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Influence of Short-Day Sleep on Sports Results of Qualified Athletes in Cyclic Sports

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physical culture"

Abstract: In this article, the authors present dogmas about the importance of sleep for the body of athletes, where it is a natural physiological process in which the entire body is updated, the restoration of physical and mental strength. The sleep of professional athletes is important for restoring the energy costs of the body, as well as for the normal functioning of all organs and systems, therefore, high-quality sleep is necessary to achieve high sports results. The article analyzes scientific information about the representation, nature and consequences of its violations, summarizes and structured data regarding the strategy of optimizing sleep in qualified athletes.

Key words: professional athletes, sleep disorders, pharmacotherapy, melatonin, non-drug methods of correction.

Relevance of research work. For normal human life, you need to sleep about eight hours. The modern pace of life involves quite a lot of activity, workload, tight work schedule. Against this background, not everyone manages to get enough sleep. Some take the opportunity to recuperate and relax during the day. According to some studies [10-13], sleeping after lunch has a positive effect on mental flexibility. Such indicators as spatial skills, memory, fluency of oral speech were subjected to assessment. The results of scientific work show that all of the above cognitive abilities were significantly better in those who slept during the day. In addition, the benefit of sleep lies in the regulation of the body's immune response to inflammatory processes. [14-18]
With age, there is a change in cognitive functions. According to the results of research works [12-17], a link was found between daytime sleep and improved memory quality. Scientists [11-15] stated that one hour of daytime sleep has a beneficial effect on memory and thinking skills. At the same time, daytime sleep does not interfere with nighttime sleep, does not affect its quality. In the course of observations, such indicators as episodic memory, visual orientation were evaluated, a number of mathematical tests were carried out. Based on the results obtained, it can be concluded that a short daytime sleep is beneficial for health.

The purpose of the study: Improving the performance of athletes on the basis of recovery measures using a short daytime sleep.

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The object of the study: is the process of physical training of athletes, the quantity and quality of sleep after intense training loads.

Subject of study: qualified athletes, representatives of cyclic sports.

Research methods. Theoretical analysis and generalization of data from special literature were taken as research methods; pedagogical supervision; pedagogical experiment; pedagogical testing of physical qualities, the study of functional indicators, the method of maintaining body balance and coordination abilities, and for processing the data obtained, methods of mathematical statistics were applied. The experiment involved 40 athletes representing cyclic sports: 22 middle-distance runners, 8 short-distance runners, 6 sprint cyclists and 4 canoe rowers, who, in turn, were divided into an experimental group (EG) and a control group (CG) of 20 athletes in each group. Athletes were divided equally into each group for the reliability of obtaining the final results and for comparison with each other. Accordingly, 11 middle-distance runners, 4 short-distance runners, 3 cyclists and 2 rowers in each study group. The duration of the experiment was 12 microcycles, where the duration of each microcycle was 7 days. The experimental group had one short nap lasting 20 minutes 2 hours before the main workout and 20 minutes after the main workout. The control group did not perform short sleep intervals during the experiment and continued to train according to the traditional method. There was no interference in the training process of athletes from our side.

Results of pedagogical research. A huge number of scientific studies have been devoted to the study of sleep, which convincingly prove that sleep is not rest, but an active, complex, multifunctional process that performs many vital functions and is one of the most important aspects of human life. It contributes to the strengthening and preservation of health, psychophysical state and performance. The average sleep duration is 7-9 hours. These figures are averaged, since the duration of sleep is a purely individual characteristic. It depends on gender, temperament, age, lifestyle and personal qualities of a person, as well as on the nature of the activity. For representatives of certain types of professional activity, due to high energy costs, more than a person needs on average, the amount of sleep is required. This type of activity includes professional sports. A characteristic feature of modern sports are large volume loads that place high demands on the body of athletes. Often, training is carried out against the background of chronic fatigue.

