HEPA EUROPE 2026

Green Pathways to Health

Integrating Green Spaces and
24-Hour Movement Behaviours for
Combating NCDs.



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HEPA Europe 2026 foreword: advancing health enhancing physical activity research, promotion, and implementation in Europe

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Physical inactivity and its frequent companion, sedentary behaviour, remain two of the most pressing and intertwined challenges in public health. Insufficient levels of physical activity — below the thresholds recommended by the World Health Organization (WHO) — are a primary driver of non-communicable diseases (NCDs) such as cardiovascular disease, type 2 diabetes, and certain cancers (WHO, 2020). Excessive sedentary time compounds metabolic risk and is recognised as an independent concern within the 24-hour movement behaviour framework, which integrates physical activity, sedentary behaviour, and sleep as interdependent determinants of health (Ross et al., 2020) Together, these behavioural patterns shape not only individual health outcomes but also social wellbeing, community cohesion, and the ecological sustainability of our living environments, particularly through the mobility choices they shape. Addressing them requires a response that is simultaneously clinical, social, and environmental.

This multidimensional challenge is precisely the terrain on which the network of HEPA Europe (Health-Enhancing Physical Activity) has operated since its establishment in 2005. Formally launched under the auspices of the WHO Regional Office for Europe (WHO/Europe), the network has grown into a cross-sectoral community comprising more than 250 member institutions from more than 40 WHO European member states — researchers, policymakers, practitioners, and non-governmental organisations working across different sectors like health, sport, education, transport, and urban planning [3]. Its mission is to advance HEPA research, advocacy, policy development and practice across the WHO European Region, guided by population-based approaches, interdisciplinary collaboration, and the best available evidence. This mission is operationalised through thematic working groups covering age- and socially-targeted approaches (active ageing, children and adolescents, socially disadvantaged groups), settings-based promotion (healthcare, workplace, sports clubs), and cross-cutting themes (environmental approaches, injury prevention, monitoring and surveillance, policy, physical literacy). Collectively, these groups have produced policy audits, surveillance tools, practical toolkits, and EU-funded projects that bring the research–policy–practice link to life (Lion et al., 2025). After twenty years, HEPA Europe should now broaden its engagement across sectors and regions, improve its sustainability, and invest in the digital and governance infrastructures needed to remain effective, integrated, and resilient into the future (Lion et al., 2025).

In September 2025, at its 16th Conference in Kaunas, HEPA Europe took a decisive step in this direction by adopting a formal Climate and Sustainability Action Pledge (WHO HEPA Europe Network, 2025). The pledge commits the network to cutting its CO_2 emissions in line with the Paris Agreement, transforming its conferences into low-carbon events, integrating planetary health into its research and award structures, and advocating for EU funding streams that connect physical activity promotion with climate change mitigation, urban green design, and biodiversity (WHO HEPA Europe Network, 2025). This commitment reflects a growing scientific consensus: access to green and blue spaces promotes physical activity, supports mental health, and generates measurable co-benefits for both human and planetary wellbeing (Banwell et al., 2024). The Kaunas Pledge thus established the foundations on which the 17th Conference organised in Ljubljana builds.

The 17th Conference, organised by Slovenia's National Institute of Public Health (NIJZ), takes as its theme Green Pathways to Health. Ljubljana, named European Green Capital in 2016, is itself a living model of this vision: its walkable urban fabric, cycling infrastructure, and abundant public green spaces translate directly into higher daily physical activity and lower sedentary time among its residents. The conference unites the ecological ambitions formalised in Kaunas with the 24-hour movement behaviour framework, examining how green environments can simultaneously reduce physical inactivity, limit sedentary behaviour, and foster the restorative conditions — lower stress, better sleep — that complete the 24-hour cycle (Ross et al., 2020).

The proceedings gathered in this volume span epidemiology, urban planning, behavioural science, clinical exercise physiology, and social policy while also emphasising the importance of cross-sector collaboration between urban planning institutions, policy makers, the sport sector, education systems, and health care. Such intersectoral cooperation is essential to create environments and policies that effectively support active living across the population. Particular attention is paid to inclusion and equity: green and active environments can fulfil their public health promise only if they are accessible to all — across socioeconomic groups, age groups, and functional abilities.

On behalf of HEPA Europe and the NIJZ, we extend our sincere thanks to the authors, reviewers, and working group members who contributed to this conference. We also gratefully acknowledge the continued support of WHO/Europe, which keeps HEPA firmly on the European public health agenda. We trust that the evidence and dialogue captured in this volume will help HEPA Europe become the more modern, inclusive, and sustainable network its ambitions demand.

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Shaping the future of HEPA Europe: member priorities, engagement and strategic directions from the 2026 network survey

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ABSTRACT

HEPA Europe, the WHO European network for health-enhancing physical activity, was established in 2005. Three previous surveys (2011, 2015, 2019) were followed by a fourth in 2026 to capture members' evolving priorities. The aim of this text is to map members' expectations for the network's future. A cross-sectional online survey was distributed to members and promoted via social media in April–May 2026. Descriptive statistics, Mann–Whitney U tests with false-discovery-rate correction, and thematic analysis of open-ended responses were applied. Ninety respondents from 26 countries took part. Networking was the most valued membership benefit, and thematic working groups, toolkits, guidelines and policy briefs were rated the most useful resources, reflecting a wish to deepen existing activities. Supporting practice/implementation and policy advocacy at European Union (EU) level were the leading strategic priorities. Regarding engagement, most respondents wished to contribute more, but conference costs were the main barrier. Funded joint projects, network-level funding and EU partnerships were the most supported developments; a membership fee was least supported. We can conclude that networking remains HEPA Europe's enduring core benefit, and engagement is the central strategic lever, now pursued through five task forces (working-group support; communication; regional, national and international advocacy and collaboration; the early-career network; operations and secretariat) of the Steering Committee. Deepening participation may need a brokering role to connect members and sustain working groups. Members' appetite for funded projects and partnerships, set against reluctance to pay fees, points to an affiliated legal entity rather than full formalisation. A joint open-access journal, perhaps beginning with the conference proceedings, could strengthen its interdisciplinary voice. These actions will help to strengthen HEPA Europe network

Keywords: physical activity, health promotion, health policy, stakeholder participation, international cooperation

INTRODUCTION

Physical inactivity remains one of the leading risk factors for non-communicable diseases globally, contributing to millions of premature deaths each year (Katzmarzyk et al., 2022). In Europe, the promotion of health-enhancing physical activity (HEPA) has been a sustained public health priority, supported by international frameworks including the World Health Organization (WHO) Global Action Plan on Physical Activity 2018–2030 (World Health Organization, 2018), the Physical Activity Strategy for the WHO European Region 2016–2025 (World Health Organization, 2016), and the European Union (EU) Recommendation on promoting HEPA across sectors (Council of the European Union, 2013).

HEPA Europe – the WHO European Network for the Promotion of Health-Enhancing Physical Activity – traces its origins to an earlier European network funded from 1996 by the Directorate-General for Health and Consumer Protection of the European Commission and coordinated by the UKK Institute in Tampere, Finland until 2001 (Oja & Wendel-Vos, 2022). Following an expert meeting in Magglingen, Switzerland, in 2004, it was formally founded in Gerlev, Denmark, in May 2005, under the auspices of the WHO Regional Office for Europe (WHO/Europe) (Martin et al., 2006; Martin-Diener et al., 2014). The network's vision is to achieve better health through physical activity among all people in Europe, and its goal is to strengthen efforts that increase participation in physical activity and improve conditions for a healthy lifestyle (Martin et al., 2006). Its objectives are to foster interdisciplinary exchange between researchers, practitioners and policy-makers; to share best practice; to develop multisectoral policies and strategies for HEPA; to strengthen cross-sector collaboration; to build the capacity of the HEPA workforce; to support advocacy for enabling social, physical and policy environments; and to provide a strong voice for the HEPA agenda – guided by population-based, evidence-based approaches, knowledge sharing and cross-sector cooperation (Martin et al., 2006; Lion et al., 2025; World Health Organization Regional Office for Europe, n.d.).

Over the following two decades the network expanded markedly, from 34 member institutions in 19 countries in 2006 to over 250 institutions across more than 40 WHO European Member States by 2025 (Martin-Diener et al., 2014; Oja & Wendel-Vos, 2022; Lion et al., 2025). Membership has remained predominantly academic (approximately 56% in 2025), alongside government and non-profit organisations. HEPA Europe functions through an annual meeting and scientific conference, a Steering Committee, thematic working groups and a dedicated early-career network, and its collective outputs include peer-reviewed publications, WHO/Europe and annual-meeting reports, policy-relevant tools and regular conference presentations (Lion et al., 2025).

Member consultation has long featured in HEPA Europe's governance. Three network-wide surveys were previously conducted, in 2011, in 2015 and in 2019 (HEPA Europe Steering Committee, 2011, 2015, 2020). Across all three, exchange and networking were the most cited, and satisfaction was consistently high. In 2011, 49% of members reported that HEPA Europe had influenced physical activity promotion in their work, institution or country (Martin-Diener et al., 2014). In 2015, exchange and networking were the most frequently cited membership benefit, ahead of being part of a renowned European network on HEPA promotion and the possibility of finding partners for funding proposals (HEPA Europe Steering Committee, 2015). In 2019, the principal threats were financial sustainability and member engagement, with financial stability, institutional support and communication/visibility the leading areas for improvement (HEPA Europe Steering Committee, 2020).

HEPA Europe is also part of a wider ecosystem of international organisations working on physical activity, sport and health. These include, for example, the International Society for Physical Activity and Health

(ISPAH), the International Society of Behavioral Nutrition and Physical Activity (ISBNPA), the European College of Sport Science (ECSS), the Association For International Sport for All (TAFISA) and the International Sport and Culture Association (ISCA), as well as regional networks such as the Physical Activity Network of the Americas (RAFA-PANA), the African Physical Activity Network (AFPAN), or the Asia-Pacific Society for Physical Activity (ASPA). These organisations are generally independent legal entities – companies limited by guarantee, non-profit organisations or registered non-profit associations – built on individual professional membership or, in the case of federations, on organisational membership; they operate at continental to global scales and their activities centre on scientific congresses, advocacy and mass-participation campaigns financed largely by membership fees. By contrast, HEPA Europe is not a separate legal entity, but a network of member institutions hosted and anchored within the WHO Regional Office for Europe, operating across the WHO European Region without membership fees, and dedicated specifically to HEPA across research, policy and practice.

Inter-organisational networks have become a central instrument of public health governance, on the premise that jointly produced outcomes – coordinated advocacy, shared learning and the translation of evidence into practice – exceed what member organisations could achieve independently, with governance modes ranging from informal participant-led collaborations to networks run by a dedicated organisation (Provan & Milward, 2001; Provan & Kenis, 2008). From this perspective, HEPA Europe can be understood as a community of practice (Wenger, 1998) that builds social capital among its members: bonding capital within disciplinary communities, bridging capital across the research–policy–practice divide, and linking capital towards institutions such as WHO and the EU (Szreter & Woolcock, 2004). Networking is understood here as the structured and informal exchange of knowledge, experience and contacts between members, enabling collaboration, mutual learning and collective influence. Consulting members on what they expect and receive corresponds to the participant level of network evaluation (Provan & Milward, 2001).

To our knowledge, few networks in the physical activity field have published repeated, quantitatively analysed member consultations of this type; existing studies more commonly rely on one-off Delphi exercises, tool evaluations or strategic reports (e.g., Prince et al., 2023; Ramirez Varela et al., 2018; Shilton & Milton, 2024). This study therefore contributes to the literature on member engagement and network evaluation within the field of physical activity research and policy. Drawing on the network-evaluation, community-of-practice and social-capital lenses set out above, it reads member priorities not only descriptively but explanatorily, asking why particular priorities emerge and endure. Against this backdrop, and as HEPA Europe enters a new phase under new leadership, a fourth systematic consultation was launched in spring 2026 to report results and draw implications for the network's future direction.

METHODS

Questionnaire development

The questionnaire was developed by the HEPA Europe Steering Committee between early March and 20 April 2026, building pragmatically on the Steering Committee's collective experience of the network; the instrument was reviewed by Steering Committee members before launch but was not formally piloted. Items captured: (1) professional profile and HEPA Europe relationship; (2) membership expectations; (3) strategic priorities; (4) preferred outputs and activities; (5) early-career support; (6) structural developments; (7) communication channel awareness and usefulness; and (8) content interests. The final instrument (Lion et al., 2026) comprised 91 items: 85 closed questions (five-point Likert scales and multiple-choice items) and six

open-ended questions. Closed items covered the professional profile and relationship with HEPA Europe (13 items, including five on motivations for engagement), membership expectations (nine items), strategic priorities (six items), preferred outputs and activities (ten items), early-career support (five items), structural developments (11 items), awareness and preference of communication channels (15 items), content interests (ten items) and personal involvement (six items). Five thematic sections each ended with an open-ended question, and the survey closed with a final open-comments item.

Distribution and data collection

The survey, administered via Microsoft Forms, was sent by e-mail to the contact list managed by the WHO/Europe collaborators of the HEPA network, which includes the contact person of each HEPA Europe member institution, i.e. all members (n=251), on 27 April 2026, with reminders on 4 and 13 May 2026. It was also promoted via social media (LinkedIn, X and Bluesky) from 28 April 2026, with follow-up posts on 6 and 11 May 2026. Responses were collected anonymously.

Statistical analysis

Categorical variables were expressed as numbers (n) and percentages (%). Ordinal variables (five-point Likert-scale items) were summarised using means (m) and standard deviations (SD). Between-group comparisons (members vs. non-members, active vs. inactive participants, and academic vs. non-academic respondents) were conducted using two-tailed Mann-Whitney U tests on the 5-point item ratings. To control multiple testing, p-values were adjusted using the Benjamini-Hochberg false discovery rate (FDR) procedure, and differences were considered significant at an adjusted $q < 0.05$. Responses to the six open-ended questions were analysed using an inductive thematic approach: after excluding blank and non-substantive answers (e.g. "No", "N/A"), the remaining answers were read in full and coded, codes were grouped into eight recurring themes (some answers contributed to more than one theme), and the themes were reviewed against the original answers before being finalised. Statistical analyses were conducted with the assistance of generative artificial intelligence tools, as detailed in the Use of Artificial Intelligence declaration. All results were independently verified by the authors.

RESULTS

Respondent characteristics and geographic distribution

A total of 90 responses were collected from 24 high income and 2 upper-middle income countries. Most respondents were affiliated with research/academic institutions (n=64), followed by government/public authority (n=16), NGOs/civil society (n=10) and the private/consultancy sector (n=5; Table 1). Respondents most frequently reported working in the education (n=50), public health/health care (n=45), and physical activity/sport (n=43) sectors, while fewer were involved in community, environment planning, public education, workplaces and transport sectors. In terms of professional roles, most respondents were engaged in research (n=73), followed by teaching (n=48), practice/implementation (n=41), and policy-related work (n=31). Regarding membership status, 70% were confirmed members (n=63), 20% non-members (n=18) and 10% unsure/pending (n=9). Engagement levels varied, with most respondents reporting participation a few times per year (36%), or monthly or more frequently (28%), while 26% reported rarely or never engaging. In total, 79% (n=71) participated in at least one HEPA Europe activity, most commonly the annual conference and working groups. The most represented countries were the United Kingdom (n=17), Spain (n=11),

Switzerland (n=8) and Germany (n=7) (Figure 1). Among participants in HEPA Europe activities (n=71), the primary motivations for engagement were networking (4.42 ± 0.57) and contributing to policy and practice impact (3.86 ± 0.91), whereas personal/institutional visibility/recognition were less mentioned.

Table 1

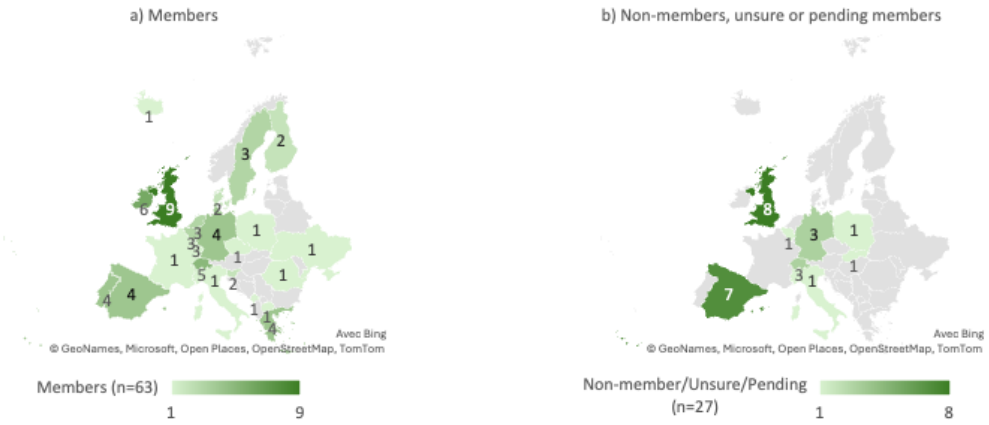
Respondent characteristics (n=90)

Characteristic	Category	n (%)
Type of organisation	Research / academia	64 (71%)
	Government / public authority	16 (18%)
	NGO / civil society	10 (11%)
	Private / consultancy	5 (6%)
	Other	1 (1%)
HEPA Europe membership	Yes	63 (70%)
	No	18 (20%)
	Unsure / Pending	9 (10%)
Engagement frequency in the last 2 years	Monthly or more	25 (28%)
	A few times a year	32 (36%)
	Rarely / never	23 (26%)
	Once a year (conference only)	10 (11%)
Participating in activities	Yes, total	71 (79%)
	Yes, annual conference	61 (68%)
	Yes, working groups	59 (65%)
	Yes, reading the newsletter	48 (53%)
	Yes, following social media posts	37 (41%)
	Yes, EU focal point meetings	14 (15%)
	Yes, early career network	2 (2%)
	No	19 (21%)

Note. Organisation type allowed multiple selections; percentages are of 90 respondents and may sum to more than 100%.

Figure 1

Geographic distribution of respondents by HEPA Europe membership status: members (panel A, n=63), non-members/Unsure/Pending (panel B, n=27). United States of America (n=1) and Cyprus (n=1) were not displayed in panel B

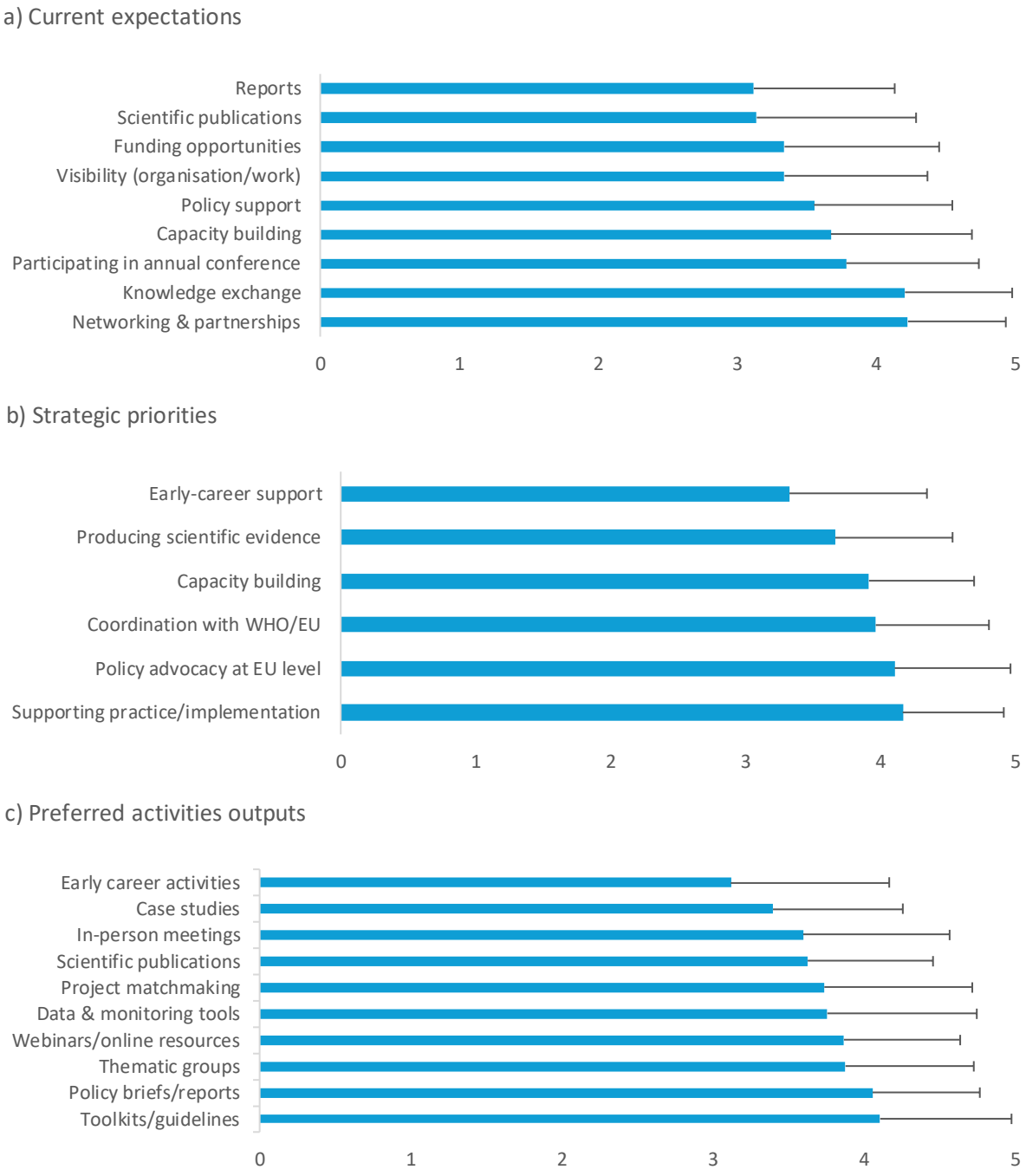


Expectations and priorities

Networking and knowledge exchanges were the most valued aspects of membership, while scientific publications and reports were rated lowest within the same battery of membership expectations of the network (Figure 2a). Supporting practice/implementation and policy advocacy at EU level were the top strategic priorities (Figure 2b), followed by coordination with WHO and EU institutions, capacity building across members and producing scientific evidence, and early-career support receiving the most mixed ratings. Among the activities/outputs from HEPA Europe, respondents valued more the toolkits and guidelines, policy briefs and reports, and thematic working groups, ahead of webinars and online resources (Figure 2c). Open-ended answers showed that six respondents urged HEPA Europe to avoid being overly academic and research-focused and to better balance the needs of policy and practice. The open-ended answers also showed that five respondents requested expanded capacity-building support, including workshops and short courses, visits and internships, as well as mentoring and secondments.

Figure 2

Expectations and priorities of HEPA Europe respondents (n=90), ranked from lowest to highest: (a) current expectations, (b) strategic priorities; (c) preferred activities outputs



Early-career support

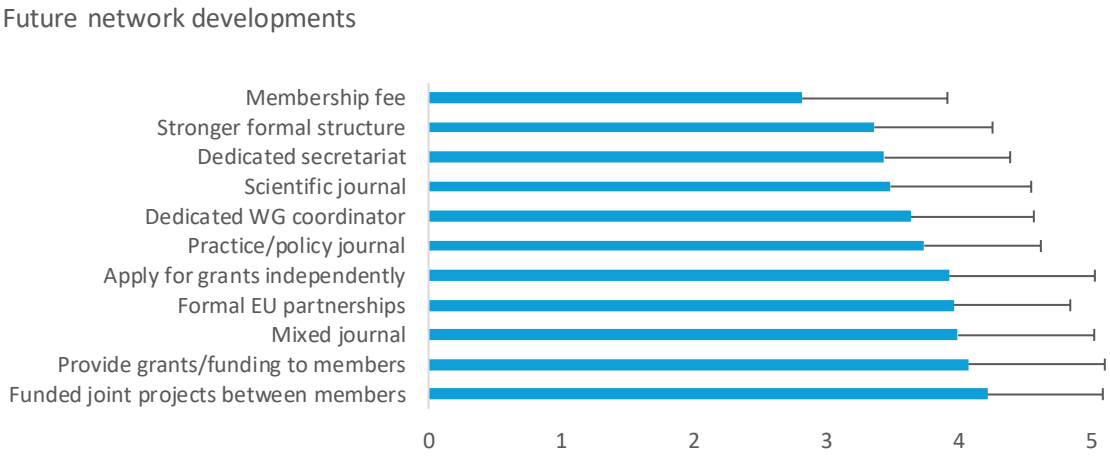
Among proposed early-career activities, networking was listed first (4.26 ± 0.84), ahead of funding opportunities (3.77 ± 0.91), training (3.63 ± 0.91), mentorship (3.62 ± 0.92), and dedicated conference sessions (3.47 ± 0.95). The analysis of the open-ended answers showed that five respondents called for opportunities — for early-career researchers in particular — to act as co-applicants on grants, in order to strengthen their funding and leadership skills.

Future development of the network

Funded joint projects between members, network-level grants or funding for members, and formal partnerships with EU institutions were the most strongly supported structural developments, followed by the possibility for the network to apply for or participate in grants independently, as shown in Figure 3. A mixed (scientific/practice/policy) open-access publication platform was preferred over a practice/policy-only or science-only platform. A dedicated working-group coordinator and a dedicated secretariat drew moderate support, whereas a stronger formal structure such as an association or foundation and, in particular, a membership fee was the least supported (Figure 3). The analysis of the open-ended answers showed that the most frequently raised concern (seven answers) was the cost of the annual conference: once travel, accommodation and registration are combined, respondents — particularly those from NGOs and public-sector bodies under budget pressure — described it as prohibitive, and called on HEPA Europe to subsidise attendance, secure funding for working groups, advocate for better EU funding, and prioritise open-access outputs.

Figure 3

Future network developments (n=90). WG: working group



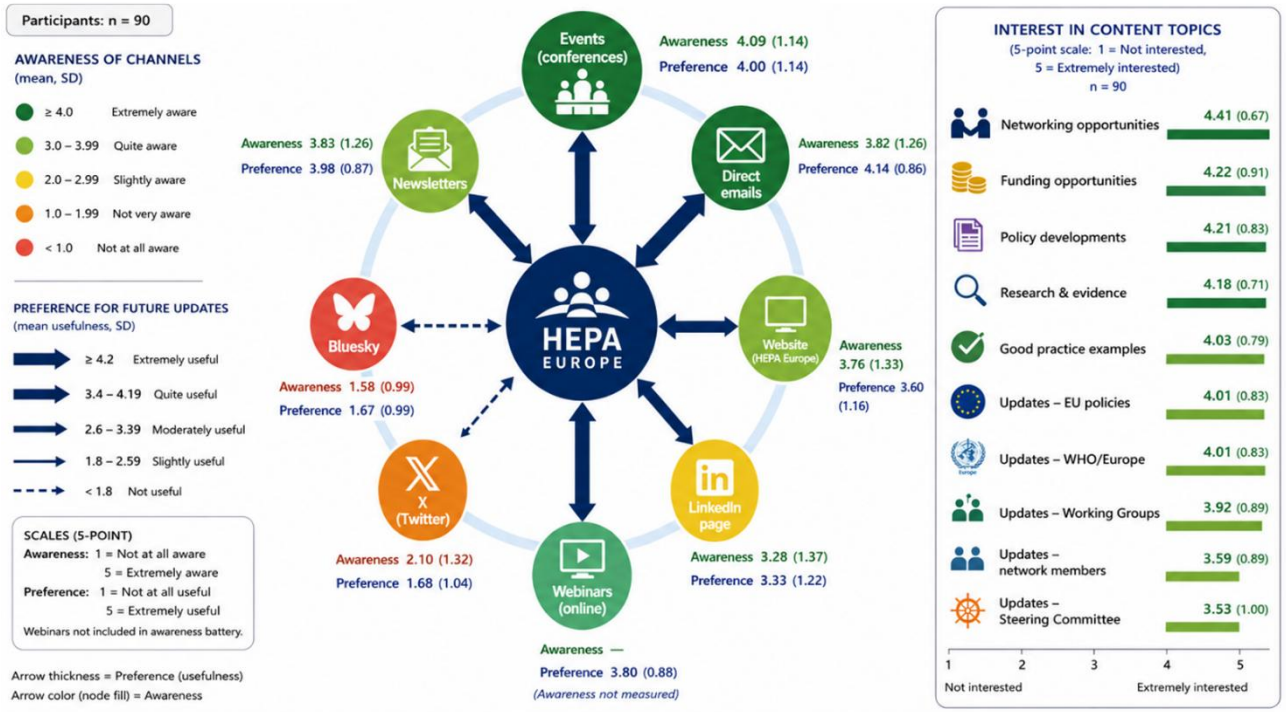
Communication

To provide an integrated overview of communication preferences, Figure 4 summarised respondents' awareness of existing HEPA Europe communication channels, their preferred channels for future updates, and their interest in different content topics. Conferences, newsletters, and direct e-mails were both highly recognised and highly valued, with direct e-mails showing the highest perceived usefulness for future communication (4.14 ± 0.86). In contrast, X (formerly Twitter) and Bluesky received the lowest awareness and usefulness ratings. Although awareness was not assessed for webinars, respondents rated them as a useful future communication channel (3.80 ± 0.88). Regarding content, networking opportunities (4.41 ± 0.67), funding opportunities (4.22 ± 0.91), policy developments (4.21 ± 0.83), and research and evidence (4.18 ± 0.71) emerged as the highest-priority topics, suggesting that future communication strategies should prioritise practical networking, funding information, policy updates, and evidence-based resources. In addition, the analysis of the open-ended answers showed that six respondents called for a stronger external communication, dissemination and visibility role, including acting as a thought leader in the sector, reaching

non-academic audiences, and actively promoting members' conferences and publications to reinforce the network's position.

Figure 4

HEPA Europe communication ecosystem: awareness and preferred communication channels alongside interest in content topics. The central network illustrates respondents' awareness of existing HEPA Europe communication channels (node colour) and their perceived usefulness for future communication (arrow thickness). Mean scores (± SD) are presented for awareness and preference on a 5-point Likert scale. Webinars were assessed only for future usefulness. The right panel summarises respondents' interest in different types of content that could be shared by HEPA Europe, with mean scores (± SD) ranked from highest to lowest



Personal involvement

When asked whether respondents would like to contribute more to the network, 43% answered yes and a further 43% maybe, with only 13% declining. Among respondents rating what they would personally hope to gain from greater involvement (n=78), networking opportunities (4.33 ± 0.73) and impact on policy and/or practice dominated (4.10 ± 0.91), well ahead of visibility for their institution, personal visibility and academic recognition.

Subgroup analyses

Membership (members, n=63, vs. non-members/unsure/pending, n=27). After FDR correction, the only robust differences between members and non-members concerned awareness of communication channels, where members were consistently more aware about events (4.38 ± 0.92 vs. 3.41 ± 1.31; q<0.001),

newsletters (4.22 ± 0.99 vs. 2.93 ± 1.36; q<0.001), direct e-mail (4.17 ± 1.02 vs. 3.00 ± 1.39; q<0.001), the WHO website (4.13 ± 1.10 vs. 2.89 ± 1.42; q<0.001), and Bluesky (1.76 ± 1.09 vs. 1.15 ± 0.53; q=0.030).

Engagement (active participants, n=71, vs. inactive, n=19). Engagement remained the most discriminating dimension after FDR correction. Active participants showed markedly higher awareness of events (4.44 ± 0.91 vs. 2.79 ± 0.98; q<0.001), the WHO website (4.11 ± 1.06 vs. 2.42 ± 1.39; q<0.001) and LinkedIn (3.59 ± 1.23 vs. 2.11 ± 1.24; q<0.001), and rated the annual conference (3.99 ± 0.90 vs. 3.05 ± 0.78; q<0.001), preference for in-person events (4.35 ± 0.85 vs. 3.29 ± 0.92; q<0.001) and interest in Working Group updates (4.11 ± 0.79 vs. 3.37 ± 0.76; q<0.001) substantially higher. Three further differences remained significant after correction: EU policy advocacy as a priority (4.28 ± 0.70 vs. 3.47 ± 1.12; q=0.030), and the perceived usefulness of scientific publications (3.77 ± 0.87 vs. 2.95 ± 1.08; q=0.040) and in-person meetings (4.01 ± 0.80 vs. 3.37 ± 0.83; q=0.040).

Sector (academia, n=64, vs. other sectors, n=26). Sector was the least discriminating dimension. After FDR correction, two differences remained robust: academic respondents showed a stronger preference for in-person events than respondents from other sectors (4.36 ± 0.80 vs. 3.60 ± 1.12; q=0.030), and — among the subset of respondents willing to contribute more to the network (n=78) — academic respondents rated academic recognition as a personal motivation higher than respondents from other sectors (3.40 ± 1.01 vs. 2.20 ± 1.15; q<0.001).

DISCUSSION

This 2026 survey is the fourth HEPA Europe network-wide member consultation. Situating the findings in perspective reveals both striking continuity and meaningful evolution in member priorities. Since 2026, the Steering Committee has reorganised its functioning around five task forces, and the results can be viewed according to these same five themes: working-group support; communication, including the annual conference; regional, national and international advocacy and collaboration, including with the WHO/Europe and the European Commission; the early-career network; and operations and secretariat, including the exploration of a possible support association.

Working-group support: networking as the enduring core

Across all four surveys spanning 15 years, networking has been the most prominent membership benefit. In 2015, it was selected by 78% of respondents (HEPA Europe Steering Committee, 2015), while in 2019 it was identified by 82%, making it the highest-ranked benefit and placing it ahead of being part of a renowned European network (HEPA Europe Steering Committee, 2020). Networking also remained the most highly valued aspect of membership in 2026. This consistency confirms networking as the foundational value proposition of HEPA Europe. The implication is consistent across all four surveys: mechanisms that deepen active participation – working groups, thematic events, funded collaboration – are the most effective route to member satisfaction and retention. The 2026 subgroup analysis underscores this: the sharpest divide among respondents was between those who actively take part and those who do not – engagement, far more than sector or membership status, distinguished responses after correction for multiple comparisons – which confirms that deepening active participation, above all through the working groups, is the network's central strategic lever.

Networking operates through formal channels – conferences, working groups, project matchmaking, webinars – and informal personal ties built up over time. Members value it less for itself than as the route to

the network's other benefits: funding partnerships, policy influence, capacity building, and, importantly, the transfer and acquisition of knowledge. This maps onto three forms of social capital (Szreter & Woolcock, 2004): bonding within one's own community, bridging across the research–policy–practice divide, and linking through the network's institutional anchoring in WHO. The thematic working groups function as communities of practice, generating and sharing knowledge through sustained joint activity (Wenger, 1998).

The 2026 findings point to several concrete ways of strengthening networking. Respondents rated thematic working groups, toolkits and guidelines and policy briefs among the most useful network outputs and funded joint projects and project matchmaking among the most strongly supported developments. Rather than being surprising, these findings confirm and sharpen the pattern observed since 2011: what members ask of the network is less a portfolio of new activities than the resources – time, funding and coordination – to deepen existing ones. For the network of the next years, the priority is therefore to keep the working groups alive and effective. Their dynamism currently rests almost entirely on their leaders, who already carry a heavy workload, so sustaining the groups will require giving these leaders dedicated support – administrative, scientific and strategic. Their work relies also on the collaboration and the activities of their members. One or more brokers could help to organise activities, connect members, prepare funding applications and guide each group's direction, so that leaders and the members can concentrate on the scientific work. Supporting and animating the working groups accordingly falls to a dedicated Steering Committee task force, for which these results provide a clear mandate.

Advocacy and collaboration: from evidence to implementation

Members prioritised supporting practice/implementation and policy advocacy at European level. It matches the field's trajectory: the first WHO assessment of the Global Action Plan on Physical Activity found policy implementation slow and uneven (World Health Organization, 2022), and implementation research keeps documenting the gap between effective interventions and their real-world delivery (Koorts et al., 2018). Seen in this light, members' emphasis on implementation over the production of new scientific evidence suggests a maturing network: the case for promoting physical activity is largely established, whereas the capacity to translate it into policy and practice is not. Positioned at the science–policy–practice interface, with direct links to WHO and the European Commission, the network is well placed to close this gap, and this work has been entrusted to the Steering Committee's task force on regional, national and international advocacy and collaboration.

Anchoring in the WHO/Europe is the network's most distinctive asset: it confers institutional legitimacy and provides variable secretariat, administrative and financial support, convening power, and channels for publishing working-group outputs and reaching policy audiences that a network of this kind could not generate on its own. Maintaining and deepening this association is therefore a strategic priority. Because so much of the network's capacity flows through this single anchor, however, shifts in priorities or resources on either side would be felt directly in its operations. Formal partnerships with EU institutions – among the most strongly supported structural developments – would diversify this base; their strong backing among engaged members shows that EU-level advocacy is seen as a sustainability strategy, not only a mission. Equally, aligning working-group agendas with the priorities WHO/Europe has identified for collaboration – insufficient physical activity, obesity and school nutrition, commercial determinants, harmful online content, systems approaches, climate change, mental health and healthy ageing – would keep the association mutually valuable and reinforce the network's contribution to the 2030 Agenda.

A further, largely untapped avenue lies in creating national HEPA networks. Much translation from evidence to policy happens at national and sub-national levels, yet HEPA Europe operates mainly as a pan-European community of institutions and individuals, not a federation of national structures. Supporting national HEPA networks – new or built on existing physical activity coalitions – would extend reach into the settings where implementation happens, create intermediaries that adapt European guidance to national contexts, and feed national experience back to the European level. Such networks could build on the existing network of national EU physical activity focal points, with which HEPA Europe already interacts. The WHO European Healthy Cities movement is a well-documented precedent: its accredited national networks multiplied the European network's reach while staying only loosely coupled to it (World Health Organization, 2015). A comparable light-touch model – national networks recognised rather than governed by HEPA Europe – could reconcile broader coverage with the informal character members value.

The early-career network

Early-career professionals – students, researchers, practitioners and policymakers at the beginning of their careers (Direito et al., 2019) – represent both the future of the network and a group whose needs the survey captured only partially. Respondents rated networking as the top early-career support activity, ahead of funding opportunities, mentorship and training, and five respondents called for early-career researchers to be able to act as co-applicants on grant proposals. A further five respondents requested broader capacity-building support such as workshops, short courses, visits, internships, mentoring and secondments. Yet only 2% of all respondents (n=2/90) reported participating in the early-career network's activities, suggesting that this recently established structure is not yet widely visible. The experience of the Early Career Network of the International Society for Physical Activity and Health indicates that such structures can play a substantive role in advocating for, disseminating and implementing global physical activity policy, rather than serving solely as a career-development space (Direito et al., 2019). Aligning the early-career network's offer with what respondents prioritised – networking first, then funding-related capacity building – and raising its visibility through the channels members use would be a direct translation of these findings, and sits with the dedicated early-career task force.

Operations and secretariat: funding, structure and the formalisation paradox

Beyond the institutional recognition, the WHO/Europe provides different types of support: the handling of new membership applications (including due diligence on prospective members), the coordination of the membership list, the hosting of the network's web presence (including social networks), the newsletter, the provision of IT tools, support for producing working-group reports (publishing, design and proofreading), direct funding to the working groups which has varied considerably from year to year and cannot be assumed in advance, limited support for the logistics of the annual conference (e.g. use of the WHO/Europe logo), and the connection of HEPA Europe with the EU Physical Activity Focal Points Network, whose meetings WHO/Europe convenes. WHO/Europe further supports the early-career professionals' development programme, including expert training and direct exposure to WHO/Europe initiatives. Alongside this support, members, and especially the Steering Committee members, contribute substantially on a voluntary basis, to the running of Steering Committee, task force and working group meetings, including their preparation and minutes. This combination is efficient, though it remains dependent both on the level of external support available in a given year and on members' priorities and resources, which may shift over time. Sustaining and further deepening the partnership with WHO/Europe – which underpins the network's legitimacy, reach and

day-to-day operations – while strengthening the network and its leadership, will therefore require mechanisms that complement those currently in place.

In addition, the developments members supported most strongly in 2026 – funded joint projects, network-level funding, EU partnerships and the network's ability to apply for grants – all require the capacity to receive and manage external funds. Funding has been a consistent concern across consultations. Yet members were least supportive of turning HEPA Europe into a formal association or foundation, or of introducing a membership fee – the least supported development of all. Members thus want the benefits of a formal organisation – funding, contracts and partnerships – while resisting both formalisation and the internal contributions that would underpin them.

One way to resolve this paradox without altering HEPA Europe's informal, WHO-anchored character would be a separate but affiliated legal entity able to hold funds, sign contracts, employ staff and apply for grants, while membership of HEPA Europe itself remains open. Such an arrangement would reconcile the demand for funded projects and formal EU partnerships with the reluctance to formalise the network or pay a membership fee, provided the governance links between the two bodies are clearly defined.

Such arrangements are neither unprecedented nor incompatible with a WHO affiliation. The Health Promoting Hospitals network, initiated by WHO, was incorporated in 2008 as a Swiss-law international association financed largely by membership fees (Pelikan et al., 2011). Within the WHO European Healthy Cities movement, many national networks are formally constituted within their own legal frameworks (World Health Organization Regional Office for Europe, 2015). By contrast, the Health Behaviour in School-aged Children network has run for decades through university-hosted coordination, without a separate legal entity (Roberts et al., 2009). In governance terms, such an entity is a network administrative organisation, a mode that suits networks growing, ambition and need for legitimacy (Provan & Kenis, 2008). Crucially, however, these models rest on the very membership fees HEPA Europe members resist, so any structural evolution would need its own financing model. Comparable professional societies – ISPAH, ISBNPA, ECSS and TAFISA – are likewise independent legal entities financed partly through membership fees.

A dedicated Steering Committee task force now aims to improve the operations and secretariat.

Communication, including the annual conference

The communication findings translate into a simple strategic rule: HEPA Europe should concentrate on the channels members actually use and value – direct e-mail, the website, newsletters, events and LinkedIn. Beyond channel choice, the open-ended answers pointed to communication content. Six respondents called for a stronger external-facing role by acting as a thought leader in the sector, reaching non-academic audiences, and actively promoting members' conferences and publications. These responses suggest that future communication should serve not only internal coordination but also the network's outward visibility and influence. The annual conference – the network's principal moment of in-person exchange – is a natural focus for this outward turn. Beyond lowering the cost of attending it, there is scope to innovate its format, for example through hybrid sessions, dedicated practice- and policy-oriented tracks and joint sessions with partner organisations, so as to attract professionals from beyond the research community, including practitioners, policymakers and early-career participants. Cost, however, remains the chief barrier to attendance: the most frequently raised concern in 2026 (seven comments) was the combined cost of travel, accommodation and registration, described as prohibitive by respondents from NGOs and public-sector bodies (HEPA Europe Steering Committee, 2015, 2020). Since HEPA Europe already operates largely online –

working-group and Steering Committee meetings are held virtually, and only the annual conference is held in person – the priority is not to curtail it but to lower the cost of attending (for example through subsidised or waived registration for early-career members and those from lower-resourced settings) and to create additional virtual meeting spaces across the year for those who cannot travel. In addition, members' clear preference for a mixed (scientific, practice and policy) open-access platform over a science- or practice-only outlet points in the same direction: appetite for a joint open-access journal spanning research, policy and practice. Such an outlet would give the network a credible, interdisciplinary voice accessible to its practice- and policy-oriented members, though launching and sustaining it would require the dedicated legal and financial vehicle discussed above. A pragmatic first step would be to publish the proceedings of the annual conference, giving an immediate, low-risk basis on which such a journal could later be built. To take these communication priorities forward, a dedicated Steering Committee task force has been created to strengthen HEPA Europe's communication.

Strengths and limitations

Several limitations apply. The dual distribution strategy (e-mail to members plus social media to the broader community) extends reach but prevents calculation of a formal response rate and complicates characterisation of the sampling frame. The sample is dominated by research/academic institutions, potentially underrepresenting practice, government and civil-society voices (71% of respondents versus approximately 56% of member institutions in 2025; Lion et al., 2025); respondents were also self-selected and may have been more engaged with, and more favourable towards, the network than non-respondents. Comparisons with earlier surveys are limited by differences in question wording, response formats and target populations. In particular, the 2026 questionnaire framed funding in terms of desired developments rather than perceived threats, which precludes direct comparison with the 2019 findings on financial sustainability. Several subgroups were small (e.g. inactive participants, n=19; non-academic respondents, n=26), and the conservative correction for multiple comparisons may have obscured smaller but genuine differences.

CONCLUSION

Networking remains HEPA Europe's enduring core benefit, and engagement – not sector or membership status – is what most distinguishes members' priorities, making deepening active participation the central strategic lever. Members strongly support funded joint projects, partnerships and independent access to grants, yet resist formalising the network or paying a fee. One option to explore is a separate but affiliated legal entity, possibly alongside a mixed research–policy–practice open-access outlet. Communication should concentrate on the channels members use (e-mail, events, newsletters and LinkedIn). Together, these findings provide an evidence-grounded foundation for HEPA Europe's strategic planning, which the five Steering Committee task forces established in 2026 are now positioned to take forward.

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The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Use of Artificial Intelligence

The authors used generative artificial intelligence tools during the preparation of this work: Claude Sonnet 5 (Anthropic) assisted with the statistical analyses; Claude Opus 4.8 (Anthropic) assisted with drafting the manuscript text; and Claude Fable 5 (Anthropic) assisted with literature searches, statistical analyses and text drafting at various stages. The authors reviewed and verified all AI-assisted content, and the corresponding author takes full responsibility for the content of the article.

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Single abstracts

The "1000 Movements" morning exercise programme – a community-based model for reducing loneliness and promoting active ageing in Slovenia

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ABSTRACT

The programme »1000 Movements« is implemented by the NGO Šola zdravja, coordinating more than 260 exercise groups and over 5,000 participants across Slovenia. It promotes physical and mental health through daily outdoor group exercise, while reducing loneliness and strengthening social inclusion among older adults. The core activity is a 30-minute structured morning exercise in public spaces. The main target group are adults aged 55+, especially retirees. The programme's innovation lies in its simplicity, nationwide reach, volunteer-led structure, and strong social dimension. The programme was introduced by Dr. Nikolay Grishin and expanded through collaboration with municipalitiesand trained volunteer leaders. Many participants have been attending programme for several years. Implementation takes place in public spaces five times per week. Complementary activities include strength exercises. Evaluation was conducted through a 2026 survey of 779 participants across Slovenia , assessing health outcomes, satisfaction, and perceived loneliness. Dissemination occurs via local networks, media, and community partnerships, enabling nationwide spread. Participants report improved mobility, perceived energy, reduced pain, and overall wellbeing . A significant proportion feel less lonely since joining . Many describe the group as their main daily social contact . High satisfaction with group atmosphere and leadership was observed. "1000 Movements" demonstrates that structured daily exercise combined with social connection can reduce loneliness, increase social inclusion, and create measurable community impact. It represents a scalable, low-cost model for health-enhancing physical activity policy and practice. The programme contributes to the prevention of non-communicable diseases and supports healthy ageing strategies.

Keywords: social inclusion, loneliness reduction, community exercise, active ageing, Slovenia

Postmenopausal women's knowledge and experiences of physical activity guidance in Ireland

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ABSTRACT

Menopause is a key stage in women's ageing during which engagement in physical activity (PA) is particularly important1, 2. This study examined PA levels among postmenopausal women in Ireland and their knowledge, attitudes, healthcare professional advice, barriers, motivators to PA3,4, and experience of menopausal symptoms. A cross-sectional online survey was conducted among 630 postmenopausal women in Ireland. PA levels were assessed using the International Physical Activity Questionnaire – Short Form and menopause symptoms using the Menopause Rating Scale. A researcher developed questionnaire assessed knowledge of PA guidelines, healthcare professional advice and barriers and motivators for PA. Quantitative data were analysed using SPSS and open-ended responses using content analysis. Participants reported mean PA levels of 2647.7 ± 660 min/week with 41.7% highly active, 39.5% moderately active, and 18.7% with low PA levels. Attitudes toward PA were positive (97.7% rated it very or extremely important), although knowledge was limited with 27% and 29.5% correctly identifing aerobic and strength guidelines respectively. Health-related limitations and time constraints were the most common barriers to PA, while external support and health benefits were key motivators. Only 24.9% reported receiving PA advice from healthcare professionals. Menopause symptom severity differed significantly across PA levels, with higher symptoms reported among women with low PA ($p = 0.012$). Despite positive attitudes, postmenopausal women reported limited knowledge of PA guidelines and low exposure to professional advice. Lower PA levels were associated with higher menopause symptom severity, highlighting the need for greater PA promotion in this population.

Keywords: postmenopause, physical activity, menopause symptoms, health promotion

Protocol for National Pilot Testing of Patient Pathways for Frailty Management in Slovenia: Insights from the Management of (Pre)Frailty Project

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ABSTRACT

Frailty is a multidimensional syndrome associated with an increased risk of falls, chronic diseases, and reduced quality of life, representing a critical public health challenge in Slovenia. Currently, standardized patient pathways for early identification and management of frailty are lacking. This study aims to establish a structured approach to the care of frail individuals in Slovenia and evaluate the effectiveness and feasibility of a newly designed patient pathway. The study is designed as a randomised controlled trial conducted across eight pilot sites in Slovenia. Following frailty screening using the FIND questionnaire, approximately 300 adults aged 50 years and older will be enrolled and randomised into either a control or an intervention group. Comprehensive assessments of physical performance and nutritional status will be performed at baseline, immediately after the intervention, and at the six-month follow-up. The intervention group will undergo a structured three-month program delivered by an interdisciplinary team in Health Promotion Centres. The program will address key components of physical frailty management, including physical activity, nutrition, health education, and psychosocial support. The findings will indicate the feasibility and effectiveness of the new pathway in reversing or delaying frailty progression, improving physical function, and enhancing nutritional status compared with standard care. This study will provide evidence to support the integration of structured frailty pathways in primary care and guide the nationwide implementation of evidence-based frailty management strategies.

Co-funded by the European Social Fund Plus and the Republic of Slovenia.

Keywords: pilot study, patient pathways, physical frailty, primary healthcare, healthy ageing

Can accelerometers estimate activity energy expenditure in very old adults? A comparison with doubly labelled water

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ABSTRACT

Accelerometers are widely used to quantify physical activity (PA), but despite the intuitive link between acceleration and energy expenditure, this association can be influenced by device placement, metric selection, and the inability to capture energy from low-acceleration activities such as sitting and standing. This study aimed to examine the association between accelerometer-derived PA from multiple placements and metrics with doubly labelled water (DLW)-measured activity energy expenditure (AEE), and whether accounting for postural energetics improves these associations. Ninety-eight community-dwelling older adults (75–90 years) participated. Participants wore accelerometers on the dominant wrist, thigh, hip, and lower back for 14 days, synchronized with DLW measurements. Resting metabolic rate and VO2 during sitting and standing were assessed by indirect calorimetry, and body composition by DEXA. Two accelerometer metrics were analyzed: ActiGraph counts per minute (AGVMC) and Euclidean Norm Minus One (ENMO). Weak but significant associations were observed between accelerometer-measured PA and DLW-measured AEE across the four positions and both metrics (R2=0.08-0.13), except for AGVMC from the wrist (R2=0.01). Adjusting for age, fat-free mass, and fat mass substantially improved the models (R2=0.37–0.45), while accounting for postural energetics (energy from sitting and standing) did not further enhance the associations. Accelerometer-derived PA modestly predicts AEE in very old adults but is insufficient as a standalone measure. Device placement and metric selection have limited influence on outputs, while adjustments for age and body composition substantially improve prediction. Accounting for postural energetics has minimal impact on the association.

Keywords: physical activity, device-based, older adults, free-living energy cost

The benefits and recommendations of types of physical activity for older adults

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ABSTRACT

Physical activity (PA) throughout life offers numerous benefits, including increased longevity. Studies show that 150 minutes per week of moderate-intensity PA reduces mortality by 31%, especially among those aged 60 or older. PA enhances physical and mental capacities, muscle strength, and cognitive function; reduces anxiety and depression; lowers the risk of diseases such as coronary artery disease, type 2 diabetes, and stroke; and boosts social outcomes. Regular moderate-intensity PA can reduce the risk of developing functional limitations in older age. PA may also slow cognitive decline by about one-third in those without dementia. Moderate PA reduces stroke risk by 11–15%, while vigorous activity decreases it by 19–22%. Unfortunately, PA declines with age: about one-third of people aged 70–79 do not meet WHO guidelines. Inactivity rates vary by country, pointing to cultural and environmental factors. Both programs and population-level actions can raise activity levels. All fitness domains: aerobic, strength, and balance are essential for older adults. Programs that promote muscle strength and endurance are effective. Strength and balance training should go in advance of aerobic exercise. Progressive resistance training improves muscle strength, reduces fall risk, supports cardiovascular health, and influences metabolism. Walking and other aerobic activities do not improve balance or strength, so older adults with limited mobility should focus on strength and balance first. The aim of our research was to develop a method for individually dosing PA based on initial VO2max, using the Compendium to estimate gross energy expenditure for various PA in older adults with known METs.

Keywords: physical activity, older adults, health benefit, risks and consequences of physical inactivity

The association between outdoor temperature and moderate-to-vigorous physical activity among community-dwelling older adults

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ABSTRACT

Physical activity (PA) is known to be important for all ages. When supporting older adults being physically active, it is important to know what environmental factors promote their PA. Therefore, this study aims to examine the association between outdoor temperature and moderate-to-vigorous PA (MVPA) among older adults in the northern climate. The study is part of the population-based cohort study, AGNES, including 484 community-dwelling older adults (75-85 years, 40.5% men) who wore an accelerometer for one week. The temperature was retrieved from the Finnish Meteorological Institute's open records. A six-minute walking test was performed in the laboratory. Based on mean temperature, the days of MVPA assessment were grouped into three categories (≤+4.9°C (1855 days), +5–+14.9°C (1003 days), & ≥+15°C (351 days)). Linear mixed models were used taking in account the repeated measures for each participant, and the final model was adjusted for age, sex, educational attainment, depressive symptoms, cognitive functioning, total number of diseases, and six-minute walking test. In the unadjusted model participants accumulated more MVPA minutes a day in ≥+15°C temperature than in the ≤+4.9°C (β=4.42, SE=2.13, $p<0.05$), but no difference between the mid-range and extreme categories. The difference increased in the adjusted model (β=5.80, SE=2.15, $p<0.01$). This study found that older adults had more MVPA during warmer than colder days. This is worth considering when planning interventions supporting physical activity among older adults.

Support/Funding Source: Samfundet Folkhälsan r.f., Research Council of Finland

Keywords: moderate-to-vigorous physical activity, older adults, outdoor temperature, environment, accelerometers

The ripple effect: capturing the wider social impact of a community-based physical activity programme for people with long-term conditions

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ABSTRACT

Extensive research shows that community-based physical activity (PA) programmes improve physical, clinical and psychological wellbeing in individuals with Long-Term Conditions (LTCs). However, evaluations typically focus on participant outcomes, with limited attention given to the wider social impacts on families, staff and other stakeholders. ExWell is a nationwide community-based PA programme in Ireland designed for people living with LTCs. This study aimed to explore the broader social impact of ExWell across multiple stakeholder groups. A qualitative exploratory design embedded within a Social Return on Investment Framework was used. Stakeholders including ExWell participants (n=28), significant others (n=4), and staff members (n=12) participated in interviews (n=6) or focus groups (n=7) online and in-person. Interviews and focus groups were audio-recorded, transcribed verbatim and analysed using thematic analysis for Theory of Change development. Preliminary findings outlined distinct yet intertwined outcomes across stakeholder groups. Participants experienced enhanced quality of life, sustained social connection and reduced healthcare utilisation. ExWell staff described increased confidence, sense of purpose, career and skill development from programme delivery. Preliminary findings from significant others suggest improved relationships and mental wellbeing linked to participant engagement. Findings suggest that community-based PA programmes generate meaningful social impact beyond direct participant outcomes. Recognising these wider benefits can support more informed decision-making, improved programme design and stronger justification for investment in community-based health enhancing PA initiatives. These findings highlight the broader value of community-based programmes and may support more effective and sustainable implementation of such health-enhancing PA intiatives.

Funding: SETU Co-fund and Active Carlow

Keywords: social impact, community, physical activity, long-term conditions

Prospective associations between leisure-time physical activity and adiposity across the transition from middle to old age: a population-based cohort study in Finnish adults

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ABSTRACT

Aim was to explore bidirectional prospective associations between leisure-time physical activity (LTPA) and multiple adiposity indicators from middle to old age, and to assess sex differences in these associations. Data were drawn from the Finnish Oulu45 cohort study (N=682, 56% female). Information about self-reported frequency of LTPA of ≥30min and laboratory-measured adiposity indicators—body mass index (BMI), waist circumference (WC), waist-to-height ratio (WHtR), and waist-to-hip ratio (WHR)—were collected at approximately ages 57 and 70. Multi-group cross-lagged panel models were used to assess sex-specific associations between LTPA and adiposity indicators, adjusted for socio-demographic and lifestyle confounders. In men, weak negative cross-sectional associations were found between LTPA and all adiposity indicators at both timepoints ($r= -0.12$ to -0.28, $p\leq0.039$). In women, only LTPA and WHR at age 70 were significantly associated ($r=-0.120$, $p=0.031$). No cross-lagged effects were observed from LTPA at 57 to adiposity at 70. In contrast, higher values in all adiposity indicators at 57 predicted lower LTPA at 70 in men (standardized coefficients: BMI: -0.123, WC: -0.145, WHtR: -0.160, WHR: -0.145; $p\leq0.035$) and women (BMI: -0.289, WC: -0.321, WHtR: -0.319, WHR: -0.274; $p<0.001$). Sex did not moderate these associations ($p\geq0.2$). Across the transition from middle to old age, adiposity predicts subsequent leisure-time physical activity frequency but not vice versa, regardless of indicator. Supporting physical activity engagement among middle-aged adults with elevated adiposity may help reduce functional decline later in life.

Funding: Research Council of Finland (Profi6/336449), Juho Vainio Foundation, Ministry of Education and Culture (OKM/19626/2024)

Keywords: leisure-time physical activity, obesity, aging, prospective cohort

Barriers and facilitators to participation in walking sports for older adults: a scoping review of qualitative research

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ABSTRACT

Walking sports are adapted versions of traditional sports designed to motivate older adults for participation due to the reduced physical intensity while maintaining social elements. They are increasingly promoted to provide positive health benefits. However, the extent of evidence evaluating their health influences remain unclear. This scoping review aimed to systematically identify, map and synthesize existing qualitative literature on walking sports for older people. A scoping review was performed following the JBI methodology, with results reported according to the PRISMA-ScR checklist. Systematic searches of academic databases and grey literature identified studies evaluating walking sports. Titles, abstracts, and full texts were screened using predefined inclusion criteria guided by the PCC framework (Population, Concept, Context). Data were extracted on study characteristics and overall health outcomes, with results synthesised thematically, with barriers and facilitators mapped to the Capability-Opportunity-Motivation-Behaviour (COM-B) model and the Theoretical Domains Framework (TDF). The review identified 23 articles on walking sports, with 17 focusing on football, two on netball, one on rugby, with three articles on multiple sports. Most participants were male, with limited focus on diverse cultures. Outcomes highlighted facilitators and barriers impacting participation. When mapped to the COM-B model and the TDF, key facilitators identified included perceived health benefits, fun, and flexible programme structure. Barriers included physical inability, sports culture, and health concerns. Walking sports support participation in health-enhancing physical activity. Future research should focus on a wider range of sports and include participants from more diverse groups.

Keywords: walking sports, older adults, physical activity

Breathing with nature: a volunteer-led outdoor mindful physical activity model supporting mental health and active ageing

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ABSTRACT

Physical inactivity, social isolation, and declining mental well-being among older adults represent major public health challenges. “Breathing with Nature” is a Slovenian humanitarian, community-based programme implemented by the NGO Šola zdravja since 2021. The study aimed to evaluate whether a structured, nature-based, volunteer-led physical activity intervention improves mental well-being, social participation, and emotional regulation among predominantly older adults. The innovative aspect lies in combining breathing techniques, mindful walking, gentle mobility exercises, and cognitive stimulation within a scalable volunteer network. A mixed-method design was used. Quantitative data were collected via surveys in spring (N=174) and autumn (N=175) 2025 assessing self-reported well-being, sleep, symptoms, trust, and social participation. Descriptive and comparative analyses were conducted. Qualitative semi-structured interviews explored perceived life changes and programme impact. In 2025, the intervention was delivered over six months, once per week, across 32 groups in 20 municipalities and 11 Slovenian regions, with 656 outdoor sessions and 4,700+ attendances. Participants reporting poor well-being decreased from 4% to 2.3%. Those “always interested” in social participation increased from 39.7% to 47.4%. Emotional expression and interpersonal trust improved. Qualitative findings highlighted stress reduction, improved sleep, enhanced mobility, emotional stability, and stronger connectedness to nature. Longer participation correlated with increased breathing awareness and emotional regulation. Findings suggest that structured, low-cost, volunteer-led outdoor mindful physical activity can effectively support mental health, social inclusion, and active ageing. The model demonstrates scalability and transferability for integration into national HEPA and community health strategies.

Co-financed by the Slovenian Ministry of Health.

Keywords: nature-based physical activity, mental health promotion, active ageing, community intervention, volunteer-led programmes

MAintAin activity in arthritis: a feasibility study

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ABSTRACT

Despite the wealth of evidence demonstrating the health benefits of physical activity (PA), people with arthritis commonly do not meet recommended PA levels. Whilst various programmes support people with arthritis to become active, most individuals reduce their PA levels after completion of a structured exercise programme. This pre-post feasibility study evaluated a newly co-developed PA maintenance intervention (MAintAin) for people living with arthritis, after completion of a physiotherapy-led structured exercise programme. MAintAin, a 16 week predominantly group-based PA coaching intervention comprised of PA monitoring, goal-setting, planning and education by a trained provider in a community setting. It was conducted in three waves of cohorts in Ireland. Twenty-seven participants (81% female, 93% aged >55 years, 93% diagnosis of osteoarthrits, 100% white) were recruited. Feasibility outcomes included recruitment, retention, and satisfaction. Process measures included PA Behavioural Automaticity and Action Coping Planning questionnaires. The study met 90% target recruitment, and 89% of participants provided follow-up data. Eighty-eight percent of participants reported being either satisfied or very satisfied with the intervention. Preliminary analyses suggested PA planning scores increased from 25.26 to 31.42/44 (mean increase of 6.16 points, 14%). Behavioural Automaticity scores decreased from 10.19 to 8.33/20 (mean reduction of 1.86 points, 9%). Findings demonstrate the MAintAin intervention is feasible, acceptable, and capable of supporting increases in PA planning and automaticity among people with arthritis. High recruitment, retention, and satisfaction rates indicate strong suitability for further evaluation. These results will inform intervention optimisation and the design of a future randomised trial.

Keywords: physical activity maintenance, physical activity coaching, arthritis, feasibility

Breaking up sitting in osteoarthritis: barriers, enablers, and intervention targets identified using com-b and the behaviour change wheel

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ABSTRACT

Sedentary behaviour (SB) is distinct from insufficient physical activity. People can meet physical activity (PA) guidelines yet still sit for long periods, with excessive SB linked to cardiometabolic health independent of PA. Brief, light-intensity breaks can benefit cardiometabolic outcomes, making SB interruption a pragmatic target alongside exercise promotion. In osteoarthritis (OA), many adults report low PA and high SB, shaped by pain, fatigue and stiffness. This study explored how adults with OA understand SB/PA and what influences SB, to inform feasible behaviour change. Semi-structured interviews were conducted with adults living with OA in England (n=11) about routines and barriers/enablers to breaking up SB. Ethical approval was obtained, and all participants provided informed consent. Framework analysis was applied, using COM-B to organise determinants and Behaviour Change Wheel (BCW) mapping to identify priority intervention functions. Participants commonly framed SB as "not doing enough exercise," rather than prolonged sitting that can be interrupted through everyday actions. This reduced psychological capability (unclear distinctions, limited options) and shaped reflective motivation (belief that only structured exercise "counts"). Symptom variability constrained physical capability and confidence; routines limited opportunities; and wider health messages reinforced exercise as the primary route to improvement. BCW mapping prioritised education (clarifying SB vs PA; legitimising breaks) and enablement (planning, prompts/cues, graded options for good/flare days, embedding micro-movements). An exercise-centric mindset can make SB interruption feel inaccessible in OA, during flares. Resources should differentiate SB from PA and provide enablement supports that make interruption feasible and sustainable.

Keywords: osteoarthritis, sedentary behaviour, physical activity, behaviour change

Evaluating a chair-based yoga intervention in care homes: effects on agitation and quality of life

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ABSTRACT

Older adults living in care homes frequently experience agitation, reduced emotional wellbeing, and diminished quality of life. Pharmacological approaches are often limited by side effects, highlighting the need for accessible, non-pharmacological interventions. Chair-based yoga may offer a safe and inclusive option for residents with physical and cognitive impairments. This study evaluated the impact of a 12-week chair-based yoga programme on agitation and quality of life among care home residents. Twenty-five residents participated in weekly chair-based yoga sessions focusing on gentle movement, breathing, mindfulness, and relaxation. Sessions were adapted to accommodate mobility and cognitive challenges. Care home staff completed the Cohen-Mansfield Agitation Inventory – Short Form (CMAI-SF) and the Care Home version of the Dementia Quality of Life measure (C-DemQoL-CH). Paired t-tests were conducted to examine changes over time. Qualitative feedback from staff and participants was also collected. Significant reductions in agitation were observed following the intervention (mean CMAI-SF: 17.4 to 15.3; $t(24) = 4.91$, $p < 0.001$). Quality of life also improved significantly (mean C-DemQoL-CH: 72.9 to 56.8; $t(24) = 2.75$, $p = 0.011$). Qualitative feedback indicated high levels of enjoyment, increased engagement, and calmer daily environments within care homes. The chair-based yoga programme was associated with reduced agitation and improved quality of life in care home residents. The intervention was feasible, well accepted, and low cost, supporting its integration into routine care. Further research using controlled designs and longer follow-up is recommended to confirm and extend these findings.

Keywords: dementia, quality of life, chair-based yoga

The associations of physical activity with general well-being and the prevalence of health problems among Estonians aged 65 and over

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ABSTRACT

Thesis examined associations between physical activity and older adults' general health, well-being, and health problems. The study analysed self-rated health, well-being, health problem prevalence, physical activity levels, gender differences, age associations, and relationships between health, well-being, health problems and aspects of physical activity. This cross-sectional study collected data via a convenience-sampled questionnaire administered through Google Forms from November 2025 to January 2026. The sample included 196 Estonian respondents (72% women, n = 141; 28% men, n = 55), with a mean age of 71.9 years (range 65–95). Overall, 57.2% rated their health as very good or good. A total of 35.2% of participants met the WHO recommendation of performing muscle-strengthening exercises on ≥2 days per week. Higher activity was linked to better self-rated health, while longer sedentary time was negatively related to all well-being indicators. WHO-5 scores showed over 80,6% had good well-being (mean 16,2 ± 4,94), with 80.6% mostly calm and stress-free and 74% active and energetic, only 26% felt refreshed in the past two weeks. Fatigue (78.6%), muscle and joint pain (75%), and physical pain (63.3%) were most common, headaches (24.5%) and digestive problems (34.2%) were less frequent. Gender and age were associated with digestive disorders, with women and older respondents more affected. WHO-5 scores were positively related to walking and exercise, and negatively to sitting time. Participants frequently reported fatigue, physical and musculoskeletal pain, while headaches and digestive problems were less common. Few engaged in muscle-strengthening exercises, and longer sedentary time was linked to poorer well-being.

Keywords: self-rated health, physical activity, health problems, well-being

Park-based physical activity in older adults: benefits and potential risks - insights from the "open spaces and closed years" project

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ABSTRACT

Population aging represents major demographic challenge, increasing the need for accessible and effective strategies that promote physical-activity (PA) among older adults. Public parks represent an increasingly recognized setting for promoting active aging because they provide free, accessible, and socially supportive environments for PA. The project "Open Spaces and Closed Years: Transformational Potentials of Natural Environments and Combined Physical Activity in Older Women" aims to develop and evaluate a multicomponent exercise program implemented in public parks for women aged 60 years and older. The program includes aerobic, strength, balance, and flexibility exercises and is designed as a non-formal and free activity. Participants are randomized into experimental and control groups, with functional and health-related outcomes assessed before and after each intervention cycle during a four-year study period (2025–2028). Park-based exercise programs offer several benefits. Outdoor environments may enhance motivation and adherence to PA, support mental well-being through exposure to natural surroundings, and encourage social interaction. Importantly, public parks reduce common barriers to participation such as cost and limited access to facilities. However, certain risks should be considered. Environmental conditions (e.g., uneven terrain, weather variability) and inadequate infrastructure may increase the risk of falls or injuries. These risks can be minimized through appropriate exercise selection, supervision, and safe park design. Public parks represent a promising and scalable setting for promoting PA and supporting healthy aging among older populations. The findings from the project may contribute to developing guidelines for future community-based exercise interventions.

Keywords: older adults, postmenopausal women

Can tailored exercise improve quality of life in people with lumbar spinal stenosis?

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ABSTRACT

Reduced trunk muscle endurance is common in symptomatic lumbar spinal stenosis and may contribute to functional limitations. We tested whether a supervised, individually tailored exercise and counselling programme improves trunk stabiliser endurance compared with a control group. Participants with symptomatic lumbar spinal stenosis were randomised to an experimental group (n=31) or a control group (n=29) and assessed at baseline, week 8 and week 12. Trunk endurance outcomes were flexor, right and left side-bridge, and extensor endurance (standardised trunk endurance test battery). Repeated-measures analysis of variance was used; Greenhouse–Geisser correction was applied when sphericity was violated. Flexor endurance showed a significant time-by-group interaction ($F(2,106)=3.79$, $p=0.026$), with greater improvement in the experimental group (+34.37 s; +60.96%) than the control group (+10.73 s; +24.39%). Right side-bridge endurance increased over time ($F(2,104)=10.63$, $p=0.001$); although the time-by-group interaction did not reach statistical significance ($p=0.062$), gains were larger in the experimental group (+61.34%) than the control group (+25.61%). Left side-bridge endurance demonstrated a significant time-by-group interaction ($F(2,96)=5.96$, $p=0.004$), improving by +44.66% in the experimental group with no change in the control group. Extensor endurance (Greenhouse–Geisser corrected) also showed a significant time-by-group interaction ($F(1.607,75.52)=4.46$, $p=0.021$), favouring the experimental group (+93.37%) over the control group (+28.06%). The individually tailored intervention produced statistically significant and clinically meaningful improvements in trunk flexor, left lateral, and extensor endurance, supporting targeted stabilization training in conservative LSS management.

Keywords: trunk endurance, stabilisation training, lumbar spinal stenosis, rehabilitation, exercise intervention

Effects of an 8-week multicomponent exercise programme Vadbeceda on physical fitness in adults aged 65+

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ABSTRACT

Age-related decline in physical capacities increases fall risk in older adults. Vadbeceda is the first evidence-based multicomponent exercise programme in Slovenia, developed by NIJZ in line with WHO guidelines for active and healthy ageing. The programme targets strength, balance, mobility, and flexibility. This study evaluated the effects of an 8-week supervised Vadbeceda programme on physical fitness in adults aged 65+. Forty-six adults completed three assessments: at baseline, after eight weeks of habitual exercise, and following an additional eight-week structured training programme. Fitness was assessed using the Senior Fitness Test battery, handgrip strength, and single-leg stance on a foam surface. Repeated measures ANOVA with Bonferroni adjustment was applied. Significant improvements were found in balance (single-leg stance errors on a soft surface; $p < .001$), dynamic balance and agility (Timed Up and Go; $p = .002$), upper limb strength (arm curl; $p < .001$), and shoulder girdle flexibility ($p < .001$). Gains in aerobic endurance and lower limb strength were observed, though not solely due to the intervention. No intervention-specific effects were found for handgrip or hamstring flexibility. Vadbeceda enhances balance, muscular strength, and flexibility in older adults, supporting fall prevention and functional independence. As a nationally implemented, freely accessible programme, it shows strong public health potential in Slovenia.

Support/Funding: Suported by the project Integration of Geriatric Care for the Elderly, funded by the Ministry of Health of the Republic of Slovenia and the European Union – NextGenerationEU.

Keywords: balance, muscular strength, flexibility, older adults, multicomponent exercise

Municipal scale-up of a physical activity program for older adults: findings from a case study

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ABSTRACT

The GESTALT – Get 10 project aims to scale-up a physical activity (PA) program within municipal prevention practice. It targets older adults who are inactive or engage in very little PA, and combines different forms of exercise with social and cognitive approaches. Results of scaling-up the PA program in ten municipalities in Bavaria (Germany) from 2020 to 2024 are presented below. The evidence-based GESTALT-PA program was systematically provided to participating municipalities through a participatory approach. Local scale-up was primarily coordinated by municipal coordinators, who supported knowledge integration, resource management, and program delivery. The program was delivered by specially trained exercise instructors. Scale-up and implementation were evaluated using standardized questionnaires completed by the coordinators after the funding phase and analysed by the research team. Over the course of the project the GESTALT-PA program was scaled-up in all ten municipalities. Specifically, 45 GESTALT-PA initial courses and 44 follow-up courses were implemented. In addition, 23 new PA initiatives were established. Overall, 74 exercise instructors were educated to implement the programme, also five supervisors were additionally qualified to educate future instructors. Twelve months after the end of the funding period, the GESTALT-PA program continued and was partly scaled up, albeit to varying extents. Through the targeted provision and training of local exercise instructors, the program was successfully implemented and scaled up across the planned region and partly beyond. Further research is needed to examine the extent to which the program was successfully transferred to neighbouring municipalities and sustainably established there.

Keywords: municipal scale-up, physical activity promotion, dementia prevention, program implementation, participatory approach

Healthy and climate-resilient neighborhoods for older adults to promote physical activity in daily life – A participatory project in two municipalities in Austria

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ABSTRACT

Climate change often forces vulnerable groups to adopt coping strategies, which also increase risk of social isolation and physical inactivity. To mitigate this, comprehensive transformations at multiple levels are necessary. In this transdisciplinary, participatory study, we aimed at identifying need-based changes of the physical and social neighbourhood to foster physical activity, health and climate resilience among older adults. We applied standardized questionnaires (e.g. ALPHA), walking tour interviews and further participatory methods, such as a serious game, chatty bench and a rating of available measures with older adults (aged > 59 years) from two Austrian municipalities. Data on self-rated health, climate impacts, adaptation strategies, quality of neighborhoods, needs and ideas for change were gathered and analysed using regression modelling and qualitative content analysis. Overall, 143 older adults (mean age 79 years) completed questionnaires, and 30 took part in participatory activities. Needs identified included insufficient infrastructure (such as green space and sheltered areas), barriers to social activities during extreme weather, and lack of awareness of local initiatives. Solutions proposed included improving public transport, expanding climate-adapted green spaces, fostering community events, collaborating with educational institutions, and promoting reporting of infrastructural deficits. Our findings underscore the importance of a multi-level-transformation to promote health, physical activity and climate resilience in older adults. The identified needs and strategies should be integrated into (local) climate action to promote (health-related) targets (e.g., Sustainable Development Goals) and equity.

Funding: This study was supported by the funding of FFG (Austrian Research Promotion Agency; grant number: FO999904587).

Keywords: physical activity, green space, older adults, climate change, health

Co-production of a community wellbeing garden for people living with dementia and their caregivers

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ABSTRACT

Informal caregivers of people living with dementia often report low levels of physical activity, which is due in part to the high levels of physical, psychological, and social burden associated with their caregiving role. Lower levels of physical activity in caregivers contribute to the increased risk of many conditions, including cardiovascular disease, social isolation, and depression. One of the difficulties in increasing physical activity levels in caregivers is the time required for caring, with physical activity usually a very low priority for caregivers. One solution could be to involve both the caregiver and the person they care for in the physical activity. This can be challenging in traditional physical activity settings, however gardening is a potential solution, especially as it can be considered exercise by stealth. The University of Bedfordshire, in partnership with the Central East Integrated Care Board , developed a wellbeing garden specifically for people living with dementia and their caregivers. The garden was co-designed with a diverse group of stakeholders, including people living with dementia and their caregivers, voluntary organisations, community leaders, and health and social care professionals. The garden design that resulted from this process includes raised beds, vertical planting, sensory plants, and wide accessible paths. Community wellbeing gardens can provide a transformative therapeutic space where people living with dementia and their caregivers can share meaningful activity incorporating social interaction and physical activity that can provide both physical and mental health benefits. for people with dementia and their caregivers.

