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Sitting still while the world gets sicker: Rethinking physical inactivity as a public health emergency

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Abstract

Physical inactivity (PI) has emerged as a "forgotten pandemic" in global health. Over a quarter of adults worldwide fail to meet recommended physical activity (PA) levels, a proportion that has remained largely unchanged since 2001. This inactivity drives a rising non-communicable disease burden, deepens health inequities, and generates substantial economic costs. Yet preventive action and dedicated funding remain insufficient. Despite international frameworks and national PA plans, with nearly 75% of countries reporting relevant policies, implementation remains inconsistent and population-wide impact elusive. Global efforts are constrained by systemic policy blind spots. Health in All Policies, a governance approach that integrates health considerations into policy decisions across sectors such as urban planning and education, remains widely endorsed but rarely enacted, foreclosing opportunities for action. Viewed through an equity lens, existing strategies disproportionately benefit more advantaged populations, leaving underserved groups behind. These shortcomings are compounded by short political cycles and chronic underinvestment in prevention, which prioritize short-term political wins over long-term gains. A fundamental paradigm shift is required, from fragmented, individually focused initiatives towards a multilevel, systems-based approach that aligns global, national, and local action. PA must be reframed as a societal investment, rather than a lifestyle choice contingent on individual responsibility. Genuine population-level empowerment stems not from placing the burden on individuals, but from creating environments and policies that enable active living. We call on global health leaders to elevate PA promotion to the forefront of political agendas, supported by increased funding, long-term vision, rigorous implementation, and targeted interventions for underserved populations.

Keywords Physical inactivity, Physical activity, Global health, Health policy, Prevention, Digital Innovation, Policy gaps, Public health

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Background

Physical inactivity (PI), defined as failing to meet established physical activity (PA) guidelines, is one of the most consequential and neglected challenges in global health [1, 2]. Every year, PI claims approximately 6% of global deaths [3], and accounts for an estimated 15 million Disability-Adjusted Life Years (DALYs) lost [1, 4, 5]. By fuelling the rising epidemic of non-communicable diseases (NCDs), PI silently erodes healthy life years and strains health systems worldwide [6, 7]. In this perspective article, we examine why PI should be urgently repositioned as a central priority in global health policy and how a systemic, multi-level approach can close the persistent implementation gap.

Although often conflated with sedentary behaviour, PI is a distinct construct: one can be sedentary yet still meet PA guidelines, and vice versa [2]. This distinction matters for policy, as interventions targeting overall activity volume differ fundamentally from those addressing prolonged sitting. Despite decades of evidence [8, 9], PI has remained chronically overshadowed in the global health discourse by other public health threats. Communicable disease outbreaks, such as COVID-19, and other acute crises garner headlines and resources, while the slower-moving "pandemic of PI" receives comparatively scant attention [10, 11]. The consequences are visible in the data: over 1.4 billion adults worldwide were insufficiently active in 2016, a level virtually unchanged since 2001 [12, 13]. This stagnation led The Lancet to label PI a pandemic requiring urgent action as early as 2012 [1, 3]. Yet, more than a decade later, prevention efforts remain underfunded and only partly implemented. This gap between evidence and action points to systemic shortcomings in policy prioritization rather than a deficit of knowledge. Moreover, this policy gap carries substantial costs [14]. Recent analyses estimate that PI costs the world approximately 47.6 billion international dollars (I$) annually in direct health-care expenses, while indirect costs, including productivity losses due to absenteeism, presenteeism, and early retirement, are likewise substantial [10, 15]. This amounts to 1–3% of national health expenditures in many countries [16]. Moreover, inactivity exacerbates social inequities. Disadvantaged communities have the least access to safe places to exercise and face higher exposure to environmental barriers, from pollution to inadequate infrastructure [17, 18]. These inequities create a vicious cycle where lower socioeconomic status and other disadvantages are associated with lower PA levels. This in turn leads to worse health outcomes and perpetuate health disparities [19, 20]. A recent global analysis using WHO STEPwise approach to Surveillance (WHO STEPS) data, a standardized, cross-nationally comparable surveillance instrument capturing behavioural and biological NCD risk factors across 68 countries, revealed a 40-percentage-point gap in active leisure between historically privileged groups (wealthy men in high-income countries) and the most disadvantaged (poor women in low-income countries). This stark disparity underscores how deeply social identities and structures shape who benefits from PA [7].

