



# Sustainable development in sport and physical activity—perspectives and challenges

Sport and physical activity are seen as important drivers for social transformation and enablers of sustainable development, i.e., as important means of achieving the 17 Sustainable Development Goals (SDGs) (WHO, 2018; United Nations, 2015). This is often concretized in relation to the special contribution of sport and physical activity to health (SDG 3), education (SDG 4), equal opportunities (SDG 5, 10), or environmental awareness (SDG 13, 14, 15). There is strong evidence for regular physical activity being an important factor of mental and physical health (Murray et al., 2020). In case of active travel as a way of being physically active, this relates not only to individual health, but also to social health and, moreover, to planetary health in terms of reducing greenhouse gases and particulate pollution (Brand et al., 2021). Sport and physical activity-related settings, for example, physical education, are rated as particularly suitable for educational projects in the sense of education for sustainable development, because learners can gain concrete reflective experiences with their physical and social environment. This provides special learning opportunities, for example, for intercultural learning, experiences of diversity and equality, or mindfulness of oneself, others and the environment (Bucht, Mess, Bachner, & Spengler, 2022; Geiger, Otto, & Schrader, 2018; Gieß-Stüber & Thiel, 2016; Lohmann, Brandl-Bredenbeck, & Wendeborn, 2023). Em-

pirical findings indicate that outdoor sport in particular can develop potential in relation to physical and mental health and wellbeing, education and lifelong learning, environmental awareness, active citizenship, and reduction of crime or antisocial behavior (Eigenschenk et al., 2019). On a structural level, more and more players in organized sports are publishing sustainability strategies for the association, for a league, or for special events (Deutsche Fußball Liga, 2023; International Olympic Committee, 2017; Union of European Football Associations, 2023). This is an initial indication that, at least on paper, they are taking on more responsibility for society and the environment in addition to sporting success. There is growing evidence about the relevance of physical activity and sport for the achievement of almost all SDGs, but also for its detrimental effects on sustainable development (Abu-Omar & Gelius, 2020; Bernard et al., 2021; Bjørnarå, Torstveit, Stea, & Bere, 2017; Nigg & Nigg, 2021; Tittlbach, Lohmann, & Kuhn, 2023). Some examples:

- The Olympic Games do not live up to their claim of being exemplars of sustainability and inspiring sustainable futures around the world: between 1992 and 2020 sustainability (index of ecological, social, and economic aspects) was only medium and has declined over time (Müller et al., 2021).

- Organized sports can only partially fulfill their image as drivers of social integration and inclusion: studies consistently show disadvantages for people with migration background, female gender, lower educational level, or disability regarding their participation in organized sports (Gehrmann, Kraus, Fast, Kleindienst-Cachay, & Kastrup, 2022; Hoemann, Köhler, Kleindienst-Cachay, Zeeb, & Altenhöner, 2021; Radtke, 2011).
- Active sport participants contribute to environmental problems like climate change via greenhouse gas emissions from sport-related travels (Wicker, 2019). Negative effects of outdoor sports and recreation activities on wildlife, flora, and soil are also being discussed, although the specific and long-term effects have been scarcely quantified (Jäger, Schirpke, & Tappeiner, 2020; Marzano & Dandy, 2012; Sato, Wood, & Lindenmayer, 2013).

The previous statements illustrate how sport and physical activity are embedded in the societal structures that promote them, i.e., in a social, cultural, political, and economic context, which manifests itself, for example, in infrastructure, events, or the industry for sports equipment, and in the environment (■ Fig. 1). Thus, in an analysis of sport and physical activity against the backdrop of a holis-