Keywords: dementia, caregiving, horticulture

Identifying 24-hour movement behaviour phenotypes in the Luxembourgish adult population based on accelerometer raw data: the ORISCAV-LUX 2 study

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ABSTRACT

The 24-hour human movement behaviour is inherently complex and heterogeneous, making it challenging to represent with a single metric. Accelerometers provide more information than simply time spent at different intensity levels. From raw acceleration signals, a wide array of indicators can be extracted, reflecting multiple dimensions such as intensity, duration, volume, frequency, accumulation pattern, timing, regularity, and complexity. This study aimed to identify distinct movement behaviour phenotypes and examine how variations in these phenotypes relate to cardiometabolic health. In this cross-sectional study, 1009 adults from Luxembourg (aged 25–79) with at least four valid days of accelerometer data were included. A reversed graph embedding technique reduced the complexity of movement behaviours into a two-dimensional tree structure, allowing the identification of distinct phenotypes. Linear regression models were applied to explore associations between the tree dimensions, movement behaviour indicators, and cardiometabolic health biomarkers. Four movement behaviour phenotypes emerged: inactive, irregularly active, regularly active, and regularly low active. Both tree dimensions showed favourable associations with cardiometabolic outcomes, indicating that greater overall activity volume—regardless of its regularity—may benefit health. Among the indicators, average 24-hour acceleration and total step count were the strongest contributors to phenotypic variation. This study demonstrates that a novel dimensionality reduction approach can effectively capture the multifaceted nature of movement behaviours, highlight key movement behaviour indicators, and distinguish between meaningful phenotypes. The findings enhance understanding of behavioural heterogeneity and emphasize movement dimensions most relevant to cardiometabolic health.

Keywords: accelerometry, non-communicable diseases, cluster analysis, profiling, 24-hour movement behaviours

Move more and sleep enough to limit the risk of osteoarthritis: a longitudinal analysis of the 24-h movement behaviour in UK biobank participants

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ABSTRACT

Hip and knee osteoarthritis is a highly prevalent musculoskeletal disorder. Physical activity, sedentary behaviour ad sleep have been previously individually associated with the incidence of hip and knee osteoarthritis. This study investigates for the first time the association between the compositional nature of 24-hour movement behaviours and hip and knee osteoarthritis incidence. Individuals aged 40-69 years from the UK Biobank cohort were included between 2013 and 2015 for this prospective study. Movement behaviours (sleep, sedentary behaviour, light physical activity and moderate-to-vigorous physical activity) were measured with a wrist-worn triaxial accelerometer over 7 days. Incident hip and knee osteoarthritis cases were prospectively identified from hospital inpatient records. Compositional Cox proportional hazard models were used. Among the 86,461 individuals included, 5,429 developed hip and knee osteoarthritis over a mean follow-up of 7.6 years. Reallocating 30 min/day from sedentary behaviour (HR = 0.98, 95% CI = 0.97-0.99) or from light physical activity (HR = 0.93, 95% CI = 0.91-0.96) to moderate-to-vigorous physical activity was associated with lower incidence of hip and knee osteoarthritis. Similarly, reallocating 30 min/day from sedentary behaviour (HR = 0.97,95% CI = 0.96-0.99) or from light physical activity (HR = 0.93,95% CI = 0.91-0.95) to sleep was associated with lower incidence hip and knee osteoarthritis. Using device-based objective measures and accounting for the compositional nature of movement behaviours, this study provides evidence that both moderate-to-vigorous physical activity and adequate sleep may play important roles in the prevention of hip and knee osteoarthritis.

Keywords: osteoarthritis, time-reallocation, cohort

Usability of wearable sensors in lifestyle interventions: insights from user experiences with smartwatches

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ABSTRACT

Wearable sensors have the potential to complement lifestyle interventions and support long-term adherence to behavioural change. However, usability remains crucial for sustained engagement with these devices. This study explores usability through user experiences with smartwatches among participants in two lifestyle interventions: a walking group and a lifestyle coaching program. In this exploratory mixed-methods study, participants (aged 43-74) wore a Garmin Vivosmart 5 smartwatch for 10–15 weeks without additional instruction. Usability (System Usability Scale; SUS) and user satisfaction (User Satisfaction Evaluation Questionnaire; USEQ) were assessed. Focus groups addressed user experience, perceived added value, and barriers to use and were analyzed using thematic analysis From the focus groups (N=11) we identified three main themes. Participants reported increased awareness of lifestyle factors (e.g., activity, sleep) by wearing the smartwatch. However, this did not consistently translate into behaviour change. Participants valued smartwatch functions that aligned with personal health goals, such as increasing physical activity. Reported barriers included poor alignment between functions and personal goals, limited knowledge or support to interpret and act on the data, and negative experiences with certain functions (e.g., stress metrics perceived as stress-inducing). Factors to consider when optimizing usability of wearable sensors include aligning device functions with users' personal goals and providing sufficient knowledge or support to translate data into actionable behaviour change. Practical guidance on how to use wearable device data may enhance usability and implementation of wearable sensors in the context of lifestyle interventions.

Funding source: Project number 13948, NWO program KIC.

Keywords: smartwatches, usability, user experience, behaviour change, lifestyle interventions

Development of a golf and health programme for frail older people and stroke survivors

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ABSTRACT

There is an increasing amount of evidence that playing golf is beneficial for health, particularly for older people. The benefits are thought to result from a combination of the physical activity involved in golf, the social interaction when playing, the benefits of being outdoors, as well as the cognitive challenges involved in playing golf shots. This aim of this project was to co-produce a golf and health programme for older people. The project was developed with stakeholders, including golf professionals, healthcare professionals, social prescribers, and older community members from many different cultures. The pilot project focuses on people living with frailty and stroke survivors. The frailty, component is included as part of an offer of 12 weeks of free physical activity for older people who are mildly frail, with recruitment through primary care and the community. The stroke survivor component is a partnership with physiotherapists, with participants progressing from clinic to the golf course. For both conditions, participants start with putting then progress to the full swing, based on individual capacities. The programme is currently being evaluated using a mixed methods approach. Scaling up is planned with additional golf courses and physiotherapy clinics. The programme could also be extended to include other sports and activities, as well as people with other age-related conditions. Partnership between health care providers and sports clubs, such as golf, could provide a way of improving public health and creating health hubs in traditional leisure settings.

Keywords: frailty, stroke, golf

What characterises the organised sports that older people participate in?

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ABSTRACT

Most studies on ageing, sport, and health focus on understanding the causes of illness rather than on what promotes health. Conversely, this study adopts a health-promoting perspective, viewing sports clubs as settings for health. Research questions were: What characterises the organised sports that older people participate in? How do older people want sports to be a health-promoting setting for them? This study is cross-sectional, adopting a salutogenic approach within the context of sports clubs, focusing older adults who regularly participate. A dataset of 4,837 adults aged 60-96 who participated in various sports was collected via a national survey. The sample comprised over 1000 sports clubs and 50 different sports. The questionnaire SPAHRQ (Salutogenic Physical Activity Health Resources Questionnaire) was used. It contains multiple-choice questions and allows open-ended answers. Quantitative data were analysed using descriptive statistics. The open-ended questions were analysed deductively for each fixed-answer option. Almost half of the sports activities that older adults participate in are organised as exercise groups for all ages, 46% and 24% are arranged as exercise groups for 60+ only. The majority of are recruited through internal contacts 91%, such as friends, relatives, partners or neighbours. A sports club should be welcoming, inclusive, well-organised and offer a variety of activities. This study offers recommendations on how sports clubs could organise sports to suit as many people as possible for as long as possible. In sum, inclusiveness has high cohesion and a good atmosphere where it is easy to try and continue but hard to drop out.

Keywords: sports clubs, participation, organisational characteristics, inclusive

Effects of a school-based activity and homework support intervention on mental health in adolescents: a cluster randomised trial

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ABSTRACT

Mental health problems are rising among adolescents, highlighting the need for preventive interventions. The purpose of this study was to evaluate a school-based intervention on mental health in adolescents. This cluster-randomised trial comprised three weekly 60-minute sessions over 7 months: (1) varied physical activities, (2) homework support with activity breaks and (3) walking while listening to audiobooks. Self-reported anxiety, psychosomatic symptoms, depression and health-related quality of life were measured using validated questionnaires. Intervention fidelity was assessed via teacher-reported attendance. Multilevel linear mixed-effects models analysed group differences, adjusted for sex and parental education. In total, 1014 students from thirty-four schools (14 intervention, 20 control; mean age 14.3 years) participated. Results showed a significant difference in anxiety between groups after the intervention (–1.11; 95% CI –2.18 to –0.34; p = 0.02), with the largest improvements observed among students with high baseline anxiety. No overall intervention effects were observed for the other mental health outcomes. Participation in the intervention was high, with a mean student attendance of over 80% across all intervention components. Integrating scheduled, structured physical activity and homework support into the school day can improve anxiety among adolescents, particularly among those with elevated mental health symptoms. This multi-component, school-based intervention demonstrates a promising strategy that can be feasibly integrated into existing school contexts for promoting mental health among adolescents.

Funding sources: Knowledge Foundation, Skandia, Kamprad Foundation, Swedish ESF Council and SFO-V.

Keywords: audiobooks, anxiety, depression, health-related quality of life, psychosomatic problems

Body mass index and metabolic risk factors in children and adolescents: the role of physical activity and cardiorespiratory fitness

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ABSTRACT

Childhood and adolescent obesity has been increasing worldwide and is associated with health risks such as type 2 diabetes, hypertension, and cardiovascular disease. This study analysed the association between body mass index (BMI), cardiorespiratory fitness (CRF), and physical activity (PA) with cardiometabolic risk factors in adolescents. The sample included 454 participants (238 females and 216 males) aged 10–16 years. Most had a normal BMI (85.2%), while 13% were overweight and 1.8% obese. Metabolic biomarkers, including glucose, lipid profile, blood pressure, and a composite cardiometabolic risk score, were assessed. CRF was measured using the shuttle run test, and PA was evaluated with Actigraph GT3X+ accelerometers following standardized protocols. Statistical analyses showed significant differences between genders and BMI categories in PA, CRF, and cardiometabolic risk variables. Overweight adolescents presented less favourable lipid profiles and higher overall risk scores. Covariance analysis (ANCOVA), adjusted for BMI, indicated that BMI was the main predictor of cardiometabolic risk, while CRF and PA did not show significant independent effects. These findings suggest that obesity is the factor most strongly associated with early deterioration of the cardiometabolic profile, regardless of PA and CRF levels. The results highlight the importance of primary prevention strategies that promote healthy lifestyles, particularly school- and community-based programs that encourage regular PA and maintenance of CRF.

Support/Funding Source:

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Keywords: childhood obesity, cardiorespiratory fitness, physical activity, Body Mass Index

The impact of sleep duration on overweight and obesity in adolescents in the context of 24-hour movement behaviour

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ABSTRACT

Existing preventive interventions for obesity often neglect a key component of the 24-h movement profile: sleep. Hormonal changes due to lack of sleep lead to increased hunger, appetite and increase in calorie intake. Prioritizing sufficient sleep during childhood and adolescence is crucial for both immediate metabolic health and long-term obesity prevention. Our hypothesis was that sleep is an important component in the association between 24-hour movement profile and overweight. We analysed data from Slovenian Health Behaviour in School-aged Children study 2018. The observed population included 7449 adolescents (3707 girls and 3742 boys) aged 11, 13, 15 and 17. We performed a multivariate analysis using the logistic regression method. The observed outcome was overweight and obesity, the explanatory variable was sleep duration during the school week, and the confounding variables were gender, family socioeconomic status, physical activity and sedentary behaviour during the school week. Those who sleep less than the recommended amount for their age during the school week have a 1.3 times greater likelihood of being overweight or obese (OR = 1.27, 95% CI: 1.11-1.46, p = 0.001). The result is adjusted for confounding factors. Sleep as a key component of the 24-h movement behaviour plays an important role in overweight and obesity in adolescents. Even when adolescents are regularly physically active and report moderate sedentary behaviour, insufficient sleep increases their risk of overweight and obesity. Promoting good sleep hygiene and adequate sleep should be a main focus of all interventions aimed at reducing and preventing obesity in adolescents.

Keywords: sleep, obesity, adolescents, movement behaviour

Gender norms and peer dynamics in school-based physical activity: experiences of adolescent girls in low-socioeconomic school contexts

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ABSTRACT

Engaging adolescent girls in school-based physical activity remains challenging, particularly in low-socioeconomic areas. The aim was to explore sociocultural factors related to school-based physical activity participation among adolescent girls in low-socioeconomic school contexts in Sweden. A qualitative ethnographic design was used. The study was conducted within the School Project for Brain Health, a school-based intervention combining structured physical activity, homework support with activity breaks, and walking sessions with audiobooks. Data were collected through participant observations in eight intervention schools located in low-socioeconomic areas between 2021–2025. Field notes were analysed using thematic analysis informed by a critical realist perspective. Four themes describe patterns in girls' participation. First, supportive activity leaders and inclusive activities shaped engagement. Second, gendered expectations and cultural norms were visible in how activities were organised and received by students, including assumptions that boys were more suited for certain activities. Girls also reported that, even though they were physically active outside school, they faced lower expectations regarding participation in school physical activities. Third, peer relations were central, with friendship groups supporting participation while social hierarchies sometimes limited involvement. Fourth, activities characterised by choice, flexibility, and enjoyment were described as more accessible and inviting for participation. Girls' participation in school-based physical activity in low-socioeconomic contexts was shaped by gender norms, peer relations, and competence expectations. Interventions need to consider sociocultural factors and offer flexible, choice-based activities, with supportive leadership, for equitable participation.

Funding Source: Knowledge Foundation, Skandia, Kamprad Foundation, Swedish ESF Council, SFO-V.

Keywords: physical activity, schools, adolescents, ethnography, gender

Making the most of accelerometer data: using advanced analytics to better inform physical activity policy and interventions

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ABSTRACT

Despite the widespread use of wearable devices to collect detailed information of movement behaviours (e.g., accelerometers), current physical activity guidelines and policy-relevant insights remain based on simple metrics, such as time in moderate-to-vigorous physical activity. Advanced approaches, such as functional data analysis (FDA), allow researchers to fully exploit these rich datasets and better characterise patterns of movement behaviours. This study illustrates how advanced analytics can help inform policymakers for the development of targeted interventions in young people. Accelerometer data from the Belgian Food Consumption Survey 2022 (n=750; aged 3–17y; 48% female) were analysed. FDA was used to investigate how movement behaviours vary across the intensity distribution and throughout the day, considering sociodemographic and modifiable factors. Girls were less active than boys, particularly on weekdays. Older participants were generally less active during school hours on weekdays but more active in the evening. Marked differences were observed among adolescents on weekends afternoon/evening. Participants with overweight (including obesity) tended to be less active during school hours and during weekend evenings. Children with parents with higher education were more active after school on weekdays and throughout most of the weekends, except in the evenings. Sport club members were more active during school breaks and after school on weekdays, and throughout the day on weekends. Findings show the potential of advanced analytics to provide a nuanced understanding of the patterns of movement behaviours and to help policymakers design tailored and effective interventions.

Fundings: European Union's Horizon Europe research (No 101072993)

Keywords: physical activity, sedentary behaviour, functional data analysis, children and adolescents, policymakers

Results from Scotland's 2026 report card on physical activity and health for children and youth

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ABSTRACT

Despite its many health benefits, physical activity (PA) is low among children and adolescents worldwide. More recently, PA levels have been negatively impacted by some of the public health measures during the COVID-19 pandemic. The 2026 Active Healthy Kids Scotland Report Card aimed to assess physical activity and health indicators in Scottish children and adolescents from 2022 onwards and examine inequalities in socio-economic status, gender, and disability. An expert panel used the Active Healthy Kids Global Alliance methodology to assign grades for behavioural/outcome and sources of influence indicators. Nationally representative data from 2022-2025, free of major biases, were used to inform the grades. Following behavioural indicators were assigned a letter grade: Sedentary Behaviour (F), Overall PA (B), Organised Sport and PA (B), Active Transportation (C+), Sleep (C), and Diet (D-). Active Play, Fitness and Obesity were graded as inconclusive (INC). Government/Policy was graded B- for PA and Diet. The remaining sources of influence indicators (Family and Peer Influence, Community and Environment, School) were graded INC. Inequalities in socio-economic status, gender, and/or disability were reported for many indicators. The comprehensiveness of the grades is limited with data mainly available for adolescents. Data related to disability was also limited. Despite good government policies for PA and diet in Scotland, grades are largely unchanged and marked inequalities exist. There is a need to improve and widen monitoring—including younger age groups and environmental contexts—in order to improve PA and health and reduce inequalities.

Keywords: physical activity, health, childhood, adolescence, surveillance

Using wearable technology to enhance adolescent girls' engagement in physical activity and promote physical literacy

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ABSTRACT

Adolescent girls are increasingly disengaging from physical activity and physical education, highlighting the need for approaches that support more meaningful engagement in physical activity and promote physical literacy. This mixed-methods study evaluated the impact of wearable technology, specifically Apple Watches, on adolescent girls' physical activity behaviours, self- perceptions and engagement in physical education lessons. Twenty five girls (aged 13 - 14 years) in a secondary school participated in a twenty week multi-phase intervention combining repeated quantitative measures (self-perceptions, body satisfaction, physical activity enjoyment) with participatory, task-oriented focus groups. Quantitative data collected at three timepoints showed encouraging positive trends, displaying increases in positive physical activity behaviours and global self-worth and no change in body satisfaction. Qualitative thematic analysis revealed that wearing the Apple Watch acted as a tool for promoting physical literacy. Girls described feeling more motivated to move, more aware of their activity levels and more capable of engaging in physical activity. Activity tracking features such as heart rate monitoring, step tracking, activity rings, timers and workout modes were used by the girls to monitor their physical activity, track progress and set personalised goals. Features that enabled the girls to stay connected with their peers, such as messaging, walkie-talkie and shared activity data fostered peer support and collective engagement. While technical barriers (e.g., limited connectivity to devices, battery constraints) shaped experiences, this study demonstrates how Apple Watches can enhance adolescents girls' physical literacy and support more personalised and meaningful engagement in physical activity.

Keywords: Apple Watch, physical activity, physical education, motivation, self-perceptions

National Czech child obesity prevention program BE FIT 24: preliminary results

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ABSTRACT

The project aims to address the rising childhood obesity problem in Czechia by integrating technology, exercise, and gamified education to help protect children from severe obesity. The program was developed by the National Screening Centre, Czech Medical Chamber, Czech Technical University, Charles University and other partners. Program is currently undergoing pilot deployment to verify its effectiveness. Following the 2026 pilot conclusion, the program aims for national scale-up. The project targets children aged 6-11 who are either overweight (BMI 90th-97th percentile) or mildly obese (BMI 98th-99th percentile). The goal is 5% BMI reduction over one year. Paediatricians recruit participants and provide them with fitness bracelets, mobile app access and information materials. Mobile app, utilizing a fitness bracelet, measures physical activity of participating children. Children, with parental assistance, also log their dietary intake into the app. Energy intake and expenditure are measured during game weeks (one each month). If diet and exercise are sufficient, children are rewarded with points. Accumulated points unlock new game characters. Preliminary analysis shows that the program is effective in increasing self-perceived physical activity among 67% of participants on first regular checkup. It also showed effectiveness from the first annual checkups, where more than 50% of adherent children achieved weight stagnation, including more than 43% who achieved a BMI decrease. This project evaluates the effectiveness of the tested instruments and suggests that a technologically-oriented, gamification-driven, public health intervention can help tackle the childhood obesity problem in Czechia. Possible barrier for nation-wide implementation is potential lack of available funding.

Keywords: obesity, BMI reduction, children, gamification, fitness bracelet

Scottish girls' and young women's experiences of being physically activity across the menstrual cycle

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ABSTRACT

Evidence is limited on experiences of being active across the menstrual cycle in girls and young women, creating a substantial barrier to providing support. This abstract presents qualitative data on girls' and young women's experiences of being active throughout the menstrual cycle. Interviews and focus groups (12-15yrs (n-4), 16-18yrs (n=4), 19-24yrs (n=5)) were structured around barriers and enablers to physical activity (PA) across the menstrual cycle; how PA influences wellbeing; educational support; and what could be done better. A thematic analysis was undertaken to identify the role of Capability, Opportunity and Motivation on Behaviour (COM-B). Physical capability was negatively impacted by premenstrual and menstrual symptoms, but participants were aware at post menses/ovulation of increased energy. Psychological capability was suppressed by premenstrual mood changes, not being prepared, and lack of knowledge; while having plans and adjusting PA facilitated activity. Easy access to bathrooms with appropriate period products enhanced physical opportunities, while open conversations and supportive coaches/teaching staff created a supportive social environment. Although participants believed PA would help them feel physically and mentally better, motivation was suppressed by a range of factors (e.g. fear of leaking). Participants wanted to learn more about the menstrual cycle, with access to educational resources that would build knowledge through school and beyond. Further research is needed to develop accessible resources that are tailored to support PA across the menstrual cycle for girls and young women.

Funding Source: The study was funded by Scottish Action for Mental Health and Public Health Scotland.

Keywords: menstrual cycle, physical activity, girls, young women, education

Key factors for promoting physical activity within a whole-school approach: Results from participatory system mapping of secondary schools in Scotland

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ABSTRACT

An understanding of the whole-school system is needed to develop successful approaches to increase physical activity (PA) levels in young people. We aimed to understand the factors and interconnected relationships influencing PA behaviours to create a comprehensive map of the whole-school PA system in Scotland and identify factors that, when intervened upon, may have a substantive impact across the system, leading to increased PA levels. We conducted five participatory workshops with secondary school pupils, aged 12-17 years (n=32) and gathered perspectives from secondary school teachers (n=9) and wider stakeholders (n=7) via questionnaires and workshops. We elicited and prioritised factors influencing PA behaviours before, during, and after school, and explored their interconnectedness. The research team refined the map using expert knowledge, and undertook quality assurance and robustness checks. The resulting map highlights six subsystems: curricular PA, non-curricular PA, travel, school structure, policy context, and cross-system factors. A range of interconnected factors were identified (n=91) including outdoor facilities/green space, and teaching approach in class. Six reinforcing and balancing feedback loops were identified that shaped PA patterns and revealed 26 key leverage factors (e.g., walking to school), highlighting areas where schools should target for maximum impact. This is the first map visualising the whole-school PA system in secondary schools in Scotland. Schools and practitioners can use the leverage points identified to generate an action plan for workable system interventions for their unique context. This will be of benefit to practitioners, policymakers, and researchers, and ultimately impact pupils across Scotland.

Keywords: systems map, whole-school approach, young people

The menstrual cycle and physical activity in girls and young women

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ABSTRACT

Evidence suggests a bi-directional relationship between physical activity (PA) and menstrual cycle symptoms in girls and young women. However, limited evidence is available from girls and young women in the UK, or Europe, to guide approaches to supporting PA throughout the menstrual cycle. This abstract presents data describing Scottish girls' and young women's experiences of the menstrual cycle, PA and relevant education. Participants in Scotland completed an online questionnaire (girls 12-18yrs, n=221 and young women 19-24yrs, n=153). Questions assessed menstrual symptoms, PA, perceived impact of the menstrual cycle, and education experiences. There was a high prevalence of girls and young women experiencing menstrual symptoms; 86% experienced period pain, and 94% rated at least one premenstrual symptom as moderate or severe. 85% reported that symptoms prevented PA participation, with pain the most frequently reported barrier. More young women than girls recognised PA helped them to feel better mentally (84% vs 47%) and physically (67% vs 34%) but 30% of participants did not feel informed of how to stay active throughout their menstrual cycle. Only 12% of young women and 34% of girls said they had received information on managing menstrual symptoms before their first period. The study extends understanding of being active throughout the menstrual cycle, specifically relevant to a Scottish context. Findings indicate strategies to support girls and young women to be active throughout their menstrual cycle are needed.

Support/Funding Source: The study was funded by Scottish Action for Mental Health and Public Health Scotland.

Keywords: menstrual cycle, physical activity, girls, young women, education

Physical activity of children and adolescents in Croatia: Global Matrix 5.0 report card

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ABSTRACT

Global Matrix is an international physical activity surveillance system focused on the 5-to 18-year-olds. The aim of this study was to develop a Global Matrix 5.0 report card by reviewing and synthesising evidence on factors relevant to physical activity promotion among children and adolescents in Croatia. The literature search was conducted in Google, Hrčak, Scopus, and SPORTDiscus, using 100 keywords relevant to 10 standard Global Matrix indicators. Based on the findings of literature review, 21 expert panel members assigned grades to the indicators. Out of 2280 records assessed for eligibility, 2216 were excluded based on titles and/or abstracts. The full-texts of the remaining 64 records were reviewed, and 14 studies were included in the evidence synthesis. The following grades were assigned to the Global Matrix 5.0 indicators: C+ to "Overall Physical Activity"; C– to "Organised Sport"; C to "Active Play"; C– to "Active Transportation"; F to "Sedentary Behaviour"; INC to "Physical Fitness"; D+ to "Family and Peers"; B to "School"; B to "Community and Environment"; and C to "Government". The top priorities for physical activity promotion among the 5- to 18-year-olds in Croatia are to: (1) prevent the rapid increase in prevalence of excessive screen time in this age group; (2) reverse the trend of decline in physical activity among primary school students; and (3) increase the percentage of parents/guardians who act as role models by engaging in physical activities with their children.

Keywords: physical inactivity, sedentary behaviour, policy, review

Co-developing a school intervention with extra physical activity for adolescents in special support schools - a qualitative study with students and school staff

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ABSTRACT

Adolescents with neurodevelopmental conditions often face barriers to physical activity participation. The aim was to co-develop a school-based physical activity intervention for adolescents with neurodevelopmental conditions attending special support schools. A qualitative inquiry was conducted. Eight special support schools in Sweden were recruited during 2025-2026. A total of 28 school personnel (aged 32-61) and 20 students (aged 13-16) participated in semi-structured focus group discussions. The discussions were audio-recorded, transcribed and analysed using reflexive thematic analysis guided by the COM-B model. Students expressed having the physical and psychological capability to engage in physical activity. At the same time, teachers described that adapted schedules, students' emotional well-being, and social challenges shaped participation. Small outdoor areas, short breaks, weather conditions, and socially uncomfortable situations were also identified as barriers to participation. High staff-to-student ratio with individualised adaptations, simplified lessons, clear routines, and outdoor teaching were described as facilitating factors for engagement. Students described higher motivation for enjoyable, varied and low-threshold activities. Student involvement was highlighted as important to promote movement. Teacher-selected activities were also described as helping to reduce stress and conflicts. A school-based physical activity intervention for adolescents with special support needs should address both structural and emotional barriers, including scheduling and social challenges. Supportive elements such as high staff presence, clear routines, engaged teachers, and outdoor activities are expected to enhance participation and provide a foundation for an inclusive and feasible intervention.

Funding Source: Swedish Institute of Educational Research, Research School in Health Science, Ekhaga Foundation

Keywords: physical activity intervention, adolescents, special support school, mental health

Preliminary results of the acute physiological response of adolescent girls during an Irish dance practice session

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ABSTRACT

Globally, almost 80% of adolescents fail to meet the recommended 60 minutes of daily moderate-to-vigorous physical activity (MVPA), with Irish data reporting similar trends1,2. In an Irish context, dance is a popular activity among this cohort and Irish dance has the potential to be an alternative form of physical activity (PA) 3. However, the physiological demands of Irish dance remain underexplored. The aim of this research is to determine the acute physiological response of adolescents during a typical dance practice. A total of 27 adolescent girls (15 ± 1.9 years) were recruited from registered Irish dance schools using convenience sampling. Heart rate was recorded continuously throughout the class using polar H10 chest-strap monitors. Rate of perceived exertion (RPE) was recorded at 10-minute intervals throughout the class using the Borg 6–20 scale. Descriptive statistics were calculated using Microsoft Excel. The average session duration was 109.2 minutes (range: 66–153 minutes). Girls' average resting heart rate was 74.9 ± 8.9 bpm. The class was performed at an average of 51.3 ± 12.7% of heart rate reserve (%HRR). Participants spent 33.3 ± 23.5% of session at light intensity, 30.7 ± 9.6% at moderate intensity, 35.9 ± 19.9% at vigorous intensity and 70.7 ± 28.9% in MVPA. Average minutes of MVPA for a typical Irish dance class was 71.4 ± 29.3. Mean RPE during the session was 12 ± 2. Preliminary results show that participating in Irish dance can provide the opportunity for adolescent girls to accumulate MVPA, thus supporting attainment of the PA guidelines.

Keywords: adolescent girls, physical activity, Irish dance, heart rate response

Tracking of sprint and endurance abilities and changes in performance profiles in elementary school children from grade 1 to grade 5

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ABSTRACT

The purpose of this study was to examine the tracking of sprinting ability and endurance capacity in elementary school children and to clarify whether the physical fitness profile indicating the relative balance of these abilities is maintained or changes during childhood. The analysis utilized the 50-m sprint and 20-m shuttle run performance data of the same children in grade 1 and grade 5. The ability profile was calculated as the difference between the standardized scores for the 20-m shuttle run and 50-m sprint (Z-shuttle run - Z-50 m sprint). The results showed correlations between the 50-m sprint and 20-m shuttle run scores of r = 0.69 and r = 0.74 for boys, and r = 0.64 and r = 0.49 for girls, respectively. Conversely, the correlation between the ability profiles in grade 1 and grade 5 was low: r = 0.26 for boys and r = 0.07 for girls. Furthermore, examining the relationship between the initial profile and subsequent change revealed a strong negative association for girls (r = -0.73), whereas this relationship was weak for boys (r = 0.28). These results suggest that while short-distance running ability and endurance capacity show a certain degree of stability during childhood, physical fitness profiles may change during the developmental process. Therefore, it is considered necessary to interpret with caution any predictions of future athletic ability or aptitude based solely on physical fitness characteristics observed during the elementary school years.

Keywords: talent identification, child, physical fitness test

Physical activity disparities among children with disabilities: an all-island comparative study of Northern Ireland and the Republic of Ireland

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ABSTRACT

Pupils with disabilities are disproportionately affected by physical inactivity, placing them at greater risk of adverse health outcomes. This first population-level study aimed to quantify PA among pupils with disabilities and compare levels with peers without disabilities across jurisdictions and school level (primary and post-primary). Cross-sectional data were drawn from Ireland's 2022 CSPPA study, capturing self-reported disability status and days of MVPA in the past week (categorised into 4 groups; 0-2 days = reference). Complex samples analysis accounted for school clustering; logistic regression examined disability status and PA outcome associations, stratified by region and school level, controlling for age, gender, and family affluence. The final sample (n=8,889; 48% male, 49% female, 3% other); 28.5% from NI (n=2530); primary school: NI=25%, ROI=26%. Disability prevalence was ~25% (NI=26%, ROI=24%). Daily MVPA was greater among pupils without disabilities than with disabilities across all strata (NI primary OR=2.4, 1.3-4.5; NI post-primary OR=2.1, 1.4-3.0; ROI primary OR=2.7, 1.7-4.2; ROI post-primary OR=1.9, 1.5-2.5). Significant differences were also observed for cognitive difficulties (REF) vs no difficulties: NI post-primary (OR=2.3, 1.4-3.7); ROI primary (OR=2.1, 1.1-3.8); ROI post-primary (OR=1.4, 1.0-1.9); and behavioural difficulties (REF) vs no difficulties: NI primary (OR=2.8, 1.3-6.0); NI post-primary (OR=3.2, 2.0-5.1); ROI primary (OR=2.5, 1.5-4.3); ROI post-primary (OR=1.6, 1.3-2.0). Marked disparities in daily PA exist between pupils with and without disabilities in both countries, highlighting the need for inclusive strategies. Findings should inform PE/PA/Sport policy and inclusion frameworks.

Funding: Sport Ireland, Sport NI, Healthy Ireland (Sport Ireland 2021 #1246).

Keywords: children, adolescents, disability, physical activity, inclusion

Acceptability of a multicomponent school-based health promotion intervention: a qualitative study of students' perspectives

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ABSTRACT

Understanding how students perceive school-based physical activity (PA) interventions is critical for sustainable implementation. This study examined the acceptability of a multicomponent school-based health promotion intervention from the students' perspectives. This qualitative study is part of a cluster-randomised controlled trial. The intervention added three weekly hours to the school day: (a) structured PA, (b) homework support sessions with activity breaks, and (c) walks with audiobooks. Data were collected through 23 focus group discussions with a total of 142 students (72 boys, 70 girls) in grade 8 (aged 13–14) across three school years (2021/2022–2024/2025) and analyzed using reflexive thematic analysis. Four themes captured students' experiences: Enjoyment and meaning are activity-dependent, with playful, choice-based PA formats experienced as engaging, while the purpose of walking was less evident to some of the students; Social connection shapes engagement, as peer interaction enriched PA and walks but distracted from homework support; Autonomy over participation matters, with students valuing non-graded, voluntary formats over mandatory structures; and Context shapes the experience, where scheduling and environmental conditions influenced acceptability. Overall, PA was experienced most positively, homework support was valued when academically relevant, and walks with audiobook generated mixed responses. Acceptability varied across components and was shaped by autonomy, social context, teacher engagement and structural fit. These findings offer guidance for practitioners and policymakers designing and scaling health-promoting interventions in school settings and informs the conditions under which multicomponent programs can be feasibly implemented.

Keywords: school-based intervention, physical activity, adolescents, acceptability, qualitative research

The associations between children's nature exposure and device-measured physical activity

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ABSTRACT

Nature exposure enhances children's physical activity (PA), but less is known of how different aspects of nature visits are associated with children's PA. We examined the associations between the frequency and duration of nature visits, nature activities, and children's light PA, moderate-to-vigorous PA (MVPA) and total PA on weekdays, weekends and across the whole week. Data were collected from 8–12-year-old children (N=540; analytic sample n=404, mean age 11.0 [SD 1.2]; 55% girls) and their parents in the DAGIS Salo study in Finland (2023–2024). Children's PA was measured with accelerometers (hip-worn ActiGraph for 7 days). Nature visit frequency, duration of a typical visit, and type of nature activities (e.g., playing, birdwatching, skiing) were child-reported. The associations were examined using multiple linear regression models adjusted for age, sex, highest parental education in the family (parent-reported), and level of urbanity. 50% of children visited nature at least weekly, and the majority (62%) reported 15–60 minutes as a typical duration. The most common nature activities were playing, cycling and walking. More frequent nature visits were associated with higher weekly MVPA (B=0.7; 95%CI 0.003-1.37) and total PA (B=1.4; 95%CI 0.08–2.7). No associations were found between other aspects of nature visits and PA levels across the week. In the association between children's nature exposure and PA, nature visit frequency was related to weekly PA while other aspects of nature visits were not. Results highlight the importance of providing accessible nature environments that children can visit regularly throughout the week.

Keywords: nature exposure, nature visits, green space, children, physical activity

Children's perspectives on social media, sleep, and physical activity: barriers, facilitators, and solutions

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ABSTRACT

Children's physical activity, sleep and social media-use are increasingly recognised as interconnected influences on physical and mental health, and emotional well-being. Growing concerns have prompted international policy discussions, yet children's perspectives remain underexplored. This study aimed to explore children's physical activity, sleep and social media-use, and identify perceived barriers, facilitators and potential solutions to support healthier behaviours. Twenty primary schools in one local authority in Wales (UK) participated in the School Health Research Network survey (N = 1,115). Pupils completed an online health and well-being questionnaire. Six schools subsequently participated in focus groups with pupils aged 9–11 years (N = 37; 57% girls). Discussions were audio-recorded, transcribed and analysed using thematic analysis. Survey data revealed 24.0% of children reported daily physical activity, 68.8% reported a 9pm or later bedtime, 65.9% sometimes or always experienced sleep problems, and 62.1% used social media several times per week or daily. Physical activity was strongly influenced by social enjoyment but limited by time, weather and access. Sleep challenges were linked to screen use, environmental factors and emotional concerns. Social media was viewed as beneficial for communication and learning but also associated with cyberbullying, exposure to inappropriate content and excessive use. Proposed solutions included increasing opportunities for physical activity, screen restrictions before bedtime and improved parental guidance for online safety. Children demonstrate awareness of the interconnected influences of social media, sleep and physical activity. Interventions should adopt integrated, child-informed approaches addressing these behaviours simultaneously rather than in isolation.

Keywords: school, health behaviours, well-being, online safety

"Every kid should go to PE regardless of ability": Adapting the Youth-Physical Activity Towards Health (Y-PATH) intervention for post-primary schools in Northern Ireland

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ABSTRACT

The purpose of this study was to explore how the evidence-based Youth-Physical Activity Towards Health (Y-PATH) programme could be adapted to the Northern Ireland (NI) context. A mixed-methods approach was employed, including an online cross-sectional survey of pupils aged 11-14 years (n=1,541) that measured PA levels, enjoyment and experiences of PE, and preferences for PA. Focus groups (n=17) with 116 pupils aged 11-16 years, and interviews with parents/guardians and teachers (n=19) explored barriers, facilitators, and perceptions of Y-PATH. Survey data were analysed descriptively, while qualitative data were analysed thematically. Only 21.2% of adolescents met daily PA guidelines, with boys more likely than girls to meet recommendations (32% vs 13.7%). PA levels and enjoyment of PE declined with age. Most pupils (98%) expressed interest in trying new activities, with team sports (65.9%) and gym-based activities (66%) most popular. Pupils highlighted the importance of variety, autonomy, and social support in PE. Teachers and parents emphasised broadening PE beyond competitive sports, ensuring every pupil participates regardless of ability. Y-PATH NI was viewed as a promising framework to support inclusive engagement and skill development, although implementation challenges included teacher workload, time constraints, and the need for professional development. Findings highlight the need for context-specific, whole-school approaches to promote health-related PA and fundamental movement skills during the transition to post-primary education. Adapting Y-PATH for NI schools offers an opportunity to increase participation, enjoyment, and inclusivity in PE, particularly for those less engaged in traditional sports.

Keywords: adolescents, school-based physical activity, physical education, experiences of physical education

Longitudinal associations between family factors and children's active school travel

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ABSTRACT

Active school travel (AST) represents an accessible form of daily physical activity embedded in children's lived environments. However, longitudinal evidence on family influences across primary school years remains limited. This study examined whether family characteristics are longitudinally associated with children's active versus inactive school travel, beyond well-established environmental factors such as distance to school. Parent-reported data from 230 children (51% girls) in the KOMPASS(2) school-based cohort (Leipzig, Germany) assessed in first, third, and fourth grade were analysed. School travel mode and family characteristics (e.g. parental behaviours, family structure, education) were measured via questionnaire. Generalized estimating equations examined associations with active (walking/cycling) versus motorized school travel, adjusting for walking time to school. Multinomial logistic regression compared specific travel modes. The likelihood of AST increased over time (OR=1.49, 95%-CI 1.20–1.84). Living in a two-parent household (OR=2.42, 95%-CI 1.31–4.46) was positively associated with AST. In multinomial analyses, parental walking, support, and sports club membership were associated with greater odds of walking versus car, while children from two-parent households were more likely to cycle versus car. Higher parental education was associated with greater car use relative to active modes and favoured cycling over walking. From a longitudinal perspective, this study highlights that family context shapes AST across primary school years independent of distance to school. Family characteristics were differentially associated with car use and active modes, with further differentiation between walking and cycling. Promoting AST therefore requires strategies that address parental behaviours, family structure, and socioeconomic resources alongside environmental approaches.

Keywords: active school travel, transportation, primary school children, family

Sleep, physical activity and sedentary behaviour in relation to mental health among Slovenian adolescents: evidence from HBSC 2022

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ABSTRACT

Sleep, physical activity, and sedentary behaviour are determinants of adolescent mental health. We examined their associations with mental health indicators. We hypothesised that adolescents meeting recommendations for daily physical activity and sleep, and reporting lower sedentary time, would demonstrate more favourable mental health outcomes. Cross-sectional data from the 2022 Slovenian Health Behaviour in School-aged Children study were analysed (15- and 17-year-olds; n = 4,484). Measures included self-reported moderate-to-vigorous physical activity (60 minutes daily), leisure-time sedentary behaviour (>4 hours/day), and sleep duration (8–10 hours vs. other). Mental health indicators comprised life satisfaction (9+), self-rated excellent health, weekly psychosomatic complaints (≥2), depressive symptoms (WHO-5), and severe anxiety (GAD-7). Associations were tested using chi-square tests, with strength estimated using Cramer's V. Significant associations were found between all three movement behaviours and life satisfaction, self-rated health, psychosomatic complaints, and depressive symptom risk (all $p < 0.001$; $V = 0.075–0.191$). The strongest associations were observed for sedentary behaviour with depressive symptom risk ($p < 0.001$; $V = 0.191$) and for physical activity with excellent self-rated health ($p < 0.001$; $V = 0.184$). For severe anxiety, associations were significant for sleep ($p = 0.0003$; $V = 0.064$) and sedentary behaviour ($p < 0.001$; $V = 0.097$), but not for physical activity ($p = 0.204$; $V = 0.020$). Integrated promotion of sufficient sleep, daily physical activity, and reduced sedentary time may improve adolescent mental well-being. Findings support policies embedding 24-hour movement behaviours within health-enhancing physical activity strategies.

Keywords: adolescents, sleep, physical activity, sedentary behaviour, mental health

Sleep in the context of 24-hour movement behavior: a study of Slovenian adolescents

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ABSTRACT

Sleep represents a fundamental pillar of health and one of the key elements of 24-hour movement behaviour, yet remains understudied in Slovenian adolescents. This study examined sleep habits and psychosocial determinants of healthy sleep among 13-year-olds in Celje Municipality, utilizing newly translated and validated Slovenian questionnaires. The research aimed to provide foundations for developing public health interventions addressing adolescent sleep health within the framework of 24-hour movement behavior. We translated, culturally adapted, and validated two questionnaires: the Pediatric Sleep Practices Questionnaire (PSPQ) and the Psychosocial Determinants of Sleep Behavior and Healthy Sleep (PSD) questionnaire. They were used in cross-sectional epidemiological study among eighth-graders (N=356, mean age 13.4±0.55 years, 49.2% female) from Celje Municipality in February 2024. Participants completed the validated NASPAN.si questionnaire assessing sleep practices, psychosocial determinants, and 24-hour movement behaviors. Both Slovenian questionnaires demonstrated adequate content validity (CVR>0.59, CVI>0.78, FVI>0.50) and internal consistency (PSPQ-SI: Cronbach's α=0.702, λ_2=0.732; PSD-SI: Cronbach's α=0.798, λ_2=0.818). Two-thirds (66.5%) of adolescents reported insufficient sleep time during school days, with 68.0% exhibiting late or very late bedtimes and 39.3% demonstrated significant weekend sleep extension (>2 hour). Only 29.3% met physical activity guidelines, while 58.6% exceeded screen time recommendations on school days. This study confirms that insufficient sleep represents a public health challenge among adolescents, intrinsically linked to excessive screen time and inadequate physical activity. The validated Slovenian questionnaires enable systematic monitoring and provide foundations for evidence-based, multi-sectoral interventions targeting adolescents, parents, and educators to promote healthy sleep habits and balanced daily movement behaviors.

Keywords: sleep, adolescents, questionnaire, validation

Perceptions of children's physical activity and motor learning among child health care nurses and preschool educators

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ABSTRACT

Previous research indicates that many preschoolers, 1-6 years old, do not achieve sufficient levels of physical activity and motor learning to support optimal motor development and health. Professional perspectives from child health care nurses and preschool educators on physical activity may influence the opportunities children receive for movement in daily life. The aim of this study was to explore how professionals in child health care and preschool settings perceive and describe children's physical activity and motor learning, and how these perceptions shape their practices. The data consisted of interviews with professionals from both sectors; ten in child health care and nine in preschool. The findings reveal differences between the two groups. Child health care nurses tend to shift discussions about physical activity toward issues of being overweight and health risks. As a result, conversations often move away from physical activity as a joyful and developmentally important part of childhood and instead become framed through a weight-management perspective. Preschool staff, in contrast, describe physical activity as something that naturally occurs during children's free play. Movement is viewed as spontaneous and self-initiated, making planned motor activities—such as practicing teacher-led occasions learning fundamental movement skills or vigorous physical activity—feel unfamiliar and rarely implemented. The study highlights the differing professional perspectives. The results underscore the need for strengthened collaboration between the two sectors and shared knowledge to promote a more holistic approach to physical activity and motor learning in early childhood.

Keywords: children's physical activity, motor development, child health care nurses, preschool educators

Natural environment features and early childhood physical activity and sedentary time: the SUNRISE Finland study

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ABSTRACT

Access to green and blue spaces has been linked to physical activity (PA) in older children and adults, but evidence is limited in early childhood using objective measures of both PA and residential natural features. This study examined associations between natural landscape features and PA and sedentary time in early childhood. Cross-sectional data were drawn from 917 children aged 3–4 years in the SUNRISE Finland study. PA and sedentary time were assessed with ActiGraph accelerometers for seven days. Natural features (forests, fields, waters, swamps) within 100, 300, 500 and 1000 m buffers around homes were quantified using CORINE land cover data. Linear regression analysed associations with light (LPA), moderate (MPA) and vigorous (VPA) PA and sedentary time. Associations between residential natural features and PA/sedentary time were generally weak. Within 100 m, swamps were positively associated with VPA (β=0.50, 95% CI 0.09–0.91) and waters with sedentary time (β=1.95, 95% CI 0.02–3.88). In larger buffers, forests within 1000 m were positively associated with LPA (β=0.36, 95% CI 0.07–0.65) and waters with VPA (β=0.04, 95% CI 0.01–0.07). Associations differed by urbanicity, with more significant relationships among rural children, particularly for forests and swamps. Residential natural features showed limited, context-dependent associations with children's PA and sedentary time. Forests in a wider home radius may support LPA, while nearby features (e.g., fields or swamps) may support VPA. Findings may inform early childhood health promotion and urban planning.

Support/Funding Source: Yrjö Jahnsson Foundation

Keywords: movement behavior, residential environment, nature

Walking school – exploring movement education

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ABSTRACT

Schools have been identified as key settings for health promotion, but school-based physical activity initiatives have rarely had a sustained impact. Interventions have been criticized for focusing on individual behavior rather than considering the context in which people live their lives. With a focus on contextual potential for integrating physical activity, outdoor education has been identified as a promising approach. However, outdoor education requires pedagogical expertise and does not primarily emphasize physical activity. Research remains limited on approaches that use outdoor settings as learning contexts without expecting the environment to be used as a means of teaching. To address these challenges, the Walking School initiative was developed and implemented. Grounded in settings-based Health Promotion, the initiative integrated education outdoors while walking to promote sustainable movement as part of everyday school culture. This article examines teaching practice when teaching takes place outdoors while walking. A mixed-methods participatory design involved six intervention classes, eight control classes (12–16 years old), and nine teachers, representing six subjects. The intervention comprised weekly curriculum-based outdoor walking lessons co-developed by researchers, teachers, and students. Data included surveys, interviews, and observations. Preliminary findings suggest that teacher-led structure determines whether outdoor lessons resemble a lesson or merely a walk. Content is of limited complexity, and activities include discussions, worksheets, and podcasts. The outdoor environment is not integrated into teaching content, and the absence of classroom boundaries and close teacher–student proximity is perceived to encourage distractions. These findings inform efforts on how to integrate health-enhancing physical activity in schools.

Keywords: outdoor education, settings-based approach, didactic triangle, physical activity

School-based physical activity promotion and mental health: a population-based cross-sectional study of Finnish adolescents

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ABSTRACT

As central social environments in adolescents' daily lives, schools play a pivotal role in fostering both physical activity (PA) and mental health. This study aims to investigate the associations between school-based PA promotion and mental health among Finnish adolescents. The data were drawn from two sources: individual-level information from the Finnish School Health Promotion study and school-level information from the Finnish Benchmarking System for Health Promotion Capacity Building. The merged dataset included 77,721 pupils from 678 schools. School-based PA promotion was assessed across four categories. Mental health included depressive, anxiety, and social anxiety symptoms, as well as prosocial behaviour. Negative binomial regression and Poisson regression were used as a statistical method. In adjusted analyses, enabling the utilization of indoor sports facilities outside of physical education (PE) classes (incidence rate ratio [IRR]:1.01, 95% confidence interval [CI]:1.01–1.01) and encouraging pupils to engage in active commuting to school (IRR:1.01, 95% CI:1.01–1.01) were associated with higher levels of prosocial behaviour. Among girls, extended PA breaks were associated with reduced anxiety symptoms (IRR:0.97, 95% CI:0.96–0.99), whereas training pupils as peer instructors for PA was linked to higher levels of social anxiety symptoms (IRR:1.02, 95% CI:1.01–1.04). School-based PA promotion may enhance adolescents' prosocial behaviour and, among girls, reduce the risk of anxiety symptoms. To support adolescents' mental health in the school setting, PA should be promoted through a multifaceted approach. However, caution is warranted when using peer-led strategies, as they may increase social anxiety symptoms among girls.

Keywords: physical activity, mental health, school, adolescents, health promotion

Exploring the relationship between neighborhood characteristics and health risk factors among youth in Saudi Arabia

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ABSTRACT

Neighbourhood environmental characteristics play a critical role in shaping health behaviors and well-being, yet empirical evidence within the context of Saudi Arabian youth remains limited. This study aimed to examine the association between neighbourhood environmental attributes and health risk factors among adolescents in Saudi Arabia. A total of 335 secondary school students (175 males and 160 females), aged 15–19 years, were recruited. Anthropometric assessments included body mass index (BMI) and waist circumference, while physical activity was objectively measured using pedometers to record daily step counts. Perceptions of the neighbourhood environment were evaluated using the International Physical Activity Questionnaire–Environment Module (IPAQ-E). Significant differences were observed among youth residing in urban, rural farm, and rural desert settings with respect to BMI, waist circumference, daily physical activity, accessibility, infrastructure, social environment, household vehicle ownership, perceived safety, and access to recreational facilities ($p < 0.001$). Adolescents in rural desert areas demonstrated lower levels of physical activity and higher BMI values compared with those in other settings. Gender-based differences were identified in perceptions of the social environment, with males reporting greater neighbourhood social engagement than females. Furthermore, negative associations were found between daily step counts and perceived neighbourhood safety as well as crime rates. These findings indicate that geographical context, cultural norms, and environmental accessibility substantially influence physical activity participation and weight status among Saudi youth. Environmental factors such as residential density, safety, transportation availability, and social surroundings appear to be particularly influential.

Keywords: neighbourhood, characteristics, health, risk factors, youth, Saudi, physical activity and BMI, geographical location, cultural attitudes and social environment

Families' outdoor recreation and physically active lifestyle in Finland

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ABSTRACT

Families are the primary setting for making choices that affect well-being and health. By influencing family culture, their physical activity choices in daily routines and parenting practices that support activity, it is possible to promote physical activity across the population. The Family Physical Activity Barometer was conducted to meet the need for information regarding the physical activity habits of Finnish families and the factors influencing them. This 2025 Barometer, a continuation of the 2021 study, surveyed 1,220 Finnish families nationwide via an internet panel. It was carried out in cooperation with The Outdoor Association of Finland and Taloustutkimus (Economic research), for the needs of the Families on the Move, which is funded by the Ministry of Education and Culture. Finnish families with children broadly engage in diverse forms of self-organized physical activity and mostly outdoors, primarily motivated by the desire to spend time together. Two out of three families participate in self-organized activity at least once a week, 69% for at least an hour per session. Diverse natural areas, pedestrian and bicycle paths, and hiking opportunities have especially boosted joint physical activity for families, with hiking and walking increasing in popularity. However, an increasing number of families cite financial reasons as a challenge to joint physical activity. The assessment data from the survey is used to guide the development of nationally and locally implemented initiatives, practices, and materials that support families' physically active lifestyles and allows the monitoring of national development.

Keywords: Finnish families, outdoor recreation, physically active lifestyle, families on the move

Education outside the classroom in school settings: a systematic review of effects on students and teachers

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ABSTRACT

Schools represent a central environment in the daily lives of children and teachers and therefore offer opportunities to not only address learning, but also health and social development. Education Outside the Classroom (EOtC), defined as the regular delivery of curriculum-based lessons outside the classroom, has gained increasing attention as a teaching approach that may influence multiple dimensions of school life. However, existing research on EOtC is scattered across disciplines and has focused primarily on students, while evidence regarding teachers and broader outcome domains remains fragmented. This systematic review aims to synthesize and critically appraise evidence on the effects of regular participation in EOtC for students and teachers. Following PRISMA guidelines, a comprehensive literature search is being conducted in PubMed, Scopus, Web of Science, and EBSCO databases. Studies examining regular curriculum-based outdoor education in primary or secondary school settings in English and German are eligible for inclusion. Data extraction includes study characteristics, intervention features, outcome domains, and findings on students' and teachers' physical and psychological health, students' social dimensions, and performance-related outcomes. The methodological quality and risk of bias of included studies are assessed using tools like RoB 2 or ROBINS-I. Based on the current screening process, approximately 50 studies are expected to be included. This review will provide a comprehensive synthesis of multidimensional effects of EOtC on students and teachers across disciplines and study designs. The findings will inform practitioners and policymakers about the current evidence base and provide a foundation for future research and evidence-informed practice in outdoor education.

Keywords: outdoor education, systematic review, students, teachers

Does attendance in outdoor kindergartens improve nocturnal sleep duration among preschool children?

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ABSTRACT

Optimal sleep patterns are essential for children's health and development. This study aimed to investigate the effect of attending outdoor versus conventional kindergarten on objectively measured nocturnal sleep duration. Data was collected from 134 children in five kindergartens in the Copenhagen area, who were alternating between outdoor and conventional settings. Nocturnal sleep duration was measured using accelerometers over one week in the outdoor setting and one week in the conventional setting, respectively. In this within-subject design, differences in nocturnal sleep duration were analyzed using a paired t-test. Data from 92 children were included in the analysis. No statistically significant overall difference in nocturnal sleep duration was observed between the two settings. However, results were modified by individual kindergartens, as two kindergartens showed significantly shorter nocturnal sleep duration in the outdoor setting (p=0.0003 and p=0.0001) and one kindergarten showed significantly longer nocturnal sleep duration in the outdoor setting (p=0.0005), while there was no difference between settings in the remaining two kindergartens. The results underscore the complexity of how children's daily environment influence their sleep patterns, and further exploring of these environmental factors could create important knowledge to understand ways to enhance and promote child health.

Keywords: sleep, nature

Physical activity, health-creating conditions and children's happiness: cross-sectional and longitudinal evidence from a community physical activity intervention

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ABSTRACT

Physical activity is associated with improved mental wellbeing in children, but less is known about how social and environmental conditions shape this relationship. This study examined whether health-creating conditions influence the association between physical activity and children's happiness. Survey data were collected from children participating in the BTS programme across five UK communities. Baseline data were available for 5,610 children, with 809 matched baseline–follow-up responses collected approximately six weeks later. Happiness (1–7 scale) was analysed using ordinal mixed-effects models. Physical activity was measured as weekly moderate-to-vigorous physical activity (MVPA), and contextual conditions were captured using the Health Creation Index (HCI), reflecting supportive relationships, opportunities for participation and perceptions of place. Higher HCI was strongly associated with greater happiness at baseline and showed a stronger relationship with happiness than physical activity alone. Predicted probabilities of high happiness (scores 6–7) were 20 percentage points higher among children with high HCI compared with low HCI. The association between MVPA and happiness was strongest among children with lower HCI, indicating moderation by contextual conditions. Longitudinal analyses showed that increases in HCI were significantly associated with increases in happiness ($\beta \approx 0.49$, $p<0.001$), while changes in MVPA alone were not independently associated with happiness change. Children's happiness appears strongly linked to health-creating social and environmental conditions. Physical activity may contribute most to wellbeing when it occurs within environments that support safety, belonging and participation.

Keywords: health creation, children, physical activity, happiness, mediation

Education outside the classroom in Germany: an interdisciplinary mixed-methods study protocol on school-based health promotion

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ABSTRACT

Schools are a central environment in the daily lives of children and teachers, where substantial time is spent and therefore health-related behaviours and well-being can be meaningfully addressed. Education Outside the Classroom (EOtC) refers to regular delivery of curriculum-based lessons outside the classroom, often in outdoor environments. While previous studies have primarily focused on pupils, little is known about potential effects on teachers, or the social and environmental dynamics of EOtC. This exploratory, quasi-experimental, interdisciplinary study is conducted in 33 schools across Germany (data collection: September 2025–November 2026). Approximately 50 EOtC teachers, 50 EOtC classes and 18 non-EOtC classes participate. The study examines the effects of EOtC on teachers' stress levels, hedonic well-being, and physical activity, as well as pupils' cognitive performance, school-related well-being, classroom behaviour, and nature connectedness. Teachers' physiological stress is assessed through salivary cortisol samples, while physical activity is measured using accelerometery. Questionnaire data capture well-being, nature connectedness, and contextual factors among teachers and pupils. Biodiversity at outdoor learning sites is assessed to examine potential associations with nature connectedness. Teaching characteristics and social interactions between teachers, pupils, learning environments, and teaching objects are documented through structured observations and video-based analyses. By combining physiological, behavioural, ecological, and sociological perspectives under real-world school conditions, this interdisciplinary study provides a comprehensive assessment of EOtC as a school-based health promotion strategy. The findings will inform practitioners and policymakers about the potential of curriculum-integrated outdoor teaching as a scalable strategy to promote physical activity, reduce stress, and support healthier school environments.

Keywords: outdoor education, school health promotion, well-being, physical activity, nature connectedness

Intraindividual correlates and determinants of active travel: a meta-analysis with over 2 million children and adolescents

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ABSTRACT

Despite the well-documented benefits of active travel for both individual health and the environment, prevalence rates remain moderate (47-53%). Previous reviews have predominantly focused on social and environmental determinants of active travel. This review aimed to synthesize and compare intraindividual correlates and determinants of active travel among children and adolescents. Following PRISMA 2020 guidelines and registered in PROSPERO (CRD42024604211), a systematic literature search was conducted across Scopus, Web of Science, PubMed, EBSCOhost, and TRID. We identified associative studies examining intra-individual influences on active travel in childhood (≤18y). Methodological quality was assessed using the JBI Checklist for Cross-Sectional Studies. A hierarchical category system was developed to classify variables into four primary domains: physical, cognitive, affective, and social capabilities. Data were synthesized using multi-level random-effects meta-analysis. From 6,866 identified records, 114 studies (published 2003-2024) were included in the meta-analysis. The majority targeted adolescents (n=69) and children (n=55), with two involving preschoolers. Results revealed substantial associations for both affective (N=43,762; rpool=.127; p<.001) and cognitive factors (N = 33,846; rpool = .131; p<.001) with active travel. Conversely, physical (N=2,087,765; rpool=.035; p=.011), sociodemographic (N= 1,005,694; rpool=.029; p=.003), and social factors (N=11,577; rpool=.035; p=.403) showed little-to-no relationship with active travel. Despite high heterogeneity (84.4%<I^2<99.6%), findings were robust against publication bias and outliers. The meta-analysis delivers a nuanced insight into the personal factors 'driving' active travel. These findings establish a solid foundation for identifying intervention components to effectively promote active travel among youth.

Keywords: active transport, youth, mobility, health promotion

Towards an activity-friendly urban environment: insights from a participatory approach aligning youth' needs and local facilities

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ABSTRACT

This study explores the relationship between the physical activity (PA) needs of children, adolescents and young adults (aged 6–34) and PA opportunities in a mid-sized city in the western Netherlands, with the overarching aim of supporting the structural development of a PA-friendly public environment. Multiple participatory and qualitative methods were used, including dot-voting among children (aged 6-12), interviews with adolescents (aged 12-18), young adults (aged 18-34) and local sports providers, as well as co-creation sessions involving young people (aged 14-20) and PA professionals. The PA-friendly environment model guided the study, focusing on the physical environment (hardware), provision of activities (software), and organisational structure (orgware). PA and sports participation was high among children (83%) but declined markedly after age twelve, particularly among teenage girls. Young adults preferred flexible, informal activities over organised sports. Key barriers included financial and time constraints, concerns about social safety, and inadequate facilities. Regarding the physical environment (hardware), an urban park was identified by young people and professionals as a key location to stimulate PA participation. However, its potential is currently limited by inadequate lighting and insufficient shelter. Professionals emphasised that physical modifications should be accompanied by clear agreements on activity programming (software) and organisational infrastructure (orgware). Enhancing health-promoting PA requires practical and policy initiatives, including redesigning activity-supportive environments like urban parks alongside actively involving local communities. PA policy professionals play an important role in linking organised and informal sports settings, particularly to support the retention of teenage girls and young adults.

Keywords: physical activity, youth, built environment, activity friendliness

Play-based community intervention improves motor competence and psychosocial outcomes in children referred to paediatric therapy services

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ABSTRACT

Children referred to paediatric therapy services often present with delayed motor development, reduced confidence and limited opportunities to engage in inclusive PA. This study evaluated the effectiveness of FunFit, a non-competitive, community intervention for therapy-referred children aged 7–12 years. Twenty-three children (15 boys; mean age 10.2 years) were recruited through physiotherapy and occupational therapy pathways. FunFit sessions were delivered weekly for 60 minutes over eight weeks and incorporated structured play-based warm-ups/cool-downs and locomotor and object-control activities. Measures included anthropometrics, self-reported MVPA, psychosocial questionnaires, and FMS assessed using the TGMD-2. Analyses used paired-samples t-tests, Wilcoxon tests, McNemar's exact tests, and Spearman correlations. Significant improvements were found in BMI z-scores ($p < .01$), self-reported MVPA ($p < .01$), autonomous motivation ($p = .017$), perceived physical competence ($p = .005$), and enjoyment ($p = .025$). Object-control skills ($p = .002$, $d = 0.94$) and Gross Motor Quotient ($p < .001$, $d = 1.10$) also improved. Catch mastery increased from 31.3% to 75.0% ($p = .016$). No significant associations were observed between changes in motor competence and perceived competence. FunFit produced meaningful improvements in MVPA, BMI z-score, motor competence, and psychosocial correlates of PA. These findings underscore the value of non-competitive, community-based programmes as early, developmentally appropriate supports that can help alleviate pressure on paediatric therapy services by offering accessible, scalable motor-skill development opportunities. The results also strengthen the case for policy investment in cross-sector health/sport partnerships to expand inclusive, play-based interventions that enhance children's confidence, motivation, and long-term engagement in PA.

Keywords: inclusive physical activity, community-based intervention, fundamental movement skills, play

Access to urban green spaces and adherence to 24-hour movement behaviour guidelines among school-aged children in urban vs. rural settings in Kyrgyzstan: a scoping review

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ABSTRACT

Green prescriptions, recommendations endorsed by clinicians to undertake activities involving nature-based physical activity, have become one of the most affordable and potentially effective approaches towards prevention of noncommunicable diseases (NCDs) in children. The purpose of the research was to determine implementation avenues, health outcomes (e.g., decreased risk of obesity, mental health improvement), region differences, and equity aspects applicable to primary care, school-based and city policy in low- and middle-income countries i,e. Kyrgyzstan and Central Asia. This systematic scoping review followed PRISMA-ScR guidelines. PubMed, Scopus, Web of Science, and Embase were searched for 2010–2025 papers on green space access, urban/rural parks, nature-based physical activity, or outdoor activity among school-aged children. Following the screening of titles and abstracts, 66 full-text publications were evaluated; 27 study of experimental, observational, and implementation studies primarily with LMICs, Central Asia and Kyrgyzstan were included in the study. In most papers, living near parks was connected to greater moderate-vigorous physical activity and less inactive leisure time. Some research also found that nature exposure improved sleep quality and duration. Clinician-led green prescriptions, school-based outdoor programs, and standardized access policies helped reduce inequity in LMICs, where urbanization reduces green space and increases NCDs like childhood obesity. This research reveals that long-term, ecologically friendly, and equitable access to urban green space improves 24-hour movement behavior delivery and NCD prevention in school-aged children. Green primary healthcare and school-based programs supported by equitable access urban planning policies would strengthen the 24-hour movement, encourage lifestyle changes, and strengthen communities.

Keywords: sedentary behaviour, sleep, urban-rural disparities, health equity, NCD prevention, Kyrgyzstan, Central Asia, green prescriptions

HappyPlant app in the SmartCHANGE project utilizing AI to support healthy behaviors among Finnish youth - perspectives of primary school students

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ABSTRACT

SmartCHANGE, funded through the Horizon Europe programme (2023–2027), develops AI-based digital tools to support healthier habits in young children. This presentation focuses on the HappyPlant mobile app used in Finnish schools and describes both its feasibility and young people's experiences of using it. The app utilizes behavioural change theories and includes gamification elements and health related tasks based on one's own goals and AI-risk prediction models and has been co-created with researchers, developers, school nurses and pupils to ensure suitability. The non-randomised controlled design includes 8 nurses and 100 pupils (50 intervention; 50 control) in grades 5 and 8. Pupils use the gamified version of the HappyPlant together with activity trackers for 3 months, while school nurses use an AI-based web tool to assess risk, monitor progress, and provide tailored support. Control group uses the same app, but without gamification or goal setting, presenting only activity tracker values. Feasibility data will be collected through pupil surveys and semi-structured focus groups. The results presented at the conference will describe pupils' experiences with the HappyPlant app, factors influencing engagement, and the implications of school policies such as restrictions on mobile-phone use during the school day. SmartCHANGE contributes to practice and policy by offering scalable, school-compatible AI-based digital health tools to support children's daily health behaviours and strengthen evidence on digital behaviour change tools.

Keywords: physical activity promotion, behaviour change, digital health, school-based health promotion, feasibility

Using AI-based web tool to support school nurses in promoting physical activity and healthy habits among Finnish children and adolescents - insights from the SmartCHANGE

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ABSTRACT

SmartCHANGE project develops AI-based digital tools to support healthier habits among children and adolescents. The project develops a web application for health care professionals and the HappyPlant mobile application for children and adolescents. This presentation focuses on the web application and describes its feasibility and school nurses' experiences of using it. Web application uses AI-health risk prediction models, trained on large longitudinal datasets, to estimate children's future health risk, visualise counterfactural scenarios, and support practitioners' clinical decision-making. A feasibility study is underway in 2026. In Finland, a non-randomised controlled design includes eight school nurses and 100 pupils in grades 5 and 8. Pupils use the HappyPlant mobile app with activity trackers for three months, while school nurses use the web tool to assess risk, monitor progress, and provide tailored support. Feasibility data will be collected through surveys and semi-structured focus groups. Preliminary findings on the feasibility of the web application from the perspective of school nurses will be presented. Emerging findings describe usability, perceived benefit, integration into school health practice, and factors that enable or hinder the adoption of the SmartCHANGE web tool. SmartCHANGE offers novel tools to support preventive counselling in school healthcare by providing actionable, AI-based insights to guide behaviour change. Feasibility findings will inform further refinement of the tools and support their broader scalability to promote physical activity and healthy habits among children and adolescents.

Support: SmartCHANGE brings together 14 organisations from nine countries and is funded by the Horizon Europe programme (2023-2027).

Keywords: digital health, behaviour change, health risk, preventive healthcare, artificial intelligence

Co-creating a gamified mobile application to promote adolescent physical activity in Ljubljana: functional specification and pilot protocol

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ABSTRACT

Adolescent physical inactivity represents a growing public health concern. Digital tools can support health-enhancing physical activity if they are co-created, privacy-preserving, and screen-time aware. LJ-MOVE »Discover Ljubljana« is a gamified mobile application designed to promote health-enhancing physical activity among secondary school students by combining movement with urban exploration and digital well-being safeguards. Development followed an Urban Living Lab (ULL) process within the CITY-MOVE project, led by the Community Health Centre Ljubljana and co-produced with the Municipality of Ljubljana, digital wellbeing non-governmental organisation, and adolescents. A comprehensive evidence review and focus groups were conducted to derive user needs and functional requirements. These requirements were then translated into a technical blueprint through iterative co-design workshops. App's core functions include step counting, map-based "Discover Ljubljana" missions at 16 points with QR codes and short quizzes, daily/weekly challenges, achievements, avatar customisation, and optional leaderboard features with a hybrid reward system (virtual items and locally sponsored prizes). Implementation will be piloted for 6 weeks in selected secondary schools. Evaluation focuses on feasibility and user experience, using engagement analytics and the user version of the Mobile App Rating Scale (uMARS). Co-creation prioritised features such as adolescent interaction, personalisation, visible progress, and meaningful rewards—while addressing barriers such as privacy for minors and risks of excessive competition/screen time through predefined safe messages and digital detox. ULL and LJ-MOVE app provide a blueprint for collaboration among schools, municipalities, and primary health care services that is both implementable and grounded in privacy-by-design principles.

Keywords: mobile application, gamification, urban living lab, physical activity, adolescents

Sociodemographic stratification and patterns of physical activity disparities among Finnish youth

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ABSTRACT

Low levels of physical activity (PA) are associated with an increased risk of cardiovascular disease, type 2 diabetes, and all-cause mortality. In Finland, insufficient PA is estimated to generate societal costs of approximately €3–7.5 billion annually. Among youth, PA and physical functioning are influenced by sociodemographic factors such as age, gender, socioeconomic status, and ethnic background, which shape health behaviors across the life course. Despite growing evidence on these inequalities, little is known about the cumulative influence of multiple sociodemographic inequalities on individuals' physical activity. The aim of this study is to examine sociodemographic inequalities in device-measured PA among Finnish youth. The study uses data from the Finnish School-aged Physical Activity Study (FSPA/LIITU) 2024, including students in grades 5, 7, and 9 (approximately 11–15 years, N ≈ 2000). Structural equation modelling (SEM) and the Multilevel Analysis of Individual Heterogeneity and Discriminatory Accuracy (MAIHDA) will be applied to examine how sociodemographic factors intersect in shaping PA and physical functioning. The results are expected to provide new insights into sociodemographic differences in PA and physical functioning among Finnish youth and to highlight population groups at higher risk of low PA and reduced physical functioning. The data analysis will be conducted in April 2026. The findings will contribute to evidence-based decision-making and support the development of targeted policies and interventions aimed at promoting equitable opportunities for physical activity among youth. The study is funded by the Ministry of Education and Culture.

Keywords: children, adolescents, physical activity, equity

The feasibility of a school-based health literacy intervention for adolescents in Ireland

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ABSTRACT

This study describes the feasibility of LifeLab Dublin, a co-designed, nine week, health literacy intervention for young adolescents (12-15 years) in socioeconomically disadvantaged schools. A pre-post-follow-up, single-arm, mixed methods, feasibility study design was adopted, guided by the Orsmond and Cohn objectives for feasibility studies. Semi-structured interviews (n=15) and focus groups (n=12) assessed the feasibility and acceptability of LifeLab. Surveys assessed adolescents' health literacy, wellbeing, and health related quality of life were administered at baseline, post-intervention, and at 3-or 6-months follow-up. Teacher surveys post-intervention assessed feasibility. Researcher records monitored recruitment, attrition, and study management procedures. Data were first analysed independently using an inductive reflexive thematic analysis, descriptive statistics, independent and paired samples t-tests, and one-way ANOVAs; with data sources integrated during write up. Four schools, 345 students and 16 teachers participated in this study between January 2023 and September 2025. While participants largely indicated positive experiences with LifeLab, there were some suggested improvements across the lessons, visits, photovoice project, and teacher training. Significant increases in adolescents' health literacy were observed from baseline to post-intervention ($p<.001$) and baseline to follow-up ($p<.001$). Family and autonomy increased from baseline to follow-up ($p<.001$) and post-intervention to follow-up ($p<.001$). Similarly, school environment increased from baseline to follow-up ($p=.024$) and post-intervention to follow-up ($p=.021$). Findings support LifeLab Dublin as a feasible and acceptable programme for young adolescents and teachers as it is aligned with curricular objectives and addresses issues faced in everyday life.

Keywords: lifestyle behaviours, mixed methods, health education, disadvantaged backgrounds

Migration background, social support and physical activity: a moderated parallel mediation analysis using Health Behaviour in School-aged Children (HBSC) Luxembourg 2022 survey

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ABSTRACT

Adolescents with migration backgrounds may face social disadvantages influencing their engagement in physical activity. Social support may help explain these inequalities. Current study examined whether social support mediates the association between migration background and physical activity, moderated by gender. This cross-sectional study included 7,640 adolescents aged 11–18 years from the Health Behaviour in School-aged Children (HBSC) Luxembourg 2022 survey. A moderated parallel mediation model was estimated using structural equation modelling, Moderated-Vigorous Physical Activity (MVPA) was examined as outcome, migration background (1st and 2nd generation) as the exposure and family, peers, teacher and classmate support as mediators, adjusted for age, socioeconomic status and family structure. Indirect and total effects were estimated using Monte Carlo confidence intervals. Migration background was negatively associated with all social support indicators, with stronger effects among girls. Among boys, peer support significantly mediated the relationship between migration background and MVPA (indirect effect=−0.009, 95%CI[−0.019, −0.002]). The total indirect effect was significant, but not the direct effect. Among girls, none of the mediators were associated with MVPA. In addition, migration background showed significant direct negative association with MVPA (direct effect=−0.187; total effect=−0.195, 95%CI[−0.320, −0.071]). Structural paths differed significantly between sexes. In Luxembourg, peer support partially explains lower MVPA among boys with migrant background, whereas lower physical activity among girls with migrant background appears to operate through other mechanisms. Tailored interventions should reflect those differences.

Support/Funding Source: Ministry of Health and Social Security; Ministry of Education, Children and Youth; University of Luxembourg

Keywords: migration background, physical activity, adolescents, social support, structural equation modelling

Protocol for a feasibility study of a Cluster Randomised Controlled Trial of a nature-based intervention enhancing mental and physical well-being among kindergarten children from deprived areas: Nurture by Nature.

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ABSTRACT

There are seasonal and socioeconomic disparities in children's access to outdoor environments in Denmark, and although many children spend time outdoors, this typically occurs in schoolyards and playgrounds. Exposure to green outdoor environments might promote emotional well-being, reduce stress, foster social connectedness, support cognitive development, and improve sleep quality among children, all of which are crucial for learning and daily functioning. The aim of this trial is to assess the feasibility of conducting a future large-scale pragmatic cluster randomised controlled trial to evaluate the impact of a nature-based intervention on children's mental and physical health. Five clusters from five different kindergartens will be randomised, with three receiving the nature-based intervention and two receiving the usual activities. The intervention will be developed through a co-design process involving relevant stakeholders. In total, 56 children will be included. The intervention consists of a 16-week structured program delivered during the winter months, designed to increase nature-based activities during kindergarten hours and enhance children's overall well-being and health. The primary outcomes for the feasibility trial are completion of the end-of-trial assessment (the Strengths and Difficulties Questionnaire), recruitment rate, and fidelity. These will be evaluated using a traffic-light system in which predefined progression criteria are categorised as red, amber, or green, each indicating different levels of feasibility. Green reflects that thresholds are met and progression to a full trial is recommended; amber indicates that progression may be appropriate with modifications; and red suggests that substantial changes are needed before a full-scale trial can be considered.

Keywords: nature, mental health, kindergarten, feasibility

Mapping physical activity intervention pathways for early childhood executive function: A scoping review

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ABSTRACT

To map the design, delivery, and implementation/equity reporting of physical activity (PA) interventions aimed at improving executive function of 2–7–year–old children. A scoping review was conducted following PRISMA-ScR. Records were screened, and data charted at study and intervention-arm level. Findings were synthesised descriptively using visual mapping. Protocol registered on OSF. A total of 24,908 records were identified, of which 63 studies were included (149 total arms; 93 PA specific). Studies were globally spread (China 20/63), with over half of studies reporting predominantly low-to-middle socioeconomic status samples (17/32, 53% of those reporting). PA interventions were most commonly play-based (n=34, 37%) and motor skill training (n=30, 32%). Intervention delivery formats often used structured protocols and multi-phase programmes (n=49, 53%). Inhibitory control and working memory were most frequently assessed executive functions (n=70, 47%). However, statistically significant improvements were observed in only 65/306 EF-related outcome entries (21%). Outcomes were specific to intervention type: play-based interventions more often showed benefits across multiple executive function outcomes, whereas motor skill training mainly improved global executive function/attention, and dance/rhythmic movement mainly improved inhibitory control/working memory. In most instances, key intervention details were under–reported: MVPA status (73/93, 79%), difficulty-design (71/93, 76%), and SES (31/63, 49%). Play-based interventions appeared to demonstrate the broadest potential benefit across executive function outcomes, but the overall evidence base remains mixed. These findings provide limited guidance for adaptation in resource-limited contexts, because key information on intervention intensity, difficulty-design, socioeconomic context, and equity-related analyses was often insufficiently reported.

Keywords: physical activity, executive function, early childhood, implementation, equity

School-based physical activity and homework support intervention improved cognitive performance among adolescents: a cluster randomized control trial

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ABSTRACT

Adolescence is a critical period for brain development and executive functions related to academic performance, yet evidence on whether school-based physical activity benefits cognition and achievement remain inconclusive. Therefore, we evaluated a multi-component school-based physical activity program to examine its effects on cognitive performance and academic grades. This cluster-randomized trial implemented a 7-month school intervention adding three weekly hours split between (a) physical activities, (b) homework support with activity breaks, and (c) audiobook walks. Cognitive performance was measured with tasks for working memory, episodic memory, and perceptual speed, and grades in English, Swedish, and Mathematics. Effects were analyzed using hierarchical linear mixed-effects models. Thirty-four schools (14 intervention, 20 control; n = 1,014 students, mean age 14.3 years) participated. Student participation was over 80% of all sessions offered. The intervention improved perceptual speed (group difference 10.47, 95% CI 2.46–18.48, p = 0.011), particularly in boys, while girls showed a positive trend in episodic memory; no effects were seen for working memory. Grades increased in both groups, with a small advantage in Swedish grades for controls, but this was not supported in sensitivity analyses, no differences were found for English or Mathematics. The intervention resulted in modest improvements in perceptual speed, but no effects on other cognitive outcomes or academic grades. Observed sex differences suggest differential responsiveness, underscoring the need for future research to examine how individual and contextual factors shape intervention effects.

