

Plyometric Training: A Boon for Physical Fitness of Handball Players

^aGursharan Singh Gill, ^bNishan Singh Deol

^aAssistant Professor, Khalsa College, Patiala, India

^bProfessor And Head Department Of Physical Education, Punjabi University, Patiala, India

Abstract

Handball is very fascinating modern game with fast and excitement action. Successful performance in Handball requires the good motor abilities and physiological and precise skill to accomplish desired result. This study aimed to find out the effect of 12 week plyometric training on physical fitness variables of handball players. For this purpose the researcher selected 30 male handball players, age ranges between 18-25 years. 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 variables i.e. agility, speed and standing broad jump were selected for this study. To find out the difference between pre and post data of selected physical fitness variables 't' test was applied at 0.05 level of significance. The results showed that there is a significant difference found between all the physical fitness variables.

KEY WORDS: Plyometric, Speed, Agility, Standing broad jump

INTRODUCTION

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. Sport plays a very prominent role in the modern society. It is important for individuals, group, nation and indeed the world. Throughout the world, sport has a popular appeal among the people of all ages and both sexes. Much of the attraction of sport comes from the wide variety of experience and feeling that result from the participation such as success, failure, exhaustion, pain, relief and feeling of belonging. Sport can bring fame, glory, status and goodwill. However, sport can also bring tragedy, grief and even death (Uppal, 1992). (Ezhilmaran, 2016) the purpose of the study was to find out the effect of specific drills with plyometric training on selected skills performance variables of school level men handball players. The dribbling skill tested with six mts speed dribble test and passing skill tested with speed pass test standardized tests were used. The results showed that the experimental group showed improvement in selected skill performance variables were dribbling and passing due to effect of specific drills with plyometric training. The control group did not improve the selected the criterion variables. (Emeish, 2015) found 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 SAQ exercises. The results of (Matlak et. al., 2015) study underscore the importance of cognitive factors in reactive agility performance and

suggest that specific methods may be required for training and testing reactive agility and change of direction speed.(Chettiamkudiyil et. al., 2015) showed that Plyometric training improved explosive strength and speed better than SAQ training both for the 6 weeks training programme among the male university level soccer players.

MATERIAL AND METHODS

The purpose of the study was to find out the effect of 12 week plyometric and SAQ training on physical, physiological and skill performance variables of handball players. Total 30 male handball players were selected; age ranges between 18-25 years. The data was obtained from Punjab.

VARIABLES

PHYSICAL FITNESS VARIABLES:

1. Agility
2. Speed
3. Standing broad jump

STATISTICAL CONSIDERATION

For interpretation of the data statistical techniques of ‘t’ test was applied to find out mean differences.

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 –4.1.1

SIGNIFICANT OF MEAN DIFFERENCES BETWEEN PRE AND POST DATA OF PHYSICAL FITNESS VARIABLES OF PLYOMETRIC GROUP

	GROUP	N	Mean	Standard deviation	Mean Diff	Std. Error Mean	Std. Error Diff	‘t’
AGILITY	PRE TEST	30	10.60	.12	.21	.02	.02	7.63*
	POST TEST	30	10.39	.09		.01		
SPEED	PRE TEST	30	5.28	.00	.26	.00	.01	19.49*
	POST TEST	30	5.01	.07		.01		
STANDING BROAD JUMP	PRE TEST	30	2.34	.06	-.59	.01	.02	-27.32*
	POST TEST	30	2.93	.09		.01		

Tabulated 't' value (1.98) at .05 level of significance

df=28

Table 4.1.1 shows that the mean values of physical fitness variables with regard to plyometric group are 10.60 & 10.39 for pre and post-test agility whereas the SD is 0.12 & 0.09. In the case of speed mean and SD values are 5.28 & 5.01 and .00 & .07 respectively. The mean value of standing broad jump for pre-test is 2.34 and for post-test are 2.93. The SD values are .06 and .09 of standing broad jump. The calculated t-value of agility of control group is 7.63*, 19.49* for speed and -27.32* is for standing broad jump. Tabulated t-value is (1.98) at .05 level. So, it depicts that there is significant difference found between pre and post-test of agility, speed and standing broad jump.

