



EFFECT OF PHYSICAL TRAINING AND COMBINATION OF PHYSICAL AND YOGIC TRAINING ON MOTOR FITNESS COMPONENT OF HANDBALL PLAYERS

Dr. Mahaprasad Ghosh

Assistant Professor & Head, Dept. of Physical Education, Asannagar MMT College, Nadia, W.B.

ABSTRACT

The study aimed to investigate the effect of physical training and a combination of physical and yogic training on motor fitness component of college level Handball players. 45 male players from Alipurduar district in West Bengal, India, aged 18-20, were randomly selected for the study. The study was conducted using a true random group design, consisting of a pre-test and post-test. The participants were divided into three groups: physical training (Experimental Group 1), combined physical and yogic training (Experimental Group 2), and control group (Experimental Group 3). Pre-tests was conducted on Abdominal muscular strength. The experimental groups participated in their respective physical training, combined physical and yogic practices for six weeks. Post-tests were conducted on this dependent variable after six weeks. The analysis of variance (ANCOVA) statistical technique was used to test the adjusted post-test mean differences among the experimental groups. Scheffe's post hoc test was used to find paired mean significant differences (Thirumalaisamy A. 1995). The descriptive analysis revealed that performance-related factors influenced both the physical training group and the combined group equally. Both groups had chances to develop physical factors, and the incorporation of yogic exercises with the training was found to be the prime source for such significance. The study highlights the importance of incorporating yogic exercises in sports training for improved motor fitness.

Key Words: Physical training, Abdominal muscular strength & Yogic Asanas.

INTRODUCTION

Fitness is essential for enjoying life and maintaining good health, performance, and appearance. Regular exercise enhances joint function, promotes physical well-being, increases cardio-respiratory fitness, muscle strength, and endurance, and reduces the risk of serious diseases. Training should be followed for two to three hours per week in at least three sessions at an intensity corresponding to 60 to 85% of the maximum heart rate achieved in a symptom limited maximum exercise test. Yoga is a science that seeks to achieve truth by identifying with the supreme soul or God. It has the surest remedies for physical and psychological ailments, making body organs active and improving internal functioning. Yoga helps develop all systems of the human body. Yoga exercises influence both the mind and body, while physical exercises mainly affect the body.

Physical exercises are repetitive and energy-intensive, while yogic exercises conserve energy. Sports performance can be significantly improved if approached correctly. Physical exercises (asanas) can increase flexibility, coordination, and strength, while breathing practices and meditation can calm and focus the mind, developing greater awareness and reducing anxiety (Kirkwood G. et al., 2005). Overall, regular exercise is crucial for maintaining good health and a better quality of life. In other systems of physical exercises, the internal organs of the body mostly do not get proper exercises, while yogic practices give sufficient exercises to the internal organs of the body. Yoga practices have a greater impact on the mind and control the senses. Yogic practices make possible not only physical and mental development but also intellectual and spiritual development. Yoga practices are called a 'non-violent activity' (Sharma, 1984). Motor Fitness is the capacity of an individual to perform a given task at a particular time. Health and Motor Fitness are not static. They are always changing. Health and Motor Fitness can be maintained only by carefully selected physical activities which are called 'exercise'. Physical exercise helps a man to possess a high degree of physical conditions. Muscular endurance is also plays an important role in the performance of individuals in various sports and games. Muscular endurance is an important fitness component and helps individuals in performing high performance. Muscular endurance is the ability of the muscles to continue to perform without fatigue (Hardayal Singh, 1979).

Background:

The investigator chose Handball as a sport due to its complex movement and high-level performance demands timely mind application during dribbling, passing the ball, and coping mechanisms in stressful situations, making it a suitable choice for this purpose.

Objectives of the study:

The purpose of the present study was to find out the effect of physical training and combination of physical and yogic training on motor fitness components of college level Handball players.

METHOD

Participants:

45 male Handball players from Alipurduar district in West Bengal, India, aged 18-20, were randomly selected voluntarily.

Research design:

The study used a true random group design with a pre-test and post-test. The 45 subjects were randomly assigned into three groups of 15 boys each. The control group was under control, while the experimental groups were given physical training, combined physical and yogic training. Pre-tests were conducted on abdominal muscular strength. The experimental groups participated in their respective practices for six weeks, and post-tests were conducted on the dependent variable after six weeks. The analysis of variance (ANCOVA) statistical technique was used to test the adjusted post-test mean differences among the experimental groups. Scheffe's post hoc test was used to find paired mean significant differences (Thirumalaisamy A. 1995).

