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Low global physical activity despite two decades of policy progress

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Global physical inactivity has remained high and unchanged for the past two decades. We assessed global political priority for physical activity. An analysis of national policy documents from 200 countries revealed notable progress in policy adoption since 2004, but we found limited evidence of implementation. A qualitative case study design, including insights from 46 key informants, confirmed low political priority. Four key challenges emerged: (1) domination of health-centric approaches; (2) limited recognition of benefits beyond non-communicable disease prevention; (3) interest across sectors but lack of clarity defining physical activity policy and of leadership; and (4) limited multisectoral partnerships. Proposed solutions include: (1) building consensus on physical activity policy with consideration of context; (2) acknowledging the scope of benefits; (3) clarifying multisectoral leadership and responsibilities; and (4) increasing partnerships beyond obvious proponents. Prioritizing physical activity policy is essential for improving human, societal and planetary health.

The prevalence of physical inactivity globally has remained unchanged in most countries for the last two decades, with approximately 80% of adolescents and one in three adults worldwide not meeting the World Health Organization (WHO) physical activity guidelines[1–3]. Despite advances in surveillance and research capacity, physical inactivity remains high, and the WHO's target of a 15% relative reduction by 2030 (ref. 4) is unlikely to be met in most countries[2].

The stagnant global prevalence of physical activity might mistakenly suggest that no policy action has occurred over the past two decades. However, since 2004, many policy-related advances have occurred, including increased availability of evidence-based recommendations, action plans, strategic initiatives, transnational monitoring and advocacy networks. Some efforts have tried to raise the political priority of physical activity promotion globally (Fig. 1)[1,4–7]. Yet, critical questions remain unanswered: Why has the apparent success of physical activity policy adoption not resulted in more active populations? Has policy implementation been insufficient? Are currently adopted policies suboptimal in their content, design and/or structure to elicit meaningful change?

Unlike tobacco use, which holds high global political priority[8,9], the global crisis of physical inactivity has not received comparable attention despite known commensurate consequences[10,11]. Although a leading risk factor for non-communicable diseases (NCDs), its burden has been systematically underestimated in global health metrics[12,13]. Lee et al. estimated that it contributes to more than 5 million deaths annually, with an all-cause mortality risk because of inactivity comparable to smoking or obesity[10]. It accounts for 6–10% of global cases of coronary heart disease, type 2 diabetes, breast and colon cancer, and premature mortality, generating more than US$53.8 billion[14] in global healthcare costs each year[10,11]. Yet, the Global Burden of Disease attributes only a fraction of this burden, reporting deaths from inactivity as just 17% and 10% of those from smoking and obesity, respectively[15].

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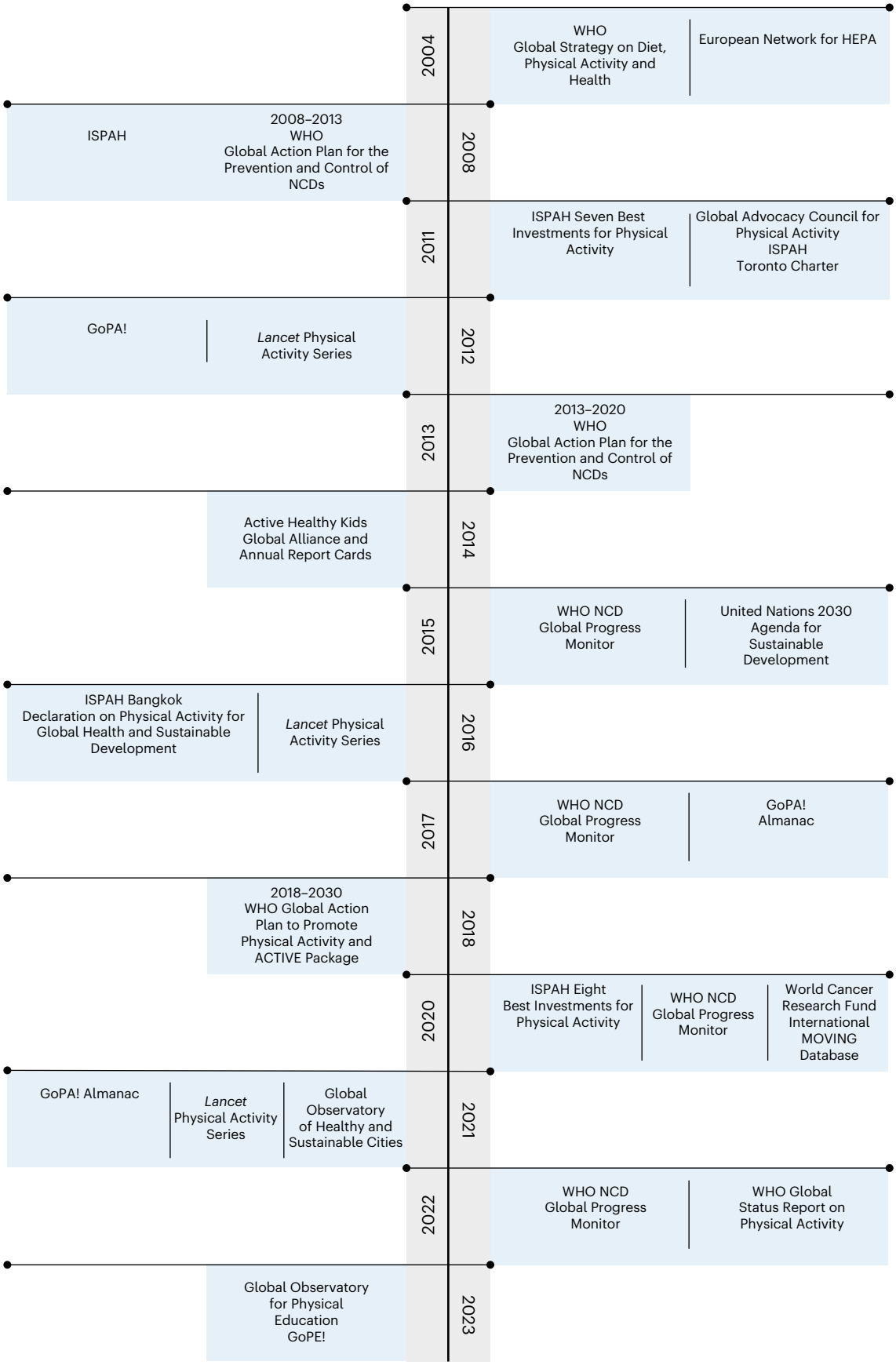

Fig. 1 | Overview of global advances in physical activity policy and monitoring initiatives since 2004. A chronological overview of major international policy milestones, advocacy initiatives and global monitoring efforts related to physical activity from 2004 to 2023. Shaded boxes indicate key global strategies, action plans, declarations and reporting initiatives led by international organizations, while the vertical timeline marks the year of introduction or publication of each initiative.

This discrepancy underscores the need to examine the unique challenges associated with physical activity and the mismatch between its substantial health importance and the disproportionately limited policy implementation and resourcing[16].

Physical activity policy is defined as a coordinated package of measures—formal or informal legislative or regulatory action, statements of intent or guides to action—issued by governments and intended to directly or indirectly affect physical activity[17]. Such policies may be standalone or embedded in other agendas (for example, NCD prevention where physical activity is a co-benefit). Optimal policies identify physical activity as a priority area and include measurable targets, clearly defined tasks, dedicated budgets and a timeline for implementation[17,18]. They also provide strategic recommendations, a framework for coordinated action and mechanisms to support multisectoral collaboration.

Public health policies have an important role in prevention because they deliver evidence-based interventions and strategies that reach entire populations[19]. Contrary to health services or clinical setting policies, they are inherently multisectoral, involving collaboration with governmental and non-governmental organizations (NGOs) and actors beyond the health sector. Lessons from other public health domains, where policy development and action have attained high political priority, may inform the challenges for developing and implementing physical activity policies.

In 2017, the WHO introduced 'Best Buys' for effective public health NCD prevention and control policies, covering tobacco and alcohol control, dietary interventions, NCD planning and access to preventive treatments[20–22]. Tobacco control policies focus on regulating a small set of behaviours and have universal recognition of their effectiveness. Supported by an agreed international framework[23], they align with the 2030 sustainable development agenda[8] and are often institutionalized in national and international political agendas. Evidence-based policy interventions, such as excise (taxes), point-of-sale display restrictions, smoking and advertising bans, restricting E-cigarettes and plain packaging, have a pivotal role in reducing smoking prevalence[8,24]; despite monitoring, implementation varies according to context and government commitment[23,25–27]. Meanwhile, obesity policies are complex, often consisting of a patchwork of sequential prevention policies, addressing healthy food promotion, marketing restrictions and nutrition labelling. Concurrently, policy implementation has been inconsistent and demonstrable reductions in obesity prevalence remain limited[28–30].

However, to date physical activity has received less attention and political priority in the public health discourse. For example, it was omitted from the WHO 'Best Buy policy guidelines' and was only mentioned in the WHO Global Progress Monitor when referencing physical activity communications campaigns[31]. Physical inactivity affects health to a degree similar to other public health priorities, including tobacco and obesity[5], yet a narrow interpretation risks reducing its impact to the increases in regulation and medicalization of daily life[32], limiting its broader societal relevance. Addressing the global crisis of physical inactivity requires broad cross-sectoral strategies because efforts to increase population-wide physical activity remain resistant to change. Comprehensive physical activity policies should encompass a broad range of settings and behaviours and underlying motivations (for example, competitive sport, play and recreation, fitness-driven and health-driven exercise, active travel according to choice in supportive settings, active travel according to necessity, active labour, social interaction, cultural practices, solitude, spirituality). Unlike other public health policies, physical activity-oriented policies have broader impact, extending beyond individual human health-related outcomes and intersecting with diverse societal sectors[33,34], offering holistic solutions for enhancing societal well-being, community resilience and planetary health[35,36]. For example, active travel policies contribute to environmental sustainability by encouraging non-motorized transport that reduces carbon emissions. Hence, multiple concurrent, multisectoral, upstream actions (including those underpinned by legal and regulatory enforcement) are needed to influence population physical activity[4,37–39].

This article critically examines global priorities for physical activity policy, identifies factors contributing to the current level of prioritization and provides strategic considerations to enhance efforts to increase global levels of physical activity. By examining how and why physical activity gains traction on policy agendas, we sought to shed light on the upstream dynamics that influence whether and how governments choose to act on this issue. These insights are an important complement to impact evaluations because they help explain the political and institutional conditions under which policies are developed, adopted and potentially implemented across diverse national contexts. We believe it is a necessary step in strengthening the policy response and, ultimately, population health outcomes.

Results

Qualitative case study results

To understand current perceptions about the challenges and opportunities for physical activity prioritization among policy leaders, 60 individuals were contacted for an interview; 53 agreed to participate (retention rate = 88.3%) and 46 were interviewed (response rate = 76.7%) (Supplementary Information 3 (Fig. 4)). Key informants included policymakers, directors, heads of units, departments and offices, researchers, professors and consultants or advisers from international networks, societies and organizations relevant to physical activity (Supplementary Information 3). Almost half (47.8%) were academics, 23.9% were policymakers (mainly from the health and sport sectors and 28.3% were from outside the physical activity sector) indirectly linked to physical activity through work in transport, urban design or environmental sustainability. These participants (58.7% males) were mostly from the Americas (43.5%) and Europe (41.3%), followed by the Western Pacific (13.0%) and Africa (2.2%); they represented high (89.1%), and low- and middle-income countries (10.9%). They were affiliated with a broad range of institutions and organizations (Supplementary Information 3).

Interview findings suggest that physical activity has moved from being an essentially non-existent policy priority, to "a low but increasing priority" in most countries and "a defined priority" in a few countries. According to respondents, variation occurred for governmental and non-governmental actors and were wide-ranging according to country-specific political environments over time. Interviewees attributed this shift to the emergence of NCDs as a major public health concern. This led to increased leadership and discussion of physical activity, and to the proliferation of networks (Fig. 1) and evidence-based policy documents, guidelines and recommendations (see Box 1 and the Global Observatory for Physical Activity (GoPA!) Policy Directory section in Methods for more details). Respondents highlighted that global leadership initiatives, particularly WHO's GAPPA 2018–2030 (ref. 4), helped elevate the priority of physical activity, but emphasized that policy adoption alone does not necessarily translate into sufficient political commitment.