It is not uncommon for situations where it is difficult to focus on training when getting physical activity, especially when learning a new motor skill. It seems that the body is overloaded with physical activity. But, according to our study results, sleep taken 2 hours before training has a positive effect not only on standing an intense workout, but also on the recovery functions of the body. According to scientists [5-8], daytime sleep can improve the functioning of the human brain by five times. In order to increase the productivity of training, it is necessary to choose the best methods of recovery. Proper healthy sleep occupies an important place among them [3-4]. The American psychologist James Maas introduced the concept of “powernap”, which means “energy sleep” in translation [6]. Sleep is important for restoring the energy costs of the

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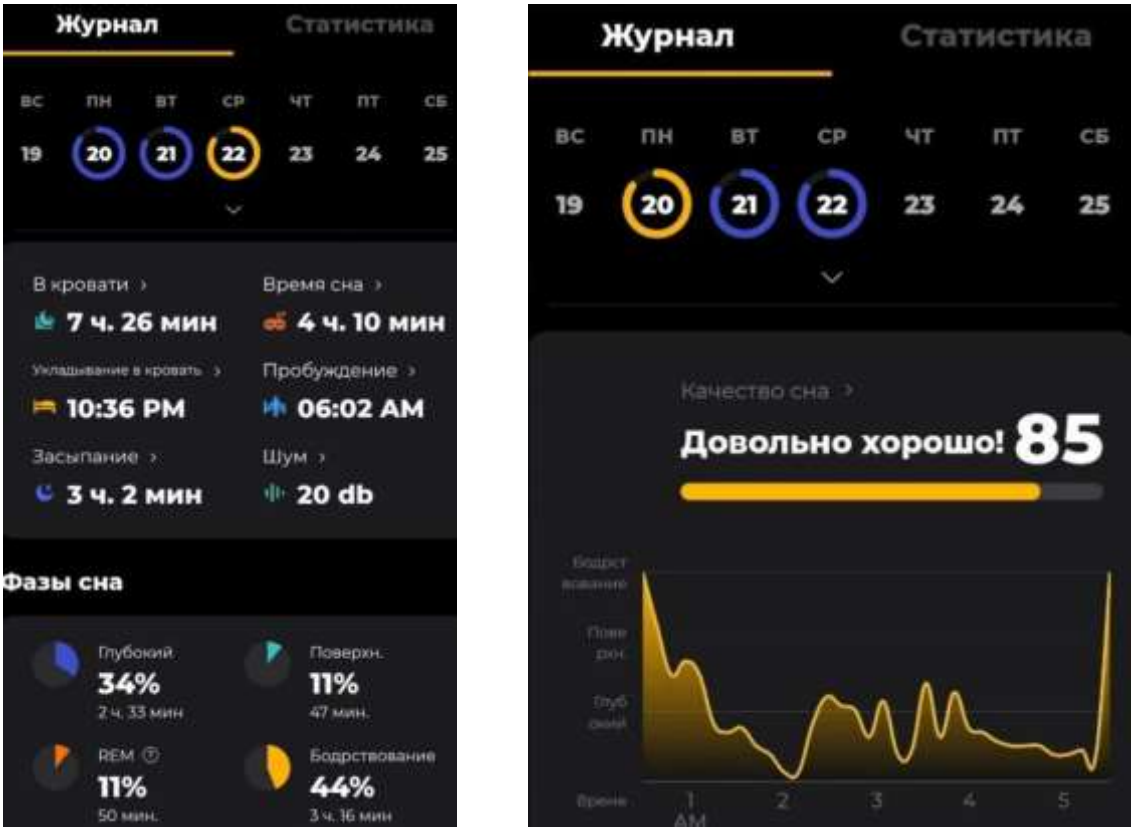
brain during physical exertion in order to form high sports results [7].

Factors affecting the sleep of athletes. Sleep is an integrative state that depends on various exogenous and endogenous influences. An analysis of the literature data on the study of athletes' sleep allows us to identify many internal (individual characteristics) and external (including the sports environment) factors that affect it (see Figure 1). A number of studies show the variability of the physical, psychological and cognitive abilities of athletes depending on the state of sleep and wakefulness [1, 8].

Figure 1. Quantity and quality of sleep in qualified athletes.



People involved in physical culture and sports are more organized and committed to a healthy lifestyle, which in turn contributes to compliance with the regime of work and rest, including sleep hygiene [18]. Athletes performing at competitions sleep 1-14 hours a day, and on the days of performances or the most intense load, they sleep even before and after a performance or training [20].

Of course, one should not forget about the individual characteristics of each person, in particular, the sleep-wake cycle and, above all, the individual need for sleep. External factors can affect the sleep of athletes in different ways, depending on the nature and intensity of training loads. In particular, physical exercise can improve the quality of sleep, but overtraining or excessive physical activity provokes sleep disturbances [1, 3]. Excessive practice, travel, and unusual competition conditions can impair sleep and consequently athletic performance.

