



# EFFECT OF 4-WEEK CONDITIONING ON SELECTED PHYSICAL FITNESS COMPONENTS OF HANDBALL PLAYERS

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### Abstract

Physical fitness is required by the player to survive in the game/sports, the conditioning of the body is done to improve its function and enhance its fitness. The purpose of this study was to evaluate the effect of 4 week conditioning programme on selected physical fitness components of handball players of physical education and sports university, chennai.. 25 handball players of tamilnadu physical education and sports university of the age group 18-25 years were selected, by random sampling technique, for the study. Conditioning programme for four weeks was adopted to develop cardiovascular endurance, agility, and flexibility of the athletes. Pre-test and Post-test were conducted. Standard tests were used to evaluate the parameters as, Cardiovascular Endurance (Queens College Step Test), Flexibility (Forward Bend and Reach Test) & Agility (4x10 Yards Shutter Run). The results showed that in Cardio-Vascular Endurance no significant differences were found ( $p < 0.05$ ). Similarly, in case of Agility no significant differences were found ( $p < 0.05$ ). And in Flexibility Significant differences were found ( $*p > 0.05$ ). It was concluded that 4-week conditioning programme did increase the flexibility of the handball Players significantly. But in case of cardiovascular endurance and agility 4-week conditioning programme does not work significantly.

**Keywords:** Conditioning, physical, fitness, hockey, cardiovascular endurance, agility, flexibility

### Introduction

“Physical fitness is not only one of the most important keys to a healthy body, it is the basis of dynamic and creative intellectual activity.” (John F. Kennedy)

Most authors define ‘physical fitness’ as the capacity to carry out every day activities without excessive fatigue and with enough energy in reserve for emergencies. Emphatically this definition is inadequate for a modern way of life. By such a definition almost anyone can classify himself as physically fit Gatchell (1977). Modern sport requires an incredible and exceptional level of fitness to survive in the competition

and to cope up with the level of the competing team. It is dream of every player or team to break other player or team's record or make one to stand on the top of the ranking list. Thus players should be engaging in a serious training/conditioning program to the supreme competitive sport. According to Encyclopedia Britannica (1994), the training of the body improves its function and enhances its fitness, so it is understood that for all systems of the body to be fit, we need physiological fitness which should respond to hard work and effective functioning of appropriate systems. Enthusiastic and aggressive representation of athletes during game, sometimes lead to overload on the body and may create some emergency situation. A well designed conditioning program provides opportunity for development and maintenance of physical fitness. In other words conditioning the body through regular exercises enables the player to meet emergencies more effectively. Clarke (1978) has thus exhorted that physical fitness is a vital biological need, the neglect of which handicaps the total effectiveness of the individual.

The benefits of physical fitness are numerous. The person who is physically fit has greater amount of strength, energy and stamina an improved sense of well being better protection from injury because strong well developed muscles safeguard bones, internal organs and joints and keep moving parts limber and improve cardio respiratory function Bucher and Prentice (1985)

In sport we divide events as; a) High intensity-short duration events, and b) Low Intensity-Long duration events and to cope up with the demand athlete needs to be physically fit. Likewise training or conditioning program should be adapted like that of Endurance training/conditioning program for long duration events that will occupy paramount role in polishing and inculcating better abilities. The duration of the match/event and extra time outs requires high class of cardiovascular endurance. The most outcome of regular endurance exercises is the ability to do more aerobic activities for longer periods of time.

Agility is the ability to change the direction of body or its parts rapidly. Quick change in direction is fundamental for good performance in the game. A player who possess high quality agility can use to advantage in competition. High level of agility decreases the potential for injury, improve performance. Barrow and McGee (1979) <sup>[4]</sup> Interprets Agility as the ability of the body or parts of the body to change directions rapidly and accurately. According to Phillips and Hornak (1979) <sup>[5]</sup> the agility is the ability to change directions rapidly and accurately. It depends essentially on strength, speed of reaction and movement, and big muscle coordination.

