COMPARISON OF IN BED AND OUT OF BED ACTIVITY BETWEEN SPORTS PERSONS AND NON-SPORTS PERSONS

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ABSTRACTS

Aim of the present study was to compare the in bed and out of bed motor activity and sleep efficiency between sports persons and control subjects. Total 40 subjects were selected randomly from Sant Gadgebaba Amravati University, Amravati, Maharastra, India. The sportsperson represented their University in various competitions organized by Indian Association of Universities. The dichotomy index, sleep time and sleep efficiency was computed. The results revealed that all the subjects exhibited sound sleep. The average dichotomy and sleep efficiency was higher in sports persons group. In conclusion, all the subjects experienced sound sleep and all the subjects has longer sleep hours.

KEY WORDS *: sports persons, dichotomy index, sleep time, sleep efficiency, control subjects.*

INTRODUCTION

Sleep is a natural and essential part of every individual's life. Sleep is important for normal motor and cognitive function. Systematic sleep research is recently gaining recognition. Very few scientific information is available regarding sleep. It is presumed that good night's sleep will helps perform better physically mentally. During sleep, modest decreases in metabolic rate has been seen but there is no evidence that any major organ or regulatory system in the body shuts down during sleep. Some brain activity, including delta waves, increases dramatically. Also, the endocrine system increases secretion of certain hormones during sleep, such as growth hormone and prolactin. In REM sleep, many parts of the brain are as active as at any time when awake.

Research is providing a scientific foundation for understanding sleep's physiology, rhythms, and implications for our health. Although much remains to be learned, this research is clarifying many critical issues relating to sleep. Though these studies will mainly have concerned with the sleep problems of sports persons, circadian rhythm of rest-activity pattern in all India inter university sports persons have not yet been studied adequately. Unfortunately, we do not have sufficient data on rest-physical activity rhythm of sports persons from the Indian sub-continent.

Therefore, in the present study the impact of sports and physical activity will be investigated. The subjects will randomly be chosen from Degree College of Physical Education, located in the Shree Hanuman Vyayam Prasarak Mandal, Amravati, with all India inter-university levels sports persons.

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METHODOLOGY

The data was collected from Inter University sports person of Sant Gadge Baba Amravati University, Amravati. Total 30 inter university male sports persons were selected as a subject randomly in the present study. In the present study dichotomous analysis (difference between in bed and out bed was studied.

Assessment of dichotomy and sleep efficiency

The dichotomy index was computed with the help of physical-activity pattern of sports persons and control subjects. The physical activity pattern was monitored using Actiheart -04. Data were collected at 1 minute epoch. Recordings were made with sampling epochs of one- minute over a period of 3 consecutive days in Sports Persons and non-Sports Persons. After monitoring each subject, the data were transferred to the computer for further statistical analyses. Along with dichotomy index the actual sleep time (duration between sleep starts and sleep ends) and sleep efficiency was computed. The actual sleep time is determined by the summation of the number of epochs that do not exceed the sensitivity threshold and multiplying that value by the epoch length in minutes. It is expressed in hours and minutes. The Sleep Efficiency (SE) is an index of the amount of time in bed actually spent sleeping. It is determined by the division of the actual sleep time by time in bed and multiplying the result by 100.

Statistical Analysis:

Data from Actiheart was retrieved and analyzed by using specific Actiheart-4 software. Actograms for visual inspection was obtained with the help of this software. Dichotomy index (I<O): Differences in activity distribution between daily activity and rest spans. The dichotomy index I<O is the percentage of the 1-minute activity values measured while subject is in bed that are inferior to the median value when the subject is out of bed. The value of I<O can vary between 0% and 100%. In the case of a marked circadian rhythm with complete rest at night and high activity during daytime, I<O reaches 100%. Other conventional statistical techniques, such as descriptive analysis and comparative t-test was also used. Data was analyzed with the help of software, namely SPSS, and Analysis Tool Pak (Microsoft Excel).

FINDINGS

Table 1:
Showing the comparison of dichotomy (I<O) index between sports persons and non-sports persons

	Sports Persons		Non-Sports Persons		t-test	
	Mean ± SE	SD	Mean ± SE	SD	t-value	p-value
DI	95.11 ± 0.47	2.58	89.84 ± 0.96	3.03	4.06	$P<0.005$

Dichotomy index (I<O): Tables 1 shows the dichotomy index (I<O) of rest-physical-activity rhythm in both groups. The average dichotomy index (I<O) was 95.11 ± 0.47 and 89.84 ± 0.96 for sports persons and non-sports persons, respectively. A statistically significant difference was ($p < 0.005$) documented for dichotomy index (I<O) when averages of dichotomy index of sports persons and non-sports persons were compared. The mean dichotomy index was statistically significantly lower in non-sports persons group as compared with that of the sports persons group.

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Table 2: Showing the comparison in characteristic of actual sleep (hours) between sports persons and non-sports persons

Sports Persons		Non-Sports Persons		t-test	
Mean ± SE	SD	Mean ± SE	SD	t-value	p-value
5.64 ± 0.12	0.71	5.71 ± 0.13	0.41	0.36	0.72

Tables 2 depicted the comparison of actual sleep time between both groups. The average actual sleep time was statistically insignificantly ($p > 0.05$) higher in non-sports persons group as compared with that of the sports persons group.

Table 3: Showing the comparison in characteristic of sleep efficiency between sports Persons and non-sports persons

Sports Persons		Non-Sports Persons		t-test	
Mean ± SE	SD	Mean ± SE	SD	t-value	p-value
84.51 ± 0.38	2.12	83.38 ± 0.24	0.78	2.44	0.02

The results of sleep efficiency were compared between the groups. The average sleep efficiency was statistically significantly ($p < 0.05$) higher in sports persons group as compared with that of the non-sports persons group.

DISCUSSION AND CONCLUSIONS:

Results of the present study show that the average dichotomy index of SP was significantly higher and closer to 100%. The dichotomy index (I<O) reflects good sleep-wake rhythm, hence correlates to good quality of life. Pati et.al.(2007) documented that the dichotomy index of healthy subject was significantly higher than that of cancer in-patients; it means the cancer in-patients experiences inferior sleep quality and sleep difficulties. Comparable findings have been reported earlier. Berger et.al. (2005) and Levin et.al (2005) reported that cancer patients do experience sleep/wake disturbances. In this study, sports persons do not experience any sleep difficulties, but it may be concluded on the basis of present result that the sports persons enjoy sound sleep and all have longer sleep (more than 7 hours) hours. Furthermore, the average sleep efficiency was higher among the sports persons group. The higher values of sleep efficiency indicate that the sports persons experienced good sleep as compare to that of non-sports persons. On the basis of the above results the it can be said that all the subjects experienced sound sleep and all the subjects has longer sleep hours.

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