

ORIGINAL ARTICLE

The Relationship Between Sport Participation and Sleep Quality of Aged Population

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ABSTRACT

Epidemiological studies have shown a close correlation between exercises and sleep quality which affects the quality of life especially in elderly people. Thus, the purpose of this study was to investigate the relationship between sport participation and sleep quality of aged male and female populations. 384 elderly persons aged 60 years were selected by simple random sampling method in recreational parks of Tehran City. The correlation was measured between Pittsburgh Sleep Quality Index (PSQI) and quality of sleep. The physical activity level of participants was measured using the Global Physical Activity Questionnaire. Data analysis was carried out independent t test and using Pearson correlation at the significance level of $p < 0.05$. The findings suggested that there was a significant relationship between sport participation with subjective sleep quality, sleep duration, habitual sleep efficiency, sleep disturbances and daytime dysfunction ($p < 0.05$), while no significant relationship was found between sport participation with sleep latency and use of sleeping medication ($P > 0.05$). The aged populations are highly recommended to do sport participation with the aim of improving quality of sleep. As shown, the higher levels of physical activity, the more quality of sleep occurs.

Keywords: Exercise, sleep quality, elderly people

INTRODUCTION

Movements and physical activities are inseparable traits of human life which play key role in prevention of depression, and improving physical health (Amini, Mirmoezzi, Salmanpour, & Khorshidi, 2018; Ghafuri, 2003; Monleon, Hemmati Afif, Mahdavi, & Rezayi, 2018; Taheri, Irandoust, Noorian, & Bagherpour, 2017). It has been shown in several studies that spending leisure time, creating healthy social relationships in society could lead to prevent the different diseases and problems

(Irandoust & Taheri, 2017, 2018; Taheri & Arabameri, 2012; Taheri & Irandoust, 2017). Among the factors involved in the sports participation process, social inclusion or socialization has attracted the attention of many researchers. Since, this type of social development can be done well through sport for all participation. Researchers have considered the vital role of sports participation in terms of socialization in sport that relates to the attitudes and behaviors of individuals (Taji bagher abaad, 2015). Today, owing to the sedentary life style of humans, the importance of active life style and giving health feedback to inactive persons seems to be highly important (Alavizade, 2009; Irandoust & Taheri, 2015; Irandoust, Taheri, Neto, & Lotfi, 2017). Furthermore, Mental health is an aspect of the overall health concept which can be affected by physical health (Rodrigues-Rodrigues, Claudia Vieira Gomes, & Rodrigues Neto, 2017). In this regard Exercise plays an important role in improving the physical, psychological, social and

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Received: 12 April 2018 Accepted: 18 April 2018

Sleep and Hypnosis
Journal homepage:
www.sleepandhypnosis.org
ISSN: 2458-9101 (Online)



physiological health of people (Daigle, 2003; Jafari, Pouryamehr, & Fathi, 2017). Participation in sporting activities is defined as any kind of organized or unorganized activity to meet the needs of people in relation to maintenance of health in the spare time. In other words, purposeful athletic movements results in the development of sport culture in society (Brinthaup, Kang, & Anshel, 2013). One of the physiological changes in aged people is sleep disturbance which cause the mental problems. Inappropriate quality of sleep disrupts the emotions, thoughts and motives of the individual, as well as increasing the risk of collapse and injuries among aged persons. Among the various types of problems related to sleep, sleep latency and sleep duration are very common in among the elderly (Rahmaninia, Mohebbi, Gholami, & Boroujeni, 2009). There are some evidences showing that headaches and gastrointestinal disorders can be key factors in disturbing the sleep quality in the elderly (Beyrami, Alizadehgoradel, Ansarhosein, & Ghahramanmoharrampour, 2014). On the other hand, sleep disturbance is an important cause of illness in humans at all ages (AfkhamEbrahimi et al., 2008). In elderly, sleep disorders may cause drowsiness, memory impairment and attention, low mood and excessive sleepiness (Monleon et al., 2018). Previous studies have shown that age, gender, occupation, social class, and physical and mental health that can be involved in sleep disturbances. It was suggested in a study that the elderly with a mean age of 71-80 years had a PSQI score of <5 (poor sleep quality) (Denison, Cooper, Sayer, & Robinson, 2015). Sheikhi et al. (2015) conducted a study showing that 39.8% of the elderly had a moderate problem in sleep quality and 24.5% of them had severe problems in quality of sleep (Sheikhy, karami, chupani, hookari, & fallah, 2015). Park et. al. (2013) studied prevalence and predictors of sleep quality in the elderly in Korea and found that 60% of the subjects had a poor quality of sleep (Park, Yoo, & Bae, 2013). There was also a direct relationship between low quality of sleep and depression (Aliasgharpour & Eybpoosh, 2011). Since quality of life is one of the factors influencing the sports participation, and disruption of normal sleep patterns can impair the quality of life and lower the ability to

perform mental and physical tasks. Therefore, it was aimed at identifying the relationship between sport participation and sleep quality of aged male and female population.

