

ANALYSIS OF POLYSOMNOGRAPHY VARIABLES ON MALE SPORTS PERSONS IN RESPONSE TO YOGA NIDRA

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The purpose of this study was to compare polysomnography variables on male sports persons. The subjects for the present study were consisting of Ten (N=10), Male Sports persons i.e., Kabbadi and Volleyball Players of Punjabi university, Patiala, Punjab. After preparing the list of subject's age ranged from 21-25 years, the investigator checked the health record of these subjects maintained by the health department of the university to ensure that the subjects were medically fit to undergo the different types of tests. The selection of the appropriate polysomnography variables between male sports persons the researcher had chosen the factors for the investigation in Response to Yoga Nidra i.e., time in bed, sleeps time, sleep efficiency, sleep onset latency, rapid eye movement. The Statistical Package for the Social Sciences (SPSS) version 21 was used for all analyses. The differences in the mean of each group i.e. Sports persons (Kabbadi and Volleyball Players) for selected polysomnography variable were tested for the significance of difference by applying paired samples „t“ test. For testing the hypotheses, the level of significance was set at 0.05 percent ($p < 0.05$). To conclude, it is significant to mention in relation to Time in Bed that results of Analysis of Variance (ANOVA) among Male Sports Persons i.e., Kabbadi and Volleyball Players (N=10) were found statistically insignificant ($P > .05$). Furthermore, in relation to Total Sleep Time, Sleep Efficiency, Sleep Onset Latency, Rapid Eye Movement that result of Analysis of Variance (ANOVA) among Male Sports Persons i.e., Kabbadi and Volleyball Players (N=10) was found statistically significant ($P < .05$).

Keywords: Polysomnography, Time in Bed, Sleeps Time, Sleep Efficiency, Sleep Onset Latency, Rapid Eye Movement

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Introduction

Sleep is the natural periodic suspension of consciousness characterized by lessened consciousness and slowed metabolism. One of the most significant circadian rhythms is the sleep-wake cycle, which alternates in a regular, regular pattern for around 24 hours. (Aschoff J., et. al., 1967). Sleep is characterized by relative immobility and reduced responsiveness to environmental stimuli. This is in contrast to wakefulness, which is defined by what appears to be deliberate motor activity and the capacity to effectively react to environmental cues. Nature provides limited tolerance to the disturbance in sleep-wake cycling, leading to disastrous consequences (Archer SN., et. al., 2015). This wrath has never been better experienced in human history as much as it is now. With the turn of the 19th century, the invention of the light bulb by Edison, transmeridian travel, and shift work have significantly contributed to the development of a new work sleep disorders group of sleep problems described as shift (Reid KJ., et. al., 2015).

SLEEP AND YOGA NIDRA

Yoga, an ancient holistic Indian traditional form of mind-body practices, uses asana (techniques of posture), pranayama (breath control), dhyana (meditation), Recent studies have looked into the health advantages of yoga and preparation of moral and ethical observance (Hagins V., et. al., 2013). Yoga is often practised in conjunction with relaxing breathing exercises, mindfulness meditation, relaxation techniques, and moderate physical postures. Additionally, research suggests that practising yoga may help lessen depressive symptoms. (Bennett S.M., et. al., 2008). Systematic evaluations show that practicing yoga in adults improves mood, well-being, mind-body awareness, attention, and emotions. It also increases strength, agility, and flexibility and improves cardio-respiratory functioning (Sharma M., 2014 & Chong C.S. et. al., 2011). Additionally, reports indicate that meditative yoga decreased stress perception, psychological distress, and anxiety in general among college students. (Black D.S., et. al., 2009, Caldwell K., et. al., 2010, Deckro G.R., et. al., 2010 & Oman D., et. al., 2008).

Recent scientific studies have demonstrated that practising Yoga Nidra is effective in reducing anxiety and stress in college professors, decreasing

Symptoms of depression in elderly people, reducing life stress, and symptoms of subjective tinnitus, as well as improving sleep quality in healthcare professionals. In order to lessen pain and anxiety caused by gynaecological disorders, enhance quality of life for women receiving curative radiotherapy for their cervical cancer, and boost self-esteem and body image in those who have experienced thermal burns, read on (D'cunha J. R., et. al., 2021).

