ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Influence of Kettle Bell Training on Selected Physical and Performance Related Variables among Handball Players

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Received 7th February 2015, Accepted 15th April 2015

Abstract

The purpose of the study was to investigate the influence of kettle bell training on selected physical and performance related variables among handball players. For the present stud 30 male Handball players from Bharathidasan University, Tiruchirappalli, Tamilnadu, India, were selected at randomly and their age ranged from 18 to 25 years. For the present study pre-test post-test randomized group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B' Group 'A' underwent kettle bell training and Group 'B' acted as control and not exposed to any specific training/ conditioning. The physical and performance related variables namely agility(4x10), balance, explosive strength, maximum strength, speed, and playing ability respectively was measured by shuttle run, stork balance, standing broad jump, 1RM test ,50 meter dash and judges rating respectively. The data was analyzed by applying Analysis of Co-Variance (ANCOVA) technique to find out the impact of Kettle bell training programme. The level of significance was set at 0.05.The findings of the present study have strongly indicates that Kettle bell training is six weeks has significant improvement in all the selected physical and performance related variables namely ,agility, balance, explosive strength, maximum strength, speed and playing ability among handball players.

Keywords: Handball playing ability, Kettle bell Training.

Introduction

Handball is one of the most popular and second fastest game in sports. Which is more than 160 countries played around in the world. Handball has more than 150 year's history. The handball player requires high degree of physical fitness factors such as agility, balance, muscular strength, maximum strength, speed, co-ordination, flexibility, which plays influential role in handball performance. To enhance the performance level of the players many training concepts have come up. Kettle bell training is form of training that will not only improve the appearance of one's physique; it will give one strength and mental toughness. The kettle bells and its techniques was introduced in 18th century y the Russians. According to Hutchinson(2012) the basic movements of the kettle bell training can raise the heart rate and improve muscles throughout the body. Kettle bell is the form of traditional weight training, but it was used for the specific muscles with the specific types of exercise to isolate the individual muscles. Kettle bell exercises were somewhat different than other types of resistance training, like kettle bell swing, accelerated swing, goblet squat, high dead lift, power clean, and back squat. Kettle bell exercises are performed with a cast- iron weight, it is used to do the ballistic type of exercises, through this type of activity one can develops the cardiovascular endurance, muscular endurance, speed endurance, flexibility and strength (Reed,2009) The research work on Kettle bell training among Handball players is very limited.

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Methodology

The objective of the study was to design Kettle bell training and to see its impact on selected physical and performance related variables among Handball players. Thirty male handball players from Bharathidasan University, Tiruchirappalli, Tamilnadu state India, were randomly selected and their ranged from 18 to 25 years. For the present study pretest post-test randomized group design which consists of control group (CG) and experimental group (KTG) was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' experimental and Group 'B' acted as control and not exposed to any specific training/ conditioning. The physical and performance related variables namely, agility, balance, muscular strength, maximum strength, speed and over all playing ability respectively was measured by shuttle run, stork balance test,1RM test,50

mts dash, and three qualified judges rating. The data was analyzed by applying analysis of co-variance(ANCOVA) technique to find out the influence of Kettle bell training programme. The level of significance was set at 0.05.

Table I. Computation of Analysis of Covariance on Arm Strength and leg Strength

S.N0	Criterion measure	Test items	Unit of measurement
1	Agility	Shuttle run(10x4)	In seconds
2	Balance	Stork balance test	In seconds
3	Explosive strength	Standing broad jump	In meter
4	Maximum strength	1RM test	In kg
5	Speed	50 mts dash	In meter
6	Playing ability	Handball playing ability	Subjective rating by three coaches

Table II. Pre, post and adjusted posttests mean and standard deviation scores of experimental and control groups on selected physical and performance related variables of handball players