Parameter:

By going through the literature and after consulting with experts in Handball, the investigator had chosen the variables which are specifically related to Handball Players.

Administration of Tests

Motor Fitness Variable

Motor Fitness	Associated Test-items	Co-efficient of Reliability
Abdominal Muscular Strength	Sit-ups	0.91

Abdominal Muscular Strength

Test : Sit-ups

Purpose : To measure abdominal strength and endurance

Equipments : Mats

Procedure: The student lays flat on the back with knees bent and feet on the floor with the heels no more than 1 foot from the buttocks. The knee angle should be no less than 90 degrees. The fingers are interlocked and placed behind the neck with the elbow touching the floor. The feet are held securely by a partner. The students then curl up to a sitting position and touch the elbows to the knees. This exercise is repeated as many times as possible in the time requirement.

Scoring: One point is scored for each correct sit-up. The score is the maximum number of sit-ups complete in 60 seconds (Harold M. Barrow and McGee, 1979).

Administration of Training Programs

The purpose of the present study, two training programs namely Physical training and combined of physical and Yogic exercise training alone were given to subjects in the Circuit training. The control group were strictly under control, without undergoing any special activity.

Circuit Training

The first day the team performs the entire circuit, 60 seconds of exercise and 20 seconds of rest between each station might be appropriate. This results in a six-station circuit that can be completed in 9 minutes and 40 seconds. The Physical training programme was scheduled at 7.00 a.m. on week days excluding Saturday and Sundays. Gradually, the exercise interval should increase and the rest interval should decrease. You will need to judge what the appropriate exercise/rest interval ratio is for the players.

Circuit Training No. 1 (First and Second Week)

SL No	Circuit Station	Exercise in each station
1	Star Jumps	60 sec.
2	Abdominal Crunch	60 sec.
3	Push-Ups	60 sec.
4	Knee Jumps/ Box Jumps	60 sec.
5	Skipping	60 sec.
6	Burpees	60 sec.

Circuit Training No. 2 (Third and Fourth Week)

SL No	Circuit Station	Exercise in each station
1	Star Jumps	90 sec.
2	Spot Running	90 sec.
3	Plank	90 sec.
4	Skipping	90 sec.
5	Handball Throw/ Pass	90 sec.
6	Back Extension	90 sec.

Circuit Training No. 3 (Fifth and Sixth Week)

SL No	Circuit Station	Exercise in each station
1	Star Jumps	120 sec.
2	Squats	120 sec.
3	Trunk Rotation	120 sec.
4	Sit-Ups	120 sec.
5	Step-Ups	120 sec.
6	Lunges	120 sec.

Yogic Practices

The team performs the circuit of Yogic exercise, 5 minutes for initial stretching exercise. After that Surya Namaskar performed in 5 times. Then the combined group performs the circuit 5 asana. Gradually, the exercise interval should increase and the rest interval should decrease. You will need to judge what the appropriate exercise/rest interval ratio is for the players. Yogic training programme was scheduled at 4.00 p.m. on week days excluding Saturday and Sundays.

Yogic Exercises First and Second Week

SL No	Circuit of Yogic exercises	Exercise in each station
1	Padmasana	3 times
2	Bajrasana	3 times
3	Paschimotanasana	3 times
4	Bhujangasana	3 times
5	Savasana	3 times

Third and Fourth Week

SL No	Circuit of Yogic exercises	Exercise in each station
1	Bajrasana	5 times
2	Halasana	5 times
3	Padahastanasana	5 times
4	Chakrasana	5 times
5	Savasana	5 times

Fifth and Sixth Week

SL No	Circuit of Yogic exercises	Exercise in each station
1	Bhujangasana	7 times
2	Sarvangasana	7 times
3	Gomukhasana	7 times
4	Dhanurasana	7 times
5	Savasana	7 times

RESULTS & DISCUSSION

Results of Analysis of Covariance

The objective of the present study is to compare the effect of physical training and combination of physical and yogic exercises on the variable used in the study were tested by an appropriate statistic toll, Analysis of covariance. The main aim of analysis of covariance is adjusting the initial mean with final mean and testing the adjusted mean on the criterion among the three groups. The descriptive measures and the results of analysis of covariance on the criterion measures were given in tables 1 and 2.