Reports with young adults point to the usefulness of YN in students, suggesting that it is effective in lowering stress (Jensen P.S., et. al., 2012) and improving self-esteem (Kim S.D., et. al., 2006).

Yoga nidra relaxation techniques have recently become popular as a stress management strategy. Yoga nidra is also being used as a self-esteem intervention. Yoga nidra is also known as "psyche sleep." According to studies, practising yoga nidra triggers a hypothalamic response that promotes the parasympathetic nervous system while inhibits the sympathetic nervous system, and may be vital for learning and memory. (Jensen P.S., et. al., 2012).

In comparison to other intervention techniques, yoga nidra has additional benefits such as affordability, non-invasiveness, safety, and accessibility. (Satyanada S.S., et. al., 2006).

Sages are known to use yoga nidra for sleep, according to ancient Indian texts. Yoga Nidra is a combination of the Sanskrit terms for unification or single-pointed consciousness, "Yoga," and "nidra," which signifies sleep. Yoga nidra is derived from tantric practise of "nyasa" and raja yoga's "pratyahara." The mind and mental awareness are separated from the sensory channels in "pratyahara." Nyasa is Sanskrit for "to take or set the mind there". Since yoga nidra is completed in a supine position and differs greatly from contemplation, which is a mindful aware state, yoga nidra is classified as a mindful sleep state. (Sarawati 1998).

Nyasa is conducted in a sitting position and incorporates the recitation of Sanskrit mantras to address specific bodily parts, expanding the scope of this instruction beyond many societies. Sages were known to practise yoga nidra, and they customarily taught it to their pupils.

Swami Satyananda Saraswati, an eminent educator from Munger, Bihar, India's Bihar School of Yoga laid

Down the fundamentals of learning yoga nidra in a book. In his description of yoga nidra, he stated that it is a "planned strategy for encouraging whole bodily, mental, and substantial unwinding and in this express, the unwinding is accomplished by turning inside, away from exterior encounters." (Saraswati 1998). It tends to be finished by adhering to directions from his book by an instructor or by using an audio CD as a means (CD). Numerous illnesses have been treated with yoga nidra as a therapeutic technique. Due to its relative simplicity, many diseases now have it as a viable therapy option. Patients with diabetes, anxiety and depression, menstruation irregularities, post-traumatic stress disorder, and diabetes have all benefited from yoga nidra (Amita et al., 2009; Rani et al., 2012; Menstrual Imbalances; Rani et al., 2011). Regarding its effect on sleep or sleep disorders, little is known. Despite the literature's descriptions of yoga nidra, there is no proof to support it. evidence to support its use in treating sleep disorders.

Material and Methods

01. Selection of Subjects

The subjects for the present study were consisting of Ten (N=10), Male Sports persons i.e., Kabbadi and Volleyball Players of Punjabi university, Patiala, Punjab. After preparing the list of subject's age ranged from 21-25 years, the investigator checked the health record of these subjects maintained by the health department of the university to ensure that the subjects were medically fit to undergo the different types of tests, subjects were divided into two equal groups volunteered to participate in the study.

02. Selection of Variables

The selection of the appropriate polysomnography variables between male sports persons the researcher had chosen the factors for the investigation in Response to Yoga Nidra i.e., time in bed, sleeps time, sleep efficiency, sleep onset latency, rapid eye movement..

Table- 1 Polysomnography variables' acronyms and units of measurement

Enclosed as Annexure 01

03. Selection of Tools

Instrument for Testing

For the sleep test, RMS

Quest 24/32 Channel polysomnography (PSG) was used. Polysomnography, a method where a person is watched, typically for a full night in a sleep laboratory, using a polygraph, is usually required for the evaluation of sleep apnea in clinical settings. This device is made to record multiple physiological activities at once. By applying specialised sensors, or electrodes, to various body areas, tiny electrical signals from the body are conveyed to this recording device (e.g., the head, chest, face. etc.) Specialized amplifiers, filters, and computer chips inside the recording device turn these impulses into records that can be viewed and examined. Electroencephalogram (EEG), electrooculogram (EOG), electromyogram (EMG), and electrocardiogram are some of the signal types that are recorded throughout the test (ECG).

