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# A STUDY ON EFFECT OF PLYOMETRIC TRAINING ON SELECTED MOTER FITNESS AND PSYCHOLOGYCAL VARIABLES OF KABADDI PLAYERS

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**ABSTRACT**

This study aimed to investigate the effect of plyometric training on physical and psychological variables on a sample of 60 male kabaddi players from the Warangal district. The players were divided into two groups, namely the plyometric training group and the control group, with 30 players in each. The plyometric training group underwent a twelve-week training program focusing on plyometric exercises, while the control group followed their usual training routine. Physical variables consist of speed, were assessed using standardized tests before and after the training program. Psychological variables consists of anxiety, were measured using validated questionnaire. Data analysis involved comparing the changes in Physical and Psychological variables between the two groups using one way Analysis of Variance statistical test. The findings of this study could provide insights into the potential benefits of plyometric training on both physical and psychological aspects of kabaddi players, aiding in the development of effective training programs for enhancing performance of Kabaddi players.Kabaddi players of the plyometric training group showed significant improvement after twelve weeks of training with respect to the following Psychological and Physical fitness components when compared with the control group.The control group did not show significant improvement after final test. Key words: Plyometric training, speed, anxiety etc.

## Introduction:

The study of training in sports is regular phenomenon in the arena of science of sports. The discipline of sport science has a rapid improvement in the last few years. The information that this field receive must be comprehended by the trainers and coaches in order for it to be used properly for the process of training. However, the majority of trainers do not have a sufficient scientific background and insufficient training to be able to fully and effectively use the information that cannot be inherited from the sports science disciplines. This creates a space between scientists and trainers. The science of training with its employees who already have a sufficient scientific and athletic background to close this gap can become mediators between the scientists and also the trainers.

## Plyometric Exercises

The word “plyometric” imbibes *“hopping, depth jumping, and bouncing drills”.* These are found to be very ever changing dimensions that utilize pull of gravity upon body and in the contraction and of muscle tissue and it’s elasticity to enhance the power of stress on muscles. This training can be treated as an extended version of “Shock method” of strengthening muscles proposed by Verkhonshonki, a jumping event Coach from Russia (1966).

**Kabaddi**,:-

**Kabaddi**, essentially a belligerent sport, consists of seven players on every side; compete for a total time of forty minutes with a break of five minutes (20-5-20). The sole purpose of the sport is to get score by marching into the rivalry's court and touching the possible number of defense players by not being trapped in a single breath.

A player, yelling "Kabaddi! Kabaddi! Kabaddi!" marches into the opponents' court and looks at possibilities of touching the opponent nearest to him simultaneously, on the other hand the seven opponent players create enough strategies to grab hold of the raider. This game is usually known as the game of struggle, match of one against seven.

Therefore, two teams confront against for higher scores by touching or by catching the players from the opponent team. Twelve players on every side makes a team, out of which seven players stand in the court playing simultaneously, and five are in reserve. These two teams clash for better points, one defense and one offense.

**Importance of Motor Fitness Variables & Psychological Variables.**

The Physical fitness & Psychological variables are mentioned below.

**l. Speed**

Speed is a prerequisite to perform motor actions under given conditions such as movement task, external factors and is an individual prerequisite for sports, specifically sports and games that required movements in minimum time. Speed is a determining factor in explosive activities such as sprints, jumps, and most field sports and Games (Singh, 1991)

**2.Anxiety**

"Anxiety is one of the important psychological factors influencing sports performance. Anxiety, a complex emotional state, may be characterized as a general fear or forbidding usually accompanied by tension. It is related to fear of failure, either real or anticipated".(Sivaramakrishnan, 1992).

**Statement of the Problem**

The purpose of this research is to reveal the impact of plyometric training method on psychological variables and particular motor fitness variables of Kabaddi players.

**Limitations**

1. Heredity that contributes to physical and mental potency won't be controlled.
2. Subjects' diet, their general activity, motivation of subjects cannot be controlled by the researcher.
3. Pressure in academics, like training class is not considered.
4. While analyzing the results of the performance of the subjects, the aspects like climatic and environmental conditions in which subjects live, their habits of food, style of living, and their routine activities are not considered. These factors may have a noticeable influence on this study.

