

Effect of Specific Core Training and Yoga Training on Kinesthetic Differentiation Ability among State Level Mallakhamb Players

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ABSTRACT: *The purpose of this study was to examine the impact of specific core and yoga training on kinesthetic differentiation ability of mallakhamb players. To achieve the purpose of this study 45 state level school Mallakhamb players from Madras Mallakhamb Association in Chennai, Tamilnadu were selected and randomly assigned to experimental group-I (specific core training), experimental group-II (yoga training), and control group of fifteen each (n=15) in a group. The training regimen lasted for twelve weeks for 6 days per week. The selected dependent variable kinesthetic differentiation ability was assessed by conducting Backward ball throw test, before and after the training regimen. Analysis of Covariance was used to determine the significant difference existing between pretest and posttest on selected dependent variables. The analysis of data revealed that the kinesthetic differentiation ability of Mallakhamb players has significantly improved due to the effect of specific core training (13.71%) and yoga training (7.60%) protocols.*

Key Words: *Specific core training, Yoga training and kinesthetic differentiation ability*

I. INTRODUCTION

Mallakhamb is a sport that requires a multitude of athletic abilities, such as speed, strength, power, flexibility, and strength in the core body, muscular balance and high levels of neuromuscular co-ordination, body awareness and stamina, the ability to know where the body is, and being able to move it, good flexibility to avoid injury and correct balance between the quadriceps and hamstrings, as well as strength imbalances between the left and right leg. Thus, every mallakhamb performers should improve coordination, physical, physiological and psychological variables in order to their performance. Hence like any athlete, mallakhamb performers also need to follow some specific conditioning programs. Along with building a good base of strength and fitness, the psychological skills of the event should be worked on, in order to produce a higher level of performance.

Although several everyday functions and sporting activities demand controlled use of the abdominal and back muscles while working with the upper limbs, the activity of core muscles during dynamic exercises has not been studied extensively. Research has highlighted benefits of training these processes for people with back pain and for carrying out everyday activities (Hibbs, 2008). However, less research has been performed on the benefits of core training for athletes and how this training should be carried out to optimize sporting performance. Many elite athletes undertake core stability and core strength training as part of their training programme, despite contradictory findings and conclusions as to their efficacy. A further confounding factor is that because of the differing demands on the core musculature during everyday activities (*low load, slow movements*) and sporting activities (*high load, resisted, dynamic movements*), research performed in the rehabilitation sector cannot be applied to the sporting environment and, subsequently, data regarding core training programmes and their effectiveness on sporting performance are lacking.

Yoga is one of the finest contributions of ancient India to the World. It is not just some sort of physical activity resulting in physical fitness but yoga in its full sense is a way of life which a person has to adopt. It is a concept based on scientific principles ultimately aiming at realization of a most satisfied, vulnerable and acceptable life, which at the end results in attainment of ultimatum (Moksha). Life as on today is mostly running behind money and pleasures of modernization, in a very short time all these will take us no where and the race to maintain and gain back the health at the cost of anything and everything will become the priority. Yoga is a scientific, systematic and readymade solution for human beings, which can be adopted for not only curing and treating ailments but also to prevent any sort of physical and mental ailments, ultimately resulting in peaceful, successful and healthy social life.

Excellent performance in any sports is governed by several factors of physical fitness. The important one may be mentioned as speed, strength, stamina, suppleness, stability and neuromuscular coordination. Although not many scientific researchers have been done, the works and have shown enough evidence about how yoga could be gainfully employed in the promotion of basic fitness factors. Using elaborate Fleishman Battery basic fitness test, Gharote (1976) has shown how even short term Yogic training could improve different basic fitness factors. Development of sports skills depends on the proper neuromuscular coordination. This coordination seems to be better in the yogic exercise. Stretching improves the performance of all sports.

Modern coaching techniques advocate the use of specific core and yoga exercises are essential components in the belief that this kind of exercise will be more beneficial to sports performance. Unfortunately there is little research to support this. The importance of maintaining fitness among mallakhamb performers is well documented and various training modalities have been recommended; however, the effectiveness of specific core and yoga training has not been completely characterized. The aim of this study was to investigate whether 12 weeks of specific core and yoga training would induce and sustain improvements in kinesthetic sense compared to no exercise control group.