Variables	Group	Descriptive Statistics	Pre test	Post test	Adjusted Mean
Agility (seconds)	KTG	Mean	10.9	10.25	10.34
		SD	0.82	0.68	
	CG	Mean	11.18	11.18	11.09
		SD	0.36	0.36	
Balance (Seconds)	KTG	Mean	2.48	3.13	3.00
		SD	0.97	0.66	
	CG	Mean	2.10	2.11	2.23
		SD	0.48	0.50	
Explosive strength (In Meter)	KTG	Mean	1.34	2.50	2.63
		SD	0.14	0.17	
	CG	Mean	1.85	1.83	1.71
		SD	0.11	0.13	
Maximum Strength (In Kg)	KTG	Mean	45.33	58.33	57.58
		SD	4.41	4.08	
	CG	Mean	43.67	43.67	44.43
		SD	5.81	6.40	
Speed (In seconds)	KTG	Mean	5.75	5.41	5.45
		SD	0.31	0.38	
	CG	Mean	5.83	5.82	5.79
		SD	0.49	0.49	
Playing ability	KTG	Mean	5.06	8.20	8.21
		SD	0.70	0.67	
	CG	Mean	5.13	5.13	5.12
		SD	0.83	0.74	

The above table indicates the pre post and adjusted post- tests mean values and pre &post tests standard deviation scores of experimental and control groups on selected physical and performance related variables of handball players are numerically presented in the above table.

Table III. Analysis of covariance of the data on agility, balance, explosive strength, maximum strength, speed, playing ability of pre post and adjusted post test scores of experimental and control groups

Variables	Test	Source of Variance	Sum of Squares	Df	Mean Square	F
Agility	Pre test	BG	0.49	1	0.49	1.2
		WG	11.40	28	0.41	
	Post test	BG	6.37	1	6.38	21.2*
		WG	8.40	28	0.30	
	Adjusted post test	BS	3.9	1	3.99	36.5*
		WS	2.9	27	0.10	
Balance	Pre test	BG	1.0	1	1.03	1.7
		WG	16.2	28	0.57	
	Post test	BG	7.8	1	7.87	23.3*
		WG	9.4	28	0.33	
	Adjusted post test	BS	4.19	1	4.19	57.3*
		WS	1.9	27	0.07	
Explosive Strength	Pre test	BG	1250.0	1	1250.0	1.0
		WG	32342.47	28	1155.0	
	Post test	BG	3.37	1	3.37	137.5*
		WG	0.69	28	0.02	
	Adjusted post test	BS	1.37	1	1.38	67.0*
		WS	0.56	27	0.02	
Maximum Strength	Pre test	BG	20.83	1	20.83	0.79
		WG	746.67	28	26.67	
	Post test	BG	1613.3	1	1613.3	56.0*
		WG	806.67	28	28.8	
	Adjusted post test	BS	1260.78	1	1260.7	184.67*
		WS	184.3	27	6.82	
Speed	Pre test	BG	0.04	1	0.04	0.26
		WG	4.8	28	0.17	
	Post test	BG	1.20	1	1.20	6.23*
		WG	5.42	28	0.19	
	Adjusted post test	BS	0.79	1	0.80	20.9*
		WS	1.03	27	0.03	
Playing ability	Pre test	BG	0.03	1	0.03	0.05
		WG	16.67	28	0.65	
	Post test	BG	70.53	1	70.53	139.73*
		WG	14.13	28	0.50	
	Adjusted post test	BS	71.41	1	71.41	156.80*
		WS	12.29	27	0.45	

*Significant at 0.05 level of confidence
(Table value for df 1 and 28 was4.21, Table value for df 1 and 27 was 4.20)

The obtained F-ratio of 36.5 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on agility. The above table also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on agility. The obtained F-ratio of 57.3 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on balance. The above table also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on balance. The obtained F-ratio of 67.0 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on explosive strength. The above table also indicates that pre test of control and experimental groups did not differ significantly and post

test of control and experimental groups have significant difference on explosive strength.