Funding Source: Knowledge Foundation (grant no. 20210002), Skandia, Kamprad Foundation, Swedish ESF Council, SFO-V.

Keywords: academic performance, adolescent, cognition, exercise, physical activity, schools

A systems perspective on children's outdoor play in a disadvantaged area in denmark – a co-creative approach with children as co-researchers

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ABSTRACT

Physical inactivity among children is increasingly recognized as a complex health issue that cannot be effectively addressed through isolated or linear interventions. Addressing such complexity requires participatory approaches that actively involve children in identifying relevant challenges and solutions. This study explores what shapes children's outdoor play in a disadvantaged Danish context, emphasizing their own perspectives. Using a Community-Based Participatory Research approach and systems thinking, 56 fourth-grade children (aged 9-11) acted as co-researchers across 14 sessions. Through methods such as photovoice, go-along interviews, mapping, and storytelling, children shared insights into what enables or limits their outdoor play. A systems map was developed to visualize these dynamics. Findings reveal that social connectedness play a central role, reinforcing well-being, motivation, and engagement with outdoor spaces through positive feedback loops. Conversely, lack of peer interaction often led to increased screen use, seen as a socially acceptable alternative. Parents emerged as key mediators, influencing access through support, transport, and safety. School structures and local infrastructure had a dual impact, both facilitating and constraining autonomy. Notably, physical environments alone did not determine play, their relevance depended on children's social interpretations. The study offers a practice-oriented, systemic understanding of outdoor play, highlighting the need for holistic approaches that promote equity, well-being, and health. It underscores the value of listening to children's voices when designing interventions and policies aimed at enhancing outdoor play opportunities in disadvantaged communities.

Support: The study is funded by ERA4health and Innovation Fund Denmark

Keywords: unorganized outdoor physical activity, co-creation, children, systems thinking

Parents' perspectives on sport and physical activity opportunities for children with a disability or health condition during the cost-of-living crisis in Northern Ireland

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ABSTRACT

Children with a disability or health condition are less physically active than their peers, with disparities widening during adolescence. Although cost is a recognised barrier to participation, the impact of the ongoing cost-of-living crisis affecting countries worldwide on access to sport and physical activity (PA) remains unclear. With institutional ethical approval, parents/guardians (≥18 years) in Northern Ireland completed an online survey (March–June 2024) assessing socioeconomic status, parental support for PA, and the perceived impact of the cost-of-living crisis on children's access to sport and PA. Chi-square tests compared responses between parents/guardians of children with and without a disability/medical condition. Qualitative responses were analysed thematically following Braun and Clarke's methodology. In total, n=300 (35%) parents/guardians reported that at least one of their children had a disability/medical condition while n=555 reported no such condition. Almost half (45%) of parents/guardians of children with a disability/health condition reported that their child had missed a sport or PA opportunity in the past year due to cost, compared with 32% of parents of children without a disability/medical condition (P<0.001). Since 2021, 43% had reduced spending on sport or PA (vs. 31%, P<0.001), and 31% had borrowed money or used credit to cover related costs (vs. 20%, P<0.001). Findings highlight a perceived disproportionate impact of rising costs on parents/guardians of children with disabilities or medical conditions, potentially limiting access to sport and PA opportunities. Further qualitative work will contextualise these findings and explore how financial pressures influence participation in this population.

Keywords: children, sport, physical activity, disability, cost-of-living

Socio-spatial inequalities in children's physical activity profiles: the role of contextual and compositional factors

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ABSTRACT

Inequalities in children's physical activity (PA) are often examined using single PA indicators. Multidimensional PA patterns and their interaction with complex socio-spatial conditions are rarely studied. Therefore, the aim was to identify PA profiles among primary school children and investigate their socio-spatial distribution in an urban environment. Data from 495 first-grade children participating in the KOMPASS(2) school-based cohort study were analysed. PA profiles were derived using cluster analysis from parent-reported indicators of children's PA (overall PA, outdoor PA, sports participation, active school travel). Socio-spatial conditions were defined using the social monitoring system of the City of Leipzig (Germany) based on school location. Multinomial logistic regression models were calculated to examine associations between PA profiles, socio-spatial conditions, and parental characteristics (e.g., socioeconomic indicators). Five distinct PA profiles emerged. Children attending schools in deprived areas were significantly more likely to belong to the least active PA profile ($p<0.01$) and to a profile characterised by PA without sports participation ($p=0.01$), whereas a multidimensional active profile was more common in non-deprived areas. After adjusting for parental characteristics, lower parental education remained significantly associated with less diverse PA profiles ($p<0.05$). PA profiles of primary school children indicate socio-spatial inequalities. Children attending schools in deprived urban areas appear to face greater risks of less favourable PA patterns and have lower chances of engaging in sports activities. Findings suggest the need for targeted PA promotion in deprived urban areas, combined with support for families with lower educational attainment, to facilitate equitable PA opportunities.

Keywords: physical activity promotion, environmental research, deprivation, health equity, urban planning

Fitness test battery software platforms for monitoring physical fitness among adolescents in secondary schools: a scoping review

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ABSTRACT

Physical fitness (PF) is a key indicator of adolescent health. Increasingly, schools are adopting fitness test battery (FTB) software platforms to assess, monitor, and report student PF. However, no comprehensive review has mapped the global distribution, characteristics, and functionality of FTBs in schools. A scoping review was conducted using a six-stage methodological framework and reported in accordance with PRISMA-ScR guidelines. Four electronic databases alongside targeted grey literature were searched to identify FTB platforms used in secondary schools. Data were charted using structured frameworks and analysed using manifest content analysis to map platform characteristics and functionality. In total, 28 platforms were identified across 26 countries/regions, most located in Europe (n = 18, 64.3%) and Asia (n=7, 25%). Health-related PF components were universally included, whereas performance-related measures were less consistently assessed (n=21, 75%). Most platforms (n=24, 85.7%) operated under government or institutional provision. While all systems generated digital reports, the extent to which reporting extended to teachers, families, and policymakers varied. Findings reveal an uneven global distribution of FTB software platforms, highlighting inequalities and the need for coordinated international approaches to support equitable, evidence-based fitness monitoring in schools. This review provides the first global mapping of youth fitness monitoring platforms used in secondary school settings, providing a foundation for future research, policy development, and equitable implementation of adolescent fitness monitoring systems.

Keywords: physical fitness, adolescents, schools, software, monitoring

Positive mental health and nature-based physical activity: findings from a Finnish population-based School Health Promotion study

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ABSTRACT

Physical activity (PA) is a well-established way to enhance positive mental health. Recent research has also shown that the PA environment is relevant for mental health in adults. The aim of this study was to examine the association between nature-based PA and positive mental health among adolescents and young people, a group for whom evidence is still limited. The study was based on the population-based School Health Promotion Study conducted in 2025 and covering all Finnish schools. The respondents were 8th and 9th grade pupils in basic education (n = 94,743; national coverage 73%), and first- and second-year students in upper secondary (n = 47,248; 70%), and vocational education (n = 24,998; 38%), totaling 166,989 respondents aged 14-20 years. Nature-based PA was assessed with a single item, and positive mental health using the Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS). The majority (91%) of respondents reported engaging in nature-based PA or spending time in nature at least once per week, and nearly half (45%) did so on at least four days per week. Younger pupils reported nature-based PA more often than upper secondary or vocational students. Spending time in nature was associated with higher levels of positive mental health. High levels of positive mental health were particularly common among those who spent time in nature every day. The findings reinforce the understanding of the beneficial role of natural environments for mental well-being and demonstrate that regular nature-based activities are specifically associated with higher levels of positive mental health among young people.

Keywords: nature-based physical activity, mental health, positive mental health, young people, adolescents

Launching the Republic of Slovenia's 2025 Report card on physical activity in children and adolescents

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ABSTRACT

The Active Healthy Kids Global Alliance is a non-profit organisation which has been monitoring global trends in child physical activity for over one decade, using a harmonised approach to grading behavioural and sources of influence on these patterns. Slovenia has participated in 4 of the last 5 Global Matrix initiatives; the results of its latest Report Card process are communicated here. A scoping review (e.g. peer-reviewed papers, government documents, grey literature, student work) was performed from Dec 2024 to Dec 2025 by Active Healthy Kids Slovenia. Specialists working with children and adolescents with disabilities (CAWD), early-years (0-5 y), and 24-hour movement behaviours were recruited. Bespoke analyses were conducted within large, multi-year datasets. Regular, bi-monthly meetings were held (remotely), and one in-person grading seminar event was held (Sept 2025) to determine consensus on national grades for 10-key indicators and two supplementary indicators for Slovenian schoolchildren. Externally-audited Indicator grades are: 1. Overall Physical Activity (B) 2. Organised Sport (B-) 3. Active Play (INC) 4. Active Transport (C-) 5. Sedentary Behaviour (F) 6. Physical Fitness (B-) 7. Family & Peers (A-) 8. Schools (A+) 9. Community & Environment (A+) 10) Government (B); additionally, 11. Sleep (D) 12. Seasonal Variation (INC). Slovenia excels in providing facilities and opportunities for young ones to engage in physical activity; however, information on unstructured play and physical activity outside of regular school hours is lacking. More research is needed specific to CAWD, early-years, and active play.

Keywords: physical activity surveillance, fitness surveillance, active outdoor play, physical education, recreational facilities

Treasured but not measured? Impact of the COVID-19 pandemic on physical literacy in children and adolescents

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ABSTRACT

Physical activity levels in children and adolescents have declined worldwide during the COVID-19 pandemic. However, it is unclear how the pandemic has affected physical literacy, which is considered foundational to physical activity participation. This study therefore aimed to synthesise the evidence on the impact of the COVID-19 pandemic on physical literacy in children and adolescents. We carried out a systematic review, searching seven databases (CINAHL, PsychINFO, PubMed, Scopus, SPORTDiscus, Sports Medicine & Education Index, and Web of Science) for studies examining changes in pre- and post-COVID-19 in typically developing children and adolescents aged 3-18 years. A grey literature search was also carried out in Global Think Tanks. A narrative synthesis was conducted; risk of bias was assessed using the Effective Public Health Practice Project. Only one study was included. This study reported a decrease in 8–14-year-olds in Canada; its evidence quality was rated as moderate. Due to the lack of evidence, we could not adequately assess the impact of COVID-19 pandemic on physical literacy. However, this lack of evidence is a valuable finding considering the importance of physical literacy. As physical literacy is gaining increased attention in national and international health and education policies, there is a need for its inclusion in public health monitoring. If physical literacy is really treasured, it should be measured.

Keywords: physical literacy, child, adolescent, health, COVID-19

Closing the HEPA implementation gap in Ukraine: improving actionability of current surveillance for equitable delivery

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ABSTRACT

Ukraine has national commitments to promote physical activity, yet population-level signals for children and adolescents remain unfavourable. This suggests an implementation gap and limitations in how existing surveillance supports policy steering, targeting, and equity across schools and communities. The primary research question was: how actionable are current surveillance and policy-monitoring outputs for implementation management and equity-sensitive decision-making in Ukraine? A secondary synthesis was conducted across three evidence products used for benchmarking and policy monitoring (GoPA, GoPE, Global Matrix 5.0). Outputs from these sources were contrasted with decision needs for implementation management, focusing on setting linkage, subgroup stratification, and visibility of reach and delivery fidelity. Across sources, behavioural indicators and setting/system grades suggested limited population impact despite documented policy and school-structure inputs. Actionability was constrained by: weak linkage between behavioural indicators and delivery settings where policy levers operate; limited visibility of reach and implementation fidelity for school provision; and incomplete equity-sensitive evidence, including insufficient data for children with disabilities across several indicators. In a war-affected context, optimising existing data outputs is more realistic than establishing new monitoring systems. Actionability could be improved by standardising a minimum reporting set linked to delivery settings, adding routine stratification (sex/age and disability where feasible), and incorporating simple reach/fidelity indicators for school implementation. Stronger evidence governance is needed to ensure accessible outputs, consistent indicator definitions, and routine cross-source comparisons, supported by closer engagement of the physical activity scientific community in survey methodology and reporting standards.

Keywords: physical activity, surveillance, children, equity, Ukraine

Usability of the app-based global adolescent and child physical activity questionnaire for physical activity surveillance: preliminary results

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ABSTRACT

To evaluate the usability of the app-based Global Adolescent and Child Physical Activity Questionnaire (GAC-PAQ) among Spanish caregivers. A total of 167 adults enrolled in the GAC-PAQ main study phase (i.e., caregivers of young participants) were invited to complete the questionnaire as proxies. Twenty-six participants completed thequestionnaire during the re-test phase, with a final sample of 25 with complete data. The Spanish version of the 10-item System Usability Scale (SUS) was used. Descriptive statistics were calculated for the overall score and individual items to identify specific usability strengths and barriers. To analyse all individual items the results were standardised to a 0-10 scale. Almost 15% of caregivers participating in the GAC-PAQ main study phase completed the SUS. The app-based GAC-PAQ usability demonstrated strong internal consistency (Cronbach's alpha = 0.84). The mean SUS score was 72.8±12.6 (range: 47.5–97.5), classifying the tool's usability as "Good". Item-level analysis revealed high scores for system independence, as participants did not require technical support (item 4 = 8.37 ±2.23) or extensive prior learning (item 10 = 7.98±2.55). The lowest scoring item was the desire for frequent use (item 1 = 5.19±1.86), which is expected given the low rates of responses. The preliminary results of the app-based GAC-PAQ usability assessment shows that this tool is highly usable for physical activity measurement among caregivers. Its intuitive design minimises technical burden, making it highly feasible for large-scale surveillance in Spanish populations. These findings support the ongoing digital transition of physical activity monitoring policies.

Keywords: mental health, surveillance, usability, physical activity, youth

Dose–response associations between screen time and mental health in school aged children

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ABSTRACT

Excessive screen use among children has been linked to poorer mental health. This study examined the association between screen time and symptoms of mental health and beahavioural problems in children, and whether associations varied by sleep duration or physical activity. This cross-sectional study included 7768 nine-year-old Swedish children (46% girls). Parents reported their children's mental health symptoms using the Strengths and Difficulties Questionnaire, which includes five subscales: emotional problems, conduct problems, hyperactivity/inattention, peer problems and prosocial behaviour. Screen time and sleep duration were parent-reported, and vigorous physical activity (VPA) was measured using accelerometers. Data were analysed with generalized estimating equations. On weekdays, most children (76%) accumulated the recommended 0–2 hours of daily screen time, whereas only one third met this level on weekends. Higher screen time was negatively associated with all subscales, showing a dose–response pattern. The findings were consistent across weekdays and weekends. Children with short sleep duration had higher hyperactivity and emotional symptom scores regardless of weekend screen time. Among children with medium or long sleep duration, both outcomes tended to increase with higher levels of weekend screen time. No interaction effects were seen for VPA. Higher screen time was associated with symptoms of mental health, with stronger associations at higher exposure levels. These findings underscore the importance of monitoring screen use in school-aged children and considering screen-related behaviours in strategies to support their mental well-being.

Funding source: This work was supported by the Knowledge Foundation and the Swedish Research Council.

Keywords: screen time, mental health, accelerometers, sleep duration, physical activity

Decrease in physical activity in secondary school girls: A look at interest and opportunities

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ABSTRACT

The decline in physical activity among adolescent girls during secondary school represents a relevant issue for public health and for the integral development of this population. Factors such as gender stereotypes, hormonal changes, academic pressure, and a progressive loss of interest negatively influence their participation in physical and sports practices. In this context, the purpose of the study was to analyze how physical activity varies among adolescent girls throughout secondary school, comparing the extremes of first and sixth grade and evaluating the overall trend across all six grades, in terms of duration, frequency, and types of practice. A quantitative, descriptive, cross-sectional study was conducted with a sample of 621 female students from first to sixth grade of secondary school. The International Questionnaire on Students' Lifestyles (CIEVA) was used, applying descriptive and inferential statistics (Mann–Whitney U and Jonckheere–Terpstra test). The results show significant differences between first and sixth grade in the frequency and total time of practice, as well as a monotonic decreasing trend from 1st to 6th grade across all modalities analyzed. Furthermore, only a minority of girls meet the minimum physical activity recommendations established by the WHO, with a progressive decline in compliance as they advance through the school level. Overall, the findings confirm a sustained decline in physical activity among secondary-school girls and highlight the need to design educational and health intervention strategies that align students' interests with real, safe, and motivating opportunities for systematic physical activity.

Keywords: physical activity, adolescent girls, secondary school, gender differences, public health

A comparative analysis of objectively assessed physical activity levels in kindergarten and home among children aged 5 to 6

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ABSTRACT

The aim of the study was to compare individual levels of physical activity in children during their time in kindergarten versus at home. Furthermore, the study aimed to assess the relationship between particular socio-demographic factors and the physical activity levels of kindergarteners. This study compared individual levels of physical activity in children aged 5–6 years across two settings: kindergarten and home. A total of 522 children (51.9% girls) participated. Physical activity was objectively measured using ActiGraph GT3X-BT accelerometers, and selected socioeconomic indicators were parent-reported. Children were significantly more active at home than in kindergarten in terms of light, moderate, vigorous, and total moderate-to-vigorous physical activity (all $p < 0.001$). Boys showed consistently higher physical activity levels than girls in both environments. Notably, median moderate-to-vigorous physical activity in boys was 22.7 min at home and 17.3 min in kindergarten, compared to 19.0 and 14.0 min in girls, respectively. Median step counts were also significantly higher at home (3315.5) than in kindergarten (3111.0). Significant associations were observed between selected socioeconomic indicators and physical activity. Lower parental education levels were associated with higher step counts, light (father's education) and moderate physical activity (mother's education) in kindergarten. Children from families with less favorable financial conditions also had higher moderate-to-vigorous physical activity in kindergarten. These findings underscore the importance of the home environment and suggest that certain aspects of socioeconomic disadvantage may be linked to higher physical activity levels in early childhood

Keywords: kindergarten, children, physical activity, accelerometery

Recruitment in global surveillance of movement behaviours in the early years: findings from the SUNRSISE Study

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ABSTRACT

Large-scale health behaviour surveillance studies face recruitment challenges1, 2, particularly in global studies involving young children across diverse cultural contexts3,4. The SUNRISE study is a global surveillance study of 24-hour movement behaviours in children aged 3 – 5 years, which creates a unique opportunity to evaluate recruitment strategies5. This study aimed to identify recruitment strategies and barriers across participating countries, examine associations with recruitment success, and explore regional, income, parent, and centre related patterns. In doing so, novel cross-national insights into recruitment practices in global health research are provided. A qualitative design guided by the socio-ecological model is adopted to classify recruitment strategies and barriers. The sample included 51 countries participating in SUNRISE. Data were collected via an online survey comprising of open-ended questions. Countries completed the pilot and main study phases were invited to complete the survey twice. Data analysis applied directed content analysis framed within the socio-ecological model. Sixty survey responses were received from 48 countries. Interpersonal strategies were most common for centre and parent recruitment, emphasising rapport and commitment. Centre recruitment barriers were mainly organisational and public-policy related. Solutions included responsive communication and governmental endorsement. Parent recruitment barriers were primarily intrapersonal, highlighting knowledge and perception gaps. These were addressed through trust-building, engagement, and knowledge development. This cross-national study identifies key recruitment strategies and barriers in a global early childhood surveillance study. Findings will inform evidence-based, culturally responsive recruitment approaches and support the design and implementation of future global child health surveillance and intervention studies.

Keywords: recruitment strategies, global health, early childhood

Physical activity tracker use among Finnish adolescents between 2016-2024

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ABSTRACT

Physical activity trackers (PAT) can be devices that record movement data. Ownership of PAT have the potential for increasing PA behaviour during adolescence. The aim was to analyse the ownership of PAT among Finnish adolescents aged 11y, 13y, and 15y, between 2016 to 2024, and its association with PA. Repeated cross-sectional data (2016-2024) from the Finnish School-age Physical Activity (F-SPA) study were conducted on ownership of PATs (mobile apps, smart watches). Binominal logistic regression analyses (reference = no ownership) were performed with study year and PA as independent variable. There were increases in ownership of all PATs from 2016 (apps = 52%; watches = 27%) to 2024 (apps = 65%; OR = 1.2, CI =1.1-1.3; watches = 43%; OR = 1.9, CI = 1.7-2.1). Simply having PAT was associated positively with increased PA from 0-2 days to 3-4days (Apps: OR=1.6, CI = 1.5-1.8; watches: OR = 1.7, CI = 1.5-1.8). Although weekly use of apps continues to increase since 2016, weekly use of watches has not changed between 2022 and 2024 among Finnish adolescents. There were modest associations between ownership with increased PA levels. Regulations on mobile phone restrictions during school times limits the accuracy of the data from apps, which may increase the interest in wearables linked with apps. Alternatively, less use of apps for PAT may occur as the phone's sensor are not allowed to measure activity for a large portion of the day (i.e. school time). Investigations on PAT use are warranted.

Keywords: wearables, apps

From children's experiences to national policy: developing a recommendation for active school travel in Sweden

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ABSTRACT

Globally, as well as in Sweden, children and adolescents are becoming increasingly sedentary, with many not reaching recommended levels of daily physical activity. Active school travel (AST), such as walking or cycling to school, provides an important opportunity to integrate physical activity into everyday routines. However, despite its potential health, environmental and social benefits, the prevalence of AST has declined and policy support remains limited. To address this challenge, a collaborative initiative was undertaken in Sweden involving academia, national authorities, municipalities, and civil society organizations. Importantly, children—the end users—were actively involved in the process. The aim of this study was to explore prerequisites for active school travel and examine how children's accounts of their everyday school journeys can inform policy development. Using participatory qualitative approaches, children documented and reflected on their school travel experiences, highlighting barriers and opportunities for independent active mobility. Their perspectives were combined with cross-sector expertise and a child impact assessment grounded in the UN Convention on the Rights of the Child. The findings informed the co-creation of a national recommendation for active school travel in Sweden. The recommendation encourages children to walk or cycle to school when feasible and safe, and calls on schools, municipalities and transport planners to create supportive environments for children's independent mobility. The recommendation is now being implemented across Sweden through collaboration between national agencies, municipalities and other stakeholders. By placing children's perspectives at the centre of policy development, this work demonstrates how cross-sector collaboration can support healthier, more sustainable, and child-centred transport systems.

Keywords: healthy mobility, children, physical activity, active transportation

Fit to learn: population-level evidence that academic gains concentrate at health-related fitness thresholds in youth

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ABSTRACT

Physical fitness is linked to cognitive and academic performance, but most studies are cross-sectional or small-scale. Evidence from large, longitudinal, population-level analyses using objective fitness and academic measures is limited. This study examined whether academic benefits of fitness increase gradually across the fitness spectrum or cluster around health-related thresholds relevant for policy. Nationwide Hungarian administrative datasets were linked to combine objectively measured health-related fitness (NETFIT®) with standardized national mathematics and reading assessments. A closed cohort of 77,676 students was followed from Grades 6 to 8 (2022–2024). Linear mixed-effects models with natural spline functions assessed non-linear associations between fitness indicators and academic scores, adjusting for demographic, socioeconomic, and school-level risk factors. Higher fitness was consistently associated with higher academic scores. Each one-unit increase in body mass index corresponded to a 1.75-point lower predicted mathematics score. Cardiorespiratory fitness showed a non-linear pattern: mathematics scores increased by 4–6 points from low to moderate fitness before plateauing. Students in the Healthy Fitness Zone outperformed peers in the Health Risk Zone by 23–31 points in mathematics and 23–25 points in reading. A cumulative fitness index showed graded, positive associations with competence scores. Physical fitness, particularly cardiorespiratory fitness, strongly predicts academic performance at the population level. Targeting students in low-fitness categories through school-based interventions may enhance learning outcomes and reduce educational inequalities.

Support/Funding Source: Hungarian School Sport Federation

Keywords: physical fitness, academic achievement, youth, longitudinal study, NETFIT

Strengths and challenges of Polish schools in whole-school physical activity promotion: results from a national certification model implementation

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ABSTRACT

The aim of the study was to explore the state of whole-school physical activity (PA) promotion in Polish schools using a comprehensive tool, by identifying strengths and challenges emerged during the first certification model implementation cycle within the "PE with UPE" initiative, which supports schools through a participatory process. Design: quantitative CAVI study. Participants: 99 schools voluntarily applied for certification, 60 schools included - completed the full questionnaire. Measure: School Improvement Questionnaire, 11 domains and 82 benchmarks. Analyses: mean of responses calculated for domains and visualized using heat maps. ANOVA with Bonferroni post hoc tests was applied to examine differences by location and school size. In 11 domains, schools performed strongest in "Active breaks" (M=5,40; SD=0,94) and "Quality PE" (M=4,48; SD=1,87), while "Governance and leadership" showed the weakest results (M=1,08; SD=0,98). "Opportunities for inclusive PA for children with special needs" were limited (M=1,10; SD=1,20). All schools organized PA-promoting events, and most participated in inter-school sports competitions. Geographic location did not significantly differentiate results. However, school size mattered: small schools scored higher than large schools in "Active breaks" ($p=0,045$; $\eta^2=0,102$), and medium schools higher than large schools in "PA dissemination and promotion" ($p=0,015$; $\eta^2=0,135$). The findings highlight strengths in the organization of active breaks and quality of PE but reveal structural gaps in governance, leadership, and strategic integration of PA promotion. Strengthening leadership, policy coherence, and resources appears essential for advancing a whole-school approach to physical activity.

Keywords: health promotion, school-based interventions, NCD prevention, school physical activity policy, national policy

Public Value in a school-based HEPA Initiative: the case of the Danish school olympics

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ABSTRACT

This study examines how a large-scale school sport initiative (School Olympics), understood as a health-enhancing physical activity (HEPA) initiative, creates societal value through multi-level governance. It applies Mark H. Moore's framework for public value creation (Moore, 2000). The study explores how legitimacy and support, operational capacity, and public value generation interact in the governance of this cross-sector initiative, linking empirical insights from a real-world program to a perspective that is rarely applied in this field. The paper combines empirical insights and theory, drawing on evaluation-based knowledge and stakeholder perspectives on the implementation of the School Olympics initiative in a Danish municipal context. The material is analyzed using Moore's strategic triangle to explore how governance processes shape perceptions of public value. Findings show strong alignment between local political priorities, school engagement, and community partnerships, creating broad legitimacy and support. Operational capacity developed through coordination roles, cross-sector collaboration, and shared learning processes. Public value emerged as increased participation and positive experiences for children, as well as stronger local cooperation, institutional learning, and a clearer role for physical activity in municipal agendas. Tensions included resource demands, long-term sustainability, and uneven effects over time. Viewing this HEPA initiative through a public value lens highlights how outcomes emerge through interactions between legitimacy, operational capacity, and value creation. The analysis shows how governance dynamics shaped the initiative's ability to generate locally meaningful outcomes and offers insight into how school-based HEPA initiatives may contribute to broader strategic ambitions beyond participation outcomes.

Keywords: public value, multi-level governance, school-based physical activity, cross-sector collaboration, implementation

Rediscovering the spark for physical activity: a new direction for physical activity counselling in Finland

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ABSTRACT

In many countries, physical activity counselling is implemented within primary health care or closely linked to it. In Finland, most municipalities provide counselling in cooperation with health care services, offering process-based support towards a more physically active lifestyle. While this approach works for some people, it does not always reflect the changing realities of everyday life. A new national direction in Finland is therefore expanding counselling beyond healthcare while maintaining its important role. The vision guiding this work is that "physical activity counselling ignites the spark for movement throughout life." The approach recognises that motivation for physical activity is not stable. It rises and falls as life situations change. The aim is to provide easy and accessible opportunities for people to discuss physical activity whenever their motivation fades and needs to be rediscovered. In this evolving model, counselling is not limited to healthcare professionals or clinical settings. It can take place in schools, workplaces, community settings, nature environments or online. Short everyday conversations, remote check-ins, or walking together outdoors can all serve as counselling encounters that help people recognise their strengths and identify simple ways to increase activity in daily life. The model brings together municipalities, wellbeing services, education providers, community and non-governmental organisations, and private actors. Together they form an ecosystem that makes counselling accessible to people of all ages and backgrounds. Finland is developing an ecosystem-based counselling model that complements healthcare services and requires new ways to measure impact and coordinated policy support across sectors.

Keywords: physical activity counselling, behaviour change, multisectoral collaboration, community settings, Finland

The Hungarian Active School Program: A nationwide school-based framework to increase physical activity and improve student health

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ABSTRACT

The World Health Organization recommends at least 60 minutes of daily physical activity for children aged 5–17, yet around 80% of Hungarian school-aged youth do not meet this guideline. In addition, every fourth child is overweight or obese, and many students show deficiencies in physical fitness. The COVID-19 pandemic further worsened these trends. Schools are key settings for promoting healthy lifestyles, particularly in disadvantaged areas with limited access to sport opportunities. In response, the Hungarian School Sport Federation launched the Active School Program in 2022 to improve students' health, fitness and health awareness by integrating regular physical activity into everyday school life through a whole-school approach. Schools voluntarily join a quality-management-based certification system supporting development in five areas: quality physical education, school sport, health-promoting environment, partnerships and communication, and student involvement. Implementation is supported by national coordination, regional coordinators, professional training and digital resources. Schools collect points by fulfilling around 80 criteria and may obtain bronze, silver or gold certification. Program impact is monitored through annual student questionnaires and the Hungarian National Student Fitness Test (NETFIT®). Results and Participation increased from 75 schools in 2022/23 to 606 schools in 2025/26, reaching about 180,000 students. Early results indicate improving fitness trends and higher proportions of students meeting physical activity recommendations, suggesting that the program can effectively embed physical activity into school culture.

Keywords: Active School program, school-based intervention, physical activity promotion, youth health, school health policy

What works to recruit adolescent girls into physical activity? A pilot study to test consensus-based recruitment strategies in schools

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ABSTRACT

Background and Recruiting adolescent girls into physical activity (PA) programmes remains a persistent challenge, limiting the reach and impact of PA interventions. This study aimed to pilot test consensus-based recruitment strategies previously identified in a systematic review and refined through a Delphi process involving PA providers and adolescent girls. A non-randomised, pre-post pilot study was conducted in seven Dublin secondary schools. Recruitment outcomes were measured during control programmes (2023-2024) and intervention programmes (2024-2025), which incorporated recruitment plans co-designed with schools based on consensus strategies and available resources. Implementation fidelity was assessed using an adapted instrument. Mean recruitment rates were higher in intervention than control programmes (21.7% ±19.5 vs 12.0% ±9.0), although not statistically significant. Recruitment rates ranged from 3.1-24.1% in control programmes and 7.5-55.3% in intervention programmes. Programme awareness differed significantly between years ($\chi^2(1)=26.5$, $p<.001$): 61.1% of sampled non-participants in the control year versus 28.6% in the intervention year had never heard about the programme, suggesting recruitment strategies reached more girls. Implementation fidelity was positively correlated with recruitment rate (Spearman's $\rho=.919$, $p=.003$, $n=7$). Teachers were the most frequently cited recruitment pathway (control: 85.5% of participants; intervention: 87.5%). Consensus-based recruitment strategies may increase awareness of PA programmes among adolescent girls, but recruitment success appears to depend on implementation fidelity. Findings should be interpreted cautiously due to the small number of programmes, variability across schools, and differences in eligible population size. Larger controlled studies are needed to determine whether these strategies translate into sustained improvements in recruitment.

Keywords: recruitment, participation, adolescent girls, physical activity

Supporting ball-based play and sports participation in early childhood

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ABSTRACT

This study examined the effects of the Ball-based Play in Preschool intervention on children's participation in ball-based sports, joy of movement, skill level, and frequency of ball-based play. Secondary analyses of baseline data explored the distribution of these outcomes and their associations with background characteristics. The intervention integrated ball-based play into daily preschool routines and aimed to strengthen collaboration between preschools and local sports clubs to foster ball-based sports participation. A non-randomized wait-list control design involved children from eight preschools. Parents completed a questionnaire assessing child-level outcomes and background factors. One of the assessed outcomes was the newly developed Ball Play Index, capturing three key elements of ball play: participation, enjoyment, and skill level. Baseline analyses included 429 children, while impact analyses included 108 children. Baseline data revealed variation across the participating preschool settings. For instance, participation in ball-based sports ranged from 14% to 30%, while participation in any sport varied from 31% to 80%. Cross-sectional analyses showed associations between sports participation, Ball Play Index, and characteristics such as disability status, parental background, and gender. Impact analyses found no significant intervention effects on Ball Play Index or participation in ball-based sports. Future initiatives should consider both the readiness of sports clubs and the current activity levels of the target group. Adopting a broader strategy that incorporates a wider range of sports could help address capacity constraints, and ensuring equal access for all children remains essential. In addition, more actively engaging parents may strengthen the process and impact of future efforts.

Keywords: ball-based play, sports participation, sports club collaboration, early childhood education and care, preschool intervention

Adolescents in organized outdoor activities: Gendered pathways to participation

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ABSTRACT

Participation in organized outdoor activities offered by civil society or public leisure providers can benefit adolescents' well-being, and foster connectedness to nature. Despite such benefits, participation declines during adolescence and this decline occurs unevenly across genders, with boys being more engaged than girls. This underscores the need to explore factors influencing outdoor activity engagement for both boys and girls to support equitable and sustained participation. The Capability, Opportunity, Motivation-Behaviour (COM-B) model provides a structured framework for examining factors shaping participation in organized outdoor activities (e.g. mountain biking, sea kayaking, horseback riding, scout and fishing). Drawing on this model and based on data from a school-based cross-sectional survey of adolescents aged 11–17 (N=1,097), this presentation has two aims. First, it provides insight into how adolescents' perceived capabilities, opportunities, and motivation for organized outdoor activities are related to participation among girls and boys. Second, it discusses how participation in organized outdoor activities can be supported across genders. Results show that for girls, participation was positively associated with psychological capability, social opportunities, and reflective motivation, while for boys, only reflective motivation showed a significant association. Furthermore, girls reported lower physical and psychological capabilities for participation than boys. This suggests that girls might face different barriers to participation than boys, calling for gender-sensitive support to strengthen confidence and social opportunities among girls while enhancing reflective motivation among all adolescents to promote equitable encouragement across genders.

Keywords: youth, participation, gender, COM-B, outdoor activities

What works to recruit adolescent girls into physical activity? A two-panel Delphi study of physical activity providers and adolescent girls

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ABSTRACT

Low physical activity (PA) among adolescent girls is a well-documented global public health concern. PA programmes designed to increase their activity levels can be effective, however, the impact of these programmes depends on successfully recruiting girls into them. This study aimed to develop consensus-derived recommendations for recruiting adolescent girls into PA programmes. Underpinned by a prior systematic review of recruitment strategies, a three-round modified Delphi study (May-June 2024) was conducted with two independent panels of PA providers (n=23) and adolescent girls (n=20) to establish consensus on recommended strategies for recruiting adolescent girls into PA programmes. Consensus indicated that encouragement, timely reminders, and practical logistic support, especially from teachers, were central to recruitment. Agreement emerged on the value of supportive friends and instructors, clear, transparent communication about programme atmosphere and activities, opportunities to try activities prior to enrolment through low-pressure “taster” sessions, and programme environments that prioritise fun and minimise competitiveness. Disagreement emerged regarding the value of fitness testing and traditional gyms as the setting for PA participation. The study produced a consolidated set of consensus-based recruitment strategies agreed by both panels. These findings provide practical, stakeholder-informed guidance for improving recruitment into PA programmes for adolescent girls. Providers might use these recommendations as a working framework for enhancing recruitment practices, while policymakers may find them useful when considering how workforce training and resource allocation can better support girls' PA participation. Further empirical research should evaluate the effectiveness of these consensus-based strategies in real-world programme settings.

Keywords: recruitment, participation, adolescent girls, physical activity

Social approval or social pressure? How normative beliefs shape parents' decisions about children's active school transportation

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ABSTRACT

Few children reach the recommended levels of at least 60 minutes daily physical activity. To counter this trend, active school transportation (AST) has been suggested as a promising strategy, since AST can contribute to roughly half of the recommendation. Parents play a key role in the decision-making process concerning their children's mode of transport to school. Previous research has shown that a form of social approval (i.e., injunctive and descriptive norm) seems to be involved in the decision-making process. This study advances the understanding of norms by including a form of social pressure that is the motivation to comply and identification with the referent. The aim of this study was first to describe parents' normative beliefs and second, to explore how these beliefs were associated with parents' intentions of letting their child walk or cycle to school. In this cross-sectional study, 333 parents of children in academic school years four to six participated by responding to a survey. Beliefs related to social approval, that is, the descriptive and injunctive norm, were reported as moderate to high among parents. In contrast, beliefs related to social pressure, motivation to comply and identification with the referent, were low, as were the composite measures of approval and pressure. In the final multivariable model, one form of social approval, the descriptive norm, was significantly associated with intention. In efforts to increase levels of AST, health promotive initiatives should emphasize social approval by making others' behaviors visible, rather than focusing on parents conforming to social pressure.

Keywords: active school transportation, children, parents, physical activity, social norms

Topic: Environmental approaches to HEPA promotion

Active commuting and stroke risk: a Swedish population-based cohort study

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ABSTRACT

Active transportation has been linked to beneficial cardiovascular outcomes, but evidence on long-term associations with stroke is limited. This study aimed to examine the association between primary commuting mode and incident stroke in a large Swedish population, and to explore dose–response relations between commuting distance and stroke risk. This population-based cohort study used data from the Västerbotten Intervention Program (1989–2019). Participants reported their primary mode of transportation to work and commuting distance. Individuals consistently using the same transport mode in at least three of four seasons were classified accordingly. Incident stroke diagnoses were obtained from the Swedish Stroke Register. Associations between transportation mode, commuting distance, and stroke incidence were analyzed using cause-specific Cox proportional hazards models, adjusting for sociodemographic and lifestyle factors including leisure-time physical activity. Among 107,752 participants (mean age 45.7 years; 49.5% female), 3,507 experienced incident stroke during a median 17-year follow-up. Cycling to work was associated with a lower risk of stroke compared with car driving, but this association was attenuated after adjustment for leisure-time physical activity. Among car commuters, longer commuting distance showed linear association with higher stroke risk, whereas cyclists displayed a nonlinear pattern with lowest risk at moderate distances. Walking to work was not associated with stroke risk, likely due to shorter distances and limited physical activity exposure. Active transportation, particularly cycling, may contribute to stroke prevention as part of an overall physically active lifestyle. Promoting active transport could support sustainable cardiovascular disease prevention at the population level.

Keywords: active transportation, sustainable mobility, commuting distance, stroke incidence, cardiovascular prevention

Stakeholder insights on temporary urban environment changes for physical activity in Scotland, UK

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ABSTRACT

Temporary Urban Environment Changes (TUECs) are reversible, adaptable public-space modifications for active living, endorsed by the WHO's 2025 Promoting Walking and Cycling toolkit. Despite this, implementation-focused evidence remains limited on how TUECs are governed and delivered, including how schemes are trialled, learned from and sustained. The aim of this study was to explore professional stakeholders' accounts of conditions that enable or constrain TUEC implementation in Scotland. Semi-structured interviews were conducted with a purposive expert sample of stakeholders working at national (n=6), regional (n=2) and local (n=3) levels (n=11). Interviews (30–45 min) were recorded, transcribed, anonymised and analysed using reflexive thematic analysis. Questions covered stakeholder conceptualisation of TUECs, perceived impacts, and delivery barriers/enablers. Stakeholders described "temporariness" as a way to trial reversible change, learn from real-world use, and decide whether to adapt, retain or withdraw measures. Perceived benefits for physical activity and liveability were described as conditional on visibility and legibility, inclusive access, perceived safety/comfort, connectivity and maintenance. Delivery was constrained by unclear approvals, limited capacity and resources, design limitations, contested public narratives and equity concerns; enabling conditions included clearer authorisation routes and policy backing, cross-sector framing, resourcing and delivery partnerships, accessibility-first design, proactive communication and monitoring credible for decision-making. TUECs may be a pragmatic public-health lever, but only when trialling is matched with stewardship and transparent review criteria. Policy and practice should prioritise accessibility-first delivery and evaluation systems that support equitable decisions about scaling, adapting or removing measures.

Funding: CSC Scholarship.

Keywords: temporary urban environment changes, physical activity, active travel, stakeholders, Scotland

Road closures in a national public park: a natural experiment on a temporary urban environment change and physical activity in Scotland, UK

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ABSTRACT

Temporary Urban Environment Changes (TUECs) are reversible, adaptable street and public-space modifications for active living, endorsed by the WHO's 2025 Promoting Walking and Cycling toolkit. However, UK evidence from real-world schemes remains limited. Using temporary road closures in Holyrood Park (Edinburgh; closed vs open to motor traffic) as a policy-defined TUEC, we compared physical activity during closure and non-closure periods and assessed whether any change reflected higher activity overall or shifts in activity-type composition. In this pre-registered natural-experiment study, trained observers collected MOHAWk (Method for Observing Physical Activity and Wellbeing) data at three park locations. Physical activity (total and by type) and visible user characteristics (e.g., age/sex/dog-walking) were recorded at the same clock-hours on closure and non-closure days (n=40 site-hours) to inform equity-relevant interpretation. Differences were analysed using negative binomial models for counts and stacked-count models for composition, with sensitivity analyses for robustness. Total physical activity counts were higher when the road was closed to motor traffic than when open (IRR 1.55, 95% CI 1.26–1.90), including walking (1.51, 1.17–1.93) and cycling (2.02, 1.30–3.15). Composition changes were small and imprecise (e.g., cycling share +2.46 pp, 95% CI −1.83 to +6.86). Sensitivity analyses were directionally consistent. In this policy-defined TUEC case, scheduled road closure was associated with higher observed health-enhancing physical activity during affected hours. The study adds real-world evidence to inform the monitoring and evaluation of temporary, "trial-and-learn" interventions for active living. Additional data collection will improve precision and enable seasonal comparison.

Funding: CSC Scholarship.

Keywords: temporary urban environment changes, physical activity, active travel, natural experiment, MOHAWk

Comparing heat-adaptation strategies in urban vs. rural endurance runners

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ABSTRACT

More frequent and intense heat waves resulting from the climate crisis require endurance runners to adopt effective heat-adaptation strategies, especially in urban environments affected by heat-island effects. This study aimed to compare heat adaptation strategies among endurance runners training in urban versus rural environments. An online questionnaire using 5-point Likert scales to assess the use and feasibility of heat adaptation strategies was completed by 303 endurance runners of varying training levels (45% male, 38.2 ± 11.3 years). Mann–Whitney U tests compared responses between runners reporting to primarily train in urban (n=60) versus rural (n=239) environments. Both groups reported similar availability of shade along their regular running routes ($p = 0.57$), and no significant differences were found in their use of strategies such as training at cooler times, selecting alternative routes, seeking extra shade, lowering pace, or reducing distance (p from 0.16 to 0.97). However, urban runners rated finding another route ($p = 0.012$) and more shade ($p = 0.009$) as less feasible. Runners from both environments equally expect an increased exposure to hot days ($p = 0.67$) but reported relatively low concern ($p = 0.66$) about managing heat during exercise. Urban and rural runners report similar use of heat-adaptation strategies, although urban runners perceive adjusting their route or seeking more shade as less feasible. Therefore, policy makers should focus on creating more natural shaded areas, particularly in cities. Despite anticipating more frequent hot-weather exposure, runners express limited concern about coping with heat during training.

Keywords: heat islands, heat adaptation, endurance, exercising, running

Association between nature relatedness and physical activity in adults—a population-based northern Finland birth cohort 1986 study

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ABSTRACT

Physical inactivity is a leading risk factor for non-communicable diseases and death worldwide. Recent evidence has demonstrated the various benefits of nature exposure and nature relatedness (NR) on human health. Natural environments have also been shown to promote physical activity (PA). The aim of this study was to explore the associations between NR and total leisure-time physical activity (LTPA) in adults. The study population included individuals from the Northern Finland Birth Cohort 1986 who participated in follow-up data collection via postal questionnaire and clinical examinations at age 33 years (n = 1995). LTPA was self-reported with questions about the frequency and duration of light and moderate to vigorous (MVPA) physical activities during leisure time. Weekly LTPA was calculated by multiplying the duration of light PA and MVPA by intensity in METs (metabolic equivalent of task) (light PA = 3 METs and MVPA = 5 METs). Association between NR and LTPA was analyzed with multiple linear regression analysis. The mean weekly total LTPA of the participants was 993 (95% CI 961, 1024) MET-minutes. The mean NR score was 29.7 (SD 5.4). In the unadjusted model, NR (β = 27, CI 95% 22, 32) was positively associated with LTPA. After adjusting for smoking and waist circumference, NR (β = 25, CI 95% 18, 31) remained a significant determinant of LTPA. Nature relatedness was positively associated with self-reported total leisure-time physical activity. This information could be utilized by strengthening nature relatedness to promote physical activity of adults.

Keywords: nature relatedness, physical activity, adults, birth cohort study

Developing a healthy cycling environment index: integrating infrastructure quality and urban nature exposure in Dublin city

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ABSTRACT

This study aims to develop a Healthy Cycling Environment Index (HCEI) that integrates cycling infrastructure quality with surrounding urban vegetation exposure. This index provides a novel spatial framework to assess how cycling environments support health and equitable access to nature across Dublin City. We analyse open-access geospatial data on cycle lanes in Dublin City and a high-resolution Urban Green Space Indicator (HUGSI) dataset including vegetation vitality (NDVI) and tree canopy coverage metrics. Cycle lane segments are assigned an infrastructure quality score (1-4) based on City Council lane typology. A combined Green Score is calculated from weighted NDVI and canopy coverage attributes from the HUGSI dataset within a 30m buffer around each segment. Each segment is plotted within a quadrant scatter graph representing infrastructure quality and Green Score. Their composite HCEI score, and total network length (km) within each quadrant, is then calculated. Preliminary exploration of the datasets suggests substantial variation in both infrastructure quality and surrounding vegetation across the cycle network, with lower-quality cycle lanes associated with reduced green exposure. The HCEI provides a replicable spatial metric for evaluating the combined infrastructure and green exposure of urban cycling environments. Safe cycling infrastructure also supports mobility aid users, who often face limited access to nature due to infrastructure barriers. Integrating green space with active travel supports biodiversity-health pathways and may encourage 24-Hour Movement Behaviours. Monitoring the environmental context of cycling infrastructure could inform urban planning strategies promoting mobility and inclusive access to nature.

Keywords: active travel, nature, transport, cycle

Shall we walk? A user study of an app tracking time in nature in everyday life

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ABSTRACT

Mobile applications that encourage and aid visits to nature ("nature apps") are emerging as promising tools supporting health and wellbeing. To increase the understanding of how nature apps can effectively support nature visits, this study explored divergences between objective and subjective assessments of urban nature experiences using a novel nature app (Kobla, Drammen). In an initial co-development phase, developers and researchers created a "green index" (GI; 0–100%) to quantify surrounding nature. In a subsequent user study, 30 participants (50% men/women; 39.6±16.1 years) completed a standardised 1.5 km walk and, at five pre-determined locations, provided ratings of perceived nature (PN; 0–100%), environmental restorativeness, and overall feeling. Background information, perceived weather, and brief interviews were also collected. The GI varied markedly across locations (52.6±26.8), reflecting specific configurations of built and natural elements. Differently, PN ratings were more stable (53.6±8.5), with substantial inter-individual variability and notable deviations from GI. PN correlated significantly with perceived restorativeness, overall feeling, and perceived weather (rho = 0.47–0.64). Interviews highlighted how individual preferences for green or blue environments and sensitivity to traffic noise influenced environmental perceptions. Nature experiences are strongly shaped by individual perceptions rather than objective environmental features alone. Nature apps should therefore focus on eliciting attention to the presence of nature, emphasising personalised feedback and motivational elements over purely objective measures of nature exposure. Funding: This study is part of Drammen's contribution to NetZeroCities – Pilot Cities, funded by the European Union's H2020 Research and Innovation programme (grant no. 101036519).

Keywords: digital nature, smartphone application, digital health, preventive medicine, health promotion

Environmental Scan of the "State of Play" for Active Outdoor Play in Slovenia

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ABSTRACT

The term 'outdoor play' might not directly translated to languages spoken across Europe, including Slovenia, where specialists in this area may be from different disciplines. We completed scoping review of outdoor play literature in Slovenia, and translated resources from the 2025 Outdoor Play Position Statement into the Slovenian language, to disseminate this global initiative at the local level. A scoping review was performed (Dec 2024-Feb 2025) and resources were translated (Feb 2026), for dissemination within the Slovenia-specific context. Slovenia currently emphasises outdoor play to a greater extent in early childhood development, whereas in later years, outdoor education (izobraževanje na prostem), teaching (pouk na prostem) and forest pedagogy (gozdna pedagogika) become more prominent. Schools in nature (šola v naravi) are also mandatory in primary schools, i.e., a special organisational form which takes place at least three days away from the pupil's place of residence, usually in a natural environment. Although nature schools have an educational focus, pupils engage in various physical activities outdoors (e.g., skiing, hiking, swimming, biking) spending most of their free time playing outside. Spontaneous, active outdoor play has not yet been consistently studied in Slovenia. Slovenia has several regions which may have their own regional or local experts in the "outdoor play" space, but this area of work has not been systematically interrogated to its fullest potential, likely due to several factors, including the topic falling between research areas (e.g. pedagogy, sport science, urban planning, early childhood education).

Keywords: health promotion, nature schools, physical activity, education, risky play

Health and movement behaviours among participants in a university-led community garden initiative: a pilot study in Porto, Portugal

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ABSTRACT

Community gardens are increasingly recognised as urban spaces that promote physical activity, social interaction, relaxation, and contact with nature. In Porto, Portugal, LIPOR converted a vacant area into a community garden comprising 230 plots. Two plots were allocated to the Faculty of Engineering of the University of Porto, allowing members of the academic community to engage in gardening and enabling examination of perceived health and movement-related benefits. This study explored how participants experienced horticultural involvement on health and movement behaviours. A mixed-methods pilot study was conducted with six participants who regularly cultivated the university plots. The project coordinator was also interviewed as an information-rich case. Data collection combined a questionnaire with "farm-along" interviews carried out during gardening activities. Only qualitative data were analysed for this report, using inductive thematic analysis. Participants primarily associated gardening with improvements in mental well-being, noting reductions in stress and anxiety and a sense of calm linked to time spent in nature. The garden was described as a space to disconnect from work demands and digital environments. Social interaction, knowledge sharing, and exchanging produce contributed to a stronger sense of community. Gardening also encouraged participants to cook and consume the vegetables they grew. In contrast, gardening was viewed as contributing minimally to overall physical activity, apart from occasional strenuous tasks. No consistent changes in sleep patterns were reported. Community gardening appears to support mental well-being and social connectedness. University-led gardens may promote both individual and environmental health and merit further exploration within urban horticulture research.

Keywords: urban horticulture, community gardens, mental health, social interaction, university initiatives

A pilot study on engaging aspirant ski and snowboard teachers in alpine stewardship

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ABSTRACT

Ski and snowboard teachers can play an important role in addressing the problem of litter in ski resorts. This study aimed to identify determinants related to reducing and collecting litter in ski resorts among aspirant ski and snowboard teachers. On the second day of a 5-day internship, aspirant ski and snowboard teachers (n = 14) were educated about planetary boundaries and the ecological footprint of winter sports. At the end of this session they were encouraged to collect litter in the ski resort while encouraging their pupils to do the same during the following three days, and to send a photograph of each item to the research team. Two days after their internship, nine aspirant teachers participated in a semi-structured focus group discussion to identify determinants related to reducing and collecting litter in the ski resort. All focus group participants reported to have collected litter with their group, which was confirmed by the submitted photographs (4-21 items/group). The identified determinants for reducing and collecting litter were categorized at the intrapersonal (e.g., awareness, sense of responsibility), interpersonal (e.g., role-modelling, gamification), environmental (e.g., natural vs. built environment), and organizational levels (e.g., ski resort initiatives, availability of litter bins). This pilot study shows that, to optimally engage (aspirant) ski and snowboard teachers in environmental stewardship, various determinants should be targeted. Further (impact) studies should examine whether and how environmental stewardship can be embedded within relevant curricula and explore how it can be facilitated by ski resort policies.

Keywords: ecological footprint, novel entities, litter, winter sports

Greenway interventions and behaviour change: Exploring the reach and impact of multi-component interventions in Denmark

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ABSTRACT

Greenways are key features in a recreational infrastructure that provide for a multitude of benefits including health and wellbeing. A substantial literature is available, but little is known about how greenway interventions stimulate behaviour change. Drawing on the Behaviour Change Wheel this study aims to investigate how multi-component interventions impact behaviour change of residents living nearby six intervention greenways in Denmark. By means a cross-sectional survey (n=3262) descriptive analysis showed that restructuring the physical environment and restructuring the social environment had the highest level of reach of all intervention functions. Further, linear regression analysis showed that the number of different intervention functions noticed by the users correlated positively with self-reported behaviour change. The strongest correlation was found for the intervention function restructuring the physical environment. Less strong correlations were found for persuasion, restructuring the social environment, and incentivisation. Psychological capability, social opportunity, and reflective motivation for use of the greenways correlated with behaviour change. So did age, educational level, limitations in physical capacity, and municipality context. The strong positive correlation between the number of intervention functions noticed and behaviour change underscores the importance of integrated multi-component approaches. Additionally, the differential reach and impact of specific interventions provide practical insights for policymakers and planners. The correlations between behaviour change and user age, education, and physical capacity are noteworthy, as they highlight equity dimensions of greenway interventions. From a policy perspective, the findings advocate for targeted investments in inclusive and accessible green infrastructure that considers *diverse user needs and local contexts.*

Keywords: greenway, multi-component intervention, behaviour change

Environmental and psychosocial determinants of device-measured physical activity in semi-urban Nepal

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ABSTRACT

This study examines how environmental opportunities and psychosocial factors affect device-measured physical activity and sedentary behaviour among adults in semi-urban Nepal, focusing on the specific drivers of movement in a South Asian low- and middle-income country (LMIC). We conducted a cross-sectional analysis of baseline data from the Community-Based Promotion of Physical Activity trial in Pokhara Metropolitan City, Nepal (March–August 2024). Participants wore wrist accelerometers for seven days to measure physical activity and sedentary time. Environmental opportunities were assessed via structured questionnaires, categorised into recreational/built environments (e.g., parks) and utilitarian environments (e.g., domestic work). Psychosocial factors included perceived behavioural control and intention. Multilevel linear mixed-effects models estimated associations between daily moderate-to-vigorous physical activity (MVPA) and sedentary time, testing for interactions with perceived behavioural control. We analysed data from 421 participants. Higher scores for utilitarian environmental opportunities correlated with about 10 additional minutes of daily MVPA per standard deviation increase. Recreational/built environments showed weak associations with MVPA. Perceived behavioural control positively influenced MVPA, while intention did not. Minimal associations were observed with sedentary time. In semi-urban Nepal, utilitarian environmental opportunities and perceived behavioural control are more closely linked to physical activity than intention alone. These findings highlight the need for context-sensitive strategies to promote everyday movement in low- and middle-income countries.

Keywords: physical activity, accelerometer, built environment, psychosocial factors, Nepal

Measuring movement in green contexts: integrating digital tools into the 24-hour movement behavior framework

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ABSTRACT

Green urban environments under the patronage of Nature-Based Solutions (NBS) are increasingly overlooked to promote a better well-being amongst individuals. Although there is increased literature in studying its contribution to health-enhancing physical activity, evidence in studying its interaction with twenty four-hour movement behavior (sleep, sedentary behavior, and physical activity) is still lacking. Objective: This study aims to explore the possible associations between green urban spaces and 24-hrs movement activity through applying digital monitoring to measure movement behavior. A systematic scoping review was conducted to examine how digital monitoring tools measure movement behaviors—physical activity, sedentary behavior, and sleep—in the context of urban green spaces. Literature was searched across databases such as PubMed using keywords including urban green spaces, digital monitoring, wearable technology, accelerometers, mobile health, and 24-hour movement behaviors. Eligible studies encompassed observational, experimental, and review designs focusing on digital technologies applied to these outcomes. After removing 17 duplicates, 53 articles were screened against predefined inclusion and exclusion criteria, resulting in 22 studies retained for final analysis. Implications: This study explores the relevance of considering urban context in research on associations between urban features and 24-hour movement through digital monitoring. This raises the potential of positive use of technology to better optimize and position urban planning with health-promotion and equity-focused HEPA decisions.

Keywords: urban green spaces, digital monitoring, wearable technology, accelerometers, 24-hour movement

Greenspace as relational infrastructure: mechanisms converting urban green access into physical activity and wellbeing

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ABSTRACT

Urban green space policies often prioritise biodiversity net gain, spatial provision, and accessibility, assuming that exposure will translate into health gains. We examined the mechanisms through which greenspace improves health-enhancing physical activity (HEPA) and wellbeing, testing whether benefits operate directly or indirectly through relational and psychosocial pathways. Methods Cross-sectional survey data from 1,985 adults participating in Beat the Street (Salford, UK) were linked to neighbourhood greenspace access. IMD-adjusted parallel mediation models tested associations between greenspace and three outcomes: physical inactivity, self-reported mental health condition, and life satisfaction. Three conceptually distinct mediators were examined: Place (neighbourhood attachment and exploration), Purpose (control, optimism, fulfilment), and People (belonging and social connection). Direct associations between greenspace access and outcomes were weak after adjusting for deprivation. However, significant indirect pathways were observed. For life satisfaction, greenspace effects operated almost exclusively through relational and psychosocial mediators. For physical inactivity, 59% of the total association operated through mediators (indirect effect –1.31 percentage points, 95% CI –2.24 to –0.54). For mental health, 24% of the association was mediated (indirect effect –0.24 pp, 95% CI –0.44 to –0.04). The strongest pathways involved neighbourhood exploration, recent park use, perceived safety, belonging, and psychological agency. Greenspace improves health not through exposure alone, but when it functions as relational infrastructure that converts opportunity into activity and wellbeing. Urban green space strategies should therefore prioritise relational design features—safety, sociability, neighbourhood attachment, and psychological agency—alongside spatial provision and biodiversity targets to maximise health enhancing physical activity and mental health gains.

Keywords: green space, physical activity, wellbeing, health creation

Planet positive event: a practical framework for measuring and improving sustainability in the event sector

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ABSTRACT

Large events significantly influence travel, consumption, and resource use, affecting environmental sustainability and public health. Many organisers aim to deliver more sustainable events but often lack practical tools to measure impacts and guide improvements. Planet Positive Event provides a practical framework to assess sustainability performance, calculate carbon footprints, and identify areas for meaningful improvement. Planet Positive Event combines a sustainability assessment framework with an automated carbon footprint calculator. It evaluates mobility, energy use, catering, waste and water management, accommodation, procurement, and digital services. Organisers provide operational data through structured questionnaires, which are analysed using recognised emission factors and standards, including the GHG Protocol, ISO standards, and ESRS/GRI. The framework also links event actions to the 17 UN Sustainable Development Goals (SDGs), helping organisers understand the broader impact of their decisions. Applying the framework at over 45 international sports and business events shows participant travel often accounts for more than 80% of total emissions. The tool identifies practical strategies, such as promoting sustainable travel, improving procurement, enhancing waste management, and advancing relevant SDGs. Final reports provide clear, actionable data supporting informed decision-making and transparency. Tools like Planet Positive Event bridge the gap between sustainability commitments and action. By providing clear metrics and recommendations, the framework helps organisers reduce environmental impacts and align events with broader sustainability and policy goals.

Keywords: sustainable events, carbon footprint, sustainable mobility, event management, SDGs

Changes in well-being, sleep quality, and general health status in individuals who participated an 8 weeks exercise program on city streets and green areas

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ABSTRACT

The aim of the study was to determine how much the subjective well-being, sleep quality, and general health status and work capacity of individuals who participated an 8-week exercise program change, and whether the changes depend on the training environment and gender. The study involved 47 adults (29 women and 18 men), with an average age of 41.94±6.911, of whom 25 exercised in green areas and 22 on city streets. The World Health Organization-Five Well-Being Index (WHO-5), Pittsburgh Sleep Quality Index (PSQI), and The Short Form Health Survey (SF-36) were used to collect data. Participants were given an exercise program for 8 weeks that required them to exercise at a moderate intensity for at least 30 minutes, 3 times a week. Repeated measures ANOVA was used to analyse the results. The WHO-5 and PSQI scores did not change significantly ($p>0.05$) over the 8-week period. In the SF-36 health concepts, the repeated measures ANOVA for General Health showed a statistically significant effect of time ($F(1, 959.6) = 15.05$, $p < .001$). And for the Energy/Fatigue score, there was an interaction effect of time, training environment, and gender ($F(1, 1039) = 7.24$, $p = .010$). There were no statistically significant ($p>0.05$) changes in the other SF-36 health concepts, and no significant ($p>0,05$) interactions were observed for gender and environment. Even 8 weeks of exercise program leads to an improvement in general health in relatively healthy people, and exercise in green areas has a greater effect.

Keywords: pave and green area, moderate physical activity, well-being, general health, sleep quality

Nature-based health promotion strategies: Understanding behavioural profiles of nature engagement

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ABSTRACT

Natural environments are increasingly recognised as health resources that support well-being and encourage healthy lifestyles including physical activity. However, engagement with nature varies substantially between individuals. Identifying behavioural profiles of nature engagement may help develop targeted health promotion strategies that strengthen resilience and support health-enhancing behaviours. A cross-sectional online survey was conducted among 965 adults aged 18–76 years (M = 42.83, SD = 13.13; 91% female). Attitude–behaviour patterns across mindful, sensory and artistic, and body-related domains of nature engagement were assessed using the Nature-Based Self-Care Questionnaire. Measures of psychological resilience, perceived stress, life satisfaction and self-rated health were collected. Cluster analysis using standardised engagement variables identified behavioural profiles. Differences between clusters were examined using Kruskal–Wallis tests. Four behavioural profiles emerged: Aligned High Nature Engagement (n = 201, 20.8%), Aligned Low Nature Engagement (n = 280, 29.0%), Moderate Attitude and Behaviour (n = 312, 32.3%), and High Attitude–Low Behaviour (n = 172, 17.8%). Significant differences were observed in psychological resilience ($H(3) = 97.80$, $p < .001$), self-rated health ($H(3) = 52.60$, $p < .001$), and life satisfaction ($H(3) = 84.56$, $p < .001$). Participants with high alignment between attitudes and behaviours reported the most favourable outcomes. Stress indicators also differed significantly across profiles. Engagement with natural environments appears to be a modifiable health behaviour associated with stronger resilience and better perceived health. Health promotion initiatives and urban planning policies that increase accessible opportunities for everyday interaction with green environments may strengthen population well-being and support preventive public health strategies.

Keywords: behavioural profiles, green environments, nature engagement, resilience, self-rated health, stress

Impact of built environment on physical activity and obesity in Hungarian and Jordanian women: a comparative study

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ABSTRACT

The built environment influences physical activity and obesity, but cultural and infrastructural contexts may shape how women utilize these environments. This research compared perceptions of the built environment and their associations with physical activity and body mass index (BMI) among women in Hungary and Jordan. A cross-sectional survey was conducted 6 months long with 800 adult women, (Hungary n=401, Jordan n=399) aged 18–45 years. Data were collected using the Physical Activity Neighborhood Environment Survey (PANES), International Physical Activity Questionnaire–Short Form (IPAQ-SF), and self-reported anthropometrics. Non-parametric tests analyzed variations in built environment subthemes among physical activity and BMI classifications. Hungarian participants indicated notably elevated scores for amenable environments, walkability/cyclability, traffic safety, and the overall built environment, whereas Jordanian women felt a stronger sense of safety from crime. Women engaged in moderate-to-high physical activity and those with a normal BMI indicated more supportive surroundings compared to their peers who are less active or overweight/obese. Owning a car was accompanied to reduced physical activity, especially in Jordan (92% ownership compared to 61% in Hungary). Supportive environment with features such as accessible parks, safe walking infrastructure, and active transportation systems, were associated with higher physical activity and optimal BMI among female adults. Nonetheless, dependency on cars and restricted green areas, especially in Amman, could inhibit these advantages. Urban planning and public health initiatives must incorporate cultural and infrastructural elements to encourage women's active living.

Keywords: built environment, physical activity, obesity, women's health, Hungary, Jordan

Running in the heat: a descriptive study of challenges and adaptation strategies among endurance runners of varying training levels

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ABSTRACT

The climate crisis is causing more frequent and intense heat waves, posing health risks and impairing endurance performance in runners. This study examined the challenges experienced and the strategies adopted by endurance runners when running in the heat. In this cross-sectional study, 303 endurance runners of varying training levels (45% male, 38.2 ± 11.3 years) completed an online questionnaire assessing heat-related symptoms, perceived limits as well as adaptation strategies for running in hot conditions. Running in hot conditions (≥25 °C) commonly induced physical symptoms such as excessive sweating (82.2%), fatigue (48.5%), headaches (22.4%), and dizziness (13.5%), and elicited predominantly neutral to negative mental effects regarding motivation, concentration, mental resilience and self-confidence. Participants perceived 26.1 ± 4.7°C as the upper temperature limit for comfortable running, and 32.7% reported being likely to cancel sessions at ≥25 °C. Most runners (74.6%) adjusted their training on hot days, typically by changing the time of day (68.3%) or reducing pace (57.4%), followed by seeking shade (45.5%) or shortening distance/duration (40.9%). Pace and duration adjustments were rated as easiest, whereas finding shade or alternative routes was more challenging. Cooling strategies were believed to improve comfort (76.3%) and performance (72.7%), but the only commonly used method was pouring water over the head (47.9%). Although 63.4% felt prepared for heat, structured acclimation practices were infrequent. Runners experience diverse physical challenges when exercising in hot conditions and rely primarily on simple training adjustments rather than structured heat acclimation. Improved education on effective heat adaptation could enhance safety and performance.

Keywords: thermal strain, acclimatization, heat stress, endurance performance, heat exposure

Is ebiking exercise or cheating? An experimental study estimating minutes of moderate physical activity

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ABSTRACT

E-bikes offer a co-beneficial travel solution, providing both health and environmental benefits compared to private car use. However, there is ongoing debate about whether e-biking qualifies as moderate-to-vigorous physical activity (MVPA) due to variable assistance from a battery-powered motor. This study investigates the effects of ebike power settings and cycling intensity on minutes of MVPA. Adult participants completed six 5km e-biking trials on the same route, with a factorial combination of ebike power setting (Off/Mid/Full) and cycling intensity (Natural/Brisk). Heart rate while cycling was measured by a Polar HR monitor.Using either age-estimated or lab-measured maximum heart rate, minutes of moderate-to-vigorous physical activity was calculated for each 5km trip. Nineteen participants completed 114 trips, with six trips excluded for data quality issues. Cycling 5km with the ebike motor switched off led to participants completing 14 minutes of MVPA on average, significantly higher than the 11 minutes with the motor set to either mid or full power. Cycling briskly led to participants completing around 90 seconds more MVPA over 5km (and notably more minutes of vigorous physical activity). Despite small differences in the total number of minutes of MVPA over 5km, cycling with electrical assistance still produced meaningful amounts of physical activity. E-biking offers a flexible means to achieve MVPA, benefiting both commuting and overall physical activity, especially compared to sedentary transportation modes like car journeys.

Keywords: climate change adaption, physical activity, electrical assistance, health benefits, ebikes

Time spent in green space and mental health outcomes in the general population: a dose-response systematic review and meta-analysis

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ABSTRACT

In recent years, green space has been prescribed as a cost-effective and accessible tool for improving mental health. While numerous studies have reviewed the beneficial effects of greenspace on mental health and wellbeing, this has typically been completed using categorical exposures (i.e. intervention vs control), which does not reveal the dose-response relationship. This study aims to review and synthesise the data into a unified continuous metric based on the duration of immersion in green space. Relevant databases were searched for controlled studies published within the past 20 years reporting associations between green space exposure and validated measures of depression and anxiety. Forty-two published papers are to be included with preliminary dose-response curves being generated using standardised mean difference scores. A meta-analysis will then be conducted on study-specific dose-response parameters to estimate pooled exposure-response relationships, permitting the prediction of mental health outcomes for different durations of weekly greenspace exposure. Random-effects meta-analyses will be completed on the pooled estimates across the studies, as well as sensitivity analyses being conducted to assess the robustness of the estimated dose-response relationship. Subgroup analysis will be conducted where numbers permit. We will then draw conclusions on the outcomes and offer tentative guidelines for regular weekly access to greenspaces to accrue benefits to mental health and wellbeing.

Keywords: greenspace, meta-analysis, systematic review, exposure measures, dose-response

Issues and challenges of capacity building to improve links between research, policy, and ethical practice for health and well-being through One Health in French-speaking Africa

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ABSTRACT

Africa is plagued by emerging epidemics and conflicts. To address health challenges related to public health emergencies, one innovative solution is the One Health approach, which is based on the certainty that human, animal, and ecosystem health are closely interdependent. The importance of effective responses based on knowledge production and sharing, and collaboration for prevention, surveillance, and response. To analyze ethical practices in relation to the responsibilities of decision-makers, providers, and researchers in decision-making and professionalism in policy implementation. The method is based on literature, semi-structured interviews, observations, and synthesis. The work highlighted current health challenges in the face of emerging epidemics exacerbated by climate change, lack of community engagement, and reduced aid. One Health offers a perspective for surveillance and resilience. Collaboration, including the pooling of resources, has produced results. This has sometimes required revisiting priorities, methods, and tools in order to adapt the process towards better results for and with communities, thereby creating momentum for more positive impacts, followed by reflection, action, monitoring and evaluation, and benefit sharing. One Health is an opportunity for close collaboration to transform systems with more appropriate public policies, as they are focused on proven results and positive impacts. It contributes decisively to improving overall health while providing up-to-date information and promoting standards of safety and well-being.

Keywords: one health capacity building research

Residential greenness and 24-h movement behaviors – are associations similar for urban and rural areas?

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ABSTRACT

Residential greenness associates with higher physical activity, but less is known of its association with device-measured 24-h movement behaviors: sleep, sedentary behavior (SED), light physical activity (LPA), and moderate-to-vigorous physical activity (MVPA). This study examined how greenness is associated with 24-h movement behaviors and whether associations differ between urban and rural areas. We included 1,141 participants (mean age at baseline 62.3 years (SD 1.1), 85% women) from the Finnish Retirement and Aging Study who underwent one-week wrist-worn accelerometer measurement annually (mean 3.5 (SD 1.6) times; 26,455 valid days). Greenness was assessed with the satellite-based normalized difference vegetation index (NDVI) within 750m grids around the participants' home addresses. Compositional generalized estimating equation models adjusted for sex, age, occupation, and work status, accounting for repeated measurements within individuals, were used to examine associations of greenness with each movement behavior relative to others. Interactions between urban (90% of participants) and rural (10%) residents were also examined. Higher greenness was associated with higher LPA ($p<.001$) and lower MVPA ($p=0.02$), with no associations for SED ($p=0.90$) or sleep ($p=0.73$). The LPA association did not differ significantly between urban and rural areas (interaction $p=0.26$), but was significant only in urban areas. Greenness tended to link with lower MVPA in urban areas but higher MVPA in rural areas (interaction $p=0.02$). Greenness was associated with higher LPA in urban areas and higher MVPA in rural areas. These diverging associations should be considered in future research and urban planning.

Keywords: greenness, accelerometer, urban, rural, adults

Relocating municipal health interventions to green spaces – insights from three Danish nature-based interventions

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ABSTRACT

This study aims to examine whether municipal health interventions may be advantageously relocated to natural outdoor environments and how participants experience engaging in such programs. The examination builds on the hypothesis that spending time outdoors increases physical activity and contributes to improved mental health. This presentation reports findings from three nature-based interventions implemented across two Danish municipalities. The interventions targeted three distinct groups: Adolescents experiencing reduced mental health, adults experiencing reduced mental health, and adults living with diabetes. Each intervention relocated activities, such as mindfulness, physical activity, and patient education, into natural environments. The impact of the nature-based interventions was investigated using the RE-AIM framework. Participant interviews, observation and participant reflection forms were analysed using thematic analysis. Preliminary findings indicate that the interventions enhanced participants' mental health. Participants reported experiencing a sense of community, increased physical activity, and improved feelings of mastery, all of which were supported by the motivating qualities of the natural environment. Adolescents were particularly motivated by physically and mentally challenging activities, whereas adults were primarily motivated by the sense of calm and restoration offered by the natural surroundings. The preliminary results support the recommendation to relocate municipal health interventions into natural environments, however further research is needed, including larger sample sizes, mixed methods designs, and investigations of the organisational and economic implications. This study, funded by 15. Juni Fonden and NordeaFonden, provides key insights into integrating green spaces and 24-hour movement behaviours to prevent non-communicable diseases and improve mental health in municipal health interventions.

Keywords: outdoor intervention, municipal setting, physical activity, mental health, adolescents and adults

Green hospital environments and digital navigation to support patient wellbeing during surgical waiting

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ABSTRACT

Pre-operative waiting for cardiac surgery can generate anxiety, uncertainty and psychological distress. Hospital environments that incorporate green spaces may support wellbeing and provide opportunities for restorative experiences during hospital stays. This review explores how environmental design and digital navigation strategies can be combined to address vulnerabilities experienced during pre-operative waiting in public healthcare settings. A narrative review examined four domains: (1) the effects of hospital green spaces on patient wellbeing; (2) psychosocial vulnerabilities associated with pre-operative waiting; (3) digital health strategies for patient guidance and anxiety management; and (4) integrated environmental–digital care models. Literature published between 2015 and 2025 with a focus on public healthcare contexts was analysed. Evidence indicates that access to hospital green spaces, such as those implemented at Hospital de Messejana (Brazil), is associated with reduced stress and improved mood. However, pre-operative waiting periods often involve uncertainty, information gaps and emotional distress. Digital navigation strategies—including scheduling support, patient education and communication tools—can help address these challenges. Integrating environmental and digital approaches may create synergistic benefits by combining stress reduction through nature contact with improved patient guidance. Accessible green areas may also encourage light physical activity, such as walking and outdoor mobility. Integrating green infrastructure with digital patient-support strategies may contribute to more supportive, patient-centred and health-promoting healthcare environments.

Keywords: health-promoting environments, green infrastructure, hospital green spaces, patient wellbeing, light physical activity

Urban green spaces and twenty four hour movement behaviours in preventing non communicable diseases: a narrative review

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ABSTRACT

Non-communicable diseases (NCDs) are the leading cause of morbidity and mortality globally, largely driven by physical inactivity, sedentary behaviour, poor sleep, and urban environmental factors. Urban green spaces may influence 24-hour movement behaviours, including physical activity, sedentary time, and sleep quality. This narrative review synthesizes evidence on how green environments shape these behaviours and contribute to NCD prevention, integrating perspectives from urban planning, behavioural science, and public health. A narrative review was conducted. PubMed, Scopus, and Web of Science were searched for studies published from 2000 to 2025. The initial search yielded 1,245 articles; after removing duplicates, 830 studies were screened. Of these, 175 full-text articles were assessed, and 92 studies were included. Studies examining associations between green space exposure and physical activity, sedentary behaviour, sleep, or health outcomes were considered. Findings were analysed qualitatively using epidemiological, environmental health, and public health literature. Proximity to green spaces is consistently associated with higher physical activity, lower sedentary behaviour, improved sleep, and enhanced wellbeing. Indirect reductions in cardiovascular risk factors, obesity, and metabolic disorders were also observed. Integrating accessible green spaces in urban planning can support healthy 24-hour movement behaviours and offer a practical strategy for NCD prevention. Environmental interventions should complement health promotion programs.

Keywords: green spaces, physical activity, sedentary behaviour, sleep health, non-communicable disease prevention

Mapping of urban determinants of health in the city of Rijeka: An example from the HORUS project

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ABSTRACT

Chronic non-communicable diseases (NCDs), such as type II diabetes and cardiovascular diseases, are the leading causes of morbidity and mortality worldwide, particularly among vulnerable population groups. This is linked to numerous behavioural, social, and environmental determinants. The aim of the research was to create thematic maps of the city of Rijeka based on analysis of the results from the "Barometer of Health of Residents of the City of Rijeka" and data obtained from key stakeholders in the City of Rijeka as part of the HORUS project (GA no. 101136516). The methodology for creating the maps was based on spatio-temporal patterns of NCDs and environmental interventions, using exploratory spatio-temporal data analysis (ESTDA) and spatial autocorrelation pattern estimation. Accordingly, thematic maps based on a geographic information system (GIS) were generated and adapted for display on the HORUS platform. Thematic maps show parts of the city of Rijeka with the proportions of residents who have healthy or unhealthy lifestyle habits (physical activity, smoking, consumption of alcoholic beverages, diet, etc.), as well as urban variables such as population density, public transport, city connectivity, density of green spaces, economic activity, and others. These thematic maps formed the basis for the development and implementation of HORUS interventions in the city of Rijeka and will also serve as the basis for changing urban environmental management policies, while promoting the well-being, sustainability, and inclusion of the population and contributing to the development of healthier and more resilient cities.