Flexibility training follows a few, simple principles. To improve range of motion, the muscles and other connective tissue around a joint must be stretched. The preferred stretching technique is a slow increase in the range of motion. The exerciser should feel the muscle stretch, but not to the point of pain. The stretch should be performed gradually, and the body should be held for 10 to 20 seconds in the stretched position and then gradually returned to a relaxed posture. By stretching each muscle group in this fashion as a part of the strengthening and conditioning program, the participant will maintain good flexibility, Blair and Cooper (2015) <sup>[6]</sup>. Good flexibility therefore helps in achieving higher movement economy.

According to Harre (1979) <sup>[7]</sup> for a high level of efficiency in techniques and tactics in most sports; a high level of physical fitness is most important. Therefore, physical fitness is considered to be fundamental criterion for developing an efficient system of selection strategy and efficient performance is possible through only a careful planned conditioning & training program and progressive practice.

Carolyn Gillespie (2015) <sup>[8]</sup>, Fitness in the game of field hockey is just as important as passing and receiving, scoring, tackling, making saves and playing well. Fitness is key to your success both in the short and long term in playing this sport, and importantly, it helps you maintain a healthy and active lifestyle, helping to minimize and prevent injuries.

### **Purpose of the study:**

The purpose of the present study was to determine the effect of four week conditioning program on selected fitness components of handball players

### **Hypothesis**

- There will be a significant improvement in flexibility of the handball players through 4-week conditioning program.
- There will be no markable improvement in Cardiovascular endurance and agility through 4-week conditioning program

## Delimitations

- Duration of the study was delimited to 4 weeks only
- Subjects age was delimited to 18—25
- Only 25 handball players were selected
- Subjects were selected from Tamil Nadu physical education and sports university
- Only 3 variables were chosen namely, cardiovascular endurance, agility and flexibility

## Limitations

- Researcher has no control over the rest of the physical fitness variables of the subjects
- Researcher has no control over the psychological variables that affect the assessment of the subjects.

## 1. Methodology

The present study was conducted on 25 Handball players of tamil nadu physical education and sports university of the age group 18-25 years. Those handball players who were level in handball selected for the present study. Conditioning programme for four weeks was adopted to develop cardiovascular endurance, flexibility and agility of the athletes viz-a-viz warming-up, high intensity run, zigzag running, slow-long duration running, Stretching Exercise (With and Without Partner) and Limbering Down, 2 hours a day, 6 days in a week and continuously for 4 weeks. Single Group Design was implemented. Pre-test and Post-test were conducted. Standard tests were used to evaluate the parameters as, Cardiovascular Endurance (Queens College Step Test), Flexibility (Forward Bend and Reach Test) & Agility (4x10 Yards Shutter Run).

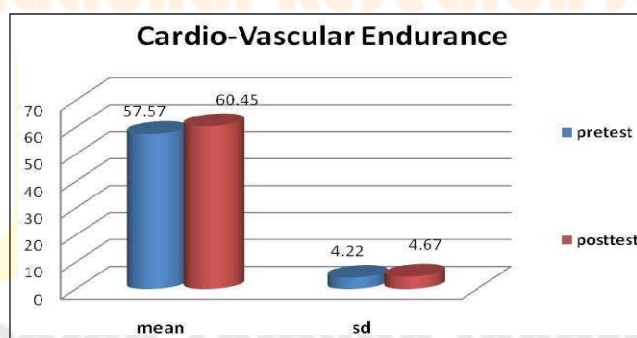
## Statistical technique

For analysis of the data on physical fitness variables, Mean & Standard Deviation was computed. To find out the significant difference, if any, t-test was used.

## 2. Results

**Table 1:** Mean, Standard Deviation and t-test values of Cardiovascular Endurance

Variable	Pre-test		Post-test		Calculated t value	Tabulated t value
	Mean	SD	Mean	SD		
Cardiovascular Endurance	57.57	4.22	60.45	4.67	1.65	2.060



**Fig 1:** Represents pretest and post test Mean and SD of Cardiovascular Endurance of handball players of tamil nadu physical education and sports university.

