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EFFECT OF BARBELL TRAINING ON NOMINATED PHYSICAL VARIABLES AMONG ENGINEERING COLLEGE MEN KABADDI PLAYERS

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Abstract:

The purpose of the current study was to find out the effect of barbell training on nominated physical variables among engineering college men kabaddi players. For the purpose of the study, thirty men kabaddi players studying bachelor's degree from the engineering colleges, affiliated to Anna University, Chennai were selected as subject and they were divided into two equal groups of fifteen subjects each at random namely barbell training group and control group. The age of the selected subjects were ranged from 18 to 22 years. Group I underwent barbell training for three days per week for eight weeks and Group II acted as control they did not undergo any special training programme apart from their regular activity. The following dependent variables were selected for this study namely Speedand Explosive Power. The data were collected on selected dependent variables at prior and immediately after the experimental period as pretest and posttest respectively. The data were analyzed by applying dependent 't' test and analysis of covariance (ANCOVA) to find out the significant difference among the groups, if any separately for each dependent variable. The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate. The result of the study showed that barbell training group has significantly differed on selected dependent variables namely Speed and Explosive Power than thecontrol group.

Key Words: Barbell Training, Speed & Explosive Power

Introduction:

Kabaddi is a contact team sport played between two teams of seven players each. Kabaddi was originated from Tamil Nadu, India and it is the traditional game of Tamil Nadu people. The objective of the game is for a single player on offense, referred to as a "raider", to enter into the opposing team's half of a court, tag out as many of their defenders (anti raider) as possible, and return to their own half of the court, without being tackled by the defenders, and in a single breath. Around 11 international competitions are being organized including world cup and Asian games for both men and women. Pro kabaddi league (PKL) was established in 2014 at India. After the establishment of PKL, kabaddi took a top place among other sports because of the fitness of the player and tremendous execution of skills by the players. Recent years it attracted around 435 million audience. To obtain the top performance and to execute the skills efficiently, rapidly and powerfully than the powerful opponent, players started doing various types of training in their schedule. To hold the position of best player in the field, a player needs to prove he is very fast and more explosive than his strong and powerful opponent. Few players are nicknamed as 'Express train' and 'Power player' based on their raid speed and powerful come back from the tackle on the court. Kabaddi needs speed in the raid and come back from the tackle. Explosive power is very much needed to come back from the tackle. Explosive power and quick reaction is needed to catch the strong raider with the lightning speed while raider making wrong move during raid. This study highlights how to improve the two important components speed and explosive power needed for the kabaddi player through barbell training.

Free weights present a number of different testing conditions compared with weight machines. Freeweight require greater motor coordination than do machines, primarily because the individual must controlfree weights through all spatial dimensions, whereas machines generally involvecontrol through only one plane of movement **(**Fleck S J and Kraemer W J, 1996**).** Thisattribute can be an advantage or a disadvantage, depending on the motor function (e.g., frail elderly, those with neuromuscular disease, people with arthritis, and soon) may require machine-based testing initially until sufficient improvement in physical function occurs. Another more practical reason for using free weights istheir low cost and availability.

Speed is not just how fast someone can run, but is dependent on their acceleration (how quickly they can accelerate from a stationary position), the maximal speed of movement, and also speed maintenance. Movement speed requires good strength and power, but also too much body weight and air resistance can act to slow the person down. In addition to a high proportion of fast twitch muscle fibers, it is vital to have efficient

mechanics of movement to optimize the muscle power for the most economical movement technique. Speed is one of the main fitness components, important for success in many sports (Langford GA, et.al., 2007).

Power represents the amount of work which a muscle or muscle group can produce per unit of time. Until recent years, power related sports performance has only been the subject of limited research, but in the last decade or so researchers realized the importance of training for power in a wide variety of sporting activities **(**Dick Frank W, 1992).

Hypothesis:

It was hypothesized that there would be no significant difference on speed and explosive power of men kabaddi players due to barbell training.

Literature Review:

K Azeem and A Al Ameer conducted a study (2010) to find out the effect of weight training (WT) on sprinting performance, flexibility and strength of the 20 students. A 45 min WT schedule twice a week for 12 weeks was administered. The test considered were strength (1 RM for all the WT components), 50 m run and sit and reach. Speed is one of the variables which is associated with the fitness of the subjects. The analysis of the data reveals a significant ($p<0.05$) improvement sprinting performance with the mean ± SD reading in the pre-test 0.43±0.07 s and in the post-test of 0.41±0.06 s. Flexibility improved ($p<0.05$) from pre to post test (26.7±9.3) and (31.8±8.4). Squat exercise increased ($p<0.05$) from pre to post test (75.5±15.1 kg) and (99.5±14.7 kg). The bench press exercise increased ($p<0.05$) from pre to post test (48.8±24.1) and (65.5±24.3 kg). Barbell front press exercise increased ($p<0.05$) from pre to post test (24.5±12.7 kg) and (34.4±12.4 kg). High pull downs improved the strength of the lats and back muscles, and the analysis points towards it with from pre to post test (39.5±11.1 kg) and (59.0±10.3 kg; $p<0.05$). Barbell curls exercise increased ($p<0.05$) the strength of the biceps muscles from pre to post test (17.3±7.3 kg) and (27.0±7.9 kg). The study has revealed that WT improved strength and also showed some improvement in speed and flexibility.