> "It's a policy priority in the sense of the work that has been collectively done to establish its importance within the health policy arena. Whether it is actually perceived to be a policy priority is a different question, and I don't believe it's perceived to be as important as it is … While the existence (adoption) of policies suggests growing political prioritization, it may be insufficient."
>
> I14 [March 2024]

Effective policymaking necessitates a multifaceted approach that engages diverse coalitions to address complex and "wicked problems", such as physical inactivity[40,41]. The policy landscape in recent decades is more congested. Most interviewees concluded that physical activity still occupied a relatively minor role in national policy discourses and

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BOX 1

National physical activity policy trends across 218 countries (Global Observatory for Physical Activity (GoPA!) 2004–2025)

Since 2004, 91.7% of 218 countries have adopted standalone physical activity policies or NCD policies inclusive of physical activity promotion. From 2012 onwards, there has been an increase in the proportion of countries with physical activity policies in all global regions and country–income groups. Despite most WHO Member States having adopted national physical activity policies by 2024, this has not been accompanied by increases in population levels of physical activity[4,56]. The content analysis found that most adopted policies were highly aspirational, with no measurable targets (that is, country-specific goals, distinct from the WHO's global target of 15% relative reduction in physical inactivity)[4], financial/resource commitments or accountable agencies responsible for implementation[109–111].

Data from GoPA! show that since 2004, 35.8% of countries (95% confidence interval (CI)=29.4–42.5) have adopted standalone physical activity policies and 56.0% of countries (95% CI=49.1–62.7) have embedded physical activity promotion in NCD policies. Figure 2 summarizes physical activity policy adoption (operationalized as policy document availability) in 2025 among the 218 countries included in GoPA! (Fig. 2a) and shows trends in the adoption of physical activity policy (Fig. 2b–e) since 2004.

Of the 661 documents describing standalone or NCD policies, including physical activity, included in the Policy Directory, only 256 (38.7%; 95% CI=35.0–43.5) were comprehensive policies, with three or more sectors assigned specific actions for physical activity (Supplementary Information 2 (Tables 2–4)). The most common sectors responsible for policy implementation were health (50.4%; 95% CI=46.5–54.3), education (38.9%; 95% CI=35.2–42.7) and sport (34.8%; 95% CI=31.2–38.6) (Supplementary Information 2 (Table 9)). Content analysis of the policy documents showed that 81.3% (n=541; 95% CI=78.7–84.7) of national physical activity policies mentioned at least one implementation enabler (that is, tasks and subtasks, budgets, timelines/time frames, collaborators) (Supplementary Information 2 (Table 6)). Information on implementation strategies was most prevalent for 100% of countries in the Americas (one-sided 97.5% CI=91.4–100.0), South-East Asia (one-sided 97.5% CI=71.5–100.0) and the Western Pacific (one-sided 97.5% CI=88.8–100.0), with 100% having at least one implementation enabler mentioned in their national policy document(s) (Supplementary Information 2 (Table 5)). In other global regions, the inclusion of at least one policy enabler in the adopted national policy documents was slightly lower, being 94.7% (95% CI=85.4–98.9) in Europe, 94.4% (95% CI=72.7–99.9) in the Eastern Mediterranean and 92.9% (95% CI=80.5–98.5) in Africa. On the other hand, only 14.1% (n=93; 95% CI=11.5–17.0) of national policies mentioned all policy enablers (Supplementary Information 2 (Tables 6 and 7)). Additionally, 26.5% (n=53; 95% CI=20.5–33.2) of the physical activity policies did not include measurable quantitative targets (Supplementary Information 2 (Table 8)).

that, in most countries, clear policy solutions, financial investment, integration into other policy agendas and support from major political leaders, had yet to be identified.

This analysis found that the inherent nature of physical activity is challenged by the way in which proponents define physical (in)activity and its solutions (problem definition), how they make the case to decision-makers about the importance of the problem and the actions needed to address it (framing), the way in which they work together towards collective action (governance) and their efforts to make strategic links with other actors and sectors outside the physical activity field (coalition-building).

Physical activity (issue) characteristics

Respondents noted that physical activity differs from other public health issues—it is not a single behaviour, has limited immediate visible health effects and is a positive behaviour that is not medicalized or associated with a simple treatment. Its meaning varies according to cultural and social context, country and individual income level. For example, leisure time physical activity is frequently perceived as a luxury (for example, gym membership, extracurricular sports) and a predominantly middle-to-upper-class phenomenon. By contrast, others indicated transportation-related physical activity (biking and walking out of economic necessity) and occupation-related physical activity (active labour, which is frequently poorly compensated and occurs in hazardous environments) is often associated with poverty[3]. The paradox of promoting a positive behaviour, such as physical activity, differs from efforts to reduce negative health-compromising behaviours, like tobacco, unhealthy eating or alcohol use. This highlights the need for complex, cross-sectoral approaches to physical activity to support actions across physical activity types and settings.

Physical activity definition and solutions

There is lack of consensus among proponents on whether physical activity should be conceptualized as a desired outcome or as the means to an outcome. This has led to disagreements regarding policy solutions. For example, respondents presented contrasting views on which types of physical activity should be promoted (for example, exercise and sport versus physical activity, active travel versus active leisure, "every move counts" versus "health-enhancing physical activity guidelines"). Respondents acknowledged that this lack of consensus could lead to confusion among political leaders. Decision-makers are unclear about what they are being asked to promote and how actions should vary according to sector and agency, which may also help explain the scarcity of successful policy implementation examples worldwide, especially in populous low- and middle-income countries.

> "Each stakeholder comes with different priorities, perspectives, and expertise, and that often leads to varying viewpoints on the problem and solutions that need to be explored … the complexity of the issue itself."
>
> *I2 [March 2024]*

> "Governments get how inactive we are as a society and how significant it is … however … most of the investment comes in treatment … it's so difficult to see the benefits of physical activity in preventing chronic conditions and disease, it's hard to show something never happened."
>
> *I12 [March 2024]*

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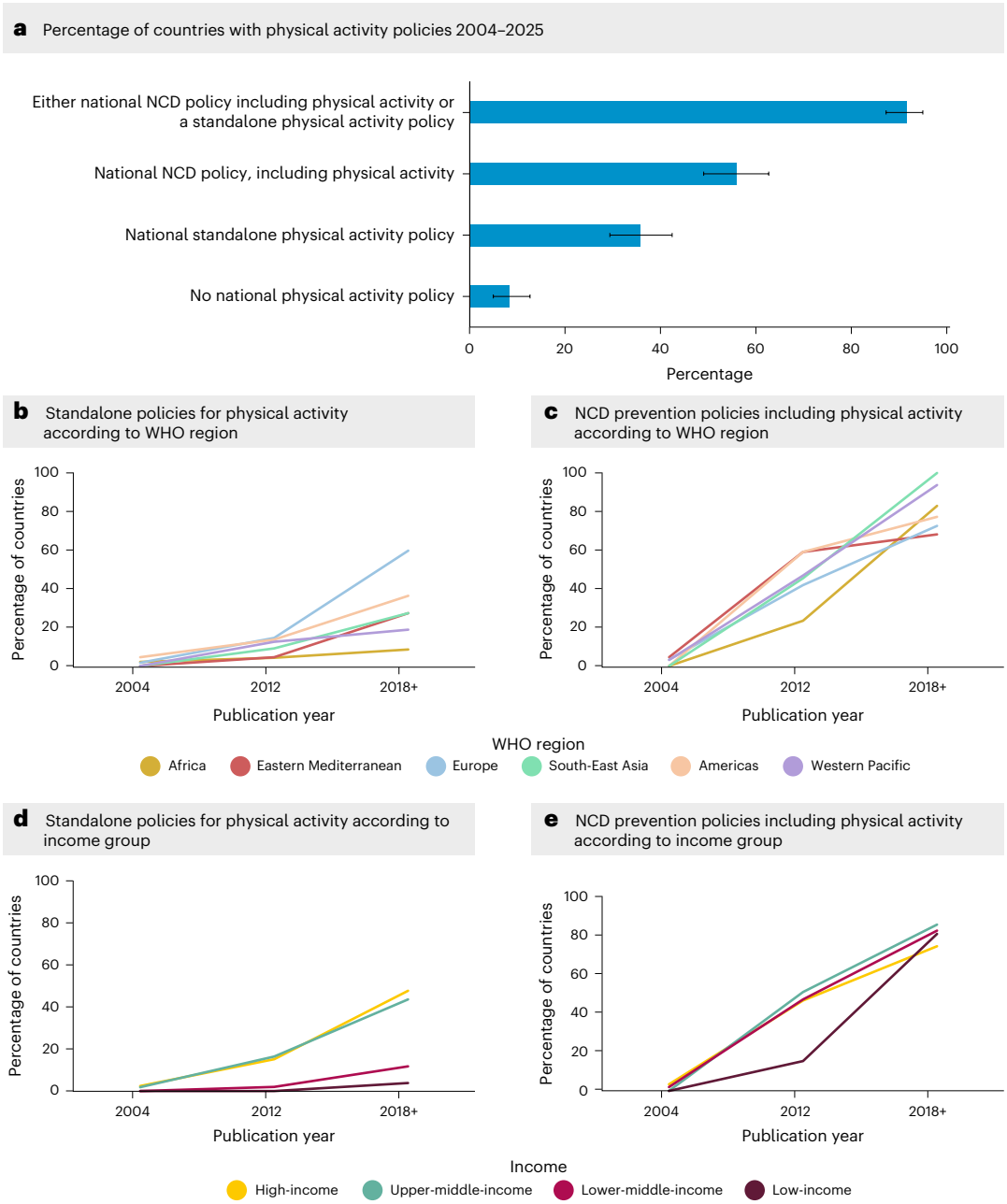

Fig. 2 | Global physical activity policy landscape and progress in countries with physical activity policy according to WHO region and income group. **a**, Percentage of countries with national physical activity policies ($n = 218$). The bars show the mean percentages with 95% CIs. **b**–**e**, Trends in the proportion of countries with physical activity policies according to WHO region (**b**,**c**) and income group (**d**,**e**). The lines represent the percentage of countries reporting each policy type according to publication year. Additional global policy findings from the GoPA! Policy Directory can be found in Supplementary Information 2 (Table 1 and Figs. 1–3).

Respondents also highlighted how the current human health-centric conceptualization of physical activity may limit policy options, while adding complexity to the issue's framing, governance and coalition-building. Thus, they believe that this approach (centring the discourse of the importance of physical activity promotion as a matter primarily concerning human health) has alienated some critical actors, resulting in fragmented governance arrangements.

> "We have too many people talking to themselves. They're building big networks of like-minded people who share the same agenda, very uniform in thinking."
>
> *I44 [April 2024]*

> "You should show the co-benefits … transportation may have other goals, and you need to recognize that utilitarian physical activity is part of the good things that can come out of sustainable transportation policy … reducing travel time, air pollution and greenhouse gases … as is showing the road safety side because you are saving lives while you travel."
>
> *I10 [March 2024]*

Another challenge was related to the types of physical activity policies that should be developed. Respondents differed on whether standalone policies should be preferred to broader policies across multiple issues. What was clear for all was the need for multisectoral physical activity policies aimed at jointly improving multiple human,

societal and planetary health outcomes, versus those with a single-issue focus (typically NCDs and obesity). Creating fewer but more meaningful physical activity policies, for which implementation strategies are well defined and resourced, was identified as critical for effective governance and sustainable development.

> "We're probably just on the brink of policy saturation … So, less policies but more meaningful policies. Less actions but more targeted actions … the people on the ground would like to see less policy but clearer, better articulated … interconnectivity, that consistency, that harmony between those actors."
>
> *I7 [March 2024]*

> "It's just not the policy adoption itself … it has to be implemented in the way it's intended … who checks to see if they're actually doing it? And what is the ramification of not doing it?"
>
> *I3 [March 2024]*

Framing of physical activity within policy

Respondents noted that physical activity is often perceived as a trivial and intangible "problem", making it seem like a "nice to have, but not a need to have" (*I17 [March 2024]*) element among competing public health priorities. Further, physical activity efforts are often misaligned with policymakers' timelines. The discourse to address physical inactivity has traditionally focused on long-term outcomes (that is, NCDs), limiting the emphasis on the immediate effects of physical activity—improved mental health, immunity[42], social connections and children's well-being—which tend to resonate more with policymakers.

> "Mostly for chronic disease risk factors … most elected officials operate on a two-to-six-year time frame, which happens to coincide with their own election … it's hard to get them thinking about if we do something about physical activity now, colon cancer rates will go down 20 years from now … so a lot of it has to do with a mismatch of the time frame between public health and policy change … policy tends to be more reactionary, and crisis driven."
>
> *I34 [March 2024]*

Most respondents agreed that physical inactivity historically had been positioned as a behaviour resulting from individual choices, which would call for educational, persuasive and incentive approaches and risk of perceptions of "nanny state" governmental control[43]. More recent conceptualizations emphasize policies to support environments that make it easier to be active in parks, schools and workplaces, and to walk and bicycle to destinations. However, schools, employers and transportation leaders often do not perceive promoting physical activity as their responsibility, and physical activity goals may be seen as competing with their mandates. Yet, substantial evidence shows that supportive policies and environments can be effective and are likely essential to facilitate the "active choice" by individuals. For example, it is not simply that people choose to walk or cycle that is the issue (individual perspective), it is whether policies in the urban design, transportation, and parks and recreation sectors, enable active choices for transport and leisure that make the active choice easy, convenient and safe for all individuals.