**Review Literature:-**

**Dr. A. Palanisamy and Mr. G. Velmurugan** Thirty college-aged male kabaddi players from Alagappa University in Karaikudi were chosen at random to participate in the study in order to fulfil its goals. The chosen subjects, who ranged in age from 23 to 28, were split into 3 groups of 15 each, including 2 *"experimental groups"* and 1 *"control group"*. For a period of six weeks, four days a week, Group I was given *"SAQ training",* while Group II was given *"Plyometric Training"*; the control group did not get any extra training outside of the required physical education exercises. The 50-meter run was used to test the speed variable, which was chosen as

the criteria variable. The chosen dependent variable was tested on at both the beginning and completion of the training programme for each individual in the three groups.

**Yogesh Kumar** tried to estimate conceptual similarities between aggression, rage, and anxiety point to each having an attitudinal component that makes people more likely to feel and act in these ways. In order to understand how these three dispositional ideas relate to performance outcome (tournament ranking) in the Indian sport of Kabaddi, this studyexamined these linkages. 48 male athletes from four teams each underwent the Sport Competition Anxiety Test and the Aggression Questionnaire (Martens, 1977). (Buss & Perry, 1992). Three discriminant functions were identified via discriminant function analysis, and they were able to accurately identify 60.4% of the team members (Wilks =.426, X 2 (18) = 35.87, p =.007). Physical aggression alone accounted for 74.3% of the variance, somatic and cognitive anxiety contributed another 18.0%, and hostility, wrath, and verbal aggression contributed another 7.7%. It seems that one necessary quality for athletes to succeed in Kabaddi is the propensity to act in a physically destructive manner.

**Methodology:-**

To support the study, 60 male kabaddi players from various places in Warangal District, Telangana State, who represented their District in Inter-District kabaddi competitions, were chosen at random as subjects, with ages ranging from 20 to 25 years. On a random basis, they were separated into 2 groups: “Plyometric Training Group (PTG)” and “Control Group (CG)”.

The goal of the study and the manner of completing Plyometric training exercises were described to the subjects prior to the start of the training to ensure their cooperation and avoid injuries.

**Selection of Variables**

The following variables were chosen based on instrument feasibility and availability.

**Fitness Variables: Speed**

**Psychological Variables: Anxiety**

**Measure of Criterion**

The given below are criterion measures of the study:

1. Speed was calculated through 50 meters run and the scores recorded in seconds.
2. Anxiety was measured using Spielbergers Trait Anxiety questionnaire.

SPEED (50 Meter Run)Purpose

**Procedure**

The subject took a place behind the starting line after a brief warm-up period. Two were requested to compete at the same time in order to achieve the greatest outcomes. The starter asked, "Are you ready?" and then said, "Go." The latter was signaled to the timer by a downward sweep of the arm. The person crossed the finish line by running. Trial number one was allowed.

**Score**

The score represents the amount of time that has passed from the start of the event to the moment the subject crosses the finish line, measured to the closest hundredth of a second. (Yobu, A.1988)

**Anxiety**

**The anxiety questionnaire was used to assess anxiety. The purpose of the anxiety questionnaire is to gauge how anxious a competitor is before a competition.**

**Spielberger (1979) was the one who created it. All subjects completed the Spielbergers Trait Anxiety questionnaire. For this study, 20 items from Spielberger's Trait Anxiety questionnaire were used. The complete scores of questionnaire are as follows:**

**Table-I**

| S.L. No | Responses | Scores for Positivestatements | Scores for Negativestatements |
|---|---|---|---|
| 1 | Not at all | 1 | 4 |
| 2 | Some what | 2 | 3 |
| 3 | Moderately so | 3 | 2 |
| 4 | Very much | 4 | 1 |

RESULTS AND DISCUSSION:-

**DESCRIPTIVE MEASURE OF SPEED TESTIN PRE AND POST-TEST OF KABADDI (M) PLAYERS IN CONTROL GROUP**

**TABLE 1**

| Speed (sec) | pre test (in sec.) | post test(in sec.) |
|---|---|---|
| **Mean** | 7.32 | 7.28 |
| **Std. Deviation** | 0.248 | 0.156 |
| **Mean Difference** | 0.04 | |

**Result and discussions:**

The Speedtest (seconds) Table 4.1.0 Mean and the standard deviation graph show the difference in speed between pre-test and post-test players in the control group. The mean and standard deviations were 7.32,0.248 and 7.28,0.156, respectively. It is clear that the average difference in speed between pretest and post-test of kabaddi players in the control group was 0.04.

