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Isolated and Combined Influence of Weight Training and Ladder Training on Selected Physical Variable among Men Kabaddi Players

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Abstract

The purpose of the study was to find out the isolated and combined influence of weight training and ladder training on selected physical variable among men kabaddi players. To execute the investigation, forty five men kabaddi players studying in various colleges of Madurai Kamaraj University, within 30 kilometers radius of Arul Anandar College, Karumathur, Tamilnadu during the academic year 2014-2016, were selected as subjects at random from the total population of 100 players. The age of the subjects were ranged from 18 to 23 years. The subjects were further classified at random into three equal groups of 15 subjects each in which group – I (n = 15) underwent Ladder training for three days per week for twelve weeks and group – II (n = 15) underwent combined influence of weight training and ladder training programme for three days per week for twelve weeks and group - III (n = 15) acted as control who were not undergo any special training programme. The selected criterion variables such as Agility and Abdominal strength were assessed before and after the training period. The collected data were statistically analysed by using Analysis of Covariance (ANCOVA). From the results of the study it was found that there was a significant improvement on Agility and Abdominal strength for Isolated and combined influence of weight training and ladder training when compared with the control group. All students in experimental group, the Isolated and combined influence of weight training and ladder training programme were fixed accordingly. Then the experimental group underwent Isolated and combined influence of weight training and ladder training programme for 6 days per week for 12 weeks. The control group did not participate in any special training programme on strenuous physical activities apart from their day to day activities. The experimental group underwent their Isolated and combined influence of weight training and ladder training under the instruction and supervision of the investigator. The data were collected on selected criterion variables such as Agility was measured by shuttle run with the seconds and Abdominal strength was measured by modified sit-ups test with numbers at before and after the twelve weeks of Isolated and combined influence of weight training and ladder training as pre and post-test. Analysis of covariance (ANCOVA) was applied to find out significant difference if any between the experimental and control group. The Scheffe's test was applied as post-hoc test whenever the 'F' ratio of the adjusted post-test means was found to be significant at 0.05 level of confidence. All the data were analyzed using statistical package (SPSS) in the computer. From the results of this study it was found that there was a significant improvement on agility and abdominal strength for isolated and combined influence weight and ladder training group when compared with the control group.

Keywords: Ladder training, Weight training, Agility, Abdominal strength and Kabaddi.

Introduction

Sport is all forms of physical activity which, through casual or organized participation, aim to use, maintain or improve physical fitness and provide entertainment to participants. Sport may be competitive, where a winner or winners can be identified by objective means, and may require a degree of skill, especially at higher levels. Hundreds of sports exist, including those for a single participant, through to those with hundreds of simultaneous participants, either in teams or competing as individuals. Training is a systematic process of repetitive progressive exercise of work involving learning and acclimatization. Training is the net summation of adaptations induced by regular exercise. Students on the exercises with reference to fitness state that it enables to tolerate more effectively, subsequently stresses of similar nature. The process of stressing the sportsman and his adaptation to this stress is called sports training and it is the means by which sports performance is improved. Training programme needs to also include periods of regeneration and recovery between training lessons, which is a necessary factor to ensure continuous improvement in the athlete's performance.

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Weight training is the use of resistance other than the weight of the body to develop specific areas of the body. Generally, it is used to develop muscular strength and power. It also develops muscular endurance, elasticity and co-ordination.Weight training is the use of systematic exercises with weight and it is used merely as a mean to increase resistance of the muscle contraction. The primary objective is not to learn to lift as much weight as possible, but to increase strength and power for application to some other sports.The subject of weight training is a controversial one. Many physical educationists believe that it makes participants "muscle bound" but muscles in a permanent state of partial contraction, limits and reduces speed, causes the learning of sports skills.It is generally agreed and accepted that muscles increase in size through weight training that strength is increased, that chemical changes take place and to some extent perhaps that the speed of muscular contraction is also increased.

Ladder training is an excellent way to improve foot speed, agility, coordination and overall quickness. Speed ladder drills are about quality and form rather than producing overload. The drills are not meant to leave the fatigued on breathless in the mid-way that shuttle runs might, for example. It is better to perform these drills at the start of a session after sufficient warm up. The muscles should be fresh to ensure good quality of movement. Players can perform resistance or endurance training afterwards (Manikandan, 2012). Ladder training can help to move faster, better, and safer. By keeping these simple facts in mind, athletes can acquire ever more complex movement skills through ladder training and the learning can come surprisingly fast. Develop a repertoire of exercises the way you would go about expanding any training concept: in a carefully drawn progression of drills going from simple to complex and increasing the speed of any drill only after you have mastered it at a slow and controlled pace. The ideal way to build this repertoire of exercises is to work on perfecting three or four movements in a training session, reviewing these movements in the subsequent sessions, and adding an additional drill or two as you go. The drills you choose to include should reflect identifiable, sport-specific movements.