> "Physical activity policy is the entire ecosystem which makes it possible, easy, to engage in physical activity in a sustainable manner … it's a framework which enables everybody to participate regardless of their ability, race, sex, religion, and beliefs …which ensures no one is left behind."
>
> *I14 [March 2024]*

Lastly, physical activity's non-human health benefits have not been effectively communicated to date, and these issues are central to other sectors' agendas. For instance, respondents underscored the promising potential of aligning physical activity promotion with other agendas: climate, pandemic preparedness, liveable communities, social determinants of health, population ageing, mental health, cognitive impairment, economics and education. While many of these topics are highlighted by Salvo and colleagues[42], this has yet to be internalized among representatives of these respective agendas.

> "On physical activity, you still don't see that level of interest … for example, the need to incorporate it in our daily life rather than think about it as sporadic engagement is something that really hasn't permeated yet at the policy level."
>
> *I43 [April 2024]*

Hinckson and colleagues[44] also discussed the importance of integration with other policy agendas, including climate action, with the dual policy goals of mitigating and adapting to climate change risks while promoting human and societal health through physical activity. Given the current salience of the climate change agenda, highlighting bidirectional and synergistic pathways with the potential to simultaneously reduce carbon emissions and physical inactivity is strategically important[44].

Physical activity governance

There is consensus among proponents that the governance of physical activity is limited by the absence of an "official home" within any specific sector or institution—a challenge exacerbated by physical activity's multisectoral nature.

> "At national level the very big problem of physical activity … is that it's a nonidentified sector … It's very often moving from one ministry to the other … very often falls under health but … there's no real assigned sector and isn't yet perceived as a solution or as a cross-sectoral approach which can serve the mandates of various different sectors as well."
>
> *I17 [March 2024]*

In addition, many interviewees reported that physical activity expertise is not recognized because it encompasses a broad spectrum of behaviours in diverse settings and is applicable to myriad health and non-health issues. This has led to a fragmented community of specialists operating in silos, further compounded by challenges with global leadership, institutions and country coordination systems. While international organizations have played important leadership roles (Fig. 1), more effort is required to bring this community together, especially non-health-centric actors (for example, development agencies, philanthropic foundations, NGOs and the private sector). The many actors complicate programme delivery and produce a frequently controversial policy climate. Respondents emphasized that accountability for promoting physical activity is unclear across government institutions, resulting in redundancy and inefficiencies. They reported a need for effective governance and a transnational platform, particularly for leadership from low- and middle-income countries and through standardized international monitoring systems.

> "I like to say that physical activity is said to be of interest and importance to everyone, but it's owned by no one."
>
> *I19 [March 2024]*

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BOX 2

Global physical activity policy monitoring systems launched since 2012

The European Health-Enhancing Physical Activity (HEPA) Focal Point network

The HEPA Focal Point network was created in 2004 based on a recommendation of the Council of the European Union (EU) on promoting health-enhancing physical activity across sectors[45]. EU member states appointed a focal point responsible for monitoring 23 indicators related to physical activity levels, programmes and policies. Data collection has been supported by the WHO Europe regional office. Every 3 years, a set of EU country profiles is published describing indicators, including physical activity guidelines, surveillance systems and plans. A recent survey of the HEPA Focal Points indicated that governments appreciate regular, systematic and comparative monitoring of their national physical activity policies[112]. According to the focal points, results from the monitoring framework are used to take stock of the situation in their own countries to understand developments in other countries, to foster communication between sectors and to further develop national policy[112].

The Global Observatory for Physical Activity (GoPA!)

The GoPA! was launched in 2012 after the first *Lancet* Physical Activity Series[46]. GoPA! has monitored national physical activity policy since 2015 (139 countries in 2015, 164 in 2020, 186 in 2025)[46,57,99,113,114], and has been an independent and local representative-based observatory producing 'physical activity Country Cards' that monitor research, surveillance and policy indicators. These profiles are developed in partnership with key local researchers, government officers and practitioners. In the last decade, GoPA! has tracked the progress of physical activity policy worldwide, supported global advocacy for physical activity, monitored the effects of the coronavirus disease 2019 (COVID-19) pandemic on physical activity and vice versa, and informed public health practice in many countries. The 2021 GoPA! report revealed that 88.2% of the global population lived in countries requiring substantial support in the capacity for physical activity promotion, with large inequalities between countries and world regions observed for physical activity policy, recommendations and monitoring systems[1,6,46,57].

The Global Action Plan on Physical Activity and the ACTIVE package

In 2018, the WHO launched the Global Action Plan on Physical Activity 2018–2030 with the target of achieving a 15% relative reduction in global physical inactivity by 2030 (ref. 4). The plan outlined four objectives and proposed 20 evidence-based policies adaptable to diverse national contexts. Concurrently, the ACTIVE technical package was developed to facilitate policy implementation, focusing on the four policy action areas outlined in the Global Action Plan: (1) Active Societies; (2) Active Environments; (3) Active People; and (4) Active Systems[47]. This approach aimed to enhance local capacity for programme implementation across sectors, spanning health, sports, transportation, urban design, civil society, academia, the private sector and community-based organizations.

The initial report published in 2022 reported slow progress in reducing physical inactivity, especially in low- and middle-income countries. Implementation was patchy across countries, resulting in inequitable access to physical-activity-supportive opportunities and environments. WHO urged all countries to incorporate physical activity into primary healthcare strategies, NCD policies, sustainable mobility plans, sport policies and COVID-19 response and recovery plans to achieve broader physical activity participation.

Examples of translational monitoring platforms are shown in Box 2 (refs. 4,45–47) and the whole-of-government approaches in Box 3 (refs. 48,49).

Coalition-building for physical activity advocacy

Coalition-building for physical activity advocacy is limited. Although respondents reported no direct opposition, there are sectors whose agendas have, intentionally or not, served to reduce physical activity historically. Research on the commercial determinants of physical activity highlights how specific industries shape policy environments in ways that deprioritize active transport and compact urban design[50,51].

For example, road construction, automobile, fossil fuel industries and entertainment and technology conglomerates passively discourage active lifestyles and may influence policy and planning in ways that prioritize car use, limit mixed-use development and maintain incentives like fuel or parking subsidies[50–53]. Digital media and entertainment platforms may also compete for time that could otherwise be spent in active pursuits[50–52,54]. Together, these factors contribute to environments that are less supportive of physical activity. Respondents perceived that the lack of explicit opposition could be because these industries do not identify a threat to their business models from the current state of physical activity[52].

> "Physical activity has kind of been everybody's darling because it doesn't take away from anybody … there is no real industry interest that opposes it. I think we would be seeing that once we look at harder policy measures, such as congestion charges in all cities and higher taxes and subsidies for active transport."
>
> *I31 [March 2024]*

Evidence suggests that public health and civil society must address the fundamental economic, commercial and social drivers of physical inactivity. Public health experts can assist global policy discussions regarding the roles of individuals, governments and corporations in safeguarding public health and changing corporate policies[52]. However, examples of successful coalition-building are infrequent. There was the impression among interviewees that many relevant actors (for example, technology companies, environmental advocacy groups and social media influencers) have not been effectively engaged, with limited progress in the co-benefits agenda. Also, respondents referred to a lack of expected support from transport and urban design sectors, which were potential allies. These sectors could provide more clarity on their roles in promoting physical activity in the future. Ultimately, the effectiveness of physical activity advocacy will result from direct outputs (guidance on intervention strategies, research priorities and international meetings), policy consequences (international resolutions, national policy adoption, the scaling up of interventions with allocated funding) and impact (increase in enabling environments for physical activity), which are all needed to improve population health[55].

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BOX 3

Achieving sustained and defined political priority for physical activity: case studies

These case studies are examples of concerted efforts showing that cross-sectoral solutions to physical activity policy and promotion are feasible, sustainable and have some evidence of effectiveness. The Healthy Ireland initiative[48] and the Colombian National Physical Activity Program[49] are whole-of-government approaches with cross-sectoral accountability, illustrating the potential generalizability of such initiatives to both high-income and middle-income countries.

Ireland, an example for high-income countries

In 2016, Ireland published its first standalone national physical activity policy[115]. This process began in 2008 with agenda setting[116]. Collective action by a coalition of academics, government and civil society stakeholders strove to put physical activity on the national policy agenda. Strategies included highlighting the high prevalence of inactivity and its associated consequences (problem stream)[84], and advocating for feasible, acceptable and viable evidence-informed solutions to address the issue (policy stream and Advocacy Coalition Framework)[116]. This resulted in action 2.11 of the Healthy Ireland framework[48], where physical activity policy development became embedded within a whole-of-government and whole-of-society approach to improving population health and well-being.

Over the next 3 years, Ireland's first national physical activity plan (NPAP) was developed and published[115]. Chaired jointly by the Department of Health and the Department of Transport, Tourism and Sport, the NPAP development team were multisectoral and multi-agency, with academic observation and consultation. NPAP's aim was to "increase physical activity levels across the entire population thereby improving the health and well-being of people living in Ireland" (NPAP, p. 11)[115]. NPAP was informed by the Toronto Charter[117], the International Society for Physical Activity and Health (ISPAH)'s investments that work for physical activity[34] and the EU Council Recommendations on promoting health-enhancing physical activity[118].

National targets were set for children, adults and older adults; eight thematic areas and 60 actions were identified for a 4-year time frame (extended to 6 years because of COVID-19). Thematic area 8, 'Implementation through Partnership', included establishing an NPAP cross-sectoral group to oversee its implementation, identify resources required, explore funding mechanisms and conduct ongoing reviews of NPAP actions and targets. Each action had a lead responsibility, partners involved and time frame assigned. An evaluation of NPAP implementation was conducted by an external agency, independent of government, highlighting several key achievements. The review used document analysis, and quantitative and qualitative data collection and analysis. NPAP actions were categorized as completed (clear evidence), partially completed, changed (because of COVID-19 in the main) or not completed. Results revealed that 54% of actions were completed, 38% partially completed, 5% changed and 3% not completed. Although an increase in the proportion of 10–18-year-olds meeting national physical activity guidelines since policy publication was estimated, the review concluded that it was unlikely that NPAP reached its stated goal of raising physical activity levels of the population of Ireland by 1% per annum, explaining that this was in part mitigated by the negative impact of COVID-19 during the evaluation period.

The evaluation also identified key achievements, such as the Healthy Ireland Fund, with specific-purpose funding for physical activity and sports programmes. The education, health, planning and transport sectors, as well as workplaces, communities and research settings, also reported progress. The Irish Physical Activity Research Collaboration (https://i-parc.ie/) is an example of a new network of policy, practice and academic stakeholders working to achieve "socially notable" change[119] in physical activity. This network is supporting implementation of NPAP through capacity building and networking events, by evaluating the application of the Global Action Plan on Physical Activity framework to Ireland[120], and by gaining an understanding of effective implementation of physical activity programmes in community settings[121,122]. Research on the status of physical activity policy implementation in Ireland revealed low-to-high scores[123]. While the extent of implementation varied across policy sectors (for example, education, transport), variation was less and scores were higher in the policy infrastructure support domains (that is, governance, leadership, surveillance). This supports the importance of a comprehensive policy approach, cautions that change is slow and emphasizes that the physical activity community must understand the process of political prioritization to ensure sustainability of effort. Evidence is needed on how to do this effectively.

Colombia, an example for middle-income countries

Colombia has a well-organized multisectoral approach to physical activity promotion, physical education and sports dating back to 1925 (ref. 124). The 1991 Constitution established sports and recreation as a right for all Colombians, effectively making this a national-level, state-level and municipal-level responsibility. Programmes funded specifically for sports and physical activity promotion combined with a deep cultural value for sport and a strong municipal organization led to many creative local physical activity promotion programmes that in 1995 coalesced into the National Sports System, which remains operational today. Over the last 25 years, Colombia has created a broad governmental policy infrastructure for physical activity. Key components include a 2008 intersectoral government commission for physical activity promotion, the 2009 National Obesity Prevention law, the National Physical Activity Network (Red Colombiana de Actividad Física) REDCOLAF, the physical activity promotion programmes of the National Sports Institute (Coldeportes) launched in 2003 and 2008, 'Visión Colombia 2019', the Ten-year Sports Plan 2009–2019 and the National and Subnational Development Plans, which included specific targets for physical activity, sports, recreation, physical education and public health. The Ministry of Sport formed in 2019 provides leadership and technical guidance for physical activity promotion. National programmes have been multisectoral, targeting many population groups, addressed all ISPAH's investments that work for physical activity[34] and have been implemented in all 32 departments[49], such as the iconic nationwide Healthy Habits and Lifestyles (HEVS) programme that already demonstrated a high cost-benefit ratio.