Despite abundant evidence that regular PA is one of the best investments for public health and prevention, PI remains a neglected pandemic [21, 22]. Drawing on the World Health Organization Global Action Plan on Physical Activity (WHO GAPPA) [23], the Comprehensive Analysis of Policy on Physical Activity policy analysis framework (CAPPA) [24], and Health in All Policies (HiAP) [25] we synthesize current evidence on implementation gaps and propose a systemic, multilevel policy agenda for integrating PA promotion into global health strategies, national frameworks, and community level action.

A Dutch and French translation of the abstract is provided in Supplementary Material 1: Native Language Abstracts.

Pitfalls in PA policy and practice

PI, a global health crisis hiding in plain sight

The PI problem is global, touching all regions and income levels, but with important variations. Worldwide, approximately 27.5% of adults are insufficiently active, including 1 in 3 women and 1 in 4 men [12]. High-income countries tend to have the worst rates, with prevalence exceeding 40% in some regions, while low-income countries have traditionally lower rates where lifestyles still involve more manual labour and active transport [12]. Nonetheless, even in those settings, PI is rising as urbanization and mechanization increase [26, 27]. The WHO has warned that, if current trends persist, the world will fail to meet the global target of a 10% relative reduction in PI by 2025 [13]. Part of the challenge is rather political than perceptual. PI contributes silently to NCDs and often does not manifest as a singular "event" or crisis that galvanizes action [28]. Unlike an infectious disease outbreak or a natural disaster, there is no sudden onset to spark urgent response [29]. This has led to policy inertia: despite strong scientific evidence for health-related benefits and good return on investment, PA promotion remains at the margins of policymaking [30–33]. This is confirmed by a recent large-scale policy analysis: an examination of 661 national policy documents from 200 countries (2004–2025) found that while policy adoption has increased, implementation remains limited, with PA still occupying a low political priority in most countries. Key barriers included a dominance of health-centric framings, limited recognition of benefits beyond NCD prevention, and weak multisectoral leadership [34]. Thus, concrete investments remain minimal: prior to

COVID-19, only around 3% of health spending in OECD (Organisation for Economic Co-operation and Development) and EU (European Union) countries was devoted to prevention, with PA being just a fraction of that [35].

Another contributory factor is the fragmentation of responsibility. Promoting an active society does not fall neatly under any single sector's mandate. This has often meant that everyone and no one is accountable. Ministries of health may lack the authority to implement changes in city design or school curricula; meanwhile, other sectors may not see PA as their concern [36, 37]. The HiAP approach explicitly calls for integrating health considerations into policymaking across all sectors [38]. Yet, it remains underutilized. Often, there is a disconnect between national policy frameworks and local action: national governments might publish guidelines or strategies, but local authorities who control parks, streets, and schools often lack funding or political mandate to act on them [39]. Even though approximately 75% of countries report a national policy on PI, few have fully executed these plans [40, 41]. The recently developed CAPPA was designed to assess such gaps systematically. It organises PA policy analysis across six dimensions, including policy level, sector type, policy cycle stage, and scope. It reveals that many countries have isolated initiatives but lack a coordinated strategy to consolidate these efforts [24, 42].

Even where sound policies exist on paper, political and fiscal constraints impede progress and implementation. Short political cycles create a structure mismatch with the long-term horizon required for behaviour change: PI prevention requires commitment, while behaviour change programs, and cultural shifts takes years to yield benefits [43, 44]. Elected officials often operate on short electoral cycles, seeking results within a few years [45]. Investments in prevention may not show immediate visible returns, making them less attractive to politicians [46]. This mismatch leads to chronic underfunding of prevention initiatives [47]. Consequently, many well-intended programs fail to scale or sustain beyond a short period, reinforcing the false notion that "interventions do not work", when, in reality, they were never given the support or time needed for success [48].

