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Editorial

Reflections on 50 shades of APA

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About 15 years ago, in 2009, our Editor-in-Chief Prof Florentina Hettinga meaningfully got in touch with the world of Adapted Physical Activity for the first time. This was at the international conference 'Rehabmove' in Amsterdam, organized by Prof Luc van der Woude and his team at the time at VU Amsterdam. She came from a human movement science background and had worked with sport, fire brigade and military, but had never come across rehabilitation, adapted sport and wheeled mobility to such extent as was offered through the congress and its driven and committed participants. Ever since, she has been working on adapted physical activity topics such as handcycling, wheeled mobility, classification and pacing and self-regulation in people with intellectual disabilities.

She saw the same happen in her own students more recently when she brought them to the European Conference of Adapted Physical Activity (EUCAPA) in Coimbra (2022) and Seville (2024). Hearing about state-of-the-art research in the field, learning new things, sharing a commitment to making lives of people with disabilities better, communicating your findings and forming new networks, these are all important elements for progressing our own work and explore new ideas and collaborations. But also, meeting each other in conference setting is a time to discuss more overarching issues relevant to the field. Such as: What is adapted physical activity? How broad is the research we are doing as adapted physical activity community? How much are other people in sport or society aware of the term 'adapted physical activity' and the research we are doing? What are the methodological challenges in our research? Can we reach a wider audience through increasing our visibility at mainstream sport conferences, to inspire new people as has happened in this example 15 years ago? To act upon discussions and questions that came up, we decided to submit a session to Europe's main sport science conference the Annual meeting of the European Conference of Sport Science in Glasgow (2024), with the theme 'Enhancing Health, Performance and Community Sport'. The main aim of the session was to showcase the breadth of work that falls within the field of adapted physical activity and sport, present this in the mainstream sport science context, and start and stimulate discussions on key themes in this research area, and positioning research on adapted sport and physical activity in the wider sport science research context. This was planned with three well-known EUFAPA established researchers, and in the summer of 2024, we were invited to hold a symposium entitled '50 shades of Adapted Physical Activity (APA)' at the European College of Sports Sciences Congress, Glasgow, Scotland. There were three topics. The first was "High intensity adapted physical activity for diverse populations, such as people living with cancer or diabetes-2", presented by Aija Klavina, which was followed by "50 shades of data used in adapted physical activity", presented by Kwok Ng, before concluding with a presentation on, "Physical activity, exercise and sport in people with disabilities and/or chronic diseases" given by Florentina Hettinga. Through choosing this range of topics, we hoped to showcase the breadth of our field. Adapted Physical Activity comprises research in people with chronic conditions, in Paralympic sport, in physical and intellectual disabilities, enhancing performance or stimulating physical activity, training and health.

The aim of this paper in EUJAPA is to share this session with EUFAPA members to stimulate further discussions on the breadth of our field, key topics, methods and

terminology, and we have asked the speakers to further reflect on their symposium. Though it is not the same as being present at the conference, we hope to share some of our insights and of course hope to welcome you at one of the future conferences on adapted physical activity such as ISAPA (2025 in Tralee) or EUCAPA (2026 in Prague).

High intensity adapted physical activity for diverse populations, such as people living with cancer or diabetes-2

The presentation was given by Aija Klavina. She highlighted the significant role of physical activity, particularly high-intensity interval training (HIIT), in promoting a healthy lifestyle and improving quality of life. Recent studies reveal that HIIT may offer substantial benefits, especially for individuals with conditions such as breast cancer, type 2 diabetes, and coronary artery disease (Chen et al., 2023; McGregor et al., 2023). As our understanding of health-promoting activities evolves, researchers are focused on designing HIIT interventions that are not only effective but also feasible and enjoyable for participants. This is supported by the integration of wearable technology, which provides personalized data to help individuals maintain consistent activity and overall wellness. This approach reflects an ecological model that addresses both supportive and limiting factors in adopting a healthy lifestyle, offering hope for sustainable health improvements across diverse populations, including cancer patients receiving chemotherapy treatment.