The overall population impact is being assessed through national health surveys (Encuesta Nacional de la Situación Nutricional) conducted every 5 years (not conducted in 2020 because of planning delays followed by COVID-19). The proportion of adults meeting the

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recommended leisure time physical activity increased from 19.9% (95% CI=19.1–20.8) in 2012 to 22.5% (95% CI=21.2–23.9) in 2015, which was concomitant with the implementation of the Decennial Sports Plan 2009–2019 (ref. 125,126).

An evaluation revealed significant implementation of high-quality subprogrammes targeted at population groups with lower physical activity, and progress securing the right to recreation, physical activity and enjoyment of free time, along with community cohesion and reduction of violence in communities. These results were sufficient to justify public investment to increase 3.8-fold between 2009 and 2019 (ref. 127). Colombia has been a leader among middle-income countries in developing comprehensive evidence-informed policy for physical activity coupled with sustained technical guidance and capacity building, cross-sectoral collaboration, community engagement and funding to ensure that programmes were implemented. The country's next steps include developing an implementation strategy for actions across sectors, an ongoing monitoring system and leveraging the 2022 guidelines for promoting physical activity and reducing sedentary behaviour to increase the political and public priority for physical activity.

Discussion

Physical inactivity is a long-term rather than acute policy challenge, and one where the application of appropriate policy instruments should yield a reduction in physical inactivity rather than its elimination (Extended Data Table 1, key findings)[13]. Although most countries now have some form of written physical activity policy, gaps persist in the African and South-East Asia regions, and across low- and lower-middle-income countries (Box 1). Also, changing political and institutional contexts may have influenced policy development and implementation across countries; in virtually all countries, policy implementation is poor and better mechanisms to initiate and drive implementation are needed. Our findings are consistent with WHO data suggesting that countries implemented fewer than half of the WHO-recommended NCD prevention and control policies between 2014 and 2021, with most physical activity policies remaining in stasis[5,6,20,21,56–58]. Enhancing physical activity recognition in the policy environment has been insufficient. Policies should incorporate national physical activity guidelines, set targets and allocate budgets, and provide clear accountability mechanisms[59]. Even where countries have well-integrated physical activity policies (for example, Ireland and Colombia), effects on population physical activity levels are either small or not yet apparent. Multicomponent surveillance systems are needed to determine whether the unchanged physical activity prevalence is due to competing secular trends driving down physical activity, ineffective or mismatched programmes, poor implementation of policies or simply that more time is required to see results[34,60,61]. More focused research is required to identify best practices to design, implement and evaluate public sector policies for physical activity promotion[62,63].

Current conceptualization and prioritization of physical activity has been predominantly shaped by epidemiological perspectives from high-income countries, largely focusing on health-centric and NCD-centric views[64]. This dominance has restricted policy options and efforts in framing, governance and coalition-building for physical activity promotion. In response, independent global organizations and platforms have emerged over the past two decades (Fig. 1), advancing arguments for addressing the physical inactivity pandemic[5], and repeatedly underscoring the need for integrated approaches. However, evidence on how to translate this compelling argument into a prioritized political agenda is limited. An improved understanding on how to better integrate different cultures, sectors, perspectives and contexts is important to develop a flexible global framework that countries can draw from. This might lead to more effective communication about physical activity, its many benefits beyond obesity and NCD prevention, and better targeted and tailored policies for physical activity promotion[42]. Despite these challenges, there are several reasons to be optimistic about physical activity's potential as a global priority.

Generating internal consensus on physical activity—defining what it means, to whom and in what context—is a necessary step towards more effective promotion. Current messaging overlooks the cultural and contextual nuances of physical activity. Surveillance efforts typically focus on energy expenditure or reported minutes, while omitting the type, setting and purpose of the activity[3,65]. This may limit the utility of the data for sectors outside health or in low- and middle-income countries.

Recognition of the multiple benefits and co-benefits of physical activity must transcend traditional boundaries, as emphasized by Salvo et al.[42] and Hinckson et al.[44]. Even within the health sector, discourse needs to move beyond obesity and NCD prevention, and include mental health, immunity and healthy ageing. More importantly the evidence-based benefits of physical activity to society and the planet need to be reframed in ways that provide value to other sectors. One strategy may be monetizing these many cross-sectoral benefits from the perspective of the relevant sectors. Monitoring of macro-level indicators of economic, social and mental well-being within physical activity surveillance systems may also be helpful for identifying intermediate effects of policies expected to lead to changes in population physical activity.

Our findings resonate with wider debates on the limitations of health-centric framing in multisectoral action for health. As highlighted in the literature, when health dominates policy agendas, other sectors may perceive it as overreach or 'health imperialism', potentially weakening coalition-building, leadership and shared ownership across government and society[66,67]. This underscores the need for approaches that foster genuine cross-sectoral engagement and distributed leadership. Therefore, forging alliances and building partnerships beyond the obvious physical activity proponents—education, transport, urban planning and community development—is essential for cross-sectoral ownership and leadership. Broad coalitions can provide synergistic impact, especially when non-governmental actors can facilitate effective collaboration among diverse agencies and actors[68]. Without such engagement, initiatives risk being siloed within health ministries, limiting their reach, sustainability and ability to mobilize resources and influence policy. Therefore, strengthening coalitions through shared leadership and responsibility is critical to enhancing the legitimacy and long-term impact of physical activity policies.

Once policies have been adopted, implementation science and participatory research frameworks are critical for evaluating their reach and impact. Collaboration between researchers and policymakers is necessary to explore implementation strategies and outcomes. Although tools for policy implementation evaluation in physical activity exist (for example, HEPA Policy Audit Tool[69], GoPA! Policy Inventory[58], GoPA! national/subnational multisectoral policy audit tool[70,71], Physical Activity Environment Policy Index (PA-EPI) tool[62,72]), these are relatively new and require further testing. The GoPA! and PA-EPI tools can be used in the long term to monitor and benchmark public sector physical activity policies, with results facilitating comparison of policies over time and across countries. However, knowledge of the effectiveness of physical activity policies, how to measure it and how to assess its impact on health equity is limited, with little guidance on which policies governments should use in different settings or under various conditions[73]. The literature highlights both the potential and

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BOX 4

Study limitations

This analysis has limitations. Limited input from a broader range of geographies and stakeholders—particularly from low- and middle-income countries and frontline policymakers (for example, elected officials and senior public servants)—may have reduced perspective diversity, partly because of recruitment challenges. As noted, 47.8% of respondents were from academic institutions and 89.1% were based in high-income countries. This reflects a broader structural reality: physical activity policy research and development remains relatively nascent in many contexts and has historically been led by institutions and experts in high-income countries, particularly those based in the Global North. This pattern has been well documented, including in the global mapping of physical activity policy research by Ramirez Varela et al.[128]. Nonetheless, our intent was to include respondents who are most actively involved in shaping physical activity policy at national or international levels. In many cases, these individuals are situated in academia or multilateral agencies but have direct roles in advising governments, shaping national plans and influencing policy discourse. We also made targeted efforts to engage a diversity of decision-makers across sectors, including government, civil society and technical experts working in low- and middle-income countries. Additionally, global evidence on policy implementation effectiveness remains scarce, reflecting a broader evidence gap that, if addressed, could support the development of more effective and equitable policies. As such, it was not possible to determine whether national policy interventions were implemented as intended or led to increased physical activity in most countries. Given our focus on identifying factors that supported the emergence and prioritization of physical activity in policy, a detailed longitudinal analysis was beyond scope.

relevance of public policy to improve health equity in physical activity[74,75], showing that, across populations with social disadvantages, tailored policy approaches for physical activity promotion are likely to be effective[76]. This is in line with Frieden's[77] 'health impact pyramid', which emphasizes the significance of contextual measures, like policies, for broader population impact compared to the narrower impact of interventions such as clinical or counselling programmes. However, research on physical activity policies has also shown that equity is rarely explicitly addressed, concluding that equity and equality considerations "were rather more symbolic than instrumental"[75].

Another central research question is whether standalone physical activity policies or integration into NCD plans yield better results for physical activity promotion. While there is a strong case for embedding physical activity policies within NCD strategies for health reasons, there is also an important downside. Most physical activity promotion efforts and potential budgets are in sectors like transportation, parks and recreation, environment and education, which do not see disease prevention as important to their missions. Their support and budgets are vital for effective policy implementation; however, they are unlikely to commit to health-centric plans. Starting the policy process with a broad multisectoral coalition focused on the synergies of physical activity promotion may be more effective for engaging these key sectors.

While examples such as the Active Living Research programme in the United States and the Irish Physical Activity Research Collaboration demonstrate how targeted funding and cross-sector steering can support sustained, interdisciplinary engagement, they remain mostly limited to high-income contexts, with Colombia standing out as a notable example from a middle-income context. The broader challenge lies in initiating, scaling and sustaining such comprehensive, multisectoral collaborations globally. Future research must move beyond mapping existing structures to actively explore strategies for initiating, monitoring and maintaining effective partnerships across sectors and income levels. Without this foundation, efforts to promote physical activity will continue to rely on isolated successes rather than systemic, sustained impact.

Finally, establishing a structure to facilitate collective action requires clarifying leadership for physical activity. Collaborative partnerships are important, but without clear leadership, governance and accountability, sustained action is unlikely. At a national level, a cross-government resolution for physical activity as a policy priority is needed through universal political commitment (the 'imprimatur')[78,79]. This could provide comprehensive, integrated and collaborative strategies to increase physical activity, such as those already applied to tobacco control[8,80]. Involving supranational organizations could prove useful for sharing successful models and mobilizing the advocacy needed for these types of significant political change.

Documenting the existence of policy actions is insufficient to achieve meaningful societal-level change. Policies in isolation run the risk of dissipating efforts or duplicating or negating work among sectors. However, a multisectoral physical activity plan could potentially integrate and align policies for effective collective action. Evidence from other public health domains, simulation studies of physical activity policy and a few country examples suggest that this is feasible[81,82]. Research needs to inform the optimal governance structure, leadership and roles in this collaboration, including a defined designation for the workforce in physical activity, to avoid physical activity becoming everyone's job, yet nobody's responsibility, and to maximize the collective effort. Embracing systems approaches[5,83] is a central organizing concept to move physical activity forward, by identifying non-obvious policy options and strategic political actions. Aligning physical activity initiatives with policy windows of opportunity within political cycles[84] could further enhance their impact.

In conclusion, integrated physical activity policy can potentially close gaps and inequities by making physical activity accessible to all while enhancing community and population resilience[82]. Active and healthy populations are better equipped to confront and recover from various challenges, including pandemics, climate-related disasters and economic shocks. This resilience is a cornerstone of sustainable development in an ever-changing world. We emphasize the critical need for increasing physical activity as a global political priority by shifting towards a more holistic view of physical activity that extends beyond traditional NCD-centric approaches (Box 4, Study limitations). With a call to action for increased global political support, inclusive policy frameworks, community engagement and fostering partnerships across sectors, this study suggests a pathway for advancing physical activity as a 'best buy' to address some of the most pressing individual, societal and planetary health issues of our times.

Methods

Study design

This study includes a qualitative case design that triangulated data from key informant interviewees and literature from peer-reviewed research and grey literature, including organizational reports, media and policy documents organized as the GoPA! Policy Directory.

Semi-structured interviews with policy expert key informants

Theoretical framework. We used the Shiffman framework on determinants of political priority for global initiatives[85]. Global political priority was defined as the degree to which international and national political leaders actively pay attention to an issue and back up that attention with financial, technical and human resources that are commensurate with the severity and importance of the issue, including the development, adoption and implementation of aligned policies and policy actions[86].

The policy framework consists of three broad categories of factors[55]: (1) network and actor features are characteristics of relevant individuals and organizations, who work on the issue, and the quality of relationships among them. These include attributes such as the quality of leadership. It also includes four challenges that networks face, that is, problem definition (whether proponents agree on what the problem is), positioning or framing (how proponents convey the issue to policymakers)[87], governance (whether proponents have established effective leadership structures to coordinate action) and coalition-building (the extent to which proponents have built broad alliances)[85]; (2) policy environment factors are external to these networks, over which they do not have extensive control, such as the strength of organized opposition, and whether the issue is included in global development goals; and (3) issue characteristics pertain to inherent features of the problem, such as the level of morbidity or mortality associated with it.

Participant selection and setting. Previous research by Shawar and Shiffman[86,88–90], examining the global priority of a health issue, required around 25–30 key informant interviews. In this study, we aimed at recruiting a similar number of participants, including influential leaders, experts and actors within and beyond the community of physical activity, such as government officials, civil society representatives, academics and experts, among others.

Our study is premised on the understanding that policy agendas are influenced by a broader ecosystem that includes not only policymakers, but also decision-makers and leaders across sectors, including academia, NGOs and service provision, who often have a key role in advocating for, framing and implementing policy ideas. For this reason, our sampling strategy intentionally included a range of stakeholders involved in the policy process. We believe that this multisectoral representation strengthens the study because it allows us to capture the complex and often cross-cutting dynamics that shape how certain issues gain policy traction.