Figure 1:- RMS Quest 24/32 Channel Polysomnograph (PSG) Machine

Enclosed as Annexure 02

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 21 was used for all analyses. The differences in the mean of each group i.e. male sports persons (Kabbadi and Volleyball Players) for selected polysomnography variable were tested for the significance of difference by applying paired samples „t“ test. For testing the hypotheses, the level of significance was set at 0.05 percent ($p < 0.05$).

Results

To conclude, it is significant to mention in relation to Time in Bed that results of Analysis of Variance (ANOVA) among male sports persons i.e., Kabbadi and Volleyball Players (N=10) were found statistically insignificant ($P > .05$).

Furthermore, in relation to Total Sleep Time, Sleep Efficiency, Sleep Onset Latency, Rapid Eye Movement that result of Analysis of Variance (ANOVA) among male sports persons i.e., Kabbadi and Volleyball Players (N=10) was found statistically significant ($P < .05$) are presented in the following tables:

Table-2 Comparison of Mean and SD values of Time

In Bed (minute) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Enclosed as Annexure 03

Table-2 shows that the mean and standard deviation values of polysomnography variable groups with regard to Time in Bed (minute) between male sports persons i.e. Kabbadi& Volleyball players (N=10) are 454.603.43 and 457.006.20 respectively and the 't' & 'P' values is equals -.967 & .388. By conventional criteria, this difference is considered to be statistically insignificant.

Table-3 Comparison of Mean and SD values of Total Sleep Time (minute) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Enclosed as Annexure 04

Table-3 shows that the mean and standard deviation values of polysomnography variable groups with regard to Total Sleep Time (minute) between male sports persons i.e. Kabbadi& Volleyball players (N=10) are 409.200 19.526 and 357.000 10.246 respectively. Which were statistically significant with the 't' & 'P' values is obtained as 8.267 & .001, this difference is considered to be statistically significant.

Figure-2: Graphical representation of mean and SD scores (between male sports persons) of Polysomnography variable with regards to Total Sleep Time (minute).

Enclosed as Annexure 05

Table-4 Comparison of Mean and SD values of Sleep Efficiency (percentage) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Enclosed as Annexure 06

Table-4 shows that the mean and standard deviation values of polysomnography variable groups with regard to Sleep Efficiency (percentage) between male sports persons i.e. Kabbadi& Volleyball players (N=10) 92.000 1.870 and 78.400 3.911 respectively and the 't' & 'P' values is equals 9.047 & .001. By conventional criteria, this difference is considered to be statistically significant.

Figure-3: Graphical representation of mean and SD scores (between male sports persons) of Polysomnography variable with regards to Sleep Efficiency (percentage).

Enclosed as Annexure 07

Table-5 Comparison of Mean and SD values of Sleep Onset Latency (minute) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Enclosed as Annexure 08

Table-5 shows that the mean and standard deviation values of polysomnography variable groups with regard to Sleep Onset Latency (minute) between male sports persons i.e. Kabbadi& Volleyball players (N=10) 25.000 1.224 and 40.400 2.792 respectively. Which were statistically significant with the 't' & 'P' values is obtained as -11.000 & .000, this difference is considered to be statistically significant.

Figure-4: Graphical representation of mean and SD scores (between male sports persons) of Polysomnography variable with regards to Sleep Onset Latency (minute).

Enclosed as Annexure 09

Table-6 Comparison of Mean and SD values of REM Onset Latency (minute) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Enclosed as Annexure 10

Table-6 shows that the mean and standard deviation values of polysomnography variable groups with regard to REM Onset Latency (minute) between male sports persons i.e. Kabbadi& Volleyball players (N=10) are 130.800 .836 and 145.600 2.190 respectively and the 't' & 'P' values is equals -15.265 & .000. By conventional criteria, this difference is considered to be statistically significant.

Figure-5: Graphical representation of mean and SD scores (between male sports persons) of Polysomnography variable with regards to REM Onset Latency (minute).

