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Effect of Six Months of Interval Training and Meditation Practices on Performance of Handball Players

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Abstract: *The purpose of the present study is to investigate the effect of interval training and meditation practices on performance of handball players. Thirty male handball players were selected as subjects from alagappa University College of physical education, Karaikudi, their age were ranged from 17 to 25 years. Subjects were divided into three equal groups consists of ten subject each. Group- I underwent interval training with meditation practices, group -II underwent interval training practices and group -III meditation practices for three days per week for the six months of training period. The data were collected at prior to and after the training programme of six months. SSPT (30-m single sprint performance test) and Yo-Yo Intermittent Test was chosen as criterion variable. The analysis of covariance (ANCOVA) was used to analyze the data. The results of the study showed that the 30-m single sprint performance test and Yo-Yo Intermittent Test was significantly improved due to the interval training with meditation and interval training programme on performance of handball players.*

Keywords: *Interval Training, Meditation, 30-m single sprint performance Test, Yo-Yo Intermittent Test.*

1. INTRODUCTION

Sports have a very important role in modern society. It in important for an individual, a group, a nation and indeed the world Sports performance is the result and expression of the total personality of a sports man. (Vinu 2016). Training should be matched to the specific needs of a given activity because adaptations to exercise are specific to the type of activity that is performed. (Babalola, J.F. 2015). Training can be defined as the systematic and regular participation in exercise to enhance sports performance. Performance, especially for sports based on locomotion (action to move from one point to another). (Veronique Billat, 2001). Interval training involves alternating periods of hard work with periods of either relative or complete rest. The work load usually is expressed relative to power output or 30-m single sprint performance test and recovering to a target Heart Rate is emphasized. (Cress Maria MS, et al 2015). In many team sports strength, quickness, speed, agility, cardio respiratory fitness and repeated sprint ability have been shown to be important factors determining success, in addition to sport-specific technical and tactical skills. (Murat Bilge, 2013).

Team-handball is an Olympic sport ball game that is characterized by fast pace defensive and offensive action during the game with the objective of the game to score goals. To score goals, the offensive players (6 players and one goalie) attempt to establish an optimal position for the throwing player by fast movements over short distances performing powerful changes in direction (with and without the ball) one-on-one action against defensive players and passing the ball using different offensive tactics. (Herbert Wagner, et al. 2014). Team handball is an Olympic sport now played professionally in Europe. However, despite increasing professionalization, there is a paucity of research data concerning performance. (Mário, a. 2006). Team Handball is one of today's fastest and the most endurance required team sports and is epitomized by special maneuvers such as jump shot under pressure, faking against hard defense players and attempting fast breaks despite all the fatigue. (Murat Bilge, 2013). In the literature, data are available on mainmast physical or physiological factors of American Football (henceforth football) and handball players such as age, body composition previousaury, poor muscle strength flexibility and or endurance, or poor skill level.(Ridvan Ekmekçi, et al. 2018). In handball, as

in other team sports, shooting a ball at the goal is the culmination of an offensive phase. Success or failure depends on whether a team attains its ultimate aim, that of scoring a goal. (Carmen Manchado et al 2017). Handball is an Olympic sport played worldwide and at a highly professional level in many European countries. Nevertheless, unlike other team sports, scientific knowledge regarding elite team handball's working demands is scarce. (Povoas, et al 2012).

The word meditation, which expresses the practice of meditating, is derived from Sanskrit, The word meditation, which expresses the practice of meditating, is derived from Sanskrit. Traditional language of India, from the word dhyana, which means attention, contemplation the exercise of meditation, is processed by a large variety of activities that range from techniques to promote relaxation through to exercises performed with objectives that are broader in scope, such as intensification of the feeling of wellbeing . (Cynthia Vieira Sanches Sampaio et al 2016). Meditative and contemplative practices involve several coordinate cognitive functions performed simultaneously, often over a prolonged period or on repeated occasions. There is increasing evidence that meditation has significant effects on the physiology of the brain; these effects include increased blood flow in the prefrontal cortex, inferior parietal lobes and inferior frontal lobes during meditation. (Brendan D Kelly 2008).Modkoupico has been le style practical action sands of years ago. Proficient de practices to uncrate she bean hinatzea; dine various physical cash postulating in a state of mental and physical well being. (Ravindra P, at al, 2012). Meditation can be also called as a kind of consciousness. Small amounts of stress can motivate people and cause. Positive reaction to environment. (Minggian Liu, et al 2014). According to the World Health Organization, Psychological stress is one of the most common occupational health problems affecting workers worldwide Psychological stress, including perceived stress, adversely affects organizational commitment, work engagement, and productivity, as well as contributes to poor mental and physical health. (Laurent Valesek. et al, 2018).