II. METHODOLOGY

Subjects and Variables

The purpose of the study was to find out the effect of specific core training and yoga training on kinesthetic differentiation ability of state level mallakhamb players. To achieve the purpose, a total number of 45 state level school Mallakhamb players in the age of 15 to 18 years from Madras Mallakhamb Association in Chennai, Tamilnadu were selected and randomly assigned to experimental group-I (specific core training), experimental group-II (yoga training), and control group of fifteen each (n=15) in a group. The selected dependent variable *kinesthetic differentiation ability* was assessed by conducting Backward ball throw test, before and after the training regimen.

Training Protocol

Training programme was administered to the mallakhamb players for twelve weeks with six training units per week. Experimental group-I underwent specific core training and experimental group-II underwent yoga training. The specific core training group performed ten core-related exercises alternatively six days in a week for twelve weeks. The training load was progressively increased once in two weeks. The yoga training (experimental group-II) group performed asanas, six days in a week for twelve weeks. It consists of three phases namely asana (first phase), pranayama (second phase) and meditation (third phase). The duration of training was 45 to one hour approximately including warm-up and warm-down.

Experimental Design and Statistical Technique

The experimental design used in this study was random group design involving 45 subjects, who were divided at random into three groups of fifteen subjects each. The data collected from the experimental and control groups on selected dependent variables was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post test. Further, percentage of changes was calculated to find out the chances in selected dependent variables due to the impact of experimental treatment. Further, the data collected from the three groups prior to and post experimentation on selected dependent variable was statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since three groups were involved, whenever the obtained 'F' ratio value was found to be significant for adjusted post test means, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases the level of confidence was fixed at 0.05 for significance.

III. RESULTS

The data (pre & post) collected from the two experimental and a control groups on Kinesthetic Differentiation Ability were statistically analyzed by dependent T test and the outcomes are as in table number-I.

Table-I: Analysis of 'T' Test on Kinesthetic Differentiation Ability of Chosen Groups

Group	Test	N	Mean	SD	DM	%	't'
Specific Core Training	Pre	15	11.66	1.11	1.60	13.71	3.65*
	Post	15	13.26	1.27			
Yoga Training	Pre	15	11.40	1.12	0.86	7.60	2.35*
	Post	15	12.26	0.88			
Control	Pre	15	11.26	0.96	0.06	0.59	0.17
	Post	15	11.20	1.14			

* Table value for $df 14=2.15(0.05 \text{ level})$

Table-I presents the pre (11.66 ± 1.11 ; 11.40 ± 1.12 & 11.26 ± 0.96) and post test (13.26 ± 1.27 ; 12.26 ± 0.88 & 11.20 ± 1.14) mean and standard deviation values on Kinesthetic Differentiation Ability of specific core training, yoga training and control groups. As the obtained 't' value (3.65 & 2.35) on Kinesthetic Differentiation Ability was higher than the required table value (2.15) for significant (0.05 level) with 14 degrees of freedom, it was decided that, significant level of differences be present between the pre and post test means of specific core training and yoga practice groups Kinesthetic Differentiation Ability. More over insignificant level of difference found between the pre and post test mean value of control group.

Specific core and yoga training produced 13.71% and 7.60% changes on upper extremity kinesthetic differentiation ability after 12 weeks of training

The means (Pre, Post & Adjusted) found on kinesthetic differentiation ability of all groups are illustrated in figure-I.

Figure-I: Graph Depicting the Means (Pre, Post & Adjusted) Values Found on Kinesthetic Differentiation Ability of All Groups

