

Circadian rhythm based 16 week ladder and circuit training programme for selected strength related variables on sports homo sapiens

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Abstract

Purpose of this study total 60 sports male subjects were chosen from Tamil Nadu and Kerala states in India. Their age range was between 18 to 24 years as per the age proof certificate. The subjects were divided into 3 groups, Group I N= 20, Group II N= 20 and Group III N= 20. The group was equated and alienated based on their practice and regular play time, Group I 6.30am – 7.30am, Group II 3.30pm -4.30pm, and Group III 8.30 – 9.30pm. Stratified sampling, 3 X 4 factorial designs was applied. Following time fixed for data collection 6.30am-7.30am, 3.30pm-4.30pm, and 6.30pm-7.30 pm. Ladder and circuit training was given sixteen week, weekly three days. Shoulder strength was calculated by Push Ups test. Data was collected respectively pretest, mid test and Post test likewise for three group and three time in day. Data explored with the support of three way repeated measures ANOVA. In pair wise comparison between the group P = 0.896 group I and group II, group I and group III P = 1.000 and group II and group III P = 0.850 was noticed. So that we concluded there was no significant difference between the groups, because all the groups are doing the same training and more over the intensity also same. In pair wise comparison between the pre test – post test P = 0.000, mid test - post test P = 0.000, and pre test – mid test P = 0.000 was noticed. So we understand that training have significant in respective interval period in all groups. In pair wise comparison between the time 6.30am – 7.30am P = 0.000, 3.30pm – 4.30pm P = 0.000 and 6.30pm – 7.30pm P = 0.000. so we understand that rhythm have significant in respective times. Hence we conclude that the circadian rhythm was not changed by practice of different times in day because it is nature of our biological clock and the peak time or circadian rhythm for shoulder strength was 3.30pm - 4.30pm.

Keywords: circadian rhythm, sports homo sapiens, ladder training, circuit training, shoulder strength, push ups

Introduction

Circadian rhythm is any biological process that displays an endogenous; entrainable oscillation of about 24 hours. These 24-hour rhythms are driven by a circadian clock. The formal study of biological temporal rhythms, such as daily, tidal, weekly, seasonal, and annual rhythms, is called chronobiology. Processes with 24-hour oscillations are more generally called diurnal rhythms; strictly speaking, they should not be called circadian rhythms unless their endogenous nature is confirmed. Although circadian rhythms are endogenous, they are adjusted to the local environment by external cues called zeitgebers, which include light, temperature and redox cycles. Circuit training is a form of body conditioning or resistance training using high-intensity aerobics. It targets strength building or muscular endurance. An exercise "circuit" is one completion of all prescribed exercises in the program. When one circuit is complete, one begins the first exercise again for the next circuit. Traditionally, the time between exercises in circuit training is short, often with rapid movement to the next exercise. The program was developed by R.E. Morgan and G.T. Adamson in 1957 at the University of Leeds in England. Circuit training was invented in 1953 as an efficient way for coaches to train many athletes in a limited amount of time with limited equipment. The drills that use ladders, is extremely popular and are now used extensively in many

different sports. By using these drills coaches take it for granted that the athletes will become quicker and faster and many cases, more explosive. However, close examination of these popular drills and how they are executed, shows that the actions involved in executing these drills is not specific to the actions that the athlete must execute in game play.

Objectives of this study

- To provide a highly selective overview of the "Chronobiology" or "Biological clock"
- To review characteristics properties of "Biological clock"
- To define the structural compounds and the extensive compounds of sports mechanism comprising the "Biological clock"
- To explore the evolution in the Biology rhythm in sports due to training

Statement of the research

- Create an evolution in "Biological clock" for sports Homo sapiens
- Isolate the changes in the selected variables effect of 16 week ladder and circuit training
- Estimate the impact of circadian rhythm on selected variables
- Isolate the correlation between the selected variables to sports Homo sapiens

Delimitations

- The study is restricted to sports Homo sapiens in Kaniyakumari Dist and Kaliyakkavilai.
- The age of the subjects selected for this study is 18-24 years as per their records.
- The training programme consist of circuit training and Ladder training
- The training is given three days in a week like sixteen weeks
- The study was delimited for the following variables:
 - Shoulder strength

Limitations

- Subjects included in the study were not controlled with regard to their life style, diet and habits which may have influenced their performance.
- Subject’s body type and the economic status of the players were not taken into consideration.
- Variations in the meteorological conditions like temperature, humidity and atmospheric pressure during the training and testing period were recognized as limitations.

Hypothesis

It was hypothesized that there would be significant difference among the circadian rhythm based training groups on selected strength related variables for Sports homo sapiens because of 16 week ladder and circuit training programme.

Methodology

Total 60 sports male subjects were chosen from Tamil Nadu and Kerala states in India. There age range between 18 to 24 years as per the age proof certificate. The subjects were divided into 3 groups, Group I N= 20, Group II N= 20 and Group III N= 20. The group was equated and alienated based on their practice and regular play time, Group I 6.30am – 7.30am, Group II 3.30pm -4.30pm, and Group III 8.30 – 9.30pm. Stratified sampling, 3 X 4 factorial designs was applied. Following time are fixed for data collection 6.30am-

7.30am, 3.30pm-4.30pm, and 6.30pm-7.30 pm. Ladder and circuit training was given sixteen week, weekly three days. Shoulder strength was calculated by Push Ups test. Data was collected respectively pretest, mid test and Post test likewise for three group and three time in day. Data explored with the support of three way repeated measures ANOVA.

Analysis of data and interpretation

Table 1: Pretest, Mid test & post test of Push Ups test

Group	Time	N	Mean	S.D
Group I Pre test	6.30am	20	22.200	2.041
	3.30pm	20	21.600	1.729
	6.30pm	20	22.700	1.688
Group I Mid test	6.30am	20	24.550	1.820
	3.30pm	20	25.700	1.625
	6.30pm	20	23.700	1.592
Group I Post test	6.30am	20	28.500	2.373
	3.30pm	20	26.300	2.202
	6.30pm	20	28.000	2.384
Group II Pre test	6.30am	20	22.350	1.755
	3.30pm	20	22.900	2.023
	6.30pm	20	23.050	1.503
Group II Mid test	6.30am	20	24.950	1.959
	3.30pm	20	24.200	1.704
	6.30pm	20	24.400	1.095
Group II Post test	6.30am	20	28.800	2.117
	3.30pm	20	28.950	2.089
	6.30pm	20	29.100	2.712
Group III Pre test	6.30am	20	21.600	1.902
	3.30pm	20	21.400	1.846
	6.30pm	20	22.550	1.731
Group III Mid test	6.30am	20	24.000	1.863
	3.30pm	20	23.600	1.667
	6.30pm	20	23.700	1.688
Group III Post test	6.30am	20	28.050	2.480
	3.30pm	20	25.750	2.124
	6.30pm	20	27.950	2.372

Table 2: Mauchly’s Test of sphericity – For pre test Mid test and post of Push Ups

Within the subject Effect	Mauchly’sW	Chi square value	df	Sig	Green house Geisser
Pre test, Mid test & Post test	0.899	5.983	2	0.050*	0.908
Time-6.30am,3.30 pm&6.30pm	0.816	11.382	2	0.003*	0.845

Table 3: Green house Geisser- Result for Pre test Mid test and Post Push Ups

Within the subject Effect	Type III S.Sq	df	M.S	F	Sig
Pre test, Mid test Post test	113.581	1.816	62.545	60.930	0.000*
	106.256	103.512	1.027		
Time-6.30am,3.30 pm&6.30pm	2969.826	1.689	1758.017	347.012	0.000*
	487.822	96.290	5.066		

Table 4: Group wise Pair comparisons -Bonferroni test for Push Ups

Group I	Group II	Group III	M.D	S.E	Sig
25.000	24.489		0.511	0487	0.896
25.000		25.017	0.017	0487	1.000
	24.489	25.017	0528	0487	0.850

Table 5: Pair wise comparisons for Pre test, Mid test, Post test - Bonferroni test for Push Ups

Pre test	Mid test	Post test	M.D	S.E	Sig
24.806	25.411		0.606	0.85	0.000*
24.806		24.289	0.517	0105	0.000*
	25.411	24.289	1.122	0.113	0.000*

Table 6: Pair wise comparisons for Push Ups in different times- Bonferroni test

6.30 am	3.30 pm	6.30 pm	M.D	S.E	Sig
22.261	24.311		2.050	0.180	0.000*
22.261		27.933	5.672	0.259	0.000*
	24.311	27.933	3.622	0.208	0.000*

Graphical representation

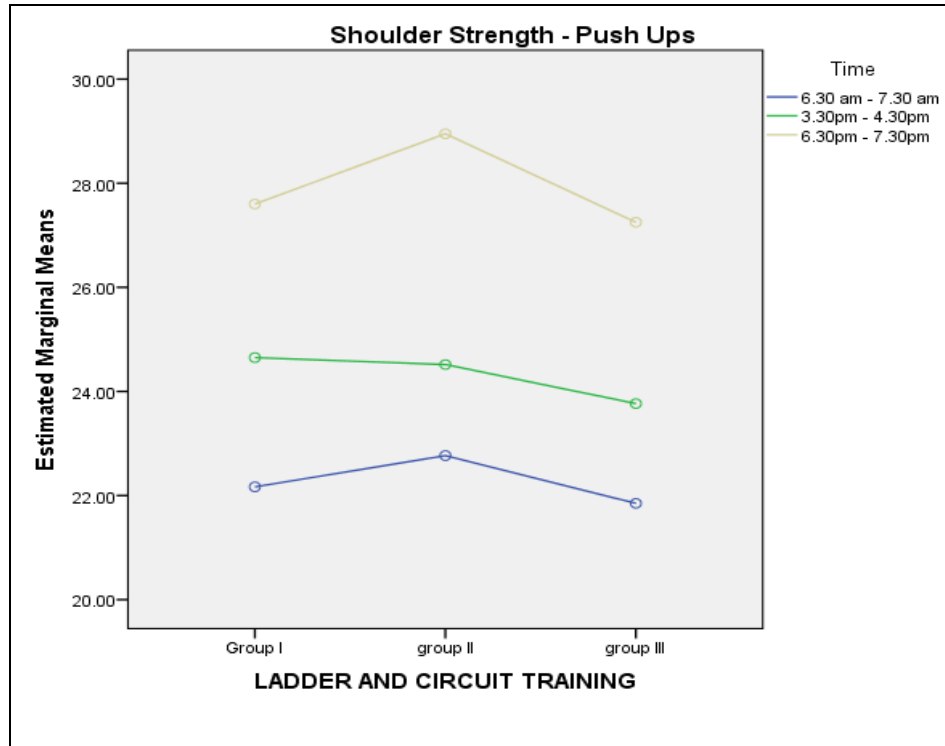


Fig 1

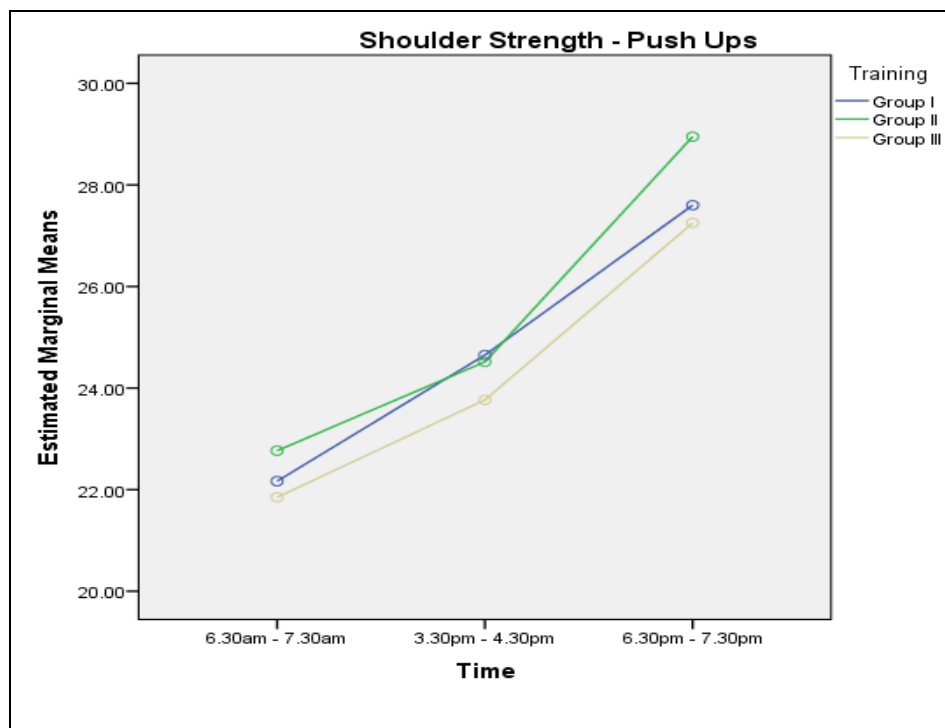


Fig 2

Result and Conclusion

Table II Mauchly's Test of sphericity test shoes that significant for push Ups P values level of 0.05 so Green houses Geisser- Result has been taken from ANOVA result of Pre test Mid test and Post. In Table –III Green house Geisser result that $p > 0.005$ was notice, for training $P = 0.000$ and Times $P = 0.000$ so that the training and various time have significantly improve in three group and different times. In pair wise comparison between the group $P = 0.896$ group I and group II, group I and group III $P = 1.000$ and group II and group III $P = 0.850$ was notice. So that we concluded there was no significant difference between the groups, because all the groups are doing the same training and more over the intensity also same. In pair wise comparison between the pre test – post test $P = 0.000$, mid test - post test $P = 0.000$, and pre test – mid test $P = 0.000$ was notice. So we understand that training have significant in respective interval period in all groups. In pair wise comparison between the time 6.30am – 7.30am $P = 0.000$, 3.30pm – 4.30pm $P = 0.000$ and 6.30pm – 7.30pm $P = 0.000$ was notice so that we concluded in times circadian rhythm have make the changes base on the mean vale of table I the clearly exit 3.30pm – 4.30pm the was good and recorded higher means for all groups in pre test, mid test and Post test. Hence we conclude that the circadian rhythm was not chance by practice of different times in day because it is nature of our biological clock and the peace time or circadian rhythm for shoulder strength was 3.30pm - 4.30pm.

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