Team Handball games are characterized by repeated periods of intense anaerobic activity (20), and it is thus logical to evaluate a player's overall ability in terms of tolerance of repeated bouts of intensive exercise. However, it is under which part of variance is explained by these fasters regarding match performance (MP). Despite the knowledge of these factors only conditional tests (eg. 30-m sprint Test, counter movement jump, squat jump test vertical jump test, abdominal strength. Yo Yo Intermittent Endurance Test and repeated sprint ability) are normally a part of the performance diagnostic(Rene Schwesig, et al, 2016).In the single sprint performance test (SSPT), each player performed a maximal, linear 30-m sprint after a 25-min profound, individual warm-up on an indoor playing court as previously described. The players had to repeat the sprint test twice with at least 4 min of Recovery between tests (Lars Bojsen Michalsik, 2021).

The Yo-Yo IR test may be performed at two different levels with different speed profiles (level 1 and 2). Level 1 starts at lower speed and with the increases in speed being more moderate than for the level 2 test. (Lars Bojsen Michalsik, 2021). Since the introduction of the Yo-Yo Intermittent (YY) test as a field test method in the 1990s, an evolution of the Yo -Yo test family has occurred. (Boris Schmitz, et al 2017). Handball play is characterized by repeated periods of interne anaerobic activity. (Souhail Hermassi, et al 2014).

2. MATERIAL & METHODS

2.1 Participants

To achieve this purpose of the study, thirty male handball players were selected as subjects from Alagappa University College of physical education, Karaikudi, Tamilnadu, INDIA at randomly and their age were ranged from 17 to 25 years. The selected subjects were divided into three equal groups of ten subjects each. Group I underwent interval training with meditation, Group II underwent interval training and Group III underwent meditation training for three days per week for the six months of training period in the morning session.

2.2 Variables

The dependent variables namely 30-m single sprint performance test and Yo-Yo Intermittent Test. were selected as criterion variables. The data were collected from the three experimental groups before and after the training period. After collection of data, which were analysed paired sample ‘t’ test, which is used for significant improvement, followed by one way analysis of covariance for significant difference, if were find significant differences, the schefee,s post hoc test was used for to find out best among the three experimental groups. The analysis of data on 30-m single sprint performance test and Yo-Yo

Intermittent Test of the pre and post test scores of three experimental groups have been analyzed and presented in the below table.

2.3 Procedure

The test involves running a single maximum sprint over 30 meters, with the time recorded. A thorough warm up should be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line. This starting position should be held for 2 seconds prior to starting, and no rocking movements are allowed. The tester should provide hints for maximizing speed (such as keeping low, driving hard with the arms and legs) and encourage them to continue running hard through the finish line.The subject starts on or behind the middle line, and begins running 20 m when instructed by the cd. The subject turns and returns to the starting point when signaled by the recorded beep. There is an active recovery period (5 and 10 seconds respectively for the endurance and recovery versions of the test) interjected between every 20 meter (out and back) shuttle, during which the subject must walk or jog around the other cone and return to the starting point. A warning is given when the subject does not complete a successful out and back shuttle in the allocated time, the subject is removed the next time they do not complete a successful shuttle.

3. DATA COLLECTION AND ANALYSIS

Table I presents pre and post-test means, standard deviations and dependent 't'test values on 30-m single sprint performance test and Yo-Yo Intermittent Test of experimental groups.

Table 1. *Analysis of "t"-ratio for the pre and post tests of experimental groups on 30m single sprint performance test and yo-yo intermittent test* ***performance***

Variables	Name of the test	Interval Training With Meditation	Interval Training	Meditation Training
30-m single sprint performance	Pre test mean ± SD	4.82 ± .250	4.82 ±.250	4.82 ± .252
	Post test mean ± SD	4.80 ± .248	4.80 ± 4.80	4.83 ± .252
	't' test	15*	11*	.80
Yo-Yo Intermittent performance	Pre test mean ± SD	17.79 ± 1.11	17.79 ± 1.11	17.79± 1.11
	Post test mean ± SD	18.15 ± 1.13	17.82 ± 1.10	17.79± 1.13
	't' test	13.50*	11.13*	.000

*Significant at .05 level. (The table value required for 0.05 level of significance with df 9 is 2.26)

[30-m single sprint performance test score in seconds and Yo-Yo Intermittent performance Test score in numbers].