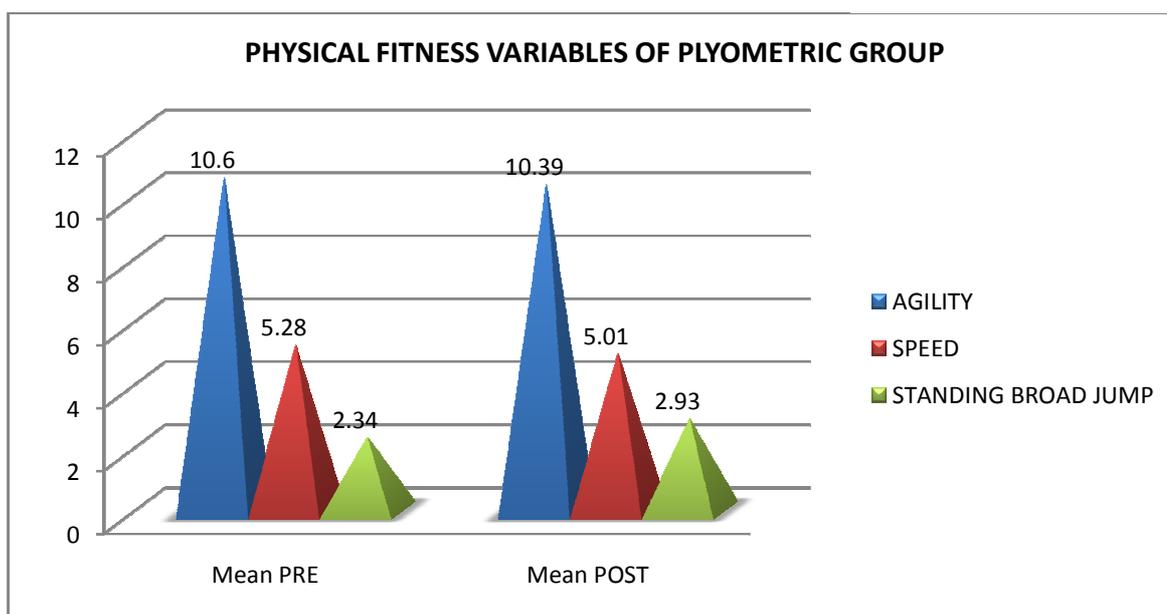


FIGURE 4.1.1: MEAN SCORES OF PRE AND POST DATA OF PHYSICAL FITNESS VARIABLES OF PLYOMETRIC GROUP

DISCUSSION OF THE FINDINGS: AGILITY VARIABLE

The results showed the statistically significant difference was found between pre and post-test values of agility variable. The results proved that after the 12 weeks of plyometric training handball players improves the rate of agility. The result might be based upon the fact that under the twelve week plyometric training in which the agility component of handball players was increased by following training drills; lateral jumps to box, front cone hops & explosive start throw etc. Agility is helpful for handball player in various aspects in a game situation during one to one faint, group tactics, dodging, scoring the goal & it is also helpful for pivot player. Miller et. al. (2006) undertook a study on "to determine the six weeks of plyometric training can improve an athlete's agility" had found that plyometric training can be an effective training technique to improve an athlete's agility. The findings of this sub variable confirm the findings of Kultu et. al. (2012).

SPEED VARIABLE

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 between pre and post-test values of plyometric group. On the contrary, it is stated that in season 12-week high-intensity plyometric 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 plyometric training in which the speed component of handball players was increased by following training drills explosive start throw, dept push ups, standing jump reach etc. which was the part of the plyometric 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 McArdle, Katch & Katch (2001) who said plyometric training used by many coaches and training experts to improve the sprint & sprinting ability of players. Devaraju (2014) also found the significant impact of plyometric training was found on Speed. Chettiamkudiyil et. al. (2015) has also found that plyometric training improved speed better than SAQ training. 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). Kamalakkannan and Mahadevan (2012), Sheppard et. al. (2006) and Sivarajan (2003) also advocated these findings.