Interviewees were selected based on their expertise and delineated by ISPAH's "best investments that work" for physical activity[34]. They included experts in public health topics historically and currently linked to physical activity, such as nutrition, tobacco, obesity, disability and climate change. This strategic decision aimed to incorporate diverse and broad perspectives from professionals who understand the interconnectedness of these issues and their relationship to physical activity and policy. Efforts were made to ensure gender balance and regional diversity in the sample of key informants. We used purposive sampling and conducted interviews until reaching theoretical saturation, which determined the final number of key informants.

We invited key actors from several institutions, networks and societies relevant to physical activity (Extended Data Table 2). Participants were categorized as either within or outside the physical activity community.

Actors within the physical activity community were identified as: (1) leaders of organizations within government or supranational organizations with responsibility for policy issues and decision-making (for example, resource allocation). For example, policymakers (national or subnational decision-makers) who inform public policy, technical officials, heads of units, departments and offices, directors, presidents, ministers from sectors directly concerned with physical activity, usually health, education (minimally via physical education) and sport, may have influenced the policy agenda and may be employed by prominent international organizations (governmental, non-governmental), agencies and foundations; (2) experts who have observed the dynamics and who have influence in decision-making. For example, researchers, advisers, consultants and advocates. Their research and work is aligned with physical-activity-relevant topics or aimed at informing physical activity policy; they may have carried out policy evaluations, may be known for their leadership in working to translate and disseminate their work to policymakers and may be part of societies, networks, collaborating centres, associations and academic institutions.

Actors outside the physical activity community were identified as individuals who potentially have control over the resources that the physical activity community needs for effective policy implementation. For example, policymakers (national or subnational decision-makers) who inform public policy, technical officials, heads of units, departments or offices, directors, presidents, ministers from other sectors (transport, environment, urban or rural planning, tourism, work and employment, public finance), may be employed by prominent international organizations (governmental, non-governmental), agencies and foundations, and may have first-hand experience of developing, implementing or evaluating interventions that directly or indirectly promote physical activity.

Data collection, analysis and reporting. Before starting data collection, the study team developed a set of research questions and a key informant guide that was used to guide the interviews. These were pilot-tested and adjusted in January 2024. Invitations were sent out by email (February and March 2024), and one reminder was sent out 1 week after the initial invitation. Participants provided informed oral and written consent to participate in the study. We explained the purpose of the study, the kind of information we sought to collect and its management, how it was going to be reported ensuring confidentiality, how long the interview was going to last, and the background of those involved (qualifications, affiliations). We coordinated the date and time to conduct the interviews with the key informants who accepted to participate.

Research team and reflexivity. All interviews were conducted by the lead author (A.R.V., who received training in qualitative research to conduct the interviews); two of the co-authors, experts in the prioritization framework (Y.R.S., expert in qualitative research; J.S., expert in qualitative research), joined 20% of the interviews (March and April 2024).

Interviews lasted an average of 1 h and took place over Zoom in a quiet, non-public place throughout March and April 2024. An audio recording was taken (upon receiving consent from the key informant); we also took notes during the interview. We uploaded the recording and notes on a shared drive, in a password-protected file. In addition, we uploaded an Excel file with the actual names of participants and codes to recognize them in the transcribed documents; the Word documents were referenced using a code rather than the actual participant's name. No repeat interviews were carried out and no transcripts returned to participants for comment, correction, or feedback.

As each transcript was completed and available, the lead author (A.R.V.) made a close reading of the transcript, carried out a deductive thematic or theory-driven analysis, drawing on social science scholarship. The de-identified transcripts of the interviews were coded by the lead author (A.R.V.), with support from the co-authors (A.B., Y.R.S., J.S., P.C.H.) in Word (April 2024).

The coding tree to identify patterns, themes and insights was based on factors influencing the global prioritization of physical activity. The elements that were considered were the magnitude and historical trajectory of its importance, the stakeholders and networks advocating for policy, the nature of the issues within the policy environment and proposed recommendations from involved parties for further research engagement. These factors involved examining the extent of physical activity's global policy priority over the past few decades, identifying influential actors and communities shaping its policies, assessing the challenges and dimensions affecting its prioritization and considering suggestions to expand conversations among recommended participants in the research process. Extended Data Table 3 presents the factors and their description according to Shiffman & Smith[86,88–90], which were used to identify the key themes emerging from the interviews. Observations, questions and tentative

interpretations to an ongoing analytical analysis were added to a memo created for this purpose.

Diversity in perspective was rigorously explored. The lead author (A.R.V.) convened with four co-authors (A.B., Y.R.S., J.S., P.C.H.) to discuss initial reactions to the transcripts and take notes of convergent and divergent themes emerging in the transcripts and literature. Through this process, the team identified initial themes and, where relevant, adapted the remaining in-depth interviews to build on the identified themes, and continued to iteratively discuss with team members until thematic saturation was reached. This was followed by a rapid thematic analysis across all the transcripts to synthesize prominent themes, fine-tune reflections from the data and have iterative discussions on key findings.

For interpretation, data from the key informant interviews were triangulated with the literature from peer-reviewed research and grey literature, including organizational reports and media, and drew on evidence from policy documents from the GoPA! Policy Directory. We followed the COREQ checklist (Supplementary Information 3 (Table 10))[91].

Approaches to assessing national physical activity policy progress (2004–2025)

In this paper, a clear standalone/single-issue physical activity policy defines one common goal, that is, to reduce population levels of physical inactivity, recognizing the myriad benefits of physical activity for health and a co-benefit for other sectors[92]. It provides a framework for targeted action through multisectoral coordination and collaboration, it articulates national physical activity guidelines, it can set targets for action, it clarifies implementation goals, enablers (roles, resources, responsibilities, timeline/time frame) and outputs[93]. Comprehensive physical activity policies are defined as multisectoral or intersectoral policies, with joint ownership across several policy areas[18,94]. A physical activity policy may be operationalized through policy actions and policy programmes.

Policy actions are specific tactics selected by policymakers to achieve policy objectives in a target population and can be classified as: (1) multisectoral actions that involves efforts across multiple sectors (for example, health, education, transport, environment), each advancing physical activity independently through their own sectoral strategies; (2) intersectoral actions referring to coordinated, joint efforts across sectors (for example, collaboration between health, urban design and transport sectors to develop active transport infrastructure for walking and cycling)[18,94].

A policy programme generally consists of multiple policy actions aimed at achieving objectives in a target population[18]. Policy adoption refers to the decision by a government to enact or pass a policy, and is usually reflected by the publication of an official policy document (for example, a law). Meanwhile, policy implementation refers to translating adopted policies into actions across different levels of government, using administrative structures and capacities, and cognizant of political interests or underlying normative and power structures[17,18]. For example, if a policy document (that is, an adopted policy) includes the construction of facilities to promote participation, implementation is achieved once those facilities are completed and operational[17,18,58,95]. Hence, policy implementation requires allocation of commensurate human and material resources.

The GoPA! Policy Directory

The GoPA! was launched in 2012, after the inaugural *Lancet* Physical Activity Series[46], as an independent observatory supported by local representatives to monitor research, surveillance and policy indicators. Since 2015 (ref. 96), GoPA! has produced 'physical activity Country Cards' summarizing these indicators worldwide[57,97,98].

A directory of national policy documents between 2004 and 2025 was developed in 2023–2025 as a comprehensive repository of publicly available national physical activity policies worldwide. This freely accessible surveillance resource via the GoPA! website allows for auditing and comparison of physical activity policy documents and content/details (https://new.globalphysicalactivityobservatory.com/).

The GoPA! Policy Directory contains data for 218 countries worldwide.

Data sources

Data were compiled from physical-activity-related policy information identified in (1) the GoPA! Country Cards 2015, 2021, 2025, and the Policy Inventory[58,97–99]; (2) WHO Country Capacity Surveys 2001, 2005, 2007, 2010, 2013, 2015, 2017, 2019 (ref. 100); (3) NCD Progress Monitor Reports 2015, 2017, 2020, 2022 (ref. 101); (4) Global Physical Activity Report country profiles[56]; and (5) the 2021 and 2024 Physical Activity Factsheets for the EU Member States in the WHO European Region[69,102]. Documents were obtained between March 2023 and May 2025 according to standardized methods used for data collection of the GoPA! Country Cards[46]. Countries were grouped using the WHO regional classification, that is, Africa, Eastern Mediterranean, Europe, Americas, South-East Asia and Western Pacific, and according to the World Bank income level classification: high-income, upper-middle-income, lower-middle-income and low-income countries.

The validation process involved obtaining original policy documents from all countries listed in the World Bank (Supplementary Information 1). This was supplemented by website searches from the WHO NCD Document Repository[103], the International Cancer Control Partnership[104], the World Obesity Federation Global Obesity Observatory[105], the United Nations-Habitat National Urban Policy Database[106], the WHO Global Database on the Implementation of Food and Nutrition Action[107] and the WHO Country Planning Cycle Database[108].

For some countries, we consulted the EU HEPA Focal Point network and the WHO European Office for the Prevention and Control of NCDs to retrieve documents mentioned in the EU Physical Activity Factsheets[69,102]. GoPA! Country Contacts (physical activity researchers, policymakers and practitioners with previous experience in GoPA! country reports) further assisted in locating or translating documents[57]. The documents were reviewed and compared to identify and remove duplicates. To ensure accuracy and consistency, two authors extracted and cross-referenced the data (A.R.V., J.M.-G.); the lead author (A.R.V.) resolved the inconsistencies that arose in this process.

Documents in the Policy Directory were audited separately by five authors (A.R.V., C.B.W., K.S., W.W.-V., J.M.-G.) and focused on classifying them as standalone physical activity policy or NCD prevention policy/plan including physical activity. Policies were also coded for policy sector(s) that (co-)authored the document; policy sector(s) mentioned as relevant stakeholders; and policy sector(s) given specific tasks for physical activity actions or activities. Policies with actions involving three or more sectors were deemed comprehensive physical activity policies; policy implementation enablers[62], namely tasks and subtasks (activities), budgets, timeline/time frame and collaborators (lead, responsible) were identified. Inconsistencies were resolved by consensus. Quality content control—checking for errors or missing elements and ensuring that the content aligned with the predefined criteria—was conducted on 75% of the documents.

Every country's classification was supported by extensive documentation included in this directory. Our analysis focused on broader structures and global dynamics that affected the national level, rather than analysing individual countries. Initially, we did not incorporate other health-centred documents embedding physical activity (for example, mental health, wellness, environmental sustainability). However, this living resource will progressively include them for further analysis.

We asked Country Contacts from Denmark, Indonesia, Russia, United Arab Emirates, Slovak Republic, Macedonia, Slovenia, Jordan, Thailand, Mongolia, Israel, Georgia, Estonia, Bulgaria, Bahrain, Italy, Iran, Brunei Darussalam, Turkey, Saudi Arabia, Japan, China, Oman,

Bosnia-Herzegovina, Czech Republic, Vietnam, Lithuania, Moldova, Nepal, Serbia, Ukraine, Cyprus, Iraq, Republic of Korea, Kazakhstan, Kyrgyzstan, Uzbekistan and Tajikistan to help with translations.

The Policy Directory included 661 documents describing physical activity policies (exclusive for physical activity or NCD policies including physical activity) from 200 countries (Extended Data Fig. 1). No data were located for 16 countries (Curaçao, Equatorial Guinea, Faroe Islands, Gabon, Guinea-Bissau, Isle of Man, Kosovo, Libya, Liechtenstein, Monaco, São Tomé and Príncipe, Sint Maarten (Dutch part), Somalia, Syrian Arab Republic, Turks and Caicos Islands, Republic of Yemen).

Ethics declarations

This study was approved by the Institutional Review Board (IRB) of the University of Texas Health Science Centre at Houston (UTHealth Houston) School of Public Health, USA and Johns Hopkins University, USA (IRB no. HSC-SPH-24-0032). All participants provided informed oral and written consent to participate in the study.

Reporting summary

Further information on research design is available in the Nature Portfolio Reporting Summary linked to this article.

