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THE INFLUENCE OF PLYOMETRIC TRAINING WITH CORE TRAINING ON SELECTED MOTOR FITNESS, PARAMETERS OF MEN VOLLEYBALL PLAYERS.

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ABSTRACT

The research study was prepared on random group design involving N=60 sixty men inter collegiate level participated Volley ball players. The Volley ball players were chosen for the study were divided into four equal groups of n=15 fifteen volley ball players each at random and designated as empirical group 'A' trained with plyometric training (PTG = I), empirical group 'B' trained with core training (CTG = II), empirical group 'C' trained with combined training of plyometric training with core training (CPCTG = IV) and control group volley ball players 'D' (CG = IV) did not participate any of the above training programme apart from their regular training programme. The treatment of plyometric training, core training and combined training to the specific groups volley ball players were given three days per week on alternative days for a period of 12 weeks. The collected scores were treated with [ANCOVA] Analysis of Covariance was used to calculate 'F' ratio to find the significant changes among all the four groups. Whenever the adjusted post test means 'F' ratio found significant the Scheffe's post hoc test was applied to find the paired means difference to compare with critical value. All the collected scores were analyzed with computer SPSS statistical packages. The level of significance was fixed at 0.05 level of confidence.

Key Words:- Plyometric training, Core training, Volley ball players.

INTRODUCTION

A study of the individual reveals four general directions or phases in which growth and development take place, namely; physical development, motor development, and human relations development. Physical education plays an important part in contributing to each of these phases of human growth and development. The physical development objective deals with the programme of activities which builds physical power in an individual through the development of the various organic systems of the body. It results in the ability to sustain adaptive effort, the ability to recover, and the ability to resist fatigue. The value of this objective is based on the fact that an individual will be more active, have better performance, and be healthier, if the systems of the body are adequately developed and functioned properly.

Statement of the problem

The main purpose of this study is to investigate the influence of Plyometric training with core training on selected bio motor fitness, physiological and skill related performance parameters of men volleyball players.

METHODOLOGY

The investigator describes the details regarding methodology adopted for selection of men volleyball players, experimental designed are adopted, selection of independent and dependent parameter motor fitness, variable **Muscular Strength** Selected parameters of motor fitness, variables, test and unit of measurements, orientation of volley ball players, competency of the investigator, instrument reliability used in this study, Inter class co-efficient of correlation values on selected criterion parameters, pilot study, collection of data, training schedule, administration of test and statistical analysis of data had been explained in the methodology .

Selection of Men Volleyball Players

To achieve the main purpose of the research study total sixty men intercollegiate level participated volley ball players were chosen randomly from Rajiv Gandhi University of Knowledge Technologies Nuzvid, Krishna district, of Andhra Pradesh from these only N=60 volleyball players selected randomly. The age of the selected men volleyball players were ranged from 18 to 25 years as per college record [Mean average Age 21.14, height 168.12 and weight 66.18]. The empirical treatment assigned such as plyometric training, core training and combined plyometric training with core training for twelve weeks.

Adopted Experimental Design:

The research study was prepared on random group design involving N=60 sixty men inter collegiate level participated Volley ball players. The Volley ball players were chosen for the study were divided into four equal groups of n=15 fifteen volley ball players each at random and designated as empirical group 'A' trained with plyometric training (PTG = I), empirical group 'B' trained with core training (CTG = II), empirical group 'C' trained with combined training of plyometric training with core training (CPCTG = IV) and control group volley ball players 'D' (CG = IV) did not participate any of the above training programme apart from their regular training programme. The treatment of plyometric training, core training and combined training to the specific groups volley ball players were given three days per week on alternative days for a period of 12 weeks. The scores of selected motor fitness, parameters were obtained before the start of empirical periods (pre-test score) and after the 12 weeks of the empirical period (post-test score).

RESULTS Table 1

RESULTS OF ANCOVA ON EFFECT OF PLYOMETRIC TRAINING [PTG] CORE TRAINING [CTG] AND COMBINED TRAINING OF PLYOMETRIC AND CORE TRAINING [CPCTG] COMPARED WITH CONTROL GROUP [CG] VOLLEY BALL PLAYERS ON MUSCULAR ENDURANCE

| TEST | PT GROU P | CT GROUP | CPCTG GROU P | C GROU P | SOURCE OF VARIANCE | SUM OF SQUARES | df | MEAN SQUARES | OBTAIN ED F |
|-------------------------|-----------|----------|--------------|----------|--------------------|----------------|----|--------------|-------------|
| Pre Test Mean | 34.60 | 33.13 | 34.40 | 34.41 | Between | 20.40 | 3 | 6.80 | 1.26 |
| SD | 2.06 | 2.44 | 2.64 | 2.06 | Within | 300.53 | 56 | 5.36 | |
| Post Test Mean | 45.73 | 53.40 | 52.53 | 33.80 | Between | 3687.26 | 3 | 1229.08 | 73.32 |
| SD | 4.51 | 3.31 | 5.52 | 2.27 | Within | 938.66 | 56 | 16.76 | |
| Adjusted Post Test Mean | 45.53 | 53.81 | 52.42 | 33.68 | Between | 3739.45 | 3 | 1246.48 | 77.36 |
| | | | | | Within | 886.17 | 55 | 16.11 | |
| Mean Diff. | 11.13 | 20.27 | 18.13 | 0.61 | - | - | - | - | - |

PTG: Plyometric training group Volleyball players; CTG: Core training group Volleyball players; CPCTG: Combined plyometric and core training group Volleyball players; CG: Control group Volleyball players

**Significant*

(Required table F-ratio at 0.05 level of confidence for 3 and 56 (df) =2.77, 3 and 55 (df) =2.77)

The above table-1 shows the prior scores mean values on muscular endurance of the Plyometric training group volley ball players [PTG], core training group Volley ball players [CTG], combined plyometric and core training group volley ball players [CPCTG] and control volley ball players group [CG] are 34.60, 33.13, 34.40 and 34.41 respectively. The calculated 'F' value for prior scores means was 1.26, lesser than the tabular value 2.77 for 3 and 56 (df) at 0.05 level of confidence. This result on prior score reveals that there are no statistically significant changes between three empirical groups volleyball players PTG, CTG, CPCTG and CG control group volley ball players on muscular endurance.

The post scores mean values on muscular endurance of the Plyometric training group volley ball players [PTG], core training group Volley ball players [CTG], combined plyometric and core training group volley ball players [CPCTG] and control volley ball players group [CG] are 45.73, 53.40, 52.53 and 33.80 respectively. The calculated 'F' value for post scores means was 73.32, higher than the tabular value 2.77 for 3 and 56 (df) at 0.05 level of confidence. This result on post score proved that there are statistically significant changes between three empirical groups volleyball players PTG, CTG, CPCTG and CG control group volley ball players on muscular endurance.

The adjusted post test mean values on muscular endurance of the Plyometric training group volley ball players [PTG], core training group Volley ball players [CTG], combined plyometric and core training group volley ball players [CPCTG] and control volley ball players group [CG] are 45.53, 53.81, 52.42 and 33.68 respectively. The calculated 'F' value for adjusted post test means was 77.36, greater than the tabular value 2.77 for 3 and 55 (df) at 0.05 level of confidence. This result on adjusted post test declared that there are statistically significant changes between three empirical groups volleyball players namely PTG, CTG, CPCTG and CG control group volley ball players on muscular endurance.

Table - 2

MULTIPLE COMPARISONS OF PAIRED ADJUSTED MEANS OF PTG, CTG, CPCTG AND CG GROUPS VOLLEY BALL PLAYERS AND SCHEFFE'S CONFIDENCE INTERVAL TEST RESULTS ON MUSCULAR ENDURANCE

| ADJUSTED POSTTEST MEANS VALUES | | | | | Required |
|--------------------------------|----------|------------|---------|-----------------|----------|
| PT GROUP | CT GROUP | CPCT GROUP | C GROUP | MEAN DIFFERENCE | . C I |
| 45.53 | 53.81 | - | - | 8.28* | 4.22 |
| 45.53 | - | 52.42 | - | 6.89* | 4.22 |
| 45.53 | - | - | 33.68 | 11.85* | 4.22 |
| - | 53.81 | 52.42 | - | 1.39 | 4.22 |
| - | 53.81 | - | 33.68 | 20.13* | 4.22 |
| - | - | 52.42 | 33.68 | 18.74* | 4.22 |

PTG: Plyometric training group Volleyball players; CTG: Core training group Volleyball players; CPCTG: Combined plyometric and core training group Volleyball players; CG: Control group Volleyball players