Compounding these challenges is the tendency to treat PA as a personal choice rather than a societal priority. Historically, interventions have often focused on individual motivation without addressing environmental barriers [49]. This overlooks the fact that opportunities for PA are conditioned by the environments in which people live and the policies that shape those environments [18]. Structural determinants, from neighbourhood design and school policy to cultural norms and work schedules, shape whether being active is a realistic option for most people. Without enabling conditions, simply telling individuals to "be more active" is ineffective and inequitable [50].

Policy gaps and challenges in promoting PA

Closing the gap between what we know about PA's benefits and what is implemented in practice requires confronting a series of policy challenges, as illustrated in Table 1. These span from the global governance level down to local community action and can be strategically addressed using existing frameworks.

Opportunities for integrating PA into all policies and sectors

One of the strongest arguments for elevating PA on the policy agenda is the array of co-benefits it offers beyond health. PA intersects transportation, environment, education, economic development, and community well-being. Recognizing this interconnectedness can motivate a broader spectrum of stakeholders to invest in solutions, effectively "mainstreaming" PA into diverse policy areas [51, 52].

PA in global sustainability and health governance

PA and sustainability

Promoting walking and cycling generates co-benefits across multiple Sustainable Development Goals (SDGs) simultaneously, improving population health (SDG 3), reducing transport-related greenhouse gas emissions and air pollution (SDG 13), and contributing to more sustainable urban environments (SDG 11) [53, 54]. These synergies reinforce the case for viewing PA promotion as part of broader sustainability and climate agendas, not solely a health concern [55]. The relationship is bidirectional, however: climate change itself threatens PA participation through extreme heat and air pollution, requiring that PA policies incorporate environmental adaptation [56]. The recently proposed Physical Activity and Climate Change (PACC) model offers a practical framework for such integrated action, demonstrating that aligning PA and climate agendas delivers greater combined benefits than addressing them separately [34].

Health in all Policies and cross-sector collaboration

Cross-sectoral implementation mechanisms, including inter-ministerial task forces, joint funding schemes, and health impact assessments, have demonstrated measurable gains in population PA [57]. Finland illustrates how this can work in practice: cross-ministerial transport and urban planning initiatives have advanced active mobility beyond what health policy alone could achieve [58], while the "Schools on the Move" program demonstrates how embedding daily PA into education, through 87 (PE), active breaks, and active commuting, yields gains in both fitness and academic performance [59]. Successful

Table 1 Policy challenges in PA promotion and relevant frameworks or approaches

Policy challenges	Key issues/evidence	Frameworks/Policy Tools for Solutions	Priority actions
Insufficient political priority and funding	Prevention and PA receive less than 5% of health budgets in most high- and middle-income countries. PA is often viewed as a "cost" rather than an investment, leading to chronic underfunding and weak political commitment [35, 116].	Economic tools quantify long-term savings and co-benefits. Fiscal measures stimulate investment. Embedding PA in national prevention budgets reframes it as a socioeconomic return (117–119].	Establish PA prevention budgets within national health expenditure frameworks, with dedicated funding streams protected across electoral cycles.
Fragmentation and lack of cross-sector collaboration	Determinants of inactivity lie across transport, education, urban planning, and health sectors, yet policies remain siloed [120]. Inconsistent adoption of HiAP principles limits coherence. Examples from Nordic countries show that long-term, cross-sector alignment increases activity and co-benefits such as cleaner air [58, 121].	HiAP ensures non-health sectors integrate PA. CAPPA provides a way to assess intersectoral gaps. Joint budgeting and interministerial task forces foster collaboration [24].	Mandate formal cross-sector governance mechanisms, such as inter-ministerial task forces with defined accountability, to coordinate PA promotion across health, transport, education, and urban planning sectors.
Implementation and accountability deficits	Most countries have national PA plans but weak execution due to limited funding, unclear indicators, and minimal monitoring. Without accountability, commitments remain rhetorical [41].	WHO GAPPA outlines evidence-based policy actions under four strategic objectives [23]. PEN and WHO NCD Progress Monitors promote accountability and transparent progress tracking [63, 121]. Integrating indicators into SDG reporting enhances sustainability.	Integrate standardized, measurable PA indicators into national NCD monitoring frameworks and SDG reporting, with publicly reported progress reviewed on a defined cycle.
Short-term political cycles and sustainability	PA policies shift with electoral cycles; programs lack continuity. Local governments may pilot innovations but lack autonomy or mandate [122].	Health promotion foundations (e.g., funded through tobacco or alcohol taxes) secure multi-year investments. Embedding PA goals in legislation or by-laws ensures long-term change. Empowering local authorities with stable budgets supports community-level innovation [119].	Embed PA promotion targets in legislation or national health strategies with multi-year funding horizons, insulating programs from short electoral cycles.
Equity and inclusivity gaps	Disadvantaged populations face higher barriers to participation and often benefit least from national programs [123].	PROGRESS-Plus encourages equity assessment [20]. Universal Design improves accessibility for all ages and abilities [124]. Targeted funding and co-creation strengthen inclusion [51, 125].	Direct targeted funding and co-designed interventions towards underserved populations, using PROGRESS-Plus to monitor differential impact and close participation gaps.

