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Effects of Combination of Resistance Training, Endurance Training on Muscular Strength and Endurance among Inter Collegiate Level Male Basketball Players

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Abstract

The present investigation is to dissect the impact of society move and resistance preparing with resistance and endurance training and their combination on readiness and adaptability of inter collegiate level male Basketball players. The subjects were chosen from Hindustan Higher Educational Institutions who are from Tamilnadu state. The subject's age runs from 18 to 25 years and the subjects were partitioned into four gatherings specifically resistance Training Group (STG), Endurance Training Group (ETG), Combination of resistance and Endurance Training Group (CSETG) and Control Group (CG) each gathering comprising of 20 subjects. They chose subjects were at first tried on the standard factors utilized as a part of this investigation and this was considered as the pre – test. In the wake of surveying of the pre – test, the subjects having a place with Resistance Training Group (RTG), Endurance Training Group (ETG) and Combination of resistance and Endurance Training Group (CRETG) were treated with strength and Endurance Training Practices. To the extent the subjects in Control Group (CG) were considered, they were not given any training. It was reasoned that the 12 weeks of preparing hones demonstrated the huge enhancements in Upper Extremity Muscular Strength because of the treatment gatherings and there were no adjustments in control gathering.

Keywords: Muscular Strength and Endurance (RTG)-Resistance Training Group, (ETG)- Endurance Training Group, (CRETG)- Combination of Resistance and Endurance Training Group (CG)-Control Group.

Introduction

According to Hakkinen et al., (1998) the strength training in combination with some explosive types of exercises be recommended as a part of overall physical training to maintain the functional capacity in middle-aged and elderly people. For explosive muscle performance, the underlying factors are muscle fiber type, muscle hypertrophy and enzymatic and neural adaptations. It is also important to investigate the impact of power-type strength training on the low back and leg muscles and joints, as well as the injury risks and adherence, and motivation to training. For being effective in improving the explosive muscle performance, training programs should be designed so as to motivate, easy to achieve, effective concerning the time spent in exercises, low in expenses, and they should give consideration to the exercise history and present exercise activity, health status and musculoskeletal symptoms and diseases of the individual. Combining both resistance strength training and plyometric explosive power training is to use the combination of resistance and plyometric exercises to effectively engage the nervous system and activate more fibers (Beachle & Earle, 1994). Ebban (2002) states that resistance training followed by plyometric training alternates bio-mechanically similar to high load weight training exercises with plyometric exercises. This type of training describes a power-developing workout that combines weights and plyometric exercises. About ten years ago, these workouts were greeted with great acclaim as research indicated that they could significantly enhance fast twitch muscle fiber power and, therefore, produce dynamic sports performance. The logic behind this pair of exercise is that the resistance work gets the nervous system into full action so that type II b fibers are available for the explosive exercise; hence a better training benefit of complex training programme can be used in the general, specific and competitive phase of training.

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Objectives of the study

To find out whether practice of Resistance Training could improve the Muscular Strength and Endurance of inter collegiate level male basketball players.

To find out whether practice of Endurance Training could improve the Muscular Strength and Endurance of inter collegiate level male basketball

players.

To find out whether the combination of Strength and Endurance Training could improve the Muscular Strength and Endurance of inter collegiate level male basketball players.

Problem of the Study

The purpose of the study is to compare the Effects of Combination of Resistance Training, Endurance Training Muscular Strength and endurance of inter collegiate level male basketball players.

Hypotheses

It is hypothesis that the practice of Resistance Training, Endurance Training and Combination of resistance and Endurance Training would significantly improve of Muscular Strength and endurance of inter collegiate level male basketball players.