Descriptive Analysis

The primary objective of the descriptive analysis is describing the level of Handball players belong to physical exercise and combination of physical and yogic exercises group and control group on criterion measure such as Abdominal Muscular Strength. Further as one of the primary aims of analysis of covariance the means before the treatment on the above said variable was adjusted with their final means. The results of means before (initial) and after the treatment (final) along with the adjusted means were presented in table:

Table 1

Descriptive Analysis of Initial, Final and Adjusted Means of Physical Exercise and Yogic and Physical Exercise group and Control group on Criterion measure

Variables	Physical & Yogic Exercises			Physical Exercises			Control Group		
	Initial Mean	Final Mean	Adjusted Mean	Initial Mean	Final Mean	Adjusted Mean	Initial Mean	Final Mean	Adjusted Mean
Abdominal Muscular Strength	20.8	23.36	23.15	20.56	22.7	22.7	20.33	20.43	20.62

Table 2

Summary of Analysis of variance for the Initial Means among Physical Exercise group and Combination of Physical and Yogic Exercises group and Control group on Criterion measure

Variables	Source of Variation	df	Sum of Squares	Mean Squares	F-value
Abdominal Muscular Strength	Between Sets	2	3.269	1.63	0.407
	Within Sets	87	348.83	4	

* Significant at 0.05 level

The value in df 2 and 87 was 3.10

Results of Initial Means

The F-value obtained from testing the initial means among the three groups on the criterion measures were shown in the table 2, the corresponding 'F' values needed for significance at 0.05 level is 3.10 (Johnson and Nelson, 1986). The calculated 'F' value is Abdominal Muscular Strength (0.407). Since the observed "F" value of this are found as less than the required table value of 3.10 at 0.05 levels, the observed mean difference among the physical exercises and combination of physical and yogic exercises and control group on criterion

measures was statistically not significant. Thus the obtained results confirm the random assignment of subjects to groups was successful.

Table 3

Summary of analysis of variance for the final means among physical exercise group and Combination of Physical and Yogic Exercises group and Control group in performance related variable

Variables	Source of Variation	df	Sum of Squares	Mean Squares	F-value
Abdominal Muscular Strength	Between Sets	2	141.86	70.93	18.44*
	Within Sets	87	334.63	3.85	

* Significant at 0.05 level

The value in df 2 and 87 was 3.10

Results of Final Means

The F-value obtained from testing the final means among the three groups on the criterion measures were shown in the table 3, the corresponding 'F' values needed for significance at 0.05 level is 3.10 (Johnson and Nelson, 1986). The calculated 'F' value is abdominal muscular strength (18.44). Since the observed "F" value of this are found as greater than the required table value of 3.10 at 0.05 levels, the observed mean difference among the physical exercises and combination of physical and yogic exercises and control group on criterion measures was statistically significant.

Table 4

Summary of analysis of variance for the adjusted means among physical exercise Group and Combination of Physical and Yogic exercises group and control group in performance related variables

Variables	Source of Variation	df	Sum of Squares	Mean Squares	F-value
Abdominal Muscular Strength	Between Sets	2	108.27	54.13	58.11*
	Within Sets	86	80.11	0.93	

* Significant at 0.05 level

The value in df 2 and 86 was 3.10

Results of Adjusted Means

The F-value obtained from testing the final means among the three groups on the criterion measures were shown in the table 4, the corresponding 'F' values needed for significance at 0.05 level is 3.10. The calculated 'F' value is abdominal muscular strength (58.11). Since the observed "F" value of this are found as higher than the required table value of 3.10 at 0.05 levels, the observed mean difference among the physical exercises and combination of physical and yogic exercises and control group on criterion measures was statistically significant. It is evident that the Motor Fitness component are influenced by interventions used in the study. Since the observed mean difference among the three groups is statically significant is order to find out which of the pair of groups grown up for the significant difference the Scheffe's post-hoc test was applied.

