ISSN PRINT 2319 1775 Online 2320 7876

Research paper **© 2012 IJFANS. All Rights Reserved, UGC CARE Listed (Group -I) Journal Volume 11,S Iss 3, Dec 2022**

Influence Of Plyometric Training On Acceleration And Agility

Mr. Pintu Debnath[1*]
[1*]Research Scholar, Faculty of Physical Education & Yoga, ICFAI University Tripura, India,
e-mail: pintudn12@gmail.com

Dr. Surjya Kanta Paul[2]
[2]professor & Coordinator, Faculty of Physical Education & Yoga, ICFAI University Tripura, India,
e-mail: surjyakantapaul@iutripura.edu.in

*__Corresponding Author:-__Mr. Pintu Debnath

*Research Scholar, Faculty of Physical Education & Yoga, ICFAI University Tripura, India,
e-mail: pintudn12@gmail.com

ABSTRACT

Background- The main purpose of the study was to find out the influence of plyometric training on acceleration and agility of men football players.
Methodology-In this study, the researcher has selected a total of ten (10) men football players who have participated in at least one intercollegiate tournament and are presently students at ICFAI University, Tripura. The age range of football players was 17 to 23 years, respectively. A six-week plyometric training programme was applied three days a week on an alternative basis. The pre-test and post-test data were collected through the RAST test for acceleration and the SEMO test for agility.
Results-After six-weeks of training, the mean acceleration time decreased from pretest.1967 to post-test.1303 and the mean agility time decreased from pretest 13.4300 to post-test 13.0650 in the plyometric training group. The statistical tools were used in a paired t-test with the help of SPSS software version 20. The level of significance was fixed at 0.05.
Conclusion-The results of the study concluded that plyometric training is helpful to improve acceleration and agility. It is possible that plyometric training improves the acceleration and agility of men football players.

KEY WORDS: Plyometric Training, Acceleration, Agility and Football Players.

INTRODUCTION

Plyometric training is a highly effective form of muscular strength training which significantly improves sports performance. It produces fast and powerful movements that provide explosive strength for football players. Plyometric training describes how to bring out power development of athletes. Research indicates that they could improve fast twitch fibers and sports performance. It consists of high-intensity dynamic exercises such as jumping, hopping and weighted jumps, and so on. Most sports scientists and coaches believe that plyometric training is effective methods for increasing muscular power. plyometric training is based on the concept of post activation potentiation (PAP). PAP is the high level of muscle function subsequent to intense muscle activity. plyometric training is the most advanced training programme today for improving sports performance. Every football player needs more speed and agility capacity because, in a football match, players need to move quickly. So, as a football player, they need to improve fitness

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 3, Dec 2022

component. The improvement of acceleration and agility for sports performance has been studied and evaluated greatly. plyometric training methods may be the most common modalities. As athletes, they have continuously tried to improve to run faster, jump higher, and have more strength, endurance, and skill. Athletes get so much scientific knowledge and experience to understand and improve the effects of exercise on the human body. Training is not a new thing; it has been used since ancient times for military and Olympic endeavors. Athletes today use more scientific and systematic training to improve a specific body part or skill and achieve their goals. This training process is not a single day; it may take a month or a year, depending on the target and the systematic training process. The major objective of training is to improve physical, physiological, and psychological adaptation in order to improve specific skills to the highest standard. Acceleration and agility are most essential components of physical fitness which are help full to all the football players to move first during the competition.

STATEMENT OF THE PROBLEM

The problem of the study was to evaluate the "influence of plyometric training on acceleration and agility."

OBJECTIVES OF THE STUDY

The objectives of the study were as follows:

i. To find out the influence of plyometric training on acceleration and agility of men football players.

ii. To compare the pre-test and post-test of six-week plyometric training influence on acceleration and agility of men football players.

METHODOLOGY

The purposes of the study, the subjects were selected using the purposive sampling method. Ten football players who have participated in at least one intercollegiate tournament and are currently students at ICFAI University, Tripura, comprised the total number of subjects. The age range of football players was 17 to 23 years, respectively. A six-week plyometric training programme was applied three days a week on an alternate basis. The pre-test and post-test data were collected through the RAST test for acceleration and the SEMO test for agility. The statistical tools were used in a t-test with the help of SPSS software version 20. The level of significance was fixed at 0.05 levels.