Keywords: public health, non-communicable diseases, geographic information system, urban health, lifestyle

A Collaborative Targeted Outreach Programme (CTOP): improving access to greenspaces for Muslim communities in Luton

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ABSTRACT

Older adults (65+ years), women, and ethnic minority communities have been less likely to access greenspaces, contributing to inequalities in physical activity, wellbeing, and nature connection. In response, this project presented the Collaborative Targeted Outreach Programme (CTOP), a community-centred, co-produced intervention designed to improve equitable access to greenspace and the countryside for diverse Muslim communities in Luton. CTOP integrated the Talk, Listen, Change (TLC) ethnographic approach with World Café collaboration workshops and Appreciative Inquiry (Discover, Dream, Design, Destiny). Five Collaboration Café workshops engaged women, older men, and community stakeholders in culturally responsive, gender-sensitive discussion spaces. Using visual prompts, collage building, and structured dialogue, participants co-designed their "ideal" greenspace experience, exploring where to go, when to go, who to go with, how to get there, and what to do on arrival. Data were analysed using framework analysis to inform intervention development. The subsequent participatory action research phase operationalised the "Destiny" stage, translating community insight into supported greenspace visits. Guided visits were co-delivered with community organisations and incorporated reflective mapping, audio-visual capture of lived experience, and pre- and post-confidence and wellbeing measures. A steering group and collective reflection process supported iterative refinement and local capacity building. Preliminary findings suggested that partnership-based, co-created approaches helped to reduce practical, cultural, and perceptual barriers to countryside access. CTOP demonstrated the potential of inclusive, strengths-based nature interventions to support more equitable participation in greenspace and enhance confidence, physical activity, and wellbeing.

Keywords: health inequalities, health equity, greenspaces, community research, participatory methods

Health barometer of the city of Rijeka – foundation for urban health interventions within the HORUS Project

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ABSTRACT

Noncommunicable diseases (NCDs) are the leading cause of mortality worldwide. According to the World Health Organization (2021), 18 million people died prematurely from NCDs before reaching the age of 70. NCDs affect all age groups, and key behavioural risk factors - physical inactivity, unhealthy diet, and harmful lifestyle habits - substantially contribute to their development. The aim of this study was to assess the health behaviours of the population of the city of Rijeka, including mental health. As part of the HORUS project (GA No. 101136516), an anonymous survey entitled "Health Barometer of the City of Rijeka" was conducted in 2024 on a sample of 2,447 adult participants. The questionnaire covered key indicators of health status, lifestyle behaviours, mental health, and use of the urban environment. The results indicated that the surveyed population in Rijeka is relatively physically active; however, certain barriers were identified, including health problems and fatigue. Moderate to elevated levels of depression, anxiety, and stress were also observed. These findings served as one of the foundations for the development and implementation of HORUS public health interventions utilising urban environmental resources, including physical activity programmes, mindfulness workshops, and forest therapy. Previous studies have demonstrated beneficial effects of physical activity, mindfulness, and forest therapy on mental health in older adults; however, it remains to be determined whether and to what extent similar effects will be observed in the present study.

Keywords: lifestyle, mental health, urban health

Urban green space inequities in the Global South: physical, behavioural and public health implications

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ABSTRACT

This review examines how inequitable access to urban green spaces (UGSs) in the Global South shapes physical activity and related physical, mental and social behaviours, while comparing evidence from the Global North. The main inequalities derive from socioeconomic conditions, infrastructure, and cultural or gender-based limitations, which together restrict access for diverse populations. A narrative review of the published literature in PubMed and Web of Science was conducted to examine inequalities in access to UGS, gendered barriers, social determinants, and associated health outcomes. These inequalities were reviewed with attention to low-middle-income settings. The evidence shows that UGSs are more common and better maintained in wealthier, less populated neighbourhoods. Conversely, lower socioeconomic areas often lack such access. Gender-based inequalities, especially in low-income communities, further restrict women's use of these spaces due to fear, safety concerns, and cultural expectations around public behaviour. Inadequate infrastructure—such as insufficient seating, poor lighting, or broken walkways—also discourages use among adults and children. These multifaceted barriers restrict opportunities for physical activity and are linked to poorer mental health, lower community engagement, and adverse physical health outcomes. There is limited research on these factors in the Global South, particularly gendered dimensions, making it challenging to understand the bio-psychosocial effects of these inequalities on health. Inclusive safety and use of UGSs may promote healthful physical activity and improve health outcomes. The Global South requires context-sensitive research and assessment tools to provide a comprehensive understanding of health and to inform policy.

Keywords: health, urban green spaces, inequities, physical activity, Global South

Gendered safety in urban greenspaces: implications for health-enhancing physical activity and wellbeing

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ABSTRACT

Urban greenspaces support physical activity, mental wellbeing, and restorative health. However, women often experience lower access and engagement due to perceived social threats. Women also report lower physical activity, higher stress and sedentary behaviour, spend 24% more time in poor health than men, and face higher risks of poor mental health. These trends highlight a stark gender–health gap, emphasizing women as an at-risk group. This study examines how gendered perceptions of safety influence engagement in greenspaces integrating social psychology of gender and feminist urbanism into nature–health research. The findings identify barriers to health-enhancing physical activity. Three experiments were conducted with residents in England (total n = 1,020; mean age 21–36). Participants viewed images and videos of park environments varying in vegetation density and potential threats, including animals and social hazards. Measures assessed perceived fear, risk, likelihood of visiting again. Data were analyzed with Analysis of Variance, Multivariate Analysis of Variance, contrast analyses, and interactions. Women consistently reported higher fear and perceived social risk than men, particularly in dense greenspaces. These perceptions reduced their likelihood of visiting again. Among danger types, social threats were the strongest predictors of reduced engagement. The findings highlight a "nature disconnect" for women, limiting opportunities for physical activity and restorative experiences. Addressing gendered experiences is critical for equitable engagement in greenspaces. Design strategies (visibility, lighting, paths), alongside interventions to reduce harassment and shift cultural norms, are needed to improve health and health equity.

Keywords: greenspace, women, safety, nature-health associations

Factors influencing engagement with the built environment for physical activity among diverse communities living in the United Kingdom: a scoping review

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ABSTRACT

Ethnically diverse communities in urbanised settings are less engaged with the built environment for physical activity, contributing to the persistence of health inequalities. This research synthesises the evidence about the factors influencing engagement with the built environment for physical activity among diverse communities living in the UK. CINAHL, Medline, SocINDEX, PsycINFO, SPORTDiscus were searched to identify sources (January 2015 - April 2025). The review followed the JBI framework of evidence synthesis and PRISMA extension for scoping reviews guidelines. Qualitative, quantitative, and mixed methods studies were included with participants aged ≥18 years, from Eastern European, Black African, Black Caribbean and South Asian communities in the UK. Included studies were analysed using inductive thematic analysis, and mapped deductively onto the COM-B model and the TDF. Of the 2,298 studies screened, 10 studies were included in the review (3 quantitative, 5 qualitative, and 2 mixed-methods studies). 14 themed factors were coded to the COM-B model: Capability (n=2); opportunity (n=7); motivation (n=5); with the assistance of the TDF. The identified themes included health status, knowledge, cultural factors, socioeconomic factors, and habits. There is a need to engage with members of diverse communities and community stakeholders to ensure policies and interventions designed to improve health behaviours are culturally responsive. The findings contribute to an Equalities approach to actively consider how underserved communities engage with the built environment for physical activity.

Funding: This research is jointly funded by the University of Bedfordshire and Luton Borough Council, UK.

Keywords: built environment, physical activity, diverse communities, UK, COM-B model

Do co-designed sustainable park improvements produce long-term impacts on physical activity and other wellbeing behaviours? A 7-year natural experimental study in a deprived urban area

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ABSTRACT

Creating or improving urban parks is a promising population-level intervention to promote physical activity. However, robust natural experimental evidence is limited, especially examining long-term impacts. We previously showed that co-designed, sustainable park improvements in a deprived UK area increased walking and other wellbeing-related behaviours up to 15 months post-intervention. This natural experimental study examined whether these effects were sustained five years post-intervention (seven years from baseline). Two comparison sites were matched to two intervention sites. Two additional unchanged nearby sites were included to assess wider neighbourhood trends. Outcomes were assessed using systematic observations at baseline (2018) and five-year follow-up (2025). The primary outcome was the change in the number of people walking. Multilevel negative binomial regression models compared changes between intervention and comparison sites, adjusting for confounders. Intercept surveys examined self-reported outdoor space use at baseline (2019, n=217) and follow-up (2025, n=232). Five years post-intervention, walking at intervention sites increased by 70% relative to comparison sites (IRR=1.70, 95% CI 1.02-2.82). Significant increases were also observed for sedentary behaviour, social interactions, and taking notice of the environment. Observations at unchanged nearby sites suggested effects were not due to wider neighbourhood trends. Intercept surveys showed greater increases in self-reported outdoor space use in the intervention area. Co-designed park improvements can generate long-term increases in walking and other wellbeing-related behaviours in deprived urban areas. Investment in urban green space interventions represents an effective long-term strategy to improve physical activity and reduce health inequalities.

Keywords: physical activity, wellbeing, urban parks, natural experiment, intervention

Exploring smartphone-based artificial intelligence systems for physical activity in urban areas: a scoping review with a focus on psychosocial theory, inclusivity, ethics, and sustainability

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ABSTRACT

While artificial intelligence (AI) integrates rapidly into mobile health (mHealth) for physical activity (PA), its deployment in urban areas remains under-scrutinised. This scoping review maps AI architectures in mHealth for PA, operationalised theories, system inclusivity, ethical standards, and environmental sustainability. Following JBI and PRISMA-ScR guidelines, seven databases were searched for urban, smartphone-based AI systems for adult PA interventions since 2011 (N=2,222). We deploy an AI-assisted pipeline on local servers. For rigorous validation at title/abstract screening stage, a human-screened 10% calibration sample (n=223; inter-rater reliability PABAK=0.53) underwent expert adjudication, driving 20 iterations of prompt optimization (RISEN framework). A fully unseen 5% test sample (n=110; PABAK=0.75) validated inference performance, achieving PABAK of 0.86, 100.0% (95% CI 78.20-100%) sensitivity, and 91.6% (95% CI 84.10-96.30%) specificity, saving 98% of human screening time. This calibrate-test architecture will be repeated for full-text screening and data extraction stages – final analyses in April 2026. Accuracy, time savings, and resource usage are logged for each stage; data screening specific metric is concordance (95% CI) – final analyses in April 2026. Targeted citation searching ensures saturation. Human written findings will detail: (1) AI architectures for PA assessment and promotion (e.g., passive sensing, hyper-personalised feedback); (2) encoding of psychosocial determinants within algorithms; and (3) inclusivity considerations, ethical compliance, and sustainability levers (e.g., on-device computing). Methodologically, this review demonstrates a resource-efficient AI screening pipeline. Practically, it provides a foundational evidence map to align future urban mHealth PA interventions with Planetary Health and ethical standards.

Keywords: artificial intelligence, physical activity, psychosocial theory, inclusion and ethics, sustainability

What prevents adults from cycling? Findings from a population-based survey in Germany

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ABSTRACT

Large proportions of the population in Europe do not cycle regularly as a means of transport. This study aims to investigate the perceived barriers to cycling in order to provide advice for effective promotional measures, particularly for less active groups. Self-reported data were used from the population-based 2025 survey "Health in Germany" involving individuals aged 18 and older (n=32,374). Participants were asked to select from 15 potential barriers those that applied to them in terms of what prevents them from using cycling as a means of transport. Multivariate logistic regression analyses were conducted to investigate differences between sociodemographic groups. On average, individuals chose 5 factors preventing them from taking a bike for transport. The most frequently selected barriers were: weather conditions (51%), too long distances (45%), not wanting to sweat (43%), having too much luggage or people to transport (34%), and a lack of shower facilities (32%). Almost all of the barriers were selected more frequently by women than men. Older adults selected more often health issues (50%), lack of physical fitness (44%), lack of bike availability (40%), and concerns about accidents (38%). Individuals with a lower level of education were more likely to select the following barriers to cycling: lack of bike availability (35%), lack of physical fitness (34%), and health issues (31%). Our findings underscore the need for target group-specific measures to promote cycling as a means of transport and indicate which key barriers these measures should address.

Funding: German Federal Ministry of Health

Keywords: active mobility, cycling, perceived barriers

How the environment impacts physical activity behaviour among Saudi adults?

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ABSTRACT

Research has revealed the link between behavioural patterns and the experiences of physical activity (PA). While PA is widely recognised as beneficial to health, insufficient PA remains prevalent among Saudi adults. Environmental conditions significantly influence opportunities for engaging in PA. Accordingly, this research aims to gain insight into environmental barriers and facilitators to PA in Saudi Arabia amongst Saudi adults in indoor and outdoor settings. Qualitative research, using semi-structured interviews, was completed with 22 Saudi adults, aged 20–65 years, recruited via snowball sampling using X platform. Qualitative content analysis was used to analyse the data through the use of the Socioecological Model, with a focus on the physical and built environmental determinants of PA. The environmental determinants of PA were categorised as barriers and facilitators. The most frequently cited barrier was lack of outdoor facilities, followed by lack of women's facilities. In addition, the poor conditions of the facilities were mentioned as well as unavailability of safe outdoor space “among female”. In relation to climatic being a hindrance to be active, hot weather was considered to be more common than cold weather. Conversely, facilitators of the environment included having enough space for PA in home, the availability of appropriate facilities for outdoor activities and the weather and scenic views being conducive to outdoor activities. Environmental factors strongly influence PA participation among Saudi adults. Addressing facility shortages, safety issues, climatic challenges and gender-specific needs through improved environmental planning is essential to promote PA engagement.

Keywords: environmental determinants, physical activity, barriers, facilitators

Electric cycling in the Netherlands: who uses an e-bike and why?

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ABSTRACT

Electric cyclists are becoming increasingly visible in Dutch streets. This study examines the prevalence of electric bicycle users and analyzes their demographic characteristics, as well as motivations, destinations and travel distances. For the first time, these figures, coming from the national health survey infrastructure, will be presented at an international conference. Cross-sectional data were obtained from a national questionnaire (Additional module Physical activity and accidents/Lifestyle Monitor, RIVM, VeiligheidNL, Statistics Netherlands), including a representative sample of Dutch cyclists aged 12+ (2021: n= 6,481; 2023: n=8,107). Descriptive statistics were used to examine demographic characteristics of electric bicycle users (e.g. age, disabilities), as well as to identify reasons for electric bicycle use (e.g. cycling faster), trip purposes (e.g. commuting), and distances traveled. Significant differences between groups and years were determined at $p<0.05$. Electric bicycle use increased from 29% in 2021 to 37% In 2023. In 2023, electric bicycle users were more often women, people aged 50+ and individuals with a lower level of education. The main reasons for choosing an electric over a conventional bicycle were ease of cycling (59%) and the desire to cycle longer distances (49%); the most common purpose was traveling to shops, friends, etc. (72%). The newest 2025 data will be available in summer 2026. These findings give policymakers insight in who uses an electric bicycle and why, as a first step to better tailor cycling and physical activity policies to different population groups.

Support/Funding Source: Ministry of Health, Welfare and Sports, the Netherlands.

Keywords: cycling, electric bike, questionnaire data

Delphi consensus on active travel terminology classification and measurement in sport science research

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ABSTRACT

Active travel describes non-motorized, human-powered movement undertaken as part of everyday journeys. Although increasingly relevant within sport science, and well-established in transport and public health research, substantial inconsistencies remain in how active travel is defined, categorised, and measured. This study aims to develop a consensus-based framework for active travel terminology, definition, categorisation, and measurement to improve conceptual clarity and methodological comparability. A scoping review following PRISMA guidelines was conducted. A systematic SportDiscus search yielded 3179 records. Inclusion criteria were peer-reviewed articles in German or English, full-text availability, all age groups, all publication years, and human populations only. After screening, 39 studies met the criteria. At the time of submission, the review was completed and the Delphi questionnaire prepared. The Delphi process consists of a minimum of two rounds in which experts evaluate and refine terminology, definitions, categorisation structures, and measurement approaches. By the time of the conference, both Delphi rounds will have been completed unless additional rounds are required to achieve consensus. The review identified 17 different terminologies and 53 separate definitions of active travel. Measurement approaches ranged from subjective self-reports to objective and observational methods, while categorisation systems showed extensive heterogeneity. Findings will be synthesised using the FITT-D (Herold et a., 2025) framework at the time of the conference. A consensus-based framework will enhance conceptual clarity and support morehigh-quality, comparable research methods in active travel, strengthening evidence for its contribution to health-enhancing physical activity and non-communicable diseases prevention.

Keywords: active transport, mobility, definition, methods, scoping review

Institutional and surrounding food environments of a university campus in Northeast Brazil: availability of ultra-processed foods in a medium-sized university town

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ABSTRACT

Environmental determinants of health are central to noncommunicable disease prevention, with food environments playing a key role in shaping dietary choices. Universities are strategic settings for health promotion, yet they are embedded within complex food systems influencing students' daily decisions.This study characterised the institutional and surrounding food environment of a university campus in a medium-sized city in Northeast Brazil. A 500-metre linear buffer from the university entrance was used to analyse nearby food outlets, identified via Google Street View and classified by predominant food type. Non-participant observations were conducted in the two campus cafeterias to document food availability and degree of processing.Ten food outlets were identified nearby: three (30%) were classified as healthy, including a cafeteria, a food market, and a self-service restaurant; seven (70%) were classified as unhealthy, primarily offering ultra-processed items such as fried snacks, fast food, and sugary beverages. Within campus cafeterias, processed and ultra-processed products were observed alongside healthier options including fruit salads, natural juices, and traditional regional foods.University campuses are embedded within complex food environments that may influence dietary behaviours. Understanding these environments can support institutional policies and health promotion strategies aimed at improving foodavailability in higher education settings.This study was supported by CNPq.

Keywords: food environment, ultra-processed foods, health promotion; university health, obesogenic environments

Health walks, green spaces and local policies within the 24-hour movement behaviour paradigm: the regional experience of Friuli Venezia Giulia (Italy)

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ABSTRACT

Within the 24-hour movement behaviour paradigm, which considers physical activity, sedentary behaviour and sleep as interdependent components of health, promoting walking in accessible green environments represents an effective strategy to prevent non-communicable diseases (NCDs). In this framework, this contribution presents guided health walks organised within the project "FVG in movimento. 10,000 passi di salute", promoted by Federsanità ANCI FVG with the support of the Friuli Venezia Giulia Region, in collaboration with municipalities, local associations and qualified exercise instructors, to encourage physical activity in nearby natural environments and promote proximity tourism. The project led to the creation of 129 walking routes (about 800 km), mostly in green areas, providing opportunities for regular physical activity across the region. The programme shows high compliance among local authorities, with most municipalities participating, reflecting a strong commitment to health promotion. Preliminary results from an ongoing questionnaire survey indicate that local administrators are highly sensitive to these issues, although most participating municipalities are small and have limited financial and human resources. Citizen involvement has been strong: about 3,500 people took part in 50 health walks during the last year, with positive feedback and increasing participation driven by word of mouth among participants. This represents a relevant outcome of the project. The interaction among the Region, municipalities, associations and citizens fostered the development of "active communities", able to continue physical activity initiatives beyond the project. These results suggest that promoting walking in green environments can support healthier daily behaviours and represent a sustainable HEPA strategy.

Keywords: 24-hour movement behaviours, green spaces, health walks, local health promotion, HEPA strategies

Health-promoting urban planning as a lever for physical activity and mental health promotion: public policy initiatives in France

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ABSTRACT

Urban environments strongly influence opportunities for daily physical activity, which is an important determinant of mental health and psychological wellbeing. Access to green spaces, walkable neighbourhoods and safe infrastructures for active mobility facilitates regular physical activity and contributes to improved population wellbeing. Public health policies in France integrate the principles of health-promoting urban planning in order to encourage physical activity. This abstract aims to present selected public policy initiatives that mobilize urban planning and environmental design as levers to promote physical activity and, indirectly, mental health. Health Impact Assessments (HIA) are used in urban development projects to anticipate the potential effects of planning decisions on health determinants. National and local policies promoting active mobility, notably through the Cycling and Active Mobility Plan, and through participation of local authorities of the WHO Healthy Cities Network, which promotes the integration of health considerations across urban policies. France has developed ISadOrA, a decision-support tool designed to assess the potential impacts of urban development projects on key health determinants such as physical activity, access to green spaces, air quality and social cohesion. These initiatives illustrate how urban planning policies can encourage daily physical activity by improving access to green spaces, walkable public spaces and active mobility infrastructures. Intersectoral collaboration between health authorities, urban planners, transport actors and local governments appears to be a key enabling factor for implementation. By fostering environments that are more conducive to physical activity, these policies indirectly contribute to promoting population mental health and wellbeing.

Keywords: urban planning, active mobility policies, healthy cities, mental well being

Green pathways to active learning environments in schools and early childhood education and care: national survey findings

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ABSTRACT

Nature-rich yards expand movement affordances, support motor development and strengthen participatory learning environments. In Finland, national Get Finland Moving -programme promotes physical activity in all cycles of life. The Ministry of Education and Culture is funding the On the Move -programme family, including Joy in Motion (ECEC) and Schools on the Move, that addresses different age groups. We examined nature elements in ECEC and school yards and their role in everyday movement. Two nationwide surveys (autumn 2025) gathered responses from 562 ECEC units and 573 schools. Data were collected via online questionnaires on nature elements, seasonal usability, indoor/outdoor facilities, and learningenvironment development. ECEC respondents rated movement opportunities positively, but small yards constrained use. Trees, shrubs and mounds were common; natural forest and water were rare, and heat and limited shade limited use in over onethird of units. Pedagogical use of nature was inconsistent. Primary yards were more versatile and naturerich than lowersecondary yards; over half reported opportunities with natural elements. Schools needed clearer guidance on integrating nature into yard design and pedagogy. Conclusions and Practice Implications: Development of green yards can proceed in baby steps, enhancing movement affordances, equity and climate resilience, aligning with national programmes emphasising learning environments and school culture. Priorities include stronger pedagogical use of nature, improved shade and microclimate solutions, and participatory yard development with children and staff. Based on the surveys, we co-create practices and recommendations for greener learning environments and implement them through the programmes' networks.

Keywords: green learning environments, movement affordances, ECEC, schools

Opportunities and challenges of nature-based training in sports clubs

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ABSTRACT

Nature-based training (NBT) may help address challenges in adolescents' sports club participation, including reduced connection to nature, mental health concerns, overuse injuries, and restricted access to facilities. However, research on opportunities and challenges of NBT in sports clubs is scarce. This study examines NBT through the following research questions: What is the prevalence of NBT in sports clubs? Can the amount of NBT be increased? What opportunities and challenges are associated with NBT? The topic is rarely studied, and this study provides knowledge for promoting NBT in sports clubs. Finnish sports club officials and coaches (n = 103) completed an e-questionnaire during a national seminar in 2025, producing cross-sectional data. Measures included "Is NBT carried out in your club" (yes/no); "Could the amount of NBT be increased" (yes/no); and open-ended responses on "Opportunities and challenges of NBT". Descriptive statistics and inductive content analysis were conducted. Among participants, 46% reported that NBT did not occur in their club, and 86% stated that NBT could be increased. Reported opportunities included wellbeing benefits, favourable conditions (e.g., proximity to nature, training capacity), older age groups, and training diversity. Challenges related to conditions (distance, weather and seasonal variation, safety), younger children, discipline-specific training requirements, limited resources, and established habits and attitudes. This study demonstrates potential for increasing NBT in sports clubs and identifies key benefits and challenges to consider when supporting its implementation. Future research should explore adolescents' perspective on NBT.

Keywords: nature, training, sports club

From cellular ageing to workplace action: integrating telomere biology with clinical and multidimensional health monitoring in a green-certified institution

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ABSTRACT

Occupational sedentariness remains a critical challenge, with office workers spending most of their day sitting. Prolonged inactivity is known to accelerate cellular ageing, as sedentary individuals often present telomeres equivalent to several years of additional biological age compared to active peers. The Bem Viver Programme at Fiocruz Ceará—a green-certified campus—integrates telomere science with clinical monitoring to promote health-enhancing physical activity (HEPA). A cross-sectional assessment of employees evaluated dietary patterns, sleep quality, and clinical markers, including fasting glucose and lipid profiles. Findings revealed that a significant portion of participants had pre-existing health conditions and specific dietary risks related to ultra-processed food intake. Statistically significant positive correlations were identified between body composition markers and glycaemic and lipid regulation. To address these risks, the "5 Daily Resets" tool was implemented, translating molecular evidence into behavioural prompts to reduce postprandial glycaemia through frequent standing breaks. The Bem Viver Programme demonstrates that telomere biology provides a robust framework for communicating HEPA benefits. Linking molecular science with clinical indicators and nutritional baseline data enhances institutional behaviour change strategies, offering a scalable model for non-communicable disease prevention in occupational settings.

Funding: CNPq-Universal_406583/2023-4

Keywords: telomere length, workplace health promotion, sedentary behaviour, glycaemic regulation, lifestyle medicine

Bioclimatic architecture and institutional sustainability as health promoters: An ecosystemic approach to urban agriculture, nutrition, and gamification

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ABSTRACT

Built environments and institutional sustainability significantly shape health behaviours. This study describes how Fiocruz Ceará's bioclimatic campus serves as a living laboratory for the Bem Viver Programme, integrating environmental wellness with innovative education and digital health strategies. We analysed the impact of bioclimatic design, organic waste composting, urban horticulture, and "Whole-Vegetable" nutrition strategies. Furthermore, gamified board games and the efficacy of digital versus traditional communication channels were evaluated. Composting and agroecological fairs successfully improved access to fresh, sustainable foods within the workplace environment. Bioclimatic strategies enhanced occupational comfort and contact with nature, while "Whole-Vegetable" educational materials promoted the use of bioactive compounds for disease prevention. Digital channels demonstrated stronger associations with dietary behaviour change than traditional methods. Finally, integrated models of green spaces and digital navigation in healthcare settings further illustrated the potential to reduce anxiety and address patient vulnerabilities. Institutional sustainability and bioclimatic design function as powerful HEPA promoters. Linking architectural wellness with sustainable food practices and digital engagement fosters resilient workplace communities and supports scalable, patient-centered public health models.

Keywords: bioclimatic architecture, institutional sustainability, sustainable nutrition, gamification, workplace wellness

Topic: HEPA Injury prevention

Injury as a barrier to organised sport and physical activity participation among physically inactive women: characteristics, impacts and associations

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ABSTRACT

In Australia, injury is one of the main barriers to women's participation in organised sport and physical activity, yet its role among physically inactive women remains poorly understood. This study aimed to describe the demographic characteristics of women reporting injury as a barrier, identify affected body regions and participation impacts, and examine associations with injury-affected status. A cross-sectional online survey was completed by women aged≥18 years who participated in social sport programs in Victoria, Australia. Data included demographic, physical activity and injury-related measures. Analyses included physically inactive women who undertook ≤150 minutes of physical activity per-week and had complete injury-status data. Descriptive statistics characterised participants; logistic regression examined associations with injury-affected status. Of 1,339 physically inactive women (82.7% of respondents), 279 (20.8%) were injury-affected. The knee (39.0%), lower back (29.9%), and ankle (24.7%) were the most common injury sites. Univariate associations were observed for geographical location, education, income, parental status, and regular physical activity confidence; in the multivariate model, only lower income and lower confidence remained associated with higher odds of injury-affected status (OR=1.84–3.28, $p<0.05$). Injury/pain was reported as a barrier by one in five physically inactive women participating in social sport, with socioeconomic disadvantage and low physical activity confidence associated with injury-affected status. Health-enhancing physical activity initiatives should incorporate tailored, gender-responsive injury prevention and management strategies that address structural inequities and build confidence for sustained participation.

Support/Funding Source: VicHealth and participating VicHealth-funded sport organisations.

Keywords: female, injury prevention, risk factor, health behaviour, recreation

Effects of exercise-induced fatigue on inter-limb jumping asymmetry

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ABSTRACT

This study investigated changes in functional inter-limb asymmetry magnitude over 72 hours in adolescents following a muscle fatigue–inducing protocol. Asymmetry magnitude in single-leg 10-s hop jumps (SL10J), single-leg countermovement jumps (SLCMJ), and single-leg horizontal jumps (SLHJ) was assessed at baseline, immediately post-fatigue protocol, and 24, 48, and 72 hours post-protocol in 7 female and 16 male adolescents aged 12–18 years. Segmental phase angle and ECW/TBW ratios derived from bioelectrical impedance analysis (BIA) were used as indicators of muscle damage, while muscle soreness was evaluated using a Visual Analog Scale (VAS). SL10J asymmetry magnitude significantly increased at 48 hours post-exercise ($p < 0.001$), with no significant changes at other time points. SLCMJ and SLHJ asymmetry remained stable throughout testing ($p = 0.468–0.714$). BIA markers showed no significant evidence of muscle damage, although VAS scores indicated a significant rise in muscle soreness peaking at 48 hours ($p < 0.05$). Kappa coefficients revealed slight to moderate task-specific agreement ($\kappa = −0.123–0.493$) and slight to substantial time-specific agreement ($\kappa = −0.137– 0.732$), with the greatest consistency observed between 24 and 48 hours for both SLCMJ and SL10J. Asymmetry magnitude increased significantly only for the SL10J at 48 h post-exercise, suggesting an asymmetrical recovery from exercise-induced fatigue between limbs and resulting in temporary shifts in inter-limb asymmetry. Since asymmetries may affect sport performance and injury risk, a task- and time-specific monitoring approach that accounts for athletes' fatigue levels is recommended when assessing (recreational) athletes.

Keywords: muscle damage, DOMS, visual analogue scale, jump tests, functional asymmetry

Topic: HEPA promotion in health care settings

'Will I, won't I?' What influences the decision to take up a community-based exercise programme for chronic disease

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ABSTRACT

Community-based physical activity referral schemes can support people living with non-communicable diseases (NCDs), yet uptake and attendance remain variable. While individual-level factors are often emphasised, less is known about how implementation contexts shape these behaviours. This qualitative study explored factors influencing uptake and attendance within ULMedEx , a 12-week community-based exercise programme for adults living with NCDs. Thirty-four participants (cardiovascular disease (n=14); type 2 diabetes (n=9); respiratory conditions (n=11)) took part in 10 small group interviews and eight individual interviews (mean=59 minutes). Data were analysed using reflexive thematic analysis, with inductive theme development followed by deductive mapping to COM-B within the Behaviour Change Wheel. Eight themes described factors shaping uptake and attendance. Uptake was influenced by (1)quality and consistency of information at diagnosis or referral, (2)referral as endorsement, where trusted healthcare professionals legitimised participation as safe and appropriate and (3)system continuity, with timely follow-up contact, coordinated transitions from hospital rehabilitation, and proactive outreach. Attendance was supported by (4)structured delivery, including fixed session times, predictable class routines and assessment feedback, (5)a sense of belonging within a supportive environment, (6)material, economic and logistical feasibility, (7)instructor-led safety and trust through supervision and tailored guidance, and (8)participants own readiness to engage, shaped by recovery-related vulnerability and perceived choice. Opportunity-related influences were central to uptake and attendance, with motivation typically reinforced after engaging with the programme rather than preceding it. Implementation strategies embedding safety, legitimacy, routine and social support may be more effective than approaches focused primarily on individual behaviour change.

Keywords: chronic disease, physical activity, qualitative research, referral

Engaging in physical activity during stress-related exhaustion: experiences to inform rehabilitation

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ABSTRACT

Prolonged psychosocial stress is associated with mental ill health and functional impairment and is accompanied by lower levels of physical activity. Individuals with stress-related exhaustion often experience difficulties engaging in everyday activities during recovery, although physical activity is commonly recommended in rehabilitation. Empirical knowledge is limited regarding factors influencing engagement and how activity is managed in the context of symptoms and recovery. Understanding these experiences is therefore important for informing rehabilitation and clinical recommendations. This study aimed to explore experiences and perceptions of physical activity among individuals with stress-related exhaustion, including factors influencing engagement and how these are managed during recovery. In this qualitative study, 12 adults with stress-related exhaustion (9 women, 3 men) participated in individual semi-structured online interviews. Participants were recruited through social media and a university webpage. Interviews explored experiences of engaging in physical activity, perceived barriers and facilitators, and strategies used during recovery. Interviews were audio-recorded and transcribed. Data is analyzed using thematic analysis. Interviews have been completed, and analysis is ongoing. Results will be presented at the conference, highlighting implications for rehabilitation practice, particularly regarding how individuals manage physical activity in the context of symptoms and recovery, and how these insights informed the development of a cognitive-behavioral therapy (CBT)-based physical activity intervention integrated into treatment as usual. The findings are expected to contribute to knowledge about factors influencing engagement in physical activity during recovery from stress-related exhaustion, thereby supporting the development of tailored interventions and clinical decision-making.

Keywords: physical activity, exhaustion disorder, rehabilitation, barriers and facilitators, qualitative research

A primary care model for obesity management: lessons from Oman

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ABSTRACT

Obesity is a major public health challenge in Oman and a leading contributor to noncommunicable diseases, including type 2 diabetes, hypertension, and cardiovascular disease. The Omani National Noncommunicable Disease Survey (2017) reported that 66% of adults are overweight or obese, highlighting a substantial burden on the health system. Despite this, structured obesity management in primary care remains limited, and obesity is often not treated as a chronic condition. Primary care–based obesity clinics offer an effective platform for early intervention, continuity of care, and patient-centered management. In July 2023, a multidisciplinary obesity clinic was established at Bidbid Health Centre to provide care focusing on lifestyle modification, education, motivation, and follow-up. Adult patients aged ≥18 years enrolled from July 2023 onward were included. All underwent assessment including history, physical examination, laboratory tests, and body composition analysis. Management followed a multidisciplinary approach emphasizing lifestyle modification, with anti-obesity medications used in selected cases. Follow-up visits occurred every two months. Outcomes included weight change and metabolic improvement over 6–12 months. A total of 170 patients were registered. Fifty patients achieved weight loss of 3–15 kg, with only three requiring medications. Three patients with type 2 diabetes lost over 15 kg and discontinued insulin therapy. One hypertensive patient lost over 10 kg and stopped antihypertensive medication. Five patients with prediabetes or prehypertension achieved normalized metabolic parameters. A structured, multidisciplinary obesity clinic in primary care can achieve meaningful weight loss and metabolic improvement, demonstrating its potential to reduce obesity-related morbidity.

Keywords: obesity, primary care, multidisciplinary clinic, lifestyle modification

Stakeholder engagement in nature-based interventions to promote health-enhancing physical activity in healthcare

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ABSTRACT

Nature-based interventions (NBIs) contribute to the prevention of non-communicable diseases and support health-enhancing physical activity (HEPA). While NBIs are increasingly integrated into healthcare systems, stakeholder engagement and role remain underrepresented. This scoping review aimed to map and synthesise evidence on stakeholder involvement in the development and implementation of nature-based interventions within healthcare contexts. A six-stage scoping review framework was applied in accordance with PRISMA-ScR guidelines. Searches were conducted in MEDLINE (ProQuest), Nursing & Allied Health Database (EBSCO), Scopus, and Web of Science. Inclusion criteria addressed stakeholders (Population), nature-based interventions (Concept), and healthcare settings (Context). The final stage included semi-structured interviews with healthcare professionals (N = 6). Data were analysed using thematic analysis. From 2,152 screened records and 109 full texts, 28 studies were included. Identified stakeholders comprised healthcare professionals, link workers, community organisations, environmental practitioners, policymakers, researchers, and service users. Engagement across development and implementation stages enhanced accessibility to green spaces, contextual adaptation of HEPA programmes, and cross-sector coordination. Barriers included fragmented governance, limited funding, unequal access to green spaces, and insufficient integration of 24-hour movement behaviour principles. Effective stakeholder engagement is essential for integrating NBIs into healthcare to promote HEPA and address non-communicable diseases. Cross-sector collaboration, equitable access to green spaces, and sustainable governance structures are critical for embedding nature-based HEPA strategies within 24-hour movement frameworks and urban health policies.

Keywords: health-enhancing physical activity, nature-based interventions, green spaces, stakeholder engagement, healthcare systems

Maintaining physical activity after stroke: navigating the transition from rehabilitation to everyday life

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ABSTRACT

Maintaining physical activity (PA) after stroke remains challenging, particularly during the transition from structured rehabilitation to the home environment. While previous studies have identified barriers and facilitators, less is known about how PA is maintained or disrupted over time in everyday life. This study explored how people with stroke and healthcare professionals experience maintaining PA after discharge from rehabilitation. A qualitative interview study was conducted in the Netherlands. Semi-structured interviews were held with 15 people with stroke living at home and 14 healthcare professionals involved in post-stroke care. Interviews explored experiences of maintaining PA during the transition from rehabilitation to home. Data were analysed using reflexive thematic analysis in collaboration with individuals with lived experience of stroke. Four interrelated themes described how PA maintenance unfolded after stroke. Participants identified the transition from rehabilitation to home as a critical period marked by the loss of externally provided structure and the need to reorganise activity within everyday life. Maintenance was shaped by daily structure, energy management, social and environmental contexts and negotiation of physical limits and capabilities. Across themes, maintaining PA emerged as a dynamic process characterised by periods of disruption, adaptation and re-engagement. Supporting PA after stroke requires attention to daily structure, social embedding and continuity of care beyond discharge. These findings highlight the importance of system-oriented and person-centred strategies to support long-term health-enhancing PA after stroke.

Funding Source: Part of a PhD project funded by the Dutch Research Council (NWO).

Keywords: stroke, physical activity maintenance, qualitative research, health-enhancing physical activity, citizen science

The future of "dangerous sports" in Slovenian compulsory health insurance

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ABSTRACT

This paper examines the normative challenges posed by participation in high-risk sports within the framework of social (health) insurance systems. It draws on a recent amendment to the Slovenian compulsory health insurance legislation that sought to limit, or even exclude, coverage of health care costs arising from participation in "high-risk leisure activities". Although the proposal was ultimately withdrawn, it triggered an important debate about the boundaries of solidarity and individual responsibility within publicly funded health insurance. The contribution explores the underlying tension between the solidarity principle, which underpins compulsory health insurance, and the idea that individuals who voluntarily assume heightened risks should bear greater financial responsibility for the consequences. While social insurance traditionally operates on collective risk-sharing and universal coverage, the increasing prevalence of high-risk activities such as mountaineering, mountain or road biking, for example, challenges established assumptions about equal access to benefits irrespective of personal choices. The analysis situates the Slovenian proposal within a broader constitutional and theoretical framework, addressing principles such as equality before the law, proportionality, private autonomy, and the social state principle. Particular attention is paid to the conceptual distinction between socially acceptable and socially excessive risk. By critically assessing the withdrawn legislative initiative, the paper argues that restricting coverage raises complex constitutional and systemic concerns. Any attempt to recalibrate solidarity in compulsory health insurance must be carefully justified, proportionate, and consistent with the foundational commitment of social security systems to universality and equal treatment, as well as the idea of promoting, not limiting, personal freedoms.

Keywords: compulsory health insurance, health care, sports, dangerous sports, Slovenia

Associations of device-assessed physical activity and sedentary behaviour with mental health and quality of life in a rare genetic metabolic condition, Fabry disease

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ABSTRACT

Fabry disease is an inherited metabolic disorder affecting breakdown of glycolipids in cell lysosomes leading to multi-organ disease, particularly the brain, heart and kidneys. This study evaluated associations of physical activity and sedentary behaviour with mental health and quality of life (QoL) in adults with Fabry disease. Cross-sectional design study with N=94 adults with Fabry disease. Sitting, standing and stepping were measured using the activPAL4™. Outcomes were the Hospital Anxiety and Depression Scale and the EuroQol five-dimension questionnaire. Analysis was correlations and multiple linear regression. Time in stepping bouts >10 minutes was correlated with anxiety (r = −0.185). Daily stepping time (r = −0.216), daily steps (r = −0.224) and time in stepping bouts of >2, 5 and 10 minutes (r = −0.265, −0.293 and −0.220, respectively) were correlated with depression. Daily sitting time and prolonged sitting time were adversely correlated with QoL (r = −0.184 and r = −0.150, respectively); increased stepping time, number of steps, and time stepping in bouts of >2 and 5 minutes were correlated favourably (r = 0.337, 0.328, 0.219 and 0.211, respectively). Time in stepping bouts >5 minutes predicted lower depression (β = −0.269). Higher daily steps predicted improved QoL (β = 0.267). Increased stepping is beneficially associated with depression and QoL in adults with Fabry disease, whereas higher sitting time was associated with lower QoL. Stepping bouts lasting at least 2 to 10 minutes could be particularly important for optimal management.

Funding source: Society for Mucopolysaccharide Diseases (reference CSAC-BAI.BRU.202110).

Keywords: sitting, stepping, accelerometery, activPAL, anxiety, depression

Understanding 24 hour activity, sedentary time and sleep in young onset dementia to inform HEPA strategies in care settings

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ABSTRACT

Health care settings are pivotal to promote physical activity and wellbeing in people with young-onset dementia (YOD). Evidence describing 24-hour movement behaviours together with lived experiences in YOD remains limited. This was a convergent mixed-methods study in four care centres. Fifty-six adults with YOD wore wrist accelerometers to assess sedentary time, activity intensities, steps and sleep (efficiency, total sleep time, awakenings). Ten focus groups explored sleep, emotions, coping, daytime functioning and support needs within care environments. Participants (ages 53–73 years) showed high sedentary time and low moderate-to-vigorous physical activity (MVPA), with many accumulating far below 10,000 steps/day, reflecting markedly inactive 24-hour movement patterns. Sleep efficiency was generally high, yet several individuals experienced fragmented or short sleep, with long wake time after sleep onset (WASO) episodes influencing daytime energy. Qualitative findings revealed that these disrupted 24-hour rhythms often interacted with emotional states, where early awakenings, rumination, or noise sensitivity reinforced feelings of uncertainty, frustration or sadness. Conversely, moments of good sleep or movement were linked to more stable mood and engagement. Participants used music, light activity, routines, and social interaction to regulate emotions and compensate for fatigue. Health-care settings should address YOD-related inactivity and variable sleep–emotional patterns through personalised, low-threshold HEPA approaches that embed social–emotional support, music- and movement-based coping, and practical guidance on sleep and emotional self-management, fostering consistent engagement and wellbeing.

Keywords: young onset dementia, dementia, HEPA, sleep, psychosocial care

Current practice of physical activity counselling within physiotherapy usual care in ireland: a cross-sectional survey

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ABSTRACT

Physical Activity (PA) counselling during healthcare interactions has been identified as a potentially effective strategy in improving patient PA levels. Physiotherapists have expertise in PA, but little is known about how PA is currently promoted in physiotherapy practice in Ireland and factors that influence it. This survey aimed to investigate physiotherapy practice, knowledge, training and understanding of PA interventions during healthcare interactions, and the role of social prescribing. An online survey link (hosted on REDcap) was distributed via the Irish Society of Chartered Physiotherapists and completed by physiotherapists working in any setting in the Republic of Ireland. 248 respondents took part, with 153 responses deemed eligible (76% female, 49% >20 years experience). 98% of physiotherapists raised/discussed PA frequently or often, 32% rarely assessed PA using an activity log and only 16% of physiotherapists frequently refer patients to community-based exercise programmes. Furthermore, only 41% felt patients were ready for community referral. Awareness around social prescribing was limited; 44% were aware of the Health Service Executive Social Prescribing framework and regarded as a high priority by only 16% of respondents. Despite the finding that PA is discussed in most interactions with patients, there was limited awareness of PA interventions available in the community and how to transition patients into the community. However, perception of physiotherapists' role in promoting PA and the benefit of PA counselling was encouraging. Results can inform future studies aimed at PA promotion in healthcare settings and maximise potential frameworks for implementation success.

Keywords: physical activity counselling, physiotherapy, survey, Ireland

Physical activity for mental health

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ABSTRACT

Psychosocial disorders have shown increasing prevalence across the population in recent years. The project aims to deepen the understanding of the mental-health benefits of physical activity, highlighting the contextual factors of physical activity — such as the characteristics of physical activity, the importance of individual factors and psychosocial environment — and compile research-based knowledge into a new material for health and physical activity practitioners. The project also aims to strengthen the competencies of physical activity counsellors in promoting physical activity from a mental-health perspective, especially among those who have psychosocial functional limitations. The project includes 1) a review of reviews synthesizing the evidence on the contextual factors of physical activity and mental health, 2) a Delphi-survey among national experts and practitioners to gather broader perspectives of promoting and treating mental health with physical activity, and 3) developing a model and educational material for physical activity counsellors to facilitate its implementation, application and dissemination in practice. The evaluation will be based on the feedback from physical activity counsellors and their clients. The project will produce a review and practical model of physical activity and mental health, and result in educational material for health and physical activity practitioners that emphasize the contextual factors of physical activity for supporting mental health. The project will provide deeper understanding of the contextual and personal factors that shape the association of physical activity and mental health. The project will develop practices for promoting physical activity and mental health, especially among people with psychosocial limitations.

Keywords: physical activity, mental health, psychosocial environment, personal factor, psychosocial functional limitations

Physical activity for mental health: Delphi-survey for national researchers and experts

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ABSTRACT

As a part of the Physical activity for Mental Health -project this study aimed to explore the opinions of experts and researchers on the content and scope of the physical activity (PA) to promote mental health. Further aim was to synthesize and integrate opinions into mental-health–supportive principles in PA practices. A Delphi survey with two rounds was used to study opinions of national experts and researchers of the field. Participants were chosen based on their expertise and experience regarding enhancing or treating mental health through PA. On the first round the respondents (N=31) received open-ended questions on the aspects of PA for promoting and treating mental health. The responses (n=14) were synthesized and based on them the second round was provided with semi-structured questions. After the second round the final consensus was summarized. The project resulted in deeper consensus and understanding of the topic giving expert views regarding the contextual factors between PA and mental health. The results of the Delphi survey will be utilized in the promotion and treatment of mental health through PA, and in the development of educational material for health and PA practitioners. The Delphi study provided deeper understanding of the opinions of experts and researchers of the relationship between PA and mental health. The results of the study focused on contextual aspects and psychosocial factors that affect the relationship between mental health and physical activity. Study will facilitate future education and practices of PA counsellors and health professionals.

Keywords: physical activity, mental health, promotion, psychosocial context, Delphi method

Physical activity prescription pilot project in Luxembourg: preliminary results

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ABSTRACT

Physical activity (PA) benefits patients with chronic diseases but remains insufficiently practiced, highlighting the need for structured support. To address this, a one-year pilot PA prescription program was launched in Luxembourg in mid-January 2026, coordinated by stakeholders from the medical and PA sectors and policymakers. The pilot targeted adults with stabilized cardiovascular disease, cancer, or type 2 diabetes who had insufficient PA levels or after phase II rehabilitation. Patients received a PA prescription from trained physicians and were referred to an umbrella federation for orientation toward PA classes delivered by affiliated associations. Financial incentives were provided to physicians and patients. Evaluation included the number of prescriptions issued, received, and used, and feedback from patients, physicians, and PA coaches. By early March 2026, 73 physicians had been trained; 66% registered on the e-platform for prescriptions and 18% issued prescriptions, totalling 25. Among prescribed patients, 72% contacted the umbrella federation and 28% enrolled in PA classes. Participants were mainly aged 50–70 years and predominantly had cardiovascular conditions (57%). Additionally, 11% declined due to schedule constraints or preference for autonomous practice, and 22% reported digital difficulties. Among surveyed physicians (n=55), lack of time outside clinical duties was the main barrier (53%), along with connection issues to the e-platform. These preliminary findings suggest that a structured PA prescription pathway is feasible. Challenges remain, including physician engagement, administrative complexity, digital literacy barriers, and aligning PA offers with patient preferences. Ongoing data will assess adherence and outcomes to inform scaling.

Keywords: referral, chronic disease management, patient adherence, digital health tools, health promotion

Lifestyle, culture, and cardiovascular prevention: South Asian women's perspectives on a Mediterranean lifestyle approach

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ABSTRACT

Cardiovascular disease (CVD) remains a leading cause of mortality globally and in Canada. South Asian (SA) immigrant women experience disproportionately high CVD risk due to biological predispositions, reproductive health factors, and sociocultural constraints shaping lifestyle practices. Despite strong evidence supporting lifestyle-based prevention, culturally tailored interventions for this population remain limited. The Mediterranean lifestyle (MEDLIFE) has demonstrated cardioprotective benefits. However, its acceptability within immigrant cultural contexts requires further exploration. This study examines the acceptability of a culturally tailored MEDLIFE among SA immigrant women in Canada and explores how health beliefs influence adoption of health-enhancing behaviors. This qualitative study is part of a larger convergent mixed-methods doctoral project. Semi-structured interviews are conducted with SA immigrant women aged 18 years and older. The interview guide is informed by the Theoretical Framework of Acceptability and the Health Belief Model to explore perceptions of cardiovascular risk, beliefs about lifestyle modification, and perceived barriers and facilitators to adopting MEDLIFE components, including physical activity. Interviews are audio-recorded, transcribed verbatim, and analyzed using reflexive thematic analysis. The analysis identifies themes related to perceptions of cardiovascular risk, cultural understandings of healthy lifestyles, and the social contexts shaping engagement in health-enhancing behaviors. Findings highlight key facilitators and barriers influencing the integration of MEDLIFE practices in daily life. Understanding cultural and social influences on lifestyle adoption can inform the design of culturally responsive health promotion strategies that support sustainable engagement in health-enhancing physical activity and cardiovascular disease prevention.

Support / Funding Source: Canada First Research Excellence Fund.

Keywords: Mediterranean lifestyle, cardiovascular disease prevention, South Asian immigrant women, health beliefs, physical activity

Implementation determinants and strategies for community-based physical activity services for cancer survivors in Ireland: a multi-stakeholder qualitative study

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ABSTRACT

Regular physical activity (PA) improves quality of life for people living with cancer. However, survivors struggle to engage in sufficient PA, highlighting the need for accessible community-based health-enhancing physical activity (HEPA) support. Community cancer support centres represent promising settings for delivering such services, yet implementing programmes in real-world contexts remains a challenge. This study aims to identify context-specific determinants and feasible implementation strategies for community-based PA services for people living with and beyond cancer in Ireland. This formative qualitative study included semi-structured focus groups with cancer support centre staff (service providers) and people living with and beyond cancer (service users), alongside an interview with a national-level decision maker. Consultations were audio-recorded and transcribed verbatim. Analysis combined deductive coding using constructs from the Consolidated Framework for Implementation Research (CFIR) Addendum with inductive thematic analysis. Determinants were mapped to implementation strategies from the Expert Recommendations for Implementing Change (ERIC) taxonomy using the CFIR-ERIC Matching Tool. Determinants were identified across all five CFIR domains. Key barriers included a cultural 'mind yourself' attitude discouraging PA, inconsistent referral pathways, and lack of specialised staff in centres. Facilitators included strong deliverer commitment to improving current services, high survivor demand, and existing funding. Relevant ERIC strategies included educational outreach, inter-organisational alliance building, promoting adaptability, and accessing new funding. By integrating stakeholder perspectives with theory-informed analysis, this study identifies specific implementation strategies that will increase the uptake of HEPA interventions supporting PA participation among cancer survivors within their local environments.

Funding source: Research Ireland

Keywords: implementation, community-based, formative research, cancer survivors, physical activity

Effects of a remote multicomponent exercise intervention on physical function, well-being and quality of life in adults living with multiple myeloma

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ABSTRACT

Adults living with Multiple Myeloma experience reduced physical function, emotional well-being, and quality of life. Remote exercise programmes may increase accessibility and continuity of care for clinically vulnerable individuals. This study examined the preliminary effects of a six-week remotely supervised multicomponent exercise programme on physical function, well-being, and quality of life in adults with Multiple Myeloma. Twenty-six adults (21 females; 42–70 years), including 16 post-transplant participants and all undergoing chemo- or immunotherapy, completed one remotely supervised session per week for six weeks. Assessments included One Leg Stance, Timed Up and Go, 30-Second Sit-to-Stand, Ruffier–Dickson, and resting blood pressure. Well-being and quality of life were evaluated using the FACT-MM and EORTC QLQ-C30 questionnaires. Independent and paired t-tests and groups-by-time interactions assessed associations and pre- and post-changes. Despite the short 6-week intervention, both exercise groups (exercise-only and exercise + psychology) demonstrated improvements in functional fitness and health-related quality of life. Balance increased in both groups, lower-limb strength improved particularly in the exercise-only group, and Timed Up and Go performance improved in the exercise + psychology group. Quality-of-life scores (FACT-MM and EORTC QLQ-C30) also improved, with reductions in fatigue and modest gains in emotional and cognitive functioning, although changes were not statistically significant. This remote, low-dose exercise programme improved functional fitness response, emotional well-being, and overall quality of life, suggesting that remote exercise delivery can contribute to more accessible and equitable physical activity promotion within oncology rehabilitation and public-health practice.

Support/Funding Source: CIAFEL: UID/00617/2025, ITR: LA/P/0064/2020, Mieloma Patients Europe.

Keywords: remote exercise intervention, cancer rehabilitation, supportive care, physical function, multiple myeloma

Nature as a low-cost health intervention: green environments and movement behaviors in resource-limited urban settings- a narrative review

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ABSTRACT

To generate a Narrative review of evidence for green space as low-cost interventions at the population level for health enhancing physical activity (HEPA) in low-resourced urban environments, with consideration for the health equity effects and implementation for poor populations. A narrative review was conducted using PubMed, Scopus, and Web of Science (2000–2025). Of 4,156 records identified, 2,847 remained after duplicate removal. Following abstract screening, 198 full-text articles were assessed, and 92 studies met inclusion criteria related to physical activity outcomes, psychosocial health indicators, implementation strategies, and equity outcomes of green infrastructure interventions. In the included research, better access to urban green areas was consistently linked to increased levels of physical activity and enhanced psychosocial well-being. In lower-income communities, park rehabilitation and accessibility improvements were linked to estimated increases in community-based physical activity between 18% and 35%, as well as decreases in reported stress and higher community participation. Positive benefits varied by sex and socioeconomic position, and females and youngsters from extremely deprived households showed less improvement. Similarly, when green spaces were accessible and safe, more women and members of underrepresented ethnic groups participated in nature-based physical exercise. Increased implementation and better health equity results were observed for interventions employing participatory planning, community participation and cross-sector collaboration among urban planning, transportation and public health sectors. Strategic investment in green infrastructure can promote HEPA in low-resource urban settings, but requires political commitment and community engagement.

Keywords: green space, physical activity, health inequities, urban, movement behaviour

Cultural adaptation and linguistic validation of the cancer awareness measure for individuals with intellectual disabilities to assess cancer knowledge and help-seeking barriers in the Hungarians

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ABSTRACT

Cancer awareness is critical for early detection, yet individuals with intellectual disabilities (ID) often face barriers to health information. This study aimed to adapt and validate the Cancer Awareness Measure (CAM) for adults with ID in Hungary and assess their cancer literacy. A cross-sectional study was conducted with 232 adults (mild-to-moderate ID) in community and residential settings. The CAM was cognitively simplified and translated into Hungarian. Psychometric evaluation included Cronbach's alpha for internal consistency, content validity indices (CVI), and pilot testing for face validity. Associations between awareness and demographics were analyzed using t-tests and ANOVA. The adapted CAM demonstrated strong internal consistency ($\alpha = 0.714–0.842$) and excellent content validity (S-CVI/Ave = 0.96). Mean scores were 5.47/9 for Warning Signs, 36.41/55 for Risk Factors, 3.79/7 for Prevention, and 27.88/33 for Barriers. Participants living with families showed higher knowledge of warning signs ($p = 0.022$), while those in residential care reported higher perceived barriers ($p = 0.004$). Higher awareness was associated with family history of cancer, previous screening participation, older age (≥65), vocational education, and full-time employment. No significant sex differences were found. The adapted CAM is a reliable, valid tool for assessing cancer awareness in the Hungarian ID population. The results highlight significant contextual and demographic disparities, emphasizing the necessity for tailored, inclusive health education and enhanced caregiver support to bridge the gap in early detection and prevention.

Keywords: cancer awareness, intellectual disabilities, psychometric validation, Hungary, screening participation

Functional exercise programme for anxiety and mental health in a community rehabilitation service: feasibility in real practice

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ABSTRACT

This project aimed to implement and evaluate a multicomponent exercise programme addressing anxiety and physical fitness among users of a Community Rehabilitation Service (SRC) in Lleida. This initiative is innovative for integrating a structured functional training protocol within a multidisciplinary psychosocial rehabilitation setting in real practice, bridging the gap between clinical mental health care and health-enhancing physical activity. The project's development involved an interdisciplinary collaboration between exercise physiologists, psychologists, and occupational therapists to adapt functional training to the needs of mental health users. Implementation consisted of an eight-week moderate-intensity programme delivered to an experimental group (n = 9), while a control group (n = 9) received usual care. Evaluation compared both groups using a quasi-experimental design to measure changes in anxiety (GAD-7), fitness (Senior Fitness Test), and quality of life (EQ-5D-5L). Regarding dissemination, the protocol is being shared within the local health network. The intervention significantly reduced anxiety (p = 0.022) and improved physical fitness (strength, flexibility, and agility), while health perception (VAS) increased (61.11 to 66.68) in the exercise group. No significant changes occurred in the control group. Main facilitators were high user adherence and effective coordination. Barriers included initial staff training needs and clinical scheduling challenges. The programme proved feasible without adding significant burden to regular practice These findings imply that integrating structured exercise into community psychosocial rehabilitation is a viable strategy for health promotion. This supports interdisciplinary policies including physical activity as a core component of mental health recovery services.

Keywords: psychosocial rehabilitation, interdisciplinary approach, well-being, exercise, implementation

Frame running as a mode of active mobility in individuals with moderate to severe spastic cerebral palsy

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ABSTRACT

Individuals with spastic cerebral palsy (SCP), particularly those with moderate-to-severe mobility limitations (Gross Motor Function Classification System (GMFCS) III-IV), engage in low levels of physical activity (PA) and show a high level of sedentary behaviour, which is associated with an increased risk of developing non-communicable diseases. This study examined whether Frame Running (FR), an assistive self-propelled mobility modality, improves cardiorespiratory fitness in individuals with moderate to severe SCP. This longitudinal study included eleven individuals (4 females, 7 males) with moderate-to-severe SCP (GMFCS III-IV; age: 23 ± 4 years; body height: 155 ± 11 cm; body weight: 60 ± 16 kg). They underwent a 12-week control phase maintaining their usual routines, followed by a 12-week intervention phase with two 60-min FR sessions per week. Cardiorespiratory fitness (CRF) was assessed at baseline (T0) after the control phase (T1), and after the training phase (T2) by use of the 6-Minute Frame Running Test (6MFRT). Changes in performance (distance) and CRF over time were analysed using repeated-measures ANOVA and paired t-tests. From T1 to T2, significant increases ($p < 0.05$) were observed in the distance achieved in the 6MFRT (+50.7%), in velocity relative to oxygen uptake (v/VO2; +35.7%), and in mean heart rate (HRmean; +12 bpm). Peak oxygen uptake (VO2peak; +2.54 ml/min/kg) increased, but did not reach statistical significance. The findings suggest that a 12-week FR training improves functional performance and movement efficiency in individuals with moderate-to-severe SCP, which may contribute to the prevention of secondary health conditions.

Funding: FWF

Keywords: spastic cerebral palsy, frame running, cardiorespiratory fitness

The uses of artificial intelligence in dietetics: a systematic review

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ABSTRACT

Artificial Intelligence (AI) has advanced in many fields, including the nutritional sciences offering substantial potential to enhance professional efficiency. However, its integration is complicated by risks, such as the dissemination of erroneous information and complex ethical dilemmas. This systematic review critically evaluates current AI applications in dietetics, identifying their advantages, limitations, and ethical implications. It is hypothesised that, due to algorithmic biases and a lack of standardised ethical frameworks, human oversight remains essential to ensure patient safety. Adhering to the PRISMA framework, this review examined peer-reviewed original research published between 2020 and 2025. Non-peer-reviewed and grey literature were excluded to maintain rigorous evidentiary standards. Electronic searches were conducted via PubMed and Google Scholar, with Rayyan software utilised for screening and data extraction. From an initial 890 references, 214 underwent full-text screening, and 54 were selected for data extraction. AI was primarily utilised for dietary intake estimation, data-driven recommendations, and predictive disease analysis. Despite these advancements, significant challenges persist regarding the prevalence of unreliable online information, data scarcity, and the under-representation of diverse populations. The current findings provide the latest insights on the uses of AI in dietetics and may guide experts in this field to make the right choices when working in a clinical or community setting. While AI is a promising tool for augmenting the productivity of dietitians, human oversight is still needed.

Keywords: artificial intelligence, nutrition, health promotion, dietetics

Exploring the design and delivery of virtual physical activity counselling programmes: a scoping review

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ABSTRACT

Physical activity (PA) counselling can be an effective strategy to reduce inactivity. With the rapid expansion of telehealth, PA counselling is increasingly delivered virtually, offering useful benefits where access to in-person services may be limited, such as in Sub-Saharan Africa (SSA). Objectives: This scoping review explored key characteristics, integration pathways, delivery platforms, and theoretical underpinnings of virtual PA counselling programmes. Five databases and five journals were searched in April 2025 for primary studies reporting characteristics of virtual PA counselling. All study designs except reviews were included and no restrictions were placed on publication date or language. The review was conducted in accordance with the Joanna Briggs Institute methodology and reported following the PRISMA-ScR checklist. In total, 1,066 records were screened, 39 studies were included. Most studies were conducted in high-income countries (n=38), primarily involving clinical populations (n=30) or inactive adults (n=9), with the majority (n=25) published after 2020. Virtual PA counselling was commonly integrated into healthcare pathways via clinician referral (n=9), although several studies recruited participants through social media and physical advertisements (n=9). Telephone-based counselling was the most frequently used delivery platform (n=12), followed by Zoom (n=4). The most common theoretical frameworks and models used included the Social Cognitive Theory (n=7), and the Transtheoretical Model of Behaviour Change (n=3). This review identifies scalable, theory-informed models for delivering virtual physical activity counselling through healthcare and community settings. These insights can inform the design and implementation of accessible, theory-informed PA counselling programmes, particularly in SSA.

Keywords: telehealth, physical activity, counselling, Sub-Saharan Africa

Bridging the gap: mapping and co-designing a physical activity pathway for the transition from inpatient to community mental health care

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ABSTRACT

Transitions from inpatient to community mental health services are periods of acute vulnerability, marked by elevated risks, including of relapse and readmission. Although physical activity (PA) offers well-evidenced benefits for mental and physical health, provision of transitions-specific support remains fragmented and inconsistently embedded within discharge processes. This study aims to develop a codesigned PA support and referral pathway to enhance continuity of care, prevent deterioration, and reduce preventable readmissions. This mixed-methods study comprises two work packages (WPs). WP1 conducts a national mapping survey of UK NHS Mental Health Trusts and community organisations, complemented by semi-structured interviews with practitioners, commissioners and PA providers, and lived experience workshops exploring transition journeys. Survey data will be analysed descriptively, while qualitative data will be examined using thematic framework analyses to identify barriers, enablers and gaps in current provision. WP2 employs structured, participatory codesign across three workshops, drawing on realist principles and systems thinking to refine pathway priorities, specify core components and develop a theory of change. This is an intervention development study and empirical findings are forthcoming (summer 2026). However, early mapping is expected to reveal substantial variation and fragmentation in transition-related PA provision, alongside mixed experiences among staff and service users. Developmental outputs will include priority pathway components, contextual contingencies and preliminary change mechanisms. The project will deliver a prototype pathway suitable for refinement and feasibility testing. Anticipated implications include strengthened prevention-orientated practice, improved continuity of PA support following discharge, and actionable insights to inform scalable implementation.

Funding: NIHR-SPHR-PREV-RG2-Rigby.

Keywords: physical activity, mental health, co design, mixed methods, prevention

Determinants of macro- and microvascular function in physically active young adults: the role of blood pressure, sex, and aerobic capacity

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ABSTRACT

The aim of this study was to assess the influence of blood pressure, sex, and aerobic capacity on central and peripheral vascular function in healthy, active individuals. Fifty apparently healthy, physically active participants aged 18-30 years were included in the study. Aerobic capacity was measured using a cardiopulmonary exercise test, blood pressure (BP) indices were measured using an oscillometric method. Central and peripheral arterial stiffness was measured using carotid-femoral pulse wave velocity (cfPWV) and brachial-radial PWV (brPWV). Microvascular reactivity (reoxyslope) was measured using near-infrared spectroscopy during a 5-minute vascular occlusion test. Participants were stratified based on blood pressure categories for one-way analysis of variance. A multivariable linear regression was used to assess the effect of participant characteristics on vascular function. Significant differences in cfPWV were observed between participants with optimal BP compared to those with high-normal BP, while no differences were observed in brPWV or reoxyslope. Linear regression analysis revealed a significant independent effect of systolic BP on cfPWV ($R2adj = 0.35$, $p < 0.001$), sex and systolic BP on brPWV ($R2adj = 0.14$, $p = 0.03$) and a significant effect of sex on reoxyslope ($R2adj = 0.16$, $p = 0.043$). In healthy adults, elevated blood pressure is associated with increased central and peripheral arterial stiffness, despite sufficient physical activity level. Females seem to exhibit higher microvascular reactivity and lower peripheral arterial stiffness, indicating differential mechanisms underlying the regulation of peripheral and central vascular function. Aerobic capacity doesn't seem to influence any of the vascular function measures.

Keywords: vascular function, arterial stiffness, microvascular reactivity, blood pressure, physical activity

Physical activity and other lifestyle factors associated with migraine characteristics in adults

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ABSTRACT

Migraine is a common neurological condition that can affect daily life and well-being. Lifestyle factors such as physical activity, sleep, diet, and stress are increasingly discussed as possible contributors to the frequency and severity of migraine attacks. Understanding these relationships may help identify practical approaches for better migraine management. The aim of this study was to examine associations between migraine characteristics and selected lifestyle factors, particularly physical activity and dietary habits. A cross-sectional study was conducted among 300 adults recruited through an online migraine community. Participants completed a questionnaire addressing migraine history, frequency and duration of attacks, pain intensity, physical activity, sleep duration, perceived stress, and dietary habits. Data were analyzed using descriptive statistics and Pearson correlations. Most participants were female (88%), while 12% were male. Migraine had been diagnosed by a physician in 48% of participants, while 52% reported self-identified migraine. During the previous three months, 81.8% experienced at least one migraine episode. Pain intensity was high (mean 7.44 ± 1.72). Significant positive associations were observed between migraine pain intensity, migraine days and episode duration. Higher pain intensity was associated with higher stress levels and longer sleep duration. Participants with more migraine days also reported more frequent fast-food consumption. Higher physical activity was associated with more migraine days and longer sleep duration. These findings suggest that lifestyle factors may play an important role in the experience of migraine and highlight the potential role of physical activity and other modifiable behaviors in reducing migraine burden.

Keywords: migraine, physical activity, dietary habits, stress, sleep

Digital food environments and promotion of ultra-processed foods in food delivery platforms around a university campus in Northeast Brazil

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ABSTRACT

Environmental determinants of dietary behaviour are increasingly shaped by digital technologies. Food delivery platforms represent a rapidly expanding component of the contemporary food environment and may influence food choices through marketing strategies embedded within their digital interfaces. Understanding how these digital food environments operate is particularly relevant among young adults, who are frequent users of these platforms. This study aimed to explore the characteristics of the digital food environment surrounding a university campus located in a medium-sized city in Northeast Brazil.This descriptive observational study was conducted as part of a broader research project examining food environments in higher education institutions. Students accessed a widely used food delivery platform (iFood) using the university campus location as the reference address. The platform interface was analysed to identify restaurants delivering to the surrounding area, types of foods offered and marketing strategies displayed, including banners, price promotions, sponsored listings and discount campaigns.Most establishments available through the platform offered ultra-processed foods such as pizzas, sandwiches, fried snacks and fast-food meals. Promotional strategies including price discounts, free delivery offers, visual food imagery and sponsored advertisements were frequently observed. In contrast, healthier food options appeared considerably less visible within the platform interface.Food delivery platforms may contribute to digital food environments characterised by strong promotion of ultra-processed foods. Understanding how these environments operate may help inform public health strategies aimed at promoting healthier lifestyles and supporting health promotion initiatives among university populations.

Funding: Research developed with financial support from CNPq.

Keywords: digital food environment, food delivery platforms; ultra-processed foods, marketing strategies, university students

Green prescriptions for noncommunicable disease prevention: integrating urban nature into the 24-hour movement framework

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ABSTRACT

Green prescriptions, a clinician-approved recommendations for engagement in nature-based physical activity are increasingly recognised as a low-cost and promising strategy for the prevention of noncommunicable diseases (NCDs). This study synthesised existing evidence on green prescriptions and examined how urban green spaces can be operationalised within the 24-hour movement behaviour framework, encompassing physical activity, sedentary behaviour and sleep. The aim was to identify implementation pathways, health impacts and equity considerations relevant to primary healthcare and urban policy. The systematic scoping review following PRISMA-ScR guidelines. PubMed, Scopus, Web of Science, and Embase were searched for 2010–2025 papers on green prescriptions, nature-based physical activity, or clinically suggested outdoor activities for NCD prevention. Duplicates were removed, identifying 872 research. 28 experimental, observational, and implementation studies involving adult populations met the inclusion criteria after title and abstract screening of 66 full-text publications and were included in our studies. Green prescription strategies increased moderate physical activity and decreased inactive time in most studies. Several investigations also noted additional effects including greater sleep and mental health. Training clinicians, having standardized prescribing standards, and living near urban green places helped implement the strategy. Green prescriptions make an environmentally friendly and reasonable method for the prevention of non-communicable diseases. The incorporation of green prescriptions into the primary healthcare system, if supported by urban planning policies that would provide equitable access to green spaces, would be able to strengthen the implementation of the 24-hour movement behaviour framework and lead to healthier and more resilient communities.

Keywords: green prescriptions, noncommunicable disease prevention, urban green spaces, 24-hour movement behaviour, health policy

Using primary health care reform to advance active living in Tajikistan

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ABSTRACT

Tajikistan faces a high burden of noncommunicable diseases, while physical inactivity remains substantial, particularly among women and older adults. Although national policies recognize physical activity, implementation through primary health care (PHC) and community services remains limited. This abstract presents an emerging policy and practice approach to integrate health-enhancing physical activity into ongoing PHC transformation in Tajikistan, using the Sughd UHC pilot as an entry point and linking health services with green and public open spaces. This policy and practice abstract draws on national policy review, WHO country profiles, and ongoing reform implementation. It proposes a four-part model: brief physical activity counselling in PHC, nurse-led follow-up and community engagement, referral pathways to safe green and public spaces for walking and group activities, and integration into PHC centres of best practice and workforce development. Early experience from the Sughd pilot suggests that greater provider autonomy and pooled financing can create space for more prevention-oriented PHC. Important gaps remain, including limited routine physical activity counselling in primary care, absence of a national walking and cycling policy, and incomplete surveillance for some population groups. Planned next steps include embedding physical activity promotion into family medicine and nursing workflows, strengthening local intersectoral collaboration, and assessing feasibility, equity and scale-up potential. Advancing health-enhancing physical activity in Tajikistan requires integration into PHC reform rather than stand-alone sport or urban initiatives. Linking financing reform, workforce redesign and green spaces offers a practical model for strengthening NCD prevention in lower-resource settings.

Keywords: Tajikistan, primary health care, physical activity, green spaces, noncommunicable diseases

Physical activity policy in Flemish psychiatric hospitals and care homes: a qualitative study of implementation facilitators and barriers

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ABSTRACT

Physical activity benefits mental and physical health, yet its integration into psychiatric care remains limited. This study identifies key facilitators and barriers affecting physical activity policy implementation in Flemish Psychiatric Hospitals (PH) and Psychiatric Care Homes (PCH), and translates these into policy recommendations. A qualitative descriptive design was used. In-depth interviews were conducted with managers from 12 purposively selected PH and PCH in Flanders (Nov 2025–Jan 2026). Data were analyzed thematically using MAXQDA. Four themes emerged. Organizations apply a broad lifestyle-oriented vision of physical activity, but levels of formalization vary. Barriers occur at societal, staff, resource, network, organizational, governmental and patient levels. Facilitators at the same levels show opportunities that often counter these barriers. Good practices include varied activities, playful or competitive elements, individualized support, low-threshold access and voluntary participation. These insights informed recommendations for clearer guidelines, stronger financial support, enhanced collaboration, platforms for sharing good practices, attention to lifestyle factors and stigma reduction. Physical activity is acknowledged but unevenly implemented. Strengthened policy frameworks and multidisciplinary collaboration are needed to improve implementation.

Support/Funding Source: This study is part of a two-year project, Step by Step: for more physical activity in psychiatric care, funded by the King Baudouin Foundation, Mulders-Moonens Fund (024-J15812960-0022188).

Keywords: psychatric care, physical activity, policy, implementation, Flanders

Promoting mental health through physical activity by improving sleep: the French interministerial roadmap on sleep

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ABSTRACT

Sleep is a major determinant of mental health and psychological wellbeing. In France, nearly one in five people sleeps less than six hours per night, and 45% of the population reports experiencing at least one sleep disorder. Scientific evidence also shows that regular physical activity improves both the quality and regularity of sleep, which itself acts as a protective factor for mental health. France adopted an interministerial roadmap on sleep (2025–2026) aimed at strengthening the prevention of sleep disorders by addressing health behaviours, including physical activity. This abstract presents this public policy approach linking the promotion of physical activity, improved sleep, and mental health prevention. The roadmap was developed through a cross-governmental process involving the health, education, labor and research sectors. It promotes behaviors that support healthy sleep, including regular physical activity and reduced sedentary behavior. Prevention messages and initiatives disseminated by national health institutions emphasize that physical activity, together with nutrition and sleep, constitutes a key determinant of overall health. These principles are reflected in the communication strategies and recommendations of the French National Nutrition and Health Programme (PNNS) which encourages the adoption of active lifestyles. This approach contributes to better integrating the interactions between physical activity, sleep and mental health within prevention policies. Joint mobilization of actors from the health, education and prevention sectors helps promote behaviours that support healthier daily rhythms and psychological wellbeing. Monitoring mechanisms are planned to assess the implementation of the roadmap and its contribution to improving health behaviours.

Keywords: quality of sleep, healthy behaviours, promotion of active lifestyles, psychological well being

From initiation to long-term implementation: Evaluating the implementation status and factors influencing implementation of interventions promoting physical activity-related health competence in German nursing education

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ABSTRACT

In 2020, physical activity-related health competence (PAHCO) was integrated into the Bavarian nursing education curriculum, requiring practical implementation of this specific content. Within the TakeCare! project, a cluster-randomized controlled effectiveness-implementation study with three intervention groups and one control group was conducted at 16 nursing schools in Bavaria, Germany. This contribution examines implementation status and factors influencing implementation. The evaluation followed a mixed-methods design. Implementation status was assessed via questionnaires completed by school project coordinators and analysed descriptively (n=16). To explore influencing factors, semi-structed interviews were conducted with coordinators and were analysed using qualitative content analysis (n=16). All interventions were initiated at nursing schools of the three intervention groups. However, sustained implementation of specific components occurred mainly in two groups. Various influencing factors were identified at multiple levels: schools (e.g., resources, curricular integration), individuals (e.g., teachers' competencies, headmaster's attitude and actions), interventions (e.g., content and methods, organization), processes (e.g., communication, planning), and beyond schools (e.g., nursing education curriculum, networks and collaborations). In particular, implementation by teachers proved promising, regardless of whether the intervention was developed in a participatory manner or by researchers. Furthermore, sustainable implementation requires addressing multiple influencing factors. Based on these findings and effectiveness results, recommendations for statewide implementation will be developed, supporting school practitioners and policymakers to establish the promotion of competencies for physically active lifestyles among nursing students.

Support/Funding Source: The study is funded by the Bavarian State Ministry of Health, Care and Prevention and the German health insurance company KKH Kaufmännische Krankenkasse.

Keywords: nursing care, schools, implementation science

Short bursts of vigorous intensity physical activity may improve work ability among inactive population: pooled analysis of two cross-sectional studies in the Finnish working-aged adults

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ABSTRACT

Short bursts of vigorous intensity physical activity (VPA) in daily living may provide substantial health benefits for those not engaging in regular exercise. However, device-based short VPA bursts have not yet been investigated relative to the work ability. We examined how device-based short bursts of VPA associates with work ability in representative samples of Finnish population. We analyzed pooled data from two cross-sectional, population-based health examination surveys comprising adults aged 20–74 years: FinHealth 2017 (n=752) and Healthy Finland 2023 (n=749). Participants were categorized as inactive if, based on self-reported information, they engaged in at most only light-intensity leisure-time physical activity. Average daily frequency (bouts/day) of VPA bouts lasting up to one minute were measured using a wrist-worn accelerometer. Perceived work ability was assessed with questionnaire. Associations were examined with multivariable-adjusted logistic regression models. Of the study sample, 30% had limited work ability, with limited work ability being significantly higher in the inactive (42%) than the active (19%) population in their leisure-time. After adjusting for covariates, among the inactive, those in the highest third of short VPA bout frequency (≥13bouts/day) had lower odds for limited work ability compared to those not accumulating short bouts of VPA (OR=0.32; 95% CI 0.11-0.99). These findings underscore the importance of LTPA in work ability promotion. However, short bouts of VPA may represent an appropriate physical activity target, particularly for individuals who are unable or unwilling to engage in structured exercise in their leisure-time.

