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COMMENTARY

A Physical Behaviour Partnership From Heaven: The Prospective Physical Activity, Sitting, and Sleep Consortium and the International Society for the Measurement of Physical Behaviour

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The advancement of science demands people and organizations work together toward worthy goals, a need that is especially pronounced in nascent fields like physical behavior. Partnerships offer an ideal vehicle for long-term collaboration to build research capacity, develop new scientific endeavors, and nurture talent. In this commentary, we discuss the newly formed partnership between two key players of the field of physical behavior, the Prospective Physical Activity, Sitting, and Sleep consortium (ProPASS) and the International Society for the Measurement of Physical Behaviour (ISMPB).

The Consortium Partner

The ProPASS, which was founded in 2017 at the University of Sydney, is an international collaborative platform of thigh-worn accelerometery cohorts. ProPASS' main scientific aim is to explore the health effects of physical activity, posture, and sleep patterns on noncommunicable disease. Using the depth that state-of-the-art accelerometry measurement allows, ProPASS' ambition is to shed light on unexplored dimensions of physical behavior and their complex interactions with health (Figure 1). ProPASS' ultimate vision is to generate such evidence at the global level beyond high-income countries.

Within a short period of time, ProPASS was embraced warmly by cohorts, scientists, and collaborators. While ProPASS was initially set up to be a pooled data resource (Stamatakis et al., 2020), such an enthusiastic response expedited its growth and expanded its functions. As of early 2018 (Stevens et al., 2020), ProPASS' objectives included the development of methods for processing, harmonizing, and pooling data from existing studies: the development of methods for collecting data for future studies (prospective harmonization) and building a vibrant early and mid-career researcher community. The first fruits of this expanded scope include ProPASS' proof-of-principle study (i.e., different thigh-worn accelerometers give similar output when processed consistently; Crowley et al., 2019), the development of standardized accelerometery protocols and prospective harmonization measurements for future inclusion of cohorts, and the development of the ActiPASS software (Occupational and Environmental Medicine, Uppsala, n.d.) for unified processing of accelerometery data in all ProPASS cohorts.

To safeguard consortium feasibility, longevity, and continued growth, ProPASS is not restricted to one specific model of accelerometer; any triaxial device that outputs raw acceleration data and is worn on the thigh is eligible—an approach we have validated empirically (Crowley et al., 2019). As of early 2022, ProPASS has been the only accelerometery consortium that actively recruits both retrospective and prospective cohort studies; in other words, ProPASS supports the inclusion of cohorts that have already collected accelerometery data and cohorts that plan to do so in the future.

The ProPASS' goals are closely aligned with the gaps highlighted by the World Health Organization's Guidelines of Physical Activity and Sedentary Behavior Development Group in 2020 (DiPietro et al., 2020), most notably the paucity of device-based dose–response data on physical activity and sedentary behavior, a gap that is particularly pronounced in lower- and middle-income countries. As a data resource, the ultimate contribution of the ProPASS consortium will be to provide remote access and analyses of preharmonized cohort study data sets (federated analyses) and their prospective health outcome linkage and to facilitate individual participant and prospective meta-analyses of nonidentifiable data.

The Society Partner

The ISMPB was formed in 2016 after the success of a number of International Conferences on Ambulatory Monitoring of Physical

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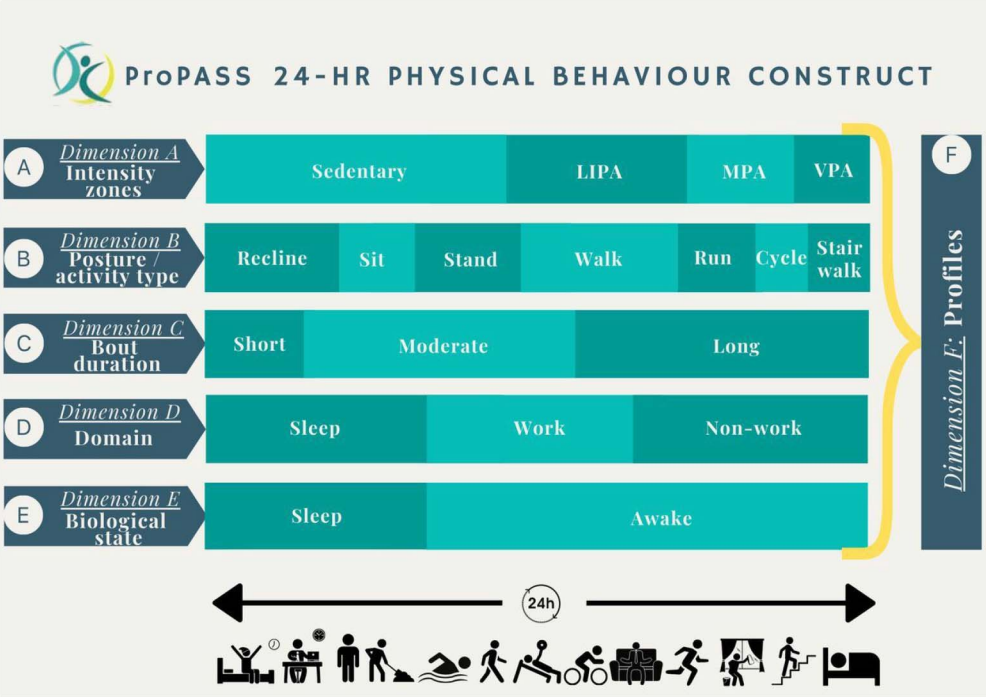

