



Sport participation and stress among women and men

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ABSTRACT

Objectives: In-depth analysis of the relationship between sports participation and stress among adult women and men.

Design: 644 women and 783 men, 20–65 years, from the SPAH Flemish-Policy-Research-Centre, reported data on participation in favourite sports and mental health.

Method: Gender-specific multiple MANOVAs with stress appraisal and the stress response of emotional distress as dependent variables, and participation in 15 different types of sports as independent variables, including effect sizes (Cohen's *d*) per sport-type.

Results: Very little difference in perceived-stress and emotional-distress existed in women and men who participated in different sport-types, suggesting that “one-activity-fits-all recommendations” are likely inappropriate. Different sports are suitable for different individuals, and it is important that one finds the sport that suits one best. Conversely, significant associations between participation in walking and in meditation sports manifested with both stress appraisal and emotional distress among women, and significant associations between participation in ball games and in water sports manifested with emotional distress among men.

Conclusions: The paper gathered substantial comprehensive insight and connected its quantitative data to existing qualitative data, presenting stimulating theoretical arguments. Sport-type related variations in the physical activity – mental health relationship were analyzed, based on the theory of mindful movement and the complexity paradigm identifying 3 coordinates on which the physical activity – mental health complexity unravels, based on: activity domains, mental health dimensions, and individual characteristics. The mindful movement theory proposes an underlying mechanism that could explain the positive physical activity – mental health relationship, and the complexity paradigm provides basis for creating a workable definition for the concept of mindful physical activity.

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“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 exorter 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 vigour 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-humoured and easy of approach”.

(William James, 1899, *The Gospel of Relaxation*, pp. 205–207)

The broad frame

Physical activity – health; health – mental health; physical activity – mental health

In the “*Global Strategy on Diet, Physical Activity and Health*” (2004), the World Health Organization (WHO) acknowledged that regular, adequate physical activity (PA) is a public health priority,

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and represents a “major factor in the promotion and maintenance of good health throughout the entire life course”, along with healthy diets. Shortly thereafter, the consensus report of the US Department of Health and Human Services and the Institute of Medicine (2006) broadcasted the conclusion that “distinct and independent focus on physical activity is imperative”. In the same line, the updated health recommendations for adults from the American College of Sports Medicine and the American Heart Association declared that “the greatest potential for increased health and reduced mortality is in taking on physical activity” (Haskell et al., 2007).

A firm science base on the health benefits of physical activity grew solid in the last decade and established the crucial position of PA in the promotion of health. On the other hand, per definition, health implies consideration for-, and proper recognition of the importance of mental health (MH): “health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity” (WHO Constitution, 2006). Moreover, MH is a fundamental pillar of the overall well-being and the effective functioning of an individual and a community, that is: “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community (WHO, 2007). Furthermore, for utter accuracy, it is important to comprehend that MH “is a positive sense of well-being and an underlying belief in our own and others’ dignity and worth that reflects the emotional and spiritual resilience which enables us to enjoy life and to survive pain, disappointment, and sadness” (DoH, 2001). The accurate understanding of the complex meaning of MH allows accepting that “how well society functions depends on how people feel about themselves, as how society works at every level influences the way people feel” (Scottish Development Centre for Mental Health Services, 1999).

The strong impact that PA is shown to have on health (Bauman, 2004; Nocon et al., 2008; Warburton, Nicol, & Bredin, 2006), and the importance of MH in the very existence of health, incite the expectation that PA may have substantial impact on MH as well, and could thereby contribute to the making of a better functioning society. In support of this expectation, Fox (2000a, 2000b) emphasized the “natural partnership” between PA and MH, establishing four major roles that PA fulfils in MH promotion: 1.) as therapeutic means for existing MH problems; 2.) as means to improve quality of life in people with MH problems; 3.) as preventive measure for MH problems; and 4.) as means to improve the mental well-being of the general population. In the same line, multiple studies collectively show that PA results in positive MH benefits across several populations, and thus PA strikingly fulfils these four roles.

