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Effect of high intensity interval training on selected psycho physiological variables of college level women players

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Abstract

This study was investigated the impact of high intensity interval training on aerobic capacity and self confidence on college level women players. To achieve the purpose of the study 40 women players were selected from JBAS college for women Chennai. The subjects was randomly assigned to two equal groups (n=20). Group- I underwent high intensity interval training (HIIT) and group - II was acted as control group (CG). The high intensity interval training was given to the experimental group for 3 days per week (Monday, Wednesday and Friday) for the period of twelve weeks. The control group was not given any sort of training except their routine work. The motor fitness variables of aerobic capacity (cooper 12 minutes run or walk) and self confidence (questionnaires Basavanna (1975) self-confidence test) before and after training period. The data collected from the subjects was statistically analysed with 't' test to find out significant improvement if any at 0.05 level of confidence. The result of the present high intensity interval training significantly improved aerobic capacity and self confidence of college level women players.

Keywords: High intensity interval training, aerobic capacity, self-confidence college level women players

Introduction

Interval training has been used for decades by elite athletes and players seeking to improve their sports performance (Fox, 1974). High intensity Interval training Interval training is not new, and it was extensively investigated during the 1970s. The effects of high intensity interval training on the human body's aerobic energy-releasing system were thoroughly examined by Edward Fox (Fox, 1974). Thus, high-intensity exercises and training have been used by elite athletes to improve their performance in sports; as such high-intensity exercise was shown to extensively recruit the aerobic energy-supplying system, resulting in the increased maximal oxygen uptake that is the most reliable factor for endurance. HIIT is an important part of the training in team sports, there is still a need for an alternative, more sport-specific approach containing important basketball components, such as dribbling and shooting. Hoff *et al.*, showed that a similar physiological load can be obtained in HIIT by using a soccer dribbling track instead of solely running (Robinson D, Harmon PM, 1941). Sanchez et al. have shown significant improvements in aerobic performance after implementing a specific high-intensity training with various change of directions (COD) in female basketball athletes. In addition to these findings, this paper focuson the sport specific approach of a HIIT using basketball drills, which include specific movements with the ball. Furthermore, multiple changes of direction were included in the drills, as suggested by Sanchez-Sanchez et al. (Sanchez-Sanchez J, Carretero M, Ramirez-Campillo 2018). Handball is a strenuous contact team sport that involves highly demanding intermittent actions, such as sprinting, jumping, short accelerations and decelerations, blocking, pushing, and throwing, interrupted by a short period of low-intensity activities (Povoas SC, Seabra AF, Ascensao AA, Magalhaes J, Soares JM, Rebelo AN, 2012). It is a high intensity intermittent sport that requires successful female handball athletes to have well-developed agility, explosive power of the upper and lower extremities, speed, aerobic capacity, hand coordination and repetitive torso strength (Naisidou S, Kepesidou M, Kontostergiou M, Zapartidis I, 2017)

Methodology

In this study the selected 40 college level women players selected from JBAS college for women Chennai, Tamil Nadu. The subjects were randomly assigned in to two equal groups namely, high intensity interval training (HIPYT) (n=20) and Control group (CG) (n=20). The respective training was given to the experimental group the 3 days per weeks (alternate days) for the training period of twelve weeks. The control group was not given any sort of training except their routine. The evaluated psycho physiological variables were aerobic capacity was assessed by cooper 12 minutes run or walk test and the unit of measurement was in meters, and self-confidence was assessed by Basavanna (1975) self-confidence test unit of measurements was in points.

Training Programme

The training programme was lasted for 60 minutes for session in a day, 3 days in a week for a period of 12 weeks duration. These 60minutes included 10 minutes warm up, 40 minutes for high intensity interval training and 10 minutes and warm down. The equivalent in high intensity interval training is the length of the time each action in total 3 day per weeks (Monday, Wednesday and Friday).