Today, it is common practice for international and national oncology organizations to incorporate aerobic and resistance exercise into standard care protocols for cancer patients, both during and after treatment. Physical activity has been proven to improve quality of life, functional capacity, and cardiorespiratory fitness in cancer patients while reducing symptoms such as fatigue and mitigating systemic inflammation. In various studies, different HIIT protocols were tested, with some researchers concluding that a 4×4 minute protocol generated higher energy expenditure and cardiovascular and metabolic strain compared to continuous training. For patients needing a high training stimulus, longer intervals may be preferable.

However, every HIIT program must be adapted to the individual's physical abilities, which may vary depending on treatment timing and recovery stage. While HIIT is beneficial, it remains an intensive exercise form that may be limited by a patient's health condition. For those undergoing chemotherapy treatment, side effects can affect participation, while long-term therapy impacts may reduce performance during aftercare. Therefore, an individualized and supervised training regimen with adjustable parameters could be essential for implementing HIIT across prehabilitation, treatment, and aftercare stages.

Despite the benefits of physical activity during cancer treatment, researchers note challenges in retaining cancer patients in exercise programs. Barriers such as time constraints, financial issues, treatment side effects, and transportation difficulties often impede participation. The recent increase of mobile technology, however, offers an opportunity for more frequent monitoring and guidance, enabling patients to self-manage their activity levels. Smartphone apps and reminder alerts can help individuals stay on track with self-directed exercise routines. For example, the Cancerbeat (https://biomed.lu.lv/project/eea-research-164/) study demonstrated that six months remote HIIT monitored in Polar app improved physical functioning, reduced breast cancer symptoms, and alleviated systemic therapy-related side effects, including fatigue and social health-related issues (Klavina et al., 2024). Social incentives implemented in digital technology platforms, such as online group interactions, could further enhance adherence by providing peer support and reducing isolation.

The growing availability of wearable technologies supports chronic disease management and the health of high-risk individuals by obtaining and analyzing physical

activity data. Wearable devices, such as smartwatches, fitness bands, and even health-focused jewelleries monitor movements and various physiological metrics 24/7, providing valuable data for clinical research and practice. These devices sync with apps or websites, offering users a summary of their activity and other health indicators. Marketed as tools for promoting increased physical activity, wearables empower users to monitor their progress—a crucial factor in successful behavior change. Although wearables have shown potential in improving health habits, their effectiveness in transforming external motivation into sustainable, internalized behavioral change remains an area for further study.

50 Shades of Data in APA

The second presentation was provided by Kwok Ng, who focused more on methodological challenges in adapted physical activity, terminology and the importance of rigorous research in the field of adapted physical activity.

There are many sport science studies where people with specific impairments are specifically in the participant exclusion criteria. Scientists may choose to do this because it is often argued that people with impairments cannot do the tasks required in the tests. Other concerns are that the results of the studies would have high imprecision, would lead to indirectness of evidence, or have inconsistency (Higgins et al., 2019) by including people with impairments. Yet, at the same time, results often seek to generalise and apply to the full population, leaving people with impairments behind. With an estimated 16% of the world's population experiencing significant disabilities (World Health Organization, 2023), there is a sizable population where scientific knowledge is lacking. Such information can mean that the core work of adapted physical activity can be centred around this 16% of the population. Therefore, it would be good for the field of adapted physical activity researchers to make use of the recognised ways to identify people with disabilities. Since 2001, the World Bank set up the Washington Group on Disability Statistics, with a remit to be able to measure the rates of disabilities around the world, mainly through census data (Mont et al., 2022). This short set of questions that measure functional limitations were recommended as a proxy for disabilities and started deployment across countries around the world from 2010 and the child functioning module was widely available a few years later (Cappa et al., 2018). These questions are used to measure levels of difficulty on a four-point scale, from no difficulties to cannot do in the following functions (in the short set) of seeing, hearing, walking, remembering or concentration, self-care, and speaking. As there is more acceptance to use these questions from around the globe, researchers and practitioners in adapted physical activity may need to consider how this instrument can be used in their work. There have been some examples from around the world for epidemiologic type of studies using these instruments (Ng et al., 2023), although it remains unclear if these short measures provide sufficient details to help advance the research and practice in Adapted Physical Activity. It should be noted that a balance is needed to meet the different disability model approaches to align more closely with what is being considered an international standard that is used in multiple sectors. As such, future projects in this direction may help to improve not only the research in promoting physical activity and sport among people with disabilities, but also position APA in the context of improving the quality of life.

