Effect of Sleep Deprivation on Kicking and Dribbling Ability of Women Soccer Players

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Abstract

The paper provides the results of the studies on the effect of deprivation of sleep on women soccer players. Deprivation of sleep is expected to disturb the rhythm affecting performance and skill ability of a soccer player, who generally do not have proper sleep in the previous night of the day of competition due to tension and anxiety. Keeping this in view, present studies were conducted to assess the effects of sleep deprivation on kicking ability and dribbling ability of women soccer players. 20 healthy women soccer players from LNUPE, Gwalior were selected for the study who were subjected to test for 30 yards dribbling and distance covered by kicking both after a sound sleep and no sleep at previous night of the test. Data were compared by ‘t’ test. Details of the methods and subjects are provided and results are discussed. The results indicated that sleep deprivation caused significant deterioration in both dribbling and kicking ability.

INTRODUCTION

Good health requires a continuous biorhythm of work and rest, which should go hand in hand in every living organism (Yuri Lipatnikov 1979). Exercise is required to maintain life, good health and fitness and it is a master conditioner. Geraldine et al.(1960) stated that while exercise is important for good health the rest and relaxation are also essential to repay the debt of emotional and intellectual fatigue caused due to strenuous physical activity. Sleep is a recurring state of inactivity with a loss of consciousness and decreases in response to events in one’s environment. The obvious practical questions are, to what extent does sleep deprivations impair motor performance and how much sleep loss can the individual overcome to which task? Sound sleep is very much related to the sound mental ability. Mental health and play are closely related with each other. For any type of play when sound health is first requirement, the sound mental condition is important for concentrating on learning and retaining of knowledge. The sleep deprivation causes mental maladjustment with symptom of restlessness, poor playing achievement and conflicts and tension.

Sleep causes two major types of physiological effects. First and most important is the effect on nervous system and second is its effect on other structures of the body. While lack of sleep and wakefulness due to high degree of activity causes neither significant harm to the body organs, nor even any deranged function, the lack of sleep certainly does affect the functions of the central nervous system (Cyton , 1976). Little is known about what actually goes on during sleep, but much is known about what happens when it is lacking. A chronic sleep shortage first manifest in poor timing and coordination. If the fundamental feature of rhythm of work and rest is overlooked, it may have adverse effects on the efficient work of the various organs and performance of sportsmen. After 30 to 60 hours of continuous sleeplessness, irritation, loss of memory, hallucinations and
even symptoms of schizophrenia can be noticed (Geraldine et al.1960). It is generally seen that players don’t get proper sleep on the previous night of the day of competition because of high tension and anxiety. With this in view the present studies have been undertaken to observe the effect of one night’s sleep deprivation on skill ability of kicking and dribbling of soccer players.

MATERIALS AND METHODS
The experiment was conducted at the campus of Lakshmibai National University of Physical Education during 2003-04 academic year following the procedures given below: The subjects chosen for the study were 20 women soccer players from the Lakshmibai National University of Physical Education, Gwalior during the academic year 2003-04. The average age of the subjects were 21 years. All of these players have represented LNUPE and were National level players. From health records it was ensured that all the subjects were medically fit to undergo the requirements of the study. Since all the subjects resided in the hostel of the college, the general conditions, such as diet, daily routine of work and environment factors were more or less same for all the subjects. Requirement of the study was explained to all the subjects prior to the testing and they were motivated for active participation and cooperation. Criteria measured were the scores of kicking and 30 yards dribbling ability taken as pretest before sleep deprivation and post test after sleep deprivation. For pre-test purpose the subjects were asked to have sound sleep at night and in the following morning they were asked to perform stop and kick test and 30 yards dribbling test. Kick test was conducted to assess the subject’s ability to kick a stationery ball for a distance. For this a restraining line was drawn on one end of the ground. To start the test the subjects were asked to put or roll or bounce a ball behind or on the restraining line. After that they were asked to kick the ball as far as they can. The distance between the restraining line and the spot where the ball landed was measured. The subjects were permitted to use any part of their foot. Three trials were given and the best score out of 3 were recorded. One subject at a time was tested. Dribbling test was conducted to measure the speed in dribbling in between starting and finishing line 30 yards apart where a minimum of 2 subjects were tested at a time. The subjects were permitted to take standing start with the ball and asked to dribble the ball at the command ‘go’ to cover the distance in shortest possible time and to run as far as they can across the finishing line touching the ball at least four minutes during the course.

For posttest, subjects were deprived of sleeping with effect from following evening at 7 PM till the next morning at 6 AM and after allowing one hour time for washing etc. all the activities as done in pretest were repeated from 7AM. Statistical analysis of the data were done using single group design, subjects serving as their own control. Pretest and posttest data were compared by ‘t’ test.

RESULTS AND DISCUSSION
Results are presented in table 1 & 2.
Table 1: **Initial and post-sleep deprivation score of kicking stationery ball for distance**

<table>
<thead>
<tr>
<th></th>
<th>Pre Test Mean ± S.D</th>
<th>Post Test Mean ± S.D</th>
<th>Mean Diff.</th>
<th>S.E.of Mean Diff.</th>
<th>‘t’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>22.29 ± 21.72</td>
<td>19.44 ± 18.94</td>
<td>2.85</td>
<td>2.28</td>
<td>1.729</td>
</tr>
</tbody>
</table>

Table 2: **Initial and post-sleep deprivation score of 30 yards dribbling**

<table>
<thead>
<tr>
<th></th>
<th>Pre Test Mean ± S.D</th>
<th>Post Test Mean ± S.D</th>
<th>Mean Diff.</th>
<th>S.E.of Mean Diff.</th>
<th>‘t’ Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.04 ± 6.56</td>
<td>7.62 ± 7.42</td>
<td>0.58</td>
<td>0.56</td>
<td>1.948</td>
</tr>
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Table 1 indicates that the mean distance covered by the group initially was higher than that covered after 11 hours of sleep deprivation. Mean difference of pretest and posttest distance is 2.85 m, which is significant at 0.05 level of confidence. Similarly table 2 indicates that the mean time required by the group for 30 yards dribbling after 11 hours sleep deprivation was 7.62 minutes which was longer than that of initial time of 7.04 minute. The mean difference of time is 0.58 minute, which is significant at 0.05 level of confidence.

It is thus clear that sleep deprivation at the previous night of competition definitely deteriorates the performance of soccer players so far as kicking ability(strength) and dribbling (speed) are concerned.

There are many reports available on the effect of sleep deprivation on the performance of sports. Although few workers could not find any significant effect many of them found significant ill effect of sleep deprivation on various aspects of performance. Gilbert (1963) reported that varying sleep intervals did not affect the performance scores of the college men athletes in terms of accuracy and hand eye-coordination. Urgquhat (1964) could not find any effect of sleep loss for selected period on the performance of running speed, cardio-vascular endurance, hand –eye coordination, leg and shoulder power, agility and general motor ability in case of 43 performing college women. The result of present finding however, corroborates the findings of Karran and Joel (1972) who found that accuracy, agility, balance, endurance, power, reaction time and speed was significantly affected by 34 to 50 hours of sleep deprivation to IXth grade male and female students. Ravindran (1980) also found significant effects of one night sleep deprivation on the speed, strength and endurance in case of undergraduate male students. Wilkinson (1959) confirmed thirty hours loss of sleep seriously impaired performance of 12 volunteers in five choice tests.

REFERENCES
Geraldine B. Novotomy and Donald P. Kent (1960). Physical Activities and Older Adult., Journal of Health, Physical Education and Recreation 31 (June): 46