Methodology

The present was impact of resistance Training, Endurance Training and Combination of resistance and Endurance Training on Muscular Strength and endurance of inter collegiate level male basketball players. The subjects were chosen from Hindustan Higher Educational Institutions who are from Tamilnadu state. The subject's age runs from 18 to 25 years and the subjects were isolated into four gatherings. The Test groups are Experimental gathering – I (N=20) experienced resistance Training Group (STG), Experimental gathering – II (N=20) experienced Endurance Training Group (ETG), Experimental gathering – III (N=20) experienced Combination of strength and Endurance Training Group (CSETG) and lastly control gathering (N=20) did not done any Training were said as Control Group (CG). The trial bunches took an interest in regarded preparing plan for the time of 12 weeks, three option days in seven days. The investigation parameters including Muscular Strength and endurance are likewise broke down. The information was examined by utilizing "t" proportion to discover the mean contrast from pre test to post test. Investigation of co change was connected and Scheffee's post hoc test.

Analysis of Data and Interpretation

Table 1

The tabulation values shows the mean losses / gains between pre and post test values of resistance training group on muscular strength and endurance of inter collegiate level male basketball players

Components	Test	Mean	Std. Deviation	S.E.M	M.D	't' value
Upper Extremity Muscular Strength in Kilograms	Pre-Test	30.10	2.59	1.02	6.65	6.46*
	Post- Test	36.75	6.17			

*Significance at 0.05 levels (2.09)

Table 1 displayed the results of 't' value of Muscular Strength and endurance (6.46). The obtained tabulated t value was 2.09 statistically significant. It was found that statistically significant at 0.05 level of confidence. It was observed that the mean significant improvement in Muscular Strength and Endurance (6.65 $p< 0.05$).

Table 2

The tabulation values shows the mean losses / gains between pre and post test values of endurance training group on muscular strength and endurance of inter collegiate level male basketball players

Components	Test	Mean	Std. Deviation	S.E.M	M.D	't' value
Upper Extremity Muscular Strength in Kilograms	Pre-Test	30.65	2.97	0.26	3.45	12.95*
	Post- Test	34.10	2.95			

*Significance at 0.05 levels (2.09)

Table 2 displayed the results of 't' value of Muscular Strength and endurance (12.95). The obtained tabulated t value was 2.09 statistically significant. It was observed that the mean significant improvement in Muscular Strength and endurance (2.550 p< 0.05).

Table 3

The tabulation values shows the mean losses / gains between pre and post test values of combination of strength and endurance training group on muscular strength and endurance of inter collegiate level male basketball players

Components	Test	Mean	Std. Deviation	S.E.M	M.D	't' value
Muscular Strength and Endurance	Pre-Test	31.10	3.44	0.59	6.35	11.84
	Post- Test	38.10	4.06			

*Significance at 0.05 levels (2.09)

Table 3 displayed the results of 't' value of Muscular Strength and endurance (11.84). The obtained tabulated t value was 2.09 statistically significant. It was observed that the mean significant improvement in Muscular Strength and Endurance (6.63p< 0.05).

Table 4

The tabulation values shows the mean losses / gains between pre and post test values of control group on muscular strength and endurance of inter collegiate level male basketball players

Components	Test	Mean	Std. Deviation	S.E.M	M.D	't' value
Muscular Strength and Endurance	Pre-Test	30.8000	3.22164	0.09	0.20	2.07
	Post- Test	31.0000	3.17888			

*Significance at 0.05 levels (2.09)

Table 4 displayed the results of 't' value of Muscular Strength and Endurance(2.07). The obtained tabulated t value was 2.09 statistically not significant.

