# EFFECT OF UNIFORM PLYOMETRIC TRAINING PROGRAMME ON MOTOR FITNESS PARAMETERS OF TEEN-AGE ATHLETES

**THESIS**

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# CHAPTER-IV

## DISCUSSION

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The uniform plyometric training used on the teen-age state level athletes, with a duration of 12 weeks, can have positive effects, increasing the performance of the speed and increase acceleration at distance of 50 meters, focusing on improving the maximum strength for sprinter. It can be said, while the importance of uniform plyometric training programme is apparent on the sprinters, on the other hand it is important for throwers and jumpers to improve their performance.

The present study also showed that 12 weeks of uniform plyometric training programme of this type significantly improved the sprinting speed of the jumpers. Speed performance of jumpers is better than the throwers due to increased muscular power and strength, as a result gradually decreased sprinting time of jumpers.

The study showed that the uniform plyometric training programme could improve speed abilities in teen-age thrower and more specifically this programme selectively influenced on the maximum speed in thrower. As throwers increase their leg strength, further increases the movement of rotation by increasing arm strength.

The present study showed that the explosive power of experimental group of thrower had shown much more improvement between pre-test and final post-test than the explosive power of experimental group of sprinter and jumper. In this case follows, it may be stated that the strength of the legs was increased due to improvement of muscle fibre in throwers, because in most of time the throwers usually do arm strength training. In this research, application of uniform plyometric training programme increased overall muscular power, particularly effective for throwers.

The present study clearly showed that the different post-test performances were significantly improved than pre-test performance by the treatment of uniform plyometric training programme. Performances were increased significantly for different parameters, because the leg muscle power increased and eccentric and concentric muscle contraction was properly activated in the muscle due to scientific application of uniform plyometric training programme for teen-age athletes.

The throwers showed greater improvement in standing broad jump performance or leg explosive strength performance after uniform plyometric treatment of 12 weeks in the present study. Constantly body weight was decreased and explosive leg power was increased for throwers than the sprinters and jumpers but better returns were found among sprinters and throwers.

The present study revealed that the uniform plyometric training programme appears to enhance the leg strength and provides a convenient in-session training methods for teen-age athletes. Uniform plyometric training programme tone the entire body, burn calories and improved cardiovascular fitness. It also rapidly stretches athlete's muscles, allowing the muscle for much more effective force generation.

The present study revealed that the uniform plyometric training programme showed well improved performance in reaction time because of better utilization the stretch reflex mechanism in the muscle to improve the reaction time. It results in the increase of overall neural stimulation of the muscle and therefore there was incensement in force-output.

The present study demonstrated that the uniform plyometric training programme when used in conjunction with one another provided statistically significant and practically relevant improvement in agility over a period of 12 weeks in teen-age athletes.

The result of the study indicated significant improvement in all the selected parameters of the teen-age athletes because of the uniform plyometric training programme, which was conducted for a period of twelve weeks. The subjects were exposed to a highly systematic and scientifically designed training programme for the first time. This exposure brought improvement performance, which was proved when the pre-test and post-test performances were compared by using repeated measure ANOVA and ANCOVA.

The above discussion implies that uniform plyometric training programme was very much effective for the improvement of different fitness parameters and sports performance of the teen-age athletes likely the throwers, jumpers and sprinters.

# CHAPTER-V

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

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## SUMMARY OF THE STUDY:

The ability of plyometric training to improve athletic performance, particularly in sprinter, jumper and thrower continuously a matter of discussion in the field of sports training. Many researchers have searched and still searching the mysteries of plyometric training. Based on scientific discoveries, today we are at the passion that with proper preparation, instruction and progressions, uniform plyometric training can be an effective method to train athletes for motor fitness and physiological performance. But "Research" always tries to 'Re' and 'Search' the fact with innovative ideas and under new settings.

The purpose of the study was to investigate the effect of uniform plyometric training on motor fitness parameters of teen-age athletes. To achieve these purpose forty state level (school games) athletes were selected at randomly from barasat athletic coaching center, Barasat, North 24 parganas, West Bengal. Their age ranged from 14-19 years. They were divided into four groups of 10 subjects each at random. The different experimental groups are Group-I(sprinters), group-II(jumpers), group-III(thrower) and group-IV(control); the control group was consisted of four sprinters, three jumpers and three throwers. The 12 weeks uniform plyometric training schedule is over for the study.

During the training time, the three experimental groups underwent their supporting training programme, four days per weeks on alternate days for twelve weeks in addition to their regular programme. Control group did not participate in any of the training programme except from their regular programme. The selected subjects were tested on selected criterion parameters such as speed, agility, power, shoulder strength, reaction time test. The above criterion parameters were a determined by 50 mt. sprint, 4x10 meter shuttle run, standing broad jump, pull up test, and nelson choice movement response reaction time test method.

Prior to the training and after the 12 weeks of uniform plyometric training programme data were collected tested through pre-test and three different post-tests (post-1, post-2, post-3) in different duration from the subjects. The subjects were tested for all the selected parameters. The collected data were statistically analyzed in SPSS by Repeated Measures Analysis of Variance (ANOVA) and Repeated Measures Analysis of Covariance (ANCOVA). The

Analysis of Covariance and Variance were used to find out the significant differences if any among the experimental group and control group. 'F'ratio was computed to assess the variation in the groups. Where ever the 'F'ratio for the post-test result was found significant and the Tukey's Post Hoc test was used as a Post Hoc test to find out the compare mean differences. In all the cases 0.05 level of significance was fixed to test the significance.

From the study's findings, it is concluded that the twelve week of uniform plyometric training produces more effective improvement in motor fitness parameters for teen-age athletes and it is also concluded that the uniform plyometric training protocol adopted for the study capable of improving motor fitness parameters for teen age athletes like sprinters, jumpers and throwers. Based on the conclusions of the present study, different implications are assumed that twelve weeks of uniform plyometric training programme may be sufficient to bring desirable changes in the fitness level of the beginners and further studies may be under taken by extending the training period for the sports person. The research result may be implied by the coaches, trainers and athletes interested in developing different type of motor fitness and performances and they should incorporate these types of plyometric exercises in the training process.

From the conclusion of the present study it may be stated that the present research creates a future scope for the physical educators and coaches for screening, identifying and selecting of potential players at national level and international level as well as to provide the scientific uniform plyometric training programme specifically for different sports discipline. The present study definitely creates the futures scopes for doing the same kind of research by changing the sports discipline, level of participation and training protocol.

**CONCLUSIONS OF THE STUDY:**

Within the limitations of the study and based on the results of the study the following conclusions may be drawn-

1. The twelve week of uniform plyometric training produces more effective improvement in motor fitness parameters for sprinters.
2. The twelve week of uniform plyometric training enhances the performance in motor fitness parameters for jumpers.

3. The twelve week of uniform plyometric training produces more effective changes in motor fitness parameters for throwers.
4. The performance of the speed is more effective, increased by uniform plyometric training. The speed of the jumper is most effectively improving as compare to sprinter and throwers.
5. The performance of the power highly improves by uniform plyometric training. The power of the thrower is most effectively improved as compare to sprinters and jumpers.
6. The agility of the thrower is most effectively improved as compared to sprinters and jumpers. The performance of the power highly improves by uniform plyometric training.
7. There is no effective improvement of shoulder strength in sprinter and throwers after three month of uniform plyometric training. The shoulder strength is improved for the jumpers as a result of uniform plyometric training.
8. The reaction time is improved by the uniform plyometric training programme. The reaction time of the sprinters is mostly effected by the uniform plyometric training programme.
9. It is concluded that the uniform plyometric training protocol adopted for the study capable of improving motor fitness parameters for sprinters, jumpers and throwers.
10. The uniform plyometric training betterly improve the motor fitness parameters like speed, agility, power, reaction time and shoulder strength for throwers as compared to the sprinters and jumpers. Whereas, there are no much more differences in between the shoulder strength improvement for the different groups.
11. The uniform plyometric training programme for a period of twelve weeks may be the most appropriate protocol to produce more effective improvement in motor fitness parameters for the teen-age athletes like sprinter, jumpers and throwers.

**RECOMMENDATIONS OF THE STUDY:**

Although the investigator has put in his best efforts on the present study, still the topic has a wide scope for further research. Thus, for future research and in the light of the results and conclusions of the present study following recommendations is made:

1. It is assumed that twelve weeks of plyometric training may be sufficient to bring desirable changes in the fitness level of the beginners. Hence further studies may be under taken by extending the training period for the sports person.
2. The similar study may be conducted by using only female or only male athletes.
3. Based on the results of the study, the investigator suggests that there is a need to encourage youth and children to participate in plyometric dominated sports in order to maintain good health and a successful life.
4. Similar study may be conducted by Plyometric training which one may be considered as a regular part of training programme for an athlete of various sports and games.
5. It is recommended that, coaches, trainers and athletes interested in developing different type of motor fitness and skills, should adopt these types of plyometric exercises in training with this objective, research may be organized.
6. A similar study may be conducted with longer duration and larger sample to find out any better result.
7. Such study may be conducted among different age groups, players of different disciplines and extending the training period or modifying the same.
8. The results of the present study may be very much useful for physical educators and coaches for screening and selecting potential players at national level and inter-national level by knowing their attitude, hence new research may be conducted for the above purposes.
9. It is also recommended that football, hockey and for the other team sport the players/coaches at any level should have knowledge about plyometric training for enhancing performance, so the research may be undertaken.

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