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# IMPACT OF PLYOMETRIC TRAINING ON SELECTED MOTOR FITNESS VARIABLE AMONG MEN ARTISTIC GYMNASTS

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**Abstract:**

The objective of the study was to investigate the impact of plyometric training on selected motor fitness variable among men artistic gymnasts. For the present study 30 male gymnasts from various schools in tiruchirtapalli, Tamilnadu were selected at random and their age ranged from 14 to 17 years. For the present study pre test – post test randomized group design which consists of 15 control group and 15 experimental groups were used. The subjects were randomly assigned to two equal group 'A' and group 'B'. Group 'A' underwent plyometric training and group 'B' underwent no training. Speed and agility was measured by 30 meters dash and shuttle run respectively. The data was collected before and after 12 weeks of training. The data was analyzed by applying Analysis of co-variance (ANCOVA) technique to find out the impact of Swiss ball training programme. The level of significance was set at 0.05. The findings of the present study was strongly indicates that plyometric training of twelve weeks has significant impact on selected motor fitness variables i.e., speed and agility of men artistic gymnasts.

**Keywords:** Motor fitness variables, plyometric & Gymnastics.

**Introduction:**

Gymnastics is an intermittent endurance sport involving short sprinting as well as movement with grace and focus in current scenario the sport gymnastics requires lots of physiological and physical demands to compete in Olympics. Physical characteristics and body composition have been known to be fundamental to excellence in athletic performance.

Plyometrics is the term now applied to exercise that has their roots in Europe, where they were first known simply as jump training. Plyometric is defined as exercises that enable a muscle to reach maximum strength in as short a time as possible. This speed-strength ability is known as power. Although most coaches and athletes known that power is the name of the game, few have understood the mechanics necessary to develop it.

Motor fitness is necessary for success in most of games & sports. Without a higher level of motor fitness an individual will not be able to withstand the stress and strain caused on the body by various games and sports. Motor fitness in addition to bringing about better performance

in games and sports, also helps in prevention of injuries in the long run (Doneash scaton et al., 1956).

**Objective of the study:**

The objective of the study was to investigate the impact of plyometric training on selected motor fitness variables among men artistic gymnasts. It was hypothesized that there would have been a significant effect of twelve weeks plyometric training programme on selected motor fitness variables among men artistic gymnasts.

**Methodology:**

To achieve the purpose of the present study, 30 male gymnasts from various schools in and around Tiruchirappalli, Tamilnadu were selected as subjects at random and their age group ranged from 14 to 17 years. 15 control group and 15 experimental group .For the present study pretest- posttest randomized group design which control group (A) and experimental group (B) was consists of 15 subjects each. The subjects were randomly assigned to two equal group 'A' and group 'B'. Group 'A' underwent Plyometric training and group 'B' underwent no training. Speed and agility was measured by 30 meters dash and shuttle run respectively. The data was collected before and after 12 weeks of training. The data was analyzed by applying Analysis of co-variance (ANCOVA) technique to find out the impact of Plyometric training programme. The level of significance was set at 0.05.

**Results and discussion on findings:**

The findings pertaining to analysis of co-variance between experimental group and control group on selected motor fitness variables among men artistic gymnasts for pre-post test respectively have been presented in table No.1 to 2.

**Table – 1**

**ANCOVA between Experimental group and control group on speed of male gymnasts for pre-post and adjusted test**

| | Experimental Group | Control Group | Source of variance | Sum of squares | Df | Mean square | F |
|---|---|---|---|---|---|---|---|
| Pre test Mean | 8.61 | 8.68 | BG | 0.03 | 1 | 0.03 | 0.16 |
| | | | WG | 5.61 | 28 | 0.20 | |
| Post Test Mean | 7.83 | 7.83 | BG | 4.89 | 1 | 4.89 | 34.35* |
| | | | WG | 3.99 | 28 | 0.14 | |
| Adjusted Post Mean | 7.84 | 7.84 | BG | 4.52 | 1 | 4.52 | 42.42* |
| | | | WG | 2.87 | 27 | 0.10 | |

** Significant at 0.05 level. Df: 1/27= 4.21

Table No.1 revealed that the obtained 'F' value of 42.42 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of speed of gymnasts between experimental group and control group.

**Table – 2**

**ANCOVA between Experimental group and control group on agility of male gymnasts for pre-post and adjusted test**

| | **Experimental Group** | **Control Group** | **Source of variance** | **Sum of squares** | **Df** | **Mean square** | **F** |
|---|---|---|---|---|---|---|---|
| Pre test Mean | 18.13 | 17.88 | BG | 0.46 | 1 | 0.46 | 0.29 |
| | | | WG | 44.84 | 28 | 1.60 | |
| Post Test Mean | 16.97 | 17.69 | BG | 3.83 | 1 | 3.83 | 14.62* |
| | | | WG | 7.34 | 28 | 0.26 | |
| Adjusted Post Mean | 16.97 | 17.69 | BG | 3.80 | 1 | 3.80 | 13.97* |
| | | | WG | 7.34 | 27 | 0.27 | |

** Significant at 0.05 level. Df: 1/27= 4.21

Table No.2 revealed that the obtained 'F' value of 13.97 was found to be significant at 0.05 level with df 1, 27 as the tabulated value of 4.21 required to be significant at 0.05 level. The same table indicated that there was a significant difference in adjusted means of speed of gymnasts between experimental group and control group.

In case of motor fitness variables i.e speed and agility the results between pre and post (12 weeks) test has been found significantly higher in experimental group in comparison to control group. The findings of the present study have strongly indicates that Plyometric training of twelve weeks have significant impact on motor fitness variable i.e., speed and agility of gymnasts. Hence the hypothesis earlier set that Plyometric training programme would have been significant impact on selected motor fitness variables in light of the same the hypothesis was accepted.

**Discussion:**

The finding of the study showed that there was no significant difference between the pre-test of speed and agility.

The finding of the study showed that there was a significant difference between the post test and adjusted post-test of speed and agility.

**Conclusions:**

On the basis of findings and within the limitations of the study following conclusions were drawn: significant effect of Plyometric training was found on speed and agility. With so many exercise systems and machines available, finding an inexpensive, safe way to exercise can be difficult. Jump training and upper body Plyometrics are relevant to many Sports. Gymnastics, jumping events in track and field, diving, and volleyball are all arenas were success depends on the athlete's ability to explode from the standing surface and generate vertical velocity, linear velocity, or both to achieve the desire result.

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