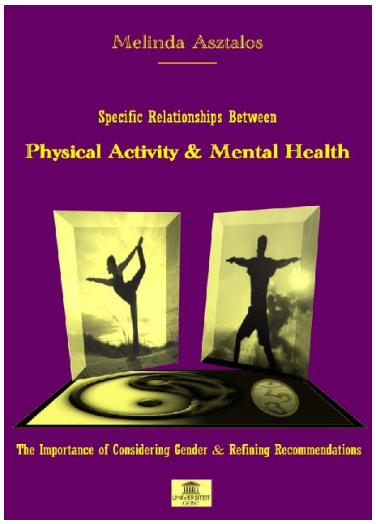
# SPECIFIC RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY & MENTAL HEALTH THE IMPORTANCE OF CONSIDERING GENDER AND REFINING RECOMMENDATIONS

***PhD book by Melinda Asztalos***




Thesis submitted in fulfillment of requirements for the
Academic Degree of Doctor in Sport and Movement Sciences
Specific Research Domain: Exercise Psychology

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This thesis addresses the association between physical activity and aspects of psychological functioning and well-being, generally named mental health. It is divided into three main broad research questions, based on analyses of types of physical activity (and sedentary behaviors), domains of psychological well-being, and gender differences. It does so with an epidemiological approach, based on data from two large and representative cohorts in Belgium. The thesis includes two published/accepted papers in well-ranked journals and two other manuscripts submitted for publication, which reveals a high level of scientific achievement associated with the original research conducted. Additionally, it includes an in-depth review of the historical and current knowledge on the topics under scrutiny and a final section of discussion and conclusions, including research directions and final recommendations. The overall document is well-organized and very well-written.

The research questions addressed in this thesis are clearly relevant, which is made sufficiently clear throughout the document. In fact, Ms. Asztalos appears to be passionate about the potential of physical activity to improve psychological functioning, from protecting against mental health problems to promoting self-awareness and personal growth. Although the empirical findings do not clearly support some of the propositions, this does not detract from the well-justified need to study such associations. The overall plan for the thesis is sound and coherent, with some of the studies following on the questions left open in the previous reports.

My general evaluation on this body of work is that it meets, and in some regards goes beyond the minimum requirements for a doctoral level thesis, as I interpret them. Part I in particular shows a level of knowledge of various fields of enquiry (exercise science and exercise psychology, mental health, and gender studies,) which is clearly advanced, and it assures the reader that Ms. Asztalos has in fact reviewed the literature in extensive detail, was able to extract the most pertinent information and, most importantly, reflected upon her readings and successfully integrated all selected information into a coherent text, formulating adequate empirical hypotheses, and appropriately framing and justifying the relevance of her original research. Furthermore, Ms. Asztalos was able to generate innovative hypotheses and adequately integrate them into the overall research pursuit rather seamlessly. On top of this, great care appears to have been placed in the writing process, resulting in a clear, concise, and also fun and captivating read.

I feel confident that after the peer-review process is completed and all four papers are published, Ms. Asztalos and her co-authors will have contributed to the field of exercise science (and related areas) in a substantial way. It appears that following these studies with subsequent

original research using prospective, preferable experimental, methods would be the logical way to go, and I would be pleased to see such research come to fruition in years to come. With the theoretical background she now has accumulated, and supported by the current observational findings, Ms. Asztalos would most certainly be in a privileged position to lead that research in the near future. >>

Author's summary

Although there is good reason for promoting physical activity in the general public, both as preventive measure and as means of improving mental and social well-being, physical activity promotion meant for the promotion of mental health is a rarity. Not even a simple message for the amount and type of physical activity for optimal mental health exists, and physical activity recommendations only tangentially deal with the potential of physical activity for mental health benefits. Despite the growing attention toward the use of physical activity in the promotion and maintenance of mental health, and in the management of mental health problems, despite the mounting evidence associating physical activity with reduced depression and anxiety, improved self-esteem, enhanced physical self-perception, self-efficacy, and cognitive functioning, optimal stress management, better sleep quality, elevated mood, and significantly greater health-related quality of life, skepticism still prevents the proper recognition of physical activity as preventive and therapeutic means for mental health problems, and even its crucial role in stress management is uncertified.

The ingenious question of "What evidence would prompt scientists to "stick their necks out" in favor of more definitive statements?" (Landers, 1997) forms a perplexing dilemma when paralleled to Hippocrates's recognition of the effects of exercise on mental health from 2500 years ago, or to William James's convincement of the importance of physical activity in mental hygiene, which he shared in the "Gospel of Relaxation", 111 years ago:

"I recollect, years ago, reading a certain work by an American doctor on hygiene and the Laws of Life, and the type of future humanity. I remember well an awful prophecy that it contained about the future of our muscular system. The writer said:

> Human perfection means ability to cope with the environment; but the environment will more and more require mental power from us, and less and less will ask for bare brute strength. Wars will cease, machines will do all our heavy work, and man will become more and more a mere director of Nature's energies, and less and less an exerter of energy on his own account. So that, if the homo sapiens of the future can only digest his food and think, what need will he have of well-developed muscles at all?

I cannot believe that our muscular vigor will ever be a superfluity. Even if the day ever dawns in which it will not be needed for fighting the old heavy battles against Nature, it will still always be needed to furnish the background of sanity, serenity, and cheerfulness to life, to give moral elasticity to our disposition, to round off the wiry edge of our fretfulness, and to make us good-humored and easy of approach" (James, 1899, pp.205-207).

