

# The Sleep Behaviour of Students' Athletes in the Nights Prior to Competition

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## Abstract

The prevalence of sleep disturbance in athletes' in the nights prior to important competitions or games is a worrisome phenomenon. Sixty-one athletes from an Irish university with age range of 19- 26 years were asked about their sleep habits in the nights prior to important competitions using the 'Competitive Sport Sleep'', questionnaire with a descriptive research design approach. Results indicated that (85%) of athletes had experienced poor sleep in the nights prior to a sports event. The causes of sleep disturbance were attributed as being more internal than external, with reasons such as nervousness and thoughts about competition particularly prevalent.

**Keywords:** sleep, athletes, student, competition

## 1. Introduction

Sleep is a significant recovery process, and health of athletes and arguably supports healthy cognition, mood, metabolism tissue repair, immune function, among other important processes in the brain and body. Sleep play a significant role in keeping up one's physical and psychological well-being. For the focused athlete, numerous elements may have adverse effect on his or her sleep, conceivably bringing about undermined athletic performance (Savis, 1994). Sleep and performance are very specific to individual athlete, with many interdependent factors influencing the expression of both variables.

Sleep as behaviour is widely acknowledged in research circles as a biological necessity which is very important for maintaining one's physical and psychological well-being. This is an active and complex experience for both an individual and an athlete. The structure and needs are also considered an extremely interindividual variable (Savis, Eliot, Gansneder and Rotela, 1997, Savis, 1994). Sleep surveys have consistently provided information about the nature of human sleep. Regulation in terms of duration of sleep suggests that sleep provides several important psychological and physiological functions. The first of these functions, theorised by Frank (2006), was the somatic theory of function, which explains the restoration relationship between the immune system and the endocrine system with sleep.

Another theory is of a neuro-metabolic nature and suggests that awakening imposes a neuronal and metabolic cost via subsequent sleep. This involves both detoxification and restoration of the human nervous system. These sleep functions, described above, have been supported by similar work, such as Diekelmann & Born (2010), which has confirmed that metabolic processes involve detoxification, tissue restoration, and immune and endocrine systems. and, finally, the consolidation of newly acquired functions. information in memory.

Sleep as a behaviour has an important role to play in convalescence, and the functioning of the immune system as well as the alteration of sleep and waking are organized by homeostatic control and the endogenous circadian rhythm that interact (Maurer, Weess and Schredl, 2013, Van Dongen & Dinges, 2005). The mechanism of sleep and the degree of drowsiness depend on the length of the waking period and the biological time of the day.

Therefore, sleep duration, quality, and circadian timing are considered key factors in the overall sleep outcome in terms of recovery (Dijk and Archer, 2009).

Thurton (2016) in a summary of two studies from Juliff et al., (2015) and Erlacher, et al. (2011) stated that athletes often have difficulty sleeping during competition and that it seems interesting to learn strategies to help fall asleep, including the use of different relaxation and breathing exercises and the use of a notebook to record the ruminations (these are in addition to making the habit of going through a checklist of what will be needed the next day for the competition or training and to see it again before going to bed).

Ehrlenspiel, et.al, (2016) citing (Erlacher et al., 2011, Juliff et al., 2015) further reiterated that most German and Australian athletes 80% had their "thoughts about competition" and 60% German and 43% Australian athletes experienced "nervousness" which could explain the lack of sleep before the competition. A similar study was also conducted by Lastella et al., (2014) with marathon runners, where athletes were asked the morning of their race how they had slept the previous night and then gave an estimate of their race performance that day. The results indicate that 70% of the athletes reported lower sleep than usual, but there was no difference between the athletes' actual performance and their pre-race estimates.

Several studies on sleep and athlete performance have also indicated that sleep quality can be disrupted for several reasons, such as the problem of falling asleep at the usual time with fatigue during the day, gastro-intestinal and / or loss of appetite / diet as well as lack of concentration and impaired mental and physical performance altered in the time zone, jet lag, sleeping in an unfamiliar location, worry and excitation (Leatherwood and Dragoo, 2013; Forbes-Robertson et al., 2012; Ehrlenspiel, et al, 2016).

The problem of sleep disorders is common, with a significant number of adults suffering from insomnia (Ohayon, 2005), as well as experiences of real-life stressors such as an examinations, interviews and other forms of testing, especially among student-athletes. Our study focused on the prevalence and incidence of sleep problems among student athletes at an Irish university. It is a replication of the results of the questionnaire study used by Erlacher et al. (2011) on elite athletes from various sports in Germany. Although our participants are sports university students actively involved in sports. Our goal was to determine if the athletes had ever had worse sleep in the last 12 months before competitions and the frequency with which athletes reported having sleep problems before a major competition. Study possible influences such as gender and type of sport. (individual vs. team), identified the predominant sleep problems, the reasons for sleep disturbance, and whether athletes perceive the negative effects of disturbed sleep on their daytime performance and the strategies used by athletes to overcome sleep problems the night before an important competition. It was expected that female athletes and individual sports athletes would have more sleep problems than male athletes and team sports athletes. We hypothesized that the insomnia rate would be higher for female athletes than for their male counterparts, that individual sports athletes would be more anxious and thus have more sleep problems than group sports athletes, which of the two sexes significantly perceived the negative effects of disturbed sleep on their day performances and what strategies would athletes use to overcome their sleep problems the night before a major competition.

