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Impact of strength training on selected physiological variables among kabaddi players

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Abstract

This study was designed to investigate the impact of strength training on selected physiological variables among kabaddi players. To achieve the purpose of the study (N=40) forty men kabaddi players were selected from the Department of Physical Education, Vijaynagara Sri Krishnadevara University, Bellary, Karnataka, India was selected as subjects. Their age ranged in between 19 and 24years. The subjects will be randomly assigned in to two equal groups (N=20) namely one experimental group and one control group. Group I underwent strength training Group II as control group they do not have any specific training. The physiological variables such as blood pressure, breath holding time and resting heart rate were selected as criterion variables and was assessed by sphygmomanometer, manual test and stethoscope respectively. The subjects were concerned with their particular training for a period of six weeks, three days per week. The pre and post-test were taken before and after the end of six weeks of the training. The Analysis of Covariance (ANCOVA) was used to analyse the significant differences between the means and the level significance was fixed at 0.05 for all the cases to test the hypothesis. The strength training produced significant enhancement in selected physiological variables among kabaddi players.

Keywords: Strength training, blood pressure, breath holding time and resting heart rate

Introduction

Kabaddi is well-known to everyone as the game of entertaining masses, the popularity; simple and basic nature of play has attracted people to the core. As the game does not need any high-cost equipment's as well as a technically complicated instrument to use in its conduct. Though it is basically an outdoor sport played on clay court, now a days the game is being played on synthetic surface, with players playing with shoes, the game taken a different dimension in itself, and had attained a great success. Kabaddi is a unique body contact game with the basic idea of the game is to score points by raiding into the opponent's court and touching as many defence players as possible without getting caught on a single breath. During play, the players on the defensive side are called "Antis" while the player of the offense is called the "Raider" the game of Kabaddi perhaps the only combative sport in which attack is an individual attempt while defence is a group effort. The Kabaddi perhaps is one of the few sports to combine yogic characteristics with physical activity (Kumar, T. (2019) ^[1].

Strength Training

Strength is the ability of the neuromuscular system to produce internal tension (in the muscles and connective tissues that pull on the bones) to overcome an external force. Whether the external force demands the neuromuscular system to produce stability, endurance, maximal strength, or power, internal tension within the muscles is what leads to force production. The degree of internal tension produced is the result of strength adaptations. The specific form of strength or internal tension produced from training is based on the type and intensity of training used by the players. Resistance training programs have traditionally focused on developing maximal strength in individual muscles, emphasizing one plane of motion (typically the sagittal plane). Because all muscles function eccentrically, isometrically, and concentrically in all three planes of motion (sagittal, frontal, and transverse) at different

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speeds, training programs should be designed using a progressive approach that emphasizes the appropriate exercise selection, all muscle actions, and repetition tempos. Because muscle operates under the control of the central nervous system, strength needs to be thought of not as a function of muscle, but as a result of activating the neuromuscular system. Strength gains can occur rapidly with strength training in the beginning clients and can increase with a structured, progressive resistance training program. One factor in increased strength is an increase in the number of motor units recruited, especially early in a training program. Using heavier loads increases the neural demand and recruitment of more muscle fibres until a recruitment plateau is reached, after which further increases in strength are a result of fibre hypertrophy. Strength cannot be thought of in isolation. Strength is built on the foundation of stabilization requiring muscles, tendons, and ligaments to be prepared for the load that will be required to increase strength beyond the initial stages of training. Whereas stabilization training is designed with the characteristics of type I slow-twitch muscle fibres in mind (slow-contracting, low tension output, and resistant to fatigue), strength training is designed to match the characteristics of type II muscle fibres (quick contracting, high tension output, prone to fatigue). Thus, acute variables (sets, reps, intensities, etc.) are manipulated to take advantage of the specific characteristics of each fibre type. The majority of strength increase will occur during the first 12 weeks of

resistance training from increased neural recruitment and muscle hypertrophy. Intermediate and advanced lifters will find it necessary to carry out a more demanding program in terms of training volume and intensity by following a sound periodized schedule (Nieman, 2011) [6].

Methodology

To achieve the purpose of the study (N=40) forty men kabaddi players were selected from the Department of Physical Education, Vijayanagar Sri Krishnadevara University, Bellary, Karnataka, India were selected as subjects. Their age ranged in between 19 and 24 years. The subjects will be randomly assigned to two equal groups (N=20) namely one experimental group and one control group. Group I underwent strength training Group II as control group they do not have any specific training. The physiological variables such as blood pressure, breath holding time and resting heart rate were selected as criterion variables and was assessed by sphygmomanometer, manual test and stethoscope respectively. The subjects were concerned with their particular training for a period of six weeks, three days per week. The pre and post-test were taken before and after the end of six weeks of the training. The Analysis of Covariance (ANCOVA) was used to analyse the significant differences between the means and the level significance was fixed at 0.05 for all the cases to test the hypothesis.

Table I: Selected Variables and Their Tests

S. No	Variables	Test	Unit of Measurements
1.	Blood Pressure	Sphygmomanometer	Mm/hg
2.	Breath Holding Time	Manual Test	Seconds
3.	Resting Hart Rate	Stethoscope	Counts/minute

Table II: Computation of Analysis of Covariance of Means Strength Training (STG) and Control Group (CG) on Blood Pressure, Breath Holding Time and Resting Hart Rate