The paired sample't' was computed on selected dependent variables. The results are presented in the above table I. The 't' test values of interval training with meditation, interval training and meditations practice groups are 15, 11 and .80 for 30-m single sprint performance test and 13.50, 11.13, and .000 for Yo-Yo Intermittent Test. experimental t' values are significantly higher than the required table value of 2.26 with degrees of freedom 9 at 0.05 level of confidence. Except meditation group/ The't' test value of meditations practice groups is less than the required table value. The result of the study shows that interval training with meditation training group and interval training training group has significantly improved the performance of 30-m single sprint performance test and Yo-Yo Intermittent Test, but there was not significant improvement on 30-m single sprint performance test and Yo-Yo Intermittent Test performance on meditations practice groups. The one way analysis of covariance on 30-m single sprint performance test and Yo-Yo Intermittent Test of experimental and meditations has been analyzed and presented in Table II.

Table 2. *Analysis of Covariance Computed For Three Experimental Groups on 30m Single Sprint Performance Test and Yo-Yo Intermittent Test*

(The table value required for 0.05 level of significance with df 2 and 26 is 3.37)

Variables	Source	SS	Df	MS	F	P	Partial Eta Square(η)
30-m single sprint performance test	Groups Error	.004 .001	2 26	.002 .0000432	50.70	.000	.796
Yo-Yo Intermittent Test	Groups Error	.189 .188	2 26	.409 .007	56.68	.000	.813

One way analysis of covariance (ANCOVA) was computed for 30-m single sprint performance test and Yo-Yo Intermittent Test. The independent variables included three groups namely interval training with meditation group, interval training group and Meditations group on 30-m single sprint performance test and Yo-Yo Intermittent Test the obtained "F" values are 50.70* and 56.68*. Which are higher than the table value of 3.37 with degrees of freedom 2 and 26 significant at .05 level of confidence. It shows that were a significant differences among the experimental groups. However, only 79.6% (η=.796) and 81.3% (η=.813) of the total variance in 30-m single sprint performance test and Yo-Yo Intermittent Test was accounted by the three groups for the effect of experimental programmes. In order to find out which of the paired means significantly differ the post- hoc test was applied and effect sizes are presented in the Table III among the three groups.

Table 3. *Scheffe's Post Hoc Paired Means Comparisons and Effect Size on Selected Variables among Experimental Groups*

Variables	Groups	Adjusted Mean	Adjusted Mean Differences (Effect Size are Indicated in Parenthesis)		
			1	2	3
30-m single sprint performance test	Interval Training With Meditation	4.80	-	-	-
	Interval Training	4.80	0.00 -	-	-
	Meditation Training	4.83	0.03 (0.21)	0.03 (0.21)	-
Yo-Yo Intermittent Test	Interval Training With Meditation	18.15	-		-
	Interval Training	18.13	0.02 (0.06)		-
	Meditation Training	17.79	0.36 (1.14)	0.34 (1.07)	-

(*Significant at 0.05 level of confidence scheffe's CI value are 0.02 and 0.1)

4. RESULTS

Follow up was conducted to evaluate pair wise differences among the adjusted means for three experimental groups. The scheffe's post hoc was used to control type I error across the three pair- wise comparisons 30-m single sprint performance test (CI = 0.02). The adjusted mean differences between interval training with meditation group and interval training group, interval training with meditation group and meditation group, and interval training group and Meditations group are 0.00, 0.03, and 0.03 respectively. All the differences are greater than the confidence level value of 0.02. It shows there were significant differences between the three experimental groups. The results showed that interval training with meditation group (M = 4.80) and interval training group (M = 4.80), had significantly better than and Meditation group (M = 4.83). The effect size of those significant adjusted mean differences between the interval training with meditation group and interval training practices group, interval training with meditation group and Meditation group, interval training practices group and Meditations group are 0.00, 0.21, and 0.21 respectively.

The adjusted mean differences between interval training with meditation group and interval training group, interval training with meditation group and Meditation group, and interval training group and Meditations group are 0.02, 0.36, and 0.34 respectively. All the differences are greater than the confidence level value of 0.02. It shows there were significant differences between the three experimental groups. The results showed that interval training with meditation group (M=18.15) and interval training group (m=18.13), had significantly better than and Meditation (m=17.79). Interval training with meditation practices group had better performance over the interval training group and Meditation group. The effect size of those significant adjusted mean differences between the interval training with meditation group and interval training practices group, interval training with meditation group and Meditation group, interval training practices group and Meditations group are 0.06, 1.14, and 1.07 respectively.