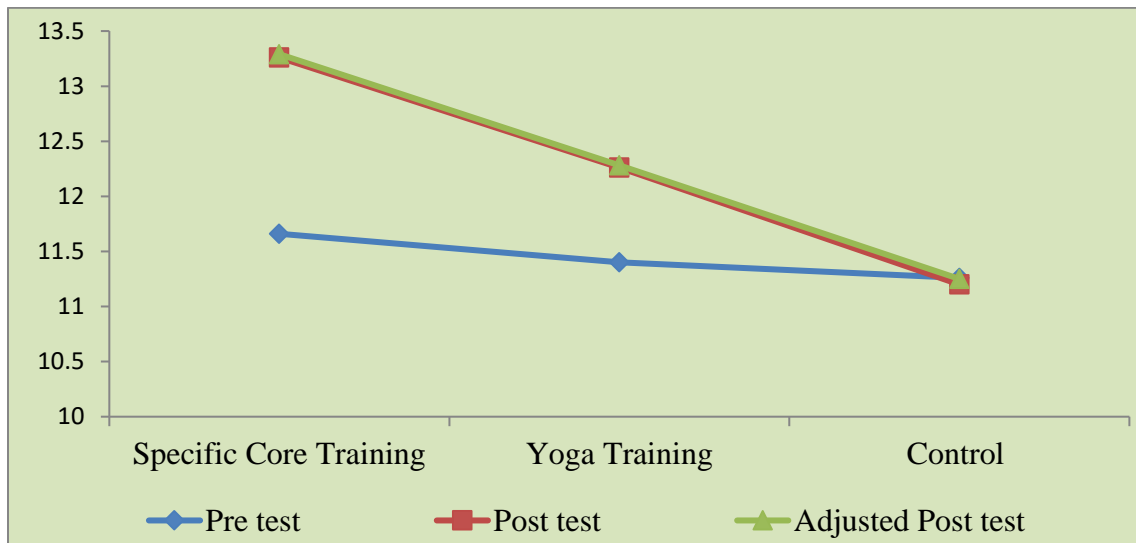


Table-II: ANCOVA Output on Kinesthetic Differentiation Ability of Chosen Groups

Adjusted means of Groups			S o V	SS	df	MS	'F'
Specific Core Training	Yoga Training	Control					
13.29	12.28	11.25	B	27.39	2	13.69	11.95*
			W	46.96	41	1.14	

(Table value for df_2 & $41 = 3.23$)

*Significant (.05 level)

The kinesthetic differentiation ability (adjusted means) of specific core training, yoga training and control subject's (13.29, 12.28 & 11.25) vary considerably as the derived 'F' value (11.95) is more than the necessary value (df_2 & $41 = 3.23$) for significance (0.05 level). As it is found significant the follow up test (Scheffe's) was utilized as in table-4.3, in order to discover the paired mean variations.

Table-III: Scheffe's Test Results on Kinesthetic Differentiation Ability (Upper Extremity) of Chosen Groups

Group's Adjusted Means			DM	CI
Specific Core Training	Yoga Training	Control		
13.29	12.28		1.01*	0.99
13.29		11.25	1.94*	0.99
	12.28	11.25	1.03*	0.99

*Significant

In response to specific core training (1.94) and yoga training (1.03) the kinesthetic differentiation ability was remarkably improved, although specific core training treatment was much better than yoga training in enhancing kinesthetic differentiation ability, as these mean differences (1.01) were found higher than CI value (0.99).

IV. DISCUSSION

In the present study it was concluded that specific core and yoga training causes positive effect on the kinesthetic differentiation ability. The result of the present study is supported by McMorrisset *et al.*, (2005) who reported that exercise affects whole body task differently from purely cognitive task central factor are probably more important than peripheral factor. Systematic exercise is a safe and effective intervention to delay or even reverse the neuromotor decline. It has been claimed that vigorous physical activity has positive effects on mental health in both clinical and non clinical populations. Jones *et al.*, (2007) in his study concluded that participation in exercise program was associated with decrease of frequency of challenging behaviors and increase in quality of life and alertness.

To participate in a competitive sport, such as mallakhamb, one of the main aspects any coach should always keep in mind is that it is vital to achieve the best possible performance from the whole body – including the visual system (Wilson & Falkel, 2004). Accuracy, balance, concentration and co-ordination, are a few of the visually related abilities a player uses during sports event. In recent years, there has been a growing acceptance that perceptual skills precedes and determines skilful actions in sport and other contexts (Harris & Jenkin, 1998; Williams, Davids & Williams, 1999). Coordinative abilities are important for all the activities and are optimally developed in childhood (Bos, 2001). Coordination can be defined as the ability of fast and exact control and regulation of movements, it denotes body mind relationship. Participation in physical activity is very important to increase the coordinative abilities. Coordination is often used as an indicator of objective motor behaviour, since it contributes strongly to the explanation of total motor performance (Mechling, 1999). Manoj and Yajuvendra (2015) observed significant relationship of reaction and differentiation abilities with the table tennis playing ability. Hence, it is suggested that training program with this kind of activity can help to improve coordinative abilities.

V. CONCLUSIONS

In response to specific core training and yoga training the kinesthetic differentiation ability was remarkably improved, although specific core training treatment was much better than yoga training, Due to specific core and yoga training 13.71% and 7.60% changes in kinesthetic differentiation ability was found.

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