

# SLEEP DISORDERS AND THEIR RELATION TO INJURIES AMONG YOUNG ELITE SOCCER PLAYERS

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## Introduction

Lack of sleep leads to impaired muscle protein synthesis and insufficient recovery, which can interfere with the body's adaptation to training loads [1]. A significant prevalence of sleep disorders has been recorded among professional athletes. These disorders among them may be associated with frequent evening performances at competitions, high-intensity physical exercises, frequent flights (abrupt changes in circadian rhythms), use of stimulants (drugs potentially affecting sleep physiology, e.g. caffeine), psychological stress and late start time of training sessions [2].

**The aim of the study** is to investigate the quality of sleep and the relationship between sleep disorders and injury incidence in young professional soccer players.

## Results

The study summarises data of anonymous cohort testing of 236 male football players (age 11-21) from leading football academies, two farm teams of leading Russian Premier League clubs and three national youth teams.

The following questionnaires were used: **Pittsburgh Sleep Quality Index (PSQI)**, **Athlete Sleep Behavior Questionnaire (ASBQ)** and **The Epworth Sleepiness Scale (ESS)**. PSQI was completed by 229 athletes, ASBQ - 236, ESS - 230.

The questionnaires translated into Russian were offered to athletes by team doctors. The rules for completing the questionnaires were explained to all athletes in detail. Sleep disturbances were recorded using questionnaires during the 90 days prior to the study were taken into account. Injuries were recorded by medical staff on a daily basis. Classification of injuries by severity and type was carried out according to UEFA recommendations using a special form. Non-contact injuries sustained in the 90 days prior to the study during training and games which resulted in missing two or more days of training were taken into account. Data was analysed independently by three sports medicine specialists. Spearman correlation was calculated to compare the results among the three sleep questionnaires.

Chi-square test was used to identify the relationship between the prevalence of sleep disturbances and the incidence of injuries. Logistic regression was used to assess the effect of binary outcomes, i.e. the effect of age on the presence of sleep disturbances.

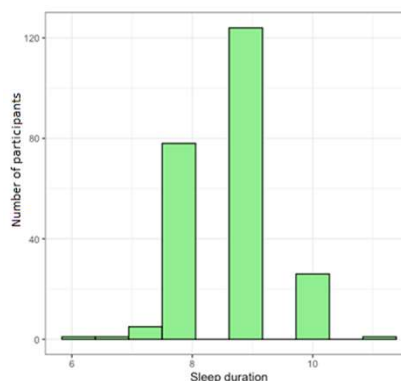


Figure 1. Sleep duration in hours among all participants

## Methods

The results of all three sleep questionnaires are significantly positively correlated with each other (PSQI-ESS: 0.261, PSQI-ASBQ: 0.407, ESS-ASBQ: 0.403).

The average sleep duration in the study participants was 9 hours.

The prevalence of sleep disorders was **7%** (PSQI, Pittsburgh Sleep Quality Index) and **10%** (ASBQ, Athlete Sleep Behavior Questionnaire).

Among the youngest soccer players, the prevalence of disorders was the lowest.

Significant or moderate daytime sleepiness was found in 59% of participants with 12% of athletes having moderate to significant sleepiness and only 39% not experiencing this symptom as measured by the ESS scale.

Severe sleep disturbances were diagnosed based on the presence of deviations on at least two of the three questionnaires. Twenty-two percent (n=53) had these disturbances. In addition, **the risk of severe sleep disturbances increased with age** ( $p < 0.001$ , OR = 1.434, 95% CI: 1.24-1.67).

The players sustained 72 injuries during the analysed observation period. **A significant relationship was found between the presence of sleep disturbances and the incidence of injuries in the last 3 months** ( $\chi^2 = 8.28$ ,  $p = 0.041$ ). However, no association was found between severe or moderate sleep disturbances and injury incidence in the past 3 months ( $\chi^2 = 1.21$ ,  $p = 0.75$ ;  $\chi^2 = 7.4$ ,  $p = 0.061$ ), respectively.

	Normal daytime sleepiness	Mild excessive daytime sleepiness	Moderate excessive daytime sleepiness	Severe Excessive Daytime Sleepiness	No data
Participants, N	93	110	21	6	5
Prevalence, %	39%	47%	9%	3%	2%

Table 1. Prevalence of Sleep Disorders Measured by the Epworth Sleepiness Scale

	Normal	Sleep disorder	No data
Participants, N	213	16	7
Prevalence, %	90%	7%	3%

Table 2. Prevalence of Sleep Disorders Measured by the Pittsburgh Sleep Quality Index

## Conclusions

The study showed a relatively low prevalence of sleep disorders in a group of young professional soccer players. However, the confirmed relationship between injuries and sleep disorders allows us to consider sleep quality improvement as an important component of injury and morbidity prevention among athletes of team sports.

## References

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