Keywords: population studies, physical activity, work ability, accelerometry

Associations between different intensities of leisure-time physical activity and subsequent psychotropic medication: a 3-year follow-up study

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ABSTRACT

Physical activity has been shown to reduce the risk of future psychotropic medication. However, previous studies have not examined the role physical activity intensity. Consequently, this study aimed to examine associations between different intensities of leisure-time physical activity (LTPA) and subsequent psychotropic medication purchases. The study was conducted on Helsinki Health Study (HHS) questionnaire data collected from 19–39-year-old employees of the City of Helsinki in 2017 and linked register data from 2014 to 2020 on psychotropic medication purchases (82.5% gave linkage permission). Those with ongoing psychotropic medication (n=334) were excluded. The final analytical sample consisted of 3766 participants (80.5% women). Weekly hours for light (LPA), moderate (MPA) and vigorous (VPA) LTPA were examined as separate variables. Mean follow-up time was 3.2 years. Cox's regression results are reported as hazard ratios (HR) for the first psychotropic medication purchase. Of the participants, 15.6% had a recorded psychotropic medication purchase during the follow-up. Similarly, 11.8% had purchases in the prior 3 years. Adjusting gender and age none of the intensities of LTPA were associated with future psychotropic medication. Further adjustment for prior psychotropic medication did not change the results (HR = 1.01, 95% CI, 0.99–1.02 for LPA; HR = 1.00, 95% CI, 0.97–1.03 for MPA; HR = 0.97, 95% CI, 0.93–1.01 for VPA). Regardless of intensity LTPA was not associated with future psychotropic medication purchases. More research is needed to clarify the role of specific intensities of LTPA.

Keywords: physical activity intensity, LTPA, MVPA, psychotropic medication, prospective cohort study

Transferability of interventions promoting physical activity-related health competence among nursing students: Evaluation of implementation and effectiveness

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ABSTRACT

Following the integration of physical activity-related health competence (PAHCO) into the Bavarian nursing education curriculum in 2020, the TakeCare! project investigated strategies promoting PAHCO in a cluster-randomized study involving 16 nursing schools allocated to three intervention groups (IG1-IG3) and a control group (CG). IG1 implemented participatorily-developed interventions. IG2 and IG3 implemented an expert-developed intervention, delivered by physical activity professionals (IG2) and teachers (IG3). The CG received no systematic intervention. This contribution examined transferability of implementation and effectiveness to subsequent student cohorts. Implementation was evaluated using a mixed-methods approach, collecting and analysing qualitative and quantitative data from school project coordinators (n=16). To investigate effectiveness, questionnaire-based data on students' PAHCO (n=315) were collected at the beginning and end of the training year and analysed using linear models (ANOVA). In the long term, IG1 schools implemented about half of the participatorily-developed components, where in IG2 and IG3, two schools each continued individual intervention content. The remaining IG3 schools further implemented single components, while the other schools in IG2 discontinued the intervention. At student level, no significant time-group interaction effect was found for PAHCO sub-competencies ($p>.05$). Especially in IG1 and IG2, parts of the interventions were continued, allowing subsequent cohorts to benefit. However, the interventions' effectiveness has not been demonstrated. The findings will inform Bavarian-wide implementation recommendations, supporting practitioners and policymakers in establishing the promotion of PAHCO.

Support/Funding Source: The Bavarian State Ministry of Health, Care and Prevention and the German health insurance company KKH Kaufmännische Krankenkasse provided funding.

Keywords: nursing care, schools, implementation science, mixed-methods

Physical activity participation and mental wellbeing among hospital nurses in Nigeria

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ABSTRACT

Healthcare professionals are exposed to demanding work conditions and occupational stress, which can have a negative effect on their mental wellbeing. The promotion of workplace physical activity for healthcare professionals in low- and middle-income countries is limited, highlighting the need for further research in this context. Promoting health-enhancing physical activity within the workplace of healthcare professionals can result in a positive impact on health outcomes. This study was conducted to measure the level of physical activity among hospital nurses, the association with their mental wellbeing, and the barriers to engaging in workplace physical activity. A quantitative cross-sectional study was conducted among 150 nurses working in tertiary hospitals in Nigeria. The research instrument used to collect data was a structured questionnaire that measured the level of physical activity, workplace support for physical activity, and the wellbeing of the nurses using a wellbeing scale. Approximately 26% of participants met the recommended level of physical activity. Nurses who engaged in moderate-to-vigorous physical activity reported significantly higher levels of mental wellbeing compared with those who were less physically active. The most commonly reported barriers to physical activity included long working hours, fatigue after work shifts, and limited access to exercise facilities within the workplace. Promotion of physical activity among healthcare work environments could help to improve the wellbeing of the staff. This could result in a healthy workforce.

Keywords: physical activity, workplace health promotion, nurses, mental wellbeing, occupational health

Early detection of functional musculoskeletal imbalance and stress resilience: A comprehensive screening within the Bem Viver workplace health programme

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ABSTRACT

Musculoskeletal disorders and psychological stress are primary drivers of work-related disability. This axis evaluates the integration of functional screening, circadian health, and stress resilience within the Bem Viver institutional framework at Fiocruz Ceará. Workers underwent muscle strength symmetry testing using handheld dynamometry. Additionally, participants were assessed for perceived stress and circadian synchronizers to identify behavioural determinants of biological clock regulation. Results identified clinically relevant strength asymmetry in a substantial proportion of participants, particularly in the lower limbs. Regarding psychosocial health, moderate levels of perceived stress and variability in coping capacity were observed among the group. Sleep quality analysis further revealed heterogeneous patterns and recurrent disturbances, including nocturnal awakenings. These functional and emotional imbalances are addressed through targeted physiotherapy and an educational framework focusing on the core synchronizers of the biological clock. The prevalence of functional asymmetry and stress variability underscores the need for integrated screening in occupational health. By combining objective physical metrics with psychosocial indicators, the Bem Viver Programme provides data-driven interventions to improve muscular balance, recovery, and overall worker resilience.

Keywords: functional screening, muscle strength, musculoskeletal diseases, perceived stress, occupational health

Leisure-time physical activity for socio-professional reintegration in swiss disability insurance: insights from an exploratory study

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ABSTRACT

This study examines the feasibility of integrating a Physical Activity (PA) intervention into Switzerland's Disability Insurance (DI), a compulsory social insurance aimed at rehabilitating individuals with chronic disabilities. Although PA is known to enhance health and support reintegration by mobilising preserved capacities, its role within SI systems remains underexplored. This exploratory case study investigates how PA could be implemented as an innovative reintegration measure for DI beneficiaries Switzerland. Semi-structured interviews were conducted with officials from the cantonal DI offices of Fribourg, Geneva and Vaud. The interview guide addressed participants' professional trajectories, beneficiary profiles, existing interventions, and legal and practical possibilities for introducing PA programmes. Special attention was paid to interviewees' conceptions, practices and attitudes toward PA. Interview transcripts were analysed through qualitative discourse analysis informed by categories derived from the Swiss DI Act. Findings indicate that the Swiss legal framework provides sufficient flexibility to incorporate PA as a socio-professional reintegration measure. Respondents highlighted the strong alignment between DI objectives and PA promotion. PA may be particularly suitable during the first year of DI support and for young adults. However, wider adoption of PA programs would require addressing professionals' attitudes and raising awareness of complementarities between DI goals and PA promotion. Socio-professional PA interventions could reach 200,000 Swiss DI beneficiaries. As vulnerable groups face elevated risks of multimorbidity, ensuring long-term access to low-cost intervention requires social welfare actors to recognise shared interests between social insurance and PA promotion and support their integration into DI practice.

Funding: UNIL

Keywords: physical activity promotion, socio-professional reintegration, disability insurance, social insurance policy, Switzerland

A qualitative study on user experiences of a consumer app promoting behaviour change among adults living in socially disadvantaged areas

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ABSTRACT

An app designed to support behaviour change, including enhanced physical activity, has been co-designed and evaluated in previous research projects. This study aimed to explore user experiences among adults living in socially disadvantaged areas. A qualitative study was conducted with users who were invited to use the app for three months. Interviews were carried out after one month. Recruitment occurred through social media advertisements. A total of 63 individuals were eligible and provided informed consent, of whom 59 activated the app. The first 30 of these participants were invited for interviews. Digital interviews were conducted with 15 informants, whereof 13 women, with a mean age of 54 (±11) years. Interviews lasted 17-39 minutes. were audio-recorded, transcribed verbatim and analysed using manifest content analysis. The analysis yielded three main categories: 1) Lifestyle support to suit all, 2) Experiences of Interaction and motivation, and 3) Experiences of interface usability. Overall, the app was appreciated for its multifaceted and interactive approach, its appealing design, and its inspirational and relevant content. However, navigation was perceived as challenging, and features such as activity registration and tracking were described as inflexible and therefore demotivating. The language used in the app was considered too academic for many users. The findings provide insights into users' experiences of the app's relevance and usability, though these experiences demonstrated considerable variability. Participants articulated several suggestions regarding how an app promoting healthy behaviours as physical activity, can be better tailored to the needs and preferences of this target group.

Keywords: behaviour change, experiences, mHealth, socially disadvantaged

Integrating movement, sleep and mental health: a mixed methods study among socially disadvantaged older adults in urban community settings

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ABSTRACT

Older adults in socially disadvantaged situations face multiple barriers to maintaining physical activity, sleep quality and mental wellbeing. This study aimed to investigate 24-hour movement behaviours, sleep patterns and mental health, and to identify multilevel motivators and barriers for health-enhancing physical activity. A mixed-methods design was applied. Quantitative self-report questionnaires assessed movement behaviour, sedentary time, sleep duration/efficiency and mental health indicators. A subsample of 39 participants additionally wore wrist accelerometers to objectively assess physical activity, sedentary behaviour and sleep. Qualitative data were gathered through nine focus groups in community centres, exploring motivations, barriers and programme needs. A total of 144 older adults (age 44–96 years; majority female; high proportion living alone) completed questionnaires. Participants reported low physical activity, high sedentary time (6–12 hrs/day) and frequent barriers including poor health, lack of motivation, financial constraints, and not knowing how or where to start. Sleep problems were highly prevalent, including sleep onset latency up to 120 min, nighttime awakenings, pain and temperature-related disturbances, and sleep efficiency often <80%. Mental health issues included low mood, reduced motivation, loneliness and difficulty performing daily tasks.Accelerometry data (n=39) confirmed very low moderate-to-vigorous physical activity, high sedentary time and fragmented sleep, aligning with self-reported patterns. Focus groups (n=54) revealed strong preferences for group-based, low-threshold, socially oriented activities and emphasized the importance of safety, accessibility and minimal digital demands. Interrelated challenges across movement, sleep and mental health highlight the need for socially responsive, group-based HEPA interventions tailored to disadvantaged older adults.

Keywords: movement behaviour, sleep, older adults, community, socially vulnerable

"You know they don't want you there": barriers and facilitators to physical activity and exercise among traveller and Roma communities in Ireland

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ABSTRACT

Objective: Addressing the health and wellbeing of ethnic minority groups in Ireland remains a policy priority. Traveller and Roma communities experience substantial health inequalities that limit opportunities for physical activity (PA) and exercise. This study examined key barriers and facilitators influencing PA and exercise engagement among Traveller and Roma individuals in Ireland. Design: A qualitative study using interviews and focus groups, guided by the COM-B model and the Theoretical Domains Framework (TDF). Participants reported multiple, interconnected barriers to PA and exercise. These included social influences (discrimination, lack of representation in PA settings); environmental context and resources (exclusion from or limited access to facilities, financial constraints, and competing life priorities); social/professional role and identity (cultural norms and gender roles); and knowledge (limited understanding of PA and exercise, low awareness of guidelines, and language or literacy barriers). Facilitators were identified and included environmental context and resources (affordable, locally accessible facilities and mobile or satellite services that reduced logistical barriers); social/professional role and identity (culturally sensitive and gender-specific activities); and knowledge (targeted health education initiatives and community-based workshops). Physical activity participation among Traveller and Roma communities is shaped by interacting individual, social, and structural factors. Barriers such as low health literacy, cultural norms, financial constraints, and experiences of exclusion persist, whilst facilitators including strong community bonds and culturally relevant provision present opportunities for intervention. Co-designed, culturally safe, peer-supported programmes, alongside targeted outreach and structural barrier reduction, are essential to promote sustained engagement and reduce health inequalities.

Keywords: traveller, Roma, physical activity, exercise, health inequities

Understanding physical inactivity by developing a policy informed perspective: An analysis of GAPPA and Wales

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ABSTRACT

The purpose of this research is to draw on a policy perspective to understand how systems thinking and specifically the Global Action Plan on Physical Activity (GAPPA) can be used in real world settings to tackle physical inactivity. Project Description: The WHO identifies that 27% of adults are not physically active and 80% of young people do not meet the required levels of physical activity with non- participation worse among certain populations. In Wales, inactivity follows this pattern, with too few adults physically active and children also at risk of not meeting the national targets. Evidence show this to be an increasingly intractable public policy issue which is often referred to as a 'wicked issue' in which 'hard to reach groups' including women and girls; people with disabilities; those living in poverty and ethnic minority communities record even lower activity levels. Research was undertaken in Wales over two phases between 2024 and 2025. It involved mixed methods research in a real-world setting. Findings are drawn from the quantitative and qualitative research and offer insights into understanding systems thinking from a policy perspective. Adopting a policy perspective to understand physical inactivity is seen as an opportunity. There is a need to navigate a complex policy landscape which examines both formal and informal analysis. There are synergies in adopting GAPPA as it helps shift the analysis away from a binary approach of either top-down or bottom-up policy analysis towards one which realises the connectedness of the system.

Keywords: physical activity, GAPPA, policy, policy implementation

Identification of sedentary or insufficiently active profiles in Belgium

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ABSTRACT

The Belgian national surveys (Food Consumption Survey and Health Interview Survey), which measure physical activity in the Belgian population, showed that part of the adult population failed to achieve the WHO guidelines for physical activity. Importantly, physical activity level remained largely stable over the last decade. Therefore, identifying different profiles is critical for policymakers, as it enables the targeting of high-risk groups and the development of evidence-based, context-specific interventions. The data from 2025 Health Interview Survey were analyzed using a Factor Analysis of Mixed Data and a Hierarchical Clustering on Principal Components model. The variables included in these analyses cover several complementary dimensions: physical activity, sedentary behavior, sociodemographic characteristics and health status. Five clusters were identified. Clusters 1 and 2 reflect high-risk profiles marked by overweight or obesity, multimorbidity, low physical activity, and prolonged sedentary time. Cluster 1 mainly includes urban women aged 55–74, while Cluster 2 consists mostly of men living in suburban or rural areas with limited screen time. Cluster 3 comprises young rural women with normal BMI and at least one chronic condition, low transport-related activity, and low sedentary time. Clusters 4 and 5 include individuals without chronic disease: older urban men (overweight, active, low sedentary time) and young suburban men (normal BMI, active, high sedentary time), respectively. This analysis enabled the identification of sedentary or insufficiently active profiles. Although no definitive recommendations can be made, preliminary proposals were developed and will need to be validated through further analyses and/or field-based studies.

Keywords: physical activity, sedentary time, targeted public health interventions, behavioral profiles, health inequalities

Park pharmacies: reimagining urban green spaces as integrated health delivery hubs for socially disadvantaged populations

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ABSTRACT

Urban green spaces improve cardiovascular health and mental well being, but benefits are unequally distributed. Socially disadvantaged groups face barriers including poor infrastructure, safety concerns, cultural barriers and structural inequalities. We propose 'Park Pharmacies"- reconceptualizing parks in underserved neighbourhoods as integrated health hubs combining health screening, community health workers and green social prescribing. The Park Pharmacy proposal was developed by systematically synthesizing evidence from PubMed and Google Scholar across three domains: health kiosk studies, green social prescribing research and community health worker frameworks. Initial search yielded 54 records; after screening, 6 studies met inclusion criteria. Under the proposed model, health ministries would fund community health workers, park departments would host infrastructure and insurers would reimburse services. Evaluation would assess health outcomes (blood pressure, BMI, mental health) and process measures (utilization rates, referral completion, SROI). A community-based screening study found 22% of kiosk users had possible hypertension, but reach among elderly and rural populations remain limited. Prescribing nature-based activities (walking groups, community gardening) improves mental health, neurological fatigue and chronic pain, delivering £2.42-11.94 social return per £1 invested. However, implementation relies on volunteers and lacks coordination. Vegetation quality (Leaf area index) predicts cardiovascular outcomes better than mere green space presence. This model addresses health equity by detecting undiagnosed conditions in hard-to-reach communities, filling coordination gaps in green prescribing and capturing documented SROI. Fund park-based community health workers; mandate health kiosks in underserved parks; insurers reimburse park services; create cross-departmental funding; mandate culturally-inclusive co-design.

Keywords: park pharmacy, green social prescribing, urban green space, healthy equity

'It has definitely shifted our thinking and helped us move forward': Supporting a more systems approach to physical activity promotion in Wales

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ABSTRACT

The purpose of the project was to foster and encourage a systems approach to physical activity promotion in West Wales. Informed by the WHO Global Action Plan for Physical Activity a systems thinking training programme was developed with a regional sport and physical activity partnership to support them to embed a systems approach into ways of working across their region. The target group were stakeholders in sport and physical activity in the West Wales Sports Partnership region. This project is innovative because it acknowledges that to adopt a systems approach, stakeholders require both knowledge and confidence to implement new ways of working. Systems thinking workshops (n=5) were designed and delivered over a 12-month period in West Wales, covering four local authority areas. Workshops were attended by stakeholders (n=93) involved in sport and physical activity from across the region. A mixed method evaluation included a pre and post workshop survey and qualitative interviews to capture learning from implementation. Survey results demonstrate that levels of knowledge, confidence and likelihood to adopt a systems approach improved post training. Interviews provided evidence of a shifting of perspective from programming to a more people and places focus; 'it has definitely shifted our thinking'. Actively engaging with multisectoral organisations and leaders across a region to foster a collective, new way of working, reflects a contemporary ambitious approach. It demonstrates a commitment by a regional organisation to embrace systems thinking and foster better collaboration and seek alternative, systems-based solutions, to physical inactivity in West Wales.

Keywords: systems thinking, GAPPA, community, collaboration

Today's barriers and facilitators to physical activity in visually impaired individuals: a systematic review

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ABSTRACT

Visually impaired (VI) individuals are often reported as having lower levels of physical activity (PA) than their sighted peers. The objective of this systematic review was to identify and synthesize available literature on the barriers and facilitators to PA among VI individuals. This review provides a comprehensive understanding of factors influencing PA levels in this cohort. Quantitative, qualitative, and mixed methods studies involving VI adults (≥18 years old) published in English language were included. A comprehensive search strategy identified relevant studies in EMBASE, MEDLINE, CINAHL, Web of Science, and Google Scholar databases, and included studies published between October 2004 and October 2024 using search words related to barriers and facilitators to PA in VI individuals. The quality of studies was assessed using the Mixed Methods Assessment Tool (MMAT). Extracted data was coded and analysed thematically. Resulting themes were mapped onto a Socioecological model (SEM) across intrapersonal, interpersonal, organisational, social, policy, and community levels. This review included 18 studies (10 qualitative, 6 quantitative and 2 mixed-methods studies). Synthesis identified 28 themes (14 barriers and 14 facilitators), across all levels of the SEM. The most cited barriers were under the community level (n=12), while facilitators were predominately identified under the interpersonal level (n=10). Our findings suggest that there are multiple interconnected barriers and facilitators to PA among this cohort. A systems-based approach is required to tackle this issue involving multiple levels of action from public awareness to infrastructure design and inclusive adapted opportunities to engage in PA.

Keywords: physical activity, visual impairment, barriers, facilitators, systematic review, health policies

Mechanisms shaping inequity in physical activity-related policy systems: an expert-based conceptual systems model

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ABSTRACT

Public policies can promote equitable opportunities for physical activity (PA) and reduce socioeconomic inequities in PA. However, many fail to achieve this. A systems perspective is needed to capture complex, dynamic, and non-linear interactions within policy environments affecting PA inequity. Using a systems approach, we aimed to 1) understand how policy structures contribute to socioeconomic inequities in PA, and 2) identify system archetypes explaining the system. Two workshop rounds with equity experts were conducted. In round one (N=11), a problem-solution tree approach identified system-level drivers underlying inequity in PA policy. Drivers were organised into subsystems using Physical Activity-Environment Policy Index (PA-EPI) domains. In round two, these factors were reviewed and relationships explored using group model building. Following the workshops, a causal loop diagram was developed, and system archetypes were identified. Findings were validated with participants through e-mail and phone. Workshop one identified 45 drivers including reliance on short-term policies, underrepresentation of low-SES groups in policy processes, emphasis on performance-driven policies, strength of policy accountability, and commercial influence. Examples of archetypes are: 'Fixes That Fail': where short-term policies fail to address structural barriers for low-SES groups; and 'Success to the Successful': where limited mechanisms for low-SES engagement in scientific agendas and policy dialogue lead to policies favouring groups with greater voice. Socioeconomic inequities in PA are reinforced by systemic dynamics within policy processes. Focusing on structural solutions, rather than short-term 'quick fix' policies, and increasing the representation of low-SES groups in policy processes may help create more equitable outcomes.

Keywords: policy, equity, physical activity, complex systems

Can a walking initiative in a professional football club in Denmark reach men and improve their health? findings from the men's health program

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ABSTRACT

Men are less likely to participate in health promotion than women and professional football clubs (PFCs) have shown effectives for engaging men in physical activity (PA). AGF Walks is a weekly walking initiative developed with a PFC and municipality through a participatory systems approach. This study examined reach, experiences, and individual outcomes. A prospective observational study was conducted from May 2025 to February 2026. Reach was assessed using attendance data from 27 walks. Health outcomes were measured using questionnaires at baseline and seven-month follow-up, including self-rated health, PA, social connectedness and health awareness. Post-focus groups and interviews (n=11 men) were conducted. 170 men registered for the program, with median participation of 2.5 walks (range 0–24). Sessions attracted median 28 participants (range 6–61). Among 100 respondents, median age was 59 years (IQR: 53–65). Participants had diverse social backgrounds: 51% had primary/secondary education, 15% were outside labor market, 20% retired, and 15% lived alone. At baseline, 75% did not meet PA recommendations. At follow-up, 22% formed social connections, 72% formed acquaintances, and 39% increased PA awareness. Qualitative findings showed men were attracted by football discussions and the walking format, while social relations supported participation. No statistically significant differences were found in health outcomes. PFCs may provide accessible settings for engaging men in PA, including inactive men from varied backgrounds. Like other PA initiatives in this setting. The walking initiative appears to function as a social draw that make health-promoting activities socially acceptable for men.

Keywords: men's health, professional sports club, systems thinking, physical activity, evaluation

A digital sleep diary to improve 24-hour movement behaviours research in a Belgian population study

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ABSTRACT

Sleep is commonly assessed using paper diaries in 24-hour movement behaviours research. However, paper diaries are increasingly considered outdated, are prone to recall bias, and require manual data entry. Missing data are also common, which can compromise the combination between sleep and accelerometer data. To overcome these limitations, this project uses a smartphone application (m-Path) to collect sleep diaries in the context of a 24-hour movement behaviours population study. In 2026, 1200 adults aged 20-69 living in Belgium are being asked to wear 2 accelerometers and provide information on their sleep for 7 consecutive days, via a paper diary or m-Path. During a home visit, interviewers install m-Path on participants' smartphones following a standardised protocol. Sleep diary entries are delivered through scheduled notifications adapted to participants' potential wake times. Quality indicators include researcher burden, completion rates and moments, and usability perspectives (notification and direct messaging systems). Preliminary results indicate that 90% of participants chose the application. Real-time monitoring allows to reduce non-response via a direct messaging system to the participants. The in-built notification system provides higher control over completion moment, reducing recall bias. Research burden is low, despite more time dedicated to real-time monitoring. Further analyses will compare data quality between the paper and application-based diaries. m-Path may offer a scalable and efficient alternative to paper sleep diaries in adult population studies. Its use could reduce researcher workload, improve data completeness, and support more accurate integration of sleep within 24-hour movement behaviours surveillance and research.

Keywords: mobile application, sleep diary, accelerometers, digital health

Advise to the Dutch government: Implement sensor-based physical activity measurement in the existing infrastructure for national health surveillance

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ABSTRACT

The primary aim was to advise our Ministry of Health, Welfare and Sports in the Netherlands how to best implement sensor-based physical activity (PA) measurement in the existing national health surveillance infrastructure.Wanda Wendel-Vos Based on multiple previous studies and two recent pilot studies, the advice was formulated by the RIVM, Statistics Netherlands and Amsterdam UMC. It consisted of the following aspects: which infrastructure the sensors needed to be implemented to, frequency of measurement, sample size, sensor-placement (i.e. wrist or thigh-worn), costs, and implementation. We recommend expanding the existing Health Survey with sensors immediately. In that timeline, they will be fully implemented in 2030, the year where the new PA guidelines will be published by the World Health Organization (WHO). To make optimal use of the Health Survey infrastructure and obtain reliable data, continuous year-round measurement is recommended, allowing for annual activity rates and more accurate insights into subpopulations. Based on the current Health Survey sample design and pilot data, an estimated 1,626 adults per year are expected to wear a sensor. Since we are currently unable to obtain reliable results from a wrist-worn sensor, we now recommend a thigh-worn sensor, as it can accurately measure various activities. Costs for establishing the new infrastructure will be around €250.000, costs for the first year of sensor-measurement around €485.000. We advise addition of the sensors to the Health Survey immediately for complete implementation in 2030. Accurate measurement of PA along the spectrum is important because detailed understanding tailors policies.

Keywords: surveillance, monitoring, physical activity, sensors

Physical activity level measured by devices among urban population in country of Georgia, 2024

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ABSTRACT

Physical activity (PA) is key to preventing diseases, especially cardiovascular conditions, yet it is difficult to measure accurately through self-report. This is the first study in Georgia to determine feasibility of accelerometers use to objectively measure PA as part of the WHO STEPS survey. Between February and March 2024, 306 adults aged 18-69 in Tbilisi were recruited by convenience sampling from the interviewers' social circles. Among them, PA was measured using wrist-worn Axivity AX3 accelerometers for 7 consecutive days. Sociodemographic data were collected via interview and accelerometer data analyzed using R GGIR package. Accelerometer was worn four days of more among 288 participants (94.1% response rate). Their mean age was 47.7 years (SD = 15.5), and the majority were female (76.0%). The overall mean daily moderate to vigorous PA (MVPA) was 100.9 minutes (± 95%CI 91.4-110.4) and 96.9% of participants met the WHO recommendation of 150 minutes of moderate PA per week or equivalent amount of MVPA. Participants aged 18-29 had the highest mean daily MVPA (119.5 (± 95%CI 100.5-138.5) while those aged 60-69 had the lowest (79.6 (± 95%CI 65.1-94.1). Females had higher daily MVPA than males (103.0 vs. 94.2 minutes; p value = 0.44). This pilot study showed that objective measurement of PA is feasible in Georgia as part of the WHO STEPS survey. Large majority of participants attained the WHO recommendation for daily MVPA. Objective measurement of PA using accelerometers in a nationally representative sample is needed to determine true prevalence of insufficient PA in Georgia.

Keywords: accelerometer, physical activity, measurement

Development, validation, and national application of a physical education theoretical knowledge assessment for 6th-grade students

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ABSTRACT

To respect the educational character of Physical Education (PE), it is necessary for students to assimilate theoretical content that supports the development of competencies related to health, motor skills, and an active lifestyle. This paper aimed to conduct a validation and standardization process of an assessment instrument designed to measure the level of theoretical knowledge among 6th-grade students in Romania, followed by an evaluation of students' knowledge at this educational level. The study employed a standardized testing procedure, and participant selection was conducted using probabilistic sampling to ensure national representativeness (n=2352). The validation and standardization process confirmed the instrument's psychometric soundness, supporting its validity and demonstrating its feasibility for large-scale educational assessment. Using this validated instrument, the findings indicate that the average level of theoretical knowledge associated with PE reached the minimum passing threshold (grade 5 out of 10). Girls demonstrated slightly higher levels of theoretical knowledge compared to boys ($t(2350)=3.32$, $p<.001$, $d=0.14$), suggesting modest gender-related differences. In conclusion, physically educated adults cannot be expected without the systematic development of theoretical knowledge during schooling. The validated and feasible instrument developed in this study provides a practical tool for monitoring students' cognitive outcomes in PE and informing curriculum evaluation. Strengthening the theoretical dimension of PE may enhance awareness of physical activity benefits and support sustained engagement in active lifestyles. Moreover, the proposed methodological framework offers a transferable model adaptable to other educational systems.

Keywords: physical education, knowledge, physical activity

Associations of 24-h movement behaviors with BMI: A population-based study using compositional data analysis

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ABSTRACT

Low physical activity (PA) and high sedentary behavior (SB) decrease energy expenditure and may lead to weight gain. As PA, SB, and sleep together comprise the 24-hour day, these behaviors are interdependent. This study examines the association between 24-h movement behaviors and BMI in Finnish adults. A random sample of Finnish adults aged 20 years and older was invited to the population-based Healthy Finland 2023 health-examination survey (n= 10,000; participation rate 58%). A sub-sample (n=859) completed continuous 3–7-day wrist-worn accelerometer measurements for sleep, SB, light-intensity physical activity (LIPA) and moderate-to-vigorous physical activity (MVPA). Compositional binary logistic regression analysis, adjusted for age and sex, was used in R to examine associations between 24-h movement behaviors and BMI. A higher relative proportion of SB to the remaining 24-h movement behaviors (MVPA, LIPA, sleep) was associated with a higher likelihood of both overweight ($p=0.007$) and obesity ($p<0.001$). Conversely, a higher relative proportion of MVPA compared to the remaining behaviors was associated with lower odds of overweight ($p=0.003$) and obesity ($p<0.001$). Differences in the relative amount of LIPA showed no association with either overweight or obesity. The results underscore the protective role of MVPA on maintaining a healthy weight, as well as the central role of SB in contributing to adverse weight outcomes within the 24-hour movement composition. These findings highlight that the relative balance of daily movement behaviors, rather than their absolute durations, is key for weight-related outcomes.

Keywords: physical activity, sedentary behavior, sleep, overweight, compositional data analysis

Does genetic architecture for cognitive function modify the association between lifelong physical activity and midlife cognitive changes? A population-based longitudinal study

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ABSTRACT

This study examined whether a polygenic risk score for cognitive function (PRS-COG) modifies the association between cumulative physical activity (PA) from childhood to midlife and cognitive changes in midlife. We utilized data (n=1353, 57% female) from the Cardiovascular Risk in Young Finns Study, an ongoing population-based longitudinal study that began in 1980. PA was assessed at all study phases (1980–2018) with a standardized questionnaire every 3–9 years. Cumulative PA was determined from childhood to midlife (ages 9–48). Cognitive functions (learning and memory, working memory, reaction time, and information processing) were evaluated using the Cambridge Neuropsychological Test Automated Battery in 2011 and 2018. Associations between cumulative PA and cognitive changes were analysed using linear regression models. Models were adjusted for age, sex, education, cardiometabolic risk factors, and health behaviors. The moderating effect of PRS-COG to cumulative PA was evaluated by adding an interaction term for the mean centred variables. PRS-COG and cumulative PA from childhood to midlife did not show statistically significant interaction effects on changes in any cognitive domain. Higher levels of cumulative PA were associated with a smaller decrease in information processing in midlife (β=0.05, p=0.008). Cumulative PA was not associated with changes in other cognitive domains. These findings suggest that promoting PA across the lifespan may be associated with a smaller decrease in information processing in midlife, regardless of individuals' genetic architecture.

Support/Funding Source: The study was supported by the Finnish Ministry of Education and Culture (OKM/15/626/2024).

Keywords: life-long physical activity, cognitive changes, a polygenic risk score, midlife

Predicting heart rate at the respiratory compensation point to guide high-intensity exercise prescription in physically active young adults

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ABSTRACT

The respiratory compensation point (RCP) marks the transition to high-intensity exercise and represents a threshold for exercise prescription. The aim of this study was to develop a practical equation to estimate heart rate at RCP in physically active young adults and evaluate its accuracy against guideline-based intensity domains. Methods: A cross-sectional study included 51 apparently healthy young adults aged 20 to 30 years (32 men, 19 women) performing maximal CPET. Heart rate at the RCP was predicted using multivariate linear regression with a forward stepwise approach. Candidate predictors included age, sex, body height, body weight, maximal heart rate, and resting heart rate. External validation compared the equation with guideline-based exercise intensity domains using mean absolute percentage error (MAPE), limits of agreement (LoA), and intraclass correlation coefficients (ICC). Results: Maximal heart rate (HRmax) was the sole significant predictor of heart rate at the RCP ($R2 = 0.73$, $p < 0.001$). The equation was $-13.32 + 0.991 \times HRmax$. External validation demonstrated greater accuracy than guideline-based %HRmax prescription, with lower prediction error (MAPE = 2.25%), narrower LoA (-11.4 to 10.8 bpm), and excellent reliability (ICC = 0.98). In contrast, guideline-based intensity domains exhibited high error (MAPE = 16.24%), wide LoA (17.7 to 39.2 bpm), and poor reliability (ICC = 0.12). Conclusions: Maximal heart rate strongly predicts heart rate at the RCP in physically active young adults. The proposed equation provides a practical tool to estimate heart rate at RCP and guide high-intensity exercise prescription.

Keywords: cardiopulmonary exercise testing, high-intensity exercise prescription, maximal heart rate, respiratory compensation point, young adults

Health-enhancing physical activity and lifestyle habits among medical students in kosovo: associations with quality of life and academic performance

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ABSTRACT

Medical students often experience high academic stress and unhealthy habits that may affect their academic performance and quality of life. This study assessed knowledge, attitudes, and practices (KAP) related to physical activity and lifestyle habits and their association with academic performance and self-reported quality of life among medical students in Kosovo. A cross-sectional KAP survey was conducted among medical students from years 2–6 using a structured self-administered questionnaire. Data included sociodemographic characteristics, knowledge and attitudes toward healthy lifestyle behaviors, physical activity, sleep duration, diet, and stress. Outcomes were high academic performance (grade average >9) and good quality of life (Likert scale). Associations were analyzed using χ^2 tests and multivariable logistic regression, reported as adjusted odds ratios (aOR) with 95% confidence intervals (95% CI). A total of 200 students participated (mean age 21.3 ± 2.0 years; 70.8% female). Overall, 52.8% reported moderate-to-vigorous physical activity at least three times weekly and 57.4% slept ≥7 hours per night. High perceived stress and academic burnout were reported by 88.7% and 90.3%, respectively. High academic performance was reported by 52.8%, and 63.6% rated their quality of life as good or very good. Regular physical activity was associated with better quality of life (74.8% vs 42.9%, $p < 0.001$) and remained independently associated in multivariable analysis (aOR = 3.29; 95% CI: 1.70–6.35), but not with academic performance (aOR = 1.13; 95% CI: 0.61–2.11) Physical activity was associated with improved quality of life but not academic performance, underscoring the need to promote health-enhancing physical activity.

Keywords: health-enhancing physical activity, lifestyle, medical students, academic performance, quality of life

Better musculoskeletal fitness is associated with less reclining and more standing and physical activity

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ABSTRACT

Cardiorespiratory fitness (CRF) is associated with physical activity (PA), but the associations with musculoskeletal fitness (MF) have been studied rarely. This study analyzed how MF is associated with accelerometer-measured physical behavior among working-aged adults. The study is based on two cross-sectional population-based studies that measured 1) physical behavior by a triaxial hip-worn accelerometer (UKK RM42) and 2) fitness by modified push-up, jump-and-reach and 6 -min walk tests among 20-69-year-old adults (n=3250, age 50.3 ±13.0 years, 59% women). Waking-time stationary behavior (lying, reclining, sitting, and standing) was analyzed by the APE-algorithm and PA by the MAD-algorithm. Both absolute and relative intensities of PA were assessed: light (LPA), moderate (MPA) and vigorous (VPA). Absolute intensities were defined by metabolic equivalents and relative intensities by individual CRF (VO2R) estimated by the 6-min walk test. Modified push-up and jump-and-reach results were analyzed in age-group and sex-specific tertiles. Data was analyzed by General linear model. Participants with the best push-up performance accumulated statistically significantly ($p<0.001$) less reclining and more standing time, more LPA and MPA in both absolute and relative terms, and more daily steps than those with the poorest performance. Correspondingly, participants in the best jump-and-reach tertile accumulated less reclining and more standing, more absolute PA regardless of intensity, more relative LPA and more daily steps than those in the poorest tertile. Better MF is associated with less reclining, and more standing and PA. Individual level in both CRF and MF should be considered when promoting PA among adult populations.

Keywords: physical activity, stationary behavior, adult population, fitness

Impact of cardiorespiratory fitness on associations between peak activity intensities and waist circumference

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ABSTRACT

Waist circumference (WC), cardiorespiratory fitness (CRF), and physical activity (PA) are interrelated determinants of cardiometabolic health. Because WC, CRF, and PA may influence one another bidirectionally, each can act both as a confounder and a mediator. It remains unclear whether peak PA intensities accumulated over different time durations show distinct associations with WC when accounting for CRF. A total of 3475 adults (mean age 51±13 years; 60% women) participated in the cross-sectional population-based FINFIT17- and FINFIT21-studies and wore hip-mounted accelerometers for one week. CRF was estimated with a 6-minute walk test, and WC was measured with standardized procedures. Accelerometer data were processed using MAD-metrics and mean daily peak intensities were derived for 1-, 3-, 6-, 10-, 30-, and 120-minute durations. Age- and sex-adjusted and age-, sex-, and CRF-adjusted partial correlations were calculated between WC and each intensity measure. All age- and sex-adjusted partial correlations showed statistically significant inverse associations with WC ($p<0.001$), the strongest one for the 3-minute duration ($r=-0.305$). After adjusting for CRF, associations were markedly attenuated. The strongest remaining inverse correlation was observed for the 30-minute duration ($r=-0.062$; $p<0.001$), with significant associations ($p<0.05$) persisting for the all over 3-minute durations. Peak daily activity intensities across both short and long durations were inversely associated with WC across the study group. Adjustment for CRF substantially attenuated the associations, shifting the strongest association towards longer durations. These findings suggest that longer activity bouts may provide additional benefits for central adiposity in some contexts.

Keywords: physical activity, central adiposity, maximum oxygen consumption

Towards a Dutch Physical Activity Index: which sensor-based behavioural characteristics represent 24/7 physical behaviour best?

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ABSTRACT

Sensor-based measurements are increasingly used to analyse 24/7 physical behaviour (PB) in cohort and monitoring studies, providing detailed information on physical activity (PA), sedentary time, and sleep. However, it remains unclear which sensor-derived characteristics best describe 24/7 PB and how these relate to health. This knowledge is valuable for designing new, sensor-based activity guidelines. This study is a first step towards a 'Dutch Physical Activity Index' (DPAI), a set of components designed to: I) capture relevant 24/7 PB characteristics from sensor data, II) be derived from common sensor protocols, and III) be simple and attractive to communicate, for instance in guidelines. Potential components (e.g., distribution of moderate-to-vigorous PA or maximal sedentary time) were formulated based on literature and expert discussions. When necessary, additional exploratory analyses were performed on cross-sectional accelerometer data from the Doetinchem Cohort Study (2013-2017, n=1,991). We then evaluated the practical feasibility of extracting these from sensor data. The proposed components are currently being refined iteratively based on these analyses and expert feedback. Next, we will determine prevalence within various sensor protocols and explore associations with health-related factors. At the HEPA conference, we will present the selected components, prevalence estimates, and preliminary exploratory analyses of associations with health outcomes. We expect to provide detailed insights into various 24/7 PB patterns, serving as input for a DPAI. This index may be an interesting step towards new, sensor-based PA guidelines.

Support/Funding Source: This research was funded by the National Institute for Public Health and the Environment.

Keywords: sensor-based, physical activity, accelerometer, 24/7 physical behaviour

Associations of demographic, socioeconomic, lifestyle factors and comorbidity with accelerometer-measured physical activity in individuals with cardiovascular diseases

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ABSTRACT

Physical activity (PA) is important for secondary prevention of cardiovascular diseases (CVDs), yet factors associated with device-measured PA in this population are underexplored. This study examines the link between device-measured PA and demographic, socioeconomic, lifestyle factors, and comorbidity in individuals with CVDs. This cross-sectional study used data from a large Swedish cohort and included adults aged 50-64 years with major CVDs. Moderate-to-vigorous physical activity was measured using accelerometers and grouped into tertiles. Demographic, socioeconomic, lifestyle factors, and comorbidities were obtained through questionnaires and registry data. Associations with PA levels were analysed using multiple ordinal logistic regression. In total, 1,484 participants (32% women; median age 60.2 years) were included. Lower odds of having a higher PA level were significantly associated with being in the oldest age group (OR = 0.58; 95% CI: 0.44, 0.77), female sex (OR = 0.74, 95% CI: 0.59, 0.92), completion of secondary school (OR = 0.73, 95% CI: 0.54, 0.98), regular/occasional smoking (OR = 0.37; 95% CI: 0.26, 0.51), and having one (OR = 0.61, 95% CI: 0.48, 0.77) or two or more comorbidities (OR = 0.45, 95% CI: 0.30, 0.68). A healthy diet was significantly associated with higher PA levels (OR = 1.84; 95% CI: 1.47, 2.32). In this population, engagement in PA is largely associated with lifestyle factors, demographic characteristics, and comorbidity, whereas some commonly used socioeconomic indicators may be of lesser relevance. These findings identify characteristics that may inform future research supporting PA promotion in high-risk groups.

Keywords: accelerometer-measured physical activity, epidemiology, cardiovascular prevention

Comparison of self-reported and accelerometer-measured physical activity in Slovene adults

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ABSTRACT

Physical activity (PA) is one of the key factors influencing individual health. Consequently, many health initiatives and guidelines rely on PA data obtained using various measurement methods. However, different methods of PA assessment may produce varying results across different groups and populations. A total of 306 healthy Slovene adults participated in the study. As subjective measures of PA, three of the most widely used PA questionnaires (PAQs) in the European Union were employed: the International Physical Activity Questionnaire (IPAQ), the Global Physical Activity Questionnaire (GPAQ), and the Physical Activity Questionnaire from the European Health Interview Survey (EHIS-PAQ). UKK RM42 accelerometers were used as the objective measure of PA. The results showed that participants in the Slovene sample overreported their PA when using PAQs compared with accelerometer-based measurements. Equivalence testing indicated that PA estimates obtained using the EHIS-PAQ were comparable to those measured by accelerometers, whereas results from the IPAQ and GPAQ differed significantly from the objective measurements. Additionally, when comparing participants with high and low fitness levels, individuals in the low-fitness group demonstrated greater levels of overreporting. Physical activity questionnaires remain a valuable tool for assessing physical activity; however, their results should be interpreted with caution. The findings suggest that the choice of measurement method should be carefully considered with respect to the target population and the type of information required. Differences in reporting patterns were observed between participant groups, with more physically fit individuals showing the lowest levels of overreporting.

Keywords: physical activity, physical activity questionnaires, physical activity assessment

Physical activity and active transport before stroke in relation to stroke outcomes

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ABSTRACT

Physical activity is a well-established protective factor for non-communicable diseases, including stroke. Beyond prevention, pre-stroke physical activity may also influence recovery trajectories following stroke. Active transportation, such as walking or cycling to work, has been associated with reduced cardiovascular risk, but its potential relationship with post-stroke recovery remains largely unexplored. This study investigates whether active transportation and leisure-time physical activity prior to stroke are associated with early and later post-stroke recovery outcomes. This registry-based cohort study included 3,507 individuals with first-ever stroke from the Västerbotten Intervention Programme linked with national health registries. Transportation mode to and from work was self-reported for four seasons and classified as the predominant annual mode if reported in at least three seasons (walking, bicycling, bus, or car). Leisure-time exercise during the previous three months was categorized as no regular exercise, 1–2 times/week, or ≥2 times/week. Two outcomes were examined: number of hospital days after stroke and dependency in activities of daily living (toilett, dressing, moving) at three months (Riksstroke follow-up). Adjusted models included age, sex, level of consciousness at admission (proxy for stroke severity), education, risky alcohol consumption, and leisure-time physical activity (in transport models). Logistic regression and negative binomial regression were used. Higher age and reduced consciousness at admission were significantly associated with both greater ADL dependency at three months and a higher number of hospital days. No statistically significant associations were observed between transportation mode or leisure-time physical activity and either outcome after adjustment.

Keywords: stroke recovery, active transportation, physical activity, registry-based cohort study

Daily movement behaviours of university students in Central Europe: a comparative study in the Visegrad countries

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ABSTRACT

Health during young adulthood is strongly influenced by the daily balance between physical activity, sedentary behaviour, and sleep. The twenty-four-hour movement behaviour framework integrates these components into a single model of health. However, limited comparative data exist on adherence to these recommendations among university students in Central Europe. A cross-sectional study was conducted among 2,611 university students aged 18–29 years from the Czech Republic, Hungary, Poland, and Slovakia. Physical activity and sedentary behaviour were assessed using the International Physical Activity Questionnaire – Long Form, while sleep duration was self-reported. Descriptive statistics and chi-square tests were used to examine gender and country differences. Overall, 44.24% of students met the physical activity recommendation, 82.27% complied with the sedentary behaviour guideline, and 85.43% achieved the recommended sleep duration. However, only 26.92% of participants met all three components simultaneously. Significant differences between countries were observed for physical activity ($p < 0.001$) and sleep duration ($p = 0.025$), whereas sedentary behaviour ($p = 0.147$) and overall adherence to the integrated recommendations ($p = 0.351$) did not differ significantly across countries. A relatively small proportion of university students demonstrate balanced daily movement behaviours. Universities and public health stakeholders should implement integrated strategies—such as active campus environments, reduced sedentary learning formats, and sleep health promotion—to support healthier behavioural patterns and long-term wellbeing among students.

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Keywords: pyhsical activity, sedentary, sleep, university students

Combined associations of lifelong physical activity and obesity with midlife cognitive changes: a population-based longitudinal study

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ABSTRACT

Physical activity (PA) and obesity show opposite associations with cognition, yet their joint long-term links with cognitive change remain poorly understood. This study examined combined associations of cumulative PA and body mass index (BMI) from childhood to midlife with cognitive changes in midlife. Data were drawn from the longitudinal, population-based Cardiovascular Risk in Young Finns Study (YFS; n=1173, 57% female). PA using standardized questionnaires and body weight and height were measured at 3–9-year intervals between 1980-2018. Cumulative PA and BMI were calculated for ages 9–42. Cognitive functions (learning and memory, working memory, reaction time, and information processing) were evaluated using the Cambridge Neuropsychological Test Automated Battery (CANTAB) in 2011 and 2018. Sex-stratified linear regression models were used to examine independent and joint associations of cumulative PA and BMI with cognitive changes, adjusting for age, education, polygenic risk score for cognitive function, cardiometabolic risk factors, and health behaviors. In males, higher cumulative BMI (β=-0.04, p=0.024) was associated with a greater decrease in learning and memory in midlife independent of cumulative PA. Higher cumulative PA (β=0.06, p=0.024) was associated with a smaller decrease in information processing independent of BMI. No significant associations were observed among females. No significant interactions were found in either sex. Among males, accumulation of BMI and PA from childhood to midlife showed distinct, independent associations with midlife cognitive changes, underscoring the importance of sustained PA promotion and early obesity prevention for supporting cognitive health.

Support/Funding Source: Ministry of Education and Culture, Finland, OKM/15/626/2024.

Keywords: life-long physical activity, body mass index, cognitive changes, midlife

Numbers that move: key-indicators empowering Dutch sports and physical activity policy

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ABSTRACT

The Netherlands has a unique system in place for systematic monitoring of sports and physical activity, with the use of Key-indicators. For the first time, the factsheet containing the essential information about the Key-indicators has been translated into English, thereby extending the reach to the global community. To support the goal of an active and sportive society, key-indicators have been established to address important facilitators and outcome measures, providing a clear signaling function for the national government. An additional aim is to disseminate local-level data for every Key-indicator when feasible. Each indicator is represented by a single numerical value, enabling the presentation of complex information in a communicable and visually appealing overview. Key-indicators were developed collaboratively with stakeholders in 2014 and formalized by the Minister of Health, Welfare and Sport. A network of organizations was appointed to ensure implementation and maintenance, including Statistics Netherlands, VeiligheidNL, NOC*NSF, Mulier Institute, Knowledge Centre for Sport & Physical Activity, and RIVM, which coordinates the network. The network convenes biannually, to ensure quality, comparability, and continuity. In 2024, the Key-indicators were evaluated with the network, policymakers, and researchers. The overview of 25 Key-indicators is updated regularly as new data become available: www.sportenbewegenincijfers.nl/en/key-indicators/factsheet Key-indicator numbers are updated at least every four years, most annually or biennially. Policymakers have ongoing access to the latest online overview, enabling timely policy adjustments based on emerging trends. The English translation of the Key-Indicators increases international visibility and supports broader collaboration in public health and sports policy.

Keywords: physical activity, sports participation, key-indicators, data-based policymaking, Netherlands

The future of physical activity based on societal developments

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ABSTRACT

Current policy programs on physical activity (PA) in the Netherlands are expiring. To determine focus areas for new national policy, the Ministry of Health, Welfare and Sports wants to gain a broad perspective on future societal developments and a prediction of the future PA trends. This study comprises two parts: an exploration of future societal developments (qualitative research) and an analysis of the future development of PA key-indicators (quantitative research). For the first part, workshops with experts and citizens were organized. In these workshops the PA system was mapped out using causal loop diagrams and societal developments were linked to specific elements in this system map. Societal developments came from a DESTEP-analysis looking at demographic, economic, socio-cultural, technological, ecological and political-legal factors and developments. In the second part, a system dynamic model was used to model the future development of a selection of key-indicators up to 2040. In this analyses a broad range of scenarios were taken into account. Results provide a description of expected future societal developments that influence PA of the Dutch population. The analysis also gives insight into long-term future developments of several PA key-indicators, for example “weekly sports participation”, “number of sport accommodations” and “adherence to physical activity guidelines”. These results will be presented at the HEPA 2026 conference. This study will form a basis for future policy on PA by providing insight into recent and anticipated developments. This creates a foundation for broad thinking with a long-term perspective in policy.

Keywords: physical activity, future, developments, horizon scan, trend analysis

How can the physical activity environment policy index be used at the local level? results from an expert survey in European countries

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ABSTRACT

Local governments play a central role in shaping physical activity (PA) environments. Despite their importance for developing and implementing PA policies, only a limited number of monitoring tools were designed for the local level, and none assess the extent of policy implementation. This study aims to assess if and how the Physical Activity Environment Policy Index (PA-EPI) – that was developed to assess the implementation of national policies – can be adapted for use at the local level. In a first step, the PA-EPI Good Practice Statements (GPS) were adapted to the local level in online workshops, involving researchers with expertise in PA policy. In a second step, an expert survey was conducted to assess the applicability of the tool at the local level in different countries. Both policymakers and non-government stakeholders with expertise in local PA policy were recruited. The terminology of 38 out of 45 GPS was adapted to fit with local contexts, e.g. reworded to emphasize aspects relevant to the local-level. For the online survey, experts from 11 European countries were recruited. The results reveal similarities and differences between countries with regards to the jurisdiction of the local level and the availability of evidence of policy implementation. This study shows that the national PA-EPI can be adapted to the local level. The results also have implications for the importance of considering the local context when using standardized policy evaluation tools.

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Keywords: physical activity policy, local governments, policy implementation, policy evaluation tools, Physical Activity Environment Policy Index (PA-EPI)

Developing regional physical activity intelligence to support place-based decision-making in Wales

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ABSTRACT

Place-based partnerships are increasingly responsible for co-ordinating action to increase physical activity and reduce health inequalities. However, regional decision-making is often constrained by fragmented and inaccessible evidence. In Wales (UK), five Regional Sport Partnerships lead local physical activity and health promoting strategies. This project aimed to develop "State of the Region" reports for two Sport Partnerships, synthesising data on physical activity, health and sport to provide accessible regional intelligence to support policy and strategic planning. Two Sport Partnerships in Wales commissioned the Welsh Institute of Physical Activity, Health and Sport (WIPAHS) to undertake a regional data review. Development involved two phases: i) a stakeholder survey exploring access to and use of data; and ii) collation, analysis and visualisation of multiple datasets relating to physical activity, health and demographic inequalities, producing region-specific indicators, trend summaries and accessible data visualisations. Stakeholders reported strong interest in using data but limited confidence in locating and interpreting datasets, with many requesting training and clearer access to regional insights. This led to the development of a series of training workshops. A key barrier was the lack of alignment between existing surveillance: datasets use inconsistent terminology and definitions (e.g, physical activity, exercise, fitness), limiting the ability to combine evidence and generate comparisons. Regional data synthesis can strengthen evidence-informed policy and strategic planning for physical activity. However, improving surveillance alignment and strengthening regional capacity to access and interpret data are critical for enabling partnerships to translate evidence into effective policy and practice.

Keywords: data synthesis, national surveillance, stakeholder engagement, health inequalities

Get Finland moving programme: framework for evaluation and monitoring

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ABSTRACT

The Government's Get Finland Moving initiative aims to increase physical activity across all age groups. The programme promotes physical activity through a phenomenon-based approach that spans for example school days, studies, working life, conscription, and services for older people. It is cross-sectorally funded, with measures supported by seven ministries. Systematic monitoring has been established to assess the programme's results and impacts. A multidisciplinary research and expert group has developed a comprehensive monitoring framework, under which each of the programme's 35 measures is followed using defined action, process, output, and impact indicators. Progress toward the core objective—increasing physical activity in every age group—is tracked through population-based studies that examine changes in overall activity levels and physical functioning. Additional research focuses on the societal impact of physical activity counselling, outdoor recreation, and school-aged children's movement. For schoolchildren, data are collected from the same schools and pupils before and after the introduction of funded measures to increase physical activity. The purpose of the results reporting is to generate evidence on the programme's effectiveness and impacts. An external evaluation will also be carried out. This assessment will consider the counterforces that have influenced physical activity promotion during the government term as well as the process-related lessons learned from cross-sectoral cooperation.

Keywords: monitoring, evaluation, physical activity, policy

Evaluating the Duch action plan on physical activity from a systems' perspective achieved progress in 2025

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ABSTRACT

In 2023 the Dutch Government launched the Action Plan on physical activity(PA) to encourage governments, community organisations and municipalities to carry out actions to stimulate PA from a systems approach. The National Institute for Public Health and the Environment (RIVM) conducted a system evaluation study by running surveys among policy makers and organisations and by applying the action-scale model. Several positive changes were observed in the first two and a half years, but more could be have been achieved. For example, several Ministries have devoted more attention to PA. However there was little new policy from Ministries to promote PA at school or in the workplace – places where people spend much of their time sitting. In addition, an increasing number of organisations (up to 585) joined the PA Network Alliance. This resulted in new collaborations that help people be more physically active. However, mainly 'simple' actions, like sharing knowledge, which have limited impact on PA system change were performed. Finally, within municipalities, a growing number of domains are collaborating on the topic of PA. To achieve the government's ambitious target that 75% of Dutch people meet the PA guidelines by 2040, RIVM recommends that ongoing efforts using a systems approach are needed in the coming years. This will also require actions with more impact on the overall PA system such as changing societal beliefs related to PA. In addition, policymakers can do more to link PA to other topics, such as mental health and climate.

Keywords: physical activity policy, system approach, action-scale model, stakeholders

Corporate digital well-being programs and physical activity promotion: a case study of Playrix and Stayf

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ABSTRACT

Employees spend a large part of their day at work, making the workplace an important part for physical activity promotion. For global companies, offline health programs are often difficult to implement. As a result, many organizations use digital well-being solutions to support employee health and encourage physical activity. This case study examines the implementation of a one-month corporate digital physical activity program developed by Stayf Ltd. and implemented at Playrix in September 2025. Playrix employs approximately 3,000 employees worldwide, and 506 employees participated in the program. Participants joined from different countries, including Serbia (173), Ukraine (54), Kazakhstan (46), Georgia (32), Poland (32), Cyprus (20), and other countries (149). The program was realized in a mobile application and included team-based challenges, personal goals, educational webinars, and a collective step goal linked to a charity initiative. Aggregated program data were used to evaluate participation and physical activity indicators. Participants achieved an average of 9,500 steps per day, with an average of three training sessions per week lasting 23 minutes per session. These values indicate that participants were close to the WHO physical activity recommendations of at least 150 minutes of moderate-intensity physical activity per week. App engagement data showed that participants opened the application on average four times per day, hence the suggestion that the platform supported both activity tracking and social interaction. This case study suggests that digital well-being programs may support physical activity promotion in geographically distributed organizations and provide digital tools to improve engagement and movement among employees.

Keywords: digital wellbeing, physical activity, corporate wellness

Mapping urban design policies for pa: an analysis of the Romanian policy environment – gaps and challenges

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ABSTRACT

Urban design is not merely an engineering task, but a strategic tool for public health. We documented government measures using the PA-EPI framework. The research aims to map policies, with a focus on active mobility, mixed land use, and infrastructure development, as well as differences in international practice. Using the PA-EPI methodology, we conducted desk research and policy analysis of national legislation, decisions, and infrastructure programs. We compared the regulatory framework with specific implementation data and international best practices. Our research identified a duality in policies. While the legal framework supports sustainable mobility and mixed-use land use, in practice, there is a shift toward infrastructure investment. The inventory highlights successful measures on PA infrastructure development, but specific regulatory mechanisms that directly encourage active mobility and the diversification of space functions are less prominent. The results highlight a gap between "strategic intent" and "physical implementation" as well as shortcomings relative to international good practice exemplars. While progress has been made in the construction of sports and PA facilities, the systematic transformation of the urban fabric to support PA remains a challenge. These stop at the level of individual responsibility, while urban planning regulations do not provide the necessary infrastructure or equitable access. The results highlight the need for future policies to more deeply integrate the "Health in All Policies" principle into urban planning and development practices.

Funding: IMPAQT.

Keywords: PA, urban design, public policy

Life Course Disease Model to estimate the potential impact of physical activity policies on health outcomes, costs, and quality of life: an evidence based approach

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ABSTRACT

To estimate the impact of policy interventions regarding physical activity (PA) on future public health in the Netherlands, we developed a life course disease microsimulation model (LCDM). The impact estimation from this model of PA on health, costs, and quality of life will facilitate decision making concerning PA interventions by national policy makers. The LCDM, an existing microsimulation model, was extended to include PA and PA-related health outcomes. Self-reported PA from a Dutch national health survey was used to model PA as MET minutes/week. For model input regarding health outcomes, we studied recent literature on the association of PA-level with the odds/risk of developing major non-communicable diseases type 2 diabetes, stroke, ischemic heart disease, congestive heart failure, breast cancer, colon cancer & dementia. Costs, Quality Adjusted Life Years (QALY's), and workforce productivity serve as secondary outcomes. In an additional literature study, PA policy interventions with a significant effect on PA levels were identified. To illustrate the potential impact of PA policy interventions on public health in 2050, the results of these interventions were modelled and compared with a 'usual' policy projection (i.e. without PA policy interventions). For our primary health outcomes, we are currently running projections with the LCDM, and are able to present the results at the HEPA conference. These results will be used to model or estimate the evidence based public health impact of national policies concerning PA.

Keywords: PA policy, impact, microsimulation model

Advancing cross-sector collaboration for healthy lifestyles through physical activity

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ABSTRACT

The Healthy Lifestyles for Europe (HL4EU) project is a 30-month Erasmus+ initiative (January 2024–June 2026) aimed at strengthening cross-sector collaboration to promote healthy lifestyles through physical activity. The project responds to the growing burden of NCDs and health inequalities, while addressing the structural fragmentation that often characterises health promotion efforts. Physical activity promotion spans multiple policy domains such as health, sport, mobility, education, and urban planning, yet governance and responsibilities remain dispersed. This fragmentation limits coordinated action between sectors and across EU and national levels, reducing the overall effectiveness of health promotion strategies. HL4EU brings together European and national organisations representing the fitness, physical activity, outdoor, health (healthcare professionals, patients, and caregivers), and active mobility sectors. The consortium aims to foster structured collaboration capable of creating systemic impact. Through dialogue, alignment of priorities, and shared ownership, the project seeks to strengthen cross-sector collaboration in European policy and practice. The project combines research, stakeholder engagement, and policy development. A Call to Action established a common direction for collaboration. Good practices were mapped through desk research and stakeholder outreach, identifying 136 initiatives. These were analysed quantitatively to assess collaboration patterns, sector partnerships, geographic distribution, target populations, and innovation types. In parallel, virtual focus groups with 30 stakeholders explored key enablers, barriers, and implementation challenges. These insights informed a set of policy recommendations to support future EU action. HL4EU also developed a good practice platform showcasing selected good practices and enabling knowledge exchange among organisations working on healthy lifestyle promotion across Europe.

Keywords: cross-sector collaboration, HEPA, NCDs, health inequalities, physical activity policy

Keeping people moving in crisis: integrating physical activity into emergency preparedness

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ABSTRACT

Public health emergencies, including pandemics, climate-related disasters, and conflict settings, often disrupt physical activity (PA) through movement restrictions, infrastructure damage, and displacement. Lower PA worsens cardiometabolic health, physical functioning and mental well-being. Despite strong evidence that PA supports both physical and psychological resilience, PA promotion is rarely integrated into emergency preparedness and response strategies. A structured, narrative synthesis of peer-reviewed literature, international emergency preparedness frameworks (e.g. WHO and UN disaster risk strategies), and interdisciplinary expert consultation was conducted. This approach aimed to identify best practices on how to integrate PA into emergency management strategies (e.g., pandemics, natural disasters, human displacement, and climate-related events). The synthesis identified six priority action areas: (1) integrate PA considerations into emergency preparedness and response plans; (2) maintain and adapt active mobility infrastructure during crises; (3) enable low-resource and remote PA delivery formats; (4) promote short, flexible, and safe PA sessions/routines; (5) tailor interventions to vulnerable groups; and (6) ensure multisectoral coordination. Integrating PA into emergency preparedness and response policy requires cross-sector collaboration between public health, sport, urban planning, occupational safety, and emergency management sectors. PA promotion can serve not only as a preventive health behaviour, but also as a public health resilience strategy to support mental health and social cohesion during crises. Developing safe, adaptable, and inclusive PA examples for low-resource environments and displaced populations may help reduce secondary negative health impacts during times of emergencies.

Keywords: physical activity promotion, emergency preparedness, crisis response, resilience, vulnerable populations

Physical activity experiences and their influence on physical activity adherence and health – a review of reviews

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ABSTRACT

Physical activity (PA) guidelines typically emphasise quantitative targets, e.g., 150 minutes aerobic PA per week. However, qualitative aspects, such as subjective experiences of PA might substantially affect adherence and health. With this systematic review of reviews, we aim to synthesise evidence on PA experiences and their influence on PA adherence and health outcomes. We searched for reviews in PubMed, Scopus, PsycINFO and Web of Science. The quality of the included reviews was assessed using the JBI checklist for Systematic Reviews and Research Syntheses. We extracted the results and applied qualitative content analysis with a coding scheme including outcome domains (PA adherence and health) and PA experience aspects (social, affective, cognitive-evaluative and other). Of the initial 7,462 records, 22 were included into the review of reviews. 17 reviews were of mixed-methods design. Overall, samples were heterogeneous with participants ranging from children to older adults. The results of the evidence synthesis show that several aspects of positive PA experience (e.g., connectedness, enjoyment) are associated with enhanced health (e.g., self-esteem, reduced loneliness) and adherence outcomes. At the same time, negative experiences (e.g., experiencing bullying) are associated with reduced health (e.g., depression), lower adherence and higher dropouts from PA. Findings suggest that subjective experiences of PA represent important qualitative factors influencing health and sustained participation in PA. These results are considered in the current update of the German guidelines for PA and PA promotion and might ultimately extend recommendations beyond quantitative targets.

Funding Source: German Federal Ministry of Health

Keywords: national recommendations, physical activity promotion, physical activity quality, behaviour change

Stakeholders' engagement in the PA-EPI national evidence validation stage: insights from the Romanian context

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ABSTRACT

Multisectoral expert input is a key component of the Physical Activity Environment Policy Index (PA-EPI) evidence validation stage. This presentation reports on the Romanian experience of engaging institutional stakeholders, with a focus on the communication and follow-up strategies employed. Between November and December 2025, national public institutions in Romania representing all eight PA-EPI policy domains, including sport, health, or education, received email invitations to review and validate the national PA-EPI evidence document. Follow-up actions included reminder emails, telephone outreach, and identifying relevant institutional representatives. A monitoring table was maintained to record communication outcomes, referrals, and the status of questionnaire submissions. Of the twenty public institutions invited to participate, thirteen submitted completed questionnaires, while four could not be contacted, as their available contact details were either invalid or repeated contact attempts remained unanswered. Additionally, two institutions reported that time constraints precluded their participation. In one case, the request was redirected to another institution, which subsequently submitted a completed questionnaire. These results illustrate the practical complexity of coordinating evidence validation across multiple institutional settings. The Romanian experience underscores the importance of early stakeholder mapping, coordinated communication, and consistent follow-up throughout the validation stage. Taken together, these practices could enhance response rates and support a more robust assessment of policy implementation. Beyond the Romanian context, systematic documentation across IMPAQT partner countries could inform transferable insights for future PA-EPI implementation in countries where evidence validation has not yet been undertaken.

Funding: ERA4Health

Keywords: PA-EPI, stakeholder engagement, evidence validation, physical activity policy

Understanding how systems approaches to physical activity policy are interpreted and operationalised across national contexts

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ABSTRACT

Systems approaches are increasingly promoted in international public health policy, including through the WHO Global Action Plan on Physical Activity, to address complex challenges such as physical inactivity and health inequalities. However, there is limited empirical understanding of how these approaches are understood and enacted. This study asks: how are systems approaches within physical activity policy interpreted and operationalised across national contexts? Semi-structured online interviews will be conducted with 10 national-level policy actors within government or national agencies, working in physical activity policy. Participants will be purposively sampled to capture variation in national approaches. Interviews will explore interpretations of systems approaches, how these are reflected in national policy, and contextual influences on implementation. Interviews will be transcribed and analysed using thematic analysis, supported by review of national physical activity policy documents. Comparative analysis will identify key dimensions shaping national approaches, including governance arrangements, policy framing and cultural contexts. The analysis is expected to illuminate how these dimensions influence the extent to which systems thinking is reflected in policy design and implementation, including whether approaches remain programmatic or address relational dynamics. Insights will inform the development of a preliminary diagnostic framework, which aims to complement existing global surveillance of physical activity policy by providing means to interpret national approaches, highlighting strengths, gaps and opportunities for action. By examining variation across national contexts, this research aims to contribute to context-sensitive understanding of systems approaches and provide insights to support more effective design and implementation of physical activity policy.

Keywords: systems approaches, physical activity policy, governance, qualitative research, policy implementation

Scoping review of public attitudes to government active travel interventions in the UK

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ABSTRACT

Low physical activity levels are a public health concern. Active travel is a potential strategy to increase routine walking, wheeling and cycling across populations. However, securing public acceptance for interventions is challenging, and focused analysis of these challenges is lacking. This review synthesises evidence on public attitudes to active travel interventions in the UK to inform future policymaking. This systematic scoping review used six academic sources and Google Scholar to search for peer-reviewed studies of public attitudes using any methods. Titles and abstracts were screened, first on 30% of randomly selected records, before screening remaining records; the same process was used on full text records. Analysis included descriptive statistics about the publications with narrative synthesis of themes. We included 26 publications from 13,778 screened records. Publications were mostly published after 2021 (n=14). The most common intervention type was physical changes to spaces and streets (n=16). Few studies looked at rural areas or attitude trends over time. Overall active travel was positively viewed but intervention delivery was challenging. Perceived intervention effectiveness and fairness shaped attitudes but this varied due to public beliefs, characteristics and travel habits. Policymaking and practice challenges included the complexities of gauging public consensus, underlying cynicism about government, and a widespread desire to maintain driving habits. Public attitudes can affect the planning and delivery of active travel interventions, and engagement is integral to interventions. Further research should look at specific, practical strategies policymakers can use to address the challenges identified.

Keywords: public health, scoping review, public opinion, UK

Sport clubs for health in schools: a regional initiative to promote physical activity in primary education background and aim

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ABSTRACT

Promoting physical activity in childhood is a key public health priority, yet many primary schools face challenges in delivering structured opportunities due to limited teacher training and resources. #ABCdaBola is a regional initiative designed to strengthen schools' capacity to promote health-enhancing physical activity through collaboration between the education sector and a sport organization. The programme targets primary school children and aims to equip teachers with skills, resources, and support needed to integrate physical-motor activities more consistently in schools trhough motor expression classes. The initiative was developed by Associação de Futebol do Porto in partnership with schools, municipalities, and university. Implementation includes teacher training, provision of structured lesson plans, and distribution of material kits to support activity delivery. Follow-up school visits provide pedagogical support and mentoring, while teachers feedback collection helps improve the project. The programme also organizes intermunicipal events where schools participate in playful physical activities and football-based games, complemented by health literacy workshops on healthy lifestyles and nutrition. Besides this, there is a data collection of physical fitness and well-being indicators, led by a university, that will allow to inform physical activity policies and possibly normative data. The programme is currently implemented in 49 primary schools in 18 municipalities of Porto district reaching approximately 8,000 children. Cross-sector collaboration and teacher capacity-building have emerged as key enablers of implementation. School–sport partnerships may represent a scalable approach to strengthening local ecosystems that support physical activity promotion in childhood.

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Keywords: physical activity promotion, school-based intervention, children, health literacy

A framework for understanding the commercial determinants and influences on physical activity

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ABSTRACT

Much is written about the commercial determinants of tobacco, diet, alcohol use and gambling, including through WHO Europe, but nothing on physical activity. This abstract reports on field-defining work in the commercial determinants of physical activity, presenting an initial classification of the major themes across physical activity areas subject to commercial influences. These themes developed were: [i] commercial influence on active environments, especially through car manufacturing, urban development, and fossil fuels; [ii] the promotion of small screen time; [iii] the commercial sponsorship of sport and physical activity, sometimes delivered as marketing to distract from companies' unhealthy products (e.g., Coca-Cola, McDonalds); [iv] programs delivered by the fitness and wellness industries; [v] commercial actors using the 'concept' of physical activity / active lifestyles to promote products (active footwear, active leisure clothes); [vi] direct private sector funding of physical activity programs; and [vii] commercial influences on physical activity researcher and scientific evidence. These areas are mapped against the themes developed in the 2023 Lancet series on commercial determinants of health, but focusing on physical activity; these include political practices, distractor marketing and sportswashing, financial practices, influences on science and publication, and reputational actions by the commercial sector. These exist within the complex intersectoral nature and social determinants of physical activity, as physical activity is not one product or service. This framework inform global practice and policy, in conceptualising commercial influences as part of the social determinants of physical activity and initiate public health actions to understand and counter these commercial forces.

Keywords: commercial determinants, social determinants of health, health promotion, physical activity

Knowledge and awareness of WHO physical activity guidelines and their association with actual physical activity level among university students

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ABSTRACT

Awareness and knowledge of WHO Physical Activity (PA) Guidelines are positively associated with PA behavior. This study aimed to investigate the awareness and knowledge of PA guidelines among Omani university students and its relationship with their actual PA levels. In this cross-sectional study (n=356 students; Males: 186) WHO PA guidelines awareness and knowledge were assessed using a questionnaire. PA level was measured by self-reported international physical activity questionnaire (IPAQ). The association between awareness and knowledge and PA level was tested using the Chi-square test. Of total, only 17.1% students were aware of PA guidelines and 14.3% students correctly identified the recommendations for the moderate-intensity aerobic PA and 15.2% correctly identified the recommendations for the muscular type of physical activity. Majority of the students (56.2%) reported moderate level of physical activity while 19.4% of the students reported low physical activity and 24.4% reported high level of physical activity level. There was no significant association between the awareness and PA level and between knowledge of aerobic type PA recommendations and PA level; however, there was a significant association between physical activity PA levels and knowledge of muscular-type recommendations (p=0.016). This study indicated low awareness of the PA guidelines among Omani university students' and lower knowledge of the specific recommendation of PA for healthy life. This necessitates a thorough review of the current PA promotion campaigns to target such young adult group to reduce the future rising prevalence of non-communicable diseases.

Keywords: physical activity, WHO guidelines, Omani university students, IPAQ, awareness, knowledge

The single-item physical activity (SIPA) measure – usefulness for population surveillance and community-wide program evaluation

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ABSTRACT

To explore the single-item physical activity (SIPA) question for adults in national population surveillance and in community-wide physical activity (PA) program evaluation. Given diverse changes to self-report measures, and increased pressure for device-based surveillance, the SIPA is explored for adoption in European PA surveillance systems. Previous research has shown the SIPA measure (days/week of 30mins MVPA) has similar reliability (0.6-0.8) and validity (0.3-0.5), similar to established self-report PA measures. Analysis of the SIPA in three population-wide surveillance systems (Ireland, New Zealand, Australia), and in the evaluation of four large community-wide PA programs. The research questions were [i] whether the SIPA could correctly classify populations meeting PA guidelines established through existing self-report survey measures [using epidemiological methods - ROC curve analyses], and [ii] demonstrate the impact of community PA/sport programs. The SIPA can correctly classify populations as meeting physical activity guidelines (AUC values: New Zealand 0.81, Ireland 0.84, Australia 0.93, with Youden's index 0.54-0.71). In the four large community programs, change in physical activity of between 0.2 days and 1.2 days was observed, indicating measurement responsiveness. The single-item PA question is affordable, low respondent burden, has acceptable measurement properties for long-term adoption by national and regional PA surveillance surveys. In addition it is an inexpensive option for use in non-health data collections, and for standardised, comparable assessment of the impact across community-wide PA programs.

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Keywords: physical activity, surveillance, monitoring systems, program evaluation

Effectiveness of a female community health volunteer–led physical activity education intervention on accelerometer-derived outcomes in semi-urban Nepal

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ABSTRACT

To evaluate the effectiveness of a Female Community Health Volunteer (FCHV)–led, home-based physical activity education intervention on accelerometer-measured physical activity among adults in semi-urban Nepal. We conducted a six-month, open-label, cluster-randomised controlled trial in 14 wards of Pokhara Metropolitan City, Nepal, with clusters allocated to intervention or control. Adults received usual care or an FCHV-led intervention comprising three monthly home visits delivering co-designed physical activity education informed by the Theory of Planned Behaviour. Physical activity was assessed using wrist-worn accelerometers at baseline and follow-up. The primary outcome was the change in daily moderate-to-vigorous physical activity (MVPA). Intention-to-treat analyses were performed using adjusted between-group comparisons. A total of 264 participants were included (132 per group; mean age 49.4 years; 67.5% women). Both groups experienced declines in physical activity over six months; however, reductions were smaller in the intervention group. Adjusted between-group differences favoured the intervention for non-bout MVPA (+9.80 min/day; 95% CI 0.41–19.18) and 10-minute bout MVPA (+4.53 min/day; 95% CI 0.29–8.77). Average acceleration was also higher in the intervention group (+1.84 mg). Subgroup analyses showed significant effects only within blood pressure categories. An FCHV-led, home-based education programme attenuated declines in physical activity in semi-urban Nepal. Leveraging existing community health volunteer networks may offer a scalable and culturally appropriate strategy to promote physical activity in low- and middle-income countries.

Keywords: accelerometry, cluster randomised controlled trial, female community health volunteers (FCHVs), Nepal, physical activity promotion

Steps to well-being: body-esteem and global self-esteem serially mediate the association between dance training and life satisfaction

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ABSTRACT

Although dance training has been linked to improved psychological well-being, the mechanisms underlying its association with life satisfaction remain unclear. This study tested whether body-esteem facets, and subsequently global self-esteem, mediate the association between dance training and life satisfaction. A total of 234 women, including 72 engaged in supervised dance training, completed an anonymous online survey. Self-perceived sexual attractiveness, physical condition, and weight concern were assessed with the Body-Esteem Scale. Participants also completed the Rosenberg Self-Esteem Scale and the Satisfaction with Life Scale. Direct and indirect effects of dance training on life satisfaction were tested using serial mediation, with body-esteem facets entered as first-stage mediators and global self-esteem as a second-stage mediator. The direct effect of dance training on life satisfaction was not significant. Significant indirect pathways linking dance training with life satisfaction ran through body-esteem facets and global self-esteem, but not through weight concerns. Specifically, significant indirect pathways ran through perceived sexual attractiveness alone, through perceived sexual attractiveness followed by global self-esteem, and through perceived physical condition followed by global self-esteem. Body-esteem facets and global self-esteem appear to serially mediate the association between dance training and life satisfaction. Perceived sexual attractiveness and physical condition are key body-related pathways linking dance training with greater life satisfaction. These findings suggest that dance may be a particularly beneficial form of activity because it engages a multilevel self-system in which body-specific evaluations, especially perceived attractiveness and physical condition, may translate into broader self-worth and, in turn, greater psychological well-being.

