Ghent University
Faculty of Medicine & Health Sciences
Department of Movement & Sport Sciences

Specific Relationships Between
Physical Activity & Mental Health

The importance of considering gender & refining recommendations

Melinda Asztalos

Thesis submitted in fulfillment of requirements for the Academic Degree of
Doctor in Physical Education

GENT 2010

Supervisor:

*Prof. Dr. Ilse De Bourdeaudhuij**

Co-Supervisor:

*Prof. Dr. Greet Cardon**

Supervisory board:

Prof. Dr. Ilse De Bourdeaudhuij
Prof. Dr. Greet Cardon
*Prof. Dr. Renaat Philippaerts**

* Department of Movement & Sport Sciences, Faculty of Medicine and Health Sciences, Ghent University (Belgium)

Examination board:

Prof. Dr. Guy Vanderstraeten
Chairman, Department of Physical Therapy & Motor Rehabilitation, Faculty of Medicine & Health Sciences, Ghent University (Belgium)

Prof. Dr. Pedro J. Teixeira
Nutrition, Physical Activity, Obesity & Weight Management, Exercise & Health Department Faculty of Human Kinetics, Technical University of Lisbon (Portugal)

Prof. Dr. Filip Boen
Exercise & Sport Psychology, & Coaching, Department of Human Kinesiology, Faculty of Kinesiology & Rehabilitation Sciences, Catholic University Leuven (Belgium)

Prof. Dr. Lea Maes
Department of Public Health, Faculty of Medicine & Health Sciences, Ghent University (Belgium)

Prof. Dr. Liesbeth Goubert
Department of Experimental Clinical and Health Psychology, Faculty of Psychology & Educational Sciences, Ghent University (Belgium)

Prof. Dr. Leen Haerens
Department of Movement & Sport Sciences, Faculty of Medicine & Health Sciences, Ghent University (Belgium)

Faculty of Medicine & Health Sciences
Department of Movement & Sport Sciences
Watersportlaan 2, 9000 Ghent, Belgium

ISBN: 9789078836070

Contents

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[1], 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. 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[2].

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 study 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, resulting the proposition 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 study 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, it 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 B-HIS 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.

1. Department of Health (2001). *Making it happen: a guide to delivering mental health promotion*. Retrieved November 17, 2009, from: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4007907.

2. Scully, D., Kremer, J., Meade, M.M., Graham, R., & Dudgeon, K. (1998). Physical exercise and psychological well-being: a critical review. British Journal of Sports Medicine, 32, 111-120.

3. Hamer, M., Stamatakis, E., & Steptoe, A. (2008). Dose response relationship between physical activity and mental health: The Scottish Health Survey. *British Journal of Sports Medicine*. Published Online First: 10 April 2008. doi:10.1136/bjsm.2008.046243.

4. Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: a unifying theory. *Clinical Psychology Review, 21*(1), 33-61.

List of (A1) publications in international peer reviewed scientific journals

Specific associations between types of physical activity and components of mental health – *Melinda Asztalos, Katrien Wijndaele, Ilse De Bourdeaudhuij, Renaat Philippaerts, Lynn Matton, Nathalie Duvigneaud, Martine Thomis, William Duquet, Johan Lefevre, and Greet Cardon* (2008). Journal of Science and Medicine in Sport, 12(4), 468-474. Impact Factor: 1.931. Ranking Sport Sciences 16/71.

❖

The relationship between physical activity and mental health varies across activity intensity levels and dimensions of mental health among women and men – *Melinda Asztalos, Ilse De Bourdeaudhuij, and Greet Cardon* (2009). Public Health Nutrition, Article in press, doi:10.1017/S1368980009992825. Impact Factor: 2.123. Ranking Public Health 41/105; Nutrition & Dietetics 27/59.

❖

Sports participation and stress among women and men – *Melinda Asztalos, Katrien Wijndaele, Ilse De Bourdeaudhuij, Renaat Philippaerts, Lynn Matton, Nathalie Duvigneaud, Martine Thomis, Johan Lefevre, and Greet Cardon* (2009). Psychology of Sport and Exercise, Article in revision. Impact Factor: 1.568 (5-year IF: 1.925). Ranking Sport Sciences 26/71; Applied Psychology 15/50.

❖

The relationship between sedentary behavior and mental health: variations with gender, age, socio-economic status, and physical activity participation – *Melinda Asztalos, Ilse De Bourdeaudhuij, and Greet Cardon* (2009). Journal of Applied Sport Psychology, Article in revision.
Impact Factor: 1.093. Ranking Sport Sciences 38/71; Psychology 51/61; Social Science, Hospitality, Leisure, Sport & Tourism 6/16; Social Science, Psychology, Applied 35/61.