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**Gursharan Singh Gill**  
Assistant Professor,  
Department of Physical  
Education, Khalsa College,  
Patiala, Punjab, India

## Impact of SAQ and plyometric training on speed ability for handball players

**Gursharan Singh Gill**

### Abstract

Handball is a modern ball game which belongs to the family of team sports. It combines the best features of different branches of sport, that is, the advantages of physical abilities, technical skills and tactical knowledge. This study aimed to find out the impact of SAQ and plyometric training on speed ability for handball players. For this purpose the researcher selected 30 male handball players, age ranges between 18-25 years. Further the subject were given the training of SAQ, plyometric for 12 weeks. Samples were selected at different playing levels i.e. AIU, SGFI, HFI and PHA from Punjab state. Random sampling technique was applied to select the sample. Physical fitness variable i.e. speed were selected for this study. To find out the difference among all the groups of Physical fitness variable 'ANCOVA' test was applied at 0.05 level of significance. The results showed that there is a significant difference found among all the groups.

**Keywords:** Control group, SAQ group, plyometric group, speed & ANCOVA

### Introduction

The human body is an amazing machine. All human movements, from the blinking of an eye to the running of a marathon, depend on the proper functioning of skeletal muscles. Whether it is the strained effort of a sumo wrestler or the graceful pirouette of a ballet dancer, physical activity can be accomplished only through muscle force. Gill and Deol (2017) <sup>[4]</sup> find out the effect of 12 week S.A.Q training on handball skill performance variables of handball players. The results showed that there is a significant difference found between all the handball skill variables. Emeish (2015) <sup>[3]</sup> find that speed, agility, quickness is a system of training that enhances performance levels in all sports. The results revealed significant differences between pre- and post- measurements (speed-agility and reactive agility tests). Our suggestion is that young athletes can benefit by reinforcing muscles and improving the speed, agility, flexibility and jump shoot performance through S.A.Q exercises. Siva and Jesudass (2015) <sup>[11]</sup> examined the impact of S.A.Q training on selected skill among hockey men players. The result reveals that there was a significant difference on dribble of experimental group than control group which support the present study conducted by researcher. Shivaji *et al.*, (2013) made an attempt to study the Speed, agility, and quickness (S.A.Q.) training which has become a popular way to train athletes. The findings of the present study have strongly indicates that 12 weeks of S.A.Q. training have significant effect on selected skill performance variables i.e., serving and passing ability of junior volleyball players.

### Material and Methods

The purpose of the study was to find out the impact of SAQ and plyometric training on speed ability for handball players. Total 30 male handball players were selected; age ranges between 18-25 years. The data was obtained from Punjab.

### Variables

**Physical Fitness Variable:** Speed

### Statistical Consideration

For interpretation of the data statistical techniques of was applied to find out mean differences. Further to see the difference among various categories 'ANCOVA' test was applied.

**Correspondence**  
**Gursharan Singh Gill**  
Assistant Professor,  
Department of Physical  
Education, Khalsa College,  
Patiala, Punjab, India

**Results**

Different types of descriptive statistic such as mean and standard deviation was computed to describe each variable statistically. The level of significance was set at .05. Its results have been depicted in the following table.

**Table 1:** Analysis of co-variance (Ancova) of speed test among plyometric, SAQ and control groups

| Source          | Type III Sum of Squares | Df | Mean Square | F       | Sig. |
|-----------------|-------------------------|----|-------------|---------|------|
| Corrected Model | 41.40 <sup>a</sup>      | 3  | 13.80       | 1.435E3 | .000 |
| Intercept       | .02                     | 1  | .02         | 2.56    | .11  |
| SPEED           | 4.85                    | 1  | 4.85        | 504.33  | .00  |
| Groups          | .07                     | 2  | .03         | 3.66    | .03  |
| Error           | .82                     | 86 | .01         |         |      |
| Total           | 2684.04                 | 90 |             |         |      |
| Corrected Total | 42.23                   | 89 |             |         |      |

- a. R Squared = .980 (Adjusted R Squared = .980)
- b. Computed using alpha = .05

