



ORIGINAL RESEARCH PAPER

Physical Education

EFFECT OF KETTLEBELL TRAINING ON SHOULDER STRENGTH BACK STRENGTH AND BLOOD PRESSURE

KEY WORDS: Kettlebell training followed by yogic practices, shoulder strength, back strength and blood pressure.

Dr. Baiju. A

Associate Professor, Mannaniya College Of Arts And Science, Pangode, Thiruvananthapuram. Kerala

ABSTRACT

The aim of the study was to find out whether kettlebell training enhancing the shoulder strength, back strength and blood pressure of male football players. Thirty male football players in 18 and 25 years of age group studying in various departments of Mannaniya College of Arts and Science, Pangode, Thiruvananthapuram, Kerala, were selected as subjects. They were divided into two equal groups, each group consisted of fifteen subjects, in which group – I underwent kettlebell training and group – II acted as control which did not participate any training apart from their day to day activities. The period of training for the present study was three days (alternative days, such as, Monday, Wednesday and Friday) in a week for thirteen weeks. Prior to and after the training period the subjects were tested for shoulder strength and back strength. The shoulder strength was measured by administering push-ups test, back strength was measured by using dynamometer and blood pressure (both systolic and diastolic) was measured by using sphygmomanometer. The analysis of covariance (ANCOVA) was applied as statistical tool and whenever the 'F' ratio for adjusted post-test means were significant, the Scheffé S test was used as post-hoc test to find out any significant difference between the training groups. It was concluded from the result of the study that kettlebell training group have improved (P < 0.05) all the criterion variables, such as, shoulder strength, back strength and decreased the blood pressure (both systolic and diastolic).

INTRODUCTION

Numerous training procedures are in practice to improve each and every physical and motor fitness qualities at various levels.[1] The major objective in training is to cause biological adaptation in order to improve performance in a specific task. Kettlebells, which resemble cannonballs with handles, are made of cast iron or steel and are used for a variety of workouts, including but not limited to ballistic exercises that combine aerobic, strength, and flexibility training. In the weightlifting sport of kettlebell lifting, they serve as the main tools. It is generally recognised that devices that separate muscles are inferior to the complex, whole-body movements typical of kettlebell workouts for increasing muscular tone, body composition, and strength.[2]

The tendons and ligaments are also strengthened with kettlebell use, making the joints stronger and less prone to damage. strengthens all of your muscles, head to toe. Exercises involving whole-body movement make up kettlebell training. Kettlebell workouts are noted for their complex, whole-body movements, which are better for increasing muscular tone, body composition, and strength than equipment that separate muscles. Not just strength sports, but all sports' conditioning programmes should include kettlebell training. They increase their leg strength, and every sport will benefit from their increased muscle strength and endurance. As athletes, we contract our muscles more. This creates the game's components and a specially designed kettlebell exercise regimen.[3]

Exercises like the swing, according to proponents of the kettlebell workout, may simultaneously improve physical strength, endurance, and power in addition to cardiovascular fitness. Reviewing the value of kettlebell exercise in the process of strength and conditioning, it was noted that the force used in cornerstone exercises like the swing would not be sufficient to increase maximum or explosive strength because the mass of commercially available kettlebells is relatively small (typically 16–40 kg).[4]

The immediate consequences of a kettlebell workout have only been the subject of a few scientific investigations. The energy expenditure and relative intensity of a 20-minute kettlebell workout were examined by Schnettler et. al., (2010).[5] They discovered that during a kettlebell snatch session, respondents' average heart rates and oxygen intake averaged 93% and 78% of their maximum levels, respectively. Results from a research by Farrar et al. (2010) [6] were

consistent with Schnettler et al (2010).[5] The average heart rate (HR) and oxygen consumption (VO₂) throughout the "Man Maker" kettlebell workout were 165 beats per minute (85% of HR_{max}) and 34.3 millilitres per minute (65% of VO_{2max}), respectively. Kettlebell training's metabolic burden should thus lead to improvements in body composition and limited aerobic capacity.

As an example, a 2009 research by Kiebele and Behm [7] examined lower body resistance training exercises. The study discovered a 12.4% decrease in balance beam crossing time and a 44% decrease in wobble board encounters. Resistance weight training's effects on flexibility were investigated by Wilmore et al. in 1978.[8] The sit-and-reach and back arch tests were used to calculate flexibility in inches. On the aforementioned tests, improvements were +0.5 and +0.4 for males and +1.3 and +0.7 for women..

Shoulder strength is defined as “the force that muscle or a group of muscle can exert against a kettlebell for a prolonged period”.[9] The socio-psychological concept of self-confidence relates to self-assuredness in one's personal judgment, ability, power, etc., sometimes manifested excessively.[10] Blood pressure (BP) is a force exerted by circulating blood on the walls of blood vessels, and is one of the principal vital signs.

METHODS

This study under investigation involves the experimentation of kettlebell training on shoulder strength, back strength and blood pressure (systolic and diastolic). Thirty male football players between 18 and 25 years, those who were studying in various departments of Mannaniya College of Arts and Science, Pangode, Thiruvananthapuram, Kerala were selected as subjects. The selected forty five subjects were randomly divided into three groups of fifteen each, out of which group - I (n = 15) underwent kettlebell training, and group - II (n = 15) remained as control. The training programme was carried out for three days (alternative days) per week during morning session only (6 am to 8 am) for thirteen weeks. Shoulder strength was measured by administering push – ups test, back strength was measured with the help of dynamometer and blood pressure was measured by using sphygmomanometer. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups on selected criterion variables separately. In all the cases, 0.05

level of confidence was fixed to test the significance, which was considered as an appropriate.

ANALYSIS OF DATA

The data collected prior to and after the experimental periods on shoulder strength, back strength and blood pressure (systolic and diastolic) on kettlebell training group and control group were analysed and presented in the following table -I.

Table – I Analysis of Covariance and 'F' ratio for Shoulder strength, Back strength and Blood Pressure (systolic and diastolic) for Kettlebell Training and Control Groups

Variable Name	Group Name	Kettlebell Training Group	Control Group	F' Ratio
Shoulder strength (in numbers/mn)	Pre-test Mean ± S.D	28.31 ± 1.31	28.41 ± 1.11	0.89
	Post-test Mean ± S.D.	32.16 ± 1.08	28.33 ± 1.81	18.31*
	Adj. Post-test Mean	33.093	28.514	32.86*
Back strength (in Kg)	Pre-test Mean ± S.D	73.86 ± 3.08	74.22 ± 1.86	0.732
	Post-test Mean ± S.D.	77.31 ± 2.26	75.13 ± 1.22	21.86*
	Adj. Post-test Mean	77.561	74.863	42.75*
Systolic Blood Pressure (mmHg)	Pre-test Mean ± S.D	123.56 ± 1.42	122.96 ± 1.23	0.72
	Post-test Mean ± S.D.	121.85 ± 1.63	122.51 ± 2.09	1.56
	Adj. Post-test Mean	120.163	122.893	14.567*
Diastolic Blood Pressure (mmHg)	Pre-test Mean ± S.D	82.11 ± 1.26	82.16 ± 1.86	0.861
	Post-test Mean ± S.D.	80.10 ± 1.56	82.37 ± 1.22	1.89
	Adj. Post-test Mean	80.661	82.561	15.236*

* Significant at .05 level of confidence. (The table value required for significance at .05 level of confidence with df 2 and 43 and 2 and 42 were 3.21 and 3.22 respectively).

The data are presented in the above table – I and the result shows that there was a significant improvement was occurred on all criterion variables such as, shoulder strength, back strength, systolic and diastolic blood pressure after the kettlebell training when compared with the control group.

RESULTS

Before applying the experiment all the subjects of the kettlebell training, and control groups were attended the pre-test, which was conducted a day prior to the commencement of the training and the data were collected on shoulder strength, back strength and blood pressure (systolic and diastolic). After thirteen weeks of training the post-test was conducted one day after the training period to find out any changes in the criterion variables.

After applying the analysis of covariance, the result of this study showed that there was a significant difference among kettlebell training and control groups on the changes in shoulder strength, back strength and blood pressure after eight weeks of training.

CONCLUSION

Shoulder strength and back strength has improved for the experimental group, such as kettlebell training group when compared with the control group. The blood pressure has also decreased in kettlebell training group when compared with the control group. There are so many evidences shows

that kettlebell training has enhanced the health related physical fitness such as, shoulder strength and leg strength among male kabaddi players.[2] Moreover performing kettlebell training which helps to improve muscular strength.[11] Otto et al., [12] found that kettlebell training improved improves muscular strength and power but not to the extent that traditional resistance training does. While not unanimous, the body of research on kettlebell training strongly supports the conclusions that it can have positive benefits for cardiovascular fitness, muscular strength and muscular power.[13,14] In addition to the work by Lake et al. [15], other studies have shown the efficacy of kettlebell training in improving strength and power.

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