

# Physical Activity as a Victim, a Perpetrator, or Part of the Solution to the Climate Crisis?

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Humanity is facing a polycrisis, including climate change, loss of biodiversity, and economic inequalities. This commentary examines the role of physical activity (PA) research in the context of climate change, highlighting 3 perspectives: PA as a victim, as a perpetrator, and as part of the solution. The first perspective conceptualizes PA as a victim of climate change, as heat waves, extreme weather events, and high ozone levels pose a threat to health-enhancing PA and sports; adaptation strategies are needed and potentially lifesaving. The second perspective describes PA as a perpetrator to climate change due to the significant carbon footprint of some forms of PA and sport. The third perspective focuses on PA as a solution to climate change, as some forms of PA—such as active transport and urban gardening—have both individual and planetary health benefits. In addition, PA provides health benefits in extreme situations by reducing stress and maintaining health in times of crisis. Each of these 3 perspectives can guide future research in the field of PA and health.

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## Key Points

- Physical activity can be variously conceptualized as a victim of climate change threatened by extreme weather and rising temperatures, or as a perpetrator with a considerable carbon footprint.
- A third important perspective is to view physical activity as part of the solution, with important benefits for both individual and planetary health, especially in times of extreme stress and multiple crises.
- Research and action should support all three perspectives, using adaptation strategies to protect active people, mitigating the carbon footprint of physical activity, and leveraging its positive potential for climate action.

We are entering a phase where humanity seems to face multiple crises simultaneously. This includes climate change, loss of biodiversity, high levels of air pollution, increasing numbers of displaced people, increasing economic inequalities, human rights abuses, and persistent and widening inequalities, to name just a few.<sup>1,2</sup> Different terms have been used to describe this phase, either placing an emphasis on the interconnectedness of the different crises (eg, “polycrisis” and “cascading crises”) or on their prolonged state (eg, “permacrisis”).<sup>3,4</sup>

The sobering truth is that, at this point in time, it remains uncertain whether, and how, we will manage these problems. This raises an important question for our field of research: What is to be done? Is there a need to change physical activity (PA) research to better align it to the age of the polycrisis?

To provide a stimulus for further discussions, this commentary explores different views on the relationship between PA and one of the most existential challenges to humankind: climate change.

## PA and Sport as a Victim of Climate Change

Heat waves, extreme weather events, and high ozone levels pose direct challenges to athletes and people engaging in outdoor PA. Exercising under such conditions can cause health problems, such as heat stroke, fatigue, or cramps.<sup>5,6</sup> Extreme weather events pose risks to mass sporting events that are difficult to control. Some sports face profound challenges due to deteriorating environmental conditions, for example, winter sports (lack of snow), or lawn team sports such as cricket or football (long exposure to sun and high temperatures).<sup>7</sup>

Acknowledging these challenges has led to the development of various adaptation strategies, for example, providing more shade and water to athletes, changing the location and timing of sporting events, or developing guidelines to limit heat exposure. Additionally, technological solutions, such as producing artificial snow or cooling outdoor venues are implemented to counteract the detrimental effects of global warming.<sup>8–10</sup>

## PA and Sport as Perpetrators to Climate Change


Limiting our response to climate change exclusively to adaptation would ignore the role PA plays in contributing to this global problem. Many types of PA and sport come with a considerable carbon footprint and environmental costs.<sup>11,12</sup>

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## Implications for Future PA Research

Each of the 3 perspectives on PA and climate change outlined above has important implications for research. First, from a public health perspective, it is clear that climate change poses a threat to health-enhancing PA and sport, and that adaptation strategies are necessary and potentially lifesaving. This means that further studies on how individuals react to the changed conditions, how heat strokes can be prevented, and how safe conditions for winter sports can be maintained are highly relevant.

Regarding the second perspective, research into the detrimental effects of PA has lately been growing. However, the discourse on appropriate approaches, especially on emphasizing de-growth instead of a combination of adaptation and mitigation, is still in its infancy. Such a critical stance would also raise ethical questions, such as weighing the individual health benefits of PA against its planetary costs, and shifting the focus of PA recommendations from individual to planetary health.<sup>24</sup> This would not only call into question what Eun-Young Lee and Mark Tremblay have called the “apolitical-ness”<sup>25</sup> of our field but might also alienate sport organizations and governments.

