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PHYSICAL EDUCATION

A STUDY ON EFFECT OF PLYOMETRIC TRAINING ON FLEXIBILITY AND MOTIVATION VARIABLES OF KABADDI PLAYERS

[1]S.Kumara Swamy and [2]Dr. P. Ramesh Reddy

[1]Asst. Professor, University College of Physical Education, Kakatiya University

[2]Professor of Physical Educationand Administrative Officer, KITS , Warangal

Email: rameshpingili@yahoo.co.in

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 flexibility, were assessed using standardized tests before and after the training program. Psychological variables consists of Motivation, 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, physical, psychological variables 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. Flexibility

"Muscular flexibility is a pre-requisite for maximal development of movement force and speed. Greater range of movement enables the muscles to develop more force and speed. It also allows movements with minimum of muscle tension and internal resistance help in achieving higher movement economy." (Singh, 1991)

2.Motivation

Bryant Crathy (1989) states, "Motivation as a personality characteristic related to the

general state of arousal and subsequent level of attention paid to a problem or task facing of an individual."

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:-

Arvind Bahadur Singh and Vishan Singh Rathore The main objective of their study was to analyze chosen physical and physiological factors of inter-varsity kabaddi and kho-kho players. By using a basic random sampling procedure, 50 kabaddi (male) and kho-kho central zone inter-varsity players were selected. Agility, strength, and flexibility were chosen as physical fitness factors, whereas systolic and diastolic pressure, haemoglobin (Hb%), and resting pulse rate were chosen as physiological variables. The t-ratio results revealed a noteworthy distinction in several physical fitness and physiological markers between kabaddi and kho-kho intervarsity players. Diastolic pressure indicated a wide variation between kabaddi and kho-kho players in physiological parameters. The diastolic pressure of kho-kho intervarsity players was higher than that of kabaddi intervarsity players, that could be attributed to the nature of the game and movement, that requires more blood volume with higher diastolic pressure, but the differences in systolic pressure, haemoglobin (Hb%), and resting pulse rate were insignificant. Some physical fitness metrics found in the study revealed a considerable difference between kabaddi and kho-kho intervarsity players. There was a substantial difference in agility and explosive strength. Kabaddi intervarsity players are more agile than kho-kho players because to their rapid and quick motion in catching and raiding. The explosive strength of kho-kho players was greater than that of kabaddi intervarsity players, although the difference in flexibility was minor

According to **Kumasi Basavaraj et al.,** "Sport" is typically described as an athletic activity involving some level of competition; other games and physical activities fall under this definition. Sports promote the development of new talents while also fostering collaboration, discipline, generosity, inclusivity, resilience, and other positive aspects of good sportsmanship. The discipline of how psychology manipulates performance of athletes, physical activity,

exercise, and sports is defined as *"Sports Psychology"*. Performance should be

performance (performance enhancement), and generate the best possible athletic performance, as well as the care and well-being of athletes, coaches, and sporting organisations, and the relationship between physical and psychological functioning.

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

Perform three trials. The highest score noted in inches and converted into centimeters.

Motivation

To evaluate the subjects' drive for achievement, the Sports Achievement

improved, and motivation should rise. It aids players in utilising psychological principles to attain ideal mental health, boost

Psychological Variables: Anxiety

Measure of Criterion

The given below are criterion measures of the study:

- Flexibility was calculated through Sit and Reach Test and the scores recorded in centimetres .
- Motivation was measured using Dr M L Kamalesh, 1993 (SAMQ) Motivation questionnaire.

Flexibility (SIT AND REACH)

Objective

- To Estimate the Flexibility of Trunk
- Facilities and Equipment's
- Yardstick and Measuring Steel Tape

Set the yardstick on the ground, and then cover the 15-inch mark with an 18-inch piece of tape. The yardstick should be fixed to the ground using the tape. The yardstick's O end is placed between the subject's legs as she or he is seated. With the legs straight, the subject heel should be nearly in contact with the tape at the 15-inch line and be about 12 inches apart. Slowly bending forward, the person extends a parallel hand as far as it will go before touching the yardstick. This reach should be maintained for a sufficient amount of time to capture the distance.