Statistical Analysis

The collected data before and after training period of 12 weeks on the above said variables due to the effect of high intensity interval training was statistically analyzed with 't' test to find out the significant improvement between pre and posttest. In all cases the criterion for statistical significance was set at 0.05 level of confidence. ($p < 0.05$)

Table 1: Computation of 't' Ratio On Selected Variables On Experimental Group And Control Group (Scores in numbers)

Group	Variables	Mean	N	Std. Deviation Pre	Std. Deviation Post	T ratio
Experimental Group	Aerobic capacity	Pre test	1069.33	69.02	150.52	6.53*
		Post test	1305.33			
	Self confidence	Pre test	27.26	0.99	1.22	
		Post test	30.06			
Control group	Aerobic capacity	Pre test	1069.33	69.02	69.09	1.00
		Post test	1069.40			
	Self confidence	Pre test	27.13	0.65	0.85	
		Post test	27.21			

*significant level 0.05 level degree of freedom (2.09, 1 and 19)

Table 1 reveals the computation of mean, standard deviation and 't' ratio on selected variables namely aerobic capacity and self confidence of experimental group. The obtained 't' ratio on aerobic capacity and self confidence of were 6.53 and 16.74 respectively. The required table value was 2.09 for the degrees of freedom 1 and 19 at the 0.05 level of significance. Since the obtained 't' values were greater than the table value it was found to be statistically significant.

Further the computation of mean, standard deviation and 't' ratio on selected variables namely aerobic capacity and self confidence of control group. The obtained 't' ratio on aerobic capacity and self confidence of were 1.00 and 1.36 respectively. The required table value was 2.09 for the degrees of freedom 1 and 19 at the 0.05 level of significance. Since the obtained 't' values were lesser than the table value it was found to be statistically not significant.

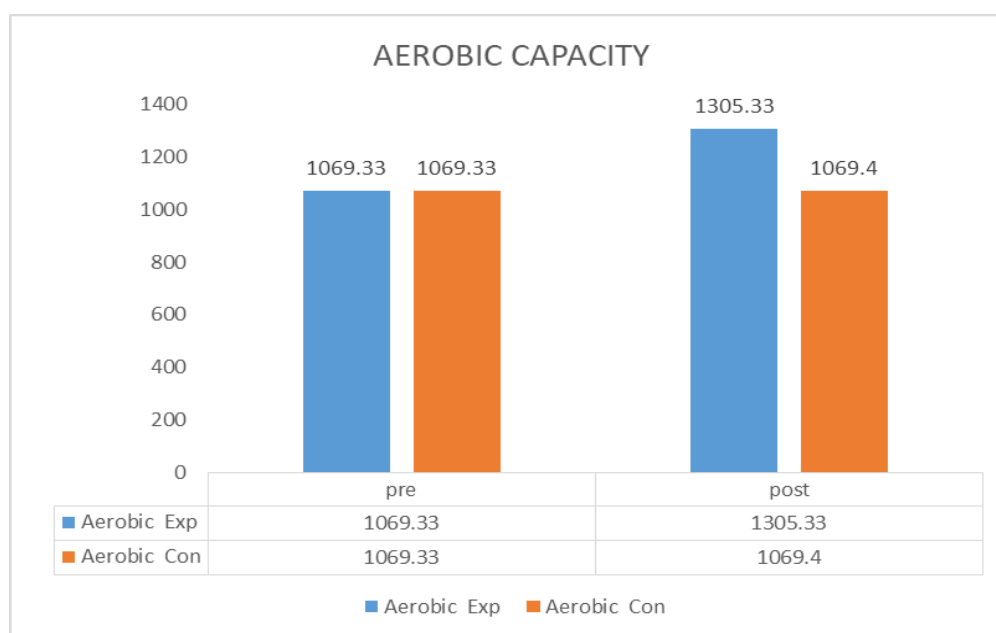


Fig 1: Bar diagram showing the mean value on Aerobic capacity of college level women players on Experimental and Control group (Scores in numbers)