Abbreviations: PA, physical activity; HiAP, Health in All Policies; CAPPA, Comprehensive Analysis of Policy for Physical Activity; WHO GAPPA, World Health Organization Global Action Plan on Physical Activity; PEN, Policy Evaluation Network; NCD, noncommunicable disease; SDG, Sustainable Development Goals; OECD, Organisation for Economic Co-operation and Development; EU, European Union; PROGRESS-Plus, Place of residence, Race/ethnicity, Occupation, Gender, Religion, Education, Socioeconomic status, Social capital, Plus additional factors

school-based models often involve collaboration between health and education sectors [60, 61].

International policy frameworks

The WHO GAPPA provides a comprehensive policy blueprint organized around four strategic objectives, active societies, environments, people, and systems, and has been widely endorsed by national governments and regional bodies including the EU and WHO regional offices [23]. In low-income settings, international cooperation remains essential to translate this endorsement into basic infrastructure and development-integrated PA programs [62]. Encouragingly, the UN (United Nations) and WHO have incorporated PA indicators into the NCD Global Monitoring Framework. International networks like the Policy Evaluation Network (PEN) and Global Observatory for PA are further advancing this agenda by facilitating the sharing of best practices [2, 63]. Global sporting events such as the Olympics represent an underutilized opportunity to generate lasting PA legacies within host countries [64, 65].

Built environments as drivers of active living

Urban planning represents a critical lever for PA promotion: as modern lifestyles have progressively engineered movement out of daily routines, redesigning environments to build activity back in has become a cornerstone of prevention [66, 67]. Urban planners and architects become health promoters, designing cities with mixed land use, footpaths, parks, playgrounds, connectivity of green spaces, and limited urban sprawl. The "15-minute city" model, where essential services are reachable on foot or by bike, exemplifies how urban design can embed PA into everyday life as a matter of course (68–70]. This concept inherently promotes PA as part of routine. In rural settings, the priorities differ but the principle holds: community sports facilities, school PE resources, and active travel provisions within national infrastructure

projects are equally essential to prevent physical fragmentation of communities [71]. Active design should be a standard consideration in all planning, much as environmental impact is now considered.

Individual health: from policy to people

While individuals make choices about being active, those choices are powerfully shaped by the environments and systems in which they live [72]. As illustrated in Fig. 1, PA behaviour evolves across the lifespan under the combined influence of global policies, community infrastructure, social relationships, and biological capacity (73–75]. Distal determinants cascade through environments to shape proximal drivers, self-efficacy, social norms, health literacy, and access to facilities, in ways that shift meaningfully with life stage: from play and peer influence in early life, through time scarcity and professional identity in mid-life, to functional capacity and independence in older age. Figure 1 also visualizes how PA capacity and performance components fluctuate across the lifespan, and how insufficient PA accumulates consequences at metabolic, inflammatory, and functional levels, ultimately contributing to chronic disease.