** Significant*

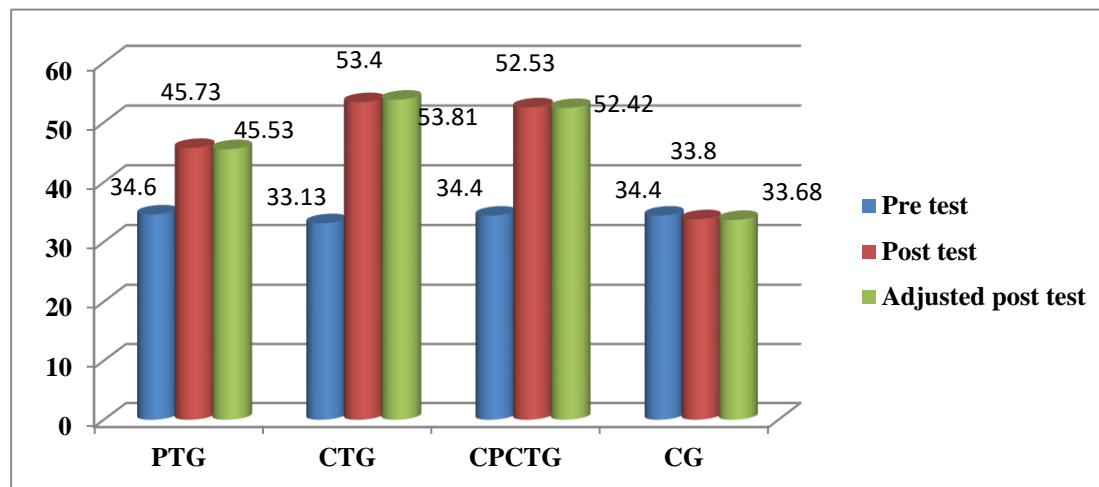
The table 4.11 display the paired mean differences on speed of four groups volley ball players namely plyometric training group volley ball players [PTG], core training group volley ball players [CTG], combined plyometric and core training group volley ball players [CPCTG] and control group volley ball players [CG].

The paired mean differences between plyometric training group volley ball players [PTG] and core training group volley ball players [CTG], plyometric training group volley ball players [PTG] and combined plyometric and core training group volley ball players [CPCTG], plyometric training group volley ball players [PTG] and control volley ball players group [CG], core training group volley ball players [CTG] and control volley ball players group [CG] and combined plyometric and core training group volley ball players [CPCTG] and control volley ball players group [CG] were 8.28, 6.89, 11.85, 20.13 and 18.74 higher than CI value of 4.22. So above table confirmed that there are significant differences exist among these groups on muscular strength.

Further the above table shows that paired mean differences between core training group volley ball players [CTG] and combined plyometric and core training group volley ball players [CPCTG] is 1.39 lower than the CI value of 4.22. So there are no significant differences exist among these groups on muscular endurance.

FIGURE – I

CLUSTERED CYLINDER GRAPHICAL PRESENTATION OF PRE TEST SCORE MEAN, POST TEST SCORE MEAN AND ADJUSTED POST SCORE MEAN OF PTG, CTG, CPCTG AND CG VOLLEY BALL PLAYERS ON MUSCULAR ENDURANCE



PTG: Plyometric training group Volleyball players; CTG: Core training group Volleyball players; CPCTG: Combined plyometric and core training group Volleyball players; CG: Control group Volleyball players

Discussion on Hypotheses

The investigator on the bases of statistical analysis acceptance and rejection of hypotheses had been made.

1. The research hypothesized that there would be significant enhancement due to the influence of plyometric training, core training and combined plyometric training with core training on selected motor fitness parameters namely muscular endurance for men volleyball players. The statistical analysis report confirmed that all the selected motor fitness parameters namely speed, agility, flexibility, explosive power, muscular strength, muscular endurance and balance of plyometric training group volley ball players, core training group volley players and combined plyometric and core training group volley ball players significantly improved with their respective training. So research first hypotheses accepted and null hypotheses rejected.

Discussion on Finding of the Results

Motor Fitness Variables-----Muscular Endurance

The research study found that three empirical groups volleyball players: PTG, CTG and CPCTG muscular endurance increased as number of bent knee sit ups number increased with the training of explosive strength exercises [Plyometric], core exercises, combined explosive strength exercises [plyometric] and core exercises. The published research articles related to the muscular endurance were Binthu and Praveen (2018) proved that influence of core training positively enhanced muscular endurance of football players. Anitha (2016) proved that muscular endurance performance of volleyball players significantly improved with plyometric training and circuit training. Hoppes et al., (2016) found that eight-week core stabilization program significantly improves transversus abdominis muscle activation in standing and increase trunk strength and muscle endurance. Gaganpreet and Jogiswar (2019) results of the study concluded that core specific training program shown the positive and significant impact on the muscular endurance of school childrens’.

Conclusions

The conclusions are drawn on selected motor fitness, physiological and volley ball skill related performance variables on the bases of statistical analyses report are given below;

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