A ladder is excellent training equipment and is useful to enhance body control, agility and increase the foot speed. For this training player need not to go out and purchase a own Ladder, it is just as easy to use throw-down lines and as far as juniors are concerned, they may be found to be better as there is no chance of their getting tangled up in the ladder. The added advantage of lines is that the distance between them can be changed to suit various exercise patterns. Using a building block system of skill development is very important to achieve success in training with a ladder. The training can start with general development and go on up to the advanced skill development, from a full range of motion to smaller and quicker movements. Keeping in mind the principle of working from slow and controlled movements and moving onto fast, explosive movements as teaching and learning progression will have a greater amount of success. (Suresh kumar, 2012)

Physical fitness is an attribute required for service in virtually all military forces. Physical fitness comprises two related concepts: general fitness (a state of health and wellbeing) and specific fitness (a task-oriented definition based on the ability to perform specific aspects of sports or occupations). Physical fitness is generally achieved through exercise, correct nutrition and enough rest. It is an important part of life. In previous years, fitness was commonly defined as the capacity to carry out the day's activities without undue fatigue. However, as automation increased leisure time, changes in lifestyles following the industrial revolution rendered this definition insufficient. Kabaddi is a team as well as a combat game. Kabaddi is characterized by discreet movement execution on the part of both offensive and defensive players. A raider, as a rule, has to utter the word Kabaddi loudly and continuously in a single breath lasting not more than 30 seconds during each raid. Raiding in Kabaddi is an individual ability. Raider is an offensive player whose intention is to raid in the opponent court to secure as many points as possible and to escape from the strong hold of defense player or group of defense players. Defense is both collective and individual ability. Players of the defensive team aim at holding a raider, individually or collectively and foil the attempt of the raider to secure points either by holding him successfully or escape from the attacks. (Madsen, 2001)

In performance and high performance sport, a great importance is given to the physical condition. It is in fact the preoccupation for the adaptation of the sportsman's body to growing physical and mental efforts, to which all the parts of the human body participate. The contemporary Kabaddi game, characterised by high intensity motor activities, places upon players a wide spectrum of requirements on all their capabilities. One can hardly single out any ability or a characteristic which isnot engaged in the performance of Kabaddi players. Basic and specific motor abilities and cardio-respiratory capacities, such as explosive strength, required at the centre line. As well as agility and speed which are indispensable for the efficient solving of game situations. A high level of aerobic capacity ensures the slower onset of fatigue and a fast recovery, whereas anaerobic capacity is responsible for endurance in high intensity repetitive activities. Team Kabaddi is a complex intermittent game, which requires players to have well developed aerobic and anaerobic capacities. Motor ability, sprinting, jumping, flexibility and throwing velocity represent physical activities that are considered as important aspects of the game and contribute to the high performance of the team. Successful performance requires explosive power of the legs and arms, sprint velocity. (Sibila, 1997).

Dependent Variables
1. Agility
2. Abdominal Strength

Independent Variables
1. Ladder training
2. Weight training

Methodology

The purpose of the study was to find out the isolated and combined influence of weight training and ladder training on selected physical variable among men kabaddi players. To execute the investigation, forty five men kabaddi players studying in various colleges of Madurai Kamaraj University, within 30 kilometers radius of Arul Anandar College, Karumathur, Tamilnadu during the academic year 2014-2016, were selected as subjects at random from the total population of 100 players. The age ofthe subjects were ranged from 18 to 23 years. The subjectswere further classified at random into three equal groups of 15subjects each in which group – I(n = 15) underwent Ladder training for three days per week for twelve weeks and group –II(n = 15) underwent combined influence of weight training and ladder training programme for three days per week for twelve weeks and group - III (n = 15) acted as control who were not undergo any special training programme. The selected criterion variables such as Agility and Abdominal strength were assessed before and after the training period. The collected data were statistically analysed by using Analysis of Covariance(ANCOVA). From the results of the study it was found that there was a significant improvement on Agility and Abdominal strength for Isolated and combined influence of weight training and ladder training when compared with the control group. All students in experimental group, the Isolated and combined influence of weight training and ladder training programme were fixed accordingly. Then the experimental group underwent Isolated and combined influence of weight training and ladder training programme for 6 days per week for 12 weeks. The control group did not participate in any special training programme on strenuous physical activities apart from their day to day activities. The experimental group underwent their Isolated and combined influence of weight training and ladder training under the instruction and supervision of the investigator. The data were collected on selected criterion variables such as Agility was measured by shuttle run with the seconds and Abdominal strength was measured by modified sit-ups test with numbers at before and after the twelve weeks of Isolated and combined influence of weight training and ladder training as pre and post-test. Analysis of covariance(ANCOVA) was applied to find out significant difference if any between the experimental and control group.