TRAINING PROGRAMME

In the training period, the plyometric training group underwent training for three days a week for six weeks. The experimental group exercised for one hour in the morning session, beginning with a warm-up and progressing to single leg hops, bounding, clapping push up, lateral jump, box jump, tuck jumps, running leg bounds and finally cooling down. At the beginning of the training, it was conducted with three sets and 90% intensity, and after the first week, two sets and 100% intensity were added up to six weeks.

STATISTICAL ANALYSIS

The mean and standard deviation were calculated for the acceleration and agility of the training group. And the data were analyzed using a paired t-test with the help of SPSS version 20. Statistical significance was fixed at 0.05 levels of confidence.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 3, Dec 2022

RESULT AND DISCUSSION

This study discovered that six-weeks of plyometric training resulted in significant improvements in acceleration and agility. This study proves that six-weeks of training programmed with three days per week can increase the acceleration and agility of men football players due to plyometric training. The findings of this study concluded that plyometric training significantly improved acceleration and agility in dependent variables. The results are shown in the table below.

Table-1: Table shows that the differences of means and standard deviation of acceleration and agility.

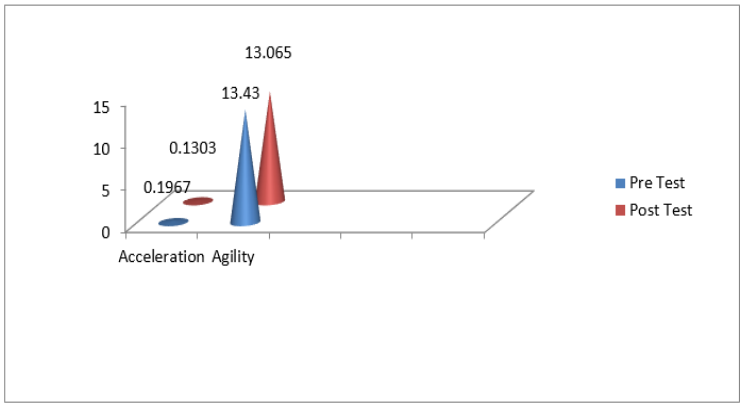
Variables	Groups	Test	Mean	SD	df	't' Value
Acceleration	Experimental	Pre test	.1967	.02423	9	4.444
		Post test	.1303	.03818		
Agility		Pre test	13.4300	.53298		2.838
		Post test	13.0650	.24623		

***Significant at 0.05 level.**

From the above table, the researcher has done his experiment with pre-test and post-test design and has taken test before and after the plyometric training. From the table, the researcher has found that the mean value of acceleration is pre-test.1967 and post-test.1303 and the SD value is pre-test.02423 and post-test.03818 before and after training, respectively. The obtained "t" ratio value is 4.444 and on acceleration, it is greater than the tabulated value of 2.262 with a degree of freedom of 9 at 0.05 level of confidence. The result of the study showed that there was a significant decrease in acceleration after taking plyometric training among men football players.

The mean value of agility is pre-test 13.4300 and post-test 13.0650 and the SD value is pre-test .53298 and post-test .24623 before and after training, respectively. The obtained "t" ratio value is 2.838 and on agility, it is greater than the tabulated value of 2.262 with degree of freedom 19 at 0.05 level of confidence. The result of the study showed that there was a significant decrease in agility among men football players after taking plyometric training.

Figure No.1: The graphical representation of mean value of Acceleration and Agility.



The graphs above show that men football players performed well in terms of plyometric training, particularly in terms of acceleration and agility. The researcher has used pre-test and post-test to

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 3, Dec 2022

check their performance. Pre-test has been taken before plyometric training has been scheduled after that six-week plyometric training, and finally, a post-test has been conducted on the ground.
In football players, the acceleration variable decreased from .1967 to .1303.This data shows that before plyometric training, football players spent much time in acceleration, while after plyometric training, it has been reduced, which shows the improvement of football players.
In Agility, a variable shows decreased in football players from 13.4300 to 13.0650. This data shows that football players spent a lot of time practicing agility before plyometric training, but they spent less time practicing agility after plyometric training, indicating that football players improved.