The obtained F-ratio of 184.67 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on Maximum Strength. The above table also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on Maximum Strength. The obtained F-ratio of 20.9 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on speed. The above table also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on speed. The obtained F-ratio of 156.80 for adjusted mean was greater than the table value 4.20 for the degree of freedom 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was a significant difference among control and experimental groups on playing ability. The above table also indicates that pre test of control and experimental groups did not differ significantly and post test of control and experimental groups have significant difference on playing ability.

Figure I. The pre, post and adjusted post- test mean values of experimental and control groups on Agility Balance, Muscular strength among Handball players.

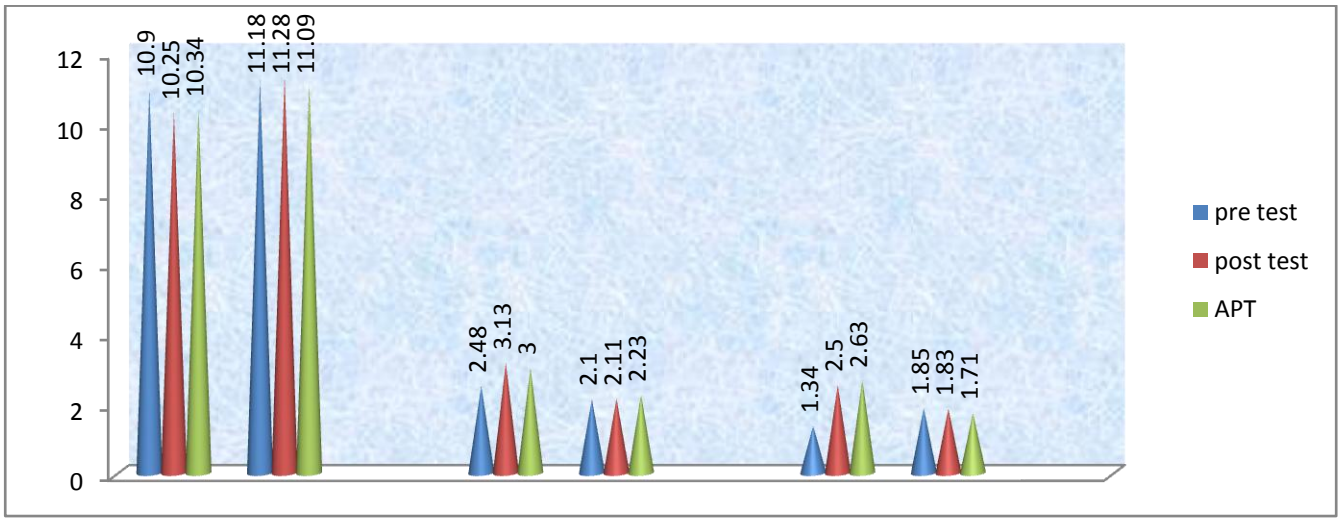
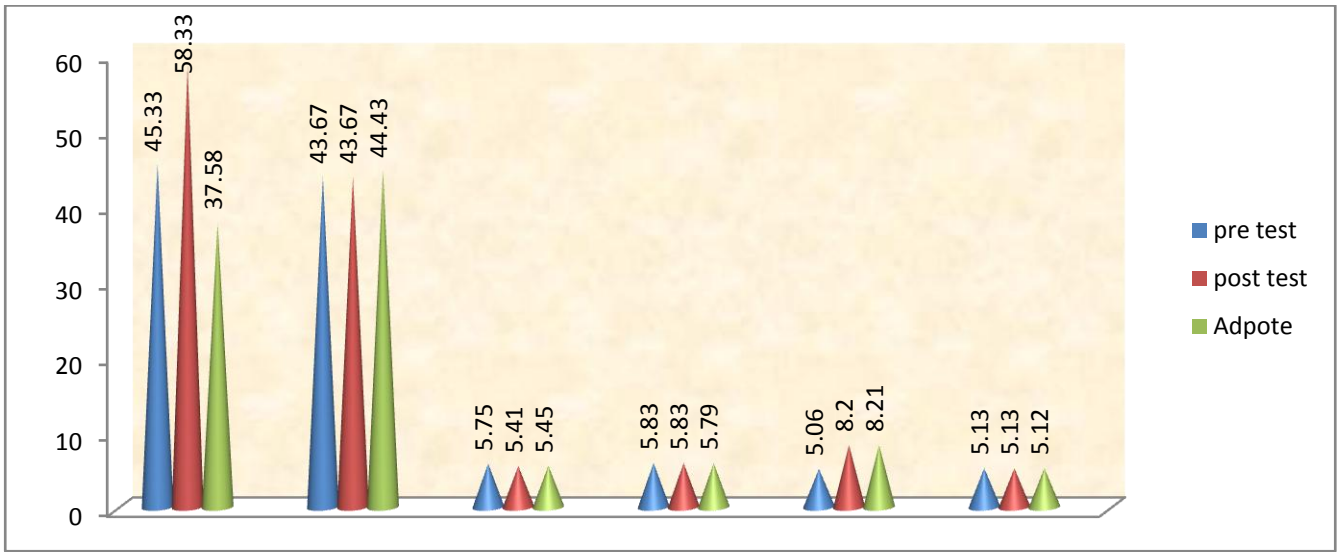