Agility

The data collected prior to and after the experimental period on agility of ladder group, combination of weight and ladder training group and control group were analyzed and presented in Table 1.

Table 1

Analysis of Covariance on Agility of Ladder Training Group, Combination of Weight and Ladder Training Group and Control Group

	Ladder Training Group	**Combination of Weight and Ladder Training Group**	**Control Group**	**SOV**	**Sum of Square**	**df**	**Mean Square**	**'F' ratio**
Pre- test								
Means	19.63	19.66	19.32	B:	1.060	2	0.530	.410
S.D.	1.34	1.22	0.77	W:	54.32	42	1.293	
Post-test								
Means	18.23	18.33	19.97	**B:**	28.66	2	14.33	15.10*
S.D.	1.02	0.92	0.98	**W:**	39.867	42	0.949	
Adjusted Post-test Means	18.19	18.26	20.09	**B:**	34.109	2	17.054	28.50*
				W:	24.539	41	0.599	

* Significant at .05 level of confidence.

(The table value required for significance at 0.05 level of confidence with df 2 and 42 was 3.23, and 2 and 41 was 3.23).

Table 1 shows that the pre-test means on agility of Ladder training, combination of weight and Ladder training and control groups were 19.63 with Standard deviation ± 1.34, 19.66 with Standard deviation ± 1.22 and 19.32 with Standard deviation ± 0.77 respectively. The obtained 'F' ratio value of .410 for pre-test scores of Ladder training, combination of weight and Ladder training and control groups on agility was less than the required table value of 3.23for significance with df 2 and 42 at 0.05 level of confidence. The post-test mean values of agility for Ladder training, combination of weight and Ladder training and control groups were 18.23 with Standard deviation ± 1.02, 18.33 with Standard deviation ± 0.92 and 19.97 with Standard deviation ± 0.98 respectively. The obtained 'F' ratio value of 15.10 for post-test scores of Ladder training, combination of weight and Ladder training and control groups was greater than the required table value of 3.23for significance with df 2 and 42 at 0.05 level of confidence. The adjusted post-test mean values of Ladder training, combination of weight and Ladder training and control groups were 18.19, 18.26 and 20.09 respectively. The obtained 'F' ratio value of 28.50 for adjusted post-test scores of Ladder training, combination of weight and Ladder training and control groups was higher than the required table value of 3.23for significance with df 2 and 41 at 0.05 level of confidence. The above statistical analysis indicates that there was a significant improvement on agility after the training. Further, to determine which of the paired means had a significant difference, the Scheffe's test was applied. The result of the test is presented in Table 2.

Table 2
Scheffe's Test for the Difference between the Adjusted Post-Test Means of agility

Adjusted Post-test Means				
Ladder Training Group	**Combination of Weight and Ladder Training Group**	*Control group*	**Mean Difference**	**Confidence interval at .05 level**
18.19		20.09	1.90*	4.74
18.19	18.26		0.07*	
	18.26	20.09	1.83*	

*Significant at 0.05 level of Confidence

Table 2 shows that the adjusted post-test means differences on agility between Ladder training group and control group, between Ladder training group and combination of weight and Ladder training group and between combination of weight and Ladder training group and control group were 1.90, 0.07 and 1.83 respectively, which were significant at 0.05 level of confidence. The adjusted post-test means difference on agility between Ladder training group and combination of weight and Ladder training group was 0.07, which was significant at 0.05 level of confidence. It was concluded from the results of the study that Ladder training and combination of weight and Ladder training groups have increased the agility significantly. The result of the study also showed that significant difference was found between the training groups in favourof the Ladder training group. The mean values on agility of Ladder training, combination of weight and Ladder training and control groups are graphically represented in figure I.