Data availability

All data supporting the findings of this study are included in the manuscript or the supplementary information. Because of privacy concerns, individual participant and de-identifiable data will not be made publicly available. The GoPA! Policy Directory, which serves as a publicly accessible surveillance resource, is available at https://new.globalphysicalactivityobservatory.com/directory.php

References

1. Hallal, P. C. et al. Global physical activity levels: surveillance progress, pitfalls, and prospects. *Lancet* **380**, 247–257 (2012).
2. Strain, T. et al. National, regional, and global trends in insufficient physical activity among adults from 2000 to 2022: a pooled analysis of 507 population-based surveys with 5·7 million participants. *Lancet Glob. Health* **12**, e1232–e1243 (2024).
3. RamirezVarela, A. & Hallal, P.C. Does every move really count towards better health? *Lancet Glob. Health* **12**, e1215–e1216 (2024).
4. *Global Action Plan on Physical Activity 2018–2030: More Active People for a Healthier World* (WHO, 2018); https://iris.who.int/server/api/core/bitstreams/33339c9c-3a9f-46d4-9f12-ae9ff0dfdc6a/content
5. Kohl, H. W. 3rd et al. The pandemic of physical inactivity: global action for public health. *Lancet* **380**, 294–305 (2012).
6. Sallis, J. F. et al. Progress in physical activity over the Olympic quadrennium. *Lancet* **388**, 1325–1336 (2016).
7. Bauman, A. E. et al. An evidence-based assessment of the impact of the Olympic Games on population levels of physical activity. *Lancet* **398**, 456–464 (2021).
8. Flor, L. S., Reitsma, M. B., Gupta, V., Ng, M. & Gakidou, E. The effects of tobacco control policies on global smoking prevalence. *Nat. Med.* **27**, 239–243 (2021).
9. Yach, D., McKee, M., Lopez, A. D. & Novotny, T. Improving diet and physical activity: 12 lessons from controlling tobacco smoking. *BMJ* **330**, 898–900 (2005).
10. Lee, I. M. et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* **380**, 219–229 (2012).
11. Katzmarzyk, P. T., Friedenreich, C., Shiroma, E. J. & Lee, I. M. Physical inactivity and non-communicable disease burden in low-income, middle-income and high-income countries. *Br. J. Sports Med.* **56**, 101–106 (2022).
12. Brauer, M. et al. Global burden and strength of evidence for 88 risk factors in 204 countries and 811 subnational locations, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet* **403**, 2162–2203 (2024).
13. Bourke, E., Rawstorn, J., Maddison, R. & Blakely, T. The effects of physical inactivity on other risk factors for chronic disease: a systematic review of reviews. *Prev. Med. Rep.* **46**, 102866 (2024).
14. Ding, D. et al. The economic burden of physical inactivity: a global analysis of major non-communicable diseases. *Lancet* **388**, 1311–1324 (2016).
15. Murray, C. J. L. et al. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet* **396**, 1223–1249 (2020).
16. Bull, F. C. & Bauman, A. E. Physical inactivity: the 'Cinderella' risk factor for noncommunicable disease prevention. *J. Health Commun.* **16**, 13–26 (2011).
17. Siefken, K. et al. Chance or strategy? Assessing the unanticipated policy window for active transportation during the COVID-19 pandemic: a systematic review. *J. Phys. Act. Health* **22**, 989–999 (2025).
18. Kelly, L. et al. Reaching consensus on definitions for food and physical activity policies: experience from the Policy Evaluation Network. *Eur. J. Public Health* **32**, iv10–iv20 (2022).
19. Brownson, R. C. & Jones, E. Bridging the gap: translating research into policy and practice. *Prev. Med.* **49**, 313–315 (2009).
20. Allen, L. N., Wigley, S., Holmer, H. & Barlow, P. Non-communicable disease policy implementation from 2014 to 2021: a repeated cross-sectional analysis of global policy data for 194 countries. *Lancet Glob. Health* **11**, e525–e533 (2023).
21. Allen, L. N., Nicholson, B. D., Yeung, B. Y. T. & Goiana-da-Silva, F. Implementation of non-communicable disease policies: a geopolitical analysis of 151 countries. *Lancet Glob. Health* **8**, e50–e58 (2020).
22. Kishore, S. P. Global NCD policy implementation stalls in the modern era. *Lancet Glob. Health* **11**, e480–e481 (2023).
23. World Health Organization (WHO). *WHO Framework Convention on Tobacco Control* https://fctc.who.int/ (WHO, 2003).
24. Feliu, A. et al. Impact of tobacco control policies on smoking prevalence and quit ratios in 27 European Union countries from 2006 to 2014. *Tob. Control* **28**, 101–109 (2019).
25. Hoffman, S. J. & Tan, C. Overview of systematic reviews on the health-related effects of government tobacco control policies. *BMC Public Health* **15**, 744 (2015).
26. Fong, G. T., Cummings, K. M. & Shopland, D. R. Building the evidence base for effective tobacco control policies: the International Tobacco Control Policy Evaluation Project (the ITC Project). *Tob. Control* **15**, iii1–iii2 (2006).
27. Hebbar, P. B. et al. How do tobacco control policies work in low-income and middle-income countries? A realist synthesis. *BMJ Glob. Health* **7**, e008859 (2022).
28. Theis, D. R. Z. & White, M. Is obesity policy in England fit for purpose? Analysis of government strategies and policies, 1992–2020. *Milbank Q.* **99**, 126–170 (2021).
29. Swinburn, B., Egger, G. & Raza, F. Dissecting obesogenic environments: the development and application of a framework for identifying and prioritizing environmental interventions for obesity. *Prev. Med.* **29**, 563–570 (1999).
30. Temple, N. J. A proposed strategy against obesity: how government policy can counter the obesogenic environment. *Nutrients* **15**, 2910 (2023).
31. World Health Organization (WHO). *Noncommunicable Diseases Progress Monitor 2022* https://iris.who.int/server/api/core/bitstreams/db06a907-0d4b-43d7-a49a-a7eb3623e489/content (WHO, 2022).

32. Crawford, R. Healthism and the Medicalization of Everyday Life. *Int. J. Health Serv.* **10**, 365–388 (1980).
33. Community Preventive Services Task Force (CPSTF). *Guide to Community Preventive Services* www.thecommunityguide.org/index.html (CPSTF, 2023).
34. *ISPAH's Eight Investments that Work for Physical Activity* (ISPAH, 2020); https://ispah.org/resources/key-resources/
35. Piggin, J. What is physical activity? A holistic definition for teachers, researchers and policy makers. *Front. Sports Act. Living* **2**, 72 (2020).
36. Bailey, R., Hillman, C., Arent, S. & Petitpas, A. Physical activity: an underestimated investment in human capital? *J. Phys. Act. Health* **10**, 289–308 (2013).
37. Magnusson, R. S. & Patterson, D. The role of law and governance reform in the global response to non-communicable diseases. *Global Health* **10**, 44 (2014).
38. Makarios, M. D. & Pratt, T. C. The effectiveness of policies and programs that attempt to reduce firearm violence: a meta-analysis. *Crime Delinq.* **58**, 222–244 (2012).
39. Institute of Medicine. *Health and Behavior: the Interplay of Biological, Behavioral, and Societal Influences* (National Academies Press, 2001).
40. Rütten, A., Abu-Omar, K., Gelius, P. & Schow, D. Physical inactivity as a policy problem: applying a concept from policy analysis to a public health issue. *Health Res. Policy Syst.* **11**, 9 (2013).
41. Pratt, M., Ramirez Varela, A. & Bauman, A. The physical activity policy to practice disconnect. *J. Phys. Act. Health* **20**, 461–464 (2023).
42. Salvo, D. et al. Physical activity for public health in the twenty-first century. *Nat. Med.* (in the press).
43. Wiley, L. F., Berman, M. L. & Blanke, D. Who's your nanny? Choice, paternalism and public health in the age of personal responsibility. *J. Law Med. Ethics* **41**, 88–91 (2013).
44. Hinckson, E. et al. Benefit of physical activity initiatives for climate change mitigation and adaptation. *Nat. Health* (in the press).
45. Martin-Diener, E. et al. 10 years of HEPA Europe: what made it possible and what is the way into the future? *SEMS* **62**, 6–12 (2014).
46. Ramírez Varela, A. et al. Worldwide surveillance, policy and research on physical activity and health: the Global Observatory for Physical Activity. *J. Phys. Act. Health* **14**, 701–709 (2017).
47. *ACTIVE: a Technical Package for Increasing Physical Activity* (WHO, 2018); https://iris.who.int/server/api/core/bitstreams/ce6e0803-6480-4b2f-8cf4-fd42dd0b3294/content
48. Department of Health *Healthy Ireland: a Framework for Improved Health and Wellbeing 2013–2025* (Government of Ireland, 2013); www.lenus.ie/entities/publication/10fd3be4-ac82-4f0e-b7b0-ae755287661b
49. Gaffney, L. K. et al. The implementation of a national physical activity intervention in Colombia. *J. Phys. Act. Health* **16**, 430–436 (2019).
50. Mclaughlin, M., Murphy, J., Rigby, B. P. & Ennis, G. We do have enemies and we should know who they are: the commercial determinants of physical activity. *J. Phys. Act. Health* **22**, 1339–1341 (2025).
51. Milton, K., Buse, K. & Bull, F. Powerful actors who undermine physical activity policy must be challenged. *BMJ* **388**, r487 (2025).
52. Parra, D. C., de Sá, T. H., Monteiro, C. A. & Freudenberg, N. Automobile, construction and entertainment business sector influences on sedentary lifestyles. *Health Promot. Int.* **33**, 239–249 (2018).
53. Pratt, M., Macera, C. A., Sallis, J. F., O'Donnell, M. & Frank, L. D. Economic interventions to promote physical activity: application of the SLOTH model. *Am. J. Prev. Med.* **27**, 136–145 (2004).
54. Sturm, R. The economics of physical activity: societal trends and rationales for interventions. *Am. J. Prev. Med.* **27**, 126–135 (2004).
55. Shiffman, J. et al. A framework on the emergence and effectiveness of global health networks. *Health Policy Plan* **31**, i3–i16 (2016).
56. *Global Status Report on Physical Activity 2022* (WHO, 2022); https://apps.who.int/iris/handle/10665/363607
57. Ramírez Varela, A. et al. Status and trends of physical activity surveillance, policy, and research in 164 countries: findings from the Global Observatory for Physical Activity—GoPA! 2015 and 2020 Surveys. *J. Phys. Act. Health* **20**, 112–128 (2023).
58. Klepac Pogrmilovic, B. National physical activity and sedentary behaviour policies in 76 countries: availability, comprehensiveness, implementation, and effectiveness. *Int. J. Behav. Nutr. Phys. Act.* **17**, 116 (2020).
59. Bull, F. C., Bellew, B., Schöppe, S. & Bauman, A. E. Developments in National Physical Activity Policy: an international review and recommendations towards better practice. *J. Sci. Med. Sport* **7**, 93–104 (2004).
60. Rütten, A. et al. Three types of scientific evidence to inform physical activity policy: results from a comparative scoping review. *Int. J. Public Health* **61**, 553–563 (2016).
61. Gelius, P., Messing, S., Goodwin, L., Schow, D. & Abu-Omar, K. What are effective policies for promoting physical activity? A systematic review of reviews. *Prev. Med. Rep.* **18**, 101095 (2020).
62. Woods, C. B. et al. The Physical Activity Environment Policy Index for monitoring government policies and actions to improve physical activity. *Eur. J. Public Health* **32**, iv50–iv58 (2022).
63. Alghannam, A. F. et al. Public policies to increase physical activity and reduce sedentary behavior: a narrative synthesis of 'reviews of reviews'. *Glob. Health Action* **16**, 2194715 (2023).
64. Milton, K., Macniven, R. & Bauman, A. Review of the epidemiological evidence for physical activity and health from low- and middle-income countries. *Glob. Public Health* **9**, 369–381 (2014).
65. Salvo, D., Jáuregui, A., Adlakha, D., Sarmiento, O. L. & Reis, R. S. When moving is the only option: the role of necessity versus choice for understanding and promoting physical activity in low- and middle-income countries. *Annu. Rev. Public Health* **44**, 151–169 (2023).
66. Rasanathan, K. et al. Governing multisectoral action for health in low- and middle-income countries. *PLoS Med.* **14**, e1002285 (2017).
67. Tangcharoensathien, V., Srisookwatana, O., Pinpratteep, P. & Posayanonda, T. Multisectoral actions for health: challenges and opportunities in complex policy environments. *Int. J. Health Policy Manag.* **6**, 359–363 (2017).
68. Doshmangir, L., Sanadghol, A., Kakemam, E. & Majdzadeh, R. The involvement of non-governmental organisations in achieving health system goals based on the WHO six building blocks: A scoping review on global evidence. *PLoS ONE* **20**, e0315592 (2025).
69. Bull, F., Milton, K. & Kahlmeier, S. *Health-Enhancing Physical Activity (HEPA) Policy Audit Tool (PAT) Version 2* (WHO, 2015); https://iris.who.int/server/api/core/bitstreams/3635029f-e62c-48d2-947e-6b5b2cd71396/content
70. Resendiz, E. et al. Breaking barriers: an innovative tool to assess the national and city-level physical activity policy development to practice disconnect. *J. Phys. Act. Health* **21**, 425–433 (2024).
71. Mejía Grueso, J. et al. Physical activity policies at national and subnational levels: a study in Colombia, Costa Rica, Ecuador and Mexico. *J. Phys. Act. Health* **21**, 445–457 (2024).
72. Lakerveld, J. et al. Advancing the evidence base for public policies impacting on dietary behaviour, physical activity and sedentary behaviour in Europe: the Policy Evaluation Network promoting a multidisciplinary approach. *Food Policy* **96**, 101873 (2020).