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The importance of healthy sleep for achieving good sports results has been confirmed by the results of a number of scientific studies [12, 15]. Athletes themselves recognize that sufficient and quality sleep has a positive effect on their well-being and athletic performance. Thus, in a survey of 40 athletes, regardless of the sport and success, sleep was named by the overwhelming majority as the most important means of recovery [13].

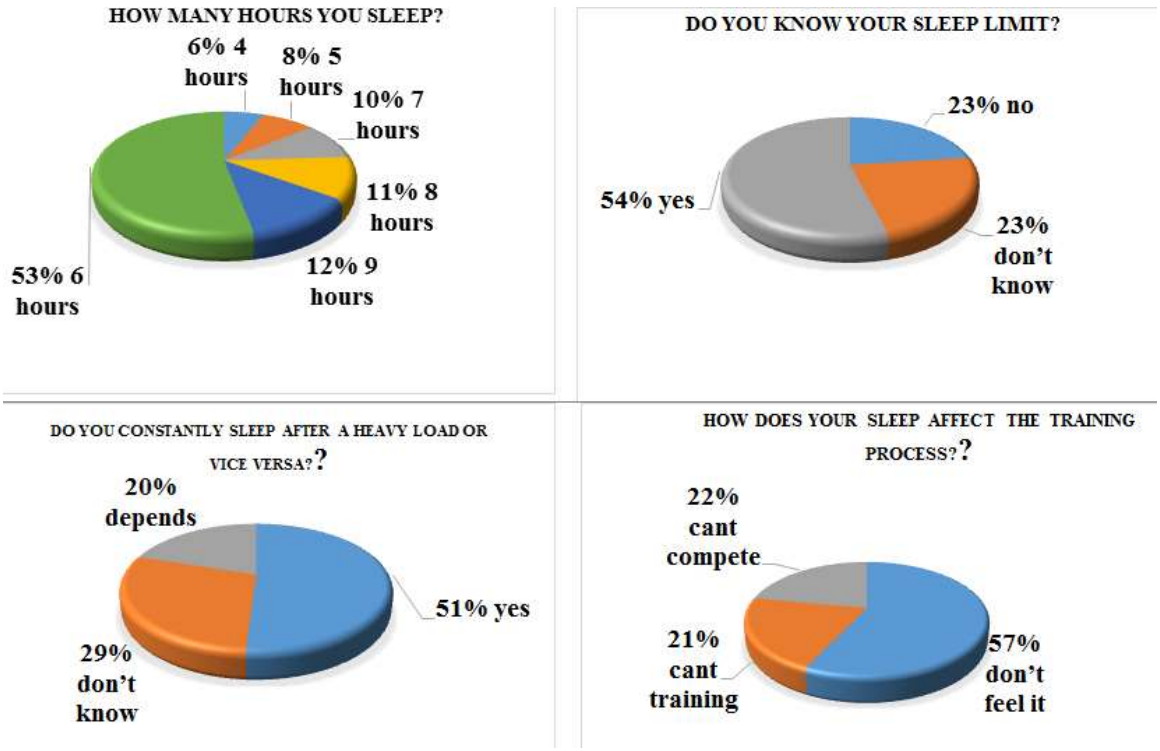

Figure 2. Questionnaire survey of subjects on the quality and quantity of sleep

The results of surveys and testing allow us to reasonably assert that the night sleep of athletes has certain differences from the nature and structure of sleep of clinically healthy people who do not systematically go in for sports [7]. In general, individuals who do not regularly engage in sports and do not prepare for competitions have more problems with night sleep in everyday life than athletes, which once again proves the healing effect of a sports lifestyle [4]. However, despite the observance of the sports regimen and adherence to a healthy lifestyle, sleep disorders are also found in athletes. The following main factors can contribute to this [3, 6, 9, 23]:

- The production of adrenaline, leading to hyperactivation and disturbing the process of falling asleep;
- Increased body temperature
- The release of energy intended for physical activity during training;
- Overwork caused by too much work
- Excessive muscle tension after a workout that was not completed by stretching;
- Unspent energy in the case when, after long intensive training, the load decreases for some reason;

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• Workout less than 4 hours before bedtime.
• Late dinner after training.
• Frequent foreign trips and sleeping in various conditions
• Emotional stress
• Use of stimulants (such as caffeine),
• Over-hydration or dehydration before bed

Paradoxically, many athletes sleep less during intense workouts, when they need sleep the most. Total sleep time for elite athletes can often fall below the minimum 7 hours recommended for optimal health, especially during periods of high exercise [2].