The hypotheses were based on previous studies on athletes sleep quality (Ehrlenspiel, et.al., 2016; Adegbesan, Ehrlenspiel, Erlacher, and Mokgothu, 2016; Erlacher et al., 2011; and Buysse et al., 2008).

## **2. Methods**

### *2.1 Sample*

The initial sample included 95 student athletes from the University of Dublin. However, only 61 athletes were the final sample of which (46%) were women and (54%) men with an age range of 19 to 26 years. The athletes were recruited through personal contacts. Their sports activities are swimming, athletics, tennis, volleyball, basketball, hockey, soccer, among others. Sports were classified in team and individual sports according to one of the hypotheses formulated. The athletes had been practicing their sport for an average period of 7.8 years and trained at least 3 times per week due to their academic work. They had also competed in at least two important competitions or games in the preceding 12 months.

### *2.2 Instrument*

The instrument entitled "Competitive Sports, Sleep, and Dreams", developed by Erlacher et al., (2011) which contained questions about sleep habits before an important competition was used for this study and consequently used by Adegbesan, Ehrlenspiel, Erlacher, and Mokgothu, (2016) on athletes from Nigeria. This measure also consisted of some closed-response options. The first question asked about the kinds of problems the athletes experienced with sleep (insomnia).

The second question addressed the reasons for the sleep disturbance. The third question asked about the perceived consequences of poor sleep. For the last question, all participants had to report the strategies they used to deal with sleeping problems. The response options were “no special strategy”, “methods to relax”, “sleeping pills”, “reading”, and “watching TV” (Erlacher et al., 2011; Adegbesan, Ehrlenspiel, Erlacher, and Mokgothu, 2016).

### 2.3 Procedure Data Collection and Analysis

Ethical approval for the study was received from the Ethics Committee of the University College Dublin and all guidelines were strictly adhered to. Participants' consent was requested. The researchers explained the instruments to the participants before administration for clarity and understanding. They were assured of the confidentiality of the information provided. Then, the participants completed the instruments and returned to the researchers and their assistants. The SPSS statistical package (version 22.0) was used for data analysis.

The descriptive statistical of percentage and mean were used and for test the hypothesis for difference between female athletes and male athletes, and sport groups (individual sport vs. team sport), the chi-square and t-test were applied. Statistical analyses were performed and statistical significance was set at 0.05.alpha level.

### 3. Results

Table 1. Prevalence of sleeping problems before competition

<i>Ever slept poorly before a game/competition</i>	<i>%</i>	<i>N</i>	$\chi^2$	<i>P</i>
No	14.8	9	11.2	0.01**
Yes	85.2	52		
		100%	61	

N = 61

df = 1

\*\* = Significant

Table 2. Problems with sleep on nights before a competition (multiple responses)

<i>Problems</i>	<i>Number of Responses</i>	<i>Frequency %</i>	<i>Male %</i>	<i>Female %</i>	$\chi^2$	<i>P</i>	<i>Team Sport %</i>	<i>Individual Sport %</i>	$\chi^2$	<i>P</i>
Problem with fallen asleep	35	57.4	65.6	67.7	8.10	0.00**	59.6	64.4	7.91	0.00**
Waking up at night	17	27.9	42.1	49.2	5.11	0.00**	47.2	52.3	4.26	0.01**
Waking up early in the morning	8	13.1	19.9	21.4	3.62	0.40*	17.4	26.7	2.94	0.04**
Unpleasant dreams	6	4.0	5.5	12.6	2.97	0.43*	5.9	11.6	2.32	0.06*
Not feeling refreshed in the morning	13	21.3	29.4	36.2	4.02	0.01**	38.5	44.1	3.77	0.02**

N = 61

df = 1

\*\* = Significant

\* = Not significant

Table 3. Reasons for sleep problems night before a competition (multiple responses)

<i>Reasons</i>	<i>Number of Responses</i>	<i>Frequency %</i>	<i>Male %</i>	<i>Female</i>	$\chi^2$	<i>P</i>
Not used to surroundings	9	14.8	8.5	11.6	4.21	0.01**
Nervousness about competitions	30	49.2	66.4	74.2	19.4	0.00**
Thought about the competition	29	47.5	63.9	71.6	12.2	0.00**
Noise in the room and from outside	4	6.6	5.6	8.2	3.60	0.03**

