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ORIGINAL ARTICLE

THE PHENOMENON OF DIURNAL VARIATION ON REACTION TIME OF FOOTBALL PLAYERS

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ABSTRACT

This study was undertaken with the purpose of comparing diurnal variations in reaction time and to determine whether there were any significant differences in diurnal variations in reaction times of football players of Kanpur region. Thirty female football players of Kanpur region with age ranged from 17-20 years were selected as a subject for the study. Diurnal variations in reaction time were measured by electronic reaction timer. All the subjects were in resting conditions. The first test was conducted in the morning at 8:30 am, second at 11:30 am and third at 2:30pm.

To find out the significant differences of diurnal variations in reaction times of football players of Kanpur region, the analysis of variance (ANOVA) was employed and It was evident that there was significant difference of mean on reaction time of right and left leg.

KEY WORDS: - Reaction Time etc.

INTRODUCTION

Rhythm is essential feature of almost all the natural phenomena of this universe such as the movements of plants in space, the cycle of weather, migration of birds etc have an obvious significance and meaning for man being an important aspect of his life.(Yuri 1979)

Body movement depends upon physiology and psychological phenomena. The biological rhythm may be manipulated to improve agricultural yield, productivity of plants and animals and human health. It should also be possible by a proper understanding biological rhythm and its exploitation to initiate steps to reduce boredom and fatigue of industrial workers, army personnel and doctors engaged in repetitive or shift work. It may be even of help to diplomats' businessmen and others in such a way that they reach their destination with minimum fatigue and state of maximum alertness. Thus, understanding of rhythm and their importance can help devise ways to adjust to our fast changing physical and social environment so as to improve the

quality of life. Time is a powerful element and therefore for every physical and mental activity there is time for maximum efficiency and minimum efficiency.

Our forefathers were aware of the fact and knew what to do during which part of the day for instance food intake. If we take it a certain time of the day we gain weight and if we take it a different time we may lose weight. Similarly, it has been found that different dosage should be given at different time according to the phase of the sensitivity of rhythm cycle. (hapliyal 1980)

The human efficiency and working capacity mainly depends upon the thermal environment of his surroundings. When a person is suddenly exposed from cold to hot climate, or vice- versa, he is not only affected physically but also physiologically. Similarly, when an athlete is exposed to different climate conditions during his participation it will have considerable effect on his performance depending on the season or the climate. The purpose of the study was to ascertain the phenomenon of diurnal variation on reaction time of football players. The study was delimited to the female football players of Kanpur region. Keeping literature are scholar's own understanding it was hypothesized that there may be significant difference in the mean performance of the reaction time on selected subjects.

METHODOLOGY

Thirty female football players of Kanpur region were selected as the subject and there age ranged from 17 to 20 years. Before administrating the test, testing procedures were explained to them in detail. As the calibrations of the instrument has been escheated by the manufactures from time to time. This instrument had the transistorized chronoscope showing time up to four decimal places. The psycho-physiological peak at a specific time of the day is ordinarily related to periodic changes in the physical environment and the phase relationship between day and night change due to light and darkness. The necessary data on the selected variables of right leg and left leg movement were collected at different times of the day. To measure the reaction time the Anand's Electronic Reaction Time chronoscope were used for collection of data. The procedure of reaction time test was explained and demonstrated to all the subjects before it was administered. No motivational technique was used and three trials were provided to each subject and the average of the three regarding was the reaction time score. To examine the significance of difference in the diurnal variation on reaction time of legs movement, One way analysis of variance (F test) was applied. The hypothesis was tested at .05 level of significance.

FINDINGS

TABLE 1
ANALYSIS OF VARIANCE OF
REACTION TIME OF RIGHT LEG

Source of Variance	df	SS	M.S.S.	F-ratio
Between Group	2	0.0135	0.00674	7.45*
Within Group	87	0.0724	0.000831	

* Significant at 0.05 level of confidence.
Tab $F_{.05}(2,87)= 3.10$

It was evident from the table 1 that there was significant difference on rection time of right leg as the obtained value was found to be 7.45 which was much greater than the tabulated value.

TABLE -2
LEAST SIGNIFICANT DIFFERENCE POST HOC TEST FOR MEAN OF REACTION TIME OF RIGHT LEG

Afternoon	Morning	Evening	Mean Difference	CD at 0.05 level
0.360	0.355		0.005	0.012
0.360		0.332	0.028*	
	0.355	0.332	0.023*	

* Significant at 0.05 level of confidence.

The table 2 shows that there is significant difference between the mean value of afternoon and evening, morning and evening.

TABLE 3
ANALYSIS OF VARIANCE OF MEAN SCORES OF REACTION TIME OF LEFT LEG

Source of Variance	df	SS	M.S.S.	F-ratio
Between the Group	2	0.0263	0.0136	6.89*
Within the Group	87	0.1286	0.0048	

* Significant at 0.05 level of confidence.
$F_{.05}(2,27)= 3.10$

It was also evident from the table 3 that there was significant difference on rection time of left leg as the obtained value was found to be 6.89 which was much greater than the tabulated value.

TABLE -4

LEAST SIGNIFICANT DIFFERENCE POST HOC TEST FOR MEAN OF REACTION TIME OF LEFT LEG

Morning	Afternoon	Evening	Mean Difference	CD at 0.05 level
0.385	0.364		0.021	
0.385		0.344	0.041*	
	3.64	0.344	0.02	0.029

* Significant at 0.05 level of confidence.

The Table 4 shows that there is significant difference between the mean value of morning and evening.

CONCLUSION

The significant difference in morning and evening season may probably be due to weather condition. When the test were administered during morning season the weather was pretty cold and which must have played an important role in the difference in reaction time. With respect to significant difference in the reaction time of right leg the significant difference in the afternoon and evening season may be because the players have usually being playing in the morning and evening season. As the player were not practicing and playing in afternoon season, hence significant difference was obtained.

The significant difference in the reaction time of the left leg between morning and evening season may probably be due to the reason sited earlier, that is, the test was administered during winter and in the morning season probably due to cold weather the players must have performed poorly and that is the reason for significant difference. Based upon the findings of the study the hypothesis with the respect to reaction time of right hand and left hand is rejected whereas the hypothesis with the respect to reaction of right leg and left leg is partially accepted.

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