Sleep is crucial for the recovery of physiological, biochemical and cognitive functions of the body. Research data show that moderate sleep deprivation leads to impaired cognitive and motor functions equivalent to a moderate level of alcohol intoxication [16].

Sleep disturbance leads to a decrease in the level of testosterone and insulin-like growth factor 1, and, consequently, glycogen synthesis is reduced, contributing to the loss of muscle mass and thereby preventing muscle recovery after damage caused by physical exertion and injury, which is especially important after active training, games and daily classes [13].

In this regard, improved sleep allows athletes to demonstrate a greater speed of starting reaction, less sprint time, greater accuracy and speed of movement. The effect of sleep disorders on cognitive functions has been proven: concentration of attention, memory and learning ability [18]. Sleep loss worsens the functional state of the frontal lobes of the brain and, as a result, has a negative impact on programming and decision making [17]. As a result of the above consequences of sleep disorders, an increase in injuries can be regarded. There is growing evidence that lack of sleep increases the risk of injury during exercise [11, 21]. Thus, adolescent athletes who sleep less than 8 hours/day are more likely (1.7 times) to get significant injuries than those who sleep more than 8 hours/day. Sleep disturbance negatively affects the general physical and mental well-being of athletes, worsens the immune status, and leads to the formation of "accumulative fatigue" [10, 22]. A tired athlete reacts more slowly to a potential hit on the ice, field or court.

Thus, sleep for professional athletes becomes a decisive success factor. Sleep disorders ultimately lead to a decrease in sports performance and a shortening of a sports career.

Sleep disorders in athletes.

In the survey, 42% of Olympic and Paralympic Sports Training Center athletes reported poor sleep, as evidenced by a score of over 5 on the Sleep Quality Index. In addition, 38% of athletes slept less than 7 hours per night, and over 50% had symptoms of excessive daytime sleepiness as measured by the Epworth Sleepiness Scale [28]. In another study, self-reported sleep quality was again frequently poor, with 41% of athletes having abnormal scores greater than 5. Interestingly, this poor sleep quality was identified despite a seemingly adequate amount of sleep (average sleep duration 8 hours, 11 minutes), although with increased wakefulness within sleep [12].

One in four athletes have been shown to suffer from sleep problems such as snoring and sleep disturbance, and one in six uses sleeping pills to help them fall asleep or sleep regularly during the game season [29].

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Lack of sleep, 44% of athletes resort to daytime sleep, 63% of them have difficulty getting up in the morning. In connection with sleep disturbance, 37% of the subjects had reduced performance in educational and sports activities, and 21% of the respondents could miss training because of the desire to sleep. The results of the study also showed respiratory disorders during sleep provoke the development of hypoxia, which adversely affects the work of almost all organs and systems of the body, which, in turn, reduces the athlete's physical performance [30].

Currently, in professional sports, there is a growing tendency to increase the number of competitions in different geographical locations (Olympic Games, World and European Championships, World Cup stages, commercial tournaments, etc.), which requires athletes to make frequent long transmeridional flights. A sharp change in standard time is accompanied by a number of physiological reactions of the body, which adversely affects the functional readiness and physical performance of athletes [31]. It must be remembered that professional sports have a significant impact on the emotional state. The psychological conditionality of the quality of the night sleep of athletes has been confirmed by a number of studies [5, 30, 32]. In particular, cases of complete insomnia on the eve of competitions and the associated state of overtraining against the background of a strict regimen of two training sessions have been described [32]. Especially often, sleep is disturbed in athletes with anxiety and depressive disorders [9, 27].

Directions and methods for optimizing sleep in athletes. As sports medicine research advances, sleep is increasingly recognized as a tool for performance enhancement and recovery among athletes, as well as the coaches and healthcare professionals who support their performance.

According to a number of authors, sleep disorders in athletes, subject to a number of rules and recommendations, can be easily corrected. In order to minimize the negative consequences of sports training, it is necessary to adhere to a number of recommendations that help the body quickly rebuild from physical activity to rest [20].

Conclusion. Thus, studies show significant fluctuations in the physical, emotional and cognitive properties of athletes, depending on the state of sleep and wakefulness. Sleep is extremely important for athletes who are more organized and committed to a healthy lifestyle. Nevertheless, sleep disturbances are not uncommon in them, which is associated with a number of both external and internal (individual) factors. Sleep disturbance in athletes, in turn, is fraught with a number of negative consequences, including deterioration in health status and an increase in the frequency of injuries, which indicates the need for a set of measures aimed at improving the quality of sleep.

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