Keywords: dance training, life satisfaction, body-esteem, self-esteem, well-being

Conceptualizing the role of sports coaches in health promotion: a theoretical framework

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ABSTRACT

Although sports clubs are recognized as health-promoting settings, coaches still have little knowledge, expertise and support to play this role. This presentation describes the development of a theoretical framework based on empirical and scientific evidence linking sports coach's role and Health Promotion (HP). Two mixed methods studies assessed coaches' roles, actions, resources and skills in HP. Two literature reviews identified HP skills used and expected by coaches, and provided an overview of existing initiatives, their mechanisms and results. Literature review 1 showed that coaches mobilize 10 HP skills at the intersection between coaching and health. Study 2 showed that coaches have partial awareness of their potential, reflecting a gap between the health dimensions they believe they influence (social and mental) and the actions they actually implement (physical). Study 3 highlighted that the resources mobilized in HP actions change the skills they use. Literature review 2 revealed that HP initiatives targeting coaches are implemented in vulnerable contexts and activate positive mechanisms of social interaction, motivation, and structuring of coaching practices, but also negative mechanisms linked to sporadic use of resources. Our findings provide empirical evidence of coaches' role in HP through mobilized skills and highlight the need for structured support to develop these skills, integrating all health dimensions, considering available resources and the need to activate mechanisms enhancing the effectiveness of available initiatives.

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Keywords: sport coaches, health promotion, skills, resources, initiatives

Integrating behaviour change techniques into the health promoting sports club framework: a review and retrospective coding using the bct taxonomy

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ABSTRACT

Sports clubs are important community settings for health promotion. The Health Promoting Sports Club (HPSC) model provides a comprehensive framework for embedding health promotion across system levels and health determinants, however, evidence on how specific Behaviour Change Techniques (BCTs) are applied within this framework remains limited. This study aimed to examine the use of BCTs in sport-based health interventions and their alignment with the HPSC model. A two-step study design was applied. First, a literature review examined the extent to which BCTs are explicitly reported in sport setting. Second, twenty trials from Hodder et al. (2025) were retrospectively coded using the BCT Taxonomy v1. Coding was conducted independently by two researchers, with inter-rater reliability assessed using Cohen's kappa. Only two sport-based interventions explicitly reported BCT use, indicating a substantial evidence gap. Across the 20 trials, 13 BCTs groups and 39 subgroups were identified, reflecting limited use of the 93 techniques included in the BCT Taxonomy v1. Most BCTs belonged to the groups: Feedback and monitoring, Shaping knowledge, Repetition and substitution, Social support, and Goals and planning. Inter-rater reliability ranged from fair to almost perfect (κ = 0.22–0.88). Sports clubs-based health interventions apply a narrow range of BCTs, often implicitly and with limited theoretical transparency. More explicit, systematic application and reporting of BCTs is needed to strengthen health promotion practice in sports clubs.

Support/Funding Source: research is funded between Santé publiqueFrance, the Ministry of Sport, Youth and Community, University Côte d'Azur and the University of Lorraine.

Keywords: behaviour change techniques, health promoting sports club, health promotion, sports club

Advancing physical activity promotion in higher education through development of the ACTION toolkit

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ABSTRACT

Higher education institutions (HEIs) are ideal settings for promoting physical activity (PA), yet implementation of effective programmes remains challenging. Using a three-study interlinked approach, this work aimed to develop innovative context-sensitive, practice-oriented resources to support implementation. Initially, a qualitative study utilising the UK Medical Research Council (UK-MRC) Framework for complex interventions the Consolidated Framework for Implementation Research (CFIR) explored the experiences of Health-Promoting University (HPU) stakeholders in delivering PA programmes in UK and Indonesia (n=34; service providers, service coordinators, policy makers, funders, and academics). Next, a comprehensive scoping review encompassing 74 reviews identified and mapped the determinants of PA programme implementation within HEIs, employing the CFIR and the Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) frameworks. Finally, following Leask's Framework, co-design workshops with stakeholders (n=10; policymakers, service coordinators, and academics) led to the development of a practical toolkit. Qualitative data from stakeholders generated 12 context-specific themes related to barriers to implementation of PA programmes including difficulties in locating relevant evidence and a lack of practical resources. Through evidence mapping, the review identified 13 context and implementation processes that may influence programme outcomes. Together, this formative work produced a determinant framework, which was then developed during the co-design study to create a theory and evidence-informed practical toolkit (ACTION toolkit) and accompanying resources. Together, these studies offer a theory-informed, context-sensitive, and co-designed resource to support the implementation of PA promotion in higher education settings. Future work is required to enhance the toolkit's generalisability through broader international collaboration.

Keywords: physical activity, toolkit, universities

The impact of work location (home vs elsewhere) on sedentary behaviour outcomes in Scottish hybrid working university employees

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ABSTRACT

In the UK, more than 40% of employees now work from home (WFH) on at least one day per week, compared with 12% pre-COVID-19. WFH leads to higher levels of sedentary behaviour (SB) than when working from elsewhere (WFE). However, there are shortcomings in the evidence with a preponderance of between-group comparisons, limited device-based assessment, and a predominant focus on total daily SB. The aim of this study was to examine the impact of WFH vs WFE on device-assessed SB outcomes (total duration, sitting events, sitting events by duration) across the total day, working hours and non-working hours. In this observational study, desk-based university employees (n=22; 16 female, mean age =39.5 years (SD 10.5)) who WFH (≥ 1 day p/week) wore the ActivPALTM device for 9-14 days and completed a diary to isolate waking and working/non-working time. Following data processing, descriptive data were calculated to compare WFH vs WFE. Total sitting was 30 minutes greater during WFH days compared with WFE, of which the majority of during working hours. During WFH overall and during working hours specifically, there were fewer sitting events in total, fewer sitting events <30 mins, and more sitting events >30mins than when WFE. Employees spent more time in events of >30 minutes and less time in events of <30 minutes when WFH vs WFE, both overall and during working hours. When WFH, employees spend more time sitting and this sitting is less fragmented than when WFE. Interventions designed to reduce SB when WFH are urgently needed.

Keywords: sedentary, home-working, measurement

Utilising green spaces in universities and higher education institutions for physical activity: cross-sector partnerships with parkrun in Ireland for student, staff and community wellbeing

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ABSTRACT

Many universities have green spaces with potential for physical activity initiatives. These are often under-utilised by students, staff and the wider community, despite recommendations for cross-sector partnerships in the Okanagan Charter for health promoting universities. This study aimed to explore the barriers and facilitators to collaboration between universities and the wider community through the free, weekly 5km running, walking and volunteering initiative parkrun. Purposive recruitment took place for interviewees from the five university parkruns in Ireland (Carlow, Dundalk, Galway, Limerick and Waterford). Twelve adults (67% female), who had participated as a runner, walker or volunteer in at least one of these five parkrun sites, took part in semi-structured online interviews in February 2026. Transcripts were analysed using Reflexive Thematic Analysis and quotes representing the two themes were selected. Theme one; Supportive facilities for collaboration includes descriptions of the practical considerations when hosting parkrun events in universities. Theme two; Community relationships explores the complex interactions between university staff and students and the local community at parkrun. The interviewees described varied collaborations between parkrun and the host university, from simple use of the outdoor space to full embedding of parkrun within the university community. The findings from this study will be used to develop a set of policy and practice guidelines which can be applied when implementing parkrun, and similar physical activity events, in universities in Ireland and beyond.

Funding: This study was funded by the College Of Medicine, Nursing and Health Science FutureCare seed fund, University of Galway.

Keywords: health promotion, community initiatives, green spaces, university settings

Joint associations of device-based moderate-to-vigorous physical activity and overweight with work ability in the Finnish adult population

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ABSTRACT

The extent to which physical activity may offset the adverse impact of overweight on work ability remains insufficiently understood. We examined the joint associations of moderate-to-vigorous physical activity (MVPA) and overweight with work ability among adults in Finland. We pooled two population-based health examination survey sub-samples of participants aged <75 years: FinHealth 2017 (n=752) and Healthy Finland 2023 (n=749). MVPA, assessed using wrist-worn accelerometers (3–7 days), was categorized into tertiles: inactive (<60 min/day), moderately active (60–95 min/day), and highly active (>95 min/day). Measured body mass index (BMI) was classified as normal-weight (18.5–24.9 kg/m²) or overweight (≥25.0 kg/m²), yielding a six-category joint variable. Self-reported work ability was dichotomized into good vs limited. Logistic regression models adjusted for age, sex, education, employment status, smoking, and alcohol use were applied. Of the participant, 65% were overweight and 30% had limited work ability. Compared with normal-weight highly active individuals, the likelihood of limited work ability was higher among normal-weight, moderately active (OR =2.0; 95% CI 1.2–3.4) and inactive (OR =2.0; 95% CI 1.1–3.6) individuals, and among overweight individual who were highly active (OR =2.2; 95% CI 1.5–3.3), moderately active (OR =2.4; 95% CI 1.7–3.5) or inactive (OR =3.9; 95% CI 2.8–5.5). Lower levels of MVPA and overweight jointly contribute to limited work ability across the adult population. Higher physical activity partially attenuates the adverse effects of overweight. Promoting regular physical activity together with healthy weight management should remain key public health priorities.

Keywords: work ability, overweight, physical activity

Leisure-time and commuting physical activity and subsequent sickness absence among young and early midlife employees: a register-linked follow-up study 2017–2020

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ABSTRACT

We examined leisure-time physical activity (LTPA) and active commuting (AC) and their associations with subsequent sickness absence (SA) among young and early midlife employees. The 2017 Helsinki Health Study survey among employees of the City of Helsinki aged 19–39 was prospectively linked to register-based data on total, short- and long-term sickness absence spells (2017–2020). LTPA (n=3,618) and AC (n=3,513) were assessed as weekly metabolic equivalent (MET) hours in 2017. LTPA was categorized into five groups based on intensity and weekly volume (inactivity, moderate, moderate-to-vigorous, vigorous and high vigorous) and AC into four groups (inactive, low moderate, moderate-to-vigorous, vigorous). Analyses were stratified by gender and adjusted for sociodemographic and lifestyle factors using negative binomial regression to estimate incidence rate ratios (IRRs) and their 95% confidence intervals (CIs). Women had more SA than men (135 vs 97 days per 10 person-years; p<0.001). Women with moderate-to-vigorous LTPA had, compared to the inactive, lower rates of total SA (IRR 0.69, 95% CI 0.60–0.80) short SA and long SA after full adjustments for covariates. Men with vigorous LTPA remained protective in total SA days (IRR 0.60, 95% CI 0.44–0.81) and short SA spells after adjustment. For AC, protective associations were observed only among women. LTPA including vigorous-intensity activity was associated with lower SA over the follow-up, although patterns differed by gender and activity level. Associations for AC were weaker and confirmed for women only. Vigorous-intensity physical activity may be beneficial for reducing SA already in early working life.

Keywords: leisure-time physical activity, active commuting, gender, sickness absence



Symposia abstracts

SYMPOSIUM TITLE

Green and built environments as catalysts for active aging: linking environment, physical activity, and health

Chair: **Kirsi E Keskinen**

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ABSTRACT

Being physically active and spending time outdoors supports active aging, yet many older adults do not meet recommended activity levels. Designing environments that motivate and enable outdoor physical activity for people with varying functional abilities may help increase activity levels, but more knowledge is needed on how environmental planning and physical activity program delivery can best support older adults. This symposium addresses this gap by offering new insights into the characteristics of outdoor spaces that foster physical activity and health, and into approaches for engaging older adults in outdoor environments. The symposium includes three research-oriented presentations, one practice-oriented presentation, and a commentary. The first research presentation demonstrates how lower extremity functioning and land-use patterns shape older adults' active transport speed, illustrating the integration of GPS, geospatial data, and physical functioning measures. The second examines green space use for physical activity, exploring associations with overall activity levels, health-related outcomes, and older adults' preferred activities in these areas. The third investigates relationships between exposure to green and blue spaces, accelerometer-measured activity, and depressive symptoms among Finnish older adults, highlighting environmental features that may counteract depressed mood and support mental well-being. The practice-oriented presentation discusses the types of support older adults with different functional levels require to participate in outdoor activities and how such guidance can be effectively delivered within physical activity programs, drawing on experiences from two national Finnish programs. A commentary from the landscape architecture perspective concludes the session. Participants in this session will gain insight into the outdoor activities older adults prefer, the environmental features that best support physical activity and health, and ways to account for varying levels of physical functioning when encouraging outdoor engagement. By showcasing presentations that use diverse methodological approaches to studying physical activity, the session may also inspire new ideas for future research projects. Finally, experiences from implementation of physical activity programs and the perspectives from landscape architecture underscore the importance of translating evidence into practice to ensure that green and built environments truly serve as catalysts for active aging.

Keywords: older adults, outdoor physical activity, built and natural environments, functional ability, active aging

PRESENTATIONS OF THE SYMPOSIUM

Lower extremity functioning and land use shape active transport speed in older adults: A GPS derived geospatial study in an urban green area

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ABSTRACT

We investigated whether median speed (MS) of active transport differs according to lower extremity functioning and land use among older adults. Empirical studies using GPS are rare. GPS data was collected over 1-8 days for 231 community-dwelling ≥78-years AGNES study participants. We generated two MS geospatial rasters from GPS points indicating active transport (<5.56 m/s) in an urban green area with varied land use: 'Low SPPB raster' from GPS points of participants with poorer (SPPB score<10, n=67) and 'High SPPB raster' with better (SPPB score≥10, n=164) lower extremity functioning. We extracted land use (residential/service/industry_and _transport/nature_and_green/wetlands_and_water) from Corine Land Cover for each raster cell. We compared MS distribution between 'Low' and 'High SPPB raster' using Mann-Whitney U-Test and between land uses separately in the 'Low' and 'High SPPB raster' using Kruskal-Wallis Test. MS was lower in the 'Low' compared to 'High SPPB raster' overall (1.11 vs. 1.33 m/s, p<.001) and in all land uses (all p<.001) except for service. MS was higher in industry_and_transport compared to residential land use (p<.05) in the 'Low SPPB raster' and compared to other land uses (all p<.001) except for wetlands_and_water in the 'High SPPB raster'. Lower extremity functioning and land use are reflected in MS of active transport among older adults. Walkways next to traffic may challenge to faster pace and/or walking without frequent stops than other environments.

Funding: KK: Juho Vainio Foundation; TR: ERC, RCF, Ministry of Education and Culture, Finland.

Keywords: older adults, active transport, green areas, land use

Physical activity and urban green spaces in older adults - results from a population-based study in Germany

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ABSTRACT

To examine public green space use for physical activity, and explore associations with overall physical activity and health-related outcomes in community-dwelling older adults. Cross-sectional analysis within the population-based "Gesundheit zum Mitmachen" study in Bad Schoenborn, Germany (data collection: April-June 2025). The sample comprised 369 adults aged 50-90 years (197 females; mean [SD] age, 64 [9] years). 289 persons (151 females) completed questions regarding the use of 17 public green space locations for physical activity engagement. The most frequently used locations (at least once per week) were walking route (N=55), quarry lake (N=36), and jogging route (N=33); facilities such as pump track, skate park or basketball court were not used. 111 participants (38%; 68 females) reported using at least one of 17 locations weekly, and analyses revealed a statistically significant sex but not age effect. Individuals who reported weekly use of at least one location had better subjective health ($p<.01$) and accumulated more MET-hours of sports activity per week ($p=.02$). While only a subset of older adults regularly uses public green spaces for physical activity, those who do exhibit favorable health outcomes and higher levels of sports-related activity. Access to outdoor environments may thus be one factor to facilitate physical activity and support healthy aging. Findings should be considered preliminary until confirmed by a prospective cohort study.Funding Source: The study was funded by AOK Mittlerer Oberrhein (health insurance provider) and the municipality of Bad Schoenborn.

Keywords: physical activity, green space, health, older adults

Associations of natural environments and physical activity with depressive symptoms in a population-based sample of Finnish older adults

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ABSTRACT

To investigate the associations of green and blue spaces and physical activity (PA) with depressive symptoms among Finnish older adults. Cross-sectional data (N=621, 57% female, 68-70y.) were obtained from the Oulu45 cohort. Total depressive symptom score (20-80), comprising of positive mental well-being (9-36, reversed), depressed mood (8-32), and somatic symptoms (3-12) was assessed by Zung Self-rating Depression Scale (SDS). Light (LPA) and moderate-to-vigorous PA were measured by wrist-worn accelerometer (min/d). Green space (%) and blue space (no/yes) within a 500-meter buffer around home were based on land cover data. Linear regression models were adjusted fo socio-demogaphics and self-rated health. Higher LPA (B=-0.007, SE=0.003) and presence of blue space (B=-2.307, SE=0.541) were associated with lower total SDS score when adjusted for socio-demographics. After further adjustment for self-rated health, the association with LPA was non-significant. Exploring the SDS factors separately, LPA (B=-0.004, SE=0.002) and blue space (B=-1.479, SE=0.323) were independently associated with higher positive mental well-being; green (B=-0.019, SE=0.007) and blue space (B=-0.566, SE=0.213) with lower depressed mood, and blue space (B=-0.320, SE=0.128) with fewer somatic symptoms. Older adults who engage in more daily light activity, have access to more greenery and some water in their residential area experience fewer depressive symptoms compared to their counterparts. Access to water may benefit mental well-being in general, while greenness may particularly counteract depressed mood and activity support positive mental well-being.

Funding: Juho Vainio Foundation, Ministry of Education and Culture (OKM/19626/2024)

Keywords: mental health, blue space, green space, accelerometry, older adults

Promoting outdoor activities for older adults

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ABSTRACT

Outdoor exercise is part of a good ageing. It improves mood and mobility. Older adults need support for outdoor activities in different ways depending on their functioning. Development Age Institute (AI) coordinates two national exercise programs (Older People on the Move and Strength in Old Age) in which promotion of outdoor activities is among key objectives. Older adults without functional limitations need information and ideas on activities. AI has developed various materials e.g. Nature parkour. Two webinars have been organized. Older adults with decreased functioning need more support. AI organizes training for professionals who then locally train volunteers to act as outdoor friends. Good practices have been developed e.g. Nature experience path. Frail older adults need support in everyday activities. The annual Go Out with the Elderly campaign promotes outdoor activities in safe company. AI challenges professionals, volunteers and families to participate. The campaign highlights the importance of daily outdoor activities. The webinars reached nearly 700 participants. AI has trained over 530 professionals who in turn have trained almost 2000 outdoor friends. Nearly 359000 outdoor sessions are recorded in 14 years. AI disseminates outdoor activities through a large national network of municipalities, wellbeing services counties and NGOs. Good practices are shared and disseminated on our website. National programs are important to enable older adults' outdoor activities in various ways. Older adults are a diverse group. It's important to use different methods to promote outdoor activities.

Keywords: active aging, older adults, outdoor activities

SYMPOSIUM TITLE

Innovative exercise approaches to address dynapenia, sarcopenia, and powerpenia

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ABSTRACT

Age-related declines in neuromuscular function, particularly reductions in motor power (powerpenia), are major contributors to mobility limitations, loss of independence, and increased fall risk in older adults. Notably, motor power declines earlier and more rapidly than maximal strength (dynapenia), making it a critical determinant of functional performance in tasks such as rising from a chair, climbing stairs, and recovering balance. Developing effective, accessible, and scalable strategies to preserve or restore power, alongside strength and muscle mass, in later life is therefore a central priority in exercise science and healthy aging research. Traditional resistance training remains a cornerstone intervention against sarcopenia (loss of muscle mass). However, barriers including time constraints, perceived exertion, recovery demands, limited access to facilities, and its limited effectiveness for improving motor power performance may reduce long-term adherence and overall impact in older individuals. Emerging approaches, such as resistance training using flywheel devices, eccentric-focused exercise, and minimal-dose strategies, also known as “exercise snacks”, offer promising alternatives that may enhance both effectiveness and feasibility. As populations age, identifying exercise strategies that also support brain health is increasingly important. Brain-derived neurotrophic factor (BDNF), a key regulator of neuroplasticity and executive function, is stimulated by physical exercise. Traditional resistance exercise increases circulating BDNF; furthermore, preliminary evidence suggests that eccentric resistance exercise may optimize acute neurotrophic signalling by promoting more stable serum BDNF concentrations. This has important implications for older adults, in whom cognitive preservation is especially relevant. In practice, many individuals seek the minimal effective dose of exercise required to achieve meaningful health benefits. Identifying the lowest volume and frequency necessary to elicit improvements in neuromuscular and cognitive outcomes is therefore of considerable practical importance. Minimal-dose exercise may represent a feasible and scalable strategy for individuals unable or unwilling to meet conventional training frequency recommendations. Collectively, the innovative paradigms presented in this symposium broaden current approaches to resistance training in older adults, with the potential to enhance strength and motor power, preserve independence and cognitive function, extend healthspan, and ultimately improve quality of life.

Keywords: older adults, eccentric, exercise snacks, powerpenia, brain health

PRESENTATIONS OF THE SYMPOSIUM

Do eccentric-focused exercise programs improve functional performance beyond traditional resistance exercise in older adults? A systematic review with meta-analysis

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UP Faculty of Health Sciences

ABSTRACT

Resistance exercise with an emphasis on eccentric contraction is often promoted as a time- and energy-efficient strategy for older adults, yet its comparative benefits over traditional or concentric-emphasized training remain unclear across outcomes. We synthesized evidence from interventional trials in adults aged ≥55 years that directly compared eccentric-focused (including eccentric-biased modalities such as flywheel training, eccentric cycling, and stair descent–type protocols) with conventional/traditional resistance or concentric-emphasized programs lasting >4 weeks. PubMed, Scopus, and Web of Science were searched (October 2021), and eligible outcomes included muscle strength/power, body composition or muscle architecture, and functional performance measures. Nineteen trials were included. Across strength outcomes, the pooled effect favored eccentric-oriented training but did not reach statistical significance and showed substantial heterogeneity. In contrast, functional performance outcomes demonstrated more consistent advantages for eccentric-oriented programs, with clearer improvements in mobility-oriented tests (e.g., timed functional tasks and sit-to-stand performance), whereas longer-duration walking capacity showed little difference between modalities. Evidence for body composition and muscle architecture was limited and inconsistent across studies. Overall methodological quality was predominantly fair, with common risks related to blinding and intervention standardization. These findings suggest that in older adults, eccentric-oriented training is at least comparable to conventional approaches and may yield more robust gains in specific functional tasks than in maximal strength or body composition. Future trials should improve workload-matching strategies and clarify whether eccentric-only prescriptions outperform eccentric-emphasized approaches.

Effects of low-frequency exercise programs on functional capacity and cardiorespiratory fitness in older adults

Žiga Kozinc

UP Faculty of Health Sciences

ABSTRACT

Low adherence to physical activity guidelines among older adults necessitates pragmatic, low-frequency exercise strategies. Emerging evidence suggests that even minimal training doses may improve functional performance; however, direct comparisons between exercise modalities at low weekly frequency remain scarce. The present work integrates findings from two related interventions examining the effectiveness of low-frequency training in community-dwelling older adults. In a 6-week pilot randomized controlled trial, participants were allocated to resistance training or balance training performed once weekly for three weeks and twice weekly for three weeks. Functional fitness was assessed using components of the Senior Fitness Test (SFT). Significant improvements over time were observed in chair stand, 2-min step test, timed up-and-go, flexibility measures, and composite SFT score (all $p < 0.05$), with no significant group × time interactions, indicating comparable benefits of both modalities at low frequency. In a separate 12-week once-weekly multicomponent program, older adults demonstrated significant improvements in functional performance (chair stand, arm curl, timed up-and-go, flexibility) and cardiorespiratory capacity (6-minute walk test, estimated VO_2max), alongside reductions in resting systolic blood pressure. Collectively, these findings indicate that low-frequency training (1–2 sessions/week) can meaningfully improve functional capacity and cardiometabolic health in older adults, regardless of whether the primary stimulus emphasizes resistance, balance, or a multicomponent approach. Minimal-dose exercise may therefore represent a feasible and scalable strategy for populations unable or unwilling to meet standard training frequency recommendations. Larger, and adequately powered trials are required to determine long-term effects and optimal programming parameters.

Acute effects of uphill and downhill treadmill walking in older adults

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UL Faculty of Sport

ABSTRACT

The primary aim of this study was to compare acute physiological and perceptual responses to downhill treadmill walking versus uphill walking. Sixteen older adults (68 ± 4 years) voluntarily participated in a randomized crossover design. They visited the laboratory once per condition, which included walking at 8° decline or incline at 2.5 km/h, administered in a counterbalanced order. Outcome measures included heart rate (HR), rating of perceived exertion (RPE), cognitive performance (Stroop test), delayed onset muscle soreness (DOMS), and gait kinematics (step frequency, step length, and ankle, knee, and hip joint angles). Results showed greater HR during uphill walking at 5, 10, 15, and 20 minutes of the exercise session (at 20 min: 81,8 ± 9,4 vs. 115,9 ± 16,6 bpm). Significant between-condition differences were observed in joint kinematics (greater knee flexion but lower hip flexion angles during downhill walking), step length (shorter steps during downhill walking), and cadence (higher cadence during downhill walking). Cognitive performance improved significantly following both conditions. No significant differences between conditions were found for DOMS one day and three days after the sessions (at 72 hours: 0,31 ± 0,6 vs. 0,31 ± 0,81). Downhill treadmill walking performed at the same pace as uphill walking provides an efficient stimulus for acutely improving cognitive performance while eliciting lower perceived exertion and cardiovascular stress compared with uphill walking. Therefore, downhill walking may represent a safe and effective modality that can be incorporated into physical activity programs for older adults.

Reliability and validity of flywheel squat power test in older adults

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ABSTRACT

Flywheel (FW) resistance devices represent a promising and relatively underexplored approach for assessing and improving power performance in older adults during both concentric and eccentric contractions, potentially mitigating age-related declines in power ("powerpenia"). This study investigated reliability and validity of an FW squat power test in older adults (mean age 69.5 years). Thirty participants completed three assessment sessions separated by one and six weeks. Assessments included functional tests (30-second sit-to-stand and timed up-and-go), isokinetic knee flexion and extension at 30°/s and 180°/s, and squat performance using both FW device with three loading conditions. Reliability coefficients were calculated for FW squat force, velocity, and power outcomes within and between sets during both concentric and eccentric movement phases. Correlations were computed between FW squat performance and functional test outcomes. Velocity demonstrated the highest reliability within and between sets and across sessions (ICC > 0.84). Reliability of all outcomes improved across sessions (ICC = 0.72–0.89; CV = 14–2%). Correlations between FW squat outputs and functional performance ranged from 0.43 to 0.80, with the strongest associations observed for power during the eccentric phase in the third session at the highest FW load. These findings indicate that the reliability of FW squat power testing improves with repeated exposure in older adults. Higher FW loads and velocity measures yielded the most reliable results. Eccentric phase power at higher FW loads showed the strongest associations with functional performance.

Accentuated-eccentric exercise as a potential strategy supporting healthy cognitive aging

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ABSTRACT

As populations age, determining brain health supporting exercise strategies is crucial. Brain-derived neurotrophic factor (BDNF) is essential for neuroplasticity and executive functions and exercise is a well-established stimulus for its release. Traditional resistance exercise (TRE) increases BDNF, but whether accentuated-eccentric exercise (AECC)—which imposes higher mechanical tension and neuronal drive—elicits comparable neurotrophic and cognitive benefits remains unclear. This study compared acute effects of TRE and AECC on serum BDNF and Stroop performance in sixteen healthy, moderately active young males. Participants completed three randomized protocols, at least 7 days apart: control (seated rest), TRE (80% 1RM), and AECC (80% 1RM concentric, 110% 1RM eccentric). Lat pulldown, leg press, and bench press were performed (four sets to failure, 2 min break). Stroop testing occurred at baseline and 15 minutes post-exercise, while venous blood samples were collected at baseline, 5 minutes, 1 hour, and 3 hours post-protocol. Serum BDNF increased 5 minutes after TRE and AECC (both $p < 0.05$), with no change in control. At 1 hour, BDNF declined after TRE ($p = 0.012$) but remained stable after AECC. Word and Color performance improved after all protocols ($p < 0.01$) with largest improvements after AECC. Executive functions (Color-Word) improved only after exercise (both $p < 0.001$), while no change occurred in control. These findings suggest that AECC may optimize acute neurotrophic signaling by maintaining more stable serum BDNF concentrations, supporting future research in older adults where cognitive preservation is especially relevant.

SYMPOSIUM TITLE

From bench to app: integrating evidence-based physical activity interventions for older adults into policy, community, and healthcare

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ABSTRACT

Physical inactivity among older adults is a major public health issue, increasing risks of frailty, falls, and reduced quality of life. While the benefits of physical activity for healthy ageing are well established, implementing effective interventions in real-world settings remains challenging. Older adults are a diverse group, and many programs overlook differences in functional ability, frailty, environment, and access to services. Strategies to promote activity include national policies, community-based programs, and digital health solutions. This symposium presents innovative approaches to implement, adapt, and scale physical activity interventions for older adults across Europe. Finland's "Older People on the Move" Program: Evaluation of 14 national and 100 local projects shows that sustained national coordination strengthens municipal structures, professional competencies, and cross-sector collaboration, embedding physical activity into daily life. Recommendations offer practical guidance for municipalities to integrate promotion into policies and services. Netherland's Framework to Match Activities to Neighbourhood Residents: Functional classification ensures programs align with older adults' capacities, increasing inclusivity, equity, and participation, particularly among underrepresented groups. Belgium's Outdoor IPitup® Activity Bench: Older adults use outdoor fitness equipment less than younger groups. Understanding user characteristics helps design targeted strategies to boost community-based activity. ABC+ Exercise Program Across Four EU Countries: Pilot results show multicomponent exercise programs for fall prevention are feasible, safe, and effective. Participants improved balance, reduced fear of falling, and enhanced quality of life. vAdBeCeDa App in Slovenian Primary Healthcare: This user-centred digital tool supports home-based exercise and integrates professional guidance. Digital interventions complement in-person counselling, with professional support and usability adaptations essential for scale-up. The symposium combines national policies, local initiatives, exercise programs, and digital solutions, illustrating how evidence-based interventions can be successfully applied across different settings. Key messages of the symposium are: national coordination paired with local implementation ensures lasting impact; tailoring programs to functional ability improves participation and equity; multicomponent exercise interventions are safe, practical, and effective; community infrastructure and targeted promotion are crucial to engage older adults; digital tools enhance counselling when designed for users and supported professionally.

Keywords: active ageing, older adults, physical activity, implementation, digital health

PRESENTATIONS OF THE SYMPOSIUM

Recommendations to promote physical activity in older adults in Finland: results from the first evaluation of the "Older People on the Move" program implementation

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ABSTRACT

Age Institute coordinates the national Older People on the Move Programme (OPMP), promoting physical activity (PA) among adults aged 65+ by strengthening professional expertise, cross-sector collaboration and structures that embed physical activity into daily life and services. OPMP also supports Ministry-funded national and local projects. OPMP analysed all programme activities 2020–2024, reviewing 14 national and 100 local projects. Key data sources included the projects' final reports, supplemented by statistics from national organisations and databases, and survey data from professionals and project implementers. Older adults' experiences were incorporated from previous studies. Quantitative analyses covered statistical, registry and monitoring data, qualitative analyses examined project measures, impacts, successes, challenges and sustainability. Findings were disseminated through open-access materials, learning networks and integration into municipal and regional planning and services. Structures, competencies and collaboration supporting PA promotion strengthened during the programme period. Opportunities for strength and balance training, low-threshold group activities, and everyday movement increased. Several practices became embedded in municipal routines. Key barriers included limited resources, accessibility challenges and difficulties in reaching the least active, while OPMP's national coordination, networks and practical tools acted as enablers. Based on these findings, recommendations were developed to guide strategic planning, decision-making and the strengthening of service structures at national and local levels. Sustained national coordination combined with local implementation can integrate PA promotion into older adults' services and daily environments. The recommendations offer a practical roadmap for municipalities, wellbeing services counties and organisations to embed these insights into permanent structures and policy.

Development of a framework to match physical activities for older adults with residents in the neighbourhood

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ABSTRACT

Municipalities are responsible for providing activities for all seniors. Currently, activities often don't align with the composition of the neighborhood. The 65+ age group is often considered a single group. Exercise programs don't meet the needs of some members. Many activities are labeled as suitable for those aged 65+, even though we know that the diversity in vitality is large and isn't based solely on age. Based on classification used by healthcare professionals, we defined four different target groups: vital, slightly frail, frail, and frail with multi-domain problems. We determined which elements should be described in the context of appropriate services and presented this to an external advisory group. During meetings, we also had policymakers and practitioners indicate which activities they offer to which target groups. The external advisory group advised to adjust the classification and combine with the Clinical Frailty Score. We define optimal exercise programs for the various groups based on, among other things, intensity, and the characteristics to be trained. Sessions with practitioners and policymakers revealed that the programs offered to various target groups, most often frail individuals, lag behind those offered to other groups. Several municipalities have begun applying this approach and developed programs for underrepresented groups. The classification gives an opportunity to balance physical activity programs with the composition of the neighborhood. This is necessary because municipalities are responsible for offering exercise programs for all seniors. In practice, this approach has proven to be well-received by both practitioners and policymakers.

Who is using the outdoor IPitup® Activity Bench and how?

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ABSTRACT

Outdoor fitness equipment in public parks may promote physical activity at the community level. However, evidence on user characteristics and usage patterns remains limited. This study aimed to describe who uses the IPitup® Activity Bench and how it is used across multiple publicly accessible locations in Leuven, a medium-sized city in central Belgium. The IPitup® Activity Bench comprises six integrated fitness elements, enabling more than 250 bodyweight exercises. A cross-sectional observational study was conducted at 12 IPitup® Activity Bench locations in Leuven (Flanders, Belgium) between March and May 2025. Each site was observed on two days (one weekday and one weekend day) across four-time blocks: morning (07:00–09:00), midday (12:00–14:00), afternoon (16:00–18:00), and evening (19:00–21:30). Direct observations were performed using a modified System for Observing Play and Recreation in Communities (SOPARC) to record user characteristics (sex, age group) and interactions with the equipment. Across 204 observation hours, 7,865 individuals were observed passing through the target areas; 2.9% (n = 227) used the IPitup® Activity Bench. Users were predominantly male (62%) compared with female (38%). Most users were young-to-middle-aged adults (46.3%), followed by children (38.3%), adolescents (10.6%), and older adults (4.8%). Outdoor fitness equipment such as the IPitup® Activity Bench may contribute to community-based physical activity. Understanding characteristics of users and non-users can inform targeted promotion strategies and interventions to increase uptake, particularly among older adults.

Effectiveness of the ABC+ exercise program for older adults: pilot results from four EU countries

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ABSTRACT

Regular multifaceted physical activity is effective in reducing falls and fall-related injuries among older adults. The ABC+ Exercise Program is a multicomponent program aimed at preventing falls and frailty in community-dwelling older adults. It was piloted in Finland, France, Slovenia, and Italy to assess its feasibility, acceptability, and effects on balance, fear of falling (FoF), functional ability, and quality of life. Altogether, 245 older adults (80.4% women; $\bar{x}$=73.3 [63–94] years) participated. Recruitment strategies differed locally but focused on physically inactive older adults at increased fall risk. Pre- and post-measures included self-reported fall risk (KaatumisSeula®), balance confidence (including the ABC Scale), FoF, and health-related quality of life (EQ-5D-5L). The Short Physical Performance Battery (SPPB) was conducted by trained instructors. Participants trained twice weekly for 3 months. Follow-up data were available from Finland, France, and Slovenia. The program reached its target population: at baseline, 35% had increased fall risk and 41% had fallen at least once in the previous 12-month-period. Poor balance decreased (12% to 4%) indoors and (22% to 14%) outdoors. FoF declined indoors (12% to 6%) and outdoors (35% to 28%). Quality of life improved: moderate-to-extreme pain decreased (52% to 45%) and the proportion without anxiety or depression increased (53% to 60%). Participant feedback indicated high acceptability. No adverse events occurred, and discomforts were mild and related to pre-existing conditions. Findings suggest the exercise program is feasible, safe, and well-received across European settings with potential for wider implementation.

Funding: Funded in 2024–2025 by Erasmus+sport funding.

Integrating the vAdBeCeDa App into Slovenian primary healthcare to support older adults' physical activity

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ABSTRACT

Population ageing and low physical and digital literacy challenge health systems. To support active ageing, the NIJZ, with the Faculty of Sport, developed vAdBeCeDa, the first evidence-based multicomponent exercise programme for older adults via a free mobile app. The aim was to integrate the app into primary healthcare, enhancing personalised counselling and home-based exercise. The app was created by public health experts, sport scientists, IT developers, and older adults, ensuring user-centred features: exercise videos, personalised plans, reminders, and activity tracking. Physiotherapists and kinesiologists were trained in five workshops, while 75 nationwide, on-site workshops guided older adults in independent app use. Professionals and users could create personal exercise plans within the app. Interim evaluation included 270 user questionnaires and facilitator observations. The app is freely available nationwide. Highest ratings were for creating/adapting personal plans (3.74/5), initial app use (3.42/5), and exercise instruction clarity (3.35/4). Moderate ratings were observed for video quality (3.00/4) and post-workshop understanding (3.11/4); lower ratings were given for general app literacy (2.48/5), main menu clarity (2.67/5), and screen layout (2.62/3). Facilitators reported occasional video issues, limited clarity, absent voice guidance and reminder management limits. The app functioned best with professional support. Final evaluation and the upgraded app, planned for June 2026, will be presented at the conference. vAdBeCeDa is feasible for promoting older adults' physical activity in primary healthcare. Professional guidance combined with user-centred design supports personalised counselling and active ageing, while usability insights inform future improvements and broader digital health integration.

Funding: Funded by NextGenerationEU.

SYMPOSIUM TITLE

EnRICH HABITS: a data-enabled community-based citizen science approach to enhance physical activity and nutrition

Chair: **Johan de Jong**

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ABSTRACT

Unhealthy diets and low physical activity raise the risk of physical and mental health problems, yet lasting lifestyle change is hard to achieve through individual interventions alone. Since habits are shaped by social and physical environments—and health inequalities persist—broader community-focused approaches are needed. EnRICH-HABITS applies a socioecological perspective to improve eating and activity behaviors in communities. Working in the Netherlands, Denmark, and Latvia, the project targets high-risk groups, creating context-specific insights while enabling cross-national comparison through aligned data, cocreation, and monitoring. This symposium contains four presentations highlighting the diverse scientific approaches within EnRICH-HABITS, with examples from each participating country. Large epidemiological cohorts are used to identify risk profiles and communities where unhealthy behaviors cluster (presentation 1). Community-based methods and citizen science then enrich these insights, enabling stakeholders and residents to co-create solutions that raise lifestyle awareness and strengthen support from public and private actors (presentations 2 & 3). Citizens collect spatial data, and both quantitative and qualitative findings inform locally relevant interventions. Meanwhile, the entire citizen-science process—from engagement to cocreation—is systematically evaluated using a dedicated monitoring framework (presentation 4). EnRICH-HABITS aims to clarify how change happens in communitiesand identify factors that enable community empowerment. These insights will inform general policy recommendations and guiding principles applicable across different European settings. We will demonstrate the value and challenges of applying diverse scientific methods across four countries to generate relevant knowledge for research and practice. Symposium presentations and presenters: Age-Specific Predictors of Moderate-to-Vigorous Physical Activity Duration: A Machine-Learning Analysis from the Lifelines Cohort (Erja Portegijs) Neighbourhood detectives for Healthy Lifestyle (Amy Jeschke) Co-creating healthier places in Latvia: A case study of citizen science approach for urban and rural communities (Didzis Rozenbergs) A Theory-Integrated Process Evaluation Framework for a Citizen Science Intervention Targeting Physical Activity and Nutrition (Paolo Caserotti)

Funding Source: The EnRICH-HABITS project received funding from ZonMw, Innovation Fund Denmark, Latvian Council of Science under the umbrella of the Partnership Fostering a European Research Area for Health (ERA4Health) (GA N° 101095426 of the EU Horizon Europe Research and Innovation Programme).

Keywords: citizen science, lifestyle habits, community, cohort data.

PRESENTATIONS OF THE SYMPOSIUM

Age-specific predictors of moderate-to-vigorous physical activity duration: a data-driven approach from the lifelines cohort

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ABSTRACT

Moderate-to-vigorous physical activity duration (MVPAd) is a key indicator of a healthy lifestyle, but its determinants vary across life stages. We identified key predictors of MVPAd across age groups using data from the Lifelines cohort (n=121,213). The analysis included 25 variables spanning health (n=4), sociodemographic (n=7), psychosocial (n=6), lifestyle (n=7), and nutritional (n=1) domains. Participants were divided into three age groups: 18–44 (n=59,071), 45–64 (n=52,890), and 65+ (n=9,252). We developed predictive models using Light Gradient Boosting Machine. Hyperparameter tuning was performed separately within age groups using 5-fold cross-validation. Model performance was assessed via RMSE and R^2 values. Predictors important to models were selected based on cumulative SHAP values, retaining variables that accounted for at least 80% of total importance. Preliminary Model performance was modest across all age groups: 18–44 (R^2=0.139, RMSE=624.7), 45–64 (R^2=0.114, RMSE=580.8), and 65+ (R^2=0.123, RMSE=370.7). SHAP values ranged from 5.4 to 88.9. The 80% threshold identified 8, 9, and 10 predictors across the three age groups. Seven predictors were consistently identified across all groups: gender, sleep duration, nutrition, well-being, association membership, recent social contacts, and cholesterol ratio [SHAP 5.5–72.2]. For adults aged 18–44 and 45-64, MVPAd was additionally associated with educational level, working hours, and income [SHAP 50.2-88.9 and 31.3-54.6, rerspectively]. For adults aged 65+, BMI, chronic stress, and alcohol consumption were also important predictors of MVPAd [SHAP 5.4-22.3]. Although the models exhibited modest predictive performance, these preliminary findings highlight shared and age-specific determinants of MVPAd.

Keywords: lifestyle, determinants, lifespan, physical activity

Neighborhood detectives in action: lessons learned in the Groningen case study

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ABSTRACT

To outline key practice insights from the Groningen case study, an applied example of community-embedded citizen science within the international project EnRICH-HABITS. The initiative engaged local residents as "Neighbourhood Detectives" who used photovoice to document and map their lived environments as a basis for co-creating improvement ideas for health-enhancing physical activity and wellbeing. The primary aim is to share practical lessons on connecting research processes with community priorities and the realities of local engagement. The project involved the collaborative development and implementation of participatory research activities in a neighbourhood setting. We partnered with existing community initiatives and networks, negotiated expectations with stakeholders, and adapted recruitment strategies to engage "hard-to-reach" participants. Evaluation encompassed reflection on engagement processes and on challenges that arose from balancing research objectives with building trust and meaningful relationships in the community. Dissemination strategies included sharing findings with residents, local partners, and project teams across contexts to inform iterative improvements. Engagement efforts revealed the importance of aligning research aims with community agendas and the value of flexibility in practice. Key enablers included locally trusted partners and adaptive methods that responded to participant priorities, while barriers emerged in balancing methodological rigour with relationship building. Recruitment of diverse participants required sustained outreach and trust-building. Embedding research within local contexts promotes meaningful engagement but necessitates ongoing adaptation. Lessons learned highlight strategies for strengthening practice-community linkages and offer transferable insights for similar community-based health promotion efforts.

Keywords: citizen science, participatory photovoice, community engagement, practice implementation, health-enhancing environments

Cocreating healthier places in Latvia: a case study of citizen science approach for urban and rural communities

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ABSTRACT

High rates of non-communicable diseases, premature mortality, and disability pose major public health challenges in Latvia. Citizen science offers a promising new approach. This case study tests a community-based cocreation process to develop locally tailored solutions for improving physical activity and nutrition environments in urban and rural areas. A community-based citizen science approach is implemented in one urban and one rural neighbourhood in Latvia. Adult community members are recruited through local gatekeepers, posters in community centres, public meetings and snowball sampling. Researcher facilitated community meetings will provide participant training in data collection and collaborative data analysis using guided group discussions. Data collection combines participant led community walks with independent exploration and group workshops as well as participants opinions and attendance. Participants use mobile application 'HealthyHoods' to document environmental features relevant to physical activity and nutrition. Measures include geolocated photographs, structured in-app ratings, field notes, and qualitative data from guided group discussions. Data analysis integrates descriptive analysis of app-based quantitative indicators with thematic analysis of workshop discussions. The ongoing study is expected to generate community relevant- data and cocreated, -context specific- proposals for improving physical activities and nutrition related supportive environments as well as data regarding feasibility of citizen science approach for public health. Although citizen science remains underutilised in Latvia's health context, methodological insights into the use of this approach to influence health habits could provide potential solutions to address public health problems.

Keywords: citizen science, physical activity promotion, nutrition environment, community cocreation

A theory-integrated process evaluation framework for a citizen science intervention targeting physical activity and nutrition (EnRICH-HABITS)

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ABSTRACT

Citizen science (CS) is increasingly applied in behavioral science and public health to enhance contextual relevance, participant engagement, and intervention tailoring. In the physical activity (PA) and nutrition domains, CS approaches may strengthen ecological validity and long-term sustainability. However, limited methodological guidance exists on how to evaluate implementation processes and underlying behavioral mechanisms in CS interventions. Challenges related to representativeness, contextual variability, and implementation fidelity may compromise both internal and external validity if not rigorously examined. This study presents the development of a theory-integrated process evaluation framework for the EnRICH-HABITS citizen science intervention targeting PA and nutrition behaviors among community-dwelling adults. An iterative co-development process involving researchers and stakeholders (brainstorming sessions, roundtables, and plenary discussions) was conducted to identify critical intervention phases. The framework integrates the Medical Research Council guidance for complex interventions, the Context and Implementation of Complex Interventions (CICI) framework, and the COM-B model to assess implementation processes, contextual determinants, and hypothesized behavioral pathways. Six critical CS phases were identified: pre-recruitment, recruitment, onboarding, data collection, solution generation, and external validity. A mixed-methods assesses reach, fidelity, adaptations, dose delivered and received, and contextual facilitators and barriers influencing PA and nutrition behaviors. Short-term behavioral mechanisms are examined through domain-specific self-efficacy measures (PA and nutrition) and a community empowerment questionnaire. This framework advances methodological rigor in citizen science by systematically linking implementation processes to behavioral mechanisms. It provides a scalable model for evaluating co-created health promotion interventions in real-world settings.

Keywords: process evaluation, citizen science, framework.

Topic: Children and Adolescents

SYMPOSIUM TITLE

Outdoor environments, inclusion, and culture: understanding and learning from physical activity in Norway

Chairs: **Solfrid Bratland-Sanda; Lena Heyn**

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ABSTRACT

Green and blue spaces are increasingly recognised as cost-effective ways to support climate and public health goals. They offer appealing settings for physical activity and provide psychological, social, and environmental benefits. However, inclusion and accessibility challenges persist, particularly for vulnerable groups who may face barriers such as adverse weather, limited access, and concerns about medical safety. Norway, where outdoor culture is strong but unevenly experienced, serve as a nice case to meet the need to understand how nature-based environments can promote inclusive physical activity. This symposium addresses these gaps by examining benefits and barriers to outdoor physical activity across different settings and population groups. The first presentation investigates Drammen, a city undergoing extensive nature-based regeneration, to examine how improved green and blue spaces support physical activity and contribute to wider individual, social, and environmental outcomes. The second presentation uses national Ungdata survey data to compare outdoor activity participation among children with and without disabilities, highlighting key inclusion issues. The third contribution focuses on physically active learning in Norwegian schools, exploring teachers' perceptions of weather as a barrier to delivering outdoor learning activities. The fourth presentation draws on a large population survey to compare perceived nature access and subjective well-being among immigrants and non-immigrants, illustrating differences in engagement with outdoor environments. The final talk examines how Norwegian cultural norms shape researchers', clinicians', and service users' attitudes towards physical activity in the treatment of eating disorders. By presenting new empirical data and diverse perspectives, this symposium strengthens understanding of how green and blue spaces function as arenas for physical activity in a country where outdoor practices are embedded in both culture and policy. The contributions collectively highlight opportunities and challenges in using natural environments to support inclusive, accessible, and sustainable physical activity. Expected insights include: (1) improved understanding of health and environmental gains linked to nature-based urban regeneration, (2) insights into access and participation among vulnerable groups, and (3) evidence on weather as a barrier to physically active learning, informing more resilient educational practices.

Keywords: planetary health, inclusion, medicine, health care, school, community

PRESENTATIONS OF THE SYMPOSIUM

Moved by nature: exploring pathways linking physical activity in urban green and blue spaces to individual, social, and environmental outcomes

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ABSTRACT

Physical activity (PA) is a key pathway linking green and blue spaces (GBS) to multiple health outcomes. However, less is known about how PA in GBS contributes to broader social and environmental benefits beyond individual health. This study therefore explored the case of Drammen, a city that has developed an extensive network of PA-supportive GBS. Data were collected through multistakeholder interviews (total n = 21), a focus groups (n = 5), field observations, and contextual document analysis, and analysed using the Gioia methodology. Four aggregate categories were identified: (i) PA as an outcome of GBS, (ii) PA as a facilitator of health-enhancing experiences, (iii) PA as an integral component of prosocial behaviours, and (iv) barriers. GBS supported varied PA, including both land- and water-based activities, with structural and psychological factors helping to sustain participation over time. In turn, PA facilitated health-enhancing interactions with nature and among people, while also functioning as an integral component of nature-positive behaviours and acculturation processes. Barriers related to maintenance and limited spatial extent shaped both the use and perceptions of GBS. Through multidirectional and interrelated pathways, PA links GBS not only to individual, but also to social and environmental benefits, contributing to Planetary Health outcomes. Policymakers are encouraged to invest in PA-supportive GBS while accounting for context-specific barriers to maximise their broader societal and environmental value.

Funding: NetZeroCities – Pilot Cities, funded by the European Union's H2020 Research and Innovation programme (grant no. 101036519).

Keywords: health promotion, healthy cities, planetary health

Exercise and nature-based outdoor activities among children with and without disabilities: results from the Norwegian Ungdata plus survey

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ABSTRACT

Children with disabilities (CWD) face greater difficulties than their peers in participating in physical activities and are at higher risk of health problems related to physical inactivity. However, there is limited knowledge about differences in participation in physical activities, including exercise and nature-based outdoor activities, between children with and without disabilities in large population-based samples. This study explores these differences. Cross-sectional self-reported survey data from 6,049 Norwegian children aged 10–13 years in the Ungdata Plus project were analysed. The prevalence of CWD was 8.2% (n=476). Group differences in participation in exercise, as well as nature-based summer and winter activities, were analysed using Pearson's chi-square tests and linear regression models controlling for sex, ethnicity, urbanity, and socioeconomic status. CWD exercised less frequently (e.g., 2–3 times per week or more = 64% vs. 85%, p<.01) and participated less often in nature-based summer activities (e.g., at least "often" = 54% vs. 60%, p<.01) compared to their peers without disabilities. These differences remained significant after adjusting for socio-demographic factors in the linear regressions (Exercise: b=-.170, p=.01, scale 0–5, Nature-based summer activities: b=-.109, p=.03, scale 0–4). No significant differences were found between groups in nature-based winter activities. The findings highlight lower levels of exercise and participation in nature-based summer activities among CWD compared to their peers without disabilities. Health promotion efforts targeting CWD should prioritise inclusive strategies that facilitate participation in exercise and nature-based summer activities.

Keywords: disability, children, exercise, nature-based outdoor activity

"Blame it on the rain": wheater as a barrier for conducting physically active learning in Norway

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ABSTRACT

The combination of PA and academic content, most often termed physically active learning (PAL), is promising for increasing children's PA levels as well as academic outcomes. In Norwegian schools, PAL is most often conducted outdoors, making the Nordic climate a significant factor for how and when PAL can be conducted. This study examined secondary school teachers' motivational regulations for using PAL, and explored how weather constrained the conduct of PAL outdoors. A total of 148 secondary school teachers completed a survey comprising the Behavioral Regulation in Exercise Questionnaire (BREQ, α = 0.79–0.92) and a scale assessing the extent to which weather affected the use of outdoor PAL (α = 0.82–0.93). There were positive Tcorrelations between teachers' self-determined regulations for applying PAL and their willingness to adapt a PAL session to be held indoors if the weather conditions did outdoor PAL impossible. In contrast, more controlled forms of motivation to use PAL were positively associated with perceiving unfavorable weather as a reason to forgo PAL altogether, whether outdoors or indoors. Weather conditions represent an important barrier to conducting PAL outdoors. However, teachers who have internalized and personally identified with the value of using PAL and view PAL as worthwhile and important, appear more capable of adjusting and sustaining PAL despite poor weather. Practical implications include the need for empowering teachers to find alternative solutions to conduct PAL regardless of weather conditions and across seasonal variations.

Funding: Grant from Saving Bank Foundation Sparebanken Sor.

Keywords: school, teachers, motivation

Direct and mediated pathways between perceived access to nature and subjective well-being among Norwegian adults: assessing the moderating role of immigrant background

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ABSTRACT

Access to nature has been linked to mental health benefits through increased exposure to natural environments, physical and social activity. This study examines whether direct and indirect (through physical and social activity) associations between perceived access to nature (PAtN) and subjective well-being (SWB) are moderated by immigrant background. We analysed cross-sectional survey data from Norwegian adults (n = 32,894, age ≥ 18 years). A parallel mediation analysis was conducted, using SWB as the dependent variable, PAtN as the independent variable, and physical and social activity as mediators. Immigrant background (non-immigrant, "Western" immigrant, "non-Western" immigrant) was tested as a moderator of all paths. Analyses controlled for gender, age, socio-economic status, and health problems. PAtN was positively associated with SWB (Total effect: $\beta = .20$, $p < .001$). A small proportion of this association was mediated through the included mediators ($\beta = .021$, 95% CI = .019,.024), but primarily through social activity ($\beta = .017$, 95% CI = .015,.020). A small moderation effect was found only for the direct PAtN–SWB path, showing a slightly weaker association for "Western" immigrants compared to non-immigrants (Interaction effect: $\beta = -.086$, $p < .01$). Perceiving good access to nature appears to benefit the mental health of both non-immigrant and immigrant Norwegian adults, with no differences in tested pathways. To address inequality in health between majority and immigrant populations, public health policies should prioritise the preservation and development of natural environments in local communities.

Keywords: inclusion, epidemiology, exercise

Friluftsliv, welfare, and sport: Norwegian cultural contexts shaping physical activity in eating disorders

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ABSTRACT

Maladaptive movement is a core symptom among many individuals with eating disorders. This study aimed to explore perceived sociocultural influences within Norwegian movement culture that shape understandings of, and attitudes towards, physical activity in the context of eating disorders. Four focus group interviews were conducted with a total of 11 informants, including experienced researchers, clinicians, and user representatives working in the field of eating disorders and exercise. Each interview lasted 60–90 minutes and generated a total of 148 pages of verbatim transcripts. The data were analysed using thematic analysis. Three overarching themes were identified: (1) The sporty, hiking nation, (2) The Nordic Welfare Model, and (3) The Nordic Sport Model. Norwegian cultural heritage was seen as strongly formative for views on physical activity and exercise in the context of eating disorders. Informants highlighted the traditions of friluftsliv, including its historical links to asceticism and its status as a core element of national identity. They also emphasised how the egalitarian welfare state—with predictable working hours, economic security, and publicly accessible natural environments—facilitates wide participation in leisure-time sport and outdoor activities. The Nordic Sport Model, characterised by volunteerism and a limited presence of professional coaches in youth sport, was viewed as influencing the lack of exercise specialists within treatment teams for eating disorders. These findings underscore the importance of considering national cultural contexts when translating and adapting international guidelines for safe and therapeutic exercise in eating disorder treatment.

Keywords: exercise, psychiatry, medicine

SYMPOSIUM TITLE

Active outdoor play: from multi-country evidence to policy action, practice and urban design

Chairs: **Josefine Kailaheimo-Björkqvist[1]; Berry van Holland[2]**

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ABSTRACT

Active outdoor play is a form of play taking place outdoors that involves physical activity of any intensity. Play is essential for child development, supporting motor competence, sensory integration, physical activity, connection to nature, and resilience. Achieving population health impact requires coordinated action across policy, practice and planning so everyday outdoor play is possible, attractive, and safe, while allowing age-appropriate challenges and risks. This symposium links research with policy and practice to translate evidence into feasible action and expand active outdoor play opportunities for children. It also reinforces the United Nations Convention on the Rights of the Child, which states: "State Parties recognise the right of the child to rest and leisure, to engage in play and activities appropriate to the age of the child". Speaker 1 will present outcomes from the 2025 Active Outdoor Play Global Position Statement, updating the evidence base and positioning active outdoor play as a foundation for health and well-being across ages, communities, and environments, increasingly important amid global challenges such as health inequities, climate change and excessive screen use. Speaker 2 will present key findings from SUNRISE Finland on associations between preschool children's outdoor play, motor competence and physical activity. Speaker 3 builds on this evidence by presenting longitudinal findings from the Physical Literacy for Communities (PL4C) initiative on how outdoor play relates to trajectories in motor competence and well-being. Findings from the Ireland State of Play Survey will communicate how parental attitudes towards risky play may influence children's opportunities to engage in these activities. Finally, the Pazi!park UrbanOasis initiative in Slovenia illustrates how child-participatory, multifunctional urban design choices can remove or reinforce barriers to active outdoor play in school and neighbourhood settings. Although active outdoor play is a low-cost way to support child development and resilience, an implementation gap persists between evidence and reality, shaped by stakeholder barriers and outdoor spaces designed for single-purpose use rather than everyday multifunctional play. Bringing these perspectives together, the symposium clarifies enablers and constraints across home, education and neighbourhood environments, and how spatial affordances and design qualities shape access and choices to engage in active outdoor play.

Keywords: physical activity promotion, motor competence, urban planning and design, OneHealth, 24-hour movement behaviour

PRESENTATIONS OF THE SYMPOSIUM

Going global with Active outdoor play: outcomes from the 2025 global position statement

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ABSTRACT

Active outdoor play is a form of play taking place outdoors that involves physical activity of any intensity, essential for healthy child development and accessible to those of all ages. In 2015, a Position Statement on Active Outdoor Play was released in Canada, one decade later, a 10-year anniversary initiative was conducted to broaden the scope and impact of the original work, extending its reach conceptually, to global and all age categories. The updated 2025 Position Statement was informed by 18 rigorous literature reviews, a series of leadership group meetings, three rounds of draft AOP10 surveys, and extensive communication, translation, production, and dissemination activities over a two-year period. The updated statement emphasises that "active outdoor play promotes holistic health and well-being for people of all ages, communities, and environments, and for our entire planet." Key statements and evidence from several studies determined that outdoor play: 1) helps us move more, play longer, and sleep better, 2) builds climate resilience and stewardship for a sustainable future, 3) is a catalyst for sustaining health and well-being, including 4) reducing excessive indoor time and sedentary behaviour. Policy implications and practice implications are varied, active outdoor play can be aligned with other aspects of international justice, health, and equity, including as part of national development goals, educational curricula, and urban planning to facilitate healthy resilience countermeasures within the population.

Funding: Lawson Foundation Canada

Associations of outdoor play in various environments with physical activity, sedentary time, and motor skills in early childhood

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ABSTRACT

We investigated associations of outdoor play in various environments with physical activity (PA), sedentary time, and motor skills in early childhood. Cross-sectional data included 3–4-year-old children (N= 1,081) that participated in the SUNRISE Finland Study (2022–2023). Children wore accelerometers for seven consecutive days and completed Supine Timed Up and Go (STUG), single-leg balance, standing long jump, and handgrip strength tests. Caregivers reported sociodemographic factors and whether children had engaged in outdoor play across six predefined environments during the past three days (yes/no). Linear mixed models with family-level random intercepts were adjusted for age, sex, household income, residential setting (urban/rural), and season. Outdoor play in nature was associated with less sedentary time (B=-17.66, 95% CI [-30.01, -5.31]), more moderate-to-vigorous (B=3.33, 95% CI [0.71, 5.94]) and total PA (B=12.47, 95% CI [1.53, 23.41]), and better handgrip strength (B=0.44, 95% CI [0.16, 0.72]). Outdoor play at playgrounds/parks was associated with more moderate-to-vigorous (B=4.34, 95% CI [1.62, 7.06]) and total PA (B=11.92, 95% CI [0.50, 23.34]). Outdoor play in own yard was associated with better STUG performance (faster time) (B=-0.82, 95% CI [-1.48, -0.16]). Outdoor play at friends'/relatives' home (B=0.42, 95% CI [0.13, 0.70]) was associated with better handgrip strength. Outdoor play on streets and near water showed no significant associations. Outdoor play may support children's PA and motor skills, highlighting the importance of creating diverse outdoor play environments that encourage children's play.

Funding: Research Council of Finland (371235), The Swedish Cultural Foundation in Finland

The developmental benefits of outdoor play: a longitudinal study on motor competence, self-perceived physical literacy, and mental health

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ABSTRACT

Outdoor play is important for children's physical and psychosocial development, yet longitudinal evidence is limited. This study examined whether outdoor play predicts trajectories of motor competence, self-perceived physical literacy (SPPL), and mental health over a two-year period. Data were drawn from the two-year longitudinal Physical Literacy for Communities (PL4C) cohort study in Canada. Children's outdoor play and mental health (SDQ) were parent-reported, while motor competence and SPPL were measured via the PLAYfun and PLAYself tools, respectively. MVPA was assessed via ActiGraph. Linear mixed models were used to estimate longitudinal associations, adjusted for gender and MVPA. A total of 342 children and their parents participated at baseline, with 255 and 239 retained at the one- and two-year follow-ups, respectively. Outdoor play was positively associated with PLAYfun scores (β=0.88, p=.003), independent of MVPA and gender, and did not differ by age. Regarding SPPL, there was a significant interaction between age and outdoor play (β=2.75, p=.013), for baseline (median 7 year-olds) outdoor play showed a weak association with PSQ scores (β=1.54, p=.074), whereas 2 years later the association was substantially stronger (β=4.29, p=.013), indicating a lagged effect. While no significant effect of outdoor play was found for the SDQ total score, it had a significant positive effect on the Prosocial subscale (β=0.27, p=.007), with no age effect. These longitudinal findings highlight time spent in outdoor play as an important early-life behaviour that strengthens children's perceived competence, social functioning, and motor competence over time, beyond overall physical activity.

Parental attitudes to risky play and children's independent mobility: opportunities for public policy to promote safe and healthy childhoods in Ireland

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ABSTRACT

Outdoor play supports children's physical, social, and emotional development, yet opportunities for risky play are declining. Parental safety concerns shape children's independence and play experiences as parents balance injury prevention with developmental benefits. This study examined parental attitudes toward risky play and independent mobility in Ireland to inform public health strategies that promote safe, developmentally beneficial childhood environments.A cross-sectional online survey of 376 nationally representative parents of children ≤16 years assessed attitudes toward risk, safety, supervision, and opportunities for outdoor risky play, alongside demographics. Data were analysed using descriptive statistics, chi-square tests, and multivariable regression to identify predictors of children's engagement in risky play.Of the 349 survey completers (84% female), most parents recognised the value of risk for skill development and trusted their children to play safely, yet attitudes strongly shaped play opportunities. Significant associations were found between attitudes to outdoor play in the rain and school travel ($p < 0.01$), and between perceived appropriate age for independent activities at home and school ($p < 0.05$). Greater independent mobility was moderately associated with permission to play in the rain (Cramer's $V = 0.51$).Despite recognising the value of risky play, parents viewed supervision as necessary and were risk-averse for play near dangerous elements, with adult tools, or out-of-sight. Findings highlight how parental attitudes can facilitate or constrain risky play and inform public policy and family-focused initiatives to support safe, developmentally appropriate outdoor play.

Multifunctional outdoor environments for physical, social and mental well-being - practice insights from Slovenia

Gaja Trbižan

Društvo Pazi!park, IPoP – Inštitut za politike prostora (IPoP – Institute for Spatial Policies)

ABSTRACT

Active outdoor play is often framed primarily through intensity of physical activity. However, children's engagement outdoors depends on environments that provide choice: movement, rest, social interaction and retreat. This presentation draws on practice-based projects to demonstrate how multifunctional and gender-sensitive spatial design influences active and unstructured outdoor play and supports physical, social and mental well-being. The UrbanOasis and RE:PLAY projects applied participatory spatial design methodologies in school environments. Children were involved as co-creators through workshops, model-making, spatial testing and on-site implementation activities. Observations of play behaviour before and after interventions, participatory workshops with children, and consultations with teachers, school staff and municipal representatives informed iterative adjustments to the design. Projects showed that mono-functional sports surfaces often privilege specific groups and forms of play, while diverse topography, natural elements, flexible structures and informal gathering areas attract a broader range of users and allow diverse forms of play. Girls' participation in active play increased where climbing structures, balancing elements and smaller-scale social spaces complemented traditional sport courts. Spaces that introduced quieter areas enabled longer outdoor stays and richer social interaction. Design processes highlighted negotiation challenges related to safety regulations, maintenance standards and school operational needs, as well as adult spatial preferences and competing land uses. Multifunctional, participatory outdoor design can act as an intervention for health-enhancing physical activity by expanding who participates and how. Embedding spatial quality and child agency into planning practice supports inclusive outdoor play while advancing child rights, mental well-being and sustainable urban development.

SYMPOSIUM TITLE

Physical activity messaging across the lifespan: evidence and innovation from Scotland and Ireland

Chair: **Caera Grady**

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ABSTRACT

Physical activity (PA) messaging is central to increasing population-level PA, yet systematic evidence-based approaches to message development, adaptation, and evaluation remain underutilised. Messages are often presented as "one-size-fits-all", despite clear differences in needs, motivations, and contexts across groups and the lifespan. This symposium showcases novel, ongoing, early career-led research, applying structured PA messaging approaches across children, adolescents, and adults in Scotland and Ireland. The aim is to demonstrate how contextually relevant, co-created and evidence-informed messaging can strengthen existing PA interventions and communication strategies. This symposium opens with an overview of PA messaging in relation to international PA policy, and introduces the Physical Activity Messaging Framework (PAMF) as a practical tool to guide message development, delivery and evaluation. Three empirical presentations then illustrate application of systematic messaging approaches across the lifespan. Presentation two examines PA messaging within The Daily Mile in Scottish primary schools, drawing on perspectives from pupils, teachers, parents and school leaders to identify messaging needs that support implementation fidelity. Presentation three presents the co-creation and feasibility testing of the COMMUNICATE toolkit within an Irish secondary school whole-of-school PA programme, demonstrating how participatory approaches and peer leadership can enhance relevance and acceptability. Presentation four focuses on adults in Scotland, evaluating understanding of PA guidelines and testing PAMF-informed messages across diverse adult groups, highlighting variation in preferences by life stage and circumstance. This symposium offers early career-led insights from active research at the forefront of PA communication. Collectively, the presentations demonstrate that effective PA messaging requires: (1) contextual tailoring across and within life stages, (2) use of evidence-based tools to guide message development, (3) meaningful involvement of target audiences and multiple interested parties, and (4) application beyond policy communication, including established interventions and programmes. The Scottish-Irish collaboration strengthens transferability across settings. PA messaging benefits from systematic, participatory, and context-sensitive approaches. Evidence-based frameworks such as the PAMF can enhance communication across diverse populations and settings, supporting more effective PA promotion throughout the lifespan.

Keywords: physical activity, health communication, lifespan approach, co-creation, messaging framework

PRESENTATIONS OF THE SYMPOSIUM

What makes children move? Co-creating physical activity messages in Scottish primary schools with insights from the daily mile

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1 - University of Edinburgh; 2 - University of Stirling

ABSTRACT

Children's physical activity (PA) levels decline upon starting formal schooling. The Daily Mile (TDM) is a free school-based intervention, addressing this challenge through 15 minutes of running, walking or wheeling outside during lesson time, at least three times per week. However, variation in delivery and engagement limits potential impact. This project explores how PA messaging can support implementation fidelity by identifying context-specific messaging needs among multiple interested parties. Ongoing data collection conducts focus groups with pupils, teachers, parents, and school leaders in Scottish primary schools. The Physical Activity Messaging Framework (PAMF) was applied and adapted to inform the development of age-appropriate focus group topic guides, marking its first use to support research with primary school–aged children. Topic guides explore implementation experiences of TDM, perceived benefits, and messaging preferences across stakeholder groups. Framework analysis will be used to analyse data collected. Preliminary insights indicate that the PAMF is feasible for structuring PA communication research with children, supporting age-appropriate discussion of PA determinants. By September 2026, key barriers and facilitators to TDM implementation and stakeholder-specific messaging needs will be identified, informing the following co-development messages to improve understanding of benefits, motivation and fidelity. This study demonstrates the value of applying evidence-based messaging frameworks early in the research process, guiding data collection and engagement of multiple interested parties. Anticipated findings will provide practical insights into how context-aware, co-created PA messaging can strengthen delivery of established school-based interventions, with implications for scalable and wider application across educational settings.

The communication of physical activity messages in Irish secondary schools: from student voice to peer leadership

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ABSTRACT

This presentation outlines the role of the COMMUNICATE toolkit, co-created with secondary school stakeholders, in supporting a communications campaign within a peer-led whole-of-school programme (WSP) for physical activity (PA) (the Active School Flag). The COMMUNICATE toolkit was developed with a multi-stakeholder team of co-researchers (policymakers, practitioners, researchers, adolescents) and co-creators (end-users). The co-creation process was evaluated to ensure meaningful participatory research. The COMMUNICATE toolkit was evaluated in a pre-post, quasi-experimental, mixed methods feasibility study to assess its feasibility and acceptability within the Active School Flag, using the Orsmond & Cohn objectives for feasibility studies. The co-creation process was iterative, adaptive, and suitable for peer leaders and teachers. A multi-component, multi-level toolkit was developed incorporating evidence-based messaging tools and principles for peer leaders to implement when delivering a WSP. The feasibility assessment demonstrated acceptability among school stakeholders and identified necessary adaptations to improve intervention fidelity, content, and study procedures before proceeding to a definitive trial. There was low intervention fidelity and this was accompanied by no meaningful improvements in the peer leaders' communication or teamwork skills, health literacy levels, knowledge or beliefs about PA. Including teacher training and further alignment with the WSP could improve intervention fidelity and content. Participatory approaches can successfully facilitate the development of feasible, acceptable and contextually appropriate PA communication strategies. The COMMUNICATE toolkit provides a practical, evidence-informed resource for peer-led whole-of-school PA programmes. Critical considerations are outlined for embedding PA messaging into existing WSP. Nevertheless, modifications are needed before full-scale effectiveness testing.

How should we communicate about physical activity to different groups of the adult public in Scotland?

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University of Edinburgh

ABSTRACT

Physical inactivity causes approximately 3,000 deaths annually in Scotland, yet awareness of UK Chief Medical Officers' physical activity guidelines (UKCMOPAG) remains low (4-18%). Scotland's National Framework identifies Active Communications as a key system, with specific action to apply the Physical Activity Messaging Framework (PAMF) in practice. This presentation synthesises findings from two complementary studies examining public understanding of UKCMOPAG and testing PAMF-informed messages for diverse Scottish adult populations. Study 1 employed qualitative semi-structured interviews with 17 adults (mean age 33.1 years, 52% female) in Scotland to explore understanding and opinions of UKCMOPAG and messaging preferences. Study 2 used a cross-sectional online survey (n=279) to evaluate three message types (guideline, educational, persuasive) across five adult groups: general adults (18-64), older adults (65+), adults with disability, pregnant, and postpartum individuals. Interviews revealed participants were unable to accurately recall UKCMOPAG and described them as unclear and unappealing when informed. Participants preferred positive, relatable messages emphasising short-term benefits over threshold-based guidelines, with NHS identified as the most trusted source. Survey findings showed all message types rated highly for clarity, relevance and appeal (median=6), but only moderately for motivational effect (median=5-6), with preferences varying across population groups. Current guideline communication strategies are ineffective. Future approaches should separate technical guidelines from public-facing messages, use relatable language, emphasise short-term benefits, adopt continuum-based messaging, and ensure delivery by trusted sources. The PAMF provides a valuable framework for developing targeted, evidence-based messages for diverse Scottish populations.

SYMPOSIUM TITLE

Scaling fitness and resistance training in schools: from implementation support to system-level integration

Chairs: **Lars Breum Christiansen**; **Thomas Skovgaard**

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ABSTRACT

European and international policies increasingly emphasize muscle-strengthening activities and physical fitness monitoring as central components of health-enhancing physical activity (HEPA) for adolescents. However, embedding evidence-based resistance training and fitness surveillance into school systems remains challenging. Barriers include limited teacher capacity, insufficient structural support, fragmented monitoring systems, and policy–practice gaps. This symposium addresses how evidence-based resistance training and fitness promotion can be scaled across educational systems, cultural contexts, and policy environments. It aims to bridge effectiveness research, implementation science, and policy infrastructure to inform sustainable system-level integration. An Australian hybrid cluster randomized controlled trial compares three levels of implementation support for the Resistance Training for Teens programme, demonstrating how structured external support and resource investment influence reach, sustainment, and cost at scale. A Danish cluster randomized stepped wedge trial examines cross-context transfer of the same evidence-based programme, evaluating both effectiveness and real-world implementation following co-adaptation to a new national education system. The European FitBack network presents a large-scale fitness monitoring and surveillance initiative based on eight million test results from 34 countries, providing harmonized reference values and implementation frameworks to strengthen data-informed HEPA promotion. A Finnish intervention protocol responds to upcoming national education reform mandating promotion of physically active lifestyles, outlining how evidence-based school programmes can align with legislative change and national policy priorities. The symposium integrates effectiveness research, implementation intensity comparisons, cross-national transfer, surveillance infrastructure, and policy reform within one coherent scaling framework. It offers a multi-level perspective spanning classroom delivery to European policy systems. Participants will gain insight into: ow varying levels of implementation support influence reach, sustainment, and cost, what enables successful cross-context adaptation of evidence-based programmes, how fitness surveillance systems can strengthen policy–practice alignment, how educational reform creates windows of opportunity for HEPA integration. Together, the presentations demonstrate how muscle-strengthening and fitness-based initiatives can move from evidence to scalable, system-level HEPA impact.

Keywords: implementation science, resistance training, school-based intervention, fitness surveillance, policy integration

PRESENTATIONS OF THE SYMPOSIUM

Comparing implementation support models for scaling school-based resistance training in secondary schools

David Lubans

University of Newcastle, Australia

ABSTRACT

Schools can provide foundational resistance training opportunities, but implementation is often constrained by limited teacher capacity, expertise and structural support. This study compared three implementation support models to determine their effects on reach and sustainment of the evidence-based *Resistance Training for Teens* programme, identifying scalable strategies for system-wide delivery.A hybrid cluster randomized controlled trial was conducted in 58 secondary schools in New South Wales, Australia. Schools were randomized to Low (training and resources), Moderate (+external support), or High (+equipment) implementation support. The primary outcome was reach. Secondary outcomes included dose delivered, fidelity, sustainment, perceived impact and cost. Teacher surveys were administered at baseline and 18-month follow-up. Ordinal generalized linear models were used, with Low support as reference. Semi-structured interviews were conducted with project officers (n=10) and teachers (n=11). Compared with Low support, Moderate (OR=5.45, 95% CI: 1.52–19.56) and High (OR=8.12, 95% CI: 2.03–32.58) support significantly increased reach. Sustainment was higher in the High support group (OR=10.74, 95% CI: 1.91–60.31). Teachers in Moderate and High groups reported greater perceived student impact ($p<0.05$). Qualitative findings highlighted local adaptation, teacher leadership and student engagement as sustainment mechanisms. Mean per-school costs increased stepwise (AUD $1,098–$2,474). Structured external implementation support substantially increased programme reach and sustainment. Scaling school-based resistance training requires system-level investment, with important implications for policy and resource allocation in health-enhancing physical activity initiatives.

Funding: National Health and Medical Research Council Partnership Grant (APP2010866) and NSW Department of Education

Keywords: implementation support, scaling-up, resistance training, school-based intervention

Scaling school-based resistance training across contexts: effectiveness and implementation in Danish secondary schools

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ABSTRACT

This study evaluates the effectiveness and real-world implementation of a co-adapted school-based resistance training programme transferred from the Australian Resistance Training for Teens intervention to the Danish lower secondary school context. Beyond effectiveness, the study examines whether an evidence-based programme can be scaled across national, cultural and educational systems through systematic co-adaptation while maintaining feasibility, fidelity and acceptability. A two-period cluster randomized stepped wedge trial is being conducted in 20 lower secondary schools (approximately 1,000 students, grades 7–9). Schools are randomized to early or delayed implementation. The programme is delivered by the teachers during eight physical education lessons, including two sessions for assessment. Teachers receive a structured manual, exercise cards, equipment and participate in a full-day professional development workshop to support implementation. The primary outcome is resistance training self-efficacy. Secondary outcomes include muscular strength, cardiorespiratory fitness, motivation and well-being. Implementation outcomes—fidelity, feasibility, acceptability and appropriateness—are assessed using mixed methods to examine contextual adaptation and scalability. Data collection concludes in March 2026. Effectiveness analyses will estimate intervention effects on psychosocial and physical outcomes. Implementation analyses will identify mechanisms facilitating teacher uptake, programme delivery and contextual transferability beyond the original Australian setting. This study contributes evidence on cross-context scaling of school-based resistance training within public education systems. Findings will inform policy and practice on sustainable integration of muscle-strengthening activities into secondary physical education, strengthening system-level approaches to health-enhancing physical activity.