Variables	Test	SCT	CG	So V	SS	df	MS	'F' Ratio
Blood Pressure	Pre-Test	123.86	123.93	BG	0.033	1	0.033	0.82
				WG	55.333	28	1.976	
	Post- Test	120.80	124.06	BG	90.133	1	90.133	82.29*
				WG	30.667	28	1.095	
	Adjusted Post- Test	120.80	124.06	BG	87.947	1	87.947	77.47*
				WG	30.651	28	1.135	
Breath Holding Time	Pre-Test	26.26	25.53	BG	4.033	1	4.033	0.47
				WG	236.667	28	8.452	
	Post- Test	34.86	25.80	BG	616.533	1	616.533	49.30*
				WG	350.133	28	12.505	
	Adjusted Post- Test	34.84	25.82	BG	599.124	1	599.124	46.36*
				WG	348.893	27	12.922	
Resting Hart Rate	Pre-Test	74.06	74.46	BG	1.200	1	1.200	0.53
				WG	62.667	28	2.238	
	Post- Test	70.66	74.26	BG	97.200	1	97.200	29.49*
				WG	92.267	28	3.295	
	Adjusted Post- Test	70.59	74.33	BG	103.147	1	103.147	33.09*
				WG	84.164	27	3.117	

*Significant at 0.05 level (Table value for df 1 and 28 was table value for df and 27 was 3.10).

Table-1 shows the results of pre-test, post-test and adjusted post-test mean scores of strength training group (LTG) and control group (CG) on blood pressure, breath holding time, resting heart rate. The adjusted post-test mean scores were 120.80, 124.06; 34.84, 25.82, and 70.59, 74.33 respectively and the f ratio of adjusted post-test means were 77.47, 46.36 and 33.09 respectively. The obtained means were significant and these were greater than the required table value of df 3.10

at 0.05 level of confidence. Further there was significant difference between the experimental groups and control groups on selected physiological variables such as in blood pressure, breath holding time, resting heart rate. When compare with the control groups the strength training groups will shows better improvement on selected physiological variables among kabaddi players.

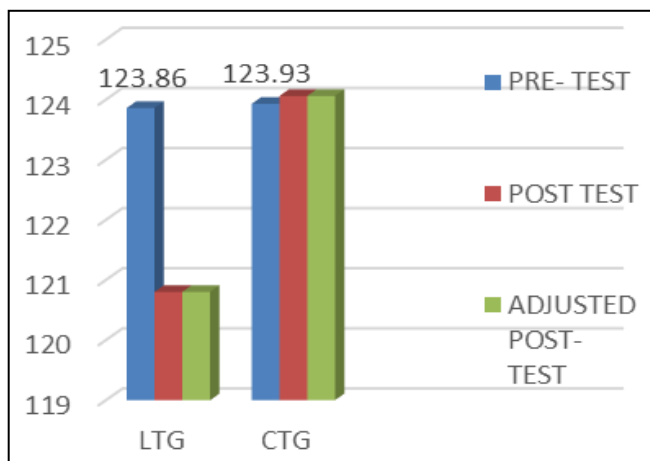


Fig 1: Mean value of Blood Pressure

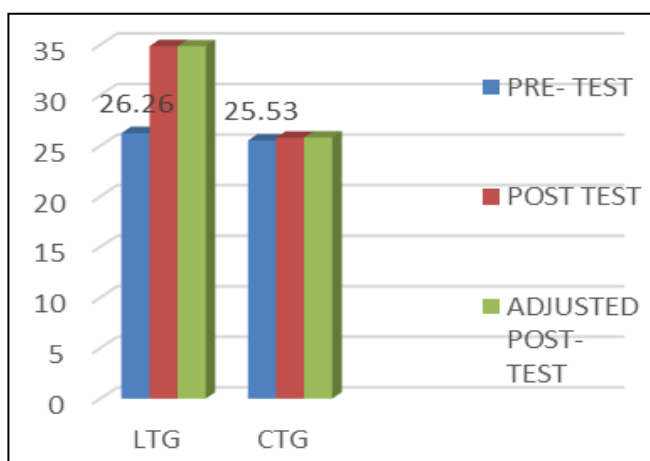


Fig 2: Mean value of Breath Holding time

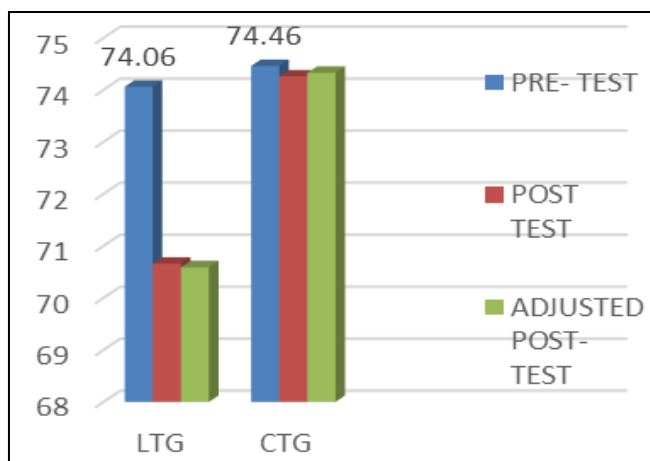


Fig 3: Mean value of Resting Heart rate

Fig 1-3: The Mean Values of Pre-Test, Post-Test and Adjusted Post-Test Mean Scores of Strength Training and Control Group (CG) on Blood Pressure, Breath Holding Time and Resting Hart Rate

Discussion on findings

The result of the study reveals that the subject of control group did not show improvement on selected physiological variables among men kabaddi players. The result of the study also reveals that strength training would improve the selected physiological variables namely blood pressure, breath holding time, resting heart rate among men kabaddi players significantly. These finding were similar to the findings of Buyukyazi *et al.*, (2008) ^[3] and Kassavou *et al.*, (2013) ^[4].

Conclusions

It was concluded that there was significant improvement on all the selected physiological variables namely blood pressure, breath holding time, resting heart rate among men kabaddi players students due to the influence of six weeks of strength training.

The subject of control group did not show improvement in any of selected the physiological variables among men kabaddi players.

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