Figure II. The pre, post and adjusted post- test mean values of experimental and control groups on maximum strength, speed and playing ability among Handball players.



Discussion on findings

The findings of the present study have strongly indicates that kettle bell training of six weeks has shown significant improvement in all the selected physical and performance related variables namely agility, balance, muscular strength, maximum strength and playing ability of handball players. Rathbun (2009) observed that kettle bell is the basic exercise for the improvement of upper and lower extremities, the handle of kettle bell is used to make the swinging action. The kettle bell exercises are develops strength and endurance, particularly lower back, legs and shoulder, and also it is increases the grip strength.

Conclusions

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in all the selected physical and performance related variables such as agility, balance, muscular strength, maximum strength and playing ability after undergoing six weeks of Kettle bell training.
2. The control group did not show significant improvement in any of selected variables.

Reference

1. Farrar, Ryan E; Mayhew, Jerry L; Koch, Alexander J (2010). Oxygen cost of kettle bell swings. *J Strength Cond Res*, 24(4), 1034-1036.
2. Hulsey, Caleb R. Soto, David T. Koch, Alexander J. Mayhew, Jerry L. (2012). Comparison of Kettle bell swings and treadmill running at equivalent rating of perceived exertion values.*J Strength Cond Res*, 26(5), 1203–1207.
3. Hutchinson Alex., (2012), "How effective are kettle bell workout?", Special to the globe mail, Jun, 10, 2012, 4.00pm. Retrieved from http://www.theglobeandmail.com//.On 16/02/2014.
4. Lake, Jason P and Lauder, Mike A (2012). Kettle bell swing training improves maximal and explosive strength. *J Strength Cond Res*, 26(8), 2228-2233.
5. Lake, Jason P. Lauder, Mike A. (2012) Mechanical demands of kettle bell swing exercise. *J Strength Cond Res*, 26(12), 3209–3216.
6. Otto, William H. Coburn, Jared W. Brown, Lee E. Spiering, Barry A. (2012). Effects of weightlifting vs. kettle bell training on vertical jump, strength, and body composition. *J Strength Cond Res, 26*(5), 1199–12
7. Purusothaman, A. &Kalidasan, R. (2014). Impact of kettle bell training on selected physical and performance related variables among. *Star.phy.edu.* 10(5), 18-22.
8. Rathbun, Andy., (2009), "The Kettle bell way: Focused workouts mimic the movements of everyday activities", heralnet. Retrieved from http://www.wikipedia.org//.On 15/02/2014.