N = 61

df = 1

\*\*significant

Table 4. Perceived effects/influence of sleep problems on performance during competition (multiple responses)

<i>Reasons</i>	<i>Number of Responses</i>	<i>Frequency %</i>	<i>Male %</i>	<i>Female</i>	$\chi^2$	<i>P</i>
No influence	35	57.4	65.6	67.7	9.02	0.02**
Bad mood the following day	8	13.1	21.4	19.9	3.91	0.49*
Increase daytime sleepiness	9	14.8	23.2	24.5	4.66	0.04**
Worse performance in competition	4	6.6	5.6	8.2	3.11	0.73*

N = 61

df = 1

\* = Not significant

\*\* = significant

Table 5. Strategies to sleep well on nights before a competition (multiple responses)

<i>Strategies</i>	<i>Number of Responses</i>	<i>Frequency %</i>	<i>Male %</i>	<i>Female %</i>	<i>t-value</i>
No special strategy	39	63.9	58.4	42.5	
Relaxation techniques	9	14.8	19.2	15.1	
Sleeping pills	-	-	-	-	4.35
Reading	12	19.7	22.7	18.5	
Watching TV/listening to music	14	23.0	39.2	21.8	

\* t-test = 4.357 \*significant

\* mean for male = 158.9; SD = 23.6

\* mean for female = 124.5; SD = 26.5

\* p-value = 0.00

\* df = 59

\* N = 61

The results in table 1, indicated that (85%) of the student athletes had experienced worse sleep than normal at least once during the previous 12 months in the nights prior to a sports event or game,  $\chi^2$ ; (N=61)=11.2,  $p < .01$ . The female student athletes had sleep disturbance (67.7%) more than their male counterparts (65.6%) with problem with fallen asleep ( $\chi^2$ ; (N=61)=8.20,  $p < .000$ ) as a major issue compared with others such as waking during the night, waking up very early, unpleasant dreams and not feeling refreshed in the morning as shown in table 2.

Similar results were found with the type of sports, the individual sport student athletes had more problems with sleep (64.4%) compared with the team sport category (59.6%). Both sport categories had significant ( $\chi^2$ ; (N=61) =7.91,  $p<.000$ ) sleep problem, with problem of fallen asleep as a major issue. However, unpleasant dreams was not a significant ( $p>.000$ ) sleep problem by sport categories and by gender. The athletes were also asked about what they thought caused these sleeping problems. The results in table, 3 revealed that the athletes identified thoughts about the competition and the associated nervousness as major causes. This implies that the causes of sleep disturbance were attributed as being more internal than external, with reasons such as nervousness ( $\chi^2$ ; (N=61) =19.4,  $p<.000$ ) and thoughts ( $\chi^2$ ; (N=61) =12.2,  $p<.000$ ) about competition particularly prevalent. A small percentage of student athletes reported not used to surroundings (8.5%) male and (11.6%) female and noise in the room or from outside (5.6%) male and (8.2%) female as problems for their sleep. In response to the question about the perceived consequences of the worst sleep on performance and competitions, fifty-seven percent of athletes reported that sleep interrupted before the competition did not influence their performance. As a consequence of disturbed sleep, (23.2%) men and (24.5%) women of student athletes reported an increase in daytime sleepiness, and (21.4%) men and (19.9%) women of student athletes reported that they perceived a poor mood during the day as shown in table 4. In response to the question about what strategies they used to sleep better the night (s) before a competition with multiple open answers provided, sixty-three percent of the athletes mostly reported not using any specific strategy as a solution to sleeping problems before a competition from the multiple responses to the question. However, the use of watching television and listening to music as a strategy appears prominent for the male athletes (39.2%) and (21.8%) female athletes and also with others strategies such as relaxation techniques and reading as shown in table 5. Further results in the table indicate a significant  $t(4.35)$ ;  $p<.000$ ) difference in the strategy used between the few male and female student athletes that were reported to be using some specific strategies to sleep nights prior to an important game or competition. Multiple open answers were provided and the athletes reported using other strategies such as reading and watching television.

#### 4. Discussion

Sport science has recently been giving attention to sleep research in an effort to develop better athletes and proffering solutions to sleep disturbance prior to important sport events. Our general aim was to examine the sleep behaviour of students' athletes in the nights prior to competitions. Specifically, we first examined whether the athletes had experience poor sleep in the last 12 months night prior to important competitions. It was discovered that most student athletes experienced a bad night's sleep before their competitions. This finding was similar to that of Erlacher et al. (2011), who reported that sixty-five percent of the German athletes studied experienced bad nights of sleep before the competitions. The athletes also perceived that their sleep quality was impaired before the competition, associated the impediment with the problems of falling asleep, waking up at night, waking up early in the morning, unpleasant dreams and not feeling refreshed in the morning.