Enclosed as Annexure 11

Discussion of Findings

The researcher derives the following conclusions from data statistical analysis:

- Based on the outcomes regarding polysomnography variable groups with regard to Time in Bed (minute) in Table-2 it can be seen that there are insignificant differences in variable ($t = -.967, p = .388$) between male sports persons i.e. Kabbadi& Volleyball players (N=10). As the Kabbadi players are having mean score of 60 and 457.00 for the Volleyball players, at the 0.05 level of significance. It might be attributed to the fact that total impact of the similar time on bed in both the groups, which might have developed their sleep pattern in such a way that both the groups might have been influenced in the similar way.
- The study's results, which are presented in table-3, revealed that, at the 0.05 level of significance, there were significant differences between male sports persons i.e. Kabbadi& Volleyball players (N=10) in terms of Total Sleep Time (minute) variable ($t = 267, p = .001$), indicating that Kabbadi players had higher sleep efficiency. It might be because Kabbadi players require extra recuperation time because they spend so much time engaging in physical activity.
- The results in Table-4 show that there are significant differences between male sports persons i.e. Kabbadi& Volleyball players (N=10) at the 0.05 level of significance for the variable of polysomnography Sleep Efficiency (percentage), with the t-value being 047 and P value is equal to .001. Volleyball players are observed to do much better on the polysomnography variable than Kabbadi players. It could be explained by the fact that Kabbadi players require more sleep to finish their recovery processes and repair any injuries sustained during physical activity.
- The results in Table-5 show that there are significant differences between male sports persons i.e. Kabbadi& Volleyball players (N=10) at the 0.05 level of significance for the variable of polysomnography in terms of Sleep Onset Latency (minute) variable ($t = --11.000, p = .000$). It can be because of the need to finish the entire recovery process their minds need to move towards sleeps subsequent stages as quickly as possible.

- The study's results, which are presented in table-6, revealed that, at the 0.05 level of significance, there were significant differences between male sports persons i.e. Kabbadi& Volleyball players (N=10) in terms of REM Onset Latency (Minute) variable ($t = -15.265, p = .000$), indicating that Kabbadi players had lower REM. It is probably Kabbadi players spend more time in deep sleep to complete their recovery process, therefore there are fewer risks of rapid eye

Conclusions

To conclude, it is significant to mention in relation to Time in Bed that results of Analysis of Variance (ANOVA) among male sports persons i.e., Kabbadi and Volleyball Players (N=10) were found statistically insignificant ($P > .05$). Furthermore, in relation to Total Sleep Time, Sleep Efficiency, Sleep Onset Latency, Rapid Eye Movement that result of Analysis of Variance (ANOVA) among male sports persons i.e., Kabbadi and Volleyball Players (N=10) was found statistically significant ($P < .05$).

Annexure(s)

Annexure 01

Table- 1 Polysomnography variables' acronyms and units of measurement

Sr. No.	Abbreviation	Variables	Unit of Measurement
1.	TIB	Time in Bed	Minute
2.	TST	Total Sleep Time	Minute
3.	SE	Sleep Efficiency	Minute%
4.	SOL	Sleep Onset Latency	Minute
5.	REML	Rapid Eye Movement Latency	Minute

Enclosed as Annexure 02

Figure 1:- RMS Quest 24/32 Channel Polysomnograph (PSG) Machine



Enclosed as Annexure 03

Table-2 Comparison of Mean and SD values of Time in Bed (minute) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Group	Mean	SD	t- Value	Sig.
KabbadiPlayers	454.60	3.43	-.967	.388
Volleyball Players	457.00	6.20		

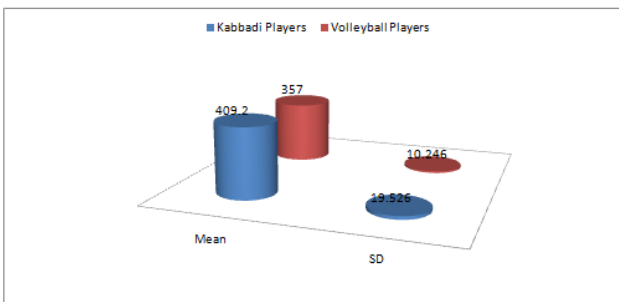
Enclosed as Annexure 04

Table-3 Comparison of Mean and SD values of Total Sleep Time (minute) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Group	Mean	SD	t- Value	Sig.
Kabbadi Players	409.200	19.526	8.267	.001
Volleyball Players	357.000	10.246		

Enclosed as Annexure 05

Figure-2: Graphical representation of mean and SD scores (between male sports persons) of Polysomnography variable with regards to Total Sleep Time (minute).