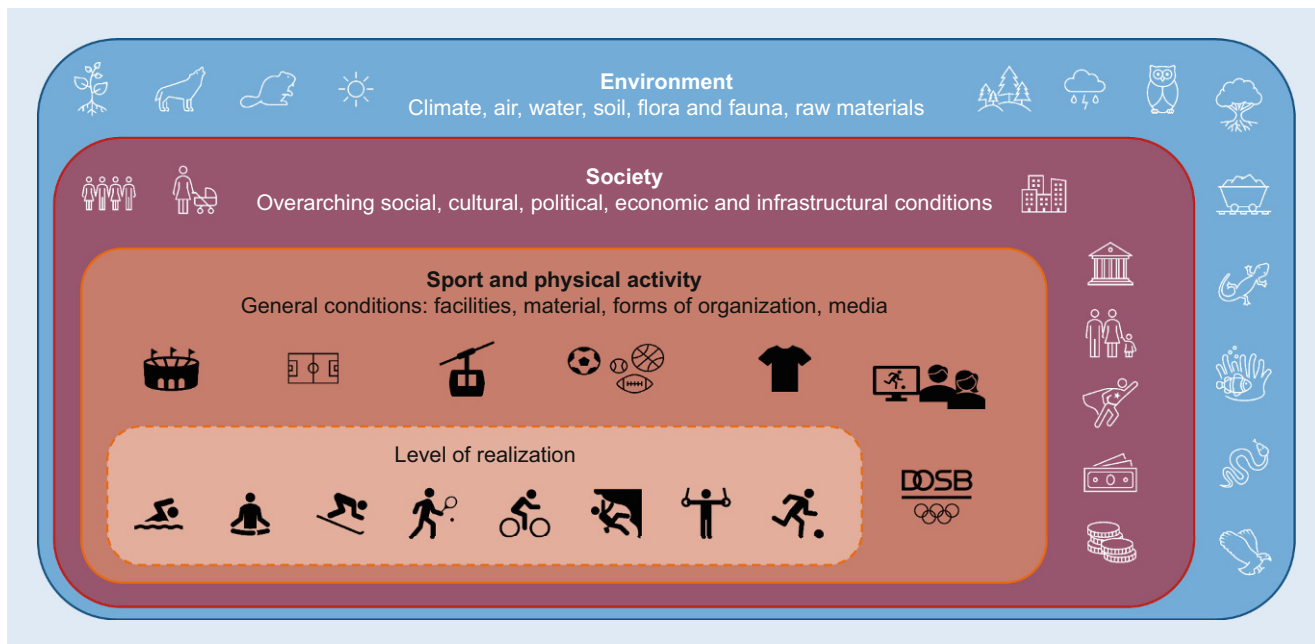


Fig. 1 ▲ Sport and physical activity in society and environment (modified after Kuhn (1996) and Tittlbach et al. (2023b))

tic understanding of sustainable development, ecological, social, and economic aspects must be taken into account. Additionally, it should be noted that the relationships between sport and physical activity, society, and the environment are bidirectional and involve complex interactions and feedback loops (Bernard et al., 2021). That means, physical activity and sport, particularly organized sports with its structures for training and competition, shape societal structures and contribute to the ecological and social crises that we are facing today: climate change, loss of biodiversity, exploitation, migration—just to name a few (Bernard et al., 2021; Tittlbach et al., 2023b). Simultaneously, climate change or migration are also altering the way sport and physical activity are pursued and organized. A highly simplified example: as outlined above, sport-related travel contributes to climate change, which is associated with extreme weather events and natural disasters which are in turn associated with decreased physical activity which might again result in altered sport-related travel behavior (Bernard et al., 2021). Sport and physical activity should thus be regarded as part of a problem and as part of the solution to issues of sustainable development.

### Perspectives and challenges

The integration of sustainable development principles into the realms of sport and physical activity has gained substantial attention in recent years. The ambivalence of the associations between sport or physical activity and sustainable development results in the need for a societal model for processes of negotiation between the needs of present versus future generations (intergenerational justice), interests of the Global North versus Global South (intragenerational justice), ecological consequences versus social (including economic and political) needs, and between scientific accuracy versus social or political acceptance (Borowy, 2014). As sport and physical activity are important societal subsystems in which many people actively or passively participate (Eurostat, 2022; IfD Allensbach, 2021), they bear responsibility regarding, for example, climate protection, biodiversity and social justice. But individual stakeholders and institutions in sport and physical activity also have the opportunity to motivate people and take them along on the path to a more sustainable society in the sense of a pioneering role. So, players in sport and physical activity must deal with their responsibility for society and environ-

ment on all levels—from individual athletes or coaches to sports and exercise scientists and political decision-makers (Abu-Omar & Gelius, 2020; Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz, 2023). The former are more responsible for themselves and their immediate environment, while the latter bear responsibility on a structural level. Thus, the research topic ‘sustainable development in sport and physical activity’ is located between individual behavior and structural framework conditions, and between ecological, social, and economic issues. It represents a relatively new and quite complex field of research in sports science at the interface to many other scientific disciplines.

