



Effect of Sleep upon Recovery and Sports Performance of the University Players

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Abstract: *The relationship of sleep, recovery and performance was the pivot of this research study. The role of sleep is vital for the health, physiological, and cognitive functioning of players. However, the complex processes of sleep are yet unclear. A bulk of literature is available documenting the effect of sleep upon human health, and a meager amount of information exists about the role of sleep in the perspectives of players. Respondents of this research study comprised of 82 university players representing Cricket, Foot Ball, Hockey, Volley Ball, Basket Ball, Badminton, Table Tennis, and Track & Field events. Data were collected using an adapted questionnaire, "Athlete Sleep Behavior Questionnaire". Anova and Coefficients were used for the analysis of data. Analysis revealed that there exists a highly significant association between sleep, recovery, and performance of the players. Similarly, the role of sleep in the perspective of recovery and performance of the player has also been found highly significant. Considering the findings of the study, it is suggested that players should be provided a conducive environment for sound sleep, ensuring having the proper amount of sleep during all three phases, including pre, during, and post-competition to have a rapid recovery and good performance.*

Key Words: Players, Health, Sleep, Recovery, Performance, Sports

Introduction

The field of physical sports is dominantly action-oriented, where the skill, capabilities, and approach of the competitors are always at stake. Domination in performance is the sole objective and innate quest of all the participants of the activity. Prompt performance in the activity is subject to a number of factors, including ability and capacity of the player, quality and intensity of

coaching and training, diet, environmental situation, altitude and lifestyle of the player, etc. In addition to all the above, the role of sleep is second to none in the perspective of attaining dominating performance in either field of sports ([Archer et al., 2014](#)). The role of sleep carries vital significance in connection with optimum performance. However, in case of anxiety, stress, a new environment, pressure of competition, and nervousness may cause loss of proper sleep before the active competition.

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The bulk of the literature endorses the stance that sleep deprivation is directly proportional to the poorer performance of the player.

Since sleep has been one of the basic requirements of healthful living, in normal circumstances, one-third of the life a healthy young person pass in sleeping (Stutz, Eiholzer & Spengler, 2018). The overall phenomenon in perspectives of the functions of sleep are yet to be discovered as there is a scarcity of information in this regard (Lastella, Lovell & Sargent, 2014). However, there exists a common understanding among psychologists and health professionals regarding the positive role of sleep in the maintenance as well as promotion of mental and physical health and recovery (Samuels, 2012). Recovery and re-energizing of the main functional organs of the body rely upon getting proper rest and the required amount of sound sleep (Yu, Ma, Zou, et al., 2013). Considerable research work endorses the vitality of sleep in recovery, but players often ignore this important aspect of routine life, and it has also been confirmed that non-players use to sleep more than players (Reyner & Horne, 2013). To have optimum performance in the field, the player is required to know the vitality of sleep in perspective of performance as well as recovery, the factors that may affect the quality and duration of the sleep. Research has confirmed the role of sleep in replacing the state of mental and physical exhaustion by restoration and conservation of energies of the body, relaxation of the mood, bringing calmness and stability to the brain, and vitalization of the immune system (Jarraya, Jarraya, Chtourou, et al., 2014). On the contrary, Davenne, (2009) has concluded that deficiency of sleep is proportional to deterioration in performance.

The Nature and Chemistry of Sleep

Sleep is the innate physical and mental urge of the body for taking rest while suspending the conscious bodily activities needing active involvement. Sleep is a natural phenomenon reflected in the physiological behavior in perspectives of living being like birds, animals, and humans. It is featured by the state of semi-

unconsciousness about the activities in the surroundings. The most common features of normal sleep are lying down with body parts, particularly upper and lower limbs, relaxed, accompanied by closed eyes. It is a natural process of re-energizing and refreshing the whole system of the living being. The recovery and restoration process of the mental and physical attributes take place during sleep. In all animal species, sleep behaviour is common, and its volume mostly varies from age to age. In case of its deficiency, deterioration of the health and normal functioning of the body is the ultimate outcomes. However, in case of its extended scarcity, serious mental and physical health problems may occur, which may end at taking a toll on life.