**Table 2:** Mean, Standard Deviation and t-test values of Agility.

Variable	Pre-test		Post-test		Calculated t value	Tabulated t value
	Mean	SD	Mean	SD		
Agility	12.91	1.14	11.52	0.58	1.59	2.060

Fig 2: Represents pretest and post test Mean and SD of Agility of handball players of tamil nadu physical education and sports university

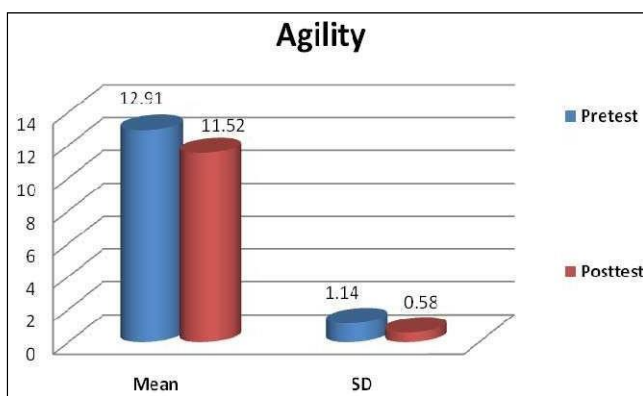


Table 3: Mean, Standard Deviation and t-test values of Flexibility.

Variable	Pre-test		Post-test		Calculated t value	Tabulated t value
	Mean	SD	Mean	SD		
Flexibility	6.96	3.43	8.00	3.67	2.57*	2.060

\*Significant

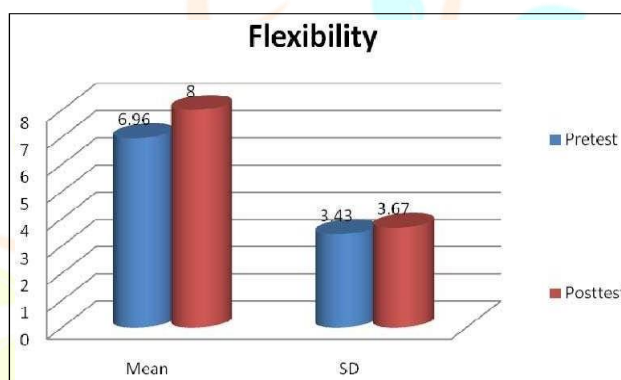


Fig 3: Represents pretest and post test Mean and SD of Flexibility of handball players of tamil nadu physical education and sports university

### Discussion

The results showed that in Cardio-Vascular Endurance no significant differences were found. John F. Alexander *et al.* (1968) [10] investigated the effects of a 4-week training program on changes in cardiovascular fitness of physically conditioned young men. The results of the study indicate small positive effect on improvement of the cardiovascular fitness level. Similarly, in the current study the pre and post test means showed little, but not significant, changes in the cardiovascular endurance of the handball players. In Agility no significant differences were found. Sing M. Nodiyach and (2012) [9] studied effect of 6 weeks conditioning on physical fitness, no significant differences were found in agility.

In Flexibility Significant differences were found. Daniel Cipriani *et al.* (2012) completed a four-week hamstring-stretching program and found that the subjects gained an average of 18.1 degrees of hip range of motion as a result of the increased hamstring length. That means conditioning together with stretching was effective at improving flexibility. Minor difference in pre and post test means for cardiovascular endurance (from pre-57.57 to post-60.45) and agility (from pre-12.91 sec. to post-11.52 sec.) were found, but were not significantly different.

### Conclusion

On the basis of the analytical estimate of the results and within the limitations of the present study, the following conclusions have been drawn, it was concluded that 4 weeks conditioning programme had no significant effect on cardiovascular endurance and agility of handball players Whereas, in case of Flexibility, significant differences were found in pre and post test means.

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