Chapter V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The alternation of day and night is an obvious feature of the world in which we live. This is due to the rotation of the earth about its vertical axis once in every 24 hours. We organize our work, leisure, other schedules and time for sleep within this solar day. Indeed, humans have ingrained timing mechanisms whereby cycles in physiological functions coincide with the period of light and darkness.

Biological factors, rhythms of man's nature and environment play a vital role in athletic performance. Major sports contests are not evenly distributed over a sufficiently broad span of the day to yield conclusions about the optimal time for competing. The sports events are scheduled many days, weeks, even months in advance. This may impair performances by forcing the athlete to perform at a time several hours before or after peak circadian performance times. The athlete, in this case, must be prepared to perform at any time on the day of competition.

Performance is directly related to productivity therefore improved physical, psychomotor and mental performance will lead to higher productivity and lower the risks of work related injuries. According to Proverbs, productivity translates directly into cost savings and profitability, which is the main goal of every business. This study will
prove beneficial for the sport industry since it targets improvement of the physical and mental performance of individuals in relation to the circadian rhythm.

Since the whole study is based on the circadian rhythm, it is important to understand the circadian rhythm because temperature is one of the many circadian rhythms that play a vital role in the living organisms’ proper functionality. By gaining a proper understanding of the concepts involved behind these cycles, we can actually take advantage of the body’s natural rhythm to positively impact productivity in a playing environment.

The purpose of the study was to find out the effects of circadian rhythm on selected factors related to sports performance of sprinters and swimmers. To achieve the purpose of the study, 15 male sprinters (n=15) were selected from the Manonmaniam Sundaranar University, Tirunelveli and 15 male swimmers (n=15) were selected from the Anna University of Technology, Tirunelveli randomly. The age of the selected subjects ranged from 18 to 24 years. Speed, flexibility, anaerobic power, resting pulse rate, skin temperature and total mood disturbance were selected as criterion variables.
The experimental design used was static group factorial design. The first factor consisted of sports as sprinters and swimmers, second factor consisted of circadian variation measured at six different times of the day (02:00, 06:00, 10:00, 14:00, 18:00, and 22:00 hours).

Two factor analysis of variance with second factor repeated (2x6) measure was used to find out the influence of each of the factor independently and also their combined influence on each of the selected variables.

Three “F” ratios were computed, one for rows to assess the sports on selected dependent variables and the second F-ratio was calculated for columns to assess the circadian variations on the selected dependent variables. The third F-ratio was calculated for sports and different times of the day. Whenever the main purpose is usually lies in the interaction, it is sufficient to discuss the interaction effect only, unless some special circumstances exist, interest in testing the main effects are usually limited (Thomas and Jack, 2001). Thus, the main purpose lies in the interaction, the main effects were not discussed. The interaction effect was only discussed for all the selected criterion variables. Hence, whenever the obtained F-ratio for interaction effect was found to be significant, the simple effect test was used as a follow up test. Since, two sports and six different times of the day were compared, whenever, the obtained ‘F’ ratio value in the simple effect test was significant, the Scheffe’s test was applied as post hoc test to determine the paired mean
differences, if any. In all the cases 0.05 level of significance was fixed and considered to be appropriate in view of the fact that very highly sophisticated equipments were not used for more stringent level of significance.

**Conclusions**

1. There was a significant difference between sprinters and swimmers on the selected variables such as anaerobic power, skin temperature and total mood disturbance irrespective of the different times of the day.

2. There was a significant difference among different times of the day on selected variables such as Speed, anaerobic power, flexibility, resting pulse rate, skin temperature and total mood disturbance irrespective of the Sports.

3. There was a significant variation in Circadian Rhythm between sprinters and swimmers on the selected variables such as speed, anaerobic power, flexibility, skin temperature and total mood disturbance among different times of the day.

4. There was no significant variation in Circadian Rhythm between sprinters and swimmers on resting heart rate among different times of the day.

5. The peak performance was found at 18:00 hours in all the selected variables.
Recommendations

The following recommendations were made on the basis of the study.

1. The existence of circadian rhythms should be recognized by athletic practitioners, physical education scientists concerned with experimental work and fitness testing, sports injury specialists and sports organizers concerned with the travel plan of athletes.

2. Findings of this study will have implications for the scheduling of game training regimens according to the time of day.

3. Further research is needed to confirm these results in actual competition conditions.

4. Similar type of research can be conducted for games so that the players can develop internally synchronized rhythms.

5. Similar study can be conducted for fighter pilots, commercial pilots, air hostesses and industrial labourers to improve their efficiency.