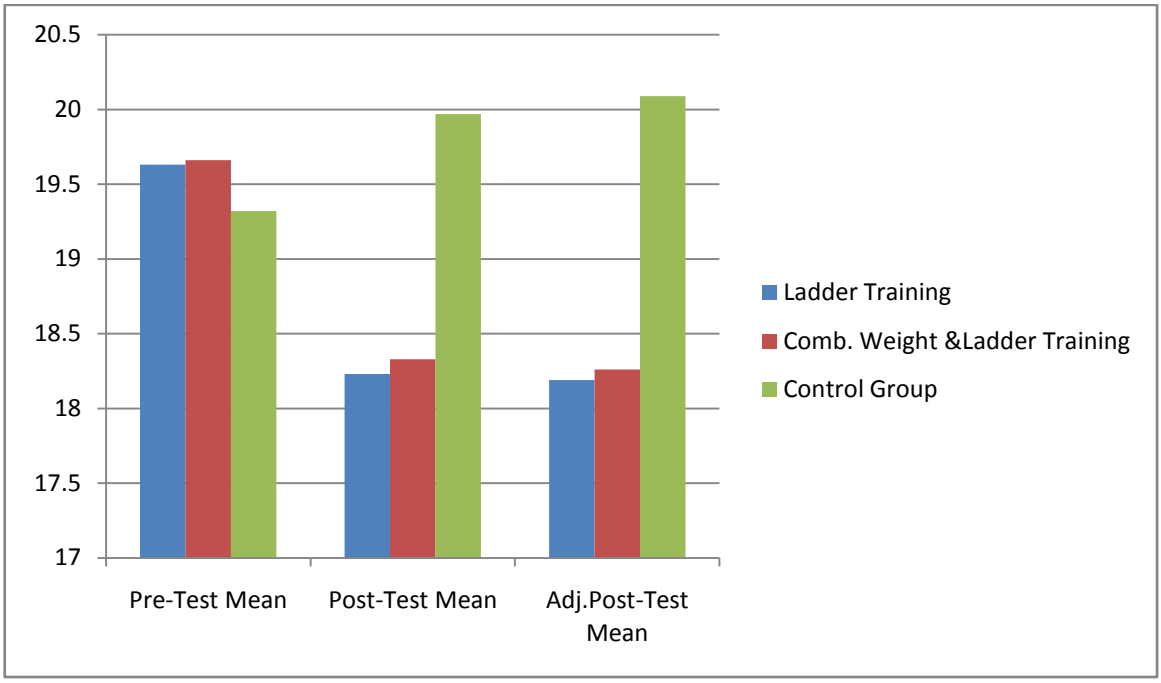

Figure I
Pre-Test, Post-Test and Adjusted Post-Test Means Differences of agility

Abdominal strength

The data collected prior to and after the experimental period on abdominal strength of ladder group, combination of weight and ladder training group and control group were analyzed and presented in Table - II.

Table 3

Analysis of Covariance on Abdominal strength of Ladder Training Group, Combination of Weight and Ladder Training Group and Control Group

	Ladder Training Group	Combination of Weight and Ladder Training Group	Control Group	SOV	Sum of Square	df	Mean Square	'F' ratio
Pre- test Means	31.60	31.27	28.47	B:	20.84	2	10.42	1.868
S.D.	2.47	2.25	2.36	W:	234.27	42	5.578	
Post-test Means	33.73	36.40	27.73	**B:**	591.111	2	295.556	60.415*
S.D.	2.66	2.50	1.16	**W:**	205.467	42	4.92	
Adjusted Post-test Means	33.11	33.96	28.80	**B:**	306.953	2	153.477	45.938*
				W:	136.979	41	3.341	

* Significant at .05 level of confidence.

(The table value required for significance at 0.05 level of confidence with df 2 and 42 was 3.23, and 2 and 41 was 3.23).

Table 3 shows that the pre-test means on abdominal strength of Ladder training, combination of weight and Ladder training and control groups were 31.60 with Standard deviation ± 2.47, 31.27 with Standard deviation ± 2.25 and 28.47 with Standard deviation ± 2.36 respectively. The obtained 'F' ratio value of 1.868 for pre-test scores abdominal strength was less than the required table value of 3.23for significance with df 2 and 42 at 0.05 level of confidence. The post-test mean values of abdominal strength for Ladder training, combination of weight and Ladder training and control groups were 33.73 with Standard deviation ± 2.66, 36.40 with Standard deviation ± 2.50 and 27.73 with Standard deviation ± 1.16 respectively. The obtained 'F' ratio value of 60.415 for post-test scores of Ladder training, combination of weight and Ladder training and control groups was greater than the required table value of 3.23for significance with df 2 and 42 at 0.05 level of confidence. The adjusted post-test mean values of Ladder training, combination of weight and Ladder training and control groups were 33.11, 35.96 and 28.80 respectively. The obtained 'F' ratio value of 45.938 for adjusted post-test scores of Ladder training, combination of weight and Ladder training and control groups was higher than the required table value of 3.23for significance with df 2 and 41 at 0.05 level of confidence. The above statistical analysis indicates that there was a significant improvement on abdominal strength after the training. Further, to determine which of the paired means had a significant difference, the Scheffe's test was applied. The result of the test is presented in Table 4.