Literature Review

As a matter of fact, taking healthy diet and exercising are mostly taken as the key to good health and better performance in life. However, this approach seems to be deficient, disregarding the role of rest and sleep in the maintenance of good health, prompt recovery, and better performance. Literature has confirmed the role of rest and sleep in boosting performance-related aspects of human psychology and physiology up to or more than 10%. These aspects include cool and stable temperaments, timely decision making, state of alertness, readiness to work and to perform up to the best of one's energies, avoidance of the state of fatigue and exertion, rapid recovery, timely precision, and improvisation and professional approach to the activity. The aforementioned aspects of a player's life are directly associated with the proper amount and nature of their rest and sleep. Despite its vitality in the perspective of health and performance, it is often ignored and kept at a second priority. On the contrary, it has also been confirmed that a player not having the proper recommended amount of sleep increases their susceptibility to injuries associated with fatigue and exertion in comparison to those having the proper amount of sleep (Choi & Sohng, 2018). In addition to providing rest and calmness to the body, sleep plays a key role in the metabolic process of the

body ([Reilly & Waterhouse, 2009](#)). The quality and quantity of sleep matter significantly in the perspective of health and prompt performance of the body. In most individuals, the quality of sleep is subject to heredity factor [Crocker & Sehgal \(2010\)](#), sleeping environment [Archer et al., \(2014\)](#), psychological stimuli, and fueling of the body ([Samuels, 2008](#)).

Research has confirmed that the quality and quantity of sleep among players is more satisfactory in comparison to their inactive counterparts ([Shapiro et al., 1986](#)). However, the quality and quantity of sleep are likely to be associated with the lifestyle, genetical structure or aerobic fitness of the player ([Sehgal and Mignot, 2011](#)). [Halson \(2008\)](#) and [Venter \(2014\)](#) have confirmed that both coaches and players acknowledge the vitality of sleep in achieving dominating sports performance. There exists a dis-opinion among the experts with reference to the amount of sleep required for the adult active players. In the previous studies, [Ferrara \(2001\)](#) has suggested 7-9 hours of sound sleep, whereas [Calder \(2003\)](#) recommended 9-10 hours of uninterrupted sleep for the normal healthy players. Similarly, in another study, [Aerenhouts, Zinzen, & Clarys \(2011\)](#) have concluded that the average amount of sleep required for a healthy adult is seven hours uninterrupted sleep. But, on the contrary, the latest research has proved that players use to sleep not in conformity with the recommended amount of sleep ([Sargent, Halson, & Roach, 2014](#)). As mentioned earlier, a number of factors, particularly pre-competition anxiety, has a dominant role and is likely to affect the quality, quantity and effectiveness of the sleep of the competitor ([Forndran et al., 2012](#)). Pre-competition anxiety, training volume and intensity have got the potency to intervene in the normal sleep pattern of the players ([Matos, Winsley, & Williams, 2011](#)). Poor quality and decreased amount of sleep are commonly experienced among the players, particularly before a high level of competition, and it is associated with pre-competition anxiety ([Juliff, Halson, Peiffer, 2014](#)). On account of individual differences and differences in the type of stressors, the

overall sleep pattern of the players is vague ([Stutz, Eiholzer & Spengler, 2018](#)).

Sleep is, in fact, a natural phenomenon which signifies the rest of the brain and is marked especially by the reduced voluntary movements and, accordingly, less responsiveness of the person ([Allada & Siegel, 2008](#)). In addition to providing rest and calmness to the body, sleep plays a key role in the metabolic process of the body ([Reilly T, & Waterhouse, 2009](#)). The quality and quantity of sleep matter significantly in the perspectives of health and prompt performance of the body. In most individuals, the quality of sleep is subject to heredity factors [Crocker & Sehgal \(2010\)](#), sleeping environment [Archer et al., \(2014\)](#), psychological stimuli, and fueling of the body ([Samuels, 2012](#)).