Scoring

Motivation Questionnaire (SAMQ), created by Dr. M.L. Kamlesh (1993), was given to them.

The questionnaire consists of 20 statements that the subject can answer "Yes" or "no." Based on the subject's response, the

achievement motivation was calculated using the author's key.

Total score was determined by how many of the subject's responses were accurate, and it served as the subject's motivational factor.

Table-IV Key:-

1-a	5-b	9-a	13-a	17-b
2.b	6-a	10-a	14-b	18-a
3-b	7-b	11-a	15-b	19-b
4-a	8-b	12-a	16-a	20-a

Result and discussions

DESCRIPTIVE MEASURE ON FLEXIBILITY IN PRE AND POST-TEST OF PLAYERSIN CONTROL GROUP

TABLE 4.2.1

	pre test (in sec.)	post test(in sec.)
Mean	21.27	21.87
Std. Deviation	2.728	2.330
Mean Difference	-0.6	

Result and discussions:

The Flexibility Test (seconds) Table 4.2.1 Mean and the standard deviation graph show the difference in flexibility between pre and post-test players in the control group. The mean and standard deviations were 21.27, 2.728 and 21.87, 2.330, respectively. It is clear that the average difference between pre and post-test of kabaddi players in the control group was -0.6.

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

TABLE 4.2.2

Flexibility	Pre-test	Post-test
Mean	21.00	24.33
Std. Deviation	1.414	1.093
Mean diff.	-3.33	

Result and discussions:

The Flexibility test (seconds) Table 4.2.2 Mean and the standard deviation graph show the difference in flexibility between pre-test and post-test players in the Training group. The mean and standard deviations were 21.00, 1.414 and 24.33, 1.093 respectively. It is clear that the average difference in speed between pre-test and post-test of kabaddi players in the Training group was -5.32.

Table-4.2(a).HYPOTHESIS TEST ON PAIRED MEAN DIFFERENCE OF FLEXIBILITY IN PRE AND POST-TEST OF PLAYERS IN CONTROL GROUP

Results and Discussion on Hypothesis - II:

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

FLEXIBILITY	Mean	SD	Paired Differences				t	Df	Sig.
					95% C. I of the Diff.				
PRE	21.27	0.156	Mean	SD	Lower	Upper			
POST	21.87	2.728	0.600	0.724	0.870	0.330	1.53 #	29	0.33

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

Result and discussions:

Table -4.2(a) Average, standard deviation, mean deviations are added, standard deviation, CI, 'T' value, DF and P-values are tested for flexibility(seconds) before and after training in the control group test.

Test is measured using test data of flexibility(seconds) before and after the training . The data were analyzed and the results are presented in Table 4.2(a).

The T-test value observed in the control group between pre- and post-test was -1.539, 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 flexibility 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 FLEXIBILITY IN PRE AND POST-TEST OF PLAYERS IN PLYOMETRIC TRAINING GROUP

Results and Discussion on Hypothesis - II:

Results pertaining to the Hypothesis-II, the hypothesis are “there is significant difference of flexibility in pre-test and post-test of players in Plyometric Training Group.

Table-4.2(b)

FLEXIBILITY	Mean	SD	Paired Differences				t	Df	Sig.
			Mean	SD	95% C. I of the Diff.				
					Lower	Upper			
PRE	21.00	1.414							
POST	24.33	1.093	-3.333	1.34	-3.837	-2.830	-13.54	29	.000

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

Result and discussions:

Table -4.2(b) Average, standard deviation, average difference pair, standard deviation, CI, 'T' value, DF and P-values T-test (seconds) Test and pre-test by flexibility in players.

Flexibility 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 4.2(b).

