



ISSN: 2456-4419

Impact Factor: (RJIF): 5.18

Yoga 2019; 4(1): 1024-1026

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www.theyogicjournal.com

Received: 10-11-2018

Accepted: 15-12-2018

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Effect of 6 weeks of kettlebell training on explosive strength and strength endurance among college women volleyball players

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DOI: <https://doi.org/10.22271/yogic.2019.v4.i1r.1284>

Abstract

The purpose of this study was to find out effect of kettlebell training (KT) on selected physical variables (PV) among college women volleyball players (CWVP). To achieve the purpose of this study (n=30) volleyball players (VP) were selected from Chennai district, Tamil Nadu (TN). The age of selected subjects ranged between 17 to 25 years and they were divided into two equal groups. Group – I (Experimental Group (EG)) underwent KT for thrice in a week of 6 weeks. Group – II (Control Group (CG)) did not participate any special training apart from their regular activities. The explosive strength and strength endurance were measured and tested for both the groups before and after the training period. The Analysis of Co Variance (ANCOVA) which has a set value of $p < 0.05$ was performed to find out the significant mean differences. The results of the study find that explosive strength (ES) and strength endurance (SE) significantly increased due to six weeks of KT among CWVP.

Keywords: Kettlebell training (KT), explosive strength (ES) & strength endurance (SE)

Introduction

Volleyball (VB) is associate with aerobic team game that demands further anaerobic fitness. This would like volleyball players to effort each energy systems, creating cardiovascular training very essential. So, VB players need cardiovascular training in order to boost their energy systems. The aerobic, or lower strength preparation, helps to construct a robust cardio base that's necessary for an extended period match. Kettlebell lifting continues to gain popularity as strength and conditioning training tool and as a sport in and of itself. Although the swing to chest-level and several multi-movement protocols have been analyzed, little research has attempted to quantify the aerobic stimulus of individual kettlebell movements, which would best inform kettlebell-related exercise prescription. Kettlebells are an ideal tool for ballistic, full-body exercises using high muscle forces, making them potentially useful for improving muscular strength and cardio respiratory fitness (Jay *et al.*, 2010).

Materials and Methods

Data were analysed from thirty collegiate women volleyball players who were selected from Chennai, Tamil Nadu. The age of the selected subjects was between 17 to 25 years. Further they were classified at random in two equal groups of 15 (n=15) subjects each. Group - I EG underwent KT thrice in a week for six weeks, and each section lasted for 45minutes and the Group – II - that was a CG did not undergo any special training apart from the regular exercises. The ES and SE were measured and tested for both the group members before and after the training session.

Training Programme

During the KT period, a six-week of KT was undertaken by the experimental group on Mondays, Tuesdays and Wednesdays along with their routine exercises. Every day the training lasted for one hour in the morning. The subsequent exercise was monitored in the training

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session, the schedule consisted of 10 min warm up which includes jogging and dynamic stretches. After this, the subjects carried exercises like kettlebell swing, bent over rows each side, front rack reverse lunge, global squat, over head pass and snatch. The ended the training session with cool down and stretches routine for 15min.

Statistical Procedure

The Analysis of Co-Variance (ANCOVA) which has a set

value of $p < 0.05$ was performed to find out the significant mean differences.

Results and Discussion

The data collected prior and after the experimental period on ES and SE of EG and CG is analysed and presented in table – 1 and 2.

Table 1: Ancova for Pre and Post Data Ones (Scores in Centimetres)

Test	EG	CG	SV	SS	df	MS	F
Pre	60.53	60.48	B	0.5	1	0.5	0.035
mean			W	401.467	28	14.338	
Post	69.32	60.9	B	166.478	1	166.478	15.021*
mean			W	310.321	28	11.083	
Adjusted	69.55	60.78	B	178.578	1	178.578	118.214*
mean			W	40.787	27	1.511	

The Pre-Test: The calculated “F” value was 0.035 correspondingly lower and indicates no significant changes. The post-test The obtained “F” value was 15.021 correspondingly higher than the required value and affirmed

significant changes. The adjusted post-test: The obtained “F” value was 118.214 correspondingly higher than the required value and affirmed significant changes.

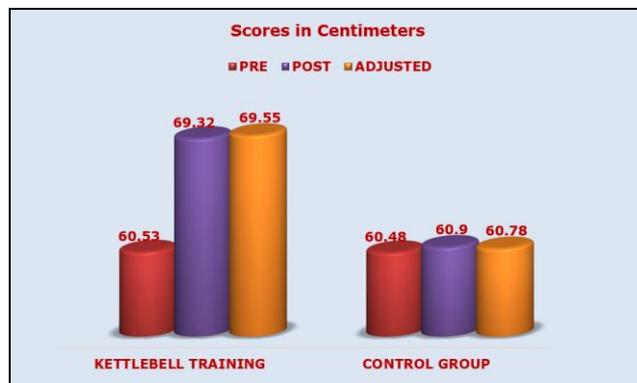


Fig 1: Test Differences Ones

Table 2: Ancova for pre and Post Data Ones (Scores in Numbers)

Test	EG	CG	SV	SS	df	MS	F
Pre	25.36	25.3	B	4.234	1	4.234	0.597
mean			W	198.467	28	7.088	
Post	30.27	25.41	B	98.243	1	98.243	13.078*
mean			W	210.344	28	7.512	
Adjusted	30.32	25.39	B	120.857	1	120.857	97.515*
mean			W	33.463	27	1.239	

The Pre-Test: The calculated “F” value was 0.597 correspondingly lower and indicates no significant changes. The post-test The obtained “F” value was 13.078 correspondingly higher than the required value and affirmed

significant changes. The adjusted post-test: The obtained “F” value was 97.515 correspondingly higher than the required value and affirmed significant changes.



Fig 2: Test Differences Ones

Conversation on Findings

The present study proved that a statistically significant result ($p < 0.05$) in the value of the ES and SE among VB players was due to the training using the KT. Yudik Prasetyo and Ahmad Nasrulloh (2017) found that the weight training significantly improved the strengths of the leg muscle, back muscle, right grip and leg grip. Kumar & Sha, (2018) ^[2] found that due to twelve weeks of resistance and aerobic training produced notable development on hand grip strength (HGS). Patel Amit & Joshi Makarand (2017) ^[3] indicates that due to resistance training vital capacity has been improved significantly. Hiremath, Gnanaraj, & Muthuraj (2020) ^[1] found that concurrent resistance and endurance training significantly increased the forced vital capacity.

Conclusion

According to the results of the study, it has been observed that KT significantly increased ES and SE among CWVB. At the same time KT can be applied to different sports, age, and gender. It is also suggested that the same research can be performed with physiological and motor fitness components also.

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