Significance of Sleep in Perspectives of Recovery and Sports Performance

Research has confirmed that the quality and quantity of sleep among players is more satisfactory in comparison to their inactive counterpart ([Shapiro et al., 1986](#)). However, the quality and quantity of sleep are likely to be associated with the lifestyle, genetical structure or aerobic fitness of the player [Sehgal and Mignot, \(2011\)](#), [Halson \(2008\)](#); [Venter \(2014\)](#) have confirmed that both coaches and players acknowledge the vitality of sleep in achieving dominating sports performance. There exists a dis-opinion among the experts with reference to the amount of sleep required for the adult active players. In the previous studies, [Ferrara \(2001\)](#) has suggested 7-9 hours of sound sleep, whereas [Calder \(2003\)](#) recommends 9-10 hours of uninterrupted sleep for the normal healthy players. But, on the contrary, the latest research has proved that players' use to sleep not in conformity with the amount of sleep mentioned above ([Sargent, Halson, & Roach, 2014](#)). As mentioned earlier, a number of factors, particularly the pre-competition anxiety have dominant role and is likely to affect the quality, quantity, and effectiveness of the sleep of the competitor ([Forndran et al., 2012](#)). Pre-competition anxiety and training volume and intensity have got the potency to

intervene in the normal sleep pattern of the players (Matos, Winsley, & Williams, 2011). Poor quality and decreased amount of sleep are commonly experienced among the players, particularly before a high level of competition, and it is associated with the pre-competition anxiety (Juliff, Halson, Peiffer, 2014). On account of individual differences and differences in the type of stressors, the overall sleep pattern of the players is vague. The average amount of sleep required for a healthy adult is seven hours of uninterrupted sleep (Aerenhouts, Zinzen, Clarys, 2011). Research has confirmed that active players using to sleep less than the required limit of eight hours were 1.7 times more likely to be susceptible to the injury in comparison to the ones sleeping for eight hours or more.

Derks, Mierlo, & Schmitz (2014) have confirmed that the role of sleep is universal for boosting mental as well as physical health and in the efficient recovery from injury, and Davenne (2009) claims that its scarcity results in deteriorating performance in sports. There

exists a limited amount of literature that endorses the negative effects of not having the required amount of sleep upon main aspects of performance, including strength, reaction time, endurance accuracy, and mental calmness (Jarraya, Jarraya, Chtourou, et al., 2014).

Problem Statement

In addition to other vital factors affecting health, vitality, and sports performance, the role of sleep also stands second to none in competitive sports. This research study was entitled, "Effect of Sleep upon Recovery and Sports performance of the University Players".

Objective of Study

1. To determine the association between sleep, recovery, and performance of the players.
2. To determine the role of sleep in the recovery of the players.
3. To determine the role of sleep in the performance of players.

Theoretical Framework

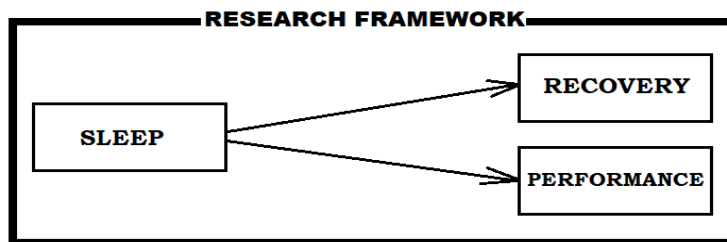


Figure 1

Hypotheses

- H₁: There has a significant association between sleep, recovery, and performance of the players.
- H₂: Sleep has a positive and significant impact on the recovery of university players.
- H₃: Sleep has a positive and significant impact on the performance of university players.

Research Methodology

Population

In this research study, 94 players from Cricket, Foot Ball, Hockey, Volley Ball, Basket Ball, Badminton, Table Tennis and Track & Field teams, who represented Gomal University in the Intersports competition 2021, were included as the sample population. Out of the total population, 82 responded with a response rate of 87.23%.

Data Collection

A descriptive research design was adopted for this study. Before the collection of data, consent and favour of the Director of Sports of the university was obtained for the interaction with the respondents. The purpose of the collection of data was explained to the respondents prior to serving the adapted questionnaire, "Athlete Sleep Behavior Questionnaire (Driller, Mah, & Halson, 2008). After obtaining the demographic information of the respondents, the questionnaire was served to the respondents. Eighteen different items

encircling various aspects of the problem are offered to the respondents. Respondents were offered five different options in front of each item, and they were at their liberty to mark any of the options which they deemed appropriate in terms of suitability. The collected data were tabulated and analyzed accordingly using SPSS.

