



COMBINED EFFECT OF PLYOMETRICS AND RESISTANCE TRAINING ON SELECTED JUMPING ABILITY OF COLLEGE VOLLEYBALL PLAYERS

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Abstract

The purpose of the study was to find out the combined effects of plyometrics and resistance training on selected jumping ability of college volleyball players. For this purpose, forty men volleyball players studying Annamalai University, Annamalainagar, Tamilnadu were selected as subjects at random and they were divided randomly into two groups of twenty each, namely Combined Plyometrics and Resistance Training Group and Control Group. The training period was limited to twelve weeks and for three days per week. The dependent variables selected for this study were Vertical Jumping Ability and Horizontal Jumping Ability. The data obtained from the Experimental groups before and after the experimental period were statistically analyzed with Analysis of covariance ANCOVA). The level of confidence was fixed at .05 level for all the cases. Vertical Jumping Ability and Horizontal Jumping Ability showed significant difference between the groups.

Keywords: Plyometrics, Resistance Training, Vertical Jumping Ability and Horizontal Jumping Ability.

INTRODUCTION

Sport as an activity offers an opportunity for self-knowledge, self-expression, and fulfillment; personal achievement, skill acquisition and demonstration of ability; social interaction, enjoyment, good health and well-being. It promotes involvement, integration and responsibility in society and contributes to the development of society, especially when sports activities have been accepted as an integral part of the culture of every society in every nation (Sharma, 2004). Healthy living and physical fitness are closely connected. Being physically fit not only helps people live healthy lives; it also helps people live longer. People who make physical activity and exercise a part of their daily lives when they are young are more likely to keep it in their lives as they grow older and benefit from it throughout their life spans. Physical activity is defined as any movement that spends energy. Exercise is a subset of physical activity, but it is an activity that is structured and planned.

While many children engage in physical activity, usually by playing with their friends, the amount of physical activity they get as they grow into adolescents usually declines. In fact, many researchers believe that physical inactivity is a national health problem that can increase the risk of illness and disease. According to the Centers for Disease Control and Prevention (CDC), doing some kind of physical activity or exercise on a regular basis helps to increase strength and flexibility, improve endurance, control weight, increase bone mass, and improve self-esteem, as well as reduce stress, anxiety, depression, and the risk of

developing high blood pressure. The best way to keep physical activity and exercise a permanent part of one's life is to make it fun and enjoyable. If people are given different options of what they can do and have easy access to those options, they are more likely to participate in physical activity and exercise. This allows people to have a positive attitude toward physical fitness. It's also helpful if people are knowledgeable about the rewards of physical activity and exercise.

Performances outcomes are more likely to be achieved when what is done prior to and during a competition. They have been planned; practiced and shown to be successful. In contests, an athlete should never use new approaches techniques, or strategies, without first being tested, refined, and trained. An athlete should compete with only what is known has been practiced. (John et.al, 2006).

The actual term 'plyometrics' was first coined in 1975 by Fred Wilt, the American Track and Field coach. The elements *ply* and *metric* come from Latin roots for "increase" and "measure" respectively, the combination thus means 'measurable increase'. Plyometrics refers to a type of intense training that may be understood by an athlete who wants to improve speed power. This type of training also refers to very fast, explosive excision (normally performed with body weight) to improve power out put and neutral activation of the muscles (the ability for a muscle to contract quickly). Basically phonetics relies on an element of physiology call the stretch-shorten cycle (s&c). This stretch-shorten cycle means that the muscle is rapidly stretched and then contracted which increases the force

applied on the muscle. Receptors within the muscle called muscle spindles react to this sudden stretching by sending a single to the brain saying this stretching by sending a signal to the brain saying this stretching is potentially dangerous than the brain contracts the muscle to stop the stretching this serves to protect the stretch and prevent against any possible injury. The pre-stretch is the sac must be used by 0.2 of a second or otherwise same type of bounce or any possible advantage gained by sac is lost. So recapping, the sac is initiated by the muscle spindles which detects a stretch and responds by causing the muscle to contract.

Resistance training should be an important component of all fitness programmes from more for strength and power athletes to more for individuals who exercise for the health benefits. Of course, athletes in sports requiring strength and power, such as weight lifting; bodybuilding and sprinting must emphasize resistance training. However many other athletes also benefit from strength training, especially those in sports requiring a high level of muscular endurance (Vinod, 2004). Weight training refers to an interest in physical fitness or importance of strong in a particular sport. It is not usually an end in itself but as a means to an end.