Funding sources: The study was funded by the Danish Heart Foundation.

Keywords: resistance training, adolescents, competencies, implementation, physical education

A hybrid type 2 implementation–effectiveness trial to promote physical activity and student health in Finnish primary schools

Timo Jaakkola; Mikko Huhtiniemi

University of Jyväskylä

ABSTRACT

In 2026, the Finnish Parliament will revise the Basic Education Act to mandate promotion of a physically active lifestyle as a core aim of basic education (preschool and Grades 1–9). This reform creates a need for evidence-based, scalable school programmes. This study presents the protocol of a one-academic-year hybrid type 2 implementation–effectiveness trial designed to increase students' physical activity and improve their physical, social and mental health, while simultaneously evaluating implementation processes within schools. A three-arm cluster randomized controlled trial will be conducted in 30 schools involving approximately 1,800 Grade 5 students. Schools will be allocated to high implementation support, low implementation support or control conditions. The intervention follows the WHO whole-of-school framework for physical activity promotion. The primary effectiveness outcome is students' cardiorespiratory fitness. The primary implementation outcome is teachers' capability, opportunity and motivation to deliver the programme. Secondary outcomes include physical activity behaviour, psychosocial well-being and implementation fidelity. A mixed-methods approach will be applied, and cost-effectiveness will be assessed. The trial will generate comparative evidence on intervention effectiveness, implementation support strategies, cost-effectiveness and contextual determinants influencing adoption and sustainability across schools. This study leverages national education reform as a policy window for advancing health-enhancing physical activity in schools. By integrating effectiveness and implementation evaluation, it will provide actionable evidence to guide scalable, system-level integration of physical activity promotion within statutory education frameworks.

Funding sources: National public funding

Keywords: hybrid implementation–effectiveness trial, education policy, cardiorespiratory fitness, physical activity promotion, scalability

Physical fitness monitoring and surveillance systems as catalysts for health-enhancing physical activity promotion

Gregor Jurak

University of Ljubljana

ABSTRACT

European policy frameworks emphasize monitoring schoolchildren's physical fitness as a key indicator of long-term health and cognitive development. However, implementation of fitness surveillance systems remains fragmented across countries. The international FitBack network was established to harmonize approaches and strengthen the use of fitness monitoring as a catalyst for health-enhancing physical activity (HEPA) promotion across Europe. FitBack applied a comprehensive data-driven approach. The network compiled more than eight million fitness test results from 34 countries to establish European reference values and map population-level fitness patterns. Causal associations between fitness indicators and health outcomes were examined to define health-related cut-off points. Existing national monitoring systems were analysed to identify best practices. Based on this work, a multilingual digital platform and toolkit were developed and validated to support educators in interpreting fitness data and promoting physical literacy through structured feedback. FitBack launched an open-access web-based platform featuring standardized reporting tools, European reference values and a practitioner-oriented digital toolkit. A 10-step implementation framework and best-practice guidelines were produced to support regional and national adoption of sustainable fitness monitoring and surveillance systems. FitBack demonstrates how harmonized fitness surveillance can bridge policy and school-level practice, enabling data-informed HEPA promotion across sectors and countries. The initiative provides a scalable model for integrating monitoring into national education and health systems. Addressing data governance and privacy challenges will be critical for strengthening longitudinal surveillance and informing future European HEPA policy.

Funding sources: Erasmus+ Sport

Keywords: fitness surveillance, health monitoring, policy–practice integration, physical literacy, european collaboration

Experiences of implementing the Finnish Move! fitness monitoring system in schools

Mikko Huhtiniemi; Timo Jaakkola

University of Jyväskylä

ABSTRACT

The Finnish Move! system has been embedded in the Curriculum for Physical Education since 2016 and annually assesses health-related fitness and motor competence among Grade 5 and Grade 8 students nationwide. The system aims to integrate feedback, home–school communication and healthcare collaboration to support health-enhancing physical activity (HEPA). This study examined stakeholder experiences of the Move! process to evaluate large-scale pedagogical implementation and identify strengths and gaps in system integration. Nationwide survey data were collected from 4,712 pupils and 5,832 parents. Items assessed experiences related to preparation, testing, feedback practices, home discussions, motivational impact and follow-up support. Descriptive analyses were conducted to examine implementation quality across stages. Pupils reported clear instructions (4.3/5), strong effort (4.4/5) and smooth peer interaction (4.2/5). Pre-test information was rated positively (4.1/5), although independent familiarization with online resources was low (1.8/5). Post-measurement pedagogical integration was weaker. While result reports were considered clear (4.0/5), individualized feedback (2.3/5), structured reflection (2.3/5) and guidance for improvement (2.3/5) were limited. Parents reported high awareness of participation (≈90%) and home discussion of results (>90%), yet perceived motivational impact (≈10%) and integration with school healthcare (≈5%) were low. At national scale, the Move! system achieves strong measurement reach and procedural fidelity. However, strengthening adoption and maintenance of pedagogical feedback and cross-sector collaboration is essential to translate monitoring into sustained HEPA promotion. Findings highlight critical leverage points for enhancing system-level impact of school-based fitness surveillance.

Funding sources: National public funding

Keywords: national monitoring system, fitness assessment, school health

Topic: Environmental approaches to HEPA promotion

SYMPOSIUM TITLE

Integrated spatial and environmental health approaches to strengthen HEPA: Evidence and tools from Slovenia

Chairs: **Vita Žlender; Ina Šuklje Erjavec**

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ABSTRACT

Health-enhancing physical activity (HEPA) largely takes place outdoors: in green spaces, along streets, in parks and within recreational infrastructure. The quality, accessibility and safety of green spaces, recreational infrastructure and environmental conditions are important for active lifestyles. As urbanisation intensifies and recreational habits change, outdoor spaces and environmental conditions face growing pressure, which challenges their capacity to remain accessible and equitable across population groups. Although the importance of built and natural environment for physical activity is widely recognised, decision-makers often lack integrated, context-specific evidence on provision, infrastructure gaps inequalities and practical tools to translate health objectives into spatial planning and investment priorities. This symposium addresses that gap by presenting complementary evidence and applied instruments from Slovenia that together inform effective HEPA policy action. The first contribution draws on a citizen science living lab that combines personal environmental exposure monitoring, experiential knowledge and participatory evaluation. It demonstrates how environmental conditions influence active mobility and how such data can inform healthier infrastructure planning. The second contribution provides population-level evidence through a national survey and municipal cases analysing recreational habits, infrastructure provision and perceived barriers, identifying mismatches between supply and demand, inequalities across age and gender groups, and strategic gaps in recreational investment. The third contribution translates research into a decision-support instrument by introducing a composite GIS-based indicator assessing settlement provision with green spaces for physical activity, enabling monitoring and integration of HEPA objectives into spatial planning. The fourth contribution presents evidence from the development of Local Walkability Plans that embed walking within sustainable mobility and public health policy, uncovering the importance of traffic measures and institutional collaboration to strengthen walkability. Together, the contributions highlight current trends and challenges and present practical tools to better integrate spatial planning and public health. The symposium will conclude with a commentary from a representative of the Ministry of Natural Resources and Spatial Planning, reflecting on the policy relevance of the presented research and its potential to strengthen cross-sectoral collaboration and institutionalise HEPA within spatial planning frameworks. The symposium is aligned and supported by activities of the Strategic Development Innovation Partnership Smart Cities and Communities (SRIP PMiS).

Keywords: spatial measures, cross-sectoral collaboration, green spaces, recreational infrastructure, active mobility

PRESENTATIONS OF THE SYMPOSIUM

Healthy Habitats Living Lab: bike commuters' environmental health literacy and insights to promote healthier cycling environments in Ljubljana

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Jožef Stefan Institute, Department of Environmental Sciences

ABSTRACT

Cycling supports health and sustainability, yet spatial planning decisions shape cyclists' exposure to air pollution, noise, and greenery. The Urban Cycling Lab in Ljubljana examined how a citizen science (CS) approach enhance environmental health literacy (EHL), influence route choice, and generate place-based knowledge for healthier urban planning. The study integrated ethnographic methods with personal exposure monitoring to connect cyclists' experiential knowledge with spatial modelling and public health objectives. A two-week theory-driven CS intervention involved 205 bike commuters who monitored particulate matter (PM2.5) and noise using personal sensors. Participants accessed a digital platform to compare geo-coded exposure across routes. A mixed-methods design combined surveys (EHL), "ride-along" interviews (n=10) , and a participatory evaluation workshop (n=30). Qualitative data were transcribed, coded and thematically analysed to identify barriers, facilitators, and intervention opportunities. Survey findings showed concern about air pollution but limited awareness of health risks and low uptake of protective behaviours. Qualitative analyses revealed experiential knowledge of green corridors, traffic density, and initiatives to enhance cycling. Participants preferred quieter, greener routes and proposed infrastructural and educational improvements. Engagement with personal data increased EHL, reshaped risk perception, and prompted selective route adaptations. Workshop discussions highlighted learning and influence strategies to enhance cycling practice. CS strengthen cyclists' EHL, support behaviour change, and translate public health goals into spatially explicit planning recommendations for health-enhancing physical activity.

Funding: Funded by the EU Horizon 2020 project URBANOME and HE ENVESOME

Keywords: citizen science, environmental health literacy, cycling, spatial planning, air pollution

Sport recreational facilities and habits in Slovenia

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ABSTRACT

The social changes of the last decades have influenced how people are active and which facilities they use. A national survey with adult population offered insight into recreational habits and facility use in Slovenia. The 26-question survey was disseminated via an online panel with 1,001 respondents from 173 municipalities. In addition, a case study approach investigated the situation in more depth in the municipalities of Ormož, Trbovlje and Nova Gorica. Within case studies, desk analysis and fieldwork assessed different recreational facilities, and focus groups provided additional data. Major motives for sport recreation in Slovenia are health improvement, relaxation, and improving personal fitness. Common barriers include lack of time, low motivation and illness. Around 10% of respondents are inactive because of insufficient infrastructure near home. Surprisingly, most respondents are active at home, followed by the use of public areas and local facilities. In municipalities, approximately one third of facilities were built in the last 20 years, including bike parks and similar amenities. The analysis also revealed that municipalities do not necessary provide opportunities equally across age groups or genders. The research confirms that the ways in which people are active have changed, including the variety of recreational facilities. Greater public investment is needed in swimming pools, cycling paths, and outdoor fitness, and municipalities should provide a demand-based offer.

Funding: Slovenian Research and Innovation Agency, national research project J7-4598 (October 2022 to September 2025).

Keywords: sport recreation facilities, recreational habits, survey, Slovenia

Provision with green spaces for physical activity: developing local-level indicators

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ABSTRACT

Access to quality green spaces (GS) supports health-enhancing physical activity (HEPA) and benefits population health, particularly in densely populated areas. However, many cities still lack reliable local indicators to assess their availability and suitability. This study identifies key aspects of GS that promote HEPA and explores methods to spatially map and represent settlement provision with such spaces. A multi-stage approach was applied, integrating GIS-based spatial analysis with stakeholder input to develop the composite indicator. It was tested in two case studies: Celje as urban, and Miklavž na Dravskem Polju as rural/peri-urban settlement type. The indicator incorporates key attributes, relevant for the provision with GS for ensuring HEPA: accessibility, size, quality, diversity of GS, attractiveness and safety, emphasizing their capacity to support HEPA across different population groups. While local variations in accessibility and quality were identified within each area, no systematic difference emerged between the urban and rural context in terms of overall accessibility to GS for HEPA. The findings highlight the importance of context-sensitive improvements rather than settlement type alone. The study highlights the need to integrate GS planning into broader public health frameworks. The developed indicator provides a valuable tool for municipal governments seeking to enhance urban liveability and promote active lifestyles.

Funding: Funded by the Slovenian Research Agency (projects V5–2232 and Z5–4589). Slovenian Ministry of Natural Resources and Spatial Planning, and the Ministry of Health cofinanced V5–2232.

Keywords: green space planning, composite indicator, Slovenia, cross-sectoral collaboration, case studies

Community-based walkability planning: a model for embedding walking in sustainable mobility and public health policy

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ABSTRACT

Walking is the most universal and accessible mode of mobility and an important determinant of public health, social equity and cohesion. As a form of health-enhancing physical activity (HEPA), everyday walking contributes to disease prevention, mental wellbeing and healthier lifestyles. Despite these benefits, walking remains marginalised in urban mobility planning dominated by motorised transport. To address this gap, Institute for Spatial Policies and CIPRA Slovenia developed and tested a methodology for walkability planning within the programme Active Travel to School and Healthy City. The initiative aims to improve everyday walking conditions, particularly for children and other vulnerable groups, and to better integrate walking into local mobility, spatial planning and public health policies. The methodology was developed through collaboration between spatial planning, transport, education and public health experts and is based on participatory planning and the Healthy Cities concept. Implementation included three levels of participation: a municipal interdisciplinary working group, a local stakeholder focus group and participatory activities with residents, including vulnerable groups, using interviews, guided walks, participatory mapping and online consultations. The methodology was applied through three Local Walkability Plans and six pilot cases. Findings show that improving walkability depends less on infrastructure investments and more on governance measures such as traffic calming, speed reduction and pedestrian prioritisation. The resulting guidelines offer a scalable model for integrating walking and HEPA into sustainable mobility and public health policies.

Funding: Co-financed by the Slovenian Ministry of Health

Keywords: active travel, walkability, participatory methods, Local Walkability Plan

SYMPOSIUM TITLE

Advancing active transport: changing norms, improving skills, assessing economic effects and exploring commercial determinants

Chairs: **Antonina Tcymbal[1]; Josef Mitáš[2]**

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ABSTRACT

Active transport plays an important role in supporting population health and environmental sustainability. Despite strong evidence supporting positive effects of walking and cycling, uptake remains insufficient in many countries. Addressing this gap requires multi-level approaches that shift social norms, strengthen individual competencies, assess economic impacts, and critically examine systemic barriers. This symposium brings together interdisciplinary perspectives to advance the science and practice of active mobility promotion. The first presentation describes an intervention in professional football settings demonstrates how leveraging fan communities and normative messaging can promote active mobility behaviours. The study examines whether social norms communicated through professional clubs can influence transport choices among fans. The second presentation shows evaluation of results from Bikepool, a school-based cycling programme in Germany. The programme aims to improve students' cycling competence, safety awareness, and confidence. Findings provide insights into behavioural outcomes and implementation challenges in school settings. In third presentation, experiences from 10 years of applying the Health Economic Assessment Tool (HEAT) for walking and cycling are discussed. Developed by the World Health Organization, HEAT quantifies the economic value of reduced mortality resulting from regular walking and cycling. Practical applications and challenges for a wider uptake of the tool will be discussed. The fourth contribution introduces commercial determinants as a novel perspective to better understand structural barriers and enablers of active travel. This presentation examines how commercial actors and market interests shape mobility environments, policies, and social norms, and discusses implications for promoting healthier and more sustainable transport systems. Overall, the symposium highlights how combining behavioural, educational, economic, and structural perspectives can support more effective and sustainable strategies for advancing active transport. It will provide a unique interdisciplinary perspective by integrating behavioural science, programme evaluation, health economics, and political economy approaches to active transport promotion. By presenting findings from diverse contexts, including sport settings, schools, and policy evaluation, it provides both empirical insights and conceptual advances for understanding how active mobility can be effectively promoted.

Keywords: active transport, cycling, walking, health economic assessment, commercial determinants of health

PRESENTATIONS OF THE SYMPOSIUM

Can social norms move fans? Evidence from an active mobility intervention in professional football

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ABSTRACT

Fan-mobility is a significant contributor to the total CO_2 emissions of professional sports events, including those of the OH-Leuven football club. In 2022, 66.1% of the club's home-game emissions stemmed from transportation3. Since then, OH-Leuven has invested in fans' active and sustainable mobility. Method In previous years, we have collaborated with the club to survey various fan behaviours, with a focus on active mobility. In the ongoing 2025/2026 season, we are following a sample of seasonal ticket holders for the entire season. Preliminary analyses show that 460 fans completed the baseline questionnaire and expressed willingness to participate in the longitudinal study. Results & Conclusion In the 2024/2025 season, 50.4% fans' main method of transport to the stadium was active. Comparatively, in the ongoing 2025/2026 season, 68.5% reported using active transport at least occasionally. After each home game, we assess their mobility choices and in-stadium consumption in a short questionnaire. This ongoing project aims to identify effective strategies to increase active mobility to the stadium. To test whether OH-Leuven relevant simple normative cues can shift behaviour, participants of the longitudinal study were randomly assigned to one of three conditions (statements): an injunctive norm, a descriptive norm, or a control. During one specific post-game questionnaire, these statements were presented. The results of this intervention and how this can promote active fan mobility in professional sports will be discussed.

Funding: Interreg North Sea Region project Active Cities (Active Cities Active Cities | Interreg North Sea), which was co-funded by the European Union.

Bikepool – evaluation results of a school-based cycling programme aiming to improve students' cycling competence

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ABSTRACT

School-based cycling interventions may promote safe and equitable active transport among children and adolescents. This study evaluates the effectiveness of bikepool, a large-scale practice-based cycling programme implemented in German secondary schools. The study examines changes in cycling competence using a standardised skills test and explores associations with cycling behaviour. A quasi-experimental pre–post design was conducted in participating schools (n = 182 students, grades 6–10). Cycling competence was assessed using a newly developed practical test. Subgroup analyses examined intervention effects across baseline performance levels. Questionnaires assessed students' attitudes towards cycling in an intervention group (n = 109) and a control group (n = 112). Students demonstrated significant improvements in cycling competence across 9 out of 11 tasks ($p < .001$). The largest absolute gains were observed among students with very low baseline competence, indicating potential reductions in skill disparities. Self-report data revealed no increase in cycling frequency. As a large-scale, school-based programme, bikepool can effectively improve students' saftety-related cycling competence and contribute to reducing skill-related inequalities in active mobility participation. Findings highlight the multifactorial nature of cycling and the need for comprehensive promotion strategies beyond competence development.

Funding Source: Funding was provided by the non-profit association bikepool Hessen e.V. Bikepool is financially supported by the AOK Statutory Sickness Fund of Hesse, Germany.

The Health Economic Assessment Tool (HEAT) for walking and cycling - experiences from 10 years of application of health impact assessment in policy and practice

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ABSTRACT

Walking and cycling have moved into the focus as promising approaches to achieve public health, sustainable transport, climate goals and better urban resilience. However, they are only realistic transport and activity options for a large proportion of the population when they are safe, inclusive and convenient. One way to increase their recognition in transport policy is the inclusion of health impacts of walking and cycling into transport economic appraisals. The Health Economic Assessment Tool (HEAT) for walking and cycling calculates: if x people walk or cycle a distance of y on most days, what is the economic value of impacts on premature mortality, taking into account physical activity, air pollution and road fatalities, as well as carbon emissions. Different data sources were collated to examine how the HEAT was used in more than 10 years of existence, and to identify lessons learned and challenges. Results Since its launch in 2009, the HEAT has gained wide recognition as a user friendly, yet robust, evidence-based tool usable by academics, policymakers, and practitioners. Originally designed for use in Europe, it has since been expanded for global use. Challenges for a wider uptake of health-impact assessment tools including active transport such as HEAT are the promotion and dissemination to local practitioners and policy makers also outside European and English-speaking regions and in low- and middle-income contexts, further increasing usability, and more generally the advancement of systematic data collection and impact quantification related to walking and cycling.

Commercial determinants as a novel perspective to understand barriers and enablers of active travel

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ABSTRACT

Although active travel improves physical and mental health, reduces greenhouse gas emissions and air pollution, and offers social and economic benefits, the pace of action to promote active travel is not reasonable. Understanding its determinants is important to guide effective interventions. Commercial determinants are important yet overlooked. While growing evidence suggests the role of commercial actors in shaping health behaviours, their impact on active travel has rarely been considered. We aim to advance the discourse on the commercial determinants of active travel by outlining positive and negative examples as well as practical approaches. Commercial determinants of active travel describe the influence of economic interests on encouraging and discouraging active mobility choices. Commercial determinants of active travel operate through systemic influences on urban and transportation planning, corporate interests, public discourse and policy making. Through strategic scanning of recent relevant literature, we developed a preliminary framework of key commercial strategies and approaches. We will present a range of counter-marketing strategies (e.g., political lobbying, promotion, advocacy and advertising, suppression of alternatives) to influence active travel and give positive (e.g. bicycle or walking coalitions lobbying) and negative examples (e.g. car industry lobbying for road expansion or reduced fuel taxes) for each strategy. Recognizing, and addressing commercial determinants of active travel is essential for improving population and planetary health. Future work should include accountability frameworks, honing of more forceful advocacy, and allocation of considerable funding for policy-oriented research to better understand and effectively engage decision-makers and practitioners in promoting active travel.

SYMPOSIUM TITLE

Advancing equitable access to greenspace: a coordinated programme of community-engaged research and practice

Chair: **Nasreen Ali**

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ABSTRACT

Inequities in access to greenspaces and the countryside persist among ethnically diverse and under-represented communities in the UK, contributing to widening disparities in physical activity, wellbeing, and meaningful connection to nature. The University of Bedfordshire has developed a strategic and coordinated programme of research and practice aimed at addressing these structural inequalities through culturally responsive, community-engaged approaches. This symposium presents the evolution and integration of this programme, beginning with COVID-19 research that examined the disproportionate impact of the pandemic on Black, Asian and Minority Ethnic communities and identified shifts in health behaviours, including the use of the built environment and greenspaces during lockdowns. This work was further advanced through NIHR funded Public Health Practitioner post, which explored the longer-term impacts of COVID-19 among these communities in the UK. Building on this foundation the Chalkscapes Project, funded by the Chilterns Conservation Board, which identified intersecting cultural, structural, and environmental barriers to greenspace engagement in Luton and Dunstable. Complementary survey and scoping review studies further examined patterns of greenspace use and synthesised evidence on barriers and facilitators affecting diverse UK communities, drawing on the COM-B model and Theoretical Domain Framework to inform intervention design and implementation. Building on these findings, the team collaborated with Luton Council through the Nature Towns and Cities (NTC) Roots to Healthy Places initiative, funded by the National Lottery Heritage Fund. Within this programme, the Collaborative Targeted Outreach Programme (CTOP) was developed as one of 14 NTC initiatives, focusing on improving equitable access to greenspaces and the Chilterns countryside for Muslim communities in Luton through co-creation, participatory action research, and partnership-led delivery. Together, the COVID-19 research, Chalkscapes project, NTC, and CTOP illustrate a coherent pathway from evidence generation to policy and practice, demonstrating how research, policy, and practice can be strategically aligned to and deliver scalable, culturally responsive approaches to greenspace engagement. The symposium will include four short presentations followed by facilitated discussion, inviting participants to reflect on practical strategies for co-design, partnership working, and advancing health equity through nature-based interventions.

Keywords: health equity, greenspace access, community co-creation, ethnically diverse communities, nature-based interventions

PRESENTATIONS OF THE SYMPOSIUM

Exploring the barriers, enablers, and strategies for improving access to greenspaces and the countryside for diverse communities: The Chalkscapes study

Nasreen Ali

University of Bedfordshire

ABSTRACT

Inequities in access to greenspaces and the countryside persist for underrepresented communities, despite growing evidence of their physical and mental health benefits. This qualitative study explored the perceptions and experiences of accessing greenspaces and the countryside among under-represented communities in Luton and Dunstable, UK, to understand community-specific barriers and enablers and to identify opportunities for more inclusive provision. Data were collected through 14 focus groups (n = 122) with community members. Participants reflected a wide range of ethnicities, ages, genders, and educational levels. Data were analysed thematically. Findings identified three overarching themes from the focus group workshops: (1) enablers for accessing greenspaces and the countryside, (2) barriers for accessing greenspaces and the countryside, and (3) co-creating sustainable and scalable activities to overcome identified barriers. Overall access to greenspaces and the countryside is shaped by intersecting structural, social and cultural factors. Centring community voices, strengthening local relationships and adopting co-designed targeted approached are critical to improving equitable access and supporting sustained engagement with outdoor environments.

Understanding greenspace use: survey findings from a multi-ethnic community study

Erica Cook

University of Bedfordshire

ABSTRACT

In the UK, disparities in urban greenspace use persist, particularly among low-income and ethnically diverse communities. Understanding how people engage with greenspaces, and the barriers and facilitators influencing use, is critical to improving equitable access. This study examined patterns of greenspace engagement within an ethnically diverse population and applied the COM-B model (Capability, Opportunity, Motivation–Behaviour) to identify determinants of use. A cross-sectional survey, conducted across two ethnically diverse towns in southeast England investigated greenspace usage, including activities and reasons for using greenspaces and included the Brief Measure of Behavior Change (COM-B). The survey was shared online via Qualtrics and widely disseminated in the local community via bilingual fieldworkers and community networks. The sample comprised 906 participants (60.7 % female, mean age 38 ± 16.37 years). The findings revealed that the use of greenspaces was low with around 33 % visiting greenspaces frequently (at least once a week). Older people, those with higher levels of deprivation and/or those from a minority ethnic background were all shown to be the lowest users of greenspaces. The findings also confirmed that the types of activities and reasons for visiting greenspaces were shown to vary by a range of socio-demographic characteristics. The COM-B model was shown to be a useful explanatory framework with physical capability and motivation identified as significant predictors of frequency of greenspace use. We now encourage future research to consider what factors underpin motivation and the opportunities to use greenspaces, and how these vary across the wider population.

A Collaborative Targeted Outreach Programme (CTOP): improving access to greenspace for Muslim communities in Luton

Olivia Hawes

University of Bedfordshire

ABSTRACT

Older adults (65+ years), women, and ethnic minority communities have been less likely to access greenspaces, contributing to inequalities in physical activity, wellbeing, and nature connection. In response, this project presented the Collaborative Targeted Outreach Programme (CTOP), a community-centred, co-produced intervention designed to improve equitable access to greenspace and the countryside for diverse Muslim communities in Luton. The Collaborative Targeted Outreach Programme (CTOP) integrated the Talk, Listen, Change (TLC) ethnographic approach with World Café collaboration workshops and Appreciative Inquiry (Discover, Dream, Design, Destiny). Five Collaboration Café workshops engaged women, older men, and community stakeholders in culturally responsive, gender-sensitive discussion spaces. Using visual prompts, collage building, and structured dialogue, participants co-designed their "ideal" greenspace experience, exploring where to go, when to go, who to go with, how to get there, and what to do on arrival. Data were analysed using framework analysis to inform intervention development. The subsequent participatory action research phase operationalised the "Destiny" stage, translating community insight into supported greenspace visits. Guided visits were co-delivered with community organisations and incorporated reflective mapping, audio-visual capture of lived experience, and pre- and post-confidence and wellbeing measures. A steering group and collective reflection process supported iterative refinement and local capacity building. Preliminary findings suggested that partnership-based, co-created approaches helped to reduce practical, cultural, and perceptual barriers to countryside access. CTOP demonstrated the potential of inclusive, strengths-based nature interventions to support more equitable participation in greenspace and enhance confidence, physical activity, and wellbeing.

Built environments for physical activity among ethnically diverse communities

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University of Bedfordshire

ABSTRACT

The built environment plays a critical role in public health by shaping opportunities for physical activity. However, ethnically diverse communities in urban UK settings are less likely to engage with the built environment for physical activity, contributing to persistent health inequalities. Evidence synthesising the factors influencing this engagement remains limited. This scoping review therefore examined the factors affecting engagement with the built environment for physical activity among diverse communities in the UK. Five databases (CINAHL, Medline, SocINDEX, PsycINFO, and SPORTDiscus) were systematically searched (January 2015–April 2025). The review followed JBI evidence synthesis methodology and PRISMA-ScR guidelines. Qualitative, quantitative, and mixed-methods studies were included where participants were UK adults (≥18 years) from Eastern European, Black African, Black Caribbean, and South Asian communities. Qualitative data were analysed inductively using thematic analysis and subsequently mapped deductively onto the COM-B model and Theoretical Domain Framework (TDF). Of 2,298 records screened, 10 studies met the inclusion criteria (3 quantitative, 5 qualitative, 2 mixed-methods). Fourteen themed factors were identified and mapped across COM-B domains: physical capability (n=1), psychological capability (n=1), physical opportunity (n=2), social opportunity (n=5), automatic motivation (n=2), and reflective motivation (n=3). Key themes included health status, knowledge, cultural and religious influences, socioeconomic constraints, environmental conditions, and health beliefs and habits. Findings highlight the importance of culturally responsive, community-engaged approaches when designing policies and interventions to enhance equitable access to supportive built environments for physical activity. This review contributes to an equalities-focused understanding of engagement with the built environment in the UK.

Topic: HEPA promotion in health care settings

SYMPOSIUM TITLE

Health-enhancing physical activity as a cornerstone of musculoskeletal care: from primary prevention to stratified pain management

Chair: **Alan Kacin**

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ABSTRACT

This symposium presents research evaluating interventions across the full continuum of musculoskeletal disorder (MSKD) care—from prevention and early management to interdisciplinary chronic pain treatment—implemented within the Slovenian primary healthcare system. Presentation 1: Around 22% of adults in Slovenia live with chronic pain, creating a substantial health and economic burden. The MiSkBol project introduces integrated primary care pathways based on the biopsychosocial model, promoting patient stratification, education, and health-enhancing physical activity to improve outcomes and reduce disease burden. Presentation 2: This presentation introduces a 150-minute multidisciplinary educational intervention for the working-age population focusing on musculoskeletal health, physical activity, ergonomics, pain self-management, and mental health. Preliminary results from 685 participants show significant improvements in health literacy and high satisfaction. Presentation 3: The third presentation examines the implementation of stratified care for acute low back pain using the STarT Back screening tool. Risk-based management improved pain and disability outcomes while optimizing healthcare resources by reducing unnecessary treatment sessions for low-risk patients. Presentation 4: This presentation reports outcomes of a 12-week multicomponent exercise program implemented across different clinical pathways. The greatest functional improvements were observed when exercise was used as a first-line intervention or as follow-up after acute physiotherapy. Presentation 5: The final presentation describes a 12-week interdisciplinary chronic pain management program combining physiotherapy and psychotherapy, which resulted in improved functional capacity, reduced fatigue, and lower perceived disability. The symposium offers a practice-focused view on MSKD care, integrating prevention, stratified treatment, exercise, and interdisciplinary chronic pain management within primary healthcare, showing how coordinated biopsychosocial approaches enhance patient outcomes and system efficiency. The symposium highlights the role of prevention, health-promoting physical activity, and risk-stratified care in musculoskeletal health, showing how exercise-based and interdisciplinary approaches in primary care enhance patient outcomes and reduce long-term disease burden.. Funding: The project “Modernisation of the Management of Musculoskeletal Pain at the Primary Care Level” is being implemented within the framework of the EU Recovery and Resilience Plan, with the support of the Ministry of Health, Republic of Slovenia.

Keywords: musculoskeletal disorders, primary healthcare, patient stratification, biopsychosocial approach

PRESENTATIONS OF THE SYMPOSIUM

Musculoskeletal disorders as a public health challenge in Europe and Slovenia: Prevalence, care pathways and opportunities for health-enhancing physical activity in healthcare

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ABSTRACT

Musculoskeletal disorders (MSKD) are a major global public health burden, affecting 1.71 billion people and representing the leading cause of years lived with disability worldwide. In Slovenia, chronic pain affects 22% of adults, most commonly due to back and joint pain. The economic burden of musculoskeletal and connective tissue diseases is estimated at €287 million annually, accounting approximately 0.5% of the national GDP. This narrative review synthesizes international clinical guidelines, systematic reviews, and national Slovenian health reports to describe the burden of MSKD and current care pathways. The biopsychosocial model is recognized as the most effective framework for MSKD management. Evidence-based practice emphasizes individualized, supervised multidimensional exercise interventions, combined with structured patient education and self-management strategies. In Slovenia, general practitioners serve as the primary entry point to care, however, long waiting times delay treatment initiation and increase the risk of pain chronification and disability. Primary care also lacks preventive interventions, standardized clinical pathways, and patient expectations for passive treatments often conflict with evidence-based recommendations for active participation. To address these challenges and rising MSKD-related costs , Slovenia has launched the MiSkBol project, piloting integrated care pathways for acute low back pain, chronic widespread MSK pain and preventive approaches within primary healthcare centres, with a focus on Health Promotion Centres. The MiSkBol project introduces patient stratification, triage, and empowerment strategies to improve access and clinical outcomes. Implementing preventive intervention and health-enhancing physical activity into MSKD care pathways is essential to reduce disease burden and optimize healthcare delivery.

Effectiveness of preventive intervention in promoting physical activity and musculoskeletal health at the primary level of public healthcare in Slovenia

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ABSTRACT

Based on the biopsychosocial model of health and the 24-hour movement behaviour paradigm, a primary prevention intervention was developed. Its main objective is to raise awareness and empower adults to adopt an active lifestyle and promote musculoskeletal and mental health. The intervention targets the working-age population. It consists of a single 150-minute session, including three thematic modules delivered by a physiotherapist (musculoskeletal health), a kinesiologist (health-enhancing physical activity), and a psychologist (mental health). It is implemented within the Health Promotion Centre programme. Participants completed pre- and post-intervention questionnaires reporting demographic characteristics, initial knowledge, achievement of immediate cognitive and affective objectives, and overall satisfaction with the intervention. Non-parametric tests were used for statistical analysis. A total of 685 participants were included in the pilot study. Preliminary results indicate a statistically significant ($p < 0.001$) improvement in most knowledge indicators, with moderate to very large effect sizes ($r = 0.30–0.80$). The evaluation items indicated high levels of participant satisfaction (92.3–98.0%) with the intervention. Within the Slovenian primary healthcare system, this intervention represents a novel approach that addresses the goals of health-enhancing physical activity and contributes to improved health and physical literacy among adults.

Support/Funding source: The project “Modernisation of the Management of Musculoskeletal Pain at the Primary Care Level (MiSk-Bol)” is being implemented within the framework of the EU Recovery and Resilience Plan, with the support of the Ministry of Health of the Republic of Slovenia.

The effect of stratified physiotherapy management of patients with acute low back pain at the primary level of public healthcare in Slovenia

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ABSTRACT

Evidence indicates that early physiotherapy for low back pain (LBP) is more effective, shorter, and more cost-efficient when patients are stratified according to baseline risk for chronicity. This preliminary evaluation of the therapeutic effectiveness of implementing stratified management for acute LBP at the primary healthcare level in Slovenia. Patients with acute LBP were stratified by general practitioner using clinical examination, pain assessment, and the STarT Back screening questionnaire into a low-risk group with low- to moderate-intensity non-specific LBP (LRC-PT, n = 126) or a higher-risk group with high-intensity non-specific or specific LBP (HRC-PT, n = 247). The LRC-PT group received physiotherapy counselling and self-management education, while the HRC-PT group underwent individual outpatient physiotherapy. Matched low- and high-risk control groups (LRC-ctrl, n = 47, HRC-ctrl, n = 47) received no physiotherapy. Pain intensity evaluated by Short Pain Inventory and Oswestry Disability Index (ODI) were assessed at baseline and follow-up. Changes were analysed using non-parametric tests. Baseline characteristics did not differ significantly between intervention and control groups. All groups showed reductions in pain intensity, however, improvements were significantly greater in both physiotherapy groups compared with controls ($p \leq 0.004$). A similar pattern was observed for ODI scores ($p < 0.001$). The LRC-PT group required significantly fewer sessions than the HRC-PT group (3.8 ± 0.4 vs 6.3 ± 1.5, $p < 0.001$). Stratified management of acute LBP at the primary care level significantly improves pain and disability outcomes while reducing physiotherapy utilisation.

Functional outcomes after a 12-week chronic pain management program

Saša Bole

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ABSTRACT

A structured 12-week chronic pain management program, combining regular physiotherapy and psychotherapy sessions was implemented in six Slovenian primary healthcare centers with the aim to update and improve the management of chronic musculoskeletal pain at the primary care level by integrating an interdisciplinary biopsychosocial approach and strengthening professional competencies. Functional test results were compared at baseline and after completion of the 12-week program using a paired-samples t-test. The preliminary analysis included 42 patients from five primary healthcare centers who completed the program. Outcome measures included functional performance tests (30-second chair stand test, sit and reach, handgrip strength, forward bend test, single-leg stand, 6-minute walk test) and self-reported fatigue and perceived exertion. The findings demonstrate improvements in physical performance and overall self-assessment. Statistically significant improvements were observed in the 30-second chair stand test, 6-minute walk test and perceived fatigue levels, indicating enhanced functional capacity and reduced disability. The results support the feasibility and effectiveness of implementing an interdisciplinary biopsychosocial chronic pain program within the primary healthcare setting. The program appears to improve functional outcomes, decrease perceived disability and fatigue, and empower patients toward more active engagement in managing chronic pain. Further follow-up is needed to evaluate long-term sustainability of these improvements.

Exercise programme for people with musculoskeletal pain - a continuation of physiotherapy treatment or as a standalone intervention

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ABSTRACT

Optimizing exercise sequencing within clinical pathways for musculoskeletal pain is essential to maximize clinical and public health impact. This pragmatic study evaluated the effectiveness of a 12-week multicomponent exercise program implemented in Slovenian primary care across 3 different pathways. A pragmatic pre–post intervention study included 132 participants (mean age 54.32 ± 8.7 years). Participants followed three pathways: (1) exercise as a first-line intervention (n = 63), (2) exercise following a chronic pain management program (n = 12), and (3) exercise following acute low back pain physiotherapy (n = 31). Outcomes included the Oswestry Disability Index (ODI) and functional performance tests (Timed Up and Go, Sit-and-Reach, 30-second Chair Stand, 6-minute Walk Test, single-leg stand and handgrip). Within-group changes were analysed using repeated-measures and non-parametric tests. Significant ODI improvements were observed in pathways 1 and 3, with 22.6% and 27.0% achieving the minimal clinically important difference (MCID), respectively. In pathway 2, 41.7% achieved MCID, but overall changes were not statistically significant. Participants in pathways 1 and 3 improved in most functional tests ($p < 0.05$), except single-leg stand and handgrip in pathway 3. No significant functional improvements were observed in pathway 2. Exercise was most effective as a primary intervention and following acute pain physiotherapy, whereas immediate continuation after chronic pain management yielded limited additional benefits. Strategic integration of exercise into clinical pathways may improve functional outcomes and optimize healthcare resource use, highlighting the need for implementation strategies to sustain long-term physical activity behaviour.

SYMPOSIUM TITLE

Embedding health-enhancing physical activity promotion in health care: competencies, systems, and practice

Chairs: **Wolfgang Geidl[1]; Suzanne McDonough[2]**

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ABSTRACT

Health care systems are key settings for health-enhancing physical activity (HEPA) promotion. Although effective physical activity (PA) interventions exist, their integration into routine care remains limited. In many countries, HEPA promotion still depends on individual initiatives rather than systematic pathways. Barriers include insufficient professional competencies, limited behaviour change skills, lack of service specifications, and weak organisational embedding of PA promotion within care structures. Evidence increasingly shows that PA is relevant for a broader range of patient groups than traditionally addressed, including people with mental health conditions. However, these populations are often insufficiently reached by existing programmes due to missing structured pathways and limited professional training. This symposium brings together initiatives from Finland, Ireland and Germany addressing these challenges at complementary levels of the health system. Summary of Contributions: • Aittasalo presents the development of a study module in Finland that integrates HEPA promotion into professional education. • Bláthín targets how training in PA behaviour change skills can increase professionals' confidence and PA signposting practices in Ireland. • Bláthín then presents national commissioning standards for structured PA programmes to improve referral pathways • Grüne introduces a German co-creation project (STABEKO) showing how movement-based therapies in rehabilitation can be adapted to better support sustainable PA. • Sudeck presents results from the German ImPuls trial highlighting the relevance of HEPA promotion for patients with mental health conditions. The sympoiusm demonstrates how HEPA promotion can be embedded into routine health care across Europe by aligning professional education, workforce training, organisational development and service commissioning while improving patient outcomes. Embedding HEPA promotion in health care requires coordinated action across education, workforce training, organisational structures and service standards. Structured pathways and national standards improve consistency, scalability and integration of referral-based services. HEPA promotion can improve outcomes in a wider range of patient populations, including people with mental health conditions, when appropriately implemented within routine care. Overall, the symposium demonstrates how HEPA promotion can be operationalised as a routine part of health care delivery, contributing to improved population health, patient outcomes and more sustainable health systems.

Keywords: health care systems, physical activity promotion, workforce competencies, implementation

PRESENTATIONS OF THE SYMPOSIUM

Strengthening social and health care professionals' competence to promote physical activity and healthy diet

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ABSTRACT

Competence in promoting physical activity (PA) and healthy nutrition varies substantially among social and health care professionals, partly due to limited emphasis on these themes in education. Inadequate competence can reduce motivation and the effectiveness of professionals' health promotion efforts, hindering the use of PA and nutrition as key strategies for improving population health. To strengthen these competencies, the Finnish Ministry of Social Affairs and Health has launched a national initiative in the Get Finland Moving Programme to develop a study module for education in social and health care. The module is being designed by a ministry-appointed expert group representing educational institutions and health promotion specialists. Development from January to Fall 2026 draws on evidence regarding required competencies, effective pedagogical methods, behaviour change strategies, and existing health promotion frameworks. Evaluation covers the development process, pilot testing, implementation, and dissemination. The module will include a general component and profession-specific sections. Its scope, content, and practical applicability will be refined through a pilot involving at least three universities of applied sciences, focusing on programmes where health promotion is currently underrepresented. Adoption will be supported through national-level actions by the ministry and institutional measures within higher education. The module will be updated regularly. The initiative is expected to harmonise education on PA and healthy nutrition, enhance professionals' capacity to promote these behaviours, and ultimately contribute to improved population health and health system sustainability.

Funding: Supported by Finnish Government's Get Finland Moving initiative.

Keywords: health professionals, education, diet, physical activity

Developing standards for structured physical activity programmes in the Irish health service

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ABSTRACT

The Health Service Executive (HSE) in Ireland published a Physical Activity Pathways in Healthcare Model (PAPHM) in 2024. This model includes a tiered approach to physical activity interventions, detailing 4 tiers for active participation. Tier 2 references exercise referral schemes which are defined as structured physical activity programmes in the model. A key recommendation was identified to develop national specifications related to the commissioning of these services. This abstract details the development of these standards, and presents the final document. The development of the standards is grounded in the evidence base for exercise referral schemes and stakeholder consultation with key stakeholders involved in referral, commissioning and service provision of such programmes in Ireland. The development and consultation process occurred during Summer 2024-December 2025 via iterative rounds of consultation and feedback. Implementation and monitoring is planned in 2026. The commissioning standards have been developed. They detail 5 categories including, referral, post-referral, programme, quality, and reporting and monitoring. The standards place an emphasis on physical activity being safe for most people, aiming to reduce over-medicalisation of referral to such services. However, themes related to 'funding', 'legality/responsibility', 'processes' remain a barrier. Commissioning standards for the provision of Tier 2, structured physical activity services, have been developed in Ireland. Next steps include, implementation of the standards across all health regions in Ireland, and targeting identified barriers such as developing a business case proposal to support the funding of such services.

The development and preliminary evaluation of a PA behaviour change skills short course for healthcare professionals

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ABSTRACT

In December 2024, the Health Service Executive (HSE) in Ireland published the 'Physical Activity Pathways in Healthcare Model (PAPHM)' which details a range of organisational enablers that aim to build capacity to implement a physical activity pathway. One such enabler is healthcare professional training. This abstract details the development and preliminary evaluation of a physical activity behaviour change short course for primary care healthcare professionals. An expert working group, including national and international experts in physical activity behaviour change, was established in Spring 2023. This group also had representation from target healthcare professionals and patient voice. In January 2024, the course was launched as a 3-month hybrid offering. It includes an embedded pragmatic service evaluation, with constructs such as demographics, knowledge and skills explored pre and post. To date, there has been 353 enrolments, with 120 enrolments on offer in 2026. There remains an active waitlist. Preliminary data shows a significant change in confidence (35% vs 61% 'very confident', $p < 0.003$), and signposting behaviours pre and post course (52% vs 71%, 'always/often', $p<0.001$), with qualitative data highlighting course acceptance and positive experience. Further detailed analysis will be available in Summer 2026 for >400 participants. Lack of confidence and knowledge of signposting opportunities are recognised barriers for healthcare professionals promoting physical activity. Preliminary data shows a positive trend in healthcare professional behaviour change (confidence and physical activity signposting behaviours). Ongoing evaluation aims to explore if these changes are maintained at a longer-term follow-up.

Modifying movement-based therapies in German medical rehabilitation to promote a physically active lifestyle using a co-creation approach

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ABSTRACT

Movement-based therapies aim to enable individuals to engage in physical activity (PA) independently. However, many patients struggle to maintain PA after rehabilitation, highlighting the need for concepts emphasizing sustainable PA. The STABEKO study uses co-creationh involving practitioners and researchers to develop actions for modifying movement-based therapies to promote sustainable PA in three German rehabilitation centres. This contribution examines the co-creation processes and resulting actions for PA promotion. Co-creation processes were documented in structured minutes (n=17), and developed actions were recorded in action plans (n=3). Practitioners assessed the co-creation processes via questionnaire (n=44). Data were analysed descriptively and through document analysis. Each rehabilitation centre conducted 5 to 6 co-creation meetings, with an average of 18 participants per meeting. A total of 25 actions were developed in the centres, assigned to four fields: (1) qualification and team development, (2) optimization of structures and processes, (3) PA promotion programs, and (4) strengthening patient participation. Practitioners rated organization, scientific input, and practitioner involvement very positively, and considered the process and its outcome appropriate and good. A co-creation approach proved suitable for developing actions to modify movement-based therapies. Implementation and effects on sustainable PA promotion will be evaluated in an ongoing effectiveness-implementation study. Based on the overall findings, a dissemination strategy will be developed, guiding and enabling practitioners and policymakers to modify movement-based therapies to promote sustainable PA.

Funding: Funded by the German Pension Insurance, Sections Southern Bavaria and Northern Bavaria.

Keywords: health care setting, participation, physical activity-related health competence

Physical activity-related health competence as a potential mechanism of change in a transdiagnostic exercise intervention (ImPuls) for mental health outpatients

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ABSTRACT

Purpose of the study was to analyse effects of the transdiagnostic group-exercise intervention ImPuls for outpatients with mental disorders on changes in physical activity-related health competence (PAHCO) and their mediating role on mental health and exercise behaviour. This study is a secondary analysis of a pragmatic RCT. Individuals with major depressive disorders, insomnia, agoraphobia, panic disorder, or PTSD (n = 400), were randomly assigned to either the ImPuls intervention plus treatment-as-usual or treatment-as-usual alone. Assessments were realized at baseline, post-intervention (6 months) and 12 months follow-up. Assessments included four sub-dimensions of PAHCO (control competence for physical training, PA-specific affect regulation, motivational competence, volitional self-control), exercise behaviour (BSA-Q) and global symptom severity (BSI-18). Linear mixed models estimated intervention effects on PAHCO and mediation models tested indirect effects of the intervention on global symptom severity and exercise behaviour via sub-dimensions of PAHCO. Intervention effects were observed for all PAHCO sub-dimensions post-intervention (ps<.01, 0.44≤ d≤ 0.61) and at follow-up (ps≤.01, 0.30≤d≤0.46). Volitional self-control mediated effects on exercise behaviour (indirect effects: p<.05), while changes in PA-specific affect regulation mediated intervention effects on global symptom severity (indirect effect: p<.05). Core components of the ImPuls intervention combining supervised outdoor aerobic exercise and behaviour change techniques in group sessions led to the promotion of PAHCO, indicating a relevant mechanism for intervention effects on mental health and exercise behaviour.

Funding: Supported by the German Innovation Fund of the Federal Joint Committee of Germany.

Keywords: exercise therapy, health literacy, healthy lifestyle, mental disorders, behaviour change

SYMPOSIUM TITLE

From policy to practice: integrating physical literacy into community and public health systems

Chair: **Johannes Carl**

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ABSTRACT

Physical literacy (PL) integrates physical, affective, social, and cognitive capabilities to foster lifelong engagement in physical activity. While PL is prioritised in global frameworks like WHO's Global Action Plan on Physical Activity (GAPPA) 2018–2030, the concept still lacks clear operationalisation and implementation across Europe. This symposium, organised by the newly established HEPA Europe Working Group on Physical Literacy, showcases how PL can move from initial conception and policy to supporting tangible intervention and implementation across four European contexts. The first contribution from Germany reports on a modified Delphi study to develop a national consensus-based framework, bridging international PL discourse with national health and curriculum traditions. The second contribution from England introduces the "THRIVE" project, which co-designed six actionable principles to translate holistic PL theory into cross-sector professional practice. The third contribution from Greece details a randomised controlled gymnastics intervention for girls, demonstrating the effectiveness of embedding PL principles into community sport to improve physical competence and knowledge. The final contribution from Ireland provides a large-scale thematic analysis of the "Gaelic4Mothers&Others" programme, evaluating how non-competitive, social sport structures support women's lifelong physical and mental well-being. Added Value: This symposium offers diverse perspectives, combining conceptualisation and policy challenges (definition aspects, practice principles) with tangible intervention experiences in different contexts. Most importantly, the session concludes with an interactive expert forum to inspire dissemination across nations and discuss how to collectively and systematically advance health-enhancing physical activity through PL across Europe. Implementation Sensitivity: Aligned with the recent 'Global Physical Literacy Action Framework', effective PL integration requires a clear national understanding and clear practice principles to ensure multi-sectoral engagement. Empirical Evidence: Holistic PL interventions in community settings successfully drive improvements in objective competence and confidence, particularly within underrepresented groups. Systemic Shift: While PL is inherently person-centred, transitioning toward inclusive, non-competitive social environments is vital for sustaining lifelong physical activity. Collective Roadmap: The plenary discussion will synthesise the insights into a roadmap for advancing PL within the HEPA Europe network.

Keywords: physical literacy, implementation, community health, lifelong physical activity, holistic development

PRESENTATIONS OF THE SYMPOSIUM

Developing a national consensus on physical literacy in Germany

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ABSTRACT

Physical inactivity remains a major public health concern. Physical literacy (PL) is recognized as key for promoting lifelong health-enhancing physical activity. In Germany, no shared definition or conceptual framework exists, and intersections with related national concepts remain unclear. This project aims to develop a consensus-based framework of PL to guide future physical activity and health initiatives. A modified Delphi approach is used to establish consensus. First, a core team (n=8) synthesizes an overview of national and international definitions and conceptualizations of PL, including distinctions from related constructs, for an initial draft. Second, an interdisciplinary expert panel (n=30), purposively recruited from research and practice in physical activity and health, evaluates their agreement with proposed definitions and domains using Likert-scaled items and provides qualitative feedback. Two-to-three anonymous iterative rounds are conducted until predefined consensus thresholds are achieved. The synthesis of internationally relevant conceptualizations and recruitment of the expert panel are underway. Key aspects of the compiled definitions and conceptualizations will be presented, including considerations regarding translations into relevant health care settings in Germany. The first Delphi rounds are scheduled until September 2026. Preliminary findings and the final consensus framework will be available at the conference. This consensus-based framework harmonizes understandings of PL across sectors in Germany, supporting consistent implementation in physical activity and health contexts. By bridging national traditions and international discourse, it establishes a foundation for future initiatives and policies to promote lifelong health-enhancing physical activity.

Keywords: conceptual alignment, expert consensus, interdisciplinary, health promotion

THRIVE: translating physical literacy into actionable principles for policy and practice

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ABSTRACT

Physical literacy is increasingly recognised within European and global policy frameworks as foundational to lifelong engagement in physical activity. However, systems often lack clear guidance on how to translate this holistic concept into policy, environments, and professional practice. This study aimed to co-design a set of actionable principles to support the enactment of physical literacy across education, sport, community, and health contexts. A structured co-design process was undertaken with a working group comprising academics (n=3) and system leaders (n=6) in England with expertise in physical literacy, education, coaching, community development, youth voice, and environmental design. The process included iterative workshops and online meetings, concept mapping, and structured evidence synthesis. Draft principles were refined through multiple rounds of feedback and aligned with the Physical Literacy Consensus Statement for England to ensure conceptual coherence and cross-sector applicability. The co-design process generated six principles: Tailored, Holistic, Reflective, Inclusive, Varied, and Empowering (THRIVE). Together, these articulate the conditions that support individuals to develop and sustain a positive and meaningful relationship with movement. The principles provide a shared, action-oriented framework to guide organisational reflection, programme design, and policy development. THRIVE offers a co-designed framework for translating physical literacy into practice. By operationalising theory into clear principles, this work addresses an identified implementation gap and provides a structured foundation for future evaluation and system-level adoption.

Support/Funding Source: This project was funded by Sport England.

Keywords: physical literacy, implementation, policy, practice

A holistic gymnastics intervention was effective in improving girls' physical literacy

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ABSTRACT

Physical literacy (PL) provides a pioneering framework for fostering children's physical activity (PA) while supporting their holistic development. Despite its prominence, PL interventions aiming at enhancing physical, affective, cognitive, social, and behavioral skills and characteristics remain limited in sport settings and among girls, who typically engage less in PA. This study investigated whether a PL intervention implemented within a sport setting was effective in improving girls' objective and perceived PL. Eighty girls (Mage=9.2±1.3 years) were randomly assigned to experimental (n=44) and control (n=36) groups within a 10-week community-based gymnastics programme. The intervention integrated holistic practices targeting outcomes across all the PL domains. The Canadian Assessment of Physical Literacy–2 (Greek version) and the Physical Literacy in Children Questionnaire (Greek) were used to assess objective and perceived PL, respectively. Data analyses showed significant improvements in the experimental group for objective PL ($p=.006$, $\eta^2=.095$), and its physical competence ($p=.002$, $\eta^2=.118$), and knowledge and understanding domains ($p=.018$, $\eta^2=.074$) compared to the control group. While no group-by-time interaction emerged for perceived PL, paired-samples t-tests indicated that the experimental group improved in perceived PL ($p=.017$) and perceived physical competence ($p=.021$). The findings highlight the potential of embedding PL principles within existing community sport structures as a practical strategy to develop girls' competence, confidence, knowledge, and active habits, thereby supporting their sustained participation in sport and PA.

Keywords: healthy active living, holistic sport programmes, sport pedagogy, childhood

Evaluating the effectiveness of the Gaelic4mothers and others programme in Ireland: a thematic analysis

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ABSTRACT

Women's participation in sport and physical activity remains consistently lower than men's worldwide. The Gaelic4Mothers&Others (G4M&O) programme, developed by the Ladies Gaelic Football Association to engage women aged 25+, promotes fun, non-competitive participation in Ladies Gaelic Football. This study evaluates the effectiveness of the programme and explores participants' experiences to inform future programme development. A mixed-methods design was used, based on a validated self-reported online survey. This abstract focuses on qualitative data generated through an open-ended question completed by 386 participants. Responses were analysed using thematic analysis to identify key patterns in experiences and perceptions beyond the quantitative measures. A total of 1,111 women completed the full survey, with 386 contributing qualitative feedback. Five themes emerged: (1) Structure and Rules, (2) Enjoyment and Fun, (3) Community and Friendship, (4) Equality and Inclusivity, and (5) Cost and Accessibility. Participants highlighted strong enjoyment, social connection, and health benefits but also noted challenges related to programme consistency, accessibility, and the balance between structured play and flexibility. Conclusions/Implications: The G4M&O programme effectively supports women's physical, mental, and social well-being while fostering inclusive community engagement. However, programme sustainability and growth would benefit from greater adaptability in rules and delivery, targeted funding to strengthen accessibility, and enhanced supports addressing participants' diverse needs. These findings can guide practice and policy aimed at promoting lifelong, community-based physical activity for women.

Support/Funding Source: This research was funded by the Ladies Gaelic Football Association (LGFA).

Keywords: programme sustainability, community engagement, physical activity, inclusivity, social connection

SYMPOSIUM TITLE

From policy to pathways: embedding physical activity as standard care across Portugal's health system

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ABSTRACT

Physical inactivity remains an under-addressed determinant of health, despite a robust evidence base for the benefits of physical activity and structured exercise in the prevention and management of chronic diseases. The principal barrier is not a lack of awareness, but the absence of scalable frameworks that institutionalize physical activity within healthcare systems. This symposium examines a Portuguese case study, focusing on the design and implementation of a pragmatic care pathway—assessment, counselling, referral, and follow-up—across primary and secondary care, emphasizing feasibility, equity, and sustainability. Perspectives include national pilot data and implementation insights from PNPAF/DGS (Cristina Godinho), a community-based model for chronic disease management (Diabetes em Movimento, Romeu Mendes), hospital-level integration by exercise physiologists (Centro de Medicina Desportiva e do Exercício, Hospital da Luz, Hugo Pereira), and specialized cardiac rehabilitation (CRECUL, Rita Pinto). Collectively, these contributions outline the essential operational components for systematic care delivery: referral criteria, clinical triggers, workflow integration, interprofessional role allocation, monitoring mechanisms, and governance. Equity is addressed through access pathway design, strategies to maximize patient reach, and implementation decisions that reduce burden and prevent health disparities. Attendees will gain a transferable framework—service design logic, implementation mechanisms, and decision points—adaptable to varied healthcare systems seeking to embed physical activity at scale. Rather than revisiting recommendations, we compare real-world operational models within one national health system to extract transferable implementation components.

Keywords: implementation, service design, physical activity pathways, integrated care, exercise physiology

PRESENTATIONS OF THE SYMPOSIUM

National PA promotion in primary care pilot data and implementation insights

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ABSTRACT

While physical activity (PA) is recognised as a cornerstone of chronic disease prevention and management, its systematic integration into healthcare remains limited. In Portugal, the National Physical Activity Promotion Programme (PNPAF) developed and implemented a national model for PA promotion within primary care, comprising brief assessment, brief counselling, and a PA consultation supported by digital tools integrated into electronic health records. This presentation focuses on the implementation of the PA consultation. The consultation targeted adults with chronic conditions and was piloted in 11 primary care units across Portugal. Twenty-eight semi-structured interviews with physicians, exercise professionals and patients explored implementation barriers and enablers. Data were analysed using the Tailored Implementation for Chronic Diseases and Behaviour Change Wheel frameworks through combined deductive and inductive approaches. Fifty-three implementation determinants were identified. Key enablers included high intervention acceptability, motivation and strong interpersonal skills among professionals, and the availability of diversified community PA resources. Major barriers were ineffective referral processes, competing clinical demands, and inconsistent local prioritisation of PA promotion. The model proved feasible and well accepted by both professionals and patients, supporting wider adoption. However, successful scale-up depends on system-level implementation strategies, including clear clinical standards, integrated referral and follow-up pathways, workforce training, governance mechanisms, and stronger links between health services and community PA resources. These findings provide transferable lessons for embedding PA consultations within primary healthcare.

"Diabetes em Movimento" community-based model for chronic disease management

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ABSTRACT

Within the European Region, Portugal ranks among the countries with the highest prevalence of type 2 diabetes (T2D) and levels of physical inactivity, consequently imposing a substantial burden on the National Health Service (NHS). To address this challenge a community-based exercise program for patients with T2D was developed and designated "Diabetes em Movimento" (in English, Diabetes in Motion). Three group exercise sessions per week (on Mondays, Wednesdays and Fridays, 20-30 participants) of 90-min duration are offered to T2D patients of 50-80 years old, aligned with sports seasons – between October and June (9 months cycles). Sessions take place in sports halls and are supervised by exercise professionals and nurses. Participants are referred by their NHS diabetology medical doctors (mainly family medicine and internal medicine doctors). The program also integrates health education sessions to increase participants' health literacy on topics related to diabetes comorbidities' management and cardiovascular risk. All activities are provided free of charge to participants. The program is managed by the Portuguese Directorate-General of Health since 2018, after a period of scientific validation (ISRCTN09240628, NCT02631902). Although central coordination, the program is implemented at community level within partnerships between Local Health Units, Municipalities, Higher Education Institutions and Sports Clubs and Associations that share their infrastructure and resources. It is currently (2025/2026 season) implemented in 60 municipalities (including Azores and Madeira archipelagos) – a growth of 460% since 2018. Notwithstanding the program's expansion, Portugal comprises 308 municipalities and approximately one million individuals with T2D, highlighting the need for strengthened policy efforts to support its wider scale-up.

Multidisciplinary integration in hospital care: routine physical-activity assessment and referral at Hospital da Luz

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ABSTRACT

Implementation often depends on individual clinicians rather than on standardized, institutionally supported pathways. This presentation introduces a hospital-wide model that embeds routine assessment of patients' physical-activity levels and structured referral processes as standard care at Hospital da Luz. We describe a policy–practice implementation model organised around four core actions: assess, advise, refer and follow-up. The pathway embeds routine identification of physical-activity needs at specified clinical encounters, applies risk-informed criteria to guide referral, delineates responsibilities across physicians, nurses and exercise physiologists, and standardises documentation to support clinical handover and continuity of care. The model identifies key operational enablers required to translate policy intent into everyday clinical practice: simple clinical triggers, compatibility with existing workflows, explicit ownership of referral processes, standardised documentation, and feedback from receiving professionals to the originating team. It further delineates how hospital-based referrals can be extended into ambulatory, rehabilitation and community-based services after discharge. Equity considerations are addressed by minimising patient burden, retaining non-digital follow-up options, and tailoring referral pathways to clinical complexity, transport availability, cost, health literacy and patient readiness. Physical-activity care is more likely to become routine when assessment, referral, documentation and follow-up are configured as a single, governed service pathway rather than relying on discretionary counselling by individual clinicians. The presentation outlines a practical model that can be adapted by other hospitals to their local resources and referral networks.

Phase III public hospital specialized cardiac rehabilitation

Rita Pinto

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ABSTRACT

Cardiovascular disease remains a leading cause of mortality, with physical activity and structured exercise training being critical components of long-term secondary prevention. However, integrating Phase III cardiac rehabilitation (CR) into public healthcare remains challenging due to non-standardised pathways. This presentation examines a certified public CR programme addressing continuity, retention, and collaboration. Operating within an accredited framework, this Phase III pathway builds on three pillars: education, research, and community. Managed by a multidisciplinary team, the programme complies with strict international standards. Safety, adherence, and effectiveness are verified through specialised evaluations, including cardiopulmonary exercise testing. Delivered via hybrid formats (in-person and online) to overcome barriers, it encompasses individualised exercise prescription, nutritional and physical activity counselling, educational sessions, and risk-factor control. Distinctively, it engages university support, integrating medical students and master's programme interns into the clinical workflow. The hybrid approach (in-person and online) mitigates traditional participation barriers. The integration of the education and research pillars drives workforce capacity and high-standard training. Seamless continuity is achieved through a close-knit referral network bridging acute hospital discharge and community-based maintenance. Guided by structured workflows and interprofessional feedback loops, the CR journey delivers highly individualised care, adapting exercise prescription, risk-factor control, and educational components to specific clinical complexities, financial constraints, transport, health literacy, and readiness. Conclusions Integrating Phase III CR requires shifting from advocacy to implementation. This certified model provides a transferable blueprint for safe, long-term follow-up in both face-to-face and digital environments, establishing sustainable, equity-driven cardiovascular pathways.

Topic: HEPA promotion in socially disadvantaged groups

SYMPOSIUM TITLE

Inclusive methods and methodological approaches for engaging disadvantaged groups in HEPA

Chair: **Caroline Dodd-Reynolds**

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ABSTRACT

As a HEPA Working Group we seek to further knowledge around tools and methods approaches to promote HEPA in disadvantaged groups. This symposium will provide case study examples of accessible and inclusive methods in design and implementation of physical activity (PA) projects with LGBTQIA+ young people living in areas of disadvantage, autistic children, older adults, and individuals with severe mental illness. Caroline Dodd-Reynolds will present an interdisciplinary case study of equitable and experiential co-production and unmethods with LGBTQIA+ children and young people living in areas of disadvantage in England, showing how researchers can work with communities at-risk of marginalisation to reframe PA. Sharon Kinsella will provide findings from a Delphi study with international experts which considers best practice around inclusion of autistic children in community-based physical activity programmes. Subsequent STARTS recommendations will support organisations working with autistic children. Zsofia Szekeres will consider how inclusion of systems mapping within process evaluation can aid peer-volunteer led healthy ageing interventions, via the 3-year Active, Connected Engaged multisite RCT with older adults across England and Wales Tara Coppinger and Aisling Forde will speak about use of PPI to co-design and subsequently refine 'Active Ease', an accessible digital platform for individuals living with severe mental illness in Ireland. This symposium will consider a range of methods and approaches: from co-production and unmethods through to adaptation of more formal approaches, such as Delphi and systems mapping which can aid research with, rather than just about, disadvantaged communities. We expect that attendees of this symposium will: gain insight into novel methods and methodological approaches, understand how elements of conventional methods approaches can be adapted to work in more accessible and inclusive ways, have the opportunity to consider how such approaches could be of use in their own work. As per the mission of the HEPA Working Group, this symposium will contribute to the field by showcasing a range of inclusive methods for working with communities at-risk of marginalisation and experiencing disadvantage.

Keywords: inclusive methods, disadvantaged groups, community PA

PRESENTATIONS OF THE SYMPOSIUM

Moving to meet joy in physical activity: critical reflections of a co-production process with young people at-risk of marginalisation

Caroline Dodd-Reynolds[1]; Scarlet Hall[1]; Mary Crowder[2]; Steph Scott[3]; Naomi Griffin[3]

1 - Durham University; 2 - University of Sheffield; 3 - University of Newcastle

ABSTRACT

Given its origins in grassroots activism and emancipatory traditions that challenge power hierarchies in under-represented groups (Smith and McGannon, 2024), we offer through a case study, ways to remain true to equitable and experientially-informed research co-production principles, as well as supporting resources. The Joyful and safe physical activity project (JASPA) aimed to build trust and ensure safe spaces for LGBTQIA+ young people to share experiences without exacerbating existing worries and fears. With LGBTQIA+ youth groups in northern England, we followed an 'unmethods' back-and-forth iterative, creative design and analysis approach (mapping, collaging, consensus-building, zine-making). Co-production enabled us to 'go with the flow', creative methods and iterative analysis provided a means for self-expression whereby joy and vibrancy surfaced. PA was reimagined in non-conventional ways, as fun, holistic and natural movement, not confined to distinct settings. On their own terms, young people thought of when they were able to be themselves (dancing in the kitchen, listening to music, quiet spaces to retreat). This meant taking time and care to build trust, gently probing through layers of inequality and allowing young people to re-visit times when PA was challenging, but also times when it was joyful. Through shifting our awareness and attending to ontological power imbalances that persist in PA research, young people showed that PA can be reframed as joyful and safe. We showcase a suite of JASPA online resources which offer learning for academics, policy-makers, and practitioners seeking to co-produce with marginalised groups.

Recommendations for the inclusion of autistic children in community-based physical activity programmes: a Delphi study

Edel Ryan[1]; Dean McDonnell[1]; Rhodri Lloyd[2]; Sean Healy[3]; Sharon Kinsella[1]

1 - South East Technological University; 2 - Cardiff Metropolitan University; 3 - University of Limerick

ABSTRACT

A range of barriers to Physical Activity (PA) participation contribute to autistic children being less physically active than their non-autistic peers. While these barriers have been well documented, further research is needed into methods of overcoming these barriers. This study aimed to create a series of best practice recommendations for the inclusion of autistic children in community-based PA programmes. A Delphi Method involving the opinions of international experts in the area of inclusion of autistic children in PA was used to carry out the aims of the study. Three rounds of questionnaires were distributed to the panel aiming to reach consensus on a series of topics related to the inclusion of autistic children in community-based PA programmes (consensus ≥67% agreement). Topics included coaches and volunteers, programme characteristics, and bridging-sessions. Sixteen consensus statements were established which were then used to create the 'STARTS' recommendations, which centre around: (1) Skill development, (2) Training for coaches/volunteers, (3) Aims for sessions, (4) Resources to improve children's experiences, (5) Transitioning from bridging-programmes to mainstream programmes, and (6) Supports to improve inclusion. The STARTS recommendations will assist clubs/organisations when setting-up or modifying community-based PA programmes which include autistic children.

Funding Source: SETU Presidents PhD Fellowship award

Systems mapping in the process evaluation of active, connected and engaged (ace): a peer volunteer active ageing intervention

Nick Cavill[1]; Zsofia Szekeres[2]; Diane Crone[2]; Colin Greaves[3]; Helen Hawley-Hague[4]; Katie Chatwin[3]; Amy Davies[4]; Janet Withall[3]; Afroditi Stathi[3]

1 - University of Bath; 2 - Cardiff Metropolitan University; 3 - University of Birmingham; 4 - University of Manchester

ABSTRACT

Active, Connected, Engaged (ACE, ACTIF in Wales) is a multisite randomised controlled trial evaluating the effectiveness and cost-effectiveness of a peer-volunteer led intervention designed to improve mobility in older adults. Implemented between 2022–2025, the programme supported engagement in community-based physical, social and meaningful activities. As part of the process evaluation, system mapping explored perceived system changes, shifts in stakeholder practices, and the ways ACE/ACTIF addressed systemic barriers to participation. Post-intervention, ten system-mapping workshops were conducted with participants, volunteers and stakeholders across the three trial sites. Pre-trial system maps were used as prompts to guide discussion on motivators, barriers, and system-level factors shaping engagement. Audio recordings were transcribed and analysed inductively through a critical realist lens. System-level changes, restricted transport, limited access, and post-lockdown effects continued to constrain participation. Stakeholders' shifting ways of working, including rapid digitalisation reduced local provision, while rising costs, further hindered engagement. ACE/ACTIF features helped address these barriers: volunteer/participant pairing increased motivation and ability to navigate local systems, clear information enhanced awareness of local initiatives. Volunteers' supportive attitudes helped participants find practical solutions to overcome challenges such as transport and cost. Using system mapping ensured a systems perspective throughout the process evaluation. It highlighted that despite adverse shifts in the wider system, the system-informed, peer-volunteer ACE/ACTIF model supported participants to engage with available community assets and increase their mobility. These findings have important implications for system-informed process evaluation in community-based research and for the development and implementation of peer-volunteer led healthy ageing interventions.

The design and evaluation of a digital physical activity intervention to support individuals with severe mental illness in an Irish mental health residential setting

Tara Coppinger; Shannon Aisling Forde; Susan Rea

Munster Technological University (Cork campus)

ABSTRACT

Individuals living with severe mental illness (SMI) typically have a shorter life expectancy and engage in less physical activity (PA) than the general population. Regular PA can play an important role in improving their physical health and easing certain psychiatric symptoms. Although digital tools have been developed to encourage PA in this group, few have succeeded in helping people maintain regular PA independently over time. Active Ease', a web-based digital PA platform was co-designed with service users and clinicians in Irish mental health residential settings. Using a Public and Patient Involvement approach, the platform incorporated accessible PA visuals and educational content to support both independent and clinician-assisted engagement. The intervention was delivered across two phases in two residential settings, using a mixed-methods design that included accelerometry, body mass index measurements, and semi-structured interviews collected at multiple time points. Phase One (July–October 2024) involved researcher-led digital navigation to support platform use, followed by co-design-informed interviews that guided refinements. Phase Two (July–August 2025) introduced visual prompts and enhanced clinician involvement to strengthen sustainability. Follow-up data collection assessing maintenance of platform use and PA engagement was completed in December 2025. Phase One results indicated no significant changes in physical activity levels, though trends showed reductions in sedentary behaviour and increases in light PA. Analysis of Phase Two and Follow-up data is currently being finalised and will be completed by Summer 2026.

Funding Source: ADVANCE CRT

SYMPOSIUM TITLE

Examining the role of sports and recreation for mental wellbeing in disadvantaged groups

Chairs: **Evan Matthews[1]; Linda Ooms[2]**

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ABSTRACT

Physical activity and by extension sport and recreation are increasingly recognised for their contribution to the wellbeing and inclusion of populations. In particular, sport and recreation appear to be powerful resources for enhancing mental health among disadvantaged and hard-to-reach groups. However, the multidimensional benefits of structured sport in these contexts are nuanced and often dependent on social, cultural, and environmental factors. Consequently, there is a need to bring together and collectively examine research from key European projects that respectively examine the value of sport and recreation and constituent components in the context of supporting mental wellbeing among disadvantaged populations. This symposium brings together four complementary projects from the HEPA Working Group on Socially Disadvantaged Groups, addressing this need as an aim. Presentation 1 reports findings from a mixed-methods survey conducted in Northern Ireland, exploring the relationship between sport and recreation participation, the role of nature connectedness, overall activity levels and wellbeing. It additionally identifies key barriers to engagement, including those disproportionately experienced by disadvantaged groups. Presentation 2 provides evidence from an international systematic review and group interviews examining how sport coaches and coaching approaches influence the mental wellbeing of young people with cross-sectoral implications. Building on the role of coaches, Presentation 3 presents outcome data from a European project, 'Progression Pathways in Social Sports', focused on training social sports coaches to reach and empower individuals from socially disadvantaged backgrounds. This work highlights the value of a European Learning Community dedicated to advancing social sports practice. Presentation 4 uses qualitative research to explore the perceived role of sports clubs and sports provision in reducing substance use and crime, two interrelated determinants of mental wellbeing in a high-density urban area of Ireland. This symposia gives added value by integrating new empirical data, cross-national perspectives, and interdisciplinary approaches to examine how sport and recreation contribute to mental wellbeing among disadvantaged populations. Together, these presented projects provide a multifaceted understanding for how sport and recreation may be leveraged to enhance mental wellbeing and address broader social inequalities and access among disadvantaged groups.

Keywords: mental wellbeing, mental health, sport, recreation, disadvantaged populations

PRESENTATIONS OF THE SYMPOSIUM

Outdoor sport for wellbeing: exploring the role of nature connectedness, individual differences, and access to natural environments

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ABSTRACT

Globally, low levels of physical activity continue to be a concern for public health. In contrast, outdoor sport and physical activity participation in Northern Ireland has experienced growth. In an aim to better understand and support physical health and wellbeing through outdoor physical activity, this study explores the relationship between outdoor sport participation and wellbeing. Across four years, an annual, mixed-methods survey was administered online to sport club members aged 18+ years (N = 1556). The survey assessed demographic details, outdoor sport type, participation time, reasons for participation, access to outdoor sport, nature connection, and wellbeing. Data were analysed using SPSS and content analysis. Individuals who participated in outdoor sport and physical activity were found to be more likely to attain higher levels of physical activity than the general population in Northern Ireland. Nature connectedness was significantly higher in females than males. Participating in outdoor sport for mental wellbeing was particularly important for those with a disability and those with dependent children. However, approximately 40% of participants experienced an issue when accessing the natural environment, the most frequently cited reason was being refused access. Promoting outdoor sport and physical activity in natural environments offers public health benefits, particularly regarding physical health and mental wellbeing. However, to facilitate such benefits for all, including those from disadvantaged groups, consideration of individual differences, types of activity, and access is required.

Funding: Commissioned by Sport Northern Ireland and Tollymore National Outdoor Centre

Keywords: outdoor sport, physical activity, nature, wellbeing

The role of sport coaches in promoting the mental health of youth

Linda Ooms[1]; Wikke van Stam[1]; Vassilis Sevdalis[2]; Marie Overbye[3]; Beatrix Algurén[2]; Sandra Heck[4]; Aurélie Van Hoye[5]

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ABSTRACT

Encouraging participation in sport may offer a valuable approach to supporting mental health of young people. In this regard, sport coaches can play an important role. This study examined the influence of sport coaches on the mental health of youth in sport settings. The study comprised a literature search and interviews with representatives of three sport programs specifically aimed at stimulating the mental health of youth. Data from both the literature and the group interviews were thematically analysed. Positive coaching styles, characterized by encouragement, constructive feedback, and an emphasis on enjoyment and psychological safety, were associated with positive mental health outcomes. Coaches who adapted activities to the needs, abilities, and experiences of young individuals further supported these outcomes. Highly performance-focused approaches increased pressure and were linked to poorer mental health outcomes. Strong, trusting coach-child relationships, fostered through individual attention and open communication, enabled early recognition of mental health concerns and promoted feelings of support. Limited trust, poor communication, lack of transparency, and insufficient attention to individual needs were associated with distress and negative mental health outcomes. Sport coaches play a central role in shaping mental health experiences of young individuals in sports. Coaching practices and coach-child relationships can either support or undermine mental health highlighting the importance of equipping coaches with the knowledge, skills, and support needed to foster psychologically safe and developmentally appropriate sport environments.

