



The Impact of Plyometric Training on Some Selected Physical Fitness Components: With Specific Reference to Accuracy Skills in Handball Players Andhra University

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ABSTRACT:

This study was carried out to examine the responses exhibited by Accuracy Skills in Handball players in Andhra University Team players Age of 18 years to 25 years concerning the effects of Plyometric training on selected physical fitness components of cardiovascular endurance, flexibility of the hip and hamstring muscle, agility, speed and power of the lower extremities following an 8-week Plyometric training program. All members of the affiliated college students taken as a sample, which consists of 30 participants. The subjects were purposively selected from the town administration. The subjects underwent training 3 times a week, for 8 consecutive weeks 50/60 min duration, with moderate and high intensity, respectively. A single group quasi- experimentally design, otherwise known as repeated measure design was used for the study. Data collected were analyzed using descriptive statistics of mean, range, and standard deviation for interpretations of research questions, whereas inferential statistics of paired t-test was adopted to confirm the significance of the stated hypotheses at the 0.05 level of significance. The results show that there was a significant difference in the pre-test and post-test responses of cardiovascular endurance, flexibility, and power. The differences recorded for the performance characteristics of speed and agility was not significant. It was recommended that Andhra university Handball team coaches and players should adopt regimental field training program and engage in strenuous Plyometric physical training to see the effects of the training program on the physical fitness components.

Key Words: Plyometric Training ,Physical Fitness Components , Handball Skills, Andhra University Handball Players.

INTRODUCTION:

“Physical fitness is going through the day with a sense of confidence that you can put whatever the day has in store for you on your back, hold it there for a while, and then set it back down later, with good form. It can give you peace of mind that you are better equipped to handle the physical challenges of daily life, from reaching high to bending low, from running with a purpose, or running with no purpose at all. You can be carrying your whole life in a bag every day to carrying just you, everywhere. Physical fitness is not a race, it’s a pursuit. There is no finish line to look for, but a new starting line to cross every day. The only real “goal” is to never finish. Physical fitness is human being.”

We hope you have gained new insights into the various types of smash in Handball utilized and how they can be leveraged to enhance your performance. It’s evident that racket and cock -handling skills alone do not define a player’s success. It is the combination of balance, coordination, and mastery of footwork that enables these athletes to maintain control, both on the ground and in the air.

One of the keys to the successful teaching of physical education is employing of a broad range of approaches and methodologies. As it is acknowledged, schools, classes and teachers will vary, some methods will suit particular circumstances better than others, and the nature of the strands themselves necessitates the use of a variety of teaching methods. There is a need to examine the teaching methods which will best enhance the achievement of the objectives, taking factors such as the content and context of the lesson into account as well as the needs of the learner. Learning and teaching are inseparable as the sides of the coin; each is needed to complete the whole. There can be no learning without teaching. All the skillful teaching produces abundant learning (Vanner, 1969).

With the advancement of scientific knowledge and research findings, the training of sportsman and sportswomen for any game is carried out on the basis of certain principles. Due to new findings and research, these principles are changed or modified. The main consideration is given to the results produced by the other nations, coaches, and trainers before adopting their principles and methods of training in different games and sports. It is a fact or tendency of human mind that men will go on searching new things as long as they can, and there is no limit to the great thrust of human spirit.

At present, athletes are trained by highly scientific means for excellent performance. They are exposed to training methods which have proved beneficial for achieving higher standards. Much progress has been made in the acquisition of knowledge about training methods and technique of events of athletics.

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In Handball, your legs and arms mean everything and the more technical skills you learn, the more weapons you have during a game. Whether you’re a smash shots are fore hand smash, Back Hand Smash and Jumping smash, learning a few techniques is imperative if you want to improve your game. So whether you’re a beginner or someone who’s been playing for years, here are a few different attacking skills that will come in handy during a Handball match. Handball skills are jump shot, fake, accuracy shooting, diving, pivot.....etc .

STATEMENT OF THE PROBLEM:

The purpose of the study is to find out whether “The Impact of Plyometric Training on Some Selected Physical Fitness Components: With Specific Reference to Accuracy Skills in Handball players Andhra University”.

OBJECTIVE OF THE STUDY:

The study is found out the physical and its significance on effects of Plyometric training on some selected physical fitness components with specific reference to jump shots in Handball players Andhra university team.

METHODOLOGY:

The researchers were implemented the single group quasi- experimentally design because it was appropriate for nature and the objectives of the study. After going through the related literature, the following dependent and independent variables were chosen to collect the data at pre- and post-test and to render training. To measure cardiovascular endurance, power, agility, flexibility, and speed, the researchers used Harvard step test, vertical jump, Illinois agility test, sit and reach test, and 50 m sprint run were used, respectively. The researchers also applied the appropriate statistical analyses (i.e., means, standard deviations, and t-value) to make sure that the sample is characterized by parity in all the variables. For the purpose of this study, the researchers used all 30 Andhra University Handball players. The age of the subjects ranged between 18 and 25 years.