Table 4
Scheffe's Test for the Difference between the Adjusted Post-Test Means of abdominal strength

Adjusted Post-test Means				
Ladder Training Group	**Combination of Weight and Ladder Training Group**	*Control group*	**Mean Difference**	**Confidence interval at .05 level**
33.11		28.80	4.31	11.21
33.11	35.96		2.85	
	35.96	28.80	7.16	

*Significant at 0.05 level of Confidence

Table 4 shows that the adjusted post-test means differences on abdominal strength between Ladder training group and control group, between Ladder training group and combination of weight and Ladder training group and between combination of weight and Ladder training group and control group were 4.31, 2.85 and 7.16 respectively, which were significant at 0.05 level of confidence. The adjusted post-test means difference on abdominal strength between Ladder training group and combination of weight and Ladder training group was 2.85, which was significant at 0.05 level of confidence. It was concluded from the results of the study that Ladder training and combination of weight and Ladder training groups have increased the speed significantly. The result of the study also showed that significant difference was found between the training groups in favour of the combination of weight and Ladder training. The mean values on abdominal strength of Ladder training, combination of weight and Ladder training and control groups are graphically represented in figure II.

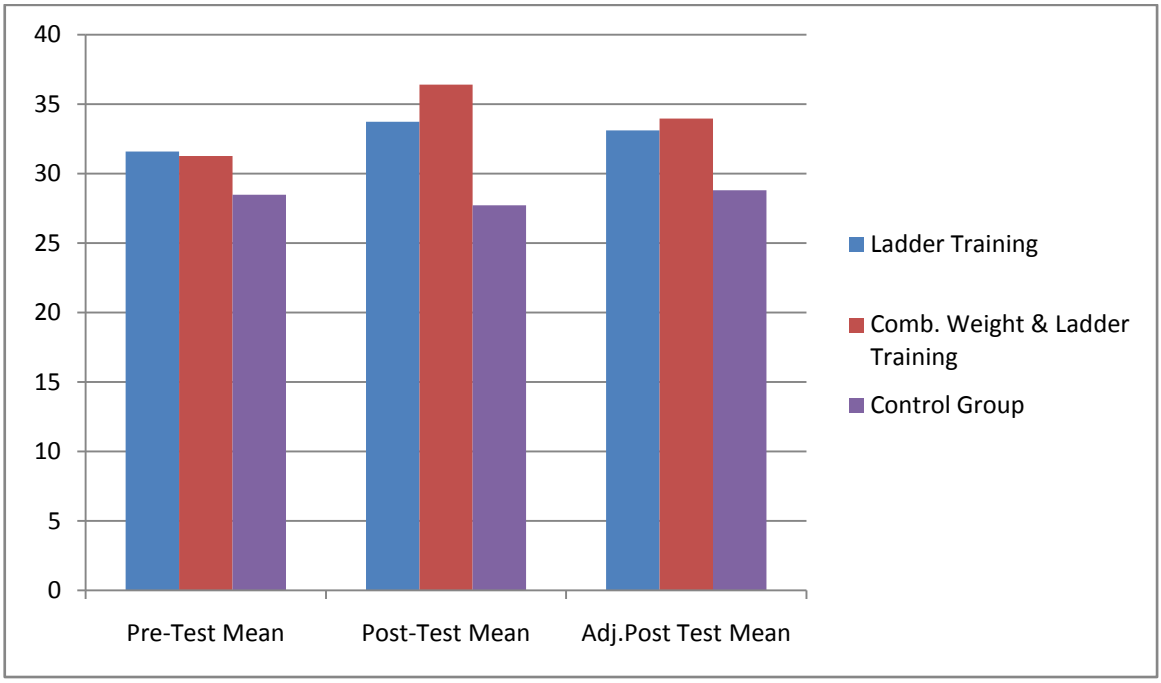

Figure III
Pre-Test, Post-Test and Adjusted Post-Test Means Differences of abdominal strength

Conclusion

1. It was concluded that the isolated training group and combination of weight training and ladder training have significantly improved all the variables under study better than the control group.
2. The result of the study also revealed that there was a significant improvement on agility after the combination of weight and ladder training and significant difference was found between the training groups on agility in favour of ladder training.
3. The result of the study also revealed that there was a significant improvement on abdominal strength after the isolated and combination of weight and ladder training and significant difference was found between the training groups on abdominal strength in favour of combination of weight and ladder training.

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