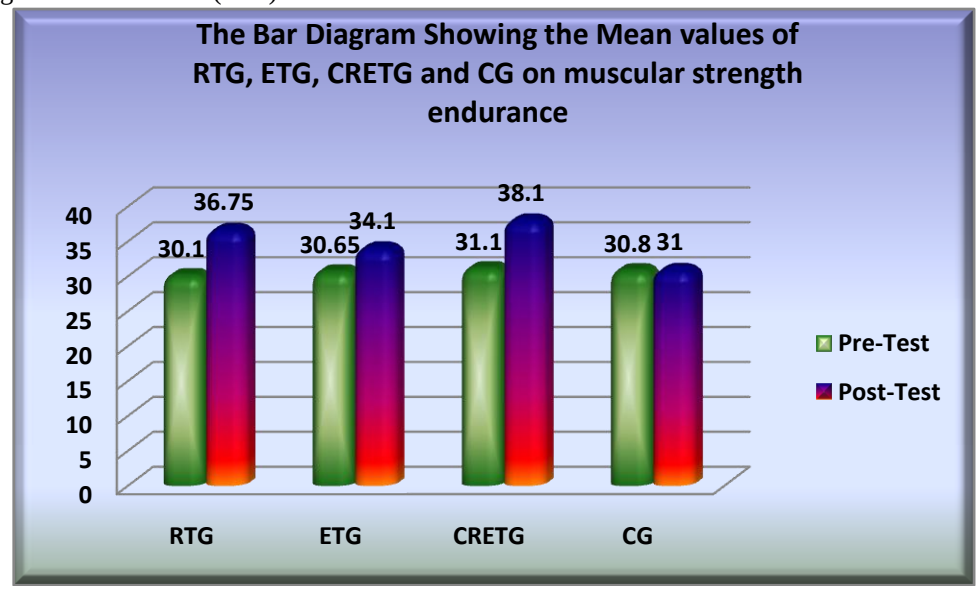


Figure I

Table 5
The table shows the mean values of pre, post and adjusted post test of rtg,etg, cretg and cg on muscular strength endurance

Mean	RTG	ETG	CRETG	CG	Source of variance	Sum of square	df	Mean square	'f'
Pre-test	30.10	30.65	31.10	30.80	**B.G**	10.53	3	3.51	**0.37**
					W.G	719.35	76	9.46	
Post –test	36.75	34.10	38.10	31.00	**B.G**	589.63	3	196.54	**10.705***
					W.G	1395.35	76	18.36	
Adjusted post test	37.35	34.11	37.62	30.85	**B.G**	396.58	3	132.19	**35.074***
					W.G	**282.67**	**75**	**3.76**	

