Temporal Pattern of Circadian Rhythm in Sportsmen

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Abstract

The present study was undertaken to asses selected time of day effect on different parameters like oral temperature, respiratory rate, finger counting, time estimation, random number adding speed & random adding ratio. The parameters were recorded four times a day i.e. 07.00, 11.00, 15.00 & 19.00 hours for consecutive 4-7 days. Most performance measures were observed to show a natural sway during the solar day in close correspondence with curve in body temperature. Peak in oral temperature recorded at pm hours resembled the peak of respiratory rate that was also recorded at the same time. The detection of circadian rhythimicity in oral temperature; heart as well as self rating mood and activity all with acrophase between 14.20 and 16.28 hrs. It is thought that there are two major rhythms which have relevance for exercise and sports performance. These are the rhythm in body temperature regarded as fundamental variables and sleep-wake cycle by which humans order their work-rest and sleeping schedules.

Key Words: Circadian Rhythm, Oral Temperature, Respiratory Rate, Pulse Rate, Skin Temperature

Introduction

Stability is a rare characteristic of the nature as most living things exhibit fluctuations in their states. These changes may be regular recurring on a cyclical and predictable basis. Clocks are probably ubiquitous in mammalian tissue and circadian rhythms are not completely isolated from other time structure with different periodicities *(Simpson, 1976)*. Circadian rhythms are found at levels ranging from cell division to whole body activity and so may have implications for exercise and sports performance.

There are many potential applications of circadian rhythmicity to exercise. The influence of time of the day on industrial task has been thoroughly researched, yet studies in sporting contexts are not so prolific. In experimental work on exercise, the need to control for time of day when measurements are taken is generally accepted. The potency of many drugs is time of day: dependent though chronopharmocology is a productive area of research its principles have not been carefully examined in treatment of sports injuries. Athletes are creature of habits and so are acutely aware of departure from their usual time of training or competing. The existence of circadian rhythm is most obvious when they are perturbed by loss or disruption of sleep. Crossing time zones causes desynchronization of a multitude of biological rhythms, leading to disorientation until all adjust completely to the new environment,

The present study was undertaken to asses selected time of day effect on different parameters.

Material & Methods

Data was collected four times a day ie 07.00, 11.00, 15.00 & 19.00 hours for consecutive 4-7 days.

Description of variables measured is given below: