

COMPARE EFFECTS OF 6 WEEKS SELECTED CIRCLES TRAINING IN THE MORNING AND EVENING ON ANAEROBIC POWER IN YOUNG ATHLETES

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Abstract:-The aim of the present study was to compare the effects of 6 weeks selected circular exercises on anaerobic power in adolescent athletes in the morning and evening, so 30 adolescents from Kermanshah football team collaborated as the samples in this study. After homogenization of the population in terms of weight and body mass index were randomly divided into 2 groups of circular exercises in the morning and in the afternoon (each group of 15 people). Morning exercises began at 9 am and afternoon exercises began at 6 pm. Circular training program was conducted at 10 stations. Each station consists of 20 seconds Activity and 30 seconds rest. The above exercise was done 2 times in the first 4 weeks and 3 times in the last two weeks. There was 3 min rest between training cycles. Calculation of aerobic power before and after training was done by performing test RAST. T-dependent and T-independent tests with $P < 0.05$ significance level was used for data analysis. The results showed that there were no significant differences between the effects of 6 weeks selected circular training in the morning and evening on the anaerobic power of adolescent athlete. The six-week training cycle in the morning and evening also has significant effects on the aerobic power of adolescent athlete.

Keywords:morning exercise, afternoon exercise, anaerobic power , adolescent athlete.

INTRODUCTION

Biological rhythms refer to the cyclic changes that occur on a regular basis, repeat on special days and are under the influence of physiological processes (Poorvaghar et al, 1386). The existence of circadian variations are well documented in many physiological functions of the body (Rahnama et al, 1387) . Temporal changes in physical function as well as physiological responses to body exercises and sports performance is noticeable (Auki et al, 1995). Different sport exercises are influenced by different times of the day in different ways Which depends on the intensity and duration of exercise (Atkinson et al, 1993). Many sports performance are changing and fluctuating at different times of day and night and even during different seasons (Atkinson and Rili , 1996). Some scholars have studied differences of physiological and fitness indicators in the morning and evening. , in comparison the maximal anaerobic power during morning and evening hours . Hill et al. (1998) also observed higher values in the afternoon hours than the morning in comparison with maximum aerobic power in the morning and afternoon hours. Day and night changes in the heat of body, heartbeat, consumed energy, hourly ventilation have been observed during workouts (Rahnama et al. 1387, Forsyth & Raily, 2005). Among these, the degree changes of the body heat have properly been proved and they're expressed as a fundamental variable in the changes of day and night rhythms

Please cite this Article as :Ali Ghamari¹ and Ahmad Hematfar², “COMPARE EFFECTS OF 6 WEEKS SELECTED CIRCLES TRAINING IN THE MORNING AND EVENING ON ANAEROBIC POWER IN YOUNG ATHLETES” : Academic Sports Scholar (Oct ; 2014)

(Poorvaghari et al.).

Raily and Kart state that body temperature in the morning is lower than in the afternoon, and during workout the temperature remains constant. Raily states that the peak performance of athletes and most of global records is obtained during the afternoon hours, since the pinnacle of body heat is in those hours (Rail, 1990). Given that the last research reported the movement performance better in the afternoon than in the morning, researchers decided to evaluate the effect of exercise on different variables in the morning and in the afternoon. Chtorou and Souissi (2012) stated about the review of performed research on the influence of practice at different times of the day that more research have reported that the impact of morning exercises is more than afternoon exercises. On the other hand, in the research in which evaluated the impact of the practice in the morning and afternoon on the performance of muscular anaerobic, Chtorou et. al reported that exercise in certain times of the day does not make a significant difference between the two groups in the evening and morning exercise. Chtorou and Souissi (2012) stated the duration of exercise probably influences the different results. Whatever the duration of the exercises at certain times of the day is more, the compatibility of body is more with workout and exercising will have more effects. Considering these points, the question discussed is whether the effect of workout in different times of day among adolescents on anaerobic power is different. Therefore, the present study aims to compare the effects of six-week exercises of selected circular in the morning and afternoon on anaerobic power of athlete adolescents.

RESEARCH METHODOLOGY

Given that the present study aimed to assess the effect of six-week exercises of selected circular in the morning and afternoon on anaerobic power of athlete adolescents; therefore, Quasi-experimental research method considers present in terms of time, and in terms of objective is among applied research. These people were placed randomly in morning circular exercise and afternoon circular exercise groups (15 people in each group) after homogenizing in terms of weight and body mass index. The morning exercise started at sharp nine o'clock and the evening exercise started at six. Workout sessions started with a ten-minute warm-up, and were over with a five-minute cool-down. Circular workout program was done in ten stations with 70% to 80% of the maximum heartbeat. Each station included 20 seconds activity and 30 seconds rest. The upon workout was done in the four first week in two rounds and in the last two weeks in three rounds. Three minutes rest was considered between workout cycles. The calculation of anaerobic power was conducted before and after workout period by administrating the RAST test. T-Independent and T-dependent were used to analyze the research results from statistic tests.

FINDINGS

First, the data obtained from the sample study, are summarized, categorized and described. In this regard, the individual characteristics of the subjects (age, height, weight, body composition, etc.) are presented in the form of the mean± of standard deviation. Next, the mean of all the studied indexes and the subjects records are shown in table 1.

Table 1- Demographic characteristics of the subjects (n=30)

Indicators	Morning exercise group	Evening exercise group
Age (year)	15.2±1.4	14.9±1.8
Height (cm)	168.72±3.8	166.49±4.2
Weight (kg)	64.9±2.7	65.2±2.1
Body mass index (kg / m²)	20.84±0.8	21.84±1.16

Table 2 -the mean and standard deviation of the measured test

groups		Power	Pre-test	Post-test
indicator				
Anaerobic power, Rast test	Morning	Minimum power (watt)	237.96	259.88
		Medium power (watt)	303.76	338.53
		Maximum power (watt)	389.92	410.91
	Afternoon	Minimum power (watt)	239.97	271.84
		Medium power (watt)	305.81	356.65
		Maximum power (watt)	393.05	421.8

T-independent and dependant statistical tests was used to check the assumption of research and it's results are summarized in table 3. T-independent test results ($T = -8.492$, $sig = .001$) revealed that there is a significant difference between the effects of 6 weeks selected circular training on anaerobic power of adolescent athletes in the morning and afternoon. The results of T-dependant test ($T = -5.881$, $sig = .001$) revealed that six-week circular training has significant effect on anaerobic power of adolescent athletes in the morning.

Table 3- Check the use of the anaerobic power in the morning and evening using dependant and independent T-test

Exercise time	N	Pre-test	Post-test	Deviation (difference in pre-test and post-test mean)	Dependant T	Df	Sig (2-tailed)
		S.D ± mean	S.D ± mean				
Morning	15	310.6±22.7	336.4 ± 24.54	25.8	-5.881	14	0.001
Afternoon	15	312.9±21.47	350.1±23.57	37.2	-12.457	14	0.001
Independent T	--	-8.492		--	--	--	--
Degrees of freedom	--	29		--	--	--	--
Sig(2-tailed)	--	0.001		--	--	--	--

DISCUSSION AND CONCLUSIONS

According to the results of present study, the effect of morning and afternoon exercise was significant on aerobic power. But comparing the two groups shows that there is significant difference between the effect of 6 weeks selected circular exercise in the morning and afternoon on anaerobic power and afternoon exercises have more meaningful impact on anaerobic power.

The results of this research is in aligned with researches of Gaini et al (1385), Jorkesh et al (2011), Jafarzade et al (2013), Rili et al (1984), Melhim et al (1993), Hill, Borden, Darnabykm et al (1999), Racinais et al (2004), Zarrouk et al (2012), who evaluated the impact of afternoon exercises on anaerobic power better than morning exercises. Although samples have different age requirements in the above studies and various training protocols were used, it seems that afternoon exercises generally have more significant impact on enhancing anaerobic power than morning exercises. Different impact of morning and afternoon exercises on anaerobic power was probably due to factors such as differences in nutritional status from morning to afternoon, Flexibility in the morning than in the evening, and not having enough time to recover from sleep

(Youngstedt and O'Connor, 1999). One of the other reason of increasing the efficiency of

body and in other words sports performance improvement in the afternoon is that the body temperature is at its peak at that time. Increasing the body temperature causes an increase in muscle temperature and consequently increase the speed of action potentials, Enzyme activity, and tension in the muscles (Giacomoni, Edwards, Bambaiechi, 2005). It seems that one of the reasons for the superiority of afternoon practice is children's habit of exercise in the evening but school attendance is a barrier for doing certain activities. Having free time in the afternoon makes an adjustment to the exercise condition, That this habit creates a rhythm for the body and cause afternoon exercise has better results.

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