Table 5
Scheffe's post-hoc test significance between paired final adjusted mean

Variables	Adjusted Mean			Mean Difference	F-Value
	Physical and Yogic Exercise	Physical Training	Control		
Abdominal	23.15	22.70	--	0.455	3.35*
Muscular	23.15	---	20.62	2.53	103.28*
Strength	---	22.70	20.62	2.07	69.41*

* Significant at 0.05 level

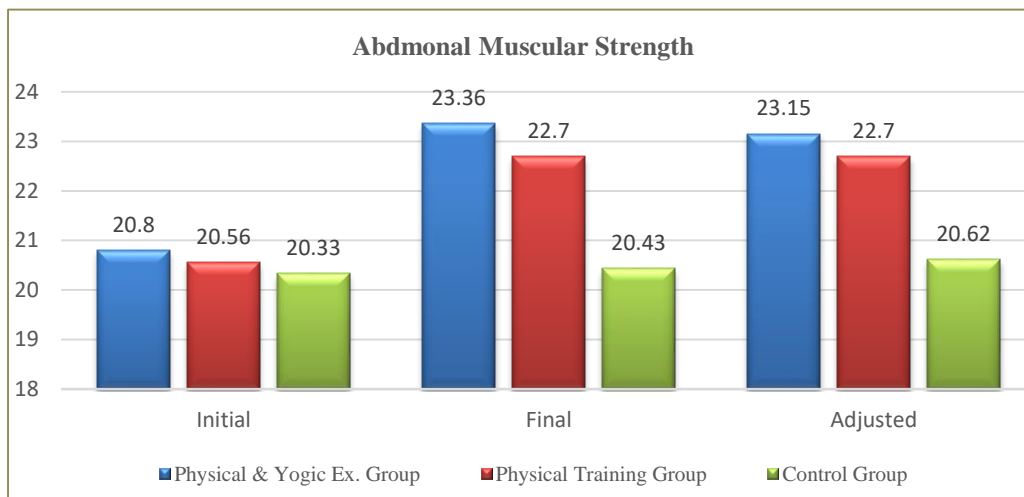
Results of Scheffe's Post-hoc Test

The F-ratios on the criterion measures given in the table 4 explained that the mean difference among three groups (physical exercises and combination of physical and yogic exercises and control group) on the variables used in the study was statistically significant. This significant mean difference among the three groups, lead to find out the pairs of adjusted mean grown up for the source of significance as Scheffe's post-hoc test was applied. The result of the Scheffe's post-hoc test was presented in table 5.

Table 5 reveals the adjusted mean values of three groups such as physical exercises, combination of physical and yogic exercises and control group on variable is abdominal muscular strength used in the study. The adjusted mean values of these groups on the variable used in the study were compared with one another. The obtained F-values on testing the significance of mean difference on all comparison were compared with concerned required critical value at 0.05 level of significance.

By this it was concluded that the players imparted with treatment of physical and yogic exercise group were significantly better than the players belonging to physical training and control group. Further when testing the significance of mean difference on the remaining criterion measure is abdominal muscular strength was tested, it was found that the performance of physical training group and combined physical and yogic exercises group was statistically significance of mean difference between the combined group and physical training group, it was found that the observed mean difference on these were statistically not significant. The mean values of physical exercises group and combination of physical and yogic exercises group and control group in performance related variable on abdominal muscular strength was graphically represented in Figure 1.

Figure- 1
Line Graph showing the mean differences on Abdominal Muscular Strength



CONCLUSION

The Following Conclusion have been made in the light of the findings of the present study

1. Finding on performance related factors (Abdominal Muscular Strength) positive confirm the influence of combined physical and control group. Since the factors of these above are having significant influences of mind related aspect, it is concluded that the incorporation of yogic exercises with the training is the prime source for such significance.

References

- [1]. Kirkwood G, Rampes H, Tuffrey V, Richardson J, Pilkington K. (2005) Yoga for anxiety: a systematic review of the research evidence. *British Journal of Sports Medicine*, vol. 39 (12): PP. 884-891.
- [2]. Thirumalaisamy, A. (1995). *Statistics in Physical Education*, Karaikudi, Senthil Publishers. P.18
- [3]. Sharma, P. D. (1984). *Yogasana and Pranayama for Health* Bombay, India: Navneet Publication, PP. 10-11
- [4]. Hardayal Singh. (1979). *Science of Sports Training*, (New Delhi: D.V.S. Publications, PP.115, 165.
- [5]. H. Harrison Clarke (1976). *The Application of Measurement Health and Physical Education*, Englewood Cliffs, New Jersey: Prentice Hall Inc, PP. 50.
- [6]. Barrow, Harold M. and McGee, Rosemary, (1979). *A practical approach to measurement in physical education*. (3rd Ed.) Philadelphia. Lea and Febiger.
- [7]. Johnson, B.L & Nelson, J.K (1974). *Practical measurement for evaluation in physical Education* (2nd Ed) Minnesota: Burgess publishing Company.