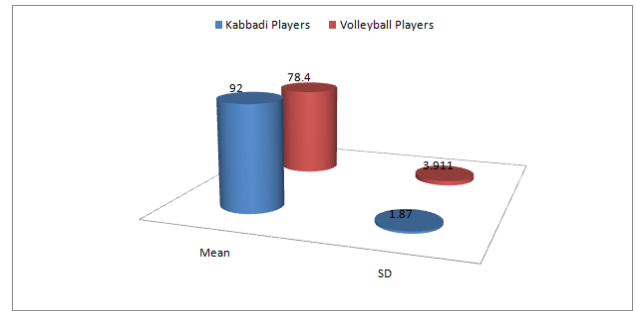
Enclosed as Annexure 06

Table-4 Comparison of Mean and SD values of Sleep Efficiency (percentage) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Group	Mean	SD	t- Value	Sig.
Kabbadi Players	92.000	1.870	9.047	.001
Volleyball Players	78.400	3.911		

Enclosed as Annexure 07

Figure-3: Graphical representation of mean and SD scores (between male sports persons) of Polysomnography variable with regards to Sleep Efficiency (percentage).



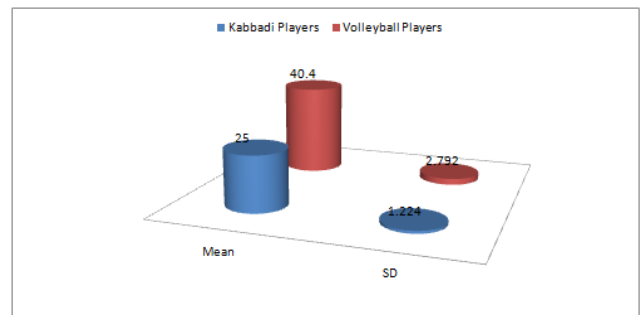
Enclosed as Annexure 08

Table-5 Comparison of Mean and SD values of Sleep Onset Latency (minute) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Group	Mean	SD	t- Value	Sig.
Kabbadi Players	25.000	1.224	-11.000	.000
Volleyball Players	40.400	2.792		

Enclosed as Annexure 09

Figure-4: Graphical representation of mean and SD scores (between male sports persons) of Polysomnography variable with regards to Sleep Onset Latency (minute).



Enclosed as Annexure 10

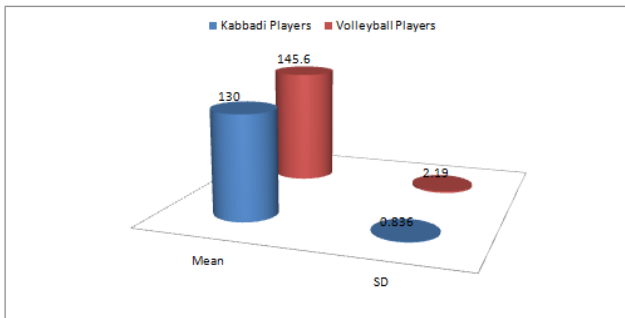
Table-6 Comparison of Mean and SD values of REM Onset Latency (minute) variables between male sports persons i.e. Kabbadi& Volleyball players (N=10).

Group	Mean	SD	t- Value	Sig.
Kabbadi Players	130.800	.836	-15.265	.000
Volleyball Players	145.600	2.190		

Enclosed as Annexure 11

Figure-5: Graphical representation of mean and SD scores (between male sports persons)

Of Polysomnography variable with regards to REM Onset Latency (minute).



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