METHODOLOGY

The study was conducted, forty men volleyball players studying Annamalai University, Annamalainagar, Tamilnadu were selected as subjects at random and they were divided randomly into two groups of twenty each, namely Combined Plyometrics and Resistance Training Group and Control Group. The training period was limited to twelve weeks and for three days per week. The dependent variables selected for this study were Vertical Jumping Ability and Horizontal Jumping Ability.

RESULTS AND DISCUSSION

The data obtained from the Experimental groups before and after the experimental period were statistically analyzed with Analysis of covariance (ANCOVA). The level of confidence was fixed at .05 level for all the cases. The level of confidence was fixed at .05 level of all cases. The influence of independent variables on each criterion variables are analyzed and presented below.

VERTICAL JUMPING ABILITY

The Analysis of covariance (ANCOVA) on Vertical Jumping Ability of Combined Plyometrics and Resistance Training group and Control Group have been analysed and presented in Table -I.

TABLE – I
ANALYSIS OF COVARIANCE ON VERTICAL JUMPING ABILITY OF COMBINED PLYOMETRICS AND RESISTANCE TRAINING GROUP AND CONTROL GROUP

| Adjusted Post-test Means | | Source of Variance | Sum of Squares | df | Mean Squares | 'F'-Ratio |
|--|---------------|--------------------|----------------|---------|-----------------|-----------|
| Combined Plyometrics and Resistance Training Group | Control Group | | | | | |
| 0.43 | 0.39 | Between With in | 0.01 0.01 | 1 37 | 0.01 0.00027 | 37.04* |

* Significant at .05 level of confidence
 (Vertical Jumping Ability Scores in Meters).

(The table value required for Significance at .05 level with df 1 and 37 is 4.11)

Table-I shows that the adjusted post test mean value of Vertical Jumping Ability for Combined Plyometrics and Resistance Training group and Control Group are 0.43 and 0.39 respectively. The obtained F-ratio of 37.04 for adjusted post test mean is more than the table value of 4.11 for df 1 and 37 required for significant at .05 level of confidence. The results of the study indicate that there are significant differences among the adjusted post test means of Combined Plyometrics and Resistance Training group on the development of Vertical Jumping Ability. It may be

concluded that Combined Plyometrics and Resistance Training group is better Control group in improving Vertical Jumping Ability.

HORIZONTAL JUMPING ABILITY

The Analysis of covariance (ANCOVA) on Horizontal Jumping Ability of Combined Plyometrics and Resistance Training group and Control Group have been analysed and presented in Table -II.

TABLE – II
ANALYSIS OF COVARIANCE ON HORIZONTAL JUMPING ABILITY OF COMBINED PLYOMETRICS AND RESISTANCE TRAINING GROUP AND CONTROL GROUP

| Adjusted Post-test Means | | Source of Variance | Sum of Squares | df | Mean Squares | 'F'-Ratio |
|---|------------------|----------------------------|----------------------|-----------------|-----------------------|---------------|
| Combined Plyometrics and Resistance Training Group | Control Group | | | | | |
| 1.94 | 1.79 | Between With in | 0.23 0.11 | 1 37 | 0.23 0.003 | 76.67* |

* Significant at .05 level of confidence

(Horizontal Jumping Ability Scores in Meters)

(The table value required for Significance at .05 level with df 1 and 37 is 4.11)

Table-II shows that the adjusted post test mean value of Horizontal Jumping Ability for Combined Plyometrics and Resistance Training group and Control Group are 1.94 and 1.79 respectively. The obtained F-ratio of 76.67 for adjusted post test mean is more than the table value of 4.11 for df 1 and 37 required for significant at .05 level of confidence. The results of the study indicate that there are significant differences among the adjusted post test means of Combined Plyometrics and Resistance Training group on the development of Horizontal Jumping Ability. It may be concluded that Combined Plyometrics and Resistance Training group is better Control group in improving Horizontal Jumping Ability.

CONCLUSIONS

Based on the result of the study the following conclusions were drawn.

- There was a significant difference between Combined Plyometrics and Weight Training Group when compared to the Control Group on Vertical Jumping Ability and Horizontal Jumping Ability due to Combined Plyometrics and Weight Training.

- There was a significant improvement in Combined Plyometrics and Weight Training Group when compared to the Control Group on Vertical Jumping Ability and Horizontal Jumping Ability due to Combined Plyometrics and Weight Training.
- Combined Plyometrics and Weight Training Group were found to be better than the Control Group in developing Vertical Jumping Ability and Horizontal Jumping Ability.

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