0.05 level of significance

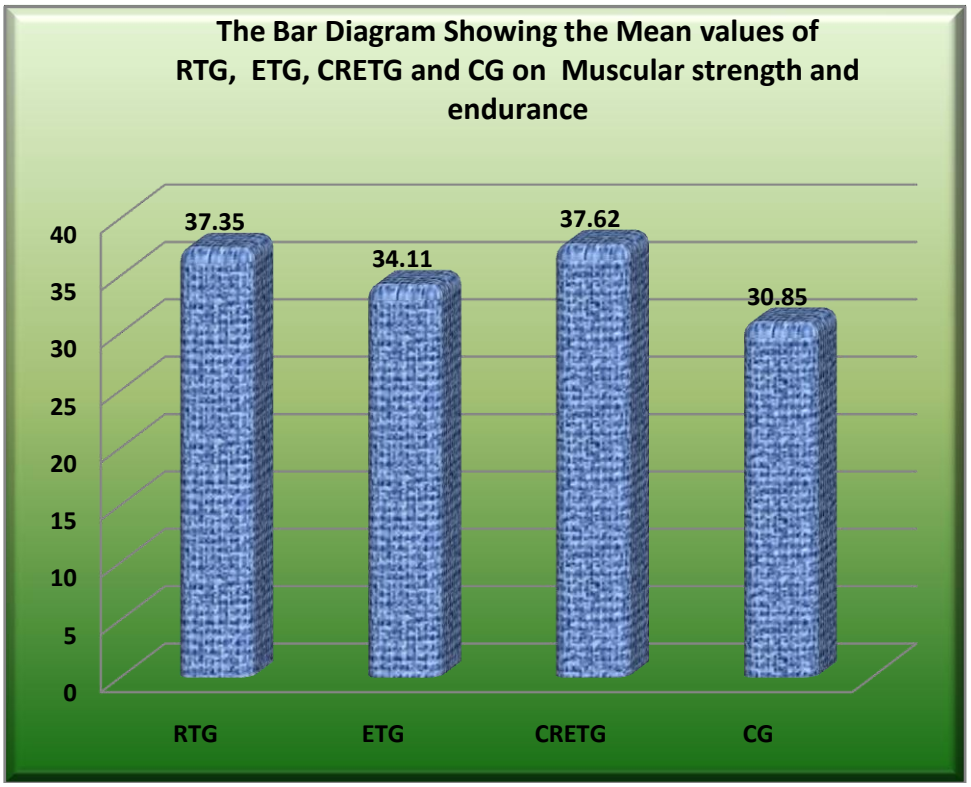
Table 5 reveals that the obtained 'F' value on pre – test means of Muscular Strength Endurance was 30.10 for experimental group – I, 30.65for experimental group – II, 31.10 for experimental group – III and 30.80 for control group. The obtained 'F' ratio 0.371was lesser than the table 'F' ratio 2.72. Hence the pre test means were found to be insignificant at 0.05 level of confidence for the degree of freedom 3 and 76. The post - test means were 36.75for experimental group – I, 34.10for experimental group – II, 38.10 for experimental group – III and 31.00 for control group. The obtained 'F' ratio 10.70 was higher than the table 'F' ratio 2.72. Hence the post – test means were found to be significant at 0.05 level of confidence for degree of freedom 3 and 76. The adjusted post – test means were 37.35 for experimental group – I, 34.11 for experimental group – II, 37.62 for experimental group – III and 30.85 for control group. The obtained 'F' ratio 35.07 was higher than the table 'F' ratio 2.72. Hence the adjusted post test means were found to be significant at 0.05 level of confidence for the degrees of freedom 3 and 75. It was concluded that there was a significant mean difference among the Resistance training group, Endurance training group and combination of resistance and endurance training group and Control Group in developing the Muscular Strength Endurance of the basketball players.

Table 6
The scheffe's test for the differences between pared means on muscular strength endurance

RTG	ETG	CRETG	CG	Mean Differences	Confidence Interval Value
37.35	34.11	-	-	-3.24	2.451
37.35	-	37.62	-	0.27	2.451
37.35	-	-	30.85	-6.5	2.451
-	34.11	37.62	-	3.51	2.451
-	34.11	-	30.85	-3.26	2.451
-	-	37.62	30.85	-6.77	2.451

* Significant at0.05 level of confidence

Table 6 shows the post hoc analysis of obtained order adjusted post test means. The confidential interval mean difference required to be significant was 1.26. It was observed that the mean difference values of Resistance training group, Endurance training group and combination of resistance and endurance training group And Control Group. Combination of resistance and endurance training group and Control Group in developing the Muscular Strength Endurance was significantly higher than the Resistance training group, Endurance training group and control group. The Resistance training group developed the Muscular Strength Endurance better than the Endurance training group and control group. The Endurance training group developed Muscular Strength Endurance better than the control group.



Discussion on Present Study

This study confirms that improvement in Muscular Strength and endurance among Effects of Resistance Training, Endurance Training and Combination of resistance and Endurance Training of inter collegiate level male basketball players.

Discussion of the Study

In analyzing the Muscular Strength and endurance for three different training groups of Resistance training group, Endurance training group and combination of resistance and endurance training group and Control Group, over the period of twelve weeks of training, the obtained results favored the inter collegiate level male basketball players who practiced with the resistance Training on Muscular Strength and endurance of inter collegiate level male basketball players. The obtained results display similar effect among the other two training modules after the completion of 12 weeks of training period. The results on Muscular Strength and endurance were discussed below.