Nonetheless, the current state of matters regarding the physical activity – mental health relationship is that the question of whether physical activity results in mental health benefits, or better mental health increases the likeliness of participation in physical activity, which in turn accounts for the research findings confirming a positive relationship between physical activity and mental health, seems impossible to answer. The direction of causality in this relationship remains undetermined, mainly because a substantial number of variables align and change in the physical activity – mental health relationship, making it much more complex than the relationship between physical activity and physical health.

The aim of the present thesis was to create a more differentiated picture about the relationship between physical activity and mental health, in order to disentangle some of its great

complexity, and perhaps help strengthening statements about it. The potential of physical activity to improve psychological functioning was comprehensively considered, from protecting against mental health problems to promoting self-awareness and personal growth. The thesis includes an in-depth review of the historical and current knowledge on the topics under scrutiny, and it focuses on three main coordinates on which the complexity of the physical activity – mental health relationship appears to manifest: activity domains (i.e., different types and intensities of physical activity), domains of mental health (e.g., emotional well-being, depression, anxiety, perceived stress, psychological distress, stress appraisal), and individual differences (gender differences in particular). Variations within and between these coordinates were analyzed with an epidemiological approach. Empirical hypotheses were developed based on the information derived from the extensive literature review.

The thesis includes four original research articles, which are based on data from two large and representative cohorts in Belgium; one from the Belgian Health Interview Survey (B-HIS), including a total of 12,111 participants; 6,190 women (51.1%) and 5,921 men (48.9%), aged 0-99 years, representing the entire Belgian population, and another from the Flemish Policy Research Centre Sport, Physical Activity, and Health (SPAH), including 5,170 individuals; 2,746 men (53.1%) and 2,420 women (46.9%), aged 18-75 years, from 46 Flemish municipalities, representing the whole Flanders (the Northern part of Belgium).

The first study1 differentiated between recreational and utilitarian forms of physical activity in their relation with levels of self-reported stress and distress in 1,919 adults aged 20-65 years, from the SPAH epidemiological data. Multiple Logistic Regression analyses were conducted, stratified by gender, age, and occupational category. Results were integrated in an adequate theoretical frame, and the proposition emerged that although physical activities of any content may be beneficial for physical health, when targeting psychological benefits, it may perhaps be insufficient to just climb the stairs instead of taking the elevator, or to engage in housework or gardening. The discussion on the findings revealed the question of whether the importance of motivation and enjoyment of physical activity is greater regarding mental health benefits than concerning physical health benefits.

The second study2 differentiated between physical activities of three different intensities and five components of mental health, including general (i.e., emotional well-being) and specific (i.e., depression, anxiety, somatization, and sleeping problems) components of mental health. Gender specific multiple Logistic Regression analyses were conducted in 3,435 women and in 3,368 men aged 25-64 years from the B-HIS data. Findings suggested clear gender differences in the optimal intensity levels of the physical activity that associates with better mental health. Positive associations between physical activity and mental health in men included vigorous-intensity physical activity and specific components of mental health, whereas among women, they involved moderate-intensity physical activity and walking with both general and specific components of mental health.

The third study relied on previous findings suggesting that sports participation might associate stronger with mental health than other types of physical activity (e.g., Hamer et al., 2008) and on Salmon's (2001) unifying theory on how the role of physical activity in stress management might explain the physical activity – mental health relationship. Associations between participation in personally favoured types of sports and stress appraisal and emotional distress were examined separately in 783 sport participator men and in 644 sport participator women, aged 20-65 years, from the SPAH epidemiologic data. Multiple MANOVAs were conducted to analyze sport-type related variations (including 15 different types of sports) in the physical activity – mental health relationship. The findings were used in theoretical reasoning about the possible meanings that women and men might attach to their sports participation, which resulted in the presupposition that men might attach a meaning of distancing or escapism, while women might attach a meaning of developing self-awareness to participation in sports.

The fourth study aimed to gather insight about the relationship between sedentary behavior and mental health, based on the physical activity – sedentary behavior, and the physical activity – mental health relationships. Variations across gender, age, socio-economic status, and participation in recommended amounts of vigorous- and moderate-intensity physical activity were analyzed in the associations between sedentary time and five components of mental health, in 6,720 adults aged 24-65years, from the BHIS data. Sedentary time and physical activity were separately measured, and examined via multiple Logistic Regression analyses; hence, the findings conveyed understanding of the potential independent mental health outcomes of sedentary behavior.

The present thesis does not provide proof of the positive effects of physical activity on mental health because the cross-sectional studies could not affirm that physical activity causes improvements in mental health. However, this thesis provides substantial evidence of an important and complicated positive relationship that incontestably exists between physical activity and mental health. Further, the thesis unveils novel hypotheses about the aspects of this relationship, which, provided that they are further explored, could advance and deepen the knowledge-base in the sciences of physical activity and exercise, and in their related fields. Moreover, the thesis elucidates the relevance of the complicated physical activity – mental health relationship in an attempt to argue for recommendations that are more specific regarding the role of physical activity in mental health. Eventually, the role of the investigations presented in this thesis may be only preliminary, but nonetheless they are valuable, because cross-sectional observation of associations and patterns between behaviors and their potential outcomes may materialize in theories, which can induce new investigations that may reveal new findings, leading to better theories. Moreover, throughout these investigations, understanding can be gained about the cognitive and emotional experiences of the individual participating in sport, exercise, or physical activity, and about why and how may psychological benefits follow from these behaviors.

**Dr. Melinda Asztalos**
**Brussels, 12.07.2010**

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