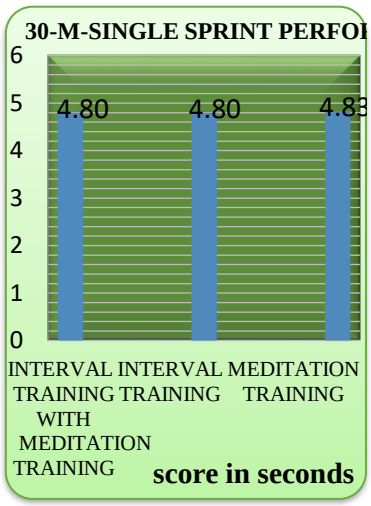

Figure 1.

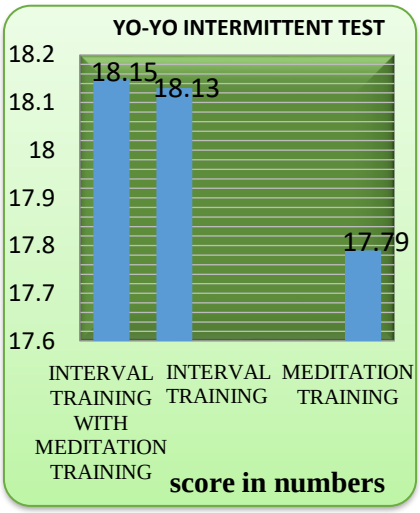

Figure 2.

Adjusted Means of Interval Training with Meditation, Interval Training, and Meditations on 30-M Single Sprint Performance Test and Yo-Yo Intermittent Test Are Presented In Following Figures
(30-m single sprint performance test score in seconds and Yo-Yo Intermittent Test score in Numbers)

5. DISCUSSION ON THE FINDINGS

The results of the present study demonstrated that six months training programme of interval training with meditation and interval training had significant improvement on selected dependent variable of 30-m single sprint performance test and Yo-Yo Intermittent Test. due to the six months training programme.

From the results of the investigation, this study in the end of the study was found more Agility and strength of Handball State level players District Ghaziabad & Gautambudh nagar, (up) in the end of the study we can say that yogic practice effects more on Agility and strength of Male Handball Players. **(Badal Kumar Jana 2018).** From the results of the investigation, this study has been done to determine the Effects of a high-intensity interval training protocol based on functional exercises on performance and body composition in handball female players. **(Diego Alonso Fernández., et al 2017).**In general, higher test performance was seen for intermittent sports but YY1 We thank Franziska B test variants may also be used to determine physical fitness in other sports as well as recreationally active and inactive subjects and athletes to rate Yo-Yo intermittent test performance and monitor training effects. **(Boris Schmitz, et al 2018).** The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups **(Sasikumar.P, Dhanaraj. S, 2019).**

6. DISCUSSION ON HYPOTHESIS

- It was hypothesized that there would be significant improvement on the selected dependent variable of 30-m single sprint performance test and Yo-Yo Intermittent Test through interval training with meditation, interval training, and meditation practices among college male handball players.

The results of the present study demonstrated that six month training programe of interval training with meditation and interval training groups has significant improvement on selected dependent variable of 30-m single sprint performance test and Yo-Yo Intermittent Test. At the same time meditation training group variables had not shown significant improvement. Thus the first hypothesis was partially accepted and partially rejected at 0.05 level of significance.

- It was hypothesized that there would be significant difference among the experimental group-I, experimental group-II and meditations group-III regarding the magnitude of improvement on the selected dependent variable.

The Post-hoc analysis of the results proved that there would be significant differences between the interval training with meditation, interval training and meditations on criterion variable of 30-m single sprint performance test and Yo-Yo Intermittent Test. Thus, the second hypothesis was accepted at 0.05 level of significance.

7. CONCLUSION

Finally, it was concluded that interval training with meditation, interval training, had achieved significantly better than the meditation training on increasing the 30-m single sprint performance test and Yo-Yo Intermittent Test among male students. The research recommended that interval training with meditation, interval training, can be advocated to increasing the level of 30-m single sprint performance test and Yo-Yo Intermittent Test of interval meditation training. The result focused that should give the importance of interval training with meditation, interval training, and include their schedule for the developments of physical fitness maintain fitness as well as performance of the players.

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