Muscular Strength Endurance

Resistance training group, Endurance training group and combination of resistance and endurance training group significantly showed improvement in Muscular Strength Endurance from pre test to post test. The Muscular Strength Endurance decreased in the RTG group from pre test (30.10 ± 2.59) to post test (36.75 ± 6.17); ETG group from pre test (30.65 ± 2.97) to post test (34.10 ± 2.95); CRETG group from pre test (31.10 ± 3.44) to post test (38.10 ± 4.06) and there were no change in control group from pre test (30.80 ± 3.22) to post test (31.00 ± 3.17). The Muscular Strength Endurance significantly showed improvement from pre test to post test in the three Treatment groups and there was no changes in control group.

The present study demonstrated that an increase in Muscular Strength Endurance of 22.09 %, 11.25 %, 11.09 % and 0.65 % was estimated with 50 meter dash for the Resistance training group, Endurance training group and combination of resistance and endurance training group and Control Group respectively. The and combination of resistance and endurance training group group significantly showed improvement in Muscular Strength Endurance by 22.09 % better than Resistance training group 11.25 %, Endurance training 11.09 % and control group 0.65 %. The Resistance training improved in Muscular Strength Endurance by 11.25% better than the endurance training 11.09 % and control group 0.65 %. The Endurance training improved in Muscular Strength Endurance by 11.09 % better than the control group 0.65.

Result of the Study

1. The present study showed the results due to Resistance Training significantly improved Muscular Strength and Endurance of inter collegiate level male basketball players.
2. The present study showed the results due to Endurance Training significantly improved Muscular Strength and Endurance of inter collegiate level male basketball players.
3. The present study showed the results due to Combination of Resistance and Endurance Training significantly improved Muscular

Strength and Endurance of inter collegiate level male basketball players.

4. The present study showed the results due to Combination of Resistance and Endurance Training significantly improved Muscular Strength and endurance better than the Resistance Training, Endurance Training and control group of inter collegiate level male basketball players.
5. The present study showed the results due to Resistance Training significantly improved Muscular Strength and endurance better than the Endurance Training and control group of inter collegiate level male basketball players.
6. The present study showed the results due to Endurance Training significantly improved Muscular Strength and endurance better than the control group of inter collegiate level male basketball players.

Conclusion

1. It was concluded that Resistance Training significantly improved Muscular Strength of inter collegiate level male basketball players.
2. It was concluded that Endurance Training significantly improved Muscular Strength and endurance of inter collegiate level male basketball players.
3. It was concluded that Combination of Strength and Endurance Training significantly improved Muscular Strength and endurance of inter collegiate level male basketball players.
4. It was concluded that Combination of Resistance and Endurance Training significantly improved Muscular Strength and endurance better than the resistance Training, Endurance Training and control group of inter collegiate level male basketball players.