Behaviour change and social support

Decades of research in exercise psychology have shown that knowledge alone is not enough to change behaviour [76, 77]. Despite awareness of PA's benefits, individuals face well-documented barriers, time constraints, low self-efficacy, and environmental limitations, that require interventions grounded in evidence-based behaviour change techniques [78]. Embedding these techniques across healthcare and community settings, from motivational interviewing in primary care to self-efficacy building in schools, represents a scalable policy strategy [79, 80]. Exercise referral schemes, now adopted across several countries, formalize this approach by positioning PA as a clinical prescription alongside medication [81]. Social support constitutes an equally important lever: peer and family involvement strengthens adherence, and policies that fund community organizations and group activity programs can institutionalize this effect at scale [82, 83]. Culturally tailored programs are also critical. What motivates a teenager in an urban setting might differ from what motivates a rural older adult, so programs must be co-designed with target communities [71]. However, it is important to maintain perspective on the population-level impact of these approaches. Despite decades of research and widespread implementation, behaviour change interventions have not produced notable shifts in population-wide PA levels [12, 48]. Their value lies in supporting individuals who already have access to enabling environments; without those enabling conditions, their population-level reach remains limited.

Redesigning daily life

Policy must equally address the supply side by investing in the physical and social infrastructure that makes active choices the default: safe streets, accessible green spaces, affordable facilities, and workplace provisions that remove practical barriers to PA. Relatively modest environmental changes, a new park, improved street lighting, or workplace cycling facilities, can translate intentions into habitual behaviour [66, 84, 85]. Several governments and public health bodies have developed or are actively implementing policy frameworks to support monitoring and benchmarking of PA environments at the municipal level, encompassing recreational access, active travel infrastructure, and inclusivity (86–89]. The workplace represents another critical setting: worksite wellness programs addressing sedentary occupations through activity breaks and active commuting incentives have demonstrated effectiveness, and culturally embedded practices such as Japan's rajio taisō and China's Tai Chi illustrate how movement can be normalized at population scale through occupational and community settings [90, 91]. The key message is that active choice should be the easy choice. When physical environments are designed such that incidental activity is built into routines, individuals accumulate activity almost without thinking about it.

Exercise as medicine

Health professionals represent a trusted and underutilized channel for PA promotion. Integrating PA screening and brief counselling into routine healthcare visits, supported by training in exercise prescription, positions PA as a clinical vital sign alongside traditional health indicators [92, 93]. The American College of Sports Medicine's "Exercise is Medicine" initiative has advanced this approach globally, providing a replicable model for embedding PA within healthcare systems [94]. At the systems level, health insurers and national health services can reinforce this through financial incentives for PA participation, recognizing the long-term cost savings of sustained population health [95, 96]. Yet, the evidence for population-level impact of clinical PA promotion remains modest. Systematic reviews indicate that exercise referral and brief counselling produce small, often short-lived effects on PA behaviour at the individual level, with limited evidence of sustained change or reach into the most inactive populations [81, 97]. Like broader behaviour change interventions, exercise as medicine functions most effectively as part of a broader enabling system, rather than as a standalone population health strategy.

Innovation as catalyst for health policy

Beyond government, the private sector and civil society are increasingly important partners in PA promotion,