Kaukab Azeem (2016) conducted a study to find out the influence of different intensities of resistance training on strength, anaerobic power and explosive power among males. For this study a group of Sixty (60) male's non-sports men were selected. Experimental group 'A' (N = 30) and control group 'B' (N = 30) age ranging between 19 to 25 years were selected randomly from the Telangana, India for this study. To compare the mean differences between the groups, mean, S.D and t-tests were computed using Statistical Software. The tests considered for this study was maximum strength (1 RM Bench press), anaerobic power (Margaria Kalamen anaerobic test) and flexibility (sit & reach test). The mean and S.D for maximum strength for experimental group were (36, 7.36) and (51.33, 11.62); control group were (34.66, 6.42) and (34.86, 6.72). Anaerobic power with mean and S.D for experimental group were (94.13, 1.06) and (96.53, 1.13) and for control group were (94.07, 0.6) and (94.20, 0.7). With regard to sit and reach test the mean and S.D for the experimental group were (18.33, 7.26) and (24.60, 6.5) and for control group were (18.23, 7.79) and (18.26, 7.81) (3), in his study had mentioned that the effect of weight training has greater effect on the student's fitness performance (2), in this study reveals that the results of the study with regard to muscular strength has improved significantly after the effect of twelve weeks resistance and free weight training program. It is concluded that the influence of different intensity of resistance training on selected Strength, Anaerobic power and explosive power among males had improved performance from pre to post test, which is significant.

Materials and Methods:

To achieve the purpose, thirty men kabaddi players studying bachelor's degree from the engineering colleges, affiliated to Anna University, Chennai were selected as subject and they were divided into two equal groups of fifteen subjects each at random namely barbell training group and control group. The age of the selected subjects were ranged from 18 to 22 years. Group I underwent barbell training for three days per week for eight weeks and group II acted as control they did not undergo any special training programme apart from their regular activity. The following dependent variables were selected for this study namely speed and explosive power. The experimental design selected for this study was pre and posttest randomized design. The data were collected form each subject before and after the training period and statistically analyzed by using dependent 't' test and analysis of covariance (ANCOVA) (Clark HH and Clark DH, 1987).

Table 1: Description of training schedule for barbell group

Week	1-2 Week			3-4 Week			5-6 Week			7-8 Week		
Load	Set	Reps	Weight	Set	Reps	Weight	Set	Reps	Weight	Set	Reps	Weight
Clean	3	6-8	30	3	6-8	35	3	6-8	40	3	6-8	45
Snatch	3	6-8	30	3	6-8	35	3	6-8	40	3	6-8	45
Bench Press	3	6-8	30	3	6-8	35	3	6-8	40	3	6-8	45
Step up	3	6-8	30	3	6-8	35	3	6-8	40	3	6-8	45

Table 2: Tests Selection

Variable	Tests/ Equipment	Unit of measurement
Speed	50 yards run	Seconds
Explosive Power	Standing Broad Jump	Meters

Findings and Analysis:

The data pertaining to the variables in this study were examined by using dependent 't' test to find out the significant improvement and analysis of covariance (ANCOVA) for each variables separately in order to determine the difference and tested at 0.05 level of significance. The analysis of dependent 't' test on data obtained for speed and explosive power of the pretest and posttest means of experimental and control group have been analyzed and presented in Table 3.

Table 3: Mean and dependent 't' test of experimental and control groups on selected physical variables

Variables	Mean	Barbell	Control Group
Speed	Pre Test	6.24	6.24
	Post Test	6.09	6.24
	't' test	**8.03***	**0.90**
Explosive Power	Pre Test	1.83	1.83
	Post Test	1.89	1.83
	't' test	**6.92***	**0.90**

* Significant at 0.05 level of confidence (14) is 2.145

The obtained 't' ratio value on speed and explosive powerof experimental group was higher than the table value, it was understood that the barbell training had made significant improvement on speed and explosive power. However, the control group has not made significant changes as the obtained 't' value is less than the table value, because it was not subjected to any specific training. The analysis of covariance on the data obtained on speed and explosive power due to the guidance of barbell training and control groups have been analyzed and presented in Table 4.