Hence, evidence indicated that PA instantly and on long-term improves mood, and significantly reduces symptoms of depression and anxiety (Biddle, 2000; Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005; Landers, 1997; Penedo & Dahn, 2005). Individuals diagnosed with major depression undergoing PA interventions showed significant improvements in depression comparable to individuals receiving psychotropic treatment; moreover, individuals following PA programs had significantly lower relapse rates than individuals receiving medication (Penedo & Dahn, 2005). Further evidence indicated that PA improves health-related quality of life, enhances the experience of well-being, increases physical functioning, and it buffers age-related cognitive decline (Bauman, 2004; Bize, Johnson, & Plotnikoff, 2007; Fox, 1999; Vuillemin et al., 2005). In addition, PA helps improve the quality and the length of sleep in individuals who suffer from sleeping problems, and in those who do not (DoH, 2001), and adequate PA may reduce symptoms of panic disorders, along with greatly increasing

perceived energy levels, and enhancing self-esteem and positive affect in individuals suffering from MH problems (Fontaine, 2000). Besides, PA enhances social well-being in all populations, by producing social cohesion and a sense of belonging or affiliation (DoH, 2001). Finally, epidemiological evidence supports the role of PA in the prevention of MH problems, in stress management, and the improvement of MH in the general population (Berger, 1994; Biddle, Fox, & Boutcher, 2000; Dunn, Trivedi, & O’Neal, 2001; Morgan, 1997, pp. 58–60). A range of data on self-reported health status, stress level, fear of crime, and believing that unfamiliar others are untrustworthy, suggest that a considerable percentage of the population suffer from poor mental well-being, expressed as low self-esteem and feelings of worthlessness, frequently depressed mood, poor body image, lack of self-confidence, poor sleep quality, and social isolation (DoH, 2004). In the same line, mental illness in the form of depression is predicted to become the second most prevalent cause of disability worldwide by 2020 (WHO, 2001). In contrast, physically active individuals appear to feel better about themselves and consistently report higher levels of subjective well-being (DoH, 2004).

A narrow issue within the broad frame

Definitive policy decisions and investments in the area of physical activity – mental health are scarce

As outlined above, current research is certainly indicative of a positive PA-MH relationship. However, definitive policy decisions and investments in this area require better prospective observational studies to examine the dose–response relationship between PA and MH, and larger randomized control trials to identify the dose and the type of activity required. Additionally, an urgent need exists to explore the underlying mechanisms for the observed MH benefits associated with PA (Bauman, 2004). In line with this state of art, currently PA endorsement meant for the promotion of MH is a rarity, and the amount and type of PA necessary for optimal MH are yet to be established, as PA recommendations only tangentially deal with the potential of PA for MH benefits.

The root of this gloomy reality is the fact that the existing evidence cannot certify a causal relationship between PA and positive MH outcomes. Thus, the current evidence is useful primarily in setting the stage for future (better) research that could more convincingly demonstrate that regular and adequate PA participation induces reduced risks of-, and solid recovery from-MH problems, as well as enhanced mental, emotional and overall well-being. The impediments preventing such research from being conducted are primarily ignorance and the subsequent lack of funds supporting powerful research in the domains exploring the PA-MH relationship, such as exercise psychology. In turn, the lack of such powerful research obstructs definitive policy decisions and investments in this area; therefore establishing a sad “catch 22” logical paradox, to which individual mental health and the health status of the human society fall prey.

Some exceptional scientists attempted to break through this dilemma and dared to “stick their necks out” in favour of more definitive statements, aligning with Landers (1997) who drew attention to the inordinate cautiousness of the scientific community when claiming the MH benefits derived from PA. A truly daring report in this sense was that of Nanette Mutrie (2000) concluding that “existing evidence strongly supports the view that PA protects against the development of depression”. Similarly, Nieman (2002) stated that “the MH benefits of PA are at least as important as its physical health benefits”. From a different perspective but in the same line, Jones and O’Beney (2004) elaborated on the high cost-effectiveness resulting from the consistent adaptation of PA in

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