Reference

1. Adengada A. Kushalappa & Dr. S. Suthakar. Effect of Basketball Specific Training on Skill Performance Variables among the Inter-collegiate Men Basketball Players of Mangalore University. International Journal of Recent Research and Applied Studies, 2016, 3, 7(12), 60-63.
2. DP Shivakumar, S Suthakar, Sundar Raj Urs, 2016. Effect of Selected Yogic Exercises on Cardiovascular Endurance and Lung Capacity of Secondary School Children, 2016/6, International Journal of Engineering Science, 7286.
3. Dr S Suthakar, Dr Sundar Raj Urs DP Shivakumar, 2016, Effect of Selected Yogic Exercises on Cardiovascular Endurance and Lung Capacity of Secondary School Children, IJESC, 6, 6 PP. 7286-7289.
4. Dr S Suthakar, Dr Sundar Raj Urs DP Shivakumar, 2016, Effect of selected yogic exercises on selected physiological variable of secondary school children., International Journal of Physical Education, Sports and Health, 4-114.
5. Dr. S Suthakar and Dr. Sundar Raj Urs DP Shivakumar, 2016. Effect of selected yogic exercises on selected physiological variable of secondary school children, 2016/6/23,International Journal of Physical Education, Sports and Health, 3, 4, 114-116.
6. Dr. S. Suthakar Adengada A. Kushalappa, 2016.Correlations of Biomechanical Characteristics with Ball Agility in Penalty Corner Push-In Effect of Basketball Specific Training on Skill Performance Variables among the Inter-collegiate Men Basketball Players of Mangalore University, 2016/7/10, International Journal of Recent Research and Applied Studies, 3, 7(12), 60-63.
7. Dr. S. Suthakar Adengada A. Kushalappa, Effect of Basketball Specific Training on Selected Physical Fitness Variables among the Inter Collegiate Men Basketball Players of Mangalore University, 2016/7, International Journal of Recent Research and Applied Studies, 3, 7 (14), 60-63.
8. Dr. S. Suthakar Muniraju M. G, 2016.Effects of the Short Term Resistance and Regular Resistance Training in the Development of Lower Body Strength, Leg Explosive Power and Shooting Ability on the Male Basketball Players, International Journal of Recent Research and Applied Studies, 3, 8,(12), 51-54.
9. Dr. S. Suthakar, Nayak Darshana Habbu, 2016. Effects of the Combination of Plyometric and Specific Training with Skill Training in the Development of Anaerobic Capacity, Leg Explosive Power and Over All Playing Ability of the Volleyball Players, 2016/8, International Journal of Recent Research and Applied Studies, 3, 8(19), 83-87.
10. Dr.S.Suthakar k.m.Ashok kumar, R.Ashok kumar, 2016. An Effective Approach through Strength, Endurance and Skill Training Program Combinations on Flexibility and Dribbling of Male Basketball Players, 2016/3, International Journal of Innovative Research and Development, 5,4, 221-224.
11. Dr.S.Suthakar M. Sankar, 2016. Influence of the Isolated and Combined Circuit and Fartlek Trainings on the Selected Strength Parameters among the College Men Students, 2016/8, International Journal of Recent Research and Applied Studies, 3, 8(16), 70-74.
12. Dr.S.Suthakar Muniraju, M. G, 2016.Effects of the Short Term Resistance and Regular Resistance Training in the Development of

Muscular Strength Endurance, Upper Body Strength and Passing Ability of the Male Basketball Players, 2016/8, International Journal of Recent Research and Applied Studies, 3,8,(13),55-59.
13. Dr.S.Suthakar Nayak Darshana Habbu, 2016. Effect of Combination of Plyometric and Skill Training in the Development of Agility, Muscular Strength Endurance and Serving Ability among the Volleyball Players,2016/8, International Journal of Recent Research and Applied Studies, 3,8,(7),25-29.
14. Dr.S.Suthakar S.Kanaka Vishnu moorthi, Dr. V.Perumal, 2016. The Effects of two Modalities of Resistance Circuit Training on Flexibility of Collegiate Male Kabaddi Players, 2016/4, International Journal of Recent Research and Applied Studies, 3,4, 71-74.
15. Dr.S.Suthakar Venkata chalapathi G, 2016. Analysis of Aerobic Capacity and Muscular Strength Endurance on the Specific Fitness Training Among the Tribal and Non-Tribal School Boys, 2016/5/11, International multidisciplinary Research Journal, 6, 5, 1-7.
16. Dr.S.Suthakar Venkata chalapathi G, 2016. Analysis of physical growth on specific fitness training among tribal and non-tribal school boys, 2016/10/27, International Journal of Physical Education, Sports and Health3,6, 137-142.
17. Dr.Sundar Raj Urs Kishor V, Dr. S Suthakar, 2016. Analysis of physical fitness and adjustment between physical education and general education teachers, 2016/6, international journal of multidisciplinary educational research, 5, 6(3), 88-91.
18. M Sankar, S Suthakar, 2016. Influence