STANDING BROAD JUMP

While comparing the results of pre & post values of standing broad jump it proved that training affects the performance of players. The statistical result shows the significant difference between pre & post values of plyometric group. Plyometric training positively affects standing long jump. The basic reason behind this could be the fact that the players was under twelve week plyometric training in which the standing broad jump component of handball players was increased by following training drills lateral cone hops, bounding, split squat jumps with dumbbells & box jumps etc. which was the part of the plyometric drills. Leg strength is a very imperative aspect of hand ballers the optimum leg strength can help to right and left finger to score goal it may also helpful for the scorer while taking jump in the air while attempting the goal. In pivot player lower explosive strength can improve stability and conversion rate. Chettiamkudiyil et. al. (2015) has also found that plyometric training improved explosive strength better than SAQ training. Very much in line with the existing literature Robinson et al., (2004) Potash & Chu (2008) plyometric training has widely been used to enhance muscular power output, force production, velocity, and aid in injury prevention. Asadi & Arazi (2012) applied the 6-week high-intensity plyometric training program on young male basketball players and found that standing long jump improved on plyometric group. These studies are in agreement with the result of the current paper. It is thought that cause of this situation that is aroused is sample group included in team sport's players (handball, soccer, basketball) in both studies. The study of Devaraj (2013) is completely justified with the present study. The findings of Sivarajan (2003) also strengthened with these findings.

CONCLUSION

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

- It was detected that after the 12 week of plyometric training handball players were having improved the performance of agility, speed & standing broad jump.

REFERENCES

- Chettiamkudiyil, H. B., Meethal, A. and Najeeb, A. M., (2015). Effect of plyometric training and Saq training on explosive strength and speed of university level soccer players. *International research journal*; Vol-17(1):170-173.
- Emeish, M. K. (2015). Effect of s.a.q exercises on certain physical variables and jump shot in handball. *Science, Movement and health*; Vol-15(2):462-467.
- Ezhilmaran, N. (2016). Effect of specific drills with plyometric training on selected skill performance variables of school level men handball players. *Indian journal of applied research*; Vol-6(7):24-25.
- Kamalakkannan, S. and Mahadevan, V. (2012). Analysis of selected physical, physiological and skill performance variable related to playing ability among the handball players. *International journal of advanced and innovative research*.
- Matlak, J., Tihanyi, J. and Racz, L.(2015). Relationship between reactive agility and change of direction speed in amateur soccer players. *Journal of strength conditioning research*.
- Uppal, A.K. (1992). Physical fitness. Published by friends' publication, Delhi.
- Asadi, A, and Arazi, H. (2012). Effects of high-intensity plyometric training on dynamic balance, agility, vertical jump and sprint performance in young male basketball players. *Journal of sport and health research*; Vol-4(1):35-44.
- Miller, M.G., Herniman, J.J., Ricard, M.D., Cheatham, C.C. and Michael, T.J. (2006). The effects of a 6-week plyometric training program on agility; *Journal of sports science and medicine*, Vol-5:459-465
- Mcardle, D.M. Katch, Fi. & Katch, V.I, (2001). *Exercise physiology: energy, nutrition and human performance* (5th ed.). Philadelphia, pa: lippincott williams and wilkins.
- Devaraj, A. B. (2013). Influence of saq and plyometric training on selected physical fitness components among hockey players. *Jiarm*; Vol-1(5).
- Devaraju, K. (2014). Effect of S.A.Q training on vital capacity among hockey players. *Journal of sports science medicine*; Vol-5(1):102-105.
- Salonikidis and Zafeiridis (2008). The effects of plyometric, tennis-drills, and combined training on reaction, lateral and linear speed, power, and strength in novice tennis players. *Journal of strength and condition research*; Vol- 22(1):182-91.
- Sheppard, J.M., Young, W.B., Doyle, T.L.A., Sheppard, T.A., and Newton, R.U. (2006). An evaluation of a new test of reactive agility and its relationship to sprint speed

and change of direction speed; *Journal of science and medicine in sport*, Vol-9:342-349

Sivarajan, S. J. (2003). Effect of plyometric training and detraining on speed and explosive power (Unpublished M.phil thesis, Pondicherry University, Pondicherry).

Villarreal, D., Kellis, K., and Izquierdo (2009). Determining variables of plyometric training for improving vertical jump height performance: *a meta-analysis Journal of strength and condition research*; Vol-23(2):495-506.

Kutlu, M., Yapici, H., Yoncalik, O. and Celik, S. (2012). Comparison of a new test for agility and skill in soccer with other agility tests. *Journal of human kinetics*; Vol-33:143-150.