Figure 1 — The dimensions of the proposed Prospective Physical Activity, Sitting, and Sleep consortium (ProPASS) Accelerometery Construct. *Dimension A*: the basic intensity-based dimension of the 24-hr physical activity (PA) construct stratified on sedentary behavior, light physical activity (LIPA), moderate physical activity (MPA), and vigorous physical activity (VPA). *Dimension B*: information about both posture and physical activity types. *Dimension C*: information of time spent on various lengths of bouts with uninterrupted periods of physical activity types and posture. For example, short bouts (0–5 min), moderate (>5–10 min), and long (>10 min) bouts of standing; meaningful bouts length could be different for sitting and other activity types or postures. *Dimension D*: domains where the physical activity components and posture occur. *Dimension E*: acknowledges that sleep is a different biological state. *Dimension F*: indicates that the profile is a combination of all other dimensions A–E. Figure reproduced under CC BY-NC 4.0 license from: "Thigh-Worn Accelerometry for Measuring Movement and Posture Across the 24-Hour Cycle: A Scoping Review and Expert Statement," by M.L. Stevens, N. Gupta, E. Inan Eroglu, P.J. Crowley, B. Eroglu, A. Bauman, . . . E. Stamatakis, 2020, *BMJ Open Sport & Exercise Medicine*, *6*, p. e000874. https://doi.org/10.1136/bmjsem-2020-000874. Copyright 2020 by the Authors.

Activity and Movement (ICAMPAM). The mission statement for ISMPB is "to promote and facilitate the study and applications of objective measurement and quantification of free-living physical behaviour and its related constructs (e.g., energy expenditure, context) using wearable devices" (International Society for the Measurement of Physical Behaviour, n.d.). ISMPB brings together people from a range of disciplines and backgrounds to further this agenda of measuring physical behavior. The broad membership base includes researchers, clinicians, scientists, engineers, and industry individuals. Physical behavior is a broad concept and, in ISMPB, encompasses physical activity, sedentary behavior, movement behavior such as gait, body postures, sleep, and constructs related to physical behaviors such as where and with whom physical behavior occurs. The types of measurement methods encompassed by the society include those that are ambulatory, wearable, and can be employed using unrestricted, prolonged, and unsupervised methods.

How the Partnership Came About

The ProPASS–ISMPB partnership was the product of patient nurturing and an evolving relationship. The seeds of this partnership were first sewed in ProPASS' annual meetings in Copenhagen in October 2018, and then fertilized in the Maastricht meeting in July 2019 which took place right after ICAMPAM 2019. Both events were well attended by members of ISMPB's Executive Committee who lent their enthusiastic support and input on ProPASS' future plans and direction. Indeed, one of the key outcomes of the Maastricht ProPASS annual meeting was the decision to work more closely with ISMPB. The disruptions and distractions that came with the COVID-19 pandemic temporarily slowed down the well-formed friendship over 2020, and final discussions concluded in the second half of 2021 when the formal partnership agreement was signed.

What Is the Partnership About?

The partnership's spirit is based on mutual support toward overlapping goals, with a focus on co-badging/co-organizing joint activities and jointly nurturing emerging talent in the field of physical behavior and beyond. Some examples include:

- A symposium session for ProPASS in 2022 ICAMPAM meeting in Colorado which is led by ProPASS' accelerometery data lead Dr. Matthew Ahmadi.
- Planned schemes and events to support the ever-expanding Early Career Researchers community of ProPASS and the Early Career Researchers members of ISMPB.
- Collaborative publications to promote the partnership (including the current commentary) and the art and science of physical behavior.
- Opportunities to advance the joint agendas and seek further opportunities for joint activities and initiatives through "mingling" at leadership level, for example, by inviting a member of ISMPB Board to ProPASS' Working Group and/or Strategic Leadership Group meetings.

The terms of the partnership will be 2 years with an option to renew. The principles underlying the agreement are broad and nonprescriptive to allow flexibility and creativity and to make the most of emerging opportunities in the fast-evolving fields of physical behavior measurement and cohort research. The partnership between ProPASS and ISMPB is not exclusive; for example, ProPASS has recently also signed a partnership with the International Society for Physical Activity and Health (https://www.ispah.org/ispah-propass), and the Global Positioning Systems in Health Research Network (https://www.gps-hrn.org/) has become a special interest group of ISMPB.

How Can You Be Involved?

A mutual desire of both partners is to use the partnership to develop the epidemiology of accelerometery-based physical behavior. Membership of ISMPB is open to all and can be accessed on the society member page: https://ismpb.org/membership/. ISMPB has several avenues for involvement. These include attendance at ICAMPAM and online seminars and workshops, following on social media (https://twitter.com/ismpb_org), and membership of the various committees of the society such as Communications and Activities committees (https://ismpb.org/committees/), and membership of the Board. Membership covers a 2-year cycle with renewal due in September of an even year. To be involved in this partnership and find out more, visit the ProPASS website for more updates on current and past events and activities (https://www.propassconsortium.org) or email propass.consortium@sydney.edu.au. ProPASS also invites researchers from any discipline who have collected or are considering collecting thigh-worn accelerometery data in observational studies to contact us to discuss.

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