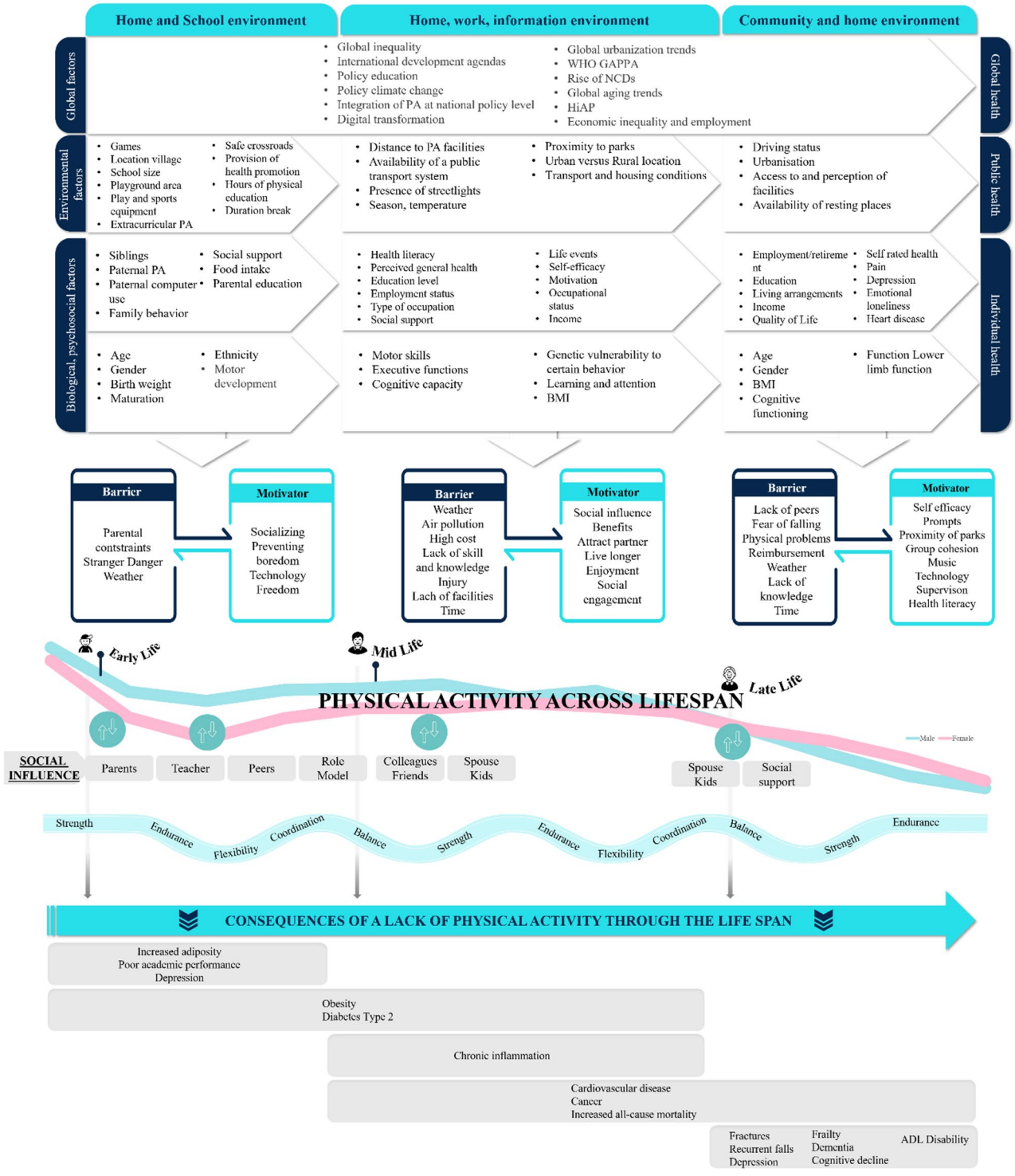

Fig. 1 The Lifelong Continuum of Physical (In)Activity: Determinants, Barriers, Motivators, and Consequences Across the Lifespan. The figure is organized along a left-to-right lifespan axis representing three life stages: early life (childhood and adolescence), mid life (adulthood), and late life (older age). Determinant factors are categorized into three hierarchical rows: global factors, environmental factors, and biological and psychosocial factors. These are further stratified by health level (global health, public health, and individual health) across three life-stage columns. For each life stage, barriers (factors limiting PA) and motivators (factors enabling PA) are listed separately. The two wavy lines across the lifespan trajectory represent PA levels in males (teal) and females (pink). Social influences relevant to each stage of life are indicated below the trajectory. The horizontal arrow at the bottom represents the cumulative consequences of physical inactivity across the lifespan, with health outcomes listed according to the life stage at which they typically emerge. Abbreviations: PA, physical activity; WHO GAPPA, World Health Organization Global Action Plan on Physical Activity; NCDs, non-communicable diseases; HiaP, Health in all Policies; BMI, body mass index; ADL, activities of daily living

with digital technology offering scalable tools for both individual behaviour change and population-level surveillance. Smartphone and wearable applications can nudge movement, deliver tailored exercise plans, and connect users in supportive communities, and should be systematically integrated into public health strategies [98, 99]. At the population level, big data from smartphones and Artificial Intelligence (AI)-driven mapping tools enable governments to identify "activity deserts" and target interventions with greater precision [12, 98, 100–102].

