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Guest editorial

The 2024 Compendium of Physical Activities and its expansion

First developed 30 years ago, the Compendium of Physical Activities (Compendium) was created to provide a standardized way of measuring and classifying specific physical activities (PAs), allowing researchers and health professionals to assess the energy expenditure and health benefits associated with different PA.[1] Since its inception, the Compendium has been widely utilized and recognized as a fundamental PA and health resource. In identifying the energy costs of PA, the Compendium has aided governmental PA and health initiatives and empowered people to understand and quantify their PA levels, aiding in self-monitoring and goal setting. The Compendium's widespread use and influence continue to drive advancements in the field, ultimately promoting PA and improving health outcomes for individuals and communities.

Over time, the Compendium has undergone revisions and expansions in 2000[2] and 2011[3] to accommodate evolving scientific knowledge and urge further research in areas of need. These updates have been crucial in maintaining the Compendium's relevance and accuracy in capturing the diverse PA landscape. New insights and evidence regarding various PA energy expenditure and health benefits have emerged as scientific research advances. The Compendium has incorporated these findings through revisions that refine existing PA Major Headings and introduce new ones. This refinement allows for a more comprehensive and nuanced understanding of PA energy costs and metabolic demands. Another critical aspect of the revisions and expansions is considering diverse populations that may have altered metabolic activity costs. Research shows that individuals may exhibit variations in the energy expenditure associated with the same PA based on age, body composition, sex, fitness level, movement differences, and health status.[4–13] These individual differences in energy costs necessitate careful consideration when estimating energy expenditure for diverse populations. The 2024 Compendium update and revision includes modifications designed to stay current with scientific advancements, update existing PA, create a new Major Heading (Video games) and Specific Activities, and curate a new Older Adult[14] and updated Wheelchair Compendia.[15]

The purpose of this special topic contribution to the *Journal of Sport and Health Science* is to provide a comprehensive account of the historical context of the Compendium and present the research findings obtained through an extensive literature review that informs this update.

We include 4 papers on the Compendium. Ainsworth et al.[16] provide a much-needed historical overview of the Compendium and its early iterations in a commentary, *A brief history of the Compendium of Physical Activities*. They explore the motivations behind its development, such as the need for a standardized framework to quantify energy expenditure associated with PA. The historical account takes readers on a journey through the significant milestones in the development of the Compendium. It discusses the primary enhancements of each version, including the expansion of Major Headings and associated PAs, refinement of measurement methods, and the incorporation of new research findings.

In their paper, *2024 Adult Compendium of Physical Activities: A third update of the energy costs of human activities*, Herrmann et al.[17] present the 2024 update and revision (the 4th edition) of the Adult Compendium. They describe the revision process showcasing the scientific rigor to ensure the Compendium remains accurate, comprehensive, and aligned with the latest scientific knowledge. The revision process highlights a systematic literature review of articles measuring the energy cost of PA in each of the Compendium's 22 Major Headings. Findings from the literature review informed the revisions and expansions undertaken in the 2024 Compendium.

Willis et al.[14] present a new Compendium explicitly designed to curate the energy costs of PA in adults 60 years and older. Their paper titled *Older Adult Compendium of Physical Activities: Energy costs of human physical activities in adults aged 60 and older* is the first expansion of the Adult Compendium into a new population. This paper describes the unique characteristics of the rapidly growing older adult population and the need for the Older Adult Compendium.[10,18] The authors provide an overview of creating the Older Adult Compendium and discuss the challenges of identifying an optimal denominator to represent standard metabolic equivalent values in older adults with lower resting metabolic rates than adults. This new resource targets a population where PA

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has proven protective health benefits, hoping to stimulate further research and PA awareness in supporting healthy aging.[19]

Another new addition is the *2024 Wheelchair Compendium of Physical Activities: An update of activity codes and energy expenditure values,* where Conger et al.[15] address the energy costs of PA in adult wheelchair users. Creating a Compendium specifically designed for wheelchair users marks a significant step towards promoting inclusivity and addressing the unique physiological aspects of this population. Approximately 12% of the U.S. population has a mobility disability, many of whom are regular wheelchair users or will progress to wheelchair use.[20] Further, diseases associated with low levels of PA are among the leading causes of death in wheelchair users. This paper provides an overview of developing the Wheelchair Compendium. It highlights the importance of supporting PA engagement among wheelchair users. It also discusses the unique challenges in identifying appropriate energy cost values for adults with varying disabilities requiring wheelchair use.

The Compendium of Physical Activities is crucial in standardizing classification, measurement, and promoting PA, contributing to scientific research, public health initiatives, and individual health and wellness. The 2024 Adult Compendium, Older Adult Compendium, and 2024 Wheelchair Compendium demonstrate a significant commitment to staying abreast of scientific advancements and broadening the scope of the Compendium to encompass new populations. The articles in this special topic will provide the current state of the evidence and highlight the need for future work in this area.

Competing interests

The authors declare that they have no competing interests.

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