Havva Demirel

Selçuk University, School of Physical Training
and Sport

Sleep Quality Differs Between Athletes and Non-athletes

Abstract

Purpose: Sufficient sleep or sleep of sufficient quality is essential for the health of children, adolescents and adults, as sleep influences almost all dimensions of life. The purpose of this study was to investigate the possible positive effects of sportsmanship on sleep quality and to assess the possible differences in sleep quality between athletes and non-athletes.

Methods: Sedentary or non-athletes subjects (n=103) and athletes (n=93) participated in this study. The Turkish version of Pittsburgh Sleep Quality Index was used to assess the points associated with sleep quality of participants before and one month after wet cupping therapy.

Results: Athletes had statistically significantly higher Pittsburgh Sleep Quality Index parameters compared with non-athletes.

Conclusions: Long-term exercise or physical fitness is advised for better health and a life without stress, anxiety and depression and also for the normal brain function and emotional stability.

Clin Invest Med 2016; 39 (6): S184-S186.

Correspondence to:

Havva Demirel
Selcuk University, School of Physical Training and Sport
Konya, Turkey
E-mail: havvademirel@selcuk.edu.tr

Sleep is a physiological process and is essential for maintaining health and homeostasis in humans. Sleep influences almost all dimensions of life. Sufficient sleep is important for the health of children, adolescents and adults and it has been reported that the sleep deprivation may delay wound healing in rats [1].

Sleep quality affects the level of anxiety of athletes [2]. Anxiety, as a negative emotion, affects the perception of athletes before a competition, resulting in decreased performance [3]. The sleep quality of athlete greatly affects his/her physiological condition, which indirectly affects his/her performance. Adequate sleep is needed to support the normal brain function and emotional stability and poor quality of sleep, in the long term, will cause a negative effect on health and affect the performance of athletes during a match [4].

High depression score is the best predictor for someone who has poor of sleep quality. Poor of sleep quality has long-term negative effects on health [5].

It is well known that there are lower health-related quality of life scores in overweight and obese adolescents compared with their normal weight counterparts. In a recent study, self-reported health-related quality of life scores were significantly associated with weekly hours

adolescents spent on videogames/internet, listening to music and reading, watching TV, sports [6]. Also, weekly hours spent on listening to music and readings and sport activities were significantly associated with their children health-related quality of life scores [6]. Time spent on physical and sedentary activities were associated with the health-related quality of life scores of high school students [6].

Physical fitness can be accepted as a good indicator of general health especially for cardiovascular, neurologic and psychologic goodness; therefore, it can be hypothesized that the sleep quality parameters of athletes were higher compared with age- and gender-matched non-athletes. We investigated whether the sleep quality parameters were different in athletes and non-athletes.

Methods

Subjects

Sedentary or non-athletes subjects (n=103; 18 women, 75 men, mean age = 32.77 years, SD = 8.04) and athletes (n=93; 46 women, 57 men, mean age = 32.77 years, SD = 8.04) participated in this study. Exclusion criteria were health problems such as psychiatric, respiratory, metabolic, cardiac, or autonomic nervous system diseases that might change the sleep quality parameters. The present study was approved by the ethical committee of university.

Sleep Quality Assessment

The Turkish version [7] of Pittsburg Sleep Quality Index [8] was used to assess the points associated with sleep quality of participants before and one month after wet cupping therapy.

Statistical Analyses

Measured values are given as a mean +/- standard deviation. Statistical analysis was performed using SPSS for Windows (version 16.0) statistical program. Student's t test was used to compare the sleep quality parameters in athletes and non-athletes. A p value less than 0.05 was considered significant.

Results

Athletes had statistically significantly higher Pittsburg Sleep Quality Index parameters compared with non-athletes (see Table 1).

TABLE 1. Means and standard deviations of Pittsburg Sleep Quality Index parameters in non-athletes and athletes

Pittsburg Sleep Quality Parameters	Non-athletes N=103	Athletes N=93	t	p
Sleep Quality Index	1.57±0.31	1.45±0.32	2.65	0.009
Copious sleep duration (hour)	7.49±1.14	7.81±0.92	2.12	0.04
Problem falling asleep in the first 30 minutes	2.06±0.83	1.64±0.8	3.62	0.00
Problem keeping late hours	1.84±0.78	1.56±0.65	2.64	0.009
Problem falling asleep	1.49±0.91	1.21±0.51	2.67	0.008
Early wake up in night or morning	2.07±0.84	1.68±0.72	3.45	0.001
Excessive warmth perception	1.52±0.65	1.47±0.68	0.59	0.56
Excessive chilling perception	1.55±0.67	1.35±0.59	2.23	0.03
Bad dream	1.57±0.72	1.56±0.68	0.09	0.92
Coughing or snoring	1.18±0.52	1.19±0.47	0.09	0.92
Dyspnea perception	1.39±0.67	1.29±0.62	0.97	0.33