Physical activity, exercise and sport in people with disabilities or chronic diseases

The third speaker was Florentina Hettinga, elaborating on her work on physical activity, exercise and sport in persons with a disability or chronic condition. In 2014-15, the ReSpAct research team published the first studies of the Rehabilitation Sport and Active Lifestyle (ReSpAct) project (Wildekamp et al., 2024), a longitudinal multi-centre research project aimed at understanding the challenges and benefits of the promotion of physical activity and

sport after discharge from rehabilitation care in the Netherlands. Counselling sessions, based on motivational interviewing techniques, were offered at and following rehabilitation discharge, and 1256 adults with physical disabilities or chronic diseases were followed with questionnaires. Data were collected 3–6 weeks before (T0) and 14 (T1), 33 (T2) and 52 (T3) weeks after rehabilitation discharge. In the mean time, 17 subsequent studies have followed covering a wide range of topics relevant to people with disabilities and/or chronic conditions; For example, an increase in total physical activity moderate-intensity to vigorous-intensity physical activity and work/commuting physical activity has been found for all time points (T1–T3) compared with baseline (T0) (Brandenbarg et al., 2022), supporting earlier findings about the importance of engaging in an active lifestyle after rehabilitation discharge. The most recent paper from the ReSpAct research team focused on barriers that affect physical activity engagement after rehabilitation discharge and found relatively low PA barrier scores which illustrate the potential value of integrating PA counselling during and after rehabilitation (Wildekamp et al., 2024). While exploring physical activity, sport and exercise in people with disabilities and/or chronic diseases, three particularly interesting populations in the field of adapted physical activity and sport can be singled out: 1) wheelchair users, 2) people suffering from an invisible disability such as fatigue or pain and 3) people with intellectual disabilities. These groups need particular guidance to promote their engagement in physical activity, sport or exercise. In advisory programs such as the physical activity promotion program that is discussed in the ReSpAct studies, but also others, professionals need evidence-based input to be able to tailor their advice to help participants overcome disability specific barriers. For example, the exploration of upper body training and exercise through handcycling has been explored as less straining training modality for wheelchair users, and a need for research in understanding wheelchair turning manoeuvres was articulated (Chaikhot et al., 2023) to be able to advise participants related to mobility, sport and exercise. Regarding fatigue and potentially also pain, activity pacing (Abonie et al., 2020) was discussed as a promising fatigue and pain management strategy, that is needed to be able to maintain or increase engagement in activities through adding appropriate rest periods in anticipation of fatigue and/or pain (Barakou et al., 2023). Taking appropriate rest and pacing your activities can be used adaptively to be able to engage in physical activity when suffering from fatigue and/or pain, and advise can be adopted accordingly into physical activity promotion programs (Seves et al., 2021). Lastly, research is needed to provide professionals with evidence-based insights on how to support people with intellectual disabilities to engage in sport and physical activity. It has been found they struggle with how to pace their exercise, and visual guidance could help in better managing their energy expenditure and fatigue throughout the exercise, preventing negative associations as becoming too fatigued (Sakalidis et al., 2024). The overviewed studies provide nice illustrations of what type of studies are available that can be used in advisory programs aiming to stimulate physical activity in people with disabilities or chronic conditions in a tailored way.

Perspectives

The overview of the reflections of the three speakers provides a nice overview of the breadth of ongoing research in the field of adapted physical activity. We hope this will inspire you to continue discussions about the breadth of the field, methodological issues, and potential impact of the research work in adapted physical activity practice. We hope this will inspire you to consider submitting work in the broad area of adapted physical activity to our diamond open-access journal, that is a community-led journal by the European Federation of Adapted Physical Activity (EUFAPA).

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