73. Noël Racine, A. et al. A scoping review of published research on local government policies promoting health-enhancing physical activity. *Int. J. Sport Policy Polit.* **12**, 747–763 (2020).
74. Williams, D. R., Costa, M. V., Odunlami, A. O. & Mohammed, S. A. Moving upstream: how interventions that address the social determinants of health can improve health and reduce disparities. *J. Public Health Manag. Pract.* **14**, S8–S17 (2008).
75. Hämäläinen, R.-M., Sandu, P., Syed, A. M. & Jakobsen, M. W. An evaluation of equity and equality in physical activity policies in four European countries. *Int. J. Equity Health* **15**, 191 (2016).
76. Kohler, S. et al. Population-based physical activity promotion with a focus on health equity: a review of reviews. *Int. J. Equity Health* **22**, 18 (2023).
77. Frieden, T. R. A framework for public health action: the health impact pyramid. *Am. J. Public Health* **100**, 590–595 (2010).
78. Breda, J. et al. Promoting health-enhancing physical activity in Europe: current state of surveillance, policy development and implementation. *Health Policy* **122**, 519–527 (2018).
79. Ding, D. Surveillance of global physical activity: progress, evidence, and future directions. *Lancet Glob. Health* **6**, e1046–e1047 (2018).
80. Gelius, P. et al. Policy instruments for health promotion: a comparison of who policy guidance for tobacco, alcohol, nutrition and physical activity. *Int. J. Health Policy Manag.* **11**, 1863–1873 (2022).
81. Levy, D. T., Tam, J., Kuo, C., Fong, G. T. & Chaloupka, F. The impact of implementing tobacco control policies: the 2017 Tobacco Control Policy Scorecard. *J. Public Health Manag. Pract.* **24**, 448–457 (2018).
82. Salvo, D. et al. Physical activity promotion and the United Nations Sustainable Development Goals: building synergies to maximize impact. *J. Phys. Act. Health* **18**, 1163–1180 (2021).
83. Leischow, S. J. et al. Systems thinking to improve the public's health. *Am. J. Prev. Med.* **35**, S196–S203 (2008).
84. Kingdon, J. W. *Agendas, Alternatives and Public Policies* (Little, Brown and Company, 1984).
85. Shiffman, J. Four challenges that global health networks face. *Int. J. Health Policy Manag.* **6**, 183–189 (2017).
86. Shiffman, J. & Smith, S. Generation of political priority for global health initiatives: a framework and case study of maternal mortality. *Lancet* **370**, 1370–1379 (2007).
87. Shiffman, J. & Shawar, Y. R. Framing and the formation of global health priorities. *Lancet* **399**, 1977–1990 (2022).
88. Shawar, Y. R. & Shiffman, J. Generation of global political priority for early childhood development: the challenges of framing and governance. *Lancet* **389**, 119–124 (2017).
89. Shawar, Y. R., Shiffman, J. & Spiegel, D. A. Generation of political priority for global surgery: a qualitative policy analysis. *Lancet Glob. Health* **3**, e487–e495 (2015).
90. Shawar, Y. R. & Shiffman, J. Generating global priority for addressing rheumatic heart disease: a qualitative policy analysis. *J. Am. Heart Assoc.* **9**, e014800 (2020).
91. Tong, A., Sainsbury, P. & Craig, J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int. J. Qual. Health Care* **19**, 349–357 (2007).
92. Greer, S. L. et al. From health in all policies to health for all policies. *Lancet Public Health* **7**, e718–e720 (2022).
93. Bellew, B., Schöeppe, S., Bull, F. C. & Bauman, A. The rise and fall of Australian physical activity policy 1996-2006: a national review framed in an international context. *Aust. New Zealand Health Policy* **5**, 18 (2008).
94. Klepac Pogrmilovic, B. et al. The development of the Comprehensive Analysis of Policy on Physical Activity (CAPPA) framework. *Int. J. Behav. Nutr. Phys. Act.* **16**, 60 (2019).
95. Cairney, P. *Understanding Public Policy Theories and Issues* (Palgrave Macmillan, 2012).
96. Pratt, M., Ramírez Varela, A., & Hallal, P. C. Celebrating 10 years of the Global Observatory for Physical Activity—GoPA! *J. Phys. Act. Health* **21**, 423–424 (2024).
97. Ramírez Varela, A. et al. *Global Observatory for Physical Activity (GoPA!): 1st Physical Activity Almanac, Global Observatory for Physical Activity (GoPA!)* (GoPA!, 2016); https://new.globalphysicalactivityobservatory.com/physical-activity-almanac
98. Ramírez Varela, A. et al. *Global Observatory for Physical Activity (GoPA!): 2nd Physical Activity Almanac, Global Observatory for Physical Activity (GoPA!)* (GoPA!, 2021); https://new.globalphysicalactivityobservatory.com/physical-activity-almanac/
99. Ramírez Varela, A. et al. New data, new perspectives: launch of the third set of GoPA! and the first set of GoPE! Country Cards. *J. Phys. Act. Health* **22**, 1337–1338 (2025).
100. World Health Organization (WHO). *Noncommunicable Disease Surveillance, Monitoring and Reporting, NCD Country Capacity Survey* (WHO, 2022); www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs
101. Pan American Health Organization (PAHO). *NCDs Progress Monitor* (PAHO, 2023); www.paho.org/en/topics/noncommunicable-diseases/ncds-progress-monitor
102. World Health Organization Regional Office for Europe. *2021 Physical Activity Factsheets for the European Union Member States in the WHO European Region* (WHO, 2021); www.who.int/europe/publications/i/item/WHO-EURO-2021-3409-43168-60449
103. World Health Organization (WHO). *Noncommunicable Disease Document Repository* https://extranet.who.int/ncdccs/documents/db (WHO, 2022).
104. International Cancer Control Partnership (ICCP). *National Plans* www.iccp-portal.org/map (ICCP, 2023).
105. World Obesity Federation. *Global Obesity Observatory* https://data.worldobesity.org/ (World Obesity Federation, 2022).
106. UN-Habitat. Urban Policy Platform. *National Urban Policy Database* https://urbanpolicyplatform.org/national-urban-policy-database/ (UN-Habitat, 2023).
107. Global database on the Implementation of Food and Nutrition Action (GIFNA). *Countries* https://gifna.who.int/countries (GIFNA, 2024).
108. World Health Organization (WHO). *Country Planning Cycle Database File Repository* https://extranet.who.int/countryplanningcycles/search-file-repository (WHO, 2023).
109. Giles-Corti, B. et al. What next? Expanding our view of city planning and global health, and implementing and monitoring evidence-informed policy. *Lancet Glob. Health* **10**, e919–e926 (2022).
110. Lowe, M. et al. City planning policies to support health and sustainability: an international comparison of policy indicators for 25 cities. *Lancet Glob. Health* **10**, e882–e894 (2022).
111. Adlakha, D. & John, F. The future is urban: integrated planning policies can enable healthy and sustainable cities. *Lancet Glob. Health* **10**, e790–e791 (2022).
112. Tcymbal, A. et al. Cross-country collaboration for physical activity promotion: experiences from the European Union Physical Activity Focal Points Network. *Eur. J. Public Health* **32**, i14–i21 (2022).
113. Ramirez Varela, A. et al. Worldwide use of the first set of physical activity Country Cards: the Global Observatory for Physical Activity-GoPA! *Int. J. Behav. Nutr. Phys. Act.* **15**, 29 (2018).
114. Ramírez Varela, A. & Pratt, M. The GoPA! Second set of Country Cards informing decision making for a silent pandemic. *J. Phys. Act. Health* **18**, 245–246 (2021).
115. Department of Health *'Get Ireland Active': National Physical Activity Plan for Ireland* (Government of Ireland, 2016).
116. Howlett, M. Moving policy implementation theory forward: a multiple streams/critical juncture approach. *Public Policy Adm.* **34**, 405–430 (2019).

117. International Society for Physical Activity and Health (ISPAH). *The Toronto Charter for Physical Activity: A Global Call To Action* https://ispah.org/resources/key-resources/ (ISPAH, 2010).
118. Council of the European Union. *Council Recommendation on Promoting Health-enhancing Physical Activity Across Sectors. 2013/C 354/01* (Council of the European Union, 2013); https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:354:0001:0005:EN:PDF
119. Fixsen, D. & Blasé, K. *Brief 1: Active Implementation Practice and Science* (National Implementation Research Network, 2016); https://nirn.fpg.unc.edu/resources/brief-1-active-implementation-practice-and-science
120. Murphy, J. J. et al. 'Getting Ireland Active'—application of a systems approach to increase physical activity in ireland using the GAPPA framework. *J. Phys. Act. Health* **18**, 1427–1436 (2021).
121. Cooper, J. et al. Barriers and facilitators to implementing community-based physical activity interventions: a qualitative systematic review. *Int. J. Behav. Nutr. Phys. Act.* **18**, 118 (2021).
122. Murphy, J. et al. Factors related to the implementation and scale-up of physical activity interventions in Ireland: a qualitative study with policy makers, funders, researchers and practitioners. *Int. J. Behav. Nutr. Phys. Act.* **20**, 16 (2023).
123. Volf, K. et al. Assessing the implementation of physical activity-promoting public policies in the Republic of Ireland: a study using the Physical Activity Environment Policy Index (PA-EPI). *Health Res. Policy Syst.* **21**, 63 (2023).
124. Ruiz Patiño, J. H. *La Política del Sport: Elites y Deporte en la Construcción de la Nación Colombiana, 1903–1925* (Pontificia Universidad Javeriana, 2020).
125. Instituto Colombiano de Bienestar Familiar, Ministerio de la Protección Social, Instituto Nacional de Salud, & Profamilia. *Encuesta Nacional de la Situación Nutricional en Colombia (ENSIN)* www.icbf.gov.co/bienestar/nutricion/encuesta-nacional-situacion-nutricional (ENSIN, 2011).
126. Instituto Colombiano de Bienestar Familiar, Ministerio de Salud y Protección Social, Instituto de Salud, Departamento Nacional de Planeación, & Universidad Nacional de Colombia. *Encuesta Nacional de la Situación Nutricional en Colombia 2015 (ENSIN)* www.icbf.gov.co/bienestar/nutricion/encuesta-nacional-situacion-nutricional (ENSIN, 2020).
127. Departamento Nacional de Planeación—Econometría. *Resumen Ejecutivo Evaluación de Operaciones, Institucional y Resultados del Plan Decenal de Deporte 2009–2019* https://www.mindeporte.gov.co/planeacion-gestion-y-control/modelo-integrado-de-planeacion-y-gestion/planeacion/largo-plazo/plan-decenal-del-deporte-2009-2019 (2022).
128. Ramirez Varela, A. et al. Mapping the historical development of physical activity and health research: a structured literature review and citation network analysis. *Prev. Med.* **111**, 466–472 (2018).

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Author contributions

A.R.V. led and supervised all aspects of the manuscript. A.R.V., A.B., C.B.W., P.C.H., K.S., W.W.-V., J.J.M., H.W.K. and M.P. contributed to the conceptualization of the study. A.R.V., A.B., C.B.W., Y.R.S., P.C.H., K.S., W.W.-V., J.J.M., J.M.-G., H.W.K., J.S. and M.P. contributed to the investigation and methodology. A.R.V., A.B., C.B.W., Y.R.S., P.C.H., K.S., W.W.-V., J.M.-G., J.S. and M.P. contributed to data curation. A.R.V., A.B., C.B.W., Y.R.S., P.C.H., K.S., W.W.-V., J.J.M., J.M.-G. and J.S. contributed to data validation. A.R.V., A.B., C.B.W., Y.R.S., P.C.H., K.S., W.W.-V., J.M.-G., J.S. and M.P. contributed to the formal analysis. A.R.V. and J.M.-G. contributed to data visualization. A.R.V., A.B., C.B.W., P.C.H., K.S., W.W.-V., J.J.M., J.M.-G., H.W.K. and M.P. contributed to writing the original manuscript draft. D.S., J.F.S., E.H., I.M.L., R.S.R., D.D. and U.E. contributed to the interpretation of the data. All authors contributed to the writing, reviewing, editing and approval of the final manuscript.