DATA COLLECTION:

The researchers determined the tests that measure the physical fitness components based on those utilized by the NSCA, FITNESSGRAM, and the British Association of Sport and Exercise Science Testing Guidelines (Edward M. Winter et al., 2007). These tests were sit and reach test for flexibility, vertical jump test for power of the lower extremities, Illinois agility sprint test for agility, 50 m sprint for speed, and Harvard step test for cardiovascular endurance. The training units were designed for 8 weeks, which included 5 stations to train the trainees on. The following basic materials were used throughout the study meters, cones, stopwatch, ropes box, and data collection tools with the support of Dessie town administration sports commission.

VALIDITY AND RELIABILITY:

A pre- and post-test were carried out with standardized physical fitness test of the same and appropriate identified methods in the design of the study. In addition, the selected tests were approved by the National Strength and Conditioning Association/NSCA/FITNESSGRAM and the British Association of Sport and Exercise Science Testing Guidelines (Edward M. Winter et al., 2007). It is insured the researcher comprehensive enough and measures what it is intended to measure. Internal consistency technique is implemented to measure reliability level of the instrument. The test at all levels is measured repeatedly three times which showed no significant difference. The only variable the test would measure is the one it is designed to. To minimize mistakes occurred during data collection, all data collectors were oriented about the measurement procedures.

STATISTICAL ANALYSIS PLAN

Data analyzed using version 16 of the Statistical Package for Social Sciences (SPSS). Descriptive statistics (i.e., means and standard deviations) and t-test were computed to achieve the objectives of the study. The level of significance or the value of P was set at 0.05.

Table 1 : shows mean and standard deviation values of agility and speed performance test.

S.NO	Variables	Pre test	Post test	Mean diff	't' ratio
1	Agility	16.893	16.242	0.75	8.99
2	Speed	9.723	9.042	0.87	6.60

*significant at 0.05 level, mean diff= mean difference/ σ Dm=standard error

The data (Table 1) showed that there was a significant difference between before the exercise and after 8 weeks of exercise on individuals' Illinois agility run and 50 m speed performance. The mean values of Illinois agility run test were 16.893s in before exercise, which was improved 16.242s at the end of 8-week exercise training program test, this means Illinois agility run performance improved by -0.75 s after 8-week exercise training program. The main reason for these performance efficiency improvements was the involvements and efforts of selected subjects on the proposed exercise training schedule.

As indicated in Table 1, 50 m speed run shows that there was a significant improvement of speed performance. The mean value of 50 m speed run test before exercise training program was 9.723s and after training mean score value was 9.042. When we compare the mean value of pre-test result with the post-test result, it has -0.681 s difference. The mean value was decreased from 9.723 to 9.042 by -0.77 s mean difference. Although the negative mean difference value shows that the time to cover a given distance. On the other hand, it indicates that the quality of participants on increments of speed capacity and the improvement of

the participants in the reduction of time duration. This also shows that increments of 50 m speed performance were observed on the selected research members. The reason behind this change was exercise training program that they were engaged in. The result of this study agreed with the finding of Hakkinen and Keskinen (1989) and it suggests that sprint training could lead to improvements in human

muscle power capabilities, as well as to improvements in dynamic athletic performance.

Table 2 shows mean and standard deviation values of flexibility, cardiovascular endurance, and power performance test.

S.NO	Variables	Pre test	Post test	Mean diff	't' ratio
1	Flexibility	20.53	24.83	1.625	3.11
2	Cardio Vascular Endurance	96.356	99.569	3.21	3.67
3	Power	27.124	32.564	5.44	4.425

*significant at 0.05 level, mean diff= mean difference/ σ Dm=standard error

The Table 2 showed that there was a significant improvement in between the pre-.to post-test score. The increments on the performance were due to they were involved in the exercise training program. The mean score value for sit and reach

test before exercise training program was -1.625 cm and after training mean score value was 4.30 cm. When we compared the mean score value of before training test with after 8-week exercise training test, the result was 1.625 cm mean difference. This shows the increments of mean value from -20.53 to 24.83 cm, with 4.30 cm. Although the positive mean difference value shows that the efforts

of participants during a training session and the impacts of exercise to being flexible. The result of this study was incorporate with the finding of Gbaltaci et al. (2003). They conducted their study on the effect of exercise program on comparison of back saver sit and reach test and modified back saver sit and reach test as a measurement of hamstring flexibility.

As indicated in Table 2, mean value of pre-training test and Harvard step test result was 96.356 and post-training test was 99.569. When we compare the performance of individuals before training test result with that of post-training test result, mean difference of 3.207 was recorded. At the end of the study, the mean value of participants on Harvard step test was significantly increased. This indicates that the major benefits of exercise training program on increasing the participant's performance in Harvard step test.

