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A COMPARISON ON HEALTH RELATED QUALITY OF LIFE BETWEEN TABLE TENNIS AND CLOSE-SKILL SPORT PARTICIPANTS

Abstract

Health is a critical component for the quality of life in late adulthood. Many health professionals suggest that maintaining an active lifestyle, especially for the elderly, is key to health. However, what kind of activity provides the best result for the elderly is still a question that needs to be answered. As such, the study tried to compare the health-related quality of life of the elderly participants who participated in table tennis, a sport that is popular for all age ranges in Taiwan, to those that participated in the commonly-studied closed-skill sports such as jogging, walking, and cycling. Fifty-four table tennis participants and fifty-one closed-skill participants completed the MOS 36-item Short Form Health Survey (SF-36). The results of the independent t-test indicated that a). The scores of several measured profiles (i.e. the role limitations due to several measured profiles physical health profile, general health perceptions profile, the role limitations due to emotional problems profile, and the mental health profile) of the geriatrics who played table tennis are higher than those of the closed-skill sports participants, b). The score for the physical component summary for the table tennis participants is higher than that of their counterparts also. The results of this cross-sectional study suggest that table tennis participation provides more health benefits than the closed-skilled sports studied.

Key words: *table tennis, close-skill, quality of life*

Introduction

The elderly population in Taiwan has grown from 8.3% in 1998 to 10% in 2007. (Ministry of the Interior, Population Administration, Department of Population, 2007). The most concerning problem for the elderly population is their health status. To maintain good health is not only a concern for just the younger population but also for the elderly as well. The healthier the elder generation is, the less money is wasted on their medical problems.

The elderly population may improve their health by several methods, such as engaging in all types of normal physical activity. Research of the last two decades has documented exercise's advantageous effect on chronic disease-symptom control, physical function, and overall Health-Related Quality of Life. In addition, recent research has shown that physical activity has beneficial effects on not only the body, but also to the brain, of the older adults. Research supports that exercise can reduce anxiety and depression, and increase positive emotion and self-esteem (Landers & Arent, 2001). Although some recent efforts have explored factors that could moderate the relationship between physical activity and mental health, the ideal exercises to achieve desired health outcomes has not yet been determined (Singh, 2002).

Each type of exercises has different positive outcomes, and each effect is required for the best health and physiological function (Singh, 2002). Aerobic exercise intervention results in better cognitive function than non-aerobic exercise intervention (Dustman, Ruhling and Shigeoka, 1984; Kramer, Hahn, & Harrison, 1999). Studies have shown that Tai Chi can improve one's positive health status by strengthening the cardiovascular and respiratory systems and developing overall fitness (Brown, Mucci Hetzler, & Knowlton,

1989; Lai, Lan, Wong, & Teng, 1995; Lan, Lai, Chen, & Wang, 1998). The population who practiced Tai Chi had better physical and mental health statuses than those who did not practice (Chen, 2000).

To date, research on finding the best type of physical activity for mental health has focused on the taxonomy of aerobic vs. non-aerobic. Not much attention has been paid to the comparison of beneficial effects of the physical activity on mental health between open-skill and closed-skill sports. Open-skilled sports like table tennis are particularly good candidates that may bring extra benefits to the mental health status of older adults. Several reasons can be given to argue for table tennis's candidacy in promoting the mental health status of older adults. On top of practical reasons such as the fact that table tennis is popular among the older population due to the minimal requirement of activity, there are some other features of the playing table tennis itself that could promote the benefits. Table tennis is characterized by a need for fast reaction to unpredictable stimuli. The speed and spin of the ball places a heavy mental and physical load on the participants. Playing table tennis can facilitate the development of hand-eye coordination, maintaining attention ability, and developing muscle strength, endurance and agility. Importantly, it is very likely that the mental load of the skill learning and strategy development is especially stimulating to an aging brain. Animal studies have shown that mice participating in more complex types of exercise secrete more brain-derived neurotrophic factors (BDNF) than those mice engaging in less complex exercises (Gomez-Pinilla, Ying, Opazo, Roy, and Edgerton, 2001). Since BDNF plays significant role on brain functioning, more BDNF release may lead to better brain functioning that in turn results in better mental and emotional health. As such, the purpose of the study is to compare the differences in health benefits between the open-skilled table tennis geriatric exerciser and his closed-skilled counterpart exerciser.