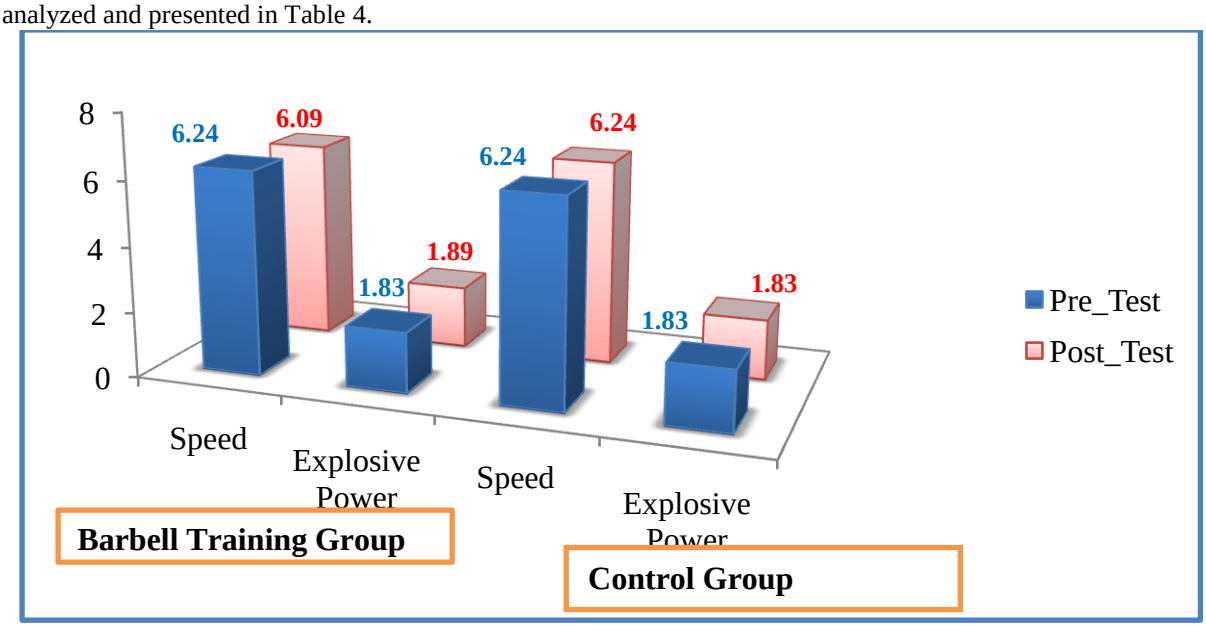

Figure 1: Showing the mean values of speed, explosive power for barbell and control groups among engineering college kabaddi players

Table 4: Analysis of covariance of experimental and control groups on physical variables

Variables	Adjusted Post Test Means		Source of variance	SS	df	Mean squares	F ratio
	Barbell training	Control Group					
Speed	6.09	6.24	Between	0.17	1	0.172	63.69*
			Within	0.07	27	0.003	
Explosive Power	1.89	1.83	Between	0.03	1	0.025	45.88*
			Within	0.02	27	0.001	

* Significant Table F-ratio at 0.05 level of confidence for 1 and 27 (df) =4.210

Table 4 exhibited that the obtained 'F' ratio value of63.69and45.88 which were higher than the table value of 4.210 with df 1 and 27 required to be significant at 0.05 level. Since the obtained value of 'F' ratio was higher than the table value, it indicated that there was significant difference among the adjusted posttest means of barbell training and control group on speed and explosive power. Hence, the stated hypothesis was rejected at 0.05 level of significance.

The barbell trainingshowed the significant difference than control group on speed and explosive power. The characteristics of the individual, which include muscle fiber composition, strength level and training effect, strongly influence the nature of post activation potentiation (PAP) effect on the subjects. This could be due to

the relative proportion of type II fast twitch fibres and the cross sectional area of type II fibre subtypes I on the subjects. Based on the rest interval, load and volume given in the training played a vital role in improving the speed and explosive power of kabaddi players. This positive improvement may be caused by the biochemical processes responsible for phosphorylation of regulatory myosin due to calcium release during initial phase, and myofibrils actin and myosin becomes more sensitive to calcium release in further contraction. Barbell training effects the neural mechanisms, in particular acute changes in both central and local regulatory inputs to motor units involved in the movement there by improves the speed performance and explosive power of men kabaddi players (Paul Gamble, 2012).

Recommendations:

- The findings of the study would help the kabaddi players to understand the importance of barbell training.
- The findings of the study will enlighten the coaches, trainers and physical educationists with the knowledge of barbell training effects on speed and explosive power.
- This study would highlight the need and importance of speed and explosive power for kabaddi players.
- It is recommended that as like men kabaddi players, women kabaddi players also can adopt the same training with sufficient load based on their one repetition maximum.

Conclusions:

- The result of the study showed that barbell training group has significantly improvedspeed and explosive power when compared to control group.
- There was no significant difference among the speed and explosive power on control group.

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