Female student athletes had a higher rate of sleep problems than male athletes. Therefore, this finding supports our hypothesis that higher insomnia rates will be predominant in female athletes than in their male counterparts. This hypothetical finding is contrary to the finding in the study of Erlacher et al. (2011), therefore, our finding seems to generally reflect the claim of sleep medicine that women report more insomnia problems than men. Edinger and Means (2005) identified that waking up too early in the morning, difficulties in falling asleep and maintaining sleep as symptoms that defined the problems of primary insomnia. These, among others, are the problems with sleep identified by the student athletes in this study. The individual sports group also indicates a high rate of sleep problems compared to team sports groups. This finding also supports our hypothesis that individual sports athlete students experience more anxiety and, therefore, demonstrate more sleep problems than team sports athletes.

It has always been reported that athletes of team sports groups experience the efficiency of sleep before competitions. For example, netball player Romyn et al. (2015) and rugby players Shearer et al. (2015) nights before competitions. Our finding also indicates that the reason for sleep problems experienced by athletes was more internal than external. This was because nervousness about competition predominates among the reasons given for sleep problems. This finding is supported by the presentation by Guastella and Molds (2007) that pre-sleep thoughts and numeration are associated with lack of sleep. Once athletes begin to show nervousness, their concentration level is interrupted and worry creeps in and this will eventually disrupt athletes' sleep the night before the competition. Athletes' lack of familiarity with respect to competition venues and noise were also adduced as reasons for the problem of sleep, although not predominant as internal factors. The investigation which examined precompetitive sleep behaviour of 103 athletes and how it relates to precompetitive mood and subsequent performance by Lastella, Lovell & Sargent (2014) also revealed similar results that on the night before competition athletes slept well under the recommended target of eight hours of sleep for healthy adults, with almost 70% of athletes experiencing poorer sleep than usual. It was found that anxiety, noise, the need to

use the bathroom and early event times were amongst the most commonly reported causes of disrupted sleep in athletes on the night prior to competition.

We also examined the effect of the sleep problem on performance during the competition and found that fifty-seven percent of athletes claimed that the sleep problem did not influence their performance; While some of the athletes reported the effect of bad mood the day after the competition, increase daytime sleepiness and worse performance in competitions. Partial sleep restrictions have been shown to have adverse effects on daytime performance according to Van Dongen and Dinges (2005). Although, athletes according to Ehrlenspiel et al., (2016) rarely report negative effects of Precompetitive poor sleep performance, improving sleep does not necessarily lead to improvements in aspects of physical performance of athletes (Fullagar et al., 2016). On the questions about the strategies used by student athletes to sleep well the nights before the competitions, our finding indicates that sixty-three percent of athletes do not have a special strategy to sleep well before the competition, but few of the athletes were indicative of strategies such as relaxation techniques, reading, watching television and listening to music. Male athletes used the strategies more than their female counterparts.

This finding is in congruence with Erlacher et al. (2011), in which they found out that athletes have no appropriate methods for managing their sleep and therefore should be educated in developing healthy sleep habits and ways to overcome problems such as not falling asleep. They further suggested that the training can influence the development of routines and the applications of mental skill techniques like relaxation and imagery.

## 5. Conclusion

Our study shows that poor sleep experience the nights before competitions exist with student athletes just as it does with elite athletes. This should be a source of concern for coaches and sport scientists. Our findings support previous anecdotal evidence in similar studies that athletes' sleep quality was impaired before competition and this impairment is associated with the problems of falling asleep, waking up at night, waking up early in the morning, unpleasant dreams and not feeling renewed in the morning.

In comparison by gender, the female student athletes had higher rate of sleep problems than the male athletes. The causes of sleep disturbance were attributed as being more internal than external, with reasons such as nervousness and thoughts about competition particularly prevalent. Though an appreciable percent of the student athletes reported that disturbed sleep prior to competition had no impact on their performance, but others reported the effect of bad mood the following day of the competition, increase day time sleepiness and worse performance in competitions. The student athletes have no special strategy that they use to sleep well before competition, but few of the athletes were indicative of strategies such as relaxation techniques, reading, watching television and listening to music. The male athletes used the strategies more than their female counterparts.

Conclusions from the present study indicates that majority of the student athletes experience sleep disruption on the night prior to competitions, and this precompetitive sleep disturbance could be detrimental to the well-being of the athletes. Relevant strategies should be given to the student athletes to assist them in the management of sleep difficulty problems with the view to coming out in their best during competitions. Therefore, it is advocated that sport scientists, especially the sport psychologists should be engaged in studies that will enhance healthy and efficient sleeping behaviour of athletes' nights prior to competitions.

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