Methods

Participants

One hundred and five geriatrics (fifty-four table tennis exercisers and fifty-one closed-skilled exercisers) completed The MOS 36-item Short Form Health Survey (SF-36).

Instruments

Chinese version of Medical Outcomes Study Short-Form Health Survey (SF-36) The test was developed to measure self-perception of physical and mental health (Ware, 1992). It consists of 36 questions and includes eight domains of health: physical functioning, role limitations due to physical health, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health. This test provides scale scores for these eight health domains, and two summary measures of physical and mental health: the Physical Component Summary (PCS) and Mental Component Summary (MCS).

Result

Table 1 summarizes the mean and standard deviation of SF-36. The score of physical functioning, role limitations due to physical health, role limitations due to emotional problems, and physical component summary of table tennis exerciser are significantly higher than close-skilled exerciser.

Table 1. Comparisons of SF-36 of table tennis exerciser (n=54) and close-skilled exerciser (n=51)

Measure	Table tennis exerciser	Close-skill exerciser	<i>t</i>	<i>P</i>
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	M	SD	M	SD		
physical functioning	51.86	7.42	48.43	12.25	1.73	.09
role limitations due to physical health	47.11	13.04	34.60	10.75	5.38	.00*
bodily pain	54.83	7.60	54.56	31.99	.06	.95
general health perceptions	58.58	8.58	54.56	8.88	2.36	.02*
vitality	58.28	9.85	55.35	10.65	1.47	.15
social functioning	54.59	8.85	53.25	8.64	.78	.44
Role limitations due to emotional problems	48.31	11.86	36.99	10.26	5.23	.00*
mental health	58.97	10.30	53.55	12.58	2.42	.02*
physical component summary	48.06	8.60	41.67	14.35	2.78	.01*
mental component summary	59.76	9.51	56.07	10.57	1.88	.60

*p<.05

Discussion

The purpose of this study is to compare self-reported health-related quality of life between older adults participating in table tennis with those who participated in various closed-skilled sports. The hypothesis of better health-related quality of life in table tennis participants is supported. Although not all 10 components in the questionnaire reached statistical significance, table tennis participants reported better score on all of them. The 5 components that table tennis participants showed statistically significantly higher scores are Role limitations due to physical health, General health perceptions, Role limitations due to emotional problems, Mental health, and Physical component summary.

There are several explanations for the beneficial effect of physical activity on the brain (Shi & Hung, 2006). First, physical activity improves the cerebral blood circulation, which in turn enhances the supply of oxygen and glucose, two essential fuels for the neuron, to the brain. Second, physical activity increases the synthesis and release of neurotrophic factors (NF) such as brain-derived neurotrophic factors (BDNF). These NFs play an important role in the activity and function of the neurons. Third, physical activity also enhances the synthesis and release of neurotransmitters that are critical for communication between neurons. Thus the combination of the aforementioned effects of physical activity to the brain is particularly beneficial to the older generation because aging places a toll on the normal functioning of the brain. By playing a reverse role against aging's degenerative effect on the brain, physical activity contributes to the elderly population's higher quality of life via its positive effects on the mind.

The finding of better health-related quality of life in table tennis participants is encouraging. Table tennis is a sport that can be both physically and mentally stimulating. The participants in this study engage in the sport regularly. The chronic effect of long-term participation may stimulate more BDNF release than those of the close-skilled sport participants. This explanation is supported by Gomez-Pinilla, Ying, Opazo, Roy, and Edgerton (2001). These authors found that mice participating in more complex types of exercise secrete more BDNF than those that were engaging in less complex exercises. BDNF release is important for neuron function and is the foundation for a sound mind.

In conclusion, the study found that table tennis participation in the elderly is associated with better health-related quality of life than closed-skill sports participation. This finding supports the notion that sports associated with more mental stimulation, such as table

tennis, in addition to the physical stimulation, can enhance self-reported health states in the older population.

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