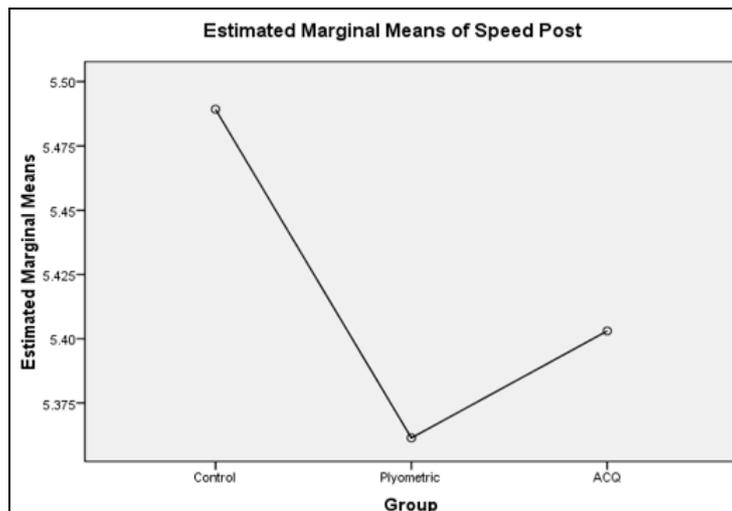
Table 1 shows the F value for comparing speed among control, plyometric and SAQ groups, since p-value for the F-statistics is .000, which is less than 0.05, it is significant. Thus the alternative hypothesis is accepted. Since the F-value is significant, to find out the critical differences, post hoc test has been made, which is shown in the next table.

**Table 2:** Pairwise Comparisons of Speed Test among Plyometric, SAQ and Control Groups

| Group (Mean)   |                  | Mean Diff | Std. Error | P-Value (Sig.) |
|--|------------------|-----------|------------|----------------|
| <b>Control Group</b><br>N= 30<br>(5.48 <sup>a</sup> )      | Plyometric Group | .12       | .05        | .09            |
|  | SAQ Group        | -.04      | .02        | .33            |
| <b>Plyometric Group</b><br>N= 30<br>(5.36 <sup>a</sup> )   | SAQ Group        | -.04      | .02        | .33            |
|  | Control Group    | -.08      | .06        | .53            |
| <b>SAQ Training Group</b><br>N= 30<br>(5.40 <sup>a</sup> ) | Control Group    | -.08      | .06        | .53            |

The mean difference is significant at the 0.05 level. From table-2 the following conclusions were drawn:

Table 2 represented that mean difference of speed between control group and plyometric group is found to be insignificant .12. Plyometric group (5.36) has exhibited significantly higher speed than their across control group (5.48). Mean difference of plyometric group and SAQ group is found to be insignificant -.04. SAQ group (5.40) had exhibited significantly supreme in speed than plyometric group (5.36). Mean difference of speed between SAQ group and control group is found to be significant -.08. SAQ group has exhibited insignificantly lower speed than control group.



**Fig 1:** Mean scores of speed test among plyometric, SAQ and control groups

**Discussion of the findings**

While comparing the mean value of speed despite the fact that there was an increase in speed values due to the training, statistically significant difference was found in between all the groups. On the contrary, it is stated that in season 12-week high-intensity plyometric & SAQ training can positively affect sprint performance on young male handball players. The outcome of the result might be due to the fact that experimental group was under twelve week SAQ training in which the speed component of handball players was increased by following training drills short sprints, high knee, butt kick, inclined running weighted arm swings & figure drills etc. which was the part of the SAQ drills. The increased speed ability might be helpful in counter attack offensive & defensive movements and in fast break during the play. These findings are reinforced with Clark *et al.* (2014) [2] they said SAQ drills can also be used to teach movement or to condition an athlete. McArdle, Katch & Katch (2001) [6] who said plyometric training used by many coaches and training experts to improve the sprint & sprinting ability of players.

Singh & Deol (2016) [10] conducted a study on “effect of 12 weeks of SAQ drills training programme on selected physical, physiological variables and hockey skills” also found that after giving the SAQ drill training there is significant effect on the speed variable. Nageswaran (2013) [7] conducted a study to find out the effect of SAQ (Speed Agility Quickness) training on speed, agility and balance among inter collegiate Athletes also explored that significant improvement and significant different exist due to the effect of SAQ training on speed among inter collegiate athletes when compared to control group. Chettiamkudiyil *et al.*, (2015) [1] has also found that plyometric training improved speed better than SAQ training. Emeish (2015) [3] and has also revealed that young athletes can benefit by reinforcing muscles and improving the speed performance through SAQ exercises. The results line with that study on impact of plyometric training improved on speed and power of tennis players (Salonikidis & Zafeiridis, 2008; Villarreal *et al.*, 2009) [8, 13]. Kamalakkannan and Mahadevan (2012) [5], Sheppard *et al.*, (2006) [9] and Sivarajan (2003) also advocated these findings.

## Conclusion

Taking into account the discoveries of this study, the accompanying conclusion were drawn:

- It was observed that the experimental group were having higher rate of improvement in the performance of speed as compare to control group of handball players.

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