Analysis of Data

H₁: There is a significant association between sleep, recovery, and performance of the players.

Table 1.

Correlations		Sleep	Recovery	Performance
Sleep	Pearson Correlation	1	.736**	.868**
	Sig. (2-tailed)		.000	.000
	N	82	82	82
Recovery	Pearson Correlation	.736**	1	.710**
	Sig. (2-tailed)	.000		.000
	N	82	82	82
Performance	Pearson Correlation	.868**	.710**	1
	Sig. (2-tailed)	.000	.000	
	N	82	82	82

** Correlation is significant at the 0.01 level (2-tailed).

The above table shows a highly significant relationship between sleep, recovery and performance of the players

H₂: Sleep has a positive and significant impact on the recovery of university players.

Table 2.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.736 ^a	.542	.536	.43995

a. Predictors: (Constant), SLEEP

The above table shows the significant impact of sleep upon recovery and performance of the players

Table 3. Shows the significant effect of independent variable sleep upon dependent variable recovery

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	18.311	1	18.311	94.602	.000 ^b
	Residual	15.484	80	.194		
	Total	33.795	81			

a. Dependent Variable: RECOVERY and b. Predictors: (Constant), SLEEP

The above table shows highly significant impact of sleep upon the recovery of the players

Table 4. shows significant effect of independent variable sleep upon dependent variable recovery

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.297	.243		5.335	.000
	SLEEP	.733	.075	.736	9.726	.000

a. Dependent Variable: RECOVERY

The above table shows highly significant impact of sleep upon recovery of the players

H_{3s} sleep has a positive and significant impact on the performance of university players.

Table 5.

Model Summary					
Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	
1	.868 ^a	.754	.751	.31270	

a. Predictors: (Constant), SLEEP

The above table shows the significant impact of sleep upon the performance of the players

Table 6. Shows the relationship of the independent variable and dependent variable

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.965	1	23.965	245.093	.000 ^b
	Residual	7.822	80	.098		
	Total	31.788	81			

a. Dependent Variable: PERFORMANCE and b. Predictors: (Constant), SLEEP

The above table shows the significant effect of independent variable sleep upon dependent variable recovery

Table 7. shows relationship of the independent variable and dependent variable

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.862	.173		4.989	.000
	SLEEP	.839	.054	.868	15.655	.000

a. Dependent Variable: PERFORMANCE

The above table shows a highly significant effect of independent variable sleep upon dependent variable performance at .000level.

Discussion

The relationship of sleep and normal performance of the body and maintenance of health have been established. Along the same

lines, different studies have shown that deficient and poor sleep leads to deterioration in proper oxygen uptake ([Brand S, Kalak N, Gerber M, et al., 2014](#)). The in-hand study has confirmed that having the required and recommended amount of sleep has a positive and positive effect upon the health and performance of the players and vice versa. Literature has also confirmed that having a normal amount of sleep has very positive and long lasting effects upon the health, fitness, and output of the players ([Y. Liu, et al., 2014](#)). The study has explored the relationship between sleep; recovery and performance of the players. [Landry, Best, Liu-Ambrose, 2015](#); [Chennaoui, Arnal, Sauvet, et al., \(2015\)](#); [Chang & Chen, \(2015\)](#) have also confirmed the same findings

affirming the close association between sleep recovery and performance of the players. The present study has shown a significant association between sleep and recovery of the players of different games. Similarly ([Hauswirth, Louis, Aubry, et al., 2014](#)) have confirmed the links between sleep and functional recovery among the players. Our results are endorsed by the findings of the study of [Yang et al. \(2012\)](#) regarding, alongside a few other factors, the effect of proper sleep upon wellbeing, recovery and output of the players. Sound and perfect amount of sleep has long been associated with better performance in many different walks of everyday life Exercise has long been associated with better sleep ([Sarris & Byrne, 2011](#)).

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