**DESCRIPTIVE MEASUREON SPEED IN PRE AND POST-TEST OF PLAYERS IN TRAINING GROUP**

**TABLE 2**

| Speed | Pre-test | Post-test |
|---|---|---|
| Mean | 7.48 | 6.57 |
| Std. Deviation | 0.261 | 0.166 |
| Mean diff. | 0.91 | |

**Result and discussions:**

The Speed test (seconds) Table 2.Mean and the standard deviation graph show the difference in speed between pre and post-test players in the Training group. The mean and standard deviations were 7.48, 0.261 and 6.57, 0.166, respectively. It is clear that the average difference in speed between pre and post-test of players in the Training group was 0.91.

**HYPOTHESIS TEST ON PAIRED MEAN DIFFERENCE OF SPEED (in sec)) IN PRE AND POST-TEST OF PLAYERS IN CONTROL GROUP**

**Results and Discussion on Hypothesis - I:**

Results pertaining to the Hypothesis- I, the null hypothesis is "there is no significant difference of speed in pre-test and post-test of players in Control Group.

**Table-3**

| SPEED | Mean | SD | Paired Differences | | | | t | Df | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 95% C. I of the Diff. | | | | |
| **PRE** | 7.32 | 0.248 | **Mean** | **SD** | **Lower** | **Upper** | | | |
| POST | 7.28 | 0.156 | 0.217 | 0.217 | 0.136 | 0.298 | 1.477 | 29 | 0.245 |

**Critical value t=2.093 not significant at 0.05levels*

**Result and discussions:**

Table -3 Average, standard deviation, mean deviations are added, standard deviation, CI, 'T' value, DF and P-values are tested for Speed (seconds) before and after in the control group test.

Test is measured using test data of Speed (seconds) before and after the test. The data were analyzed and the results are presented in Table 4.3.0.

The T-test value observed in the speed control group between pre- and post-test was 1.477, which was lower than the required statistical value of 2.093 at the level of 0.05 (p = 0.286). The result indicates that the speed test of the pre-test and the post-test of the control group are of no importance. Therefore, the hypothesis is accepted.

**HYPOTHESIS TEST ON PAIRED MEAN DIFFERENCE OF SPEED IN PRE AND POST-TEST OF PLAYERS IN PLYOMETRIC TRAINING GROUP**

**Results and Discussion on Hypothesis -I:**

Results pertaining to the Hypothesis-I the hypothesis is "there is significant difference of speed in pre-test and post-test of player students in Plyometric Training Group.

**Table-4**

| SPEED | Mean | SD | Paired Differences | | | | t | Df | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Mean | SD | 95% C. I of the Diff. | | | | |
| | | | | | Lower | Upper | | | |
| **PRE** | 7.48 | 0.261 | | | | | | | |
| POST | 6.57 | 0.166 | 0.907 | 0.250 | 0.813 | 1.0 | 19.830 | 29 | 0.000 |

**Critical value t=2.093 t significant at 0.05levels*

**Result and discussions:**

Table -4 Averages, standard deviation, average difference pair, standard deviation, CI, 'T' value, DF and P-values T-test (seconds) Test and pre-test by speed in players.

Speed is measured using data from the T-Test (seconds) pre-test and post-training for the plyometric training group. The data were analyzed and the results are presented in Table 4

The T-test value observed in the plyometric training group on the speed between pre- and post-test was 19.830, which is higher than the required statistical value of 2.093 at the level of 0.059 (p = 0. 016). The result indicates the importance of the pre-test and post-test speed test of the plyometric training group. Therefore, the hypothesis is rejected.

**DESCRIPTIVE MEASURE ON ANXIETY IN PRE AND POST TEST OF PLAYERS IN CONTROL GROUP**

**TABLE -5**

| | pre test (in sec.) | post test(in sec.) |
|---|---|---|
| Mean | 56.87 | 56.37 |
| Std. Deviation | 4.754 | 4.824 |
| Mean Difference | | 0.5 |

**Result and discussions:**

The Anxiety Test (seconds) Table 5. Mean and the standard deviation graph show the difference in anxiety between pre and post-test players in the control group. The mean and standard deviations were 56.87,4.754 and 56.37, 4.824respectively. It is clear that the average difference between pre and post-test of players in the control group was 0.5.