METHODS

The study was a survey research which recruited 384 persons over 60 years based on randomized sampling method in Tehran parks. The physical activity level of participants was measured using the Global Physical Activity Questionnaire. In order to determine the relationship of active participation in sports activities with sleep quality, the PSQI was used with a validity of 0.86 and a reliability coefficient of 0.89. A 19-item self-report questionnaire designed to assess sleep quality. The PSQI yields a score ranging between 0 and 21 (Taheri & Irandoust, 2017). The participants filled out the PSQI at the beginning and end of the study to identify sleep problems. Total score was calculated as a sleep quality scale for each subject. PSQI subscales included subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction (Taheri & Irandoust, 2017). Data analysis was carried out using Pearson correlation and independent t test.

RESULTS

Based on descriptive statistics, 40% of the participants were female (n = 153) and 60% of them were male (n = 231). 41.4% of subjects did exercise for 1 to 2 hours a day, while 35.6 % between 2 to 3 hours and 13.3% less than 1 hour a day.

The relation of participation in sports activities on the sleep parameters is shown in Table 1, using Pearson correlation.

As seen table 1, the relationship of participation in exercise activity was not significant for sleep latency and the use of sleeping medication ($p > 0.05$). On the other hand, subjective sleep quality, sleep duration, habitual sleep efficiency, sleep disturbances and daytime dysfunction were improved after regular exercise ($p < 0.05$).

Table 1. The relationship between sport participation and quality of sleep

	Sleep Subscales	Correlation Coefficient	Significant
Regular exercise	subjective sleep quality	0.406	0.001
	sleep latency	0.314	0.023
	sleep duration	0.510	0.001
	habitual sleep efficiency	0.483	0.001
	sleep disturbances	0.566	0.001
	use of sleeping medication	0.192	0.064
	daytime dysfunction	0.488	0.001

Table 2. Comparing the sleep quality between aged male and females

	sex	Mean	F	T	df	Sig
subjective sleep quality	female	2.00	6.573	-5.380	386	0.001
	male	3.13				
sleep latency	female	2.51	0.275	-2.732	386	0.008
	male	3.01				
sleep duration	female	3.88	4.499	-0.082	386	0.935
	male	3.90				
habitual sleep efficiency	female	3.62	0.339	0.064	386	0.949
	male	3.61				
sleep disturbances	female	2.15	2.841	-2.539	386	0.013
	male	2.78				
use of sleeping medication	female	2.48	0.634	0.198	386	0.844
	male	2.44				
daytime dysfunction	female	2.39	4.338	1.349	386	0.201
	male	3.01				

The results of independent t-test showed that subjective sleep quality, sleep latency and sleep disturbances in male and female aged populations were significantly different ($p < 0.05$). However, no significant differences were found for sleep duration, habitual sleep efficiency, use of sleeping medication and daytime dysfunction between the two groups.

CONCLUSION

Recently, the treatment of sleep problems of aged populations represents a new challenge for health authorities. Therefore, intervening appropriate strategies for improving the quality of sleep is of utmost importance for health policy makers. Accordingly, the purpose of this study was to investigate the relation of active participation in sports activities with the quality of sleep in the male and female elderly. In this regard, the results indicated that subjective sleep quality, sleep

duration, habitual sleep efficiency, sleep disturbances and daytime dysfunction were improved after exercise intervention. In contrast, sleep latency and the use of sleeping medication weren't significantly changed. The results regarding the improvement of sleep quality by exercise is consistent with some studies (Irandoust & Taheri, 2018; Taheri & Irandoust, 2017).

These results highlight the potential of the sport participation to improve the sleep quality in elderly persons. One possible reason for obtained results could be attributed to weight loss which can be effective in improvement of sleep indexes in the investigated subjects. In addition, exercise has the potential not only to increase the growth hormone secretion, but also improve the circadian rhythms and increase adenosine levels in the body which both leading to sleep regulation (Taheri & Irandoust, 2017). The results also showed that there was a significant difference between subjective sleep quality, sleep disturbances and sleep latency of men and women.

It must be noted that a larger sample with intervention aim regarding the direct effects of exercise on sleep parameters is highly recommended in future studies. Controlling the possible variables affecting the sleep such as psychological and mental status besides the nutrition habits must be taken into consideration. Finally, it can be concluded that active participation in sports activities can affect the quality of sleep in the elderly.

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- Acknowledgment:** None declared.
- Conflict of interest:** The authors declare no conflict of interest.
- Informed consent:** Informed consent was obtained from all the participants included in the study.
- Funding:** The authors declare that the current study was not financially supported by any institution or organization.
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