CONCLUSION

The results found that the plyometric training group had significantly improved acceleration and agility compared with pre-test and post-test of men football players. It has been proven that plyometric training is the best method for improving the acceleration as well as the agility of men football players.

REFERENCE

- Luca, P.,Ardigo., Arazi, H., Andrade, C.D., Aloui,G., Hermassi,S., Cherni,Y., Gaamouri, N., & Shephard,J.R(2020) Effect of elastic band based plyometric exercise on explosive muscular performance and change of direction abilities of male team handball players.Frontiers in Pysiology. 11:604983.Doi: 10.3389/fphys.2020.604983.
- Sporri, D.,Ditroilo,M., Pickering,R.E., Johnston,R., Sheehan,W.& watsford, M.(2018) The effect of water-based plyometric training on vertical stiffness and athletic performance.Plosone,11(4). 268-83.
- Robinson,L., Devor, S., Merrick, M. & Buckworth, J.(2004) the effects of land vs. aquatic plyometrics on power, torque, velocity, and muscle soreness in women.Journal of strength and conditioning research, 18(1), 84-91.
- Sheppard,J.M.,Gabbett,T. J.,&Stanganelli, L.R.(2009)An analysis of playing positions in elite men's volleyball: Considerations for competition demands and physiological characteristics.Journal of strength and conditioning research, 23, 1858-1866.Doi: 10.1519/JSC.0b013e3181b45c6a.
- Mohamed, A.A. (2016).Effect of complex training on jumping variables during heading the ball for soccer players. International sports science Alexandria journal, Doi:10.21608/isalexu.2018.92945.
- Ali, K., Hussain, E.M., Verma, S., & Ahmad, I. (2017). Complex Training: An Update. Journal of Athletic Enhancement, 6(3), Doi:10.4172/2324-9080.1000261.
- Lim, J & Barley, C. (2016). Complex training for power development:practical applications for program design. Strength and conditioning journal, 38(6): 33-43. Doi: 10.1519/SSC.0000000000000265.
- Thompson, T., Berning, J., Harris, C., Kent, J., Adams, Debeliso, M. (2017) the effects of complex training in male high school athletes on the back squat and vertical jump. International journal of sports science, 7(2): 50-55. Doi: 10.5923/j.sports.20170702.05.
- Cavaco, B., Sousa, N., Reis,V.M., Garriodo,N., Saavedra,F., Mendes, J & Alves, V.J(2014) Short-term effects of complex training on agility with the ball, speed, efficiency of crossing and shooting in youth soccer players. Journal of human kinetics. 43(1). Doi:10.2478/hukin-2014-0095.

ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11,S Iss 3, Dec 2022

- Silva, R.J., Nassis,P.G & Rebelo, A.(2015). Strength training in soccer with a specific focus on highly trained players. Springer,1:17. Doi: 10.1186/s40798-015-0006-z.
- Freitas, T.T., Rodriguez, M. A., Gonzalez, C.J.& Alcaraz,E.P.(2017). Short-term adaptations following complex training in team-sports: A meta-analysis.12(6).https://doi.org/10.1371/journal.pone.0180223.
- Santos, M.J.E.(2008). Effect of complex training on explosive strength in adolescent male basketball players. The journal of strength and conditioning research, 22(3).doi:10.1519/JSC.obo13e31816a59f2.
- Lesinski,M., Muehlbauer,T., Busch,D & Granacher,U (2014). Effect of complex training on strength and speed performance in atheletes:a systematic review. Effects of complex training on athletic performance.28(2), Doi: 10.1055/s-0034-1366145.Epub 2014 mar 5.
- Syed, I., Kanniyan,S.A(2013). Effect of complex training on the physiological and bio-motor variables of men soccer players. British journal of sports medicine,47(10).http://dx.doi.org/10.1136/bjsports-2013-092558.26.