**DESCRIPTIVE MEASURE ON ANXIETY IN PRE AND POST-TEST OF PLAYERS IN TRAINING GROUP**

**TABLE 6.**

| Anxiety | Pre-test | Post-test |
|---|---|---|
| Mean | 55.67 | 52.37 |
| Std. Deviation | 4.205 | 4.165 |
| Mean diff. | 3.3 | |

**Result and discussions:**

The Anxiety(seconds) Table 6. Mean and the standard deviation graph show the difference in anxiety between pre-test and post-test players in the Training group. The mean and standard deviations were 55.67, 4.205 and 52.37, 4.165 respectively. It is clear that the average difference in anxiety between pre-test and post-test of players in the Training group was 3.3.

**HYPOTHESIS TEST ON PAIRED MEAN DIFFERENCE OF ANXIETY IN PRE AND POST-TEST OF PLAYERS IN CONTROL GROUP**

**Results and Discussion on Hypothesis - V:**

Results pertaining to the Hypothesis- V, the null hypothesis is "there is no significant difference of anxiety in pre-test and post-test of players in Control Group.

**Table-7.**

| ANXIETY | Mean | SD | Paired Differences | | | | t | Df | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Mean | SD | 95% C. I of the Diff. | | | | |
| PRE | 56.87 | 4.754 | | | Lower | Upper | | | |
| POST | 56.37 | 4.824 | 0.500 | 1.137 | 0.075 | 0.925 | 1.408 | 29 | 0.226 |

**Critical value t=2.093 not significant at 0.05levels*

**Result and discussions:**

Table -7. Average, standard deviation, average difference pair, standard deviation, CI, 'T' value, DF and P-values T-test (seconds) Test and pre-test by anxiety in players.

Anxiety is measured using data from the T-Test (seconds) pre-test and post-training for the control group. The data were analyzed and the results are presented in Table 7.

The T-test value observed in the control group on anxiety between pre- and post-test was 1.408, which is 0.05 levels (p = 0.325) lower than the required statistical table value of 2.093. The result indicates that anxiety and control of the pre-test is not important in the test-testing of the group. Therefore, the hypothesis is accepted.

**HYPOTHESIS TEST ON PAIRED MEAN DIFFERENCE OF ANXIETY IN PRE AND POST-TEST OF PLAYERS IN PLYOMETRIC TRAINING GROUP**

**Results and Discussion on Hypothesis -V:**

Results pertaining to the Hypothesis- V, the hypothesis is "there is significant difference of anxiety in pre-test and post-test of players in plyometric training group.

Table-8.

| ANXIETY | Mean | SD | Paired Differences | | | | t | Df | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Mean | SD | 95% C. I of the Diff. | | | | |
| | | | | | Lower | Upper | | | |
| PRE | 55.67 | 4.205 | | | | | | | |
| POST | 52.37 | 4.165 | 3.300 | 2.037 | 2.539 | 4.061 | 8.874 | 29 | .000 |

**Critical value t=2.093 significant at 0.05levels*

**Result and discussions:**

Table -8.Average, standard deviation, average difference pair, standard deviation, CI, 'T' value, DF and P-values T-test (seconds) Test and pre-test by anxiety in players.

Anxiety is measured using data from the T-Test (seconds) pre-test and post-training for the plyometric training group. The data were analyzed and the results are presented in Table 8.

The T-test value observed in the plyometric training group on the anxiety between pre- and post-test was 8.874, which is higher than the required statistical value of 2.093 at the level of 0.059 (p = 0. 016). The result indicates the importance of the pre-test and post-test anxiety test of the plyometric training group. Therefore, the hypothesis is rejected.

**Conclussion:-**

With in the limitation and delimitations of the study. The following conclusion were drawn, kabaddi players of the plyometric training group showed significant improvement offer twelve weeks of training with respect to the following physical fitness and psychological components when compared with the controle group.

12 weeks plyometric group training significantly improved, speed of District level male kabaddi players compared to control group.

12 weeks plyometric training significantly lowered the anxiety of District level men kabaddi players compared to control group.

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