### Overview of the articles in this issue

The special issue “Sustainable development in sport and physical activity—perspectives and challenges” of the *German Journal of Exercise and Sport Research* endeavors to provide new insights into the multifaceted topic of sustainable development in sport and physical activity. The articles compiled in this special issue address various aspects and questions related to sustainable de-



**Fig. 2** ◀ Graphical overview of the topics covered in this issue on sustainable development in sport and physical activity. Graphic generated by the authors with Bing Image Creator (Microsoft Ireland Operation Limited, Leopardstown, Ireland)

velopment in the context of sport and physical activity from different perspectives (■ Fig. 2); they outline challenges and provide perspectives for the future.

Contributions that scrutinize *sport and physical activity in the context of climate change* (SDG 13) and *planetary health* (SDG 3) open this special issue. Bernard et al. (2022) discuss climate change as the next game changer for sport and exercise psychology, Schneider and Mücke (2021) take a medical perspective on the question of how climate change affects health risks during sport activities, and Gelius, Till, Messing, Tcymbal, and Abu-Omar (2023) comment on the dilemma of physical activity recommendations regarding planetary health from a sociological perspective.

Like sport and physical activity, education (SDG 4) is seen as an important

means for achieving the SDGs. *Education for sustainable development (ESD)* in formal sport and physical activity-related educational settings, however, has not yet drawn much scientific attention. In this special issue, Thurm, Frank, Greve, and Schröder (2023) present a systematic literature review examining the potential of sport and physical activity in the context of environmental and sustainability education. In addition, Lohmann, Nigg, Hertle, and Kugelmann (2023) present empirical data from a survey of prospective physical education teachers on their beliefs about sustainable development in physical education.

*Organized sport and informal sport activities* can also be a driver of educational and development processes regarding sustainability. The articles in this section address different levels of

action. They examine the role of individual athletes (Jansen, Hoja, & Rahe, 2023; Breuhauer & Reese, 2023), individual fans (Scharfenkamp & Wicker, 2023) or fan organizations (Bauers, Adam, Fuchs, Piotrowski, & Hovemann, 2023), sports federations (Piller & Nagel, 2023), and digital tools (Schwietering, Steinbauer, Mangold, Sand, & Audorff, 2023) for sustainable development. These articles report on various issues regarding sustainable development, including environmental awareness and nature conservation (SDG 13, 14, 15), sustainable consumption of food (SDG 2, SDG 12), or institutional aspects of sustainability (SDG 16). Due to its wide distribution and popularity, *football* is of particular interest—also in research. Thus, three articles in this special issue concentrate on football-specific issues (Bauers et al.,



2023; Breuhauer & Reese, 2023; Scharfenkamp & Wicker, 2023). Additionally, *outdoor sports* are becoming increasingly popular in our society and are also covered in two articles (Piller & Nagel, 2023; Schwietering et al., 2023).

The last section of the special issue is dedicated to the rapidly growing research field of *active travel*, or *active mobility*, respectively (SDG 3, SDG 11, SDG 13). In a commentary, Reimers and Demetriou (2023) outline the field of research for (German) sports science. Tittlbach, Brockfeld, Kindig, and Herfet (2023) then provide a scoping review on literature about the relevance of active travel for maintaining health in daily life. In addition, two further articles go into empirical depth and report on the role of parental environmental self-identity for the active travel behavior of children (Seemüller et al., 2023), and on the role of neighborhood environment perceptions on active travel behavior (Klos et al., 2023).

## » Societal and ecological developments will influence and change sport in complex and multilayered ways

Societal and ecological developments will influence and change sport and physical activity in complex and multilayered ways. (Sports) science solutions are needed to accompany these changes. The contributions in this issue show the diversity and range of methodological approaches (from commentaries and theoretical contributions, to reviews and empirical qualitative and quantitative research), the topics and areas of sport and physical activity covered, the disciplinary perspectives, and the levels of activity (from athlete, fan, or individual learner to institutional aspects) considered, which are necessary for a holistic view of sustainable development in sport and physical activity. We are delighted to be able to present such a wide range of empirical and conceptual sports science research and critical discussion on this complex, current, and future-relevant topic in this special issue.

The diversity of contributions in this issue reflects the field of sport science activities in Germany and beyond. We hope that it contributes to and stimulates comprehensive research programs that address specific questions of sustainable development in the context of sport and physical activity. In this regard, particularly desirable are interdisciplinary and transdisciplinary research approaches that address sport- and physical activity-specific topics from various scientific perspectives, incorporating both scientific and practical expertise in knowledge generation (Norström et al., 2020).

### Corresponding address



**Julia Lohmann**  
Institute of Sports Science,  
University of Augsburg  
Augsburg, Germany  
julia.lohmann@uni-a.de

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