Discussion

Effects of sleep deprivation on wound healing have been studied in rats: full-skin-thickness burns were produced in animals and wound healing was assessed by pathological analysis of wound by counting fibroblasts, capillary vessels, polymorphonuclear leucocytes (PNLs) and by measuring radiolabeled immunoglobulin G (IgG) amount in wound area by radio-pharmaceutical and immunoscintigraphic procedures. The number of fibroblasts and capillary vessels were found to be higher in the control group than in sleep deprivation group, and the number of PNLs and the radiolabeled polyvalent IgG levels were higher in SD group than in control group. These data suggested that sleep deprivation may delay wound healing [1].

In a recent study [9], almost all HRV parameters, except LF/HF, decreased in the work shift group (physicians) compared with the non-shift group. The researchers suggested that sleep deprivation due to work shift may cause sympathovagal imbalances by affecting the biological rhythm. It can be speculated that sleep deprivation can cause a multi-system or multi-organ hazard, probably due to impairment in biological or circadian rhythm because the normal biological rhythm is important for homeostasis in internal environment.

In the present study, athletes had statistically significantly higher Pittsburgh Sleep Quality Index parameters compared to before cupping therapy in healthy persons. That is to say, it can be stated that physically fitting, sufficient physical fitness (whether it be long term training or amateur sportsmanship) is important for the better sleeping or sleeping with higher quality.

Sleep influences almost all dimensions of life and sufficient sleep is essential for the health of children and adolescents; therefore, exercise or training must be advised for the better health and a live without stress, anxiety and depression [5] and also for the normal brain function and emotional stability [4].

In a recent study [10], an association was found among the amount of sleep and daytime sleepiness and health-related quality of life in 568 Finnish adolescent schoolchildren 10-15 years of age. The amount of sleep was significantly positively linearly associated with health-related quality of life; therefore, the researchers suggested that sufficient sleep is essential for health-related quality of life and should be protected and measured in the school health service.

References

1. Gumustekin K, Seven B, Karabulut N, Aktas O, Gursan N, Aslan S, Keles M, Varoglu E, Dane S. Effects of sleep deprivation, nicotine, and selenium on wound healing in rats. *International Journal of Neuroscience* 2004; 114(11): 1433-1442.
2. Afriani Y, Puspaningtyas DE, Mahfida SL, Kushartanti W, Farmawati A. Quality of sleep affects the level of anxiety and performance of football athletes. *Iranian Journal of Public Health* 2015; 44(7): 1023.
3. Raglin JS, Hanin YL. Competitive anxiety. In: *Emotions in sport*. Eds, Hanin Y. L., Human Kinetics Inc; United States of America, 2000; pp. 93-111.
4. Carlson NR. *Foundations of Physiological Psychology*. 6th ed Pearson Education Inc, United States of America 2005.
5. Augner C. Associations of Subjective Sleep Quality with Depression Score, Anxiety, Physical Symptoms and Sleep Onset Latency in Students. *Central European Journal of Public Health* 2011; 19(2): 115-117.
6. Jalali-Farahani S, Amiri P, Chin YS. Are physical activity, sedentary behaviors and sleep duration associated with body mass index-for-age and health-related quality of life among high school boys and girls? *Health and Quality of Life Outcomes* 2016; 14(1): 30.
7. Agargun MY, Kara H, Anlar O. Pittsburgh uyku kalitesi indeksi'nin geçerliği ve güvenirliği. *Türk Psikiyatri Dergisi* 1996; 7(2): 107-115.
8. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index (PSQI): A new instrument for psychiatric research and practice. *Psychiatry Research* 1989; 28(2): 193-213.
9. Cebeci S, Canbal M, Yuksel R, Cetin M, Caliskan Y, Dane S. The effect of sleep deprivation on heart rate variability in shift and non-shift physicians. *Clinical and Investigative Medicine* 2015; 38(4): E233-E236.
10. Gustafsson ML, Laaksonen C, Aromaa M, Asanti R, Heinonen OJ, Koski P, Koivusilta L, Löyttyneemi E, Suominen S, Salanterä S. Association between amount of sleep, daytime sleepiness and health-related quality of life in schoolchildren. *J Adv Nurs*. 2016; 72(6): 1263-1272.