The T-test value observed in the plyometric training group on the flexibility between pre- and post-test was -13.548, which is higher than the required statistical value of 2.093 at the level of 0.059 (p = 0. 016). The result indicates thesignificant between the pre-test and post-test flexibility test of the plyometric training group. Therefore, the hypothesis is rejected.

TABLE 4.8.1.DESCRIPTIVE MEASURE ON MOTIVATION IN PRE AND POST TEST OF PLAYERSIN CONTROL GROUP

	pre test (in sec.)	post test(in sec.)
Mean	22.77	22.93
Std. Deviation	6.044	5.854
Mean Difference		-0.16

Result and discussions:

The Motivation Test (seconds) Table 4.8.1 Mean and the standard deviation graph show the difference in motivation between pre and post-test players in the control group. The mean and standard deviations were 22.7, 6.044 and 22.93, 5.854 respectively. It is clear that the average difference between pre and post-test of players in the control group was -0.16.

TABLE 4.8.2. DESCRIPTIVE MEASURE ON MOTIVATION TEST IN PRE AND POST-TEST OF PLAYERS IN TRAINING GROUP

Motivation	Pre-test	Post-test
Mean	23.17	26.00
Std. Deviation	5.140	4.807
Mean diff.	-2.83	

Result and discussions:

The Motivation test (seconds) Table 4.8.2 Mean and the standard deviation graph show the difference in motivation between pre-test and post-test players in the Training group. The mean and standard deviations were 23.17,5.140 and 26.00, 4.807 respectively. It is clear that the average difference in motivation between pre-test and post-test of players in the Training group was -2.83

Table-4.8(a).HYPOTHESIS TEST ON PAIRED MEAN DIFFERENCE OF MOTIVATION IN PRE AND POST-TEST OF PLAYERS IN CONTROL GROUP

Results and Discussion on Hypothesis - VIII:

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

MOTIVATION	Mean	SD	Paired Differences				t	Df	Sig.
			Mean	SD	95% C. I of the Diff.				
					Lower	Upper			
PRE	22.77	6.044							
POST	22.93	5.854	0.167	0.461	0.339	0.006	1.98#	29	0.057

*Significant ,*Critical value t=2.093 ,# not significant at 0.05levels*

Result and discussions:

Table -4.8(a) Average, standard deviation, average difference pair, standard deviation, CI, 'T' value, DF and P-values T-test (seconds) Test and pre-test by motivation in players.

Motivation 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 4.8(a).

The T-test value observed in the control group on motivation between pre- and post-test was -1.980, which is 0.05 levels (p = 0.325) lower than the required statistical table value of 2.093. The result

indicates that motivation and control of the pre-test is not important in the test-testing of the group. Therefore, the hypothesis is accepted.

Table-4.8(b). HYPOTHESIS TEST ON PAIRED MEAN DIFFERENCE OF MOTIVATION IN PRE AND POST-TEST OF PLAYERS IN PLYOMETRIC TRAINING GROUP

Results and Discussion on Hypothesis -VIII:

Results pertaining to the Hypothesis-VIII, the hypothesis is "there is significant difference of stress in pre-test and post-test of players in Plyometric training group.

MOTIVATION	Mean	SD	Paired Differences				t	Df	Sig.
			Mean	SD	95% C. I of the Diff.				
					Lower	Upper			
PRE	23.17	5.140							
POST	26.00	4.807	2.833	0.95	3.188	2.476	16.33*	29	.000

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

Result and discussions:

Table -4.8(b) Average, standard deviation, average difference pair, standard deviation, CI, 'T' value, DF and P-values T-test (seconds) Test and pre-test by motivation in players.

Motivation 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 4.8(b).

The T-test value observed in the plyometric training group on the Motivation between pre and post-test was -16.337, 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 in the motivation test of the plyometric training group. Therefore, the hypothesis is rejected.

Conclusion:-

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, Flexibility of District level male kabaddi players compared to control group.12 weeks plyometric training significantly lowered the Motivation of District level men kabaddi players compared to control group.

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