Funding Source: The Dutch Ministry of Health, Welfare and Sport (Sport and Youth Department)

Keywords: coaches, youth, mental health

Training social sports coaches to reach and empower individuals in a socially disadvantaged position: results from a European project

Kirsten Verkooijen

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ABSTRACT

Progression Pathways in Social Sports (PPSS) is a European project (2024–2026) that aims to build a European learning community to support the provision of social sports activities for people in socially disadvantaged positions and to train social sports coaches. The project involves six countries: France, Greece, Hungary, the Netherlands, Norway, and Portugal. In each country, partner organizations recruited 3–8 participants for one or two 1-week international training courses on social sports coaching. These courses were hosted in Portugal and Norway. Hereafter, participants were asked to recruit and train at least 12 new social sports coaches in their countries. The project team, comprising country leaders from each partner organization, met online approximately four times per year. Evaluation data were collected through project meetings, surveys, and interviews with participants and country leaders, focusing on strengths, challenges, and areas for improvement. Participants evaluated the international training positively, particularly the practical skills focus, certification, and international exchange. Recruitment strategies and outcomes differed substantially across countries and were strongly influenced by national structures for social sports provision. For example, Portugal benefited from an established national network, whereas programs in Norway were more geographically dispersed. Recruiting new coaches nationally posed challenges, a clear multiplier effect emerged. PPSS successfully contributed to the development of a European learning community for training social sports coaches, resulting in increased social sports activities for individuals in socially disadvantaged positions. The long-term sustainability of this community requires monitoring. Funding: European Union (Erasmus+)

Keywords: train-the-trainer, social work, marginalized groups

Exploring the role of sport club provision as a mechanism to address substance use and crime within a high density urban centre in Ireland

Chloe Green[1]; Evan Matthews[2]; Michael Nash[1]; Paul Anders[1]; Sonam Prakashini Banka-Cullen[3]; Catherine Comiskey[1]; Philip James[1]; Roisin Reilly[1]; Peter Kelly[1]

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ABSTRACT

Sport is a resource for enhancing wellbeing among disadvantaged groups and has been implicated as potential mechanism to reduce substance use and criminality, particularly among youth. However this relationship is nuanced and contextual factors within certain areas such as high density, lower socio-economic urban areas may shape this. The aim of this research was to explore the perceived reach and effectiveness of sports clubs in addressing substance use and crime in addition to exploring context specific issues of sport club utilisation, engagement and development to enhance substance use and crime reduction. Descriptive qualitative interviews (N= 16) framed by RE-AIM were undertaken with key stakeholders (including community/youth workers, sports club representatives, elected officials) from a high-density urban area with reported high rate of crime/substance use. Data were analysed using reflexive thematic analysis. Thematic analysis reveals nuanced understanding of the role of sport clubs in reducing substance use and crime. While perceived as valuable, broader social determinant factors require consideration in the context of club engagement and value with respect to substance misuse and crime prevention. The research provides evidence for enhanced investment in sport as a mechanism to reduce substance use and crime among the specific urban area of study. Furthermore, the research highlights perceived gaps in service provision and a need for targeted youth engagement in shaping the sport landscape of the area of inquiry to address social determinant barriers.

Funding source North Inner City Drug and Alcohol Taskforce, Ireland

Keywords: port, “substance use”

SYMPOSIUM TITLE

From participation to co-creation: social participation shaping health-enhancing physical activity

Chairs: **Katja Čič[1]; Vesna Kerstin Petrič[2]**

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ABSTRACT

Social participation is increasingly recognised as a critical determinant of health, particularly in HEPA context. While policy frameworks emphasise participation, current evidence focuses on top-down programme implementation rather than on participatory approaches that actively involve communities in shaping interventions. This symposium explores how social participation can evolve from simple involvement towards genuine co-creation across life course by addressing a knowledge gap regarding mechanisms through which community actors—such as civil society organisations, youth groups, and international coordinating bodies—can influence the design, implementation, and sustainability of HEPA initiatives. Complementary perspectives highlight practical strategies for embedding participatory approaches into public health action. The symposium contains an overview of international efforts to redefine, institutionalise, and establish social participation as a core component of public health policies, within the HEPA context. 1st presentation discusses the need for institutionalising social participation, outlining how to promote good practice exchange and coordinate research, policy, and practice efforts internationally to strengthen participatory approaches in HEPA promotion. 2nd and 4th presentation focus on organised youth engagement through advocacy and peer-to-peer initiatives. They highlight how youth-led networks mobilise social participation to influence policy agendas and encourage active lifestyles among young people. 3rd presentation examines the role of non-governmental organisations in addressing frailty and promoting healthy ageing. It explores how NGOs facilitate community-based participation and support physical activity initiatives that strengthen resilience and social connectedness across generations. Symposium offers a cross-sectoral and life-course perspective on social participation in HEPA. It's a unique opportunity to examine participatory approaches operating at multiple levels through emerging evidence and practical insights on translating participation into co-creation. Social participation when institutionalized is a driver of sustainable HEPA initiatives across life. Community and youth organisations play a pivotal role in shaping locally relevant interventions. Institutional coordination strengthens scaling and integration of participatory approaches. Co-creation enhances ownership, relevance, and long-term impact. Monitoring impact of social participation on HEPA across population groups is essential for ensuring sustainable public investment in community-based initiatives. Overall, the symposium will demonstrate how institutionalizing social participation can empower communities to become active HEPA partners.

Keywords: institutionalizing social participation, meaningful youth engagement, co-creation, lived experience, community approach

PRESENTATIONS OF THE SYMPOSIUM

Institutionalizing social participation in HEPA promotion

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ABSTRACT

The adoption of WHO Resolution on Social Participation for Universal Health Coverage and Health and Wellbeing has recognized social participation as a fundamental component in successfully developing and implementing public health policies. It encourages institutionalisation of social participation throughout entire policy cycle, from situation analysis and priority setting, to budgeting, implementation, and evaluation, across all levels, from local communities to national frameworks. This study examines how social participation has been institutionalized in Slovenia within promotion of HEPA, through inclusive governance, financial mechanisms, institutional support, and monitoring and reporting of health data at the municipal level. Evaluating institutionalisation using four key dimensions outlined by WHO EURO for understanding effectiveness and inclusivity: legitimacy & trust, impact & efficiency, social justice, and matters of ownership & involvement. Significant contributions to improving equitable access to physical activity programs, fostering trust among stakeholders at various levels of governance, contributing to sustainability of public health programs. By involving civil society and local communities in decision-making and implementation processes, HEPA initiatives have become more inclusive and responsive to local needs. Institutionalising social participation has strengthened capacities of civil society, public health, primary healthcare, and local communities - vital in reaching vulnerable and hard-to-reach population groups with targeted HEPA activities. To ensure the long-term sustainability of investments, it is essential that impact be further assessed by using commonly adopted indicators that will enable systematic measurement of effectiveness and guide future policy and investment decisions.

Keywords: institutionalisation of social participation, HEPA promotion, inclusive governance, impact assessment, sustainable investment

By youth, for youth: mobilising youth for healthier futures

Katja Čič

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ABSTRACT

Youth participation is an essential component of effective public health strategies addressing NCDs, yet rarely meaningful. Youth Advisory Group of JA PreventNCD was established to strengthen youth engagement in European public health, promote youth advocacy around NCD prevention&HEPA, and empower organised youth to contribute to policy dialogue, communication strategies, and peer-led activities- Its innovative aspect lies in embedding youth participation directly within a large European policy initiative. YAG was developed through a collaborative process within the framework of Joint Action. Representatives from youth organisations, student networks, and public health groups across Europe were recruited to ensure diverse perspectives. YAG contributes to project implementation by providing feedback on policy and research activities, co-developing communication outputs, and supporting youth-focused advocacy initiatives, like consultations, workshops, project meetings, peer-to-peer outreach through youth networks and social media. The initiative has strengthened youth representation in NCD prevention discussions and increased visibility of youth perspectives in policy processes. Institutional support, structured participation mechanisms, and collaboration with established public health networks proved key, while facing challenges in varying levels of youth engagement across countries, and translating youth input into formal policy processes Integrating organised youth into public health initiatives can enhance relevance, legitimacy, and reach of HEPA and NCD prevention strategies. The experience of JA PreventNCD Youth Advisory Group demonstrates the potential of structured youth participation and peer-to-peer advocacy to contribute to more inclusive and effective public health policymaking in Europe.

Keywords: youth participation, advocacy, peer-to-peer engagement, empowerment, NCD prevention

Co-creating active ageing: civil society participation in community-based physical activity for frailty prevention

Urška Erklavec

NIJZ, Slovenia

ABSTRACT

Social participation is increasingly recognised as an important determinant of wellbeing and a key enabling factor for HEPA. Despite strong policy support, participation in public health programmes remains limited to consultation or programme uptake rather than genuine involvement in shaping interventions. This contribution explores how participatory approaches can move towards co-creation by integrating civil society organisations into design and implementation of HEPA initiatives for healthy ageing and frailty prevention. The presentation draws on Slovenian national frailty prevention project and the institutional establishment of Service for NGOs at the National Institute of Public Health. Within this framework, NGOs are systematically involved in pilot local environments where they collaborate with public health institutions and community stakeholders. The approach includes stakeholder mapping, evaluation of NGOs role on frailty prevention, structured engagement of NGOs, development of local partnerships, and implementation of community-based activities promoting physical activity, social participation, and health literacy among older adults. Early experiences from pilot environments indicate that NGOs play an important role as connectors between communities and public health systems. Their involvement facilitates locally adapted HEPA activities, strengthens outreach to older adults, and supports social participation and community cohesion. The pilot approach generates practical learning on how participatory structures can be embedded within health programmes. Institutional mechanisms that integrate civil society into public health planning can help move from participation towards co-creation. Such approaches strengthen sustainability, community ownership, and responsiveness of HEPA initiatives aimed at supporting healthy ageing.

Keywords: social participation, NGO, healthy ageing, frailty prevention, community engagement

Trailblazing in global health: The WHO youth council and HEPA advocacy

Katja Čič

NIJZ, Slovenia

ABSTRACT

Physical inactivity is a major risk factor globally, while youth are recognised as important actors in shaping agendas. WHO Youth Council was established to strengthen youth engagement in global health governance and ensure young people contribute meaningfully to policy discussions. Exploring the role of WHO Youth Council in advocating for HEPA within public health policy by highlighting how organised youth can influence policy dialogue, promote active lifestyles, and strengthen integration of youth perspectives into strategies addressing physical inactivity. This analysis draws on the experience of Youth Council members involved in international advocacy activities related to HEPA: the establishment of Youth Council as a formal advisory platform for youth engagement in WHO processes, implementation of activities - consultations, policy dialogues, and international meetings, as well as collaborations to promote physical activity and healthy environments, evaluation, based on documented engagement in policy processes, feedback from stakeholders, and reflections on youth participation mechanisms, dissemination through global health forums and youth platforms aimed at amplifying youth perspectives. Engagement has increased visibility of youth perspectives on physical activity and NCD prevention. Enabling factors include institutional recognition of youth voices, collaboration, and youth-led advocacy, barriers include limited resources, uneven representation, and challenges in translating youth inputs into concrete policy commitments. WHO Youth Council demonstrates that meaningful youth engagement can contribute to stronger advocacy for HEPA within global public health policy, enhance policy relevance, foster peer-driven promotion of inclusive active lifestyles.

Keywords: youth participation, public health advocacy, noncommunicable diseases, global health policy

Topic: Monitoring and surveillance of physical activity

SYMPOSIUM TITLE

Integration of physical activity, nutrition and sleep across the life course: towards coherent public health action

Chair: **Mojca Gabrijelčič**

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ABSTRACT

Physical activity, nutrition, and sleep are interdependent behaviours that jointly shape health and well-being across the life course. Despite growing evidence of their reciprocal relationships, surveillance, research and policy implementation frequently address them separately, also while engaging relevant stakeholders and rightholders. This symposium aims to present an integrated perspective positioning three independent health behaviours as interconnected health determinants, and to explore implications of such integration for public health action. The symposium includes complementary presentations, descriptively addressing the interconnected roles of nutrition, physical activity, and sleep in public health, as following: (1) nutrition as a core health determinant via the JAPreventNCD cross-cutting theme approach, (2) JAPreventNCD innovative monitoring of physical activity, sedentary behaviour, and sleep as population-level risk factors for NCDs, and the SLOfit system as an national example of lifelong monitoring of fitness and 24-hour movement behaviours, (3) the first EU level structural level sleep survey in JAPreventNCD and national level actions, (4) the final WHO contribution synthesises current evidence and importance of the interconnections among the three behaviours and implications for integrated policy action. The symposium audience is (via Slido and Q&A) proactively invited to exchange with presenters on how physical activity, nutrition, and sleep can be better recognized as three health determinants while synergistically integrated within public health policy and practice. The discussion will explore ways to strengthen cross-sectoral collaboration and move beyond siloed approaches toward coordinated, systems-based action across the life course, addressing effectively all relevant stakeholders. A systems-based, life-course approach integrating nutrition, physical activity, and sleep can strengthen policy coherence and improve noncommunicable disease prevention and health promotion. JA PreventNCD highlights the need for coordinated policies addressing the synergies between these key lifestyle determinants.

Support/Funding Source:The symposium is steaming from the JA PreventNCD work and is supported by the WHO expertise.

Keywords: physical activity, nutrition, sleep, public health

PRESENTATIONS OF THE SYMPOSIUM

Nutrition as the key cornerstone of the healthy lifestyle – the values of independent and of interconnected approach

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1 - Medical University of Silesia; 2 - National Institute of Public Health

ABSTRACT

Nutrition is an important lifestyle determinant, defined as the quality, quantity, and timing of food intake that provides energy and essential nutrients for growth, maintenance, and regulation of bodily functions across the life course. Descriptive overview in the area of nutrition, addressing it from the protective and risk factors perspective at the individual and structural levels. Analysis of the JA PreventNCD actions in food and nutrition will be added, reflecting the priorities of EU member States in this area. Healthy nutrition is important protective factor crucial for growth and development, cardiometabolic regulation, immune function and long-term health. It enhances energy availability and recovery, stabilises appetite regulation, and creates favourable conditions for sustained physical activity and healthy sleep. In contrast, poor dietary quality, excessive intake of energy-dense UPF, irregular meal timing, or chronic undernutrition are key risk factors. These patterns disrupt metabolic and hormonal regulation, increase fatigue and inflammation, impair sleep quality, reduce physical activity capacity, and substantially elevate the risk of obesity and other NCDs. Addressing nutrition extends beyond individual choice and requires coordinated action across policies, stakeholders, and environments, while promoting equal opportunities. JA PreventNCD surveillance and monitoring, pilots and policy actions in nutrition (and physical activity where relevant), will be presented to highlight the EU priorities in that area. Within the triad of nutrition, physical activity and sleep, nutrition occupies a distinct physiological position while remaining tightly interconnected with the other two behaviours, and is defined as such in JAPreventNCD.

Monitoring physical activity, sedentary time and sleep as risk factors for cancer & ncds in population-based samples

Tommi Vasankari

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ABSTRACT

Physical inactivity and sedentary behaviour (SB) are associated with higher risk of many NCDs, e.g. cancers, cardiovascular diseases, type 2 diabetes, mental health problems and higher risk for mortality. However, physical activity (PA) and SB are very rarely regularly objectively measured in population-based samples. Therefore, a group of scientists created a plan to monitor PA, SB and sleep as risk factors of NCDs in population-based sample and the plan was funded as a pilot of the JA Prevent-Cancer and NCDs. The pilot is the first attempt to harmonize, and pilot test a monitoring system for PA, SB and sleep by data collection using raw acceleration data, 24-7 simultaneously in several European countries (Belgium, Estonia, Finland, Iceland, Norway, Slovenia and Sweden). As a secondary (optional) aim, we will collect standardized data on biological risk factors (e.g. body composition, physical fitness, blood samples), and self-reported determinants for risk of NCDs. The target group is 20-69 years, working-aged adults (min 500/country). The pilot allows better comparison in several risk factors between countries when the individual studies are executed in each country using similar sampling, data collection, data analysis, etc. The results obtained will allow a new type of risk evaluation of risk factors of cancer and other NCDs. Success will be evaluated based on participation rate, percentage valid data points (i.e. individuals), time and manpower requirements. If successful, this project has potential to be scaled up to a harmonized surveillance system for key health determinants across EU member states.

SLOFIT: enhancing health literacy and policy making via lifelong fitness and 24-hour movement behaviour monitoring

Gregor Jurak; Gregor Starc

University of Ljubljana

ABSTRACT

Despite fitness being a premier health indicator, it is often underutilized by policymakers. Slovenia addressed this by evolving its 40-year student monitoring legacy into SLOfit—a national lifelong surveillance system. By utilizing a "bottom-up" engagement strategy, SLOfit generates high-level data for evidence-based policy while empowering individuals. Using an extensive longitudinal database, SLOfit established national reference values and a multi-channel intervention strategy: Digital Feedback: The My SLOfit app provides 10% of the Slovenian population with immediate fitness and 24-hour movement behaviour assessments. Users can share reports directly with healthcare professionals. Expert Resources: Reports link to SLOfit Advice, an online magazine offering free, professional guidance on exercise and healthy lifestyles. Public Engagement: A Citizen Science approach encourages users to investigate their own health trends, supported by a robust social media presence reaching 50,000 followers. Universal Access: Beyond mandatory annual testing in all schools, SLOfit now provides free fitness assessments for adults nationwide. SLOfit has successfully transitioned into a nationwide health literacy tool. It grants individuals agency over their fitness while providing the state with a sophisticated mechanism to promptly detect population trends and implement targeted public health interventions. The SLOfit model demonstrates how mature monitoring can evolve into a dynamic surveillance tool serving both citizens and policymakers. By fostering lifelong engagement, it positions physical fitness as a cornerstone of national health policy and a catalyst for HEPA across all life stages.

A review of progress in integrating sleep as health determinant alongside nutrition and physical activity

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ABSTRACT

Sleep is acknowledged within 24-hour movement behaviour, as a key determinant of health. As an autonomous physiological process with systemic effects on physical, mental, and social functioning, sleep represents both a protective health factor and a pathway through which risks accumulate when disrupted. From a public health perspective sleep should be addressed as a cross-sectoral priority and recognised as a third core pillar of health, alongside nutrition and physical activity. A descriptive overview of current evidence on sleep, addressing protective and risk factors at both individual and structural levels, will be provided. The JA PreventNCD action on sleep will be presented, reflecting the situational analysis in this field. National actions and priorities in Slovenia will be reviewed, including World Sleep Day activities (2020-2025) classified by target groups, thematic areas, and dissemination channels. Protective and risky sleep related behaviours will be described at the biopsychosocial levels. The JA PreventNCD sleep questionnaire will be presented, focusing on policies, promotion, prevention and research in the field of sleep. The tool enables the identification of policy enablers, barriers and future development needs globally. World Sleep Day will be highlighted as an example of raising awareness of sleep as a foundation of public health and prevention. Integrating sleep through biopsychosocial perspective can strengthen policy coherence and support more sustainable health promotion. More effective action requires coordinated engagement of health system, education, employers, policymakers, professional societies and communities.

Integrating physical activity, nutrition and sleep across the life course

Stephen Whiting; Kremlin Wickramasinghe

WHO Regional Office for Europe

ABSTRACT

Physical activity, nutrition, and sleep are core behaviours that shape health and well-being across the life course. While each behaviour has been extensively studied in isolation, growing evidence highlights that their interactions are critical for understanding health trajectories and for designing effective health promotion strategies. This symposium adopts an integrative perspective, positioning physical activity, nutrition, and sleep as interdependent behaviours embedded within shared biological, behavioural, and social systems. Across the life course, physical activity influences metabolic health, body composition, mental well-being, and sleep quality, while nutritional intake provides the physiological foundation for energy balance, recovery, and adaptation to movement. Sleep plays a central regulatory role, affecting hormonal balance, appetite regulation, cognitive function, and the capacity to engage in and benefit from physical activity. Despite this interconnectedness, research, policy, and practice frequently address these behaviours separately, limiting opportunities to leverage their combined effects. A life-course approach offers a unifying framework to examine how the relationships among physical activity, nutrition, and sleep evolve across different stages of life and in varying environmental and socio-cultural contexts. This presentation will synthesise current evidence on the relationships among physical activity, nutrition, and sleep and provide a conceptual foundation for the complementary symposium contributions focusing individually on nutrition, physical activity, and sleep. By highlighting shared mechanisms, reciprocal influences, and implications for integrated interventions, the symposium aims to advance more holistic approaches to health promotion and noncommunicable disease prevention across populations.

SYMPOSIUM TITLE

Socio-ecological drivers of 24-hour movement behaviours: from guidelines adherence studies to methodological advances in compositional data analysis

Chair: **Kaja Kastelic**

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ABSTRACT

The 24-hour movement guidelines represent a paradigm shift in public health, integrating physical activity, sedentary behaviour, and sleep. Despite their growing adoption, significant gaps remain in understanding how socio-ecological factors influence guidelines adherence, particularly within European contexts. This symposium aims to address these gaps by presenting comprehensive evidence from a global literature synthesis to findings from a large-scale Slovenian survey and device-measured insights. Furthermore, it intends to showcase how advancing from traditional isolated-behaviour analysis to Bayesian compositional data analysis provides a more nuanced understanding of time-use patterns. Summary of Contributions: 1) Systematic Review: A synthesis of 18 studies identifies a significant guideline adherence gap among several sociodemographic groups, while highlighting a critical lack of European-based evidence. 2) Slovenian Population Study: Analysis of 2,333 adults reveals a low guideline adherence rate and identifies regional and socioeconomic disparities, providing a baseline for national public health policy. 3) Occupational Factors: Using activPAL accelerometers, this study demonstrates how shift work, longer working hours, and lower levels of occupational physical activity significantly hinder the likelihood of meeting guidelines. 4) Ageing Patterns & Methodology: This contribution introduces Bayesian Dirichlet regression within a case study, showing how ageing is associated with specific shifts in 24-hour movement behaviour composition. 5) Natural Environments: Exploring environmental drivers, this research suggests that green and outdoor time are important correlates that may facilitate a healthier movement composition. This symposium is unique in including evidence on 24-hour movement behaviour correlates across the socio-ecological framework and moves beyond guidelines adherence studies by introducing advanced Bayesian compositional modelling to account for the perfect multicollinearity of 24-hour data. Conclusion and Key Take-Home Messages: 1) Adherence to 24-hour movement guidelines is generally low and strongly patterned by sociodemographic, occupational, and environmental factors. 2) Socioeconomic inequality, workplace factors, and outdoor time are important targets for interventions aimed at optimizing 24-hour movement behaviours. 3) Methodological advances, such as Bayesian compositional data analysis, enable a more nuanced understanding of 24-hour movement behaviour correlates. This symposium contributes to the understanding of socio-ecological drivers of 24-hour movement behaviours and introduces advanced methodological approaches, providing better evidence to inform public health policies in Europe.

Keywords: time-use epidemiology, 24-hour movement behaviours, sociodemographic correlates, public health policy, compositional data analysis

PRESENTATIONS OF THE SYMPOSIUM

Sociodemographic correlates of adherence to 24-hour movement guidelines among adults: a systematic literature review

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ABSTRACT

Over the last decade, several countries have issued 24-hour movement guidelines that integrate recommendations for physical activity, sedentary behaviour, and sleep. The aim of this study was to review the literature on the associations between guidelines adherence and sociodemographic factors among adults. A systematic search of PubMed, Scopus, and Web of Science databases was conducted for the period from January 2016 to June 2024. Studies were included if they: (1) were peer-reviewed and published in English, (2) included adults aged 18 years and over, and (3) reported associations between at least one sociodemographic factor and meeting the recommendation(s) of established 24-hour movement guidelines. Out of 746 unique records, 18 studies met the inclusion criteria. Studies were conducted in North America (n=9), South America (n=4), and Asia (n=5). Sample sizes ranged between 15–165,577 participants. All but one study referred to the Canadian 24-hour movement guidelines for adults. Adherence to overall 24-hour movement guidelines ranged between 0%–27%. In general, studies reported that being male, younger, married, white, highly educated, and having a higher socioeconomic status was associated with higher odds of meeting combined 24-hour movement guidelines. Adherence to 24-hour movement guidelines is significantly influenced by sociodemographic factors. The findings highlight an adherence gap among female, older, unmarried, non-white populations, and those with lower levels of education or socioeconomic status, necessitating targeted public health interventions. The lack of research from European populations indicates a clear need for future studies in this region.

Slovenian 24-hour movement guidelines: adherence and sociodemographic correlates among 2,333 adults

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ABSTRACT

Slovenia recently issued its first 24-hour movement guidelines for adults. Currently, data on adherence and correlates are scarce. Therefore, the aim of this study was to explore the prevalence and sociodemographic correlates of meeting these guidelines among Slovenian adults. Participants (n=2,333, 74% females, 18-92 years) completed an online survey including the Daily Activity Behaviours Questionnaire (DABQ) and sociodemographic characteristics. Adherence was assessed for moderate-to-vigorous physical activity (MVPA: ≥150 min/week), sedentary behaviour (SB: ≤7h/day), sleep (7-9 h/day for adults aged 18-64 years, 7-8 h/day for 65+ years), and the combined guidelines (all three recommendations in a combination). Adherence rates for MVPA, SB, sleep, and combined guidelines were 63.7%, 45.1%, 62.5%, and 20.1%, respectively. Adjusted multivariable logistic regression revealed that middle-aged and older adults had lower odds of meeting sleep recommendation. Males were less likely to meet SB recommendation, while older age and lower education were associated with higher SB adherence ($p<0.05$ for all). Low socioeconomic status and living in eastern region were associated with lower odds of meeting MVPA recommendation, while urban residency showed higher odds. Lower odds of meeting the combined guidelines were found among young adults, those with low socioeconomic status, and those with higher education ($p<0.05$ for all). Adherence to the 24-hour movement guidelines was relatively low, with significant sociodemographic disparities. These findings underscore the need for targeted interventions. Further national representative studies are required to confirm these findings and guide evidence-based public health policies in Slovenia.

Occupational demands and the 24-hour day: examining the association between work-related factors and device-measured 24-hour movement behaviours

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ABSTRACT

The objective of this study was to explore the associations of work-related factors with meeting the 24-hour movement guidelines among employees across different occupations. A total of 178 employed adults (39.7±8.3 years, 30.9% females) wore an activPAL for seven days to objectively measure their 24-hour movement behaviours. Using adjusted multivariable logistic regression, we analysed the associations of job type, work schedule, work duration, and movement behaviours at work with meeting the 24-hour movement guidelines. Shift work, including night shifts, was associated with a 4.23-fold higher likelihood of not meeting any recommendation (95% CI: 1.40–14.5) and a lower likelihood of meeting sleep recommendation (OR=0.38, 95% CI: 0.16–0.85). Longer work duration (OR=0.92, 95% CI: 0.85–0.98) and higher occupational sedentary behaviour (OR=0.94, 95% CI: 0.91–0.97) were associated with lower odds of meeting the sedentary behaviour recommendation. Conversely, higher occupational moderate-to-vigorous physical activity was associated with a lower likelihood of not meeting any recommendation (OR=0.60, 95% CI: 0.41–0.80) and higher odds of meeting sedentary behaviour (OR = 1.34, 95% CI: 1.13–1.61), moderate-to-vigorous intensity physical activity (OR=1.95, 95% CI: 1.52–2.64), and all three recommendations combined (OR=1.39, 95% CI: 1.15–1.71). No significant associations were found for job type. Employees with standard work schedules, shorter working hours, and higher levels of occupational moderate-to-vigorous physical activity were more likely to meet recommendations. Based on the presented research, workplace interventions should address work schedules and occupational activity to promote a healthy balance of 24-h movement behaviours.

Age-related patterns of self-reported and device-measured 24-hour movement behaviours: a Bayesian compositional data analysis

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ABSTRACT

Previous studies described how movement patterns vary across the lifespan by exploring each behaviour in isolation. The objective of this study was to examine the 24-hour movement behaviour composition that is associated with ageing. A subsample of 104 Slovenian adults (58% females, age: 18–73 years) from the 2024 National Health-related Lifestyle Survey was asked to complete GIB24-Q questionnaire and to wear an activPAL to assess their self-reported and device-measured 24-hour movement behaviours. We analysed the association between age and 24-hour movement behaviour composition consisting of sleep duration, sedentary behaviour (SB), light-intensity physical activity (LPA), and moderate-to-vigorous intensity physical activity (MVPA) using Bayesian Dirichlet regression. We observed that LPA increases gradually with age, mainly at the expense of decreasing SB and sleep. The age-related pattern was consistent across both self-reported and device-measured data. For example, the self-reported (and device-measured) composition for a 25-year-old participant was 7.7 (7.5) h of sleep, 6.2 (10.9) h of SB, 8.6 (4.3) h of LPA, and 1.2 (1.2) h of MVPA. In comparison, for a 50-year-old, the composition was 7.5 (7.4) h of sleep, 5.6 (9.9) h of SB, 9.6 (5.3) h of LPA, and 1.3 (1.4) h of MVPA. Ageing was associated with a shift towards higher LPA and lower SB and sleep. While these findings warrant further investigation due to the small sample size, the introduced Bayesian compositional data analysis can also be used to explore other sociodemographic factors (e.g. in population surveillance).

Time spent in nature and device-measured 24-hour movement behaviour composition: preliminary findings from the GIB study

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ABSTRACT

Time spent outdoors, particularly in natural environments, improves physical and mental health through various mechanisms. This study examines the associations of time spent in nature and time spent outdoors with 24-hour movement behaviour composition among adults. A total of 104 Slovenian adults (58% females, age: 18–73 years) from the first wave of the GIB study completed the Healthy Built Environment Questionnaire (HeBEQ) to assess time spent in natural environments and time spent outdoors over the past seven days. They wore an activPAL continuously for seven days to assess 24-hour movement behaviours. Participants reported spending on average 110 min/day in natural environments and 180 min/day outdoors. Using Bayesian Dirichlet regression, we found that spending more time in nature was associated with higher levels of light-intensity physical activity (LPA) and lower levels of sedentary behaviour (SB), while sleep duration and moderate-to-vigorous intensity physical activity (MVPA) remained relatively constant. For example, spending 120 min/day in nature compared to 30 min/day was associated with an increase in LPA of 12.3 minutes (95 % highest density interval (HDI): 3.0 to 21.0, probability of direction (PD): 99.4 %) with a corresponding reduction in SB of 13.8 minutes (95% HDI: -26.1 to -1.2, PD: 98.6 %). Our findings suggest that time spent in nature and outdoors is an important correlate of 24-hour movement behaviours, specifically by displacing SB with LPA. These results highlight the potential of green spaces as a viable public health strategy to support a more favourable movement pattern.

SYMPOSIUM TITLE

Beyond surveillance: advancing monitoring, evaluation and learning in complex physical activity policy

Chair: **Michael Pratt**

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ABSTRACT

Physical activity promotion takes place within a complex, multi-sector policy ecosystem, where national ambitions must interact with diverse local contexts, organisational capacities and the lived realities of communities. Change emerges through dynamic interactions between policies, institutions, people and places. Many established evaluation approaches focus narrowly on programmes and interventions in isolation. Traditional tools struggle to explain how change happens across systems, why outcomes differ by context and what enables sustained, equitable improvements. Where alternative approaches exist, these may frustrate policy makers seeking brief, simple indicators. In both cases, policy makers lack the evaluative insight needed to guide adaptive action. This symposium explores this challenge and offers solutions that address the disconnect. Michael Pratt, our chair, will introduce the topic drawing distinctions between monitoring, evaluation, and learning to situate the presentations. Sven Messing addresses the challenge of evaluating physical activity policy where technical capacity amongst government officials is limited. They present a practitioner-informed toolkit that supports evaluation across diverse governance contexts. Jérémie Duciel presents a flexible evaluation framework designed to verify the structural prerequisites for successful physical activity policies. By focusing on relational dynamics rather, this approach links network governance directly to policy development. Katie Shearn shares findings from a whole-systems realist evaluation of England's long-term, place-based systems change investment, which reshapes underlying conditions sustaining physical activity inequalities. This evaluation strengthens local learning systems and adaptive action. Peter Gelius concludes by presenting a composite instrument that assesses physical activity policy alongside other risk factors - tobacco, alcohol and unhealthy diets - emphasising its interdependence with wider health policy and the need for stronger methodological rigour and data collection. Added value: The symposium is unique in bringing together a system-wide view of physical activity policy evaluation: integrating conceptual clarity, methodological innovation and real-world application across local, subnational, national and international levels. Delegates will gain access and understanding of tools that strengthen approaches and system learning to ensure evaluation can practically support decision making for physical activity promotion.

Keywords: practical toolkit, evaluation, monitoring, adaptation, complex systems

PRESENTATIONS OF THE SYMPOSIUM

What are the key components of physical activity policy evaluation? Co-creating a toolkit for government officials and researchers

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ABSTRACT

Evaluating public policies is challenging in physical activity promotion due to the relevance of different political sectors. Earlier research has identified a lack of technical capacity of government officials – particularly those outside the health and sport sectors – as a barrier to applying physical activity-related policy evaluation methods. This study aimed to co-create a toolkit for ex-post evaluations of physical activity policies. We employed a multi-stage co-creation process involving a transdisciplinary research team of academics, national governments representatives, and an international organisation. A toolkit prototype was developed drawing on semi-structured expert interviews with researchers and government officials, a systematic literature search, and a focus group with EU HEPA Focal Points. To reach consensus on the key components of physical activity policy evaluation, a Delphi survey is conducted. We conducted 27 interviews (average length 54 minutes, 59% female interviewees), identified 60 publications, and conducted a one-hour focus group involving 25 participants. The resulting prototype includes 28 components of physical activity policy evaluation grouped into five categories: (1) political context, (2) policy design, (3) policy implementation, (4) policy impact, (5) communicating evaluation results. Through a structured co-creation approach, this study produced a physical activity policy evaluation toolkit that is scientifically robust and reflects the perspectives of government officials. From a scientific perspective, the toolkit may also serve as a framework for future evaluations of physical activity policies.

Funding: Funded by the European Union under Horizon Europe's Marie Skłodowska-Curie Actions (MSCA), grant agreement ID 101109929.

A network governance approach to evaluating structural prerequisites for inclusive physical activity

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ABSTRACT

People with disabilities are twice as likely to be physically inactive as the rest of the population. While traditional evaluations focus on program outputs, they often fail to identify the systemic root causes of this ineffectiveness. This study proposes a methodology to evaluate whether a multi-sector policy ecosystem is sufficiently coordinated to foster the institutionalization of physical activity, a critical "first stone" from which effective, durable policies emerge.

Based on an evaluation mandate for the Canton of Geneva, the study maps the parasport ecosystem, identifying barriers to participation. The methodology employs Social Network Analysis (SNA) to assess the importance of actors and the strength of their linkages. Data includes 22 semi-structured interviews (organizations and participants), annual reports and financial flows. This approach evaluates how organizational interactions predict policy durability

The analysis reveals a significant governance issue. Despite high complexity requiring a central coordinator, the ecosystem remains informal and decentralized. This structural failure manifests in several ways: conflicting objectives between the sport, social, and educational sectors, a lack of coordinated offers, and spatial inequities.

This methodology offers a "diagnostic compass" for policymakers to understand why policy failures occur. By utilizing SNA and financial flow, evaluators can monitor structural conditions that enable programs to emerge and persist. Focusing on relational dynamics rather than fixed indicators this method is transferable and scalable across diverse contexts and tailored to local realities.

Funding: This research is funded by the Departement of social cohesion of the Canton of Geneva.

Development and utilisation of a conceptual framework and maturity matrix to support the evaluation of a place-based systemic approach to tackle physical activity inequalities in England

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ABSTRACT

Surveillance of physical activity policy shows limited improvement and persistent inequalities. Traditional intervention-focused policies often fail because they overlook the wider social, economic and environmental systems shaping activity, sometimes worsening disparities. Internationally, systems-based and place-based approaches that combine structural action with individual-level support are advocated. Rapid uptake of "systems" language has led to inconsistent definitions and limited attention to values, politics and power, creating practical challenges for implementation and evaluation. This study aimed to develop a clear, theoretically grounded conceptual framework for place-based systems working to tackle physical activity inequalities. The study was an iterative, multi-year co-design process embedded within Sport England's National Evaluation and Learning Partnership. Drawing on realist and developmental evaluation, the framework evolved through literature review, documentary analysis (n=48), repeated stakeholder workshops with place-based consortia (n=50) and realist synthesis. The analysis generated a theory of change showing how place-based actions, system conditions and contextual factors interact through feedback loops to influence physical activity inequalities. This informed a conceptual model with three areas of action - tackling structural inequalities, strengthening community and individual capacity, and integrating physical activity across sectors - underpinned by nine cross-cutting conditions and associated maturity levels. Together, these components provide a shared framework for organising, operationalising and evaluating place-based systems work. The study concludes that this model offers a practical, theory-driven scaffold to support learning, align stakeholders and structure evaluation in complex, evolving system-change initiatives to tackle physical activity inequalities.

Funding: This study was funded by Sport England

The Public Health Index: a benchmarking tool to assess public policy on physical inactivity, tobacco, alcohol, and unhealthy diets

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ABSTRACT

Physical inactivity is one of the major risk factors for noncommunicable diseases (NCDs), alongside tobacco use, alcohol consumption, and unhealthy diets. However, a composite instrument to systematically assess these four risk factors is currently lacking. We developed an index scoring government performance on physical activity alongside the three other risk factors and applied it to a sample of European countries. We searched for existing tools for assessing policy adoption across the four risk factors. While suitable tools were identified for tobacco and alcohol, new indexes were developed for unhealthy diets and physical activity. Unlike the other three NCD areas, data for physical activity were based on government self-reports rather than independent sources. The four sub-indices were integrated into an overarching index and applied to 18 European countries. The highest scoring countries included the UK, Finland, Ireland, Norway, France and Lithuania, and the lowest scoring countries were Luxembourg, Austria, Germany and Switzerland. While scores for nutrition, alcohol and tobacco policy were correlated, scores for physical activity varied less, and correlated less with the scores of the other three areas. The Public Health Index is useful for putting physical activity policy data into the larger context of countries' general NCD policies. However, physical activity policy assessment still lags behind the other three major NCD risk factors in terms of methodological rigor and data quality, thus warranting further efforts to meet international monitoring standards and to render results more comparable.

Topic: Policy Approaches to Physical Activity Promotion (PAPAP)

SYMPOSIUM TITLE

Exploring new approaches to assess physical activity policy implementation: Reflections from six EU member states

Chair: **Sven Messing**

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ABSTRACT

Research on the implementation of public policies designed to promote physical activity directly or indirectly is limited. This research gap is addressed by the IMPAQT consortium. IMPAQT stands for 'IMproving Physical Activity policies and their impact on health eQuiTy', and is a six-country consortium funded by the ERA4Health partnership. The project applies the Physical Activity Environment Policy Index (PA-EPI), a tool to assess the extent the implementation of physical activity policies. This symposium aims to present findings on the implementation of public policies to promote physical activity in Germany, Ireland, Lithuania, Netherlands, Poland and Romania. After a brief introduction to the IMPAQT project and its methodology, four presentations will describe key results, followed by a panel discussion with policymakers. Presentation one describes the creation of a PA-EPI Evidence Document in Romania and Ireland, showcasing how data on current physical activity (PA) policies and their implementation was collected. Presentation two reflects on the involvement of policymakers to validate the PA-EPI Evidence Documents in Poland and Lithuania, a process necessary to ensure accurate representation of government action. Presentation three outlines the engagement of non-government stakeholders in the Netherlands and Germany who independently assessed the implementation of their countries' policies and developed country-specific index scores. Presentation four compares key results across all six countries, focusing on index scoresand policy recommendations. At the end of the symposium, policymakers from several IMPAQT countries will contribute to apanel discussion, reflecting on usefulness and limitations of this research from their national policy context. This symposium presents new data from 6 EU member states in Western, Central and Eastern Europe. It also discusses the involvement of policymakers and non-government stakeholders into policy-related research. Key outcomes of this symposium will relate to the importance of transdisciplinary research across different country contexts, the relevance of assessing the extent of policy implementation, and methods to translate of evidence into actionable recommendations.

Keywords: policy research, science-policy interface, co-creation, transdisciplinary research, interdisciplinary research

PRESENTATIONS OF THE SYMPOSIUM

Creating the PA-EPI evidence document: learnings from Romania and Ireland

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ABSTRACT

A whole-of-government approach is needed to maximise public sector promotion of physical activity (PA). European governments have introduced many measures that may influence PA levels, but the volume of initiatives makes the overall level of implementation hard to assess. The Physical Activity Policy Environment Index (PA-EPI) provides a framework to document and assess policy implementation across government departments. National Evidence Documents map government policies and initiatives to the PA-EPI's 45 indicators, detailing their scope and level of implementation, to enable assessment and cross-country comparison of governments' actions. In Romania, desk research was conducted, using key terms relevant to each of the 8 policy domains and 7 infrastructure support domains. In Ireland, the 2022 Evidence Document was updated by reviewing departmental and agency websites for new physical activity policies and checking for updates to existing initiatives. Research groups in each country developed a National Evidence Document, which provides an overview of key policies for physical activity promotion and the available data on their implementation (e.g., funding, adoption and equity concerns). The length of the National Evidence Documents varies between 97 pages (Romania) and 200 pages (Ireland). The two National Evidence Documents provide a comprehensive overview of government action in Ireland and Romania. After being validated by government officials, they will inform future PA-EPI implementation ratings.

Funding: ERA4Health

Validating the PA-EPI evidence document: reflections on collaborating with policymakers from Poland and Lithuania

Joanna Zukowska[1], Rasa Jankauskienė[2], Miglė Bacevičienė[2], Wojciech Kustra[1], Kevin Volf[3], Catherine Woods[3]

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ABSTRACT

The aim of this presentation is to share Poland's and Lithuania's experience in validating the National Evidence Documents with policymakers as part of the PA-EPI implementation process, which is being implemented for the first time in Central and Eastern European countries. The validation process was conducted between November and December 2025. In Lithuania, invitations to participate in the validation process were sent to all national ministries and municipalities. In Poland, half of the policymakers were affiliated with national ministries, while the other half represented the regional level of ministerial administration. Policymakers were asked to validate at least two PA policy domains. In Lithuania, a total of 52 policymakers were invited to participate, 21 completed the questionnaire, two declined participation, and two did not complete the survey. Approximately one-third of participants provided detailed comments and recommendations for improving the National Evidence Document. In Poland, a total of 22 policymakers were invited, 13 completed the questionnaire, nine declined participation, and three completed the survey during face-to-face meetings with a member of the research team. All feedback was systematically reviewed, and revisions were implemented accordingly. The validation process revealed gaps in understanding of institutional responsibilities for health-enhancing physical activity, particularly among sectors with indirect relevance to PA. The findings highlight the importance of intersectoral collaboration and structured stakeholder engagement in the validation of National Evidence Documents and in supporting evidence-informed physical activity policymaking.

Funding: ERA4Health

Keywords: physical activity policy, health equity, PA-EPI, policymakers, validation, intersectoral collaboration

Stakeholder engagement in benchmarking physical activity policy implementation and developing policy recommendations: learnings from Germany and the Netherlands

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ABSTRACT

Engaging diverse stakeholders across government and non-government sectors is essential to inform the policy process. We describe how independent experts were engaged in benchmarking physical activity (PA) policy implementation and developing policy recommendations, drawing on comparative experiences from Germany and the Netherlands: two countries with different sizes and governmental structures. Germany's federal system distributes power between the central government and states, whereas the Dutch system emphasizes centralized, consensual decision-making. Independent stakeholders were selected based on their objectivity (distance from policymaking) and expertise in PA promotion (and equity) and represented different PA-relevant sectors (e.g. education, transport, health). In both countries, these stakeholders used surveys to rate the extent of policy implementation against best practice guided by the evidence document. In workshops, stakeholders developed recommendations. In Germany, an online workshop with government and independent stakeholders (N=83) was conducted in 2026 to present an evidence document and to start the process of developing policy recommendations. Further data collection is ongoing and will be completed in spring 2026. In the Netherlands, independent stakeholders rated 10 of 45 indicators as low implementation, 28 as medium, and 7 as high, which were presented in an in-person workshop in 2024 (N=16). The workshop generated 62 recommendations – of which 10 were prioritised – and was followed by a separate session with independent equity experts (N=11) to integrate equity considerations into the recommendations. Stakeholder engagement adds value to the process of policy benchmarking and may strengthen the support for resulting recommendations.

Funding: ERA4Health

Comparing physical activity policy implementation across six EU member states: preliminary results of the IMPAQT project

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ABSTRACT

Effective public policy is essential to promote physical activity, as its role is to change systems instead of individuals and will allow programmes and environments to collectively enhance physical activity (PA), thus reducing non-communicable diseases and inequity. Many countries have policies in place, but the implementation of those policies is often unknown. To bridge this gap, the IMPAQT project has promoted policy benchmarking as a tool to improve policy implementation in six countries (Germany, Ireland, Lithuania, Netherlands, Poland and Romania). Informed by the accountability framework, the PA Environment Policy Index (PA-EPI) process led by a research team with expertise in physical activity policy in each country was undertaken. Participatory research methods in collaboration with key government officials - policymakers across government departments - and non-government stakeholders - independent experts and an equity council – underpinned the co-creation and evaluation process. IMPAQT has produced six 'evidence documents' detailing government PA policies and their implementation status in each country. These were validated with policymakers (N=109, range 15-28 per country) to ensure each was an accurate representation of government action. Initial comparison reveals variable examples of policy implementation with country specific strengths e.g. Sport in Ireland, Transport in the Netherlands that provide useful learnings. The non-government stakeholders will independently assess implementation of their countries' policies against best practices to produce country specific policy index scores. Stakeholders will also develop and prioritise policy recommendations. Transnational comparisons will provide international benchmarks for healthy and equitable PA policy environments.

Funding: ERA4Health

SYMPOSIUM TITLE

Discussing national experiences from Germany, Japan and Slovenia in regards to PA / 24h movement guidelines and PA recommendations' development, update and adoption

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ABSTRACT

Insufficient physical activity (PA) in the populations is a growing global health problem, nearly one-third (31%) of adults worldwide not meeting the recommended levels of PA in 2022, compared with 23% in the year 2000. In this context, the WHO's Guidelines on Physical Activity and Sedentary Behaviour (2020) importance for PA promotion is multi-fold. It sets out global targets for PA practice within different population sub-groups, stand-out as progress monitoring indicators and can assist different stakeholders, from policy & decision-makers to practitioners in their endeavour to promote PA within the population. However, the adoption and use of WHO's PA recommendations at national level varies from country to country, and in time, depending on a variety of factors, e.g. own capacity to further develop national PA guidelines/recommendations based on the population PA status and include this information in the national PA strategy, in its deployment phase. This symposium aims to cover this gap by presenting recent developments in the uptake/update of national PA recommendations or guidelines in 3 countries: Germany, Japan and Slovenia, that are in various stages of their national PA policy/strategy cycle. The symposium will start with a presentation from Germany presenting a theory based, evidence informed and consensus-oriented update process of their national PA guidelines and PA promotion recommendations. The second presentation examines the gaps, at different levels in Japan, regarding the knowledge and uptake of the updated national PA guidelines. Finally, the third presentation from Slovenia showcases the importance of creating national evidence-based 24-hour movement guidelines (24-HMG), a supportive policy environment, and cross-sectoral engagement to achieve sustainable population-level behavioural change. This symposium is unique in the way of presenting experiences of countries from different continents or regions, with different political-administrative systems and socio-cultural backgrounds impacting the national PA guidelines development and uptake. The presentations will be followed by a moderated discussion related to gaining insights into e.g. 1. the relationship between the WHO and national PA guidelines and recommendations updates, 2. Guidelines and recommendations' promotion including the policy implementation or limitations and 3. challenges using the PA guidelines and recommendations to positively impact population's PA levels.

Keywords: PA guidelines, PA promotion, PA recommendations, national experiences

PRESENTATIONS OF THE SYMPOSIUM

Updating the national physical activity guidelines and recommendations for physical activity promotion in Germany: the GRADE-ADOLOPMENT approach, participation and sectoral relevance

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ABSTRACT

Physical activity (PA) guidelines and recommendations for PA promotion (PAP) are systematically connected in Germany. PA guidelines update integrates international guidelines, the latest evidence base, newly considered target groups, and quality aspects of PA. In parallel, sector-specific recommendations for PAP are being developed, addressing cross-sectional issues such as equity, planetary health, and crisis preparedness. The PA guidelines update follows the GRADE-ADOLOPMENT approach, including systematic analyses of international guidelines and underlying evidence. Additional systematic reviews addressed light-intensity PA and PA quality. Adaptations were agreed upon through a structured consensus process involving 31 experts. For PAP, systematic reviews of reviews were conducted, relevant policy documents were analysed, and expert interviews and focus groups were carried out. The recommendations are refined in a comprehensive participatory process including experts from various social and political fields. The German PA guidelines are based on the 2020 WHO guidelines, current guidelines from Canada, Ireland and Singapore, and relevant clinical guidelines. Evidence updates enabled refinements for children and adolescents, adults, pregnant and postpartum women, older and (pre-)frail adults, people with non-communicable diseases, and people with disabilities. For PAP, 101 sector-specific and 68 cross-cutting draft recommendations were derived. Approximately 120 stakeholders participate in sectoral working groups (education, health, transport and urban planning, sport, and workplace) to revise and consolidate recommendations by July 2026. The combined evidence-based and participatory approach will improve implementation and cross-sectoral action on PAP with integrated responses to challenges such as equity, planetary health, and crises.

Cross-level dissemination gaps following the 2024 revision of Japan's national physical activity guidelines

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ABSTRACT

In January 2024, Japan revised its national physical activity guidelines (Physical Activity Guide for Health Promotion 2023). Although physical activity guidelines are key policy instruments, evidence on how guidelines diffuse across policy, professional, and population levels remains limited. Cross-level assessments of dissemination are scarce. This study assessed awareness, knowledge, and early uptake indicators of the guidelines across multiple levels, including prefectural governments, health professionals (medical doctors, health fitness programmers, and physical therapists), and the general population, to examine gaps. Between February and March 2025, web-based surveys were conducted among medical doctors (n=1323), health fitness programmers (n=415), and physical therapists (n=192). Data for the general population (n=3000) were also collected in February 2025. Outcomes included awareness (having heard of the guidelines or knowing their content), knowledge of key recommendations (full correct response), and intention to apply. Findings were compared with prefectural-level data. Awareness at the prefectural government level was 94.7%. Among medical doctors, awareness and full correct response were 48.1% and 14.6%, respectively, among health fitness programmers, 94.9% and 51.8%, among physical therapists, 19.3% and 4.2%. In the general population, the corresponding figures were 16.3% and 2.7%. Disparities were observed across levels. Extending assessment beyond the policy level to include professional and population groups revealed cross-level gaps in awareness, knowledge, and early uptake indicators. Integrating multi-level indicators into monitoring frameworks may strengthen dissemination and uptake and improve population-level physical activity.

Slovenian 24-hour movement guidelines for adults: from development to implementation in policy and practice

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ABSTRACT

Physical activity, sedentary behaviour, and sleep (i.e., 24-hour movement behaviours) are strongly associated with health and quality of life, representing an important public health determinant. Recognition of their interdependence highlights the need to address them within an integrated framework. To achieve sustainable population-level behaviour change towards a healthy balance of 24-hour movement behaviours, national evidence-based 24-hour movement guidelines (24-HMG), a supportive policy environment, and cross-sectoral engagement are essential. The Slovenian 24-HMG for adults were released in 2025. While their development was initiated under the National Programme on Nutrition and Physical Activity for Health 2015-2025, the core work was conducted within the GIB24 project (2023–2025), supported by the Slovenian Research and Innovation Agency and the Ministry of Health. The development followed the rigorous GRADE-ADOLOPMENT approach. Following their release, a structured implementation plan was launched to integrate the guidelines into policy and practice. The Slovenian 24-HMG for adults were systematically disseminated across multiple sectors, including health, sport, and the environment, and promoted to professionals, decision-makers, media, and the general public. The guidelines have already informed the drafting of new strategic public health documents in the field of physical activity. The ongoing implementation process includes nationwide awareness-raising, professional capacity building, and inter-sectoral collaboration. Integrating 24-HMG into national policy frameworks enhances their visibility, legitimacy, and practical uptake. A coordinated policy-to-practice approach strengthens their impact and contributes to improved health and well-being of the Slovenian adult population.

SYMPOSIUM TITLE

Co-creating evidence-based guidance for physical activity and physical activity promotion: experiences from Germany

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ABSTRACT

Germany has launched an update of its combined National Recommendations for Physical Activity (PA) and Physical Activity Promotion (PAP). This process is based on an intersectoral initiative by the German Federal Ministry of Health ("Round Table on PA and Health") and the latest scientific evidence on health-enhancing PA and measures to promote PA. In addition, the expertise of stakeholders from politics and practice (practice-based evidence) was incorporated to develop actionable, sector-specific recommendations. The update is grounded in systematic literature reviews (scientific reviews and international policy documents) and a systematic analysis of Germany's political landscape for PAP. Draft recommendations were refined through a participatory process involving sector stakeholders. The symposium explores this process, the methods applied, and the potential to enhance the integration of PAP into policy and practice. Geidl et al. outline the process to update PA recommendations, using a GRADE-ADOLOPMENT approach. The update innovatively expands the population group focus and incorporates considerations of PA quality and evidence on light-intensity PA. Resch et al. present a co-creation approach to develop sector-specific and practice-relevant recommendations for PAP, grounded in evidence and further refined by more than 100 key stakeholders. Abu-Omar et al. address the innovative integration of cross-cutting themes—planetary health, crisis resilience, and health equity—detailing methods and outcomes. Birkholz et al. describe a systematic analysis of physical activity policy in Germany and the co-creation of policy recommendations using the Physical Activity Environment Policy Index (PA-EPI). The symposium highlights the innovation potential, opportunities, and challenges of co-creating sector-guided recommendations for PAP, and their potential impact on policy and practice. Including movement quality and light-intensity activity broadens the understanding of health-enhancing PA. The participation of stakeholders from political sectors enables contextual adaptation and supports the practical implementation of recommendations. Addressing planetary health, crisis resilience, and equity offer opportunities for tackling current societal challenges. Aligning the use of international tools with national processes can increase their policy relevance, and ultimately strengthen advocacy for the promotion of PA.

Keywords: national recommendations, co-creation, participation, evidence, societal needs

PRESENTATIONS OF THE SYMPOSIUM

Updating the German national physical activity recommendations: extending population groups and integrating physical activity quality, planetary health, and light-intensity physical activity

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ABSTRACT

German physical activity (PA) recommendations require updating to address gaps concerning underrepresented populations and emerging topics. This initiative will revise the national guidelines by integrating PA quality, planetary health, and light-intensity PA. Phase 1 of the update followed a structured approach based on the GRADE-ADOLOPMENT framework. A systematic review and content analysis of PA guidelines was conducted for major population groups. Based on identified guidelines, evidence maps were created to identify gaps and inform the need for additional reviews. Evidence reports were prepared for each population group including suggestions for modifications of the recommendations. In Phase 2, these evidence reports will be discussed with experts for each population group and used to finalize the recommendations In Phase 1, we identified 69 PA guidelines. Evidence gaps prompted additional reviews, including guideline reviews for people with NCDs and disabilities (n=131 guidelines) and frail older adults (n=4 guidelines), as well as umbrella reviews on light-intensity PA (n=24) and PA quality (n=23). Planetary health is addressed by a dedicated expert group. Since February 2026, five working groups for key population groups (5–8 experts each) review the evidence reports and will finalize recommendations through consultation by July 2026. The evidence update forms the basis for the current revision of the German National Physical Activity Recommendations. By integrating emerging evidence on population groups, light-intensity PA, PA quality, and planetary health, the updated recommendations aim to better inform policy and practice.

Support/Funding Source: German Federal Ministry of Health

Updating Germany's national recommendations for physical activity promotion: a co-creation approach to sector-specific recommendations

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ABSTRACT

Germany's national recommendations for physical activity promotion (PAP) are updated following an intersectoral policy initiative of the Federal Ministry of Health. The update aims to replace the previous life-course with a sector-guided logic to improve strategic relevance and usability in PAP. Recommendations are developed for the sectors education, health, sport, transport, urban planning, and work, alongside intersectoral recommendations addressing overarching topics such as digital approaches and public education. The update is based on a comprehensive evidence review that informed the development of an initial draft of recommendations. A rapid review of relevant reviews (N = 861) and a content analysis of policies (N = 62) were conducted. Subsequently, a structured participatory development process is conducted to refine and contextualize this draft, involving stakeholders from research, policy and practice. Structured co-creation formats are applied to integrate sector-specific system knowledge and implementation perspectives. A total of 124 stakeholders contribute to the participatory process. The 169 draft recommendations are further developed in sector-specific working groups using online and in-person formats. The co-creation process informs the formulation of sector-specific recommendations and supports contextual adaptation of international evidence to the German policy and practice environment. Replacing a life-course with a sector-guided logic represents a strategic shift in national PAP policy. Combining evidence synthesis with structured co-creation enables the systematic integration of field-based expertise while maintaining an evidence-informed foundation. Participatory and sector-guided approaches may enhance legitimacy, cross-sector coherence and uptake of the PAP recommendations.

Support/Funding Source: German Federal Ministry of Health

Pushing boundaries – integrating planetary health, emergency preparedness and health equity in the national recommendations for physical activity promotion for Germany

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ABSTRACT

Over the past 30 years, physical activity (PA) guidelines have primarily focused on individual health benefits under the "health-enhancing physical activity" concept. Societal challenges such as increasing national and international inequality, pandemics and the climate crisis potentially require the adaptation of recommendations and measures to promote PA. To integrate planetary health, emergency preparedness, and health equity as cross-cutting topics into the German Recommendations for PA Promotion, three expert groups (n = 7-15) were established. Literature searches and eight semi-structured interviews with experts (diet/nutrition, public health ethics) were conducted to discuss and develop plans on how to integrate the three topics in the PA promotion recommendations. Draft recommendations were developed in collaboration with the expert groups and shared with more than 100 stakeholders for feedback through a co-production process. The current draft recommendations emphasize engaging in PA that is seasonal, regional, and uses minimal equipment. Emergency preparedness guidelines now include adaptations for PA in extreme heat and the integration of PA promotion into emergency planning. Health equity is addressed across all sectors, with tailored recommendations on how to support vulnerable populations in being more physically active. Integrating planetary health, emergency preparedness and health equity in PA promotion recommendations seems to be feasible However, discussions on the degree of implementation, potential trade-offs, and more general strategies of promoting PA on the population level are ongoing. This process highlights both opportunities and challenges in aligning PA promotion recommendations with broader sustainability and equity objectives.

Funding: German Federal Ministry of Health

Co-creating policy recommendations to strengthen physical activity promotion in Germany: a study using the physical activity environment policy index

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ABSTRACT

Despite the growing body of research on the effectiveness of policies to promote physical activity (PA), translation of evidence into action remains challenging. To better influence decision-making, it is crucial to formulate specific and actionable recommendations. Therefore, this study aimed to co-create policy recommendations to strengthen PA promotion in Germany. We used the Physical Activity Environment Policy Index (PA-EPI), following a four-step process. First, a systematic search identified national policies and implementation data for the 45 PA-EPI good practice statements, resulting in an evidence document. Second, the findings were validated by government officials via an online survey. Third, stakeholders from policy, practice and academia developed policy recommendations in a multi-sectoral expert workshop and an online survey. Fourth, these recommendations will be prioritised in another survey based on their relevance and feasibility. The search resulted in a 110-page evidence document, which was validated by 28 government officials (average of 11 responses per good practice statement). A total of 83 stakeholders and 12 facilitators participated in the expert workshop. Preliminary results indicate a need to shift from behaviour-focused interventions towards structural approaches. Moreover, policy actions supporting existing interventions such as exercise prescription were perceived as relevant. These recommendations will be further refined and prioritised in spring 2026. The PA-EPI provides a systematic structure for co-creating policy recommendations based on country-specific data. Aligning its application with national processes – in our case the update of Germany's national PA recommendations – is essential to ensure the buy-in of key stakeholders.

Funding source: ERA4Health

SYMPOSIUM TITLE

Nurturing the next generation: innovating pedagogical practice for holistic youth development and physical activity

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ABSTRACT

In an era dominated by sedentary and unhealthy lifestyles, physical literacy (PL) is recognized as a holistic framework for promoting lifelong physical activity (PA) and holistic development through movement, however, its operationalization remains challenging and uncommon across diverse educational contexts. The aim of this symposium, arising from the new HEPA Europe working group on PL, is to discuss PL integration and implementation challenges within contexts such as teacher training, early childhood education, adapted primary schools, and national curricula. The valuable insights gained will inform innovative PL practices and research that support the next generation's sustained participation in PA and holistic development. The first contribution offers insights into the evaluation of ePhyLi digital tools' usability and effectiveness in enhancing PL understanding among pre- and in-service PE teachers, revealing significant knowledge gains and positive feedback alongside areas for usability improvement. The second contribution examines Swedish preschoolers' PL views, highlighting joy in movement, relational influences, and skill eagerness, advocating inclusive practices rooted in lived experiences. The third contribution explores PL perspectives of Swedish primary children with disabilities across adapted schools, emphasizing their voices, redefined competence tied to safety/belonging, and methodological adaptations to inform responsive pedagogical practices. The fourth contribution analyses Romania's bibliography for PE teacher certification, revealing outdated, sport-focused materials that overlook PL principles and calling for alignment with international standards. The fifth contribution reviews German PETE students' portfolios, revealing initial PL unfamiliarity, overlaps with elementary curricula, uneven domain emphasis, and certain barriers. It highlights theory-practice discrepancies and urges systematic PL integration in German sport science curricula. The symposium's strength lies in elucidating the operationalization of PL through cross-national data gathered from diverse educational contexts. Research findings presented in this symposium highlight challenges in bridging theory-practice while advocating for inclusive pedagogical practices and curriculum reforms to operationalize PL effectively across diverse educational contexts. Teachers' understanding of PL could be advanced through digital tools. Meaningful PL practice in school settings should be tailored to children's needs. PL promotion will be compromised if curricula continue to neglect its principles.

Keywords: physical literacy, active lifestyle, responsive pedagogy, inclusive curricula

PRESENTATIONS OF THE SYMPOSIUM

Usability and impact of ePhyLi's digital ecosystem on physical literacy education

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ABSTRACT

Physical literacy (PL) has become central to international policy and educational discourse. Universities play a pivotal role in embedding PL within teacher education, however, its systematic integration remains uneven. This study evaluated a digital e-book, a gamified mobile application, and an interactive e-learning platform to support the professional competence for PL development among future Physical Education teachers, developed during the Erasmus+ Sport project ePhyLi. This study examined the educational effectiveness, usability, and user experience of these tools using a quasi-experimental pre-post design. Sixty-eight university students from three European institutions participated, with 61 completing all measures. A 20-item knowledge test assessed four domains of PL. Usability and experience were evaluated through the System Usability Scale (SUS), User Experience Questionnaire short version (UEQ-S), and additional app-specific instruments. Quantitative analyses included paired t-tests, McNemar's tests, and repeated-measures ANOVA. Significant improvements were observed across all PL domains ($p \leq 0.003$). The greatest gains occurred when the e-book was integrated into weekly lectures using a flipped-classroom approach alongside the platform and app (Time-Group interaction, $p < 0.001$). User experience ratings were moderately positive for both tools. SUS scores (platform: 63.49, app: 60.67) indicated scope for refinement, although playfulness and gamification were rated highly. Structured curricular integration of gamified digital tools can strengthen conceptual understanding, confidence and professional readiness in PL, while highlighting the importance of iterative usability improvements. These insights offer a scalable blueprint for enhancing PL competencies in teacher education.

Funding/Support Source: European Union [Number: 101089928].

Keywords: higher education, digital learning, gamification, usability evaluation

Exploring preschool children's perspectives on their physical literacy through interviews

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ABSTRACT

Physical literacy (PL) research in Sweden is limited, especially studies involving preschool children. Promoting PL in preschools requires knowledge of how children themselves understand movement. This study explored preschool children's perspectives on their PL and the methodological lessons learned from enabling their participation in research. Applying a qualitative design, 25 interviews with 5-year-olds were conducted in Swedish preschools. The semi-structured guide addressed core components of PL: motivation, self-confidence, physical competence, knowledge, and understanding. Data were analysed using semi-deductive content analysis. Although walks in the preschool yard were initially planned, interviews were conducted indoors to accommodate their wishes. The children shared thoughtful reflections and showed strong interest in telling their stories. They expressed joy in movement, a desire to feel good when moving, and emphasised the importance of friends and teachers. They described their abilities as well as movements they wanted to learn. Including preschool children's perspectives not only advances research but also reshapes how PL can be understood in early childhood. Lessons from including children's voices show that meaning in movement is relational and that joy and feeling safe are intertwined with motivation. They also reveal that children's choices influence both the research process and the knowledge produced. Interviewing young children demanded continuous flexibility and responsiveness, sometimes redirecting planned procedures. Grounding PL promotion in children's firsthand experiences of movement requires their active involvement and can support the development of relevant and inclusive preschool practices.

Funding source: Mälardalen University, Sweden.

Keywords: early years, health promotion, preschool

Beyond adult perspectives: what can we learn from children about physical literacy in adapted primary schools?

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ABSTRACT

Children with disabilities are among the most sedentary groups in society and often participate in physical activity less than their non-disabled peers. Although physical literacy (PL) is increasingly promoted as a framework for inclusive movement, few studies have explored how these children understand and experience it, particularly in adapted primary schools. This study explores how children in Swedish adapted primary schools understand their own PL, including its core components: knowledge and understanding, motivation, self-confidence, and physical competence. The study was conducted in three schools and involved 23 children. Data were collected through semi-structured interviews supported by visual aids to facilitate participation and communication. The interviews were audio- and video-recorded, transcribed, and subsequently analysed using a deductive content analysis. By foregrounding children's voices, this presentation highlights lessons learned from taking children's perspectives seriously, revealing how shifting away from adult interpretive frameworks reshapes what can be seen, heard, and understood. These include how competence in movement is redefined, how motivation is closely tied to feelings of safety and belonging, and how communicative and methodological adaptations shape what can be expressed. The presentation also addresses what inclusive research with children means in practice and how such approaches may challenge prevailing assumptions about physical literacy. Together, these lessons may inform more responsive pedagogical practices and meaningful movement opportunities in adapted primary schools, supporting long-term engagement in physical activity.

Support/Funding sources: This study was supported by Stiftelsen Sunnerdahls Handikappfond.

Keywords: physical literacy, children, disability, adapted primary school, public health

Examining physical education teacher preparation through a physical literacy lens: insights from the Romanian context

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ABSTRACT

Physical Literacy (PL) is widely recognized as the central outcome of contemporary Physical Education (PE), promoting lifelong engagement in physical activity. This study examines how the intended curriculum for future Physical Education and Sport (PE&S) teachers in Romania aligns with PL principles. A qualitative thematic analysis was conducted on the mandatory bibliography required for candidates preparing for the national teacher certification examination. Of the 21 prescribed references, only eight were accessible, all published more than two decades ago, highlighting the outdated theoretical foundations informing teacher preparation. Analysis of the accessible materials identified five main themes and ten subthemes describing the intended outcomes and pedagogical tools of Romanian PE&S. Findings indicate that teacher preparation remains strongly influenced by a sport-performance paradigm, prioritizing competition, motor performance standards, sports training, and talent identification as dominant educational mechanisms. Although the literature promotes independent engagement in physical exercise as a key objective, this goal is primarily framed through systematic participation in sport disciplines rather than through the holistic, learner-centred development associated with PL. The findings reveal a conceptual gap between international recommendations and the pedagogical discourse embedded in teacher preparation materials, emphasizing the need to update mandatory training literature to better support inclusive and lifelong physical activity participation. The study also highlights the importance of understanding national educational and cultural contexts when considering PL implementation, as these contexts may significantly shape both the feasibility and direction of curricular reform.

Keywords: physical education, teacher education, teacher preparation, Romania

Harnessing the potential of physical literacy for the German school system: perspectives from prospective physical education teachers

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ABSTRACT

Schools, as crucial environments for adolescents, hold significant potential for promoting active lifestyles. Internationally, Physical Literacy (PL) is gaining recognition in physical education and physical activity promotion (UNE-SCO-QPE). PL fosters lifelong engagement in physical activity through an integrated focus on cognitive, physical, and psychological domains. Across Europe, PL is rarely explicitly included in curricula, although related principles are often addressed indirectly. Given its limited integration into the German school system, this study explores Physical Education Teacher Education students' (PETEs) perspectives on PL. As part of a university course, PETEs (n=18) reflected on PL, its theoretical foundations, and potential integration into school practice through weekly learning portfolios over one semester. The portfolios covered prior knowledge, individual understandings, curricular connections, practical implementation, and perceived opportunities and challenges in (extra)curricular contexts. Data were analysed using qualitative content analysis following Mayring's model of inductive category formation. Initial findings indicate that PL was largely unfamiliar to PETEs. After intensive engagement, most identified substantial overlaps between PL and the elementary physical education curriculum, even where PL is not explicitly named. PETEs highlighted the unequal weighting of PL domains within the curriculum. Practical barriers included limited time and space, as well as prevailing performance- and assessment-oriented approaches. These exploratory findings reveal perceived discrepancies between PL theory and school practice. A systematic examination of PL within German sport science appears essential to ensure that educational processes supporting lifelong physical activity are sustainably established.

Keywords: physical literacy, school-based PA promotion, teachers' perspective

SYMPOSIUM TITLE

The powerful role of sport: process, outcomes and impacts of physical activity and health promotion in organised sports clubs

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ABSTRACT

Sports clubs have recently been recognised as health promoting settings but are still underexploited in terms of their potential to promote health. A recent literature review has demonstrated limited evidence due to the lack of health promotion interventions and activities in this setting, even if practice-based programs exist. The present symposium offers insights on different health promotion interventions and activities across 4 countries (Denmark, The Netherlands, Ireland, Australia) on how the sports clubs setting can impact sports participants, including vulnerable groups, as well as describe their implementation process. Participants will learn about 1) a participatory system approach to build and assess the capacity of Danish professional soccer clubs to promote health among men , 2) how Dutch sports club coaches perceive and act to promote health among their participants, 3) the impact of a soccer centred walking initiative on elderly health in Ireland, 4) the impact of a community walking initiative from Irish sports clubs on health and well-being outcomes, 5) how a nature walking programme affect elderly women in Australia. This will close the gap of understanding what physical activity or health promoting activities in the sports settings are, as well as why, how and who they impact. We will compare across sports practices, countries and type of interventions/activities. Understanding physical activity and health promotion intervention processes, outcomes and impacts is key to growing the evidence base of the powerful role of sports clubs setting and enhancing its intersectoral recognition as key to contributing to community and individual health.

Keywords: sports clubs, health promotion, interventions

PRESENTATIONS OF THE SYMPOSIUM

Building and assessing health promotion capacity for men's health in Danish professional football clubs: outcomes and processes from a participatory systems approach

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ABSTRACT

Men experience a disproportionate burden of cardiometabolic diseases. Professional football clubs (PFCs) represent male-dominated settings with the potential to engage men in health promotion. Little is known about how PFCs develop capacity to sustain these initiatives. This study explores the acceptability of an adapted Group Model Building (GMB) process and its contribution to build health promotion capacity (HPC) in PFCs and municipalities in Denmark. The study was part of the Men's Health Program and employed a qualitative, multi-method design involving two PFCs and municipalities. Acceptability of the GMB process was explored using observations (n=8) and semi-structured interviews with PFCs and municipality representatives (n=6). Changes in HPC were examined using semi-structured interviews with coordinators, leaders, and directors from PFCs and municipalities at baseline (n=10) and 18-month follow-up (n=8). Acceptability and HPC were analyzed abductively using Sekhon et al.'s (2012) acceptability framework and Kania et al.'s (2018) six conditions for systems change. The participatory systems approach was perceived as acceptable and meaningful, particularly in supporting shared problem framing, cross-sector collaboration, and local ownership in the development of health promotion initiatives. Time constraints and tensions between participatory systems approach and commercial PFC contexts challenged feasibility. Differences in HPC development were identified between the two PFCs, with employee capacity and fan base being imperative factors for strategic integration and organizational embedding. Participatory systems approaches show potential to support PFCs in building HPC. However, sustained impact requires alignment with organizational structures, resources, and long-term cross-sector collaborations.

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Health promotion by sport club coaches in The Netherlands: perceptions, roles and practices

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ABSTRACT

Coaches within sport clubs can play a central role in health promotion. However, little is known about their perceptions of this role and the extent to which and how they contribute to health promotion of sport participants. An online questionnaire was conducted among Dutch sport club coaches (n = 184) to examine their perceived role in promoting the health of sport participants, and the extent to and ways in which they address health promotion. Analyses consisted of descriptive statistics. Slightly more than half of the coaches felt highly responsible for the health of sport participants. The majority regularly paid attention during training to health-related topics such as injury prevention (e.g. warming-up), mental health (e.g. paying personal attention), and social health (e.g. stimulating respectful behaviour). Topics related to healthy nutrition, alcohol use, and smoking were addressed less frequently and mainly when problems arose or when sport participants explicitly asked for advice. Dutch sport club coaches already contribute to health promotion, particularly in relation to injury prevention, mental, and social health. However, lifestyle-related topics such as nutrition, alcohol use, and smoking receive limited attention. This indicates a need for additional support in practice, such as training and practical guidance for coaches. At the policy level, clearer frameworks, expectations, and funding for coach education could help integrate health promotion more structurally within sport clubs.

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Walking to the whistle: the impact of a football centred walking initiative for older adults

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ABSTRACT

The Football Association of Ireland (FAI) implement a health promotion initiative known as 'More than a club' (MTC). Walking football (WF) for older adults consists of a weekly 60-minute football session and a social gathering afterwards. This study assess the perceived impacts of participation on the physical, psychological and social-wellbeing outcomes for participants. This mixed-methods study included a quantitative written survey targeting WF participants in league of Ireland (LOI) clubs (n=59). The survey addressed, attitude/level of PA in participants, perceived health benefits of WF and the community value of the programme. Qualitative interviews included speaking with participants individually (n=13), a focus group (n=10) and facilitators (n=2). Observations also took place at weekly sessions and a national tournament (n=4). The interviews and observations were guided by the REAIM implementation science framework. The majority of participants (93.1%) believed that WF has improved their health, while 61.4% reported a decrease in physical health problems. Over two thirds believed that WF reduced their feelings of loneliness, anxiousness and depression. Regular attendance at WF (96.5%) was a key component to the programme's effectiveness and sustainability. Similarly, the qualitative data identified, strong perceived impacts on health and well-being outcomes along with, increased sense of belonging, social connection and reduced loneliness. A positive perceived impacts of WF on biopsychosocial outcomes for participants. Further research should investigate the success factors of implementation and scalability across Ireland.

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On track for health: evaluating participant health and wellbeing impacts of Ireland lights up

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ABSTRACT

Community-based PA interventions delivered through existing settings, such as sports clubs, offer pathways to increase PA levels and enhance population health. Ireland Lights Up (ILU) is a national initiative that leverages sports clubs to deliver structured group walking sessions, connecting participants with outdoor spaces. Despite operating at scale, evidence on ILU's long-term effectiveness remains limited, representing a gap in understanding the impact of such initiatives for NCD prevention. This mixed-methods study evaluates the effectiveness of ILU in improving health and wellbeing outcomes among participants over a 12-month period. Data collection through surveys (n=280) and semi-structured interviews (n=30) occurred at baseline, post-intervention, 6 and 12 months, allowing investigation of sustained impact. Quantitative measures assessed changes in PA levels, health indicators, and wellbeing scores, while qualitative data explored participants' attitudes towards participation. Preliminary findings suggest important themes such increased social connection, motivation and accountability through group participation, and perceived safety of club walking tracks. Quantitative analysis will examine changes in PA levels, health indicators, and wellbeing scores across the four time points to assess long-term effectiveness of the initiative. Findings demonstrate how sports clubs can serve as accessible infrastructure for PA promotion, integrating outdoor activity into daily routines and promoting sustainable PA habits for NCD prevention. By examining effectiveness over 12 months, this study provides valuable insights for those seeking evidence-based approaches to enhance PA for health through community-led initiatives.

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Side-By-Side Nature Walks, designing a bushwalking program for women 55+ years

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ABSTRACT

Walking in nature has physical and mental health benefits, yet some women aged 55+ can face barriers to walking in bush areas alone (e.g. not knowing where to go and fear of safety), and barriers to joining a bushwalking club (e.g. not confident to complete a walk). Some bushwalking clubs in Victoria, Australia are however wanting to increase participation in this age group. A collaboration between Outdoors Victoria, local government, La Trobe University and Escaping Your Comfort Zone, Side-by-Side Nature Walks is a program creating an opportunity and pathway for women 55+ to join bushwalking clubs. A developmental evaluation was conducted to support program development. The evaluator became part of the development team and part of the participant group, conducting participant observations and interviews with participants, program leaders, and program developers to provide real-time feedback and support the testing of ideas and initiatives. A program model that supports women to overcome barriers has been developed. Participation outcomes include an increase in physical activity and improved social connection. Other benefits include the activation of spaces, reduced isolation, and supporting women as they face transition (such as coming out of the workforce or moving to a new area). The research provides an insight into the development of physical activity interventions targeting women 55+. It offers practical implications for the design and delivery of program models aimed at increasing club participation.

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