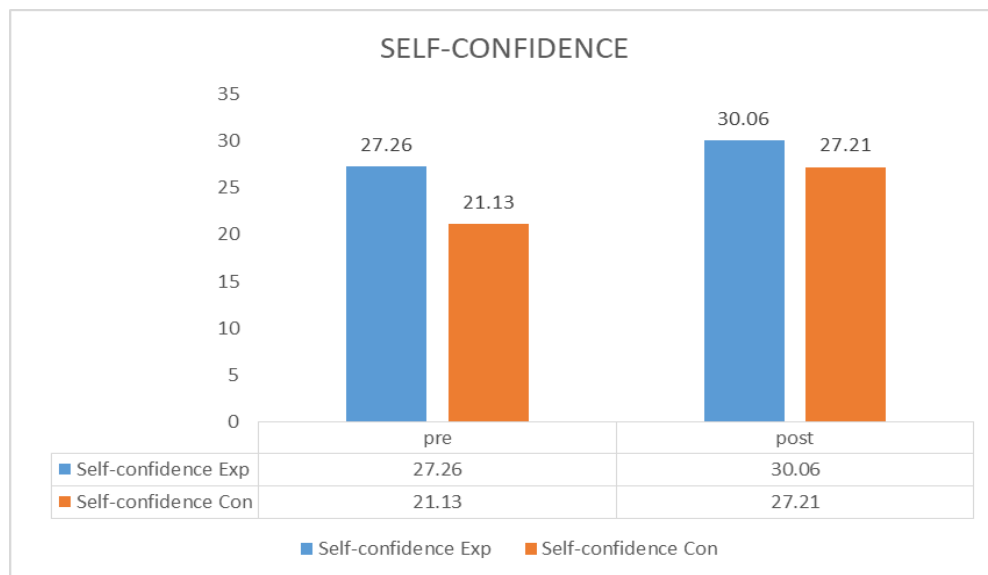


Fig 2: Bar diagram showing the mean value on Self-confidence of college level women players on Experimental and Control group (Scores in numbers)

Discussion and Findings

The present study experimented the effect of high intensity interval training on psycho physiological variables of women players. The result of the study shows that the high intensity interval training improved the aerobic capacity and self-confidence. The findings of the present study had similarity with the findings of the investigations referred in this study. However, there was a significantly changes of subjects in the present study the aerobic capacity and self-confidence was significantly improved of subject in the group may be due to the in high intensity interval training.

Clemente, *et al.*, (2021) ^[8] The HIIT resulted in greater improvement in YYIRTL-1, $\dot{V}O_{2max}$, RSA and T-drill performances compared to the MICT. Furthermore, RPE and PACES values were higher in the HIIT than the MICT. This study suggested that self-paced HIIT may be a more effective training regime to improve aerobic fitness with greater physical enjoyment in recreationally active young adults.

Villanueva *et al.*, (2015) ^[2]. There were moderate to strong correlations between SC, self-confidence and anxiety scores, and match workload (i. e., HR and RPE) only during the match day. These results indicate that the interplay between psychophysiological responses, match workload and outcome was evident only under real competitive situations.

Ugras, A. (2017) ^[9] some decrease or increase in the values of E-Zn, E-Cu, PI-Zn, PI-Cu, E-Fe, and PI-Mn minerals for female subjects, whereas there were no significant changes to the values of E-Cu, PI-Cu, E-Fe, and PI-Mn for male subjects post training or IMTC. These results suggest that HIIT and competition could impact the mineral levels of MTA.

Hence, it concluded that for aerobic capacity and self-confidence improvement of college level women players.

Conclusions

1. It was concluded that 12 weeks of high intensity interval training significantly improved the aerobic capacity of college level women players.
2. It was concluded that 12 weeks of high intensity interval training significantly improved the self-confidence of college level women players.

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