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## **Effect of Plyometric and Resistance Training on Selected Physical Fitness Variables Among College Men Volleyball Players**

***Dr. C. Kumaresan***

Director of Physical Education, Sri Krishna Arts and Science College, Coimbatore. Bharathiar University, Tamil Nadu, India

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### **ABSTRACT**

The purpose of this study was to find out the influence of different training packages on selected physical fitness for college level men volleyball players. To achieve the purpose sixty college men (Coimbatore district) volleyball players were selected in the age group of 18-25 years. The subjects were divided in to four groups randomly 15 in each group. Experimental group I (Plyometric with game specific training group), experimental group II (Resistance with game specific training group) experimental group III (Combined with game specific training group) and group IV act as a Control group they were not participated in any specific training. Three experimental groups underwent training for a period of 12 weeks. The subjects were tested on selected on Physical fitness variables namely leg explosive power. Additional research on long-duration intervention in elite players may help to establish the role of plyometric training and resistance training in conventional volleyball skills for training.

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**Key Words: Plyometric Training, Resistance Training and Volleyball, physical fitness, leg explosive power**

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### **Introduction**

Everyone who has played volleyball in the past has the experience of doing so-called 'volleyball fitness training' in which he had to do exercises which had nothing to do with volleyball. Running around the pitch, sprinting between cones or even uphill, jumping over hurdles. How can something be called 'volleyball fitness' but the players are doing everything except playing volleyball. This is yet another symptom of a world without clear terminology and definitions. The solution is simple. Let's define volleyball fitness.

Volleyball "Conditioning is most easily described as a measure of your maximum sustainable power output across a given duration" So, if you can maintain 50% of your maximum power output during each sprint throughout a volleyball match, this is effectively your level of conditioning. Compare a 90-minute volleyball match power output to a few seconds lift of an Olympic weightlifter.

### ***Sports Training***

Sports training is a special process of preparation of sports persons based on scientific principles aimed at improving and maintaining higher performance capacity in different sports activities. It is a particular type of training designed to improve fitness and abilities to perform in a given sport. It includes strength in training, corrective and restorative exercises, conditioning and cardiovascular training. It also includes mental and psychological training and advise on nutritional values

### ***Plyometric Training***

Plyometrics training can improve your physical performance and ability to do different activities. Plyometrics can include different types of exercises, like pushups, throwing, running, jumping, and kicking. Athletes often use plyometrics as part of their training, but anyone can do these workouts.

### ***Resistance Training***

Resistance training exercises involve pushing or pulling against the resistance of an object (including your own body), whereas strength training involves a large amount of muscle tissue by continuously increasing the weight you lift (while lowering the number of reps), which leads to bigger body gains in strength.

## Methodology

To complete the purpose of the study effect of plyometric and resistance training with game specific training on selected physical fitness variables among college men volleyball players., sixty (n=60) male inter-collegiate volleyball players were selected from the Coimbatore district, Tamil Nadu, India. This study consisted of three equal groups of fifteen subjects each. The age of subjects ranged from 18 to 25 years. The subjects had past experience of at least four years in volleyball players and only those who represented their respective college teams were taken as subjects. The following variables were selected namely: physical fitness variable leg explosive power Experimental Group-I underwent plyometric training, Experimental Group-II underwent Resistance training Experimental Group-III underwent combined training respectively. The control group was not exposed to any specific training /conditioning programme. The experimental treatment namely plyometric training and resistance training was administered for a duration of 8 weeks and the number of sessions per week was confined to three alternative days and each session lasted 60 minutes, in addition to the regular schedule of the volleyball training both the training packages are presented in appendices I, II and III respectively.

## Statistical Technique

The collected data from the three groups prior to and after the experimental treatments on selected physical fitness performance variables were statistically analyzed by using the statistical technique of analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post-test means was found to be significant, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. In all the cases 0.05 level of confidence was fixed as a level of confidence to test the hypotheses.

## Results and Analysis

The influence of independent variables on each of the criterion variables is analyzed and presented below.

The training period was limited to eight weeks. The dependent variables selected for these studies were physical fitness variable leg explosive power. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variables.

The data obtained from the experimental groups before and after the experimental period were statistically analyzed with dependent 't'-test and Analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post-test means was found to be significant, the Scheffe's Post hoc test was applied to determine the paired mean differences. The level of confidence was fixed at 0.05 level for all the cases.

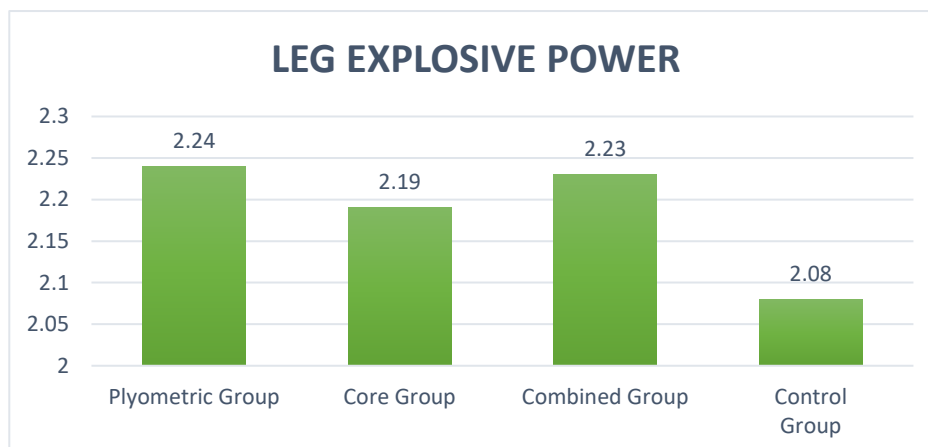
Table – 1

### ANALYSIS OF COVARIANCE OF PRE TEST AND POST MEAN AMONG PLYOMETRIC, RESISTANCE TRAINING, COMBINED AND CONTROL GROUP ON LEG EXPLOSIVE POWER

| Test                    | Plyometric Group | Resistance Group | Combined Group | Control Group | Source of Variance | Sum of Squares | df | Mean Squares | F-ratio |
|-------------------------|------------------|------------------|----------------|---------------|--------------------|----------------|----|--------------|---------|
| Pre-Test Mean           | 2.08             | 2.07             | 2.08           | 2.07          | Between groups     | 0.001          | 3  | 0.00         | 0.28    |
|                         |                  |                  |                |               | Within groups      | 0.082          | 56 | 0.001        |         |
| Post-Test Mean          | 2.24             | 2.19             | 2.23           | 2.07          | Between groups     | 0.274          | 3  | 0.09         | 45.44*  |
|                         |                  |                  |                |               | Within groups      | 0.112          | 56 | 0.002        |         |
| Adjusted Post-Test Mean | 2.24             | 2.19             | 2.23           | 2.08          | Between sets       | 0.243          | 3  | 0.081        | 73.36*  |
|                         |                  |                  |                |               | Within Sets        | 0.061          | 55 | 0.001        |         |

Figure -1

## BAR DIA GRAM THE ADJUSTED POST TEST MEAN VALUES OF PLYOMETRIC, RESISTANCE TRAINING, COMBINED GROUP AND CONTROL GROUP ON LEG EXPLOSIVE POWER



### Conclusion

The findings of the study showed that there was a statistically significant improvement in the physical fitness variables leg explosive power as compared to control group.

Based on the results of the study, it was concluded that the plyometric training program has resulted in significant increase in selected physical fitness variables as leg explosive power.

### Recommendations

A Similar studies may be conducted for the fairer sex also keeping age and other factors in to consideration for experimental variables.

Studies may be also being conducted on similar lines with different nutritional plans.

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