As indicated in Table 2, mean value of pre-training test result and standing vertical jump test was 27.124 cm and post-training test was 32.654 cm. When we compare the performance of individuals before training test result with that of post-training test result, mean difference of 5.440 cm was recorded. At the end of the study, the mean value of participants on standing vertical jump was significantly increased. This indicates that the major benefits of exercise training program on increasing the participant's performance in vertical jump. Therefore, this result was consistent with the finding of Markovic and Mikulic (2010).

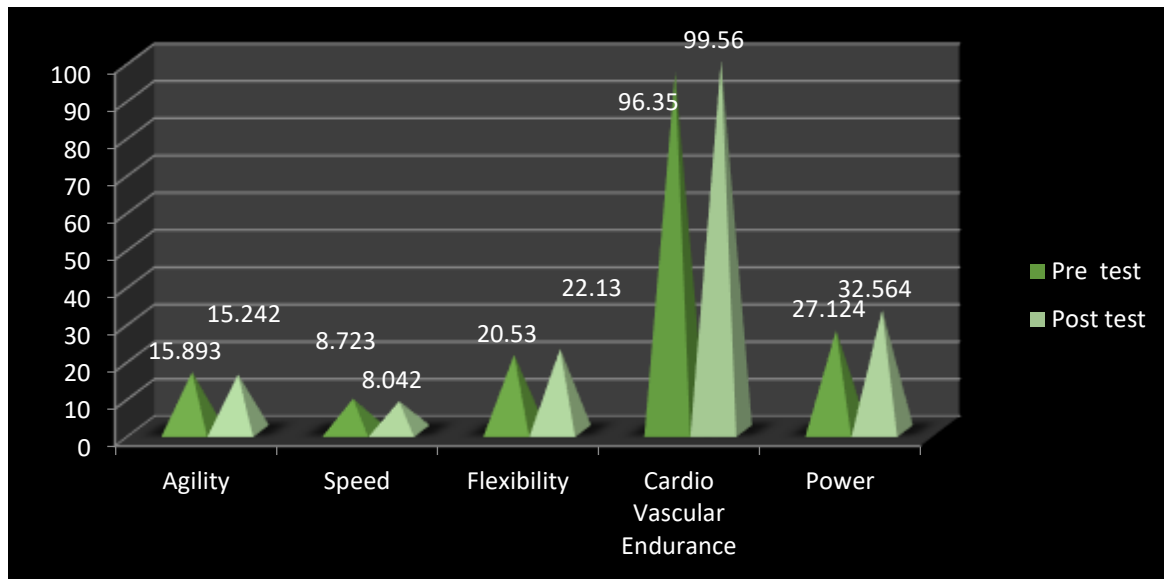


Fig:1 show the chart mean values of pre test and post test agility, speed ,flexibility, Cardiovascular and Power performance .

It includes the mean difference from one test to another and the significance of post-tests in reference to the pre-tests. Improvement of performance was recorded in all physical fitness variables. Even though the result of improvements was different in all fitness programs, all participants revealed remarkable changes. This was due to that all study members were involved on the training program. The mean difference value of sit and reach test as well as from post-to pre-test have no much more differences as compare to post . In addition, Illinois test, standing broad, and vertical jump tests performance were increased, and more significant improvements were recorded at the end of the 8th week on the performance of Dessie town administration basketball project players

In general, according to this findings and based on standard norms, the selected type 8-week training exercises program brought significant changes on selected physical fitness components. Especially, the post-test mean value results of the participants in sit and reach test should be excellent. Moreover, the rest post-test mean value results fitness variables should be above average. Therefore, these findings put a remarkable idea for the differences of performance within basketball project players. The proposed dependent variable drills were significantly improved, cardiovascular endurance, explosive power of the lower extremities, flexibility of the hip and hamstring, as well as. speed, and the overall agility of individuals. Similarly in a study conducted by Oliver and Brezz (2009), they examined the effect of functional training on the functional training exercises demonstrated improvements in speed, endurance, explosive power, flexibility, and agility (Weiss et al., 2010).

CONCLUSIONS

Based on the major findings of the study, the following points are mentioned as conclusion.

- According to the results of this study, which was registered by the participants, all study subjects brought a significant performance improvement in; Harvard step test, Illinois agility run, 50 m speed, sit and reach as well as vertical jump tests.
- Among the selected types of independent variables, the subjects improved more in vertical jump and sit and reach tests.
- Since the smallest number is being an indicator of the best time duration, all participants showed above average improvements on 50 m speed and Illinois agility run test.
- Based on the finding of this study, the exercise training completely reforms the performance of the research members. This also indicates that Plyometric exercise training was paramount for the variation of differences on the effects of physical fitness components of Andhra University Handball players. In general, while concluding, it may be stated that, within the limits of the present study, selected Plyometric training exercises contributed positively toward the improvement of cardiovascular endurance, power of the lower extremity, agility, speed, flexibility of the hamstring muscle of Andhra University Handball players as tested by Harvard step test, vertical Jump test, Illinois agility run test, 50 m sprint run test, and sit and reach test so that Plyometric training should include as an integral part of training program of Handball players to performing accuracy skills performed on Court.

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