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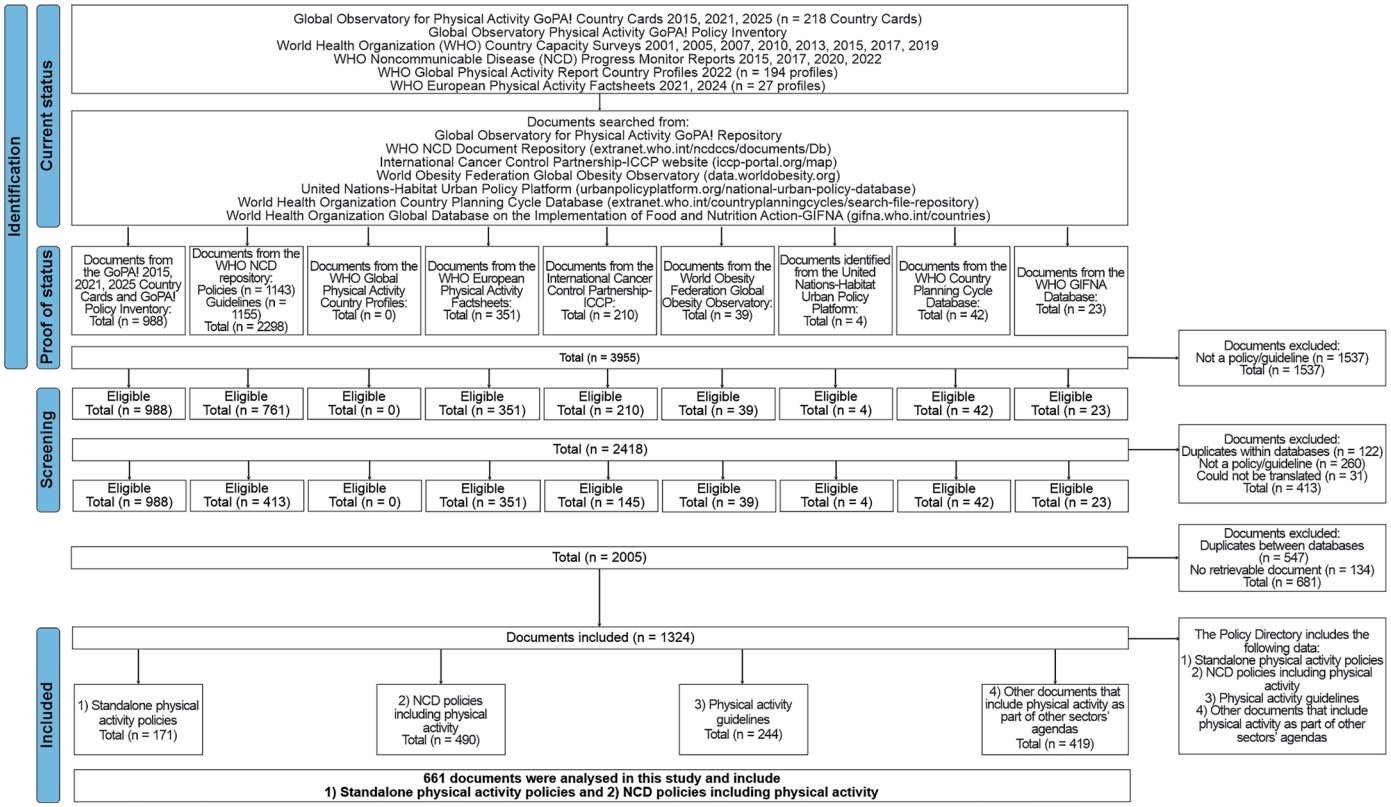

Extended Data Fig. 1 | The Global Observatory for Physical Activity – GoPA! Policy Directory flowchart.

https://doi.org/10.1038/s44360-025-00044-3

Extended Data Table 1 | Study key findings

1.	Despite substantial progress in national physical activity policy adoption worldwide, physical inactivity levels remain stubbornly high and unchanged over the past two decades.
2.	Although most countries now have adopted some policy for physical activity, gaps persist in the African and South-East Asia regions, and generally across low- and middle-income countries, underscoring global policy inequities.
3.	Evidence from an analysis of physical activity policy documents suggests that most adopted policies are aspirational, and lack measurable targets, committed resources, and tangible actions for effective implementation.
4.	Findings from a qualitative case design study, drawing insights from global physical activity and public health policy and research leaders, suggest that physical activity has undergone significant changes in the last two decades, moving from being an essentially non-existent policy priority, to “a low but increasing priority” in most countries, and “a defined priority” in a few countries.
5.	Four major challenges were identified that hinder global political prioritization of physical activity: (1) the conceptualization of physical activity has been dominated by health-centric approaches, limiting policy alternatives and hindering efforts to frame, govern, and develop coalitions for its promotion; (2) there is a very low recognition of the benefits beyond obesity and noncommunicable disease (NCD) prevention, including its known effects for other human health outcomes, and for tackling broader so cietal and planetary challenges; (3) physical activity is said to be of interest and importance to everyone, but owned by no one (lack of leadership and accountability); (4) coalition building and partnerships outside the usual proponents are limited.
6.	Opportunities to advance political priority for physical activity are proposed, including (1) generating consensus on what 'physical activity' means, to whom, and in what context; (2) reframing physical activity to acknowledge its multiple and varied benef its beyond NCD and obesity prevention; (3) clarifying leadership roles and responsibilities within government and across sectors to ensure coordinated efforts and accountability for physical activity promotion; and, (4) increasing partnerships outside the physical activity’s obvious proponents.
7.	Active and healthy populations are better equipped to confront and recover from major challenges and crises, including pandemics, climate-related disasters, and economic shocks; this resilience is a cornerstone of sustainable development in an ever-changing world and will require commensurate policy solutions.

https://doi.org/10.1038/s44360-025-00044-3

Extended Data Table 2 | Key informant organization affiliations

African Physical Activity Network (AFPAN)
American College of Sports Medicine (ACSM)
American Public Health Association (APHA)
Asia-Pacific Society for Physical Activity (ASPA)
European Heart Network (EHN)
European Public Health Association (EUPHA)
Global Observatory for Physical Activity (GoPA!) Country Contacts
GoPA! Steering Committee
Health-Enhancing Physical Activity (HEPA) Europe
InterAmerican Heart Foundation (IAHF)
International Society for Physical Activity and Health (ISPAH)
International Society of Behavioral Nutrition and Physical Activity (ISBNPA)
International Union for Health Promotion and Education (IUHPE)
Journal of Physical Activity and Health (JPAH)
The Lancet Physical Activity Series Executive Group
NCD Alliance
Physical Activity Alliance
Physical Activity Network of the Americas (RAFA-PANA)
Physical Activity Policy Experts
Policy Evaluation Network (PEN)
German Public Health Association
World Health Organization HEPA Europe Working Group on Policy Approaches (PAWG)
World Health Organization representatives
World Heart Federation (WHF)

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Extended Data Table 3 | Factors for identifying the themes emerging from the transcripts

Factors	Description
Level and Evolution of Priority	1. Level of prioritization: the extent of physical activity as a global priority 2. History: changes in global policy priority for physical activity in the last 20-30 years 3. Present state/global dynamics: evidence of present state of global policy priority for physical activity
Actors / Networks Concerned about Physical Activity Policy	1. Problem definition 2. Governance and coalition-building: a. Community/network concerned with physical activity policy b. The extent of the cohesion of the community c. Opposition to the community d. Champions/leaders (individuals, organizations, entities) for addressing physical activity policy e. The extent that physical activity policy proponents have forged alliances with people outside of the sector/field 3. Framing/positioning: effectiveness of making the case to funders, leaders of international institutions, and national policymakers about the importance in investing in and supporting action around physical activity policy
Issue Characteristics / Policy environment	1. Emergence of developments that have posed challenges to address policy priority for physical activity 2. Dimensions and features of the problem/challenges 3. Data/research deficiencies or measurement difficulties
Recommendations	Referrals of others to speak with

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☒	☐ A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☒	☐ For null hypothesis testing, the test statistic (e.g. *F*, *t*, *r*) with confidence intervals, effect sizes, degrees of freedom and *P* value noted *Give P values as exact values whenever suitable.*
☒	☐ For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☒	☐ For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☒	☐ Estimates of effect sizes (e.g. Cohen's *d*, Pearson's *r*), indicating how they were calculated

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Data collection	No custom code was used in the study.
Data analysis	No custom code was used in the study.

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All data supporting the findings of this study are included in the manuscript or the supplementary information. Due to privacy concerns, individual participant and de-identifiable data will not be made publicly available. The GoPA! Policy Directory, which serves as a publicly accessible surveillance resource, is available at: https://new.globalphysicalactivityobservatory.com/directory.php

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Reporting on sex and gender	Efforts were made to ensure gender balance and regional diversity in the sample of key informants.
Reporting on race, ethnicity, or other socially relevant groupings	Efforts were made to ensure gender balance and regional diversity in the sample of key informants.
Population characteristics	We aimed at recruiting participants including influential leaders, experts, and actors within and beyond the community of physical activity such as government officials, civil society representatives, academics, and experts, among others. Interviewees were selected based on their expertise and delineated by the ISPAH 'best investments that work' for physical activity. Interviewees included experts in public health topics historically and currently linked to physical activity, such as nutrition, tobacco, obesity, disability, and climate change. Participants were categorized as either within or outside the physical activity community. Actors within the physical activity community were identified as: 1) Leaders of organizations within government or supranational organizations with responsibility for policy issues and decision making (e.g., resource allocation). For example, policymakers (national or subnational decision makers) that inform public policy, technical officials, heads of unit/department/office, directors, presidents, ministers from sectors directly concerned with physical activity - usually health, education (minimally via physical education), and sport; may have influenced the policy agenda; may be employed by prominent international organizations (governmental, non-governmental), agencies, foundations. 2) Experts that have observed the dynamics and that have influence in decision making. For example, researchers, advisors, consultants, advocates. Their research/work is aligned with physical activity-relevant topics or aimed at informing physical activity policy; may have carried out policy evaluations; may be known for their leadership in working to translate and disseminate their work to policymakers; may be part of societies, networks, collaborating centers, associations, academic institutions. Actors outside the physical activity community were identified as: individuals who potentially have the resources that the physical activity community needs to understand their perceptions and interests. For example, policymakers (national or subnational decision makers) that inform public policy, technical officials, heads of unit/department/office, directors, presidents, ministers from other sectors (transport, environment, urban/rural planning, tourism, work and employment, public finance); may be employed by prominent international organizations (governmental, non-governmental), agencies, foundations; may have first-hand experience of developing, implementing or evaluating interventions that directly or indirectly promote physical activity.
Recruitment	Previous research by Shawar and Shiffman, examining the global priority of a health issue, required around 25-30 key informant interviews. In this study, we aimed at recruiting a similar number of participants including influential leaders, experts, and actors within and beyond the community of physical activity such as government officials, civil society representatives, academics, and experts, among others. The exact number of key informant interviews was established upon reaching theoretical saturation.
Ethics oversight	This study was approved by the IRB from The University of Texas Health Science Centre at Houston (UTHealth Houston) School of Public Health, USA and Johns Hopkins University, USA (IRB #HSC-SPH-24-0032). All participants provided oral and written consent to participate in the study.

Note that full information on the approval of the study protocol must also be provided in the manuscript.

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Behavioural & social sciences study design

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Study description	Qualitative case design that triangulated data from key informant interviewees and literature from peer-reviewed research and grey literature including organizational reports, media, and policy documents organized as the Global Observatory for Physical Activity – GoPA! Policy Directory.

Research sample	Interviewees were selected based on their expertise and delineated by the ISPAH 'best investments that work' for physical activity. Interviewees included experts in public health topics historically and currently linked to physical activity, such as nutrition, tobacco, obesity, disability, and climate change. This strategic decision aimed to incorporate diverse and broad perspectives from professionals who understand the interconnectedness of these issues and their relationship to physical activity and policy. Efforts were made to ensure gender balance and regional diversity in the sample of key informants.
Sampling strategy	We used purposive sampling until reaching theoretical saturation.
Data collection	Interviews lasted an average of 1 hour and took place over Zoom in a quiet, non-public place throughout March and April 2024. An audio recording was taken (upon receiving consent from the key informant), and we also took notes during the interview. We uploaded the recording and notes on a shared drive, within a password-protected file. In addition, we uploaded an Excel file with the actual names of participants and codes to recognize them in the transcribed documents; the word documents were referenced via a code rather than the actual participant's name. No repeat interviews carried out and no transcripts returned to participants for comment, correction, or feedback. As each transcript was completed and available, the lead author made a close reading of the transcript, carried out a deductive thematic or theory-driven analysis, drawing on social science scholarship. The de-identified transcripts of the interviews were coded by the lead author with co-authors' support on Microsoft Office Word (April 2024).
Timing	Interviews were conducted throughout March and April 2024.
Data exclusions	No data were excluded from the analyses.
Non-participation	Non-participation (n=14, 23.3%) was due to conflicting schedules. 46 were interviewed (response rate = 76.7%).
Randomization	Participants were not allocated into experimental groups.

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☒	☐ Plants

Methods

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☒	☐ Flow cytometry
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Plants

Seed stocks	n/a
Novel plant genotypes	n/a
Authentication	n/a