Nevertheless, we believe a discussion of these issues is essential both for tackling the age of polycrisis and for maintaining the credibility of our discipline. Stanley Cohen<sup>26</sup> distinguishes 3 states of climate change denial: *Literal* denialists do not acknowledge that global warming is even happening. *Interpretative* denialists insist that global warming is not human-made. *Implicatory* denialists acknowledge human-made global warming but feel it is not their responsibility to act. PA and sport research as a whole are likely neither in literal nor in interpretative denial of the climate crisis, but it is important to make sure that we also avoid implicatory denial: Like all other areas of life, PA and sport will have to contribute to slowing down and mitigating climate change, and this must also involve tackling inconvenient truths.

In this context, the third perspective may point to a potential way forward: building on the positive contribution of PA and sport to tackle the climate challenge may be a better starting point for engaging national and international sport organizations in a dialogue than only pointing to their negative impacts. Many of these organizations are already exploring ways to reduce their carbon footprint, and our own recent interactions with them suggest that such an approach may indeed be promising. At the same time, it seems necessary to devote more academic attention to the potential role of PA and sport if the crisis cannot be averted. This includes their positive effects in extreme situations, strategies to maintain PA in adverse conditions, and potentially even their integration into disaster response plans. Other disciplines have even gone so far as to call for research into the consequences of a total breakdown of society due to the climate crisis.<sup>27,28</sup> Such a perspective is still virtually absent from our field but should not be prematurely dismissed.

In summary, we believe that each of the 3 perspectives—PA and sport as victim, a perpetrator, and a solution to the climate crisis—is important to guide future research and development work in our field. However, it is important not to emphasize one of them one-sidedly at the expense of the others. PA research will need to do it all: protect active people from the consequences of climate change, openly address the negative consequences of our PA and sport on the climate, and—where possible—use an assets-based approach to work with governments and sport organizations toward using PA and sport to tackle and maybe even solve the climate crisis.

Main contributors include the construction and maintenance of sport facilities, as well as motorized transport of athletes, officials, and spectators to sporting events. In addition, some sports require large amounts of space (eg, golf and baseball), ample amounts of water (eg, clay court and lawn tennis), or fertilizers and pesticides for maintenance. Nature sports may harm wildlife and vegetation, thus contributing to the destruction of ecosystems.<sup>13</sup> The production of sports apparel and equipment poses additional climate challenges.<sup>14</sup>

The realization that PA and sport are potential contributors to climate change has led sport federations to complement their abovementioned adaptation strategies with approaches to mitigate their impact on climate change. This includes improved insulation and heating systems for sport facilities, the reuse of existing venues for big events like the Olympic Games, or waste reduction efforts during tournaments. All these strategies hinge on the idea of “green growth,” that is, reducing emissions while still attracting more members and increasing revenue.

By contrast, more radical solutions seem far less popular with both governments and federations, as they threaten to shake the very foundations of the current global sport system. Proposals for “de-growth”<sup>15</sup> would lead to, for example, longer intervals between mega events and (world) championships, regional instead of global tournaments, and even restrictions on sports considered particularly detrimental to the climate.

## PA and Sport as Part of the Solution to Climate Change

An important third perspective is to view PA and sport not only as problems for the global climate but as a potential part of the solution. The abovementioned mitigation efforts by sports organizations can be considered a good starting point. In addition, some forms of PA have, by their very nature, both individual and planetary health benefits: active transport like walking and cycling helps reduce emissions from motorized transport. Urban gardening contributes to cooling cities and growing regional and seasonal food, thus reducing emissions related to transport and storage. Sport facilities can serve as important green spaces for communities, contributing to lower temperature in cities. Nature sports like hiking, climbing, and mountaineering, which have long promoted a balance between utilizing and protecting nature, could be used to further sensitize people for climate change. These co-benefits of PA and sport for planetary health have been well documented in a number of studies.<sup>16–18</sup>

However, despite all efforts—both in PA and sport, or in other sectors—it is highly unlikely that humankind will be able to completely avoid the negative consequences of climate change. Preparing for the related crises that may lie ahead, PA may have a number of benefits that have so far received less attention: for example, the COVID-19 pandemic has highlighted its potential in maintaining physical and mental health in times of crisis and in lowering the risk of suffering from long-term health consequences under extreme conditions.<sup>19</sup> Sports offers can be helpful to reduce stress and conflicts in facilities for refugees and displaced persons, for example, in the case of climate-induced armed conflicts or natural disasters.<sup>20</sup> There is also evidence that PA can be an important treatment for people who have suffered trauma and an invaluable tool to help improve their mental health.<sup>21</sup> To our best of knowledge, however, PA and sport have not found their way into respective policy documents and strategies, such as the disaster response plans of the World Health Organization or national governments.<sup>22,23</sup>

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