Meta-analyses confirm that digital interventions can modestly but meaningfully increase PA, particularly when they incorporate behaviour change techniques and human support elements [98, 103, 104]. National-scale deployment is already underway: Singapore's step-reward program demonstrated population-wide feasibility [105], and during COVID-19 lockdowns, digital PA promotion proved its value as a public health tool [106]. In low- and middle-income countries, SMS-based interventions offer a lower-threshold alternative [107]. Equity considerations remain critical, however: digital approaches must be designed to reach older and lower-income populations who face access and literacy barriers, including through community-based technology integration [101, 102].

When PA becomes the norm

Empowering individuals is also about fostering a culture that values and normalizes PA. This is less tangible than building a bike path but equally important. Societal norms can either encourage or discourage active lifestyles [108]. If most neighbours on the street engage in evening walks, others are more likely to join [3]. If the workplace culture accepts taking short active breaks, employees won't fear being seen as avoiding work [109]. Public campaigns can help shift norms. Mass media campaigns celebrating everyday PA heroes, school events that involve parents in active play days, or high-profile endorsements (like political leaders publicly participating in runs or bike-to-work days) can signal that being active is a shared value [110]. Some countries have had success with nation-wide challenges, such as "The Daily Mile" initiative (originating in the UK) that got primary school children to run or walk a mile each day, making activity a collective habit [111]. Community-led solutions also often have better buy-ins [112]. Women-only exercise groups in conservative cultures can create a comfortable space that addresses cultural barriers [113].

Individual empowerment does not mean placing the burden solely on individuals [3]. Rather, it means equipping individuals with the knowledge, motivation, and opportunities to be active [114].

Conclusions

Global policy responses to PI remain fragmented and chronically underfunded, a gap this perspective has sought to expose and address. The recent convergence of evidence across major international journals, further confirms the urgency of the agenda outlined in this perspective [7, 34, 115].

The cost of inaction is clear: escalating NCD burden, strained health systems, productivity losses, and widening health inequities that fall disproportionately on already disadvantaged populations. Yet the solutions are not unknown, they are not enough implemented. The frameworks exist. The evidence is mature. What has been missing is the political commitment to treat PA not as a lifestyle amenity but as a foundational pillar of sustainable, equitable societies. Embedding PA across health systems, urban planning, education, and technology is not an ambition for the future, it is an obligation of the present. The co-benefits, spanning population health, economic productivity, equity, and sustainability, make this one of the highest-return investments available to policymakers today.

PI has remained a slow, silent, and politically convenient crisis to ignore. That can no longer be justified. The evidence is unambiguous; what remains is the political will to act.

Abbreviations

PI	Physical Inactivity
PA	Physical Activity
DALYs	Disability-Adjusted Life Years
NCDs	Non-Communicable Diseases
WHO GAPPA	World Health Organization Global Action Plan on Physical Activity
CAPPA	Comprehensive Analysis of Policy on Physical Activity
HiAP	Health in All Policies
I$	International Dollars
OECD	Organisation for Economic Co-operation and Development
EU	European Union
SDGs	Sustainable Development Goals
PACC	Physical Activity and Climate Change
PE	Physical Education
UN	United Nations
PEN	Policy Evaluation Network
AI	Artificial Intelligence
PROGRESS-Plus	Place of residence, Race/ethnicity, Occupation, Gender, Religion, Education, Socioeconomic status, Social capital, Plus additional factors

Supplementary Information

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Supplementary Material 1: Native Language Abstracts. Dutch Abstract. French Abstract

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KD conceived the manuscript, conducted the investigation, provided resources, prepared the visualizations, and led the original draft. KQ contributed to the investigation and assisted with manuscript review and editing. JB, AS, and DH contributed to the critical review and editing of the manuscript. BB provided supervision, contributed to the original draft, and participated in the review and editing process. All authors read and approved the final manuscript.

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