



ISSN: 2456-0057
IJPNE 2018; 3(1): 147-149
© 2018 IJPNE
www.journalofsports.com
Received: 28-11-2017
Accepted: 30-12-2017

T Parasuraman
Ph.D Research Scholar,
University of Madras,
Department of Physical
Education, Chennai, Tamil
Nadu, India

Dr. V Mahadevan
Director of Physical Education,
University of Madras, Chennai,
Tamil Nadu, India

Effect of 6 week kettle bell training on core strength and muscular endurance in volleyball players

T Parasuraman and Dr. V Mahadevan

Abstract

The purpose of the study was to find out the effect of 6 weeks Kettlebell training on core strength and muscular endurance in volleyball players. To achieve the purpose of the study thirty subjects (N=30), who had past experience of at least minimum one year in volleyball and only represented collegiate level tournament volleyball men players were randomly selected as a subjects from University of Madras. The subjects were aged between 18 to 25 years. The selected subjects were randomly assigned into two equal groups of 15 each, such as experimental and control group. The experimental group participated in the kettlebell training for 6 weeks, 3 days in a week, one session per day, each section lasted 30minutes, and the control group did not participate in any kind of special training programme apart from the daily physical activities. The selected variables such as core strength and muscular endurance were measured by plank and sit-ups. The subjects of two groups were tested on selected variables prior and immediately after the training period. The collected data were analysed statistically through analyze of covariance (ANCOVA) to find the significance difference. The 0.05 level of confidence was fixed to test the level of significance difference, the result of the study showed that systematic practice of kettlebell training improved the core strength and muscular endurance in volleyball players.

Keywords: Kettlebell Training, Core Strength, Muscular Endurance.

Introduction

Kettlebells are cast iron weights with a single looped handle on the top. They provide an entire body workout- helping to strengthen and condition your muscles. Kettlebells were developed in Russia in the 1700s, primarily for weighing crops. The Soviet army used them as part of their physical training and conditioning programs in the 20th century. "The reason for the surge in kettlebell training is that it gets back to basic training that requires functional, whole body fitness a great way to get a whole-body workout in a relatively short period of time" (ACE). Kettlebell training is accessible and practical for all. From the elite athlete seeking for a superiority, to the sedentary person looking for to get fitness for the first time. Kettlebells acceptance in fitness circles continues to increase and with good reason. When used appropriately, kettlebells are enormously effective training tools for providing total-body strength and conditioning.

Volleyball is one of the energetic sport in the world right now. To become a successful volleyball player, he needs to vanquish a lot of physical obstacles. To attain the success, they need to train more vigorously with the help of advanced training methods and equipment. Training with kettlebells challenge the volleyball players physically and it unquestionably help the players to develop their physical fitness.

Methodology

Subjects

To achieve the purpose of the study thirty subjects (N=30), who had past experience of at least minimum one year in volleyball and only represented collegiate level tournament volleyball men players were randomly selected as a subjects from University of Madras. The subjects were aged between 18 to 25 years. The selected subjects were randomly assigned into two equal groups of 15 each, such as experimental and control group. The experimental group participated in the kettlebell training for 6 weeks, 3 days in a week, one session per day, each section lasted 30minutes and the control group did not participate in any kind of special

Correspondence
T Parasuraman
Ph.D Research Scholar,
University of Madras,
Department of Physical
Education, Chennai, Tamil
Nadu, India

training programme apart from the daily physical activities. The selected variables such as core strength and muscular endurance were measured by plank and sit-ups. The subjects of two groups were tested on selected variables prior and immediately after the training period.

Training programme

During the training period the experimental group (KTG) underwent 6 weeks of kettlebell training programmes in addition to their daily routine activities as per the schedule. The duration of training were planned for 30 minutes that is from 7.00am to 7.30am on Mondays, Wednesdays and Fridays. All the subjects involved in this study were carefully monitored throughout the training programme intensity of the experimental training was based on difficulty of the exercise, sets, repetitions and recovery time. Intensity effort level exerted while performing an exercise. The intensity of workout can be changed by changing the exercise order, or increasing or decreasing the number of exercise, repetitions,

weight, or rest period.

Each session included 5 minute active warm-up, 30minute of kettlebell exercise and 5 minute of cool down exercise. Exercises included one and two hand kettlebell swings, good morning, single arm dead lift (Left and right Hand), Goblet squat, side lunge and overhead press. After completion of 6 weeks of kettlebell training period participants were retested as the pre test.

Statistical technique

The collected data were analysed statistically through analyze of covariance (ANCOVA) to find the significance difference.

Analysis of data

The data collected prior to and after the experimental periods on core strength and shoulder explosive power on experimental group and control group were analysed and presented in table – 1.

Table I: Analysis of covariance for pre and post data on core strength

Test	Kettlebell Group	Control group	Source of variance	Sum of Squares	df	Mean square	F
Pre-test mean	1.19	1.24	Between	0.02	1	0.02	1.05
			Within	0.62	28	0.02	
Post-test mean	1.83	1.25	Between	2.52	1	2.52	57.76
			Within	1.22	28	0.04	
Adjusted mean	1.84	1.23	Between	2.63	1	2.63	63.78
			Within	1.11	27	0.04	

*significant.at 0.05 level of confidence

Discussion on findings of core strength

The obtained F value on pre test scores 1.05 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 57.76 was greater than the required F

value at 3.22. This proved that the differences between the post test mean at the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 63.78 was greater than the required F value at 3.22. This proved that there was Significant differences among the means due to eight weeks of kettlebell training on core strength

Table II: Analysis of covariance for pre and post data on muscular endurance

Test	Battle rope Group	Control group	Source of variance	Sum of Squares	df	Mean square	F
Pre-test mean	34.73	34.67	Between	0.03	1	0.03	.011
			Within	84.27	28	3.01	
Post-test mean	41.13	34.27	Between	353.633	1	353.63	132.613
			Within	74.667	28	2.67	
Adjusted mean	41.12	34.28	Between	350.74	1	350.74	155.1
			Within	61.05	27	2.26	

The obtained F value on pre-test scores 0.11 was lesser than the required F value of 3.22 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 132.7 was greater than the required F value at 3.22. This proved that the differences between the post-test mean at the subjects were significant. Taking into consideration the pre-and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 155.1 was greater than the required F value at 3.22. This proved that there was Significant differences among the means due to eight weeks of battle rope training on muscular endurance.

core strength as well as muscular endurance after the 6 week of kettlebell training of Inter collegiate volleyball players while comparing to the control group. As a kettlebell training becomes increasingly popular in the fitness industry, additional studies are needed to determine further benefits of using kettlebell.

Reference

1. Asher Falatic, Peggy, Plato, Christopher Holder, Daryl Finch, Kyungmo Han. Effects of Kettlebell Training on Aerobic Capacity. Journal of Strength and Conditioning Research. 2015; 29(7):1943-1947.
2. Jay K, Frisch D, Hansen K, Zebis MK, Andersen CH, Mortensen OS *et al.* Kettlebell training for musculoskeletal and cardiovascular health: a randomized controlled trial. Scandinavian Journal of Work, Environment & Health. 2011; 37(3):196-203.
3. Kenneth Jay, Dennis Frisch, Klaus Hansen, Mette,

Conclusion

In conclusion, the current study found significant increase in

- Christoffer, Mortensen, Andersen. Kettlebell Training for Musculoskeletal and Cardiovascular Health: A Randomized Controlled Trial. *Scandinavian Journal of Work, Environment & Health*, 2011; 37(3)196-203.
4. Lake JP, Lauder MA. Kettlebell swing training improves maximal and explosive strength. *Journal of Strength and Conditioning Research*. 2012; 26(8):2228-2233.
 5. Otto WH, Coburn JW, Brown LE, Spiering BA. Effects of weightlifting vs. kettlebell training on vertical jump, strength, and body composition. *Journal of Strength and Conditioning Research*. 2012; 26(5):1199-1202.
 6. Quednow J, Sedlak T, Meier J, Janot J, Braun S. The effects of high intensity interval-based kettlebells and battle rope training on grip strength and body composition in college-aged adults. *International Journal of Exercise Science*. 2015; 8(2):3.
 7. Ryan E Farrar, Jerry L Mayhew, Alexander J Koch. Oxygen Cost of Kettlebell Swings. *Journal of Strength and Conditioning Research*. 2010; 24(4):1034-1036.
 8. Webliography
 9. <https://www.acefitness.org>
 10. <https://www.bodybuilding.com>
 11. www.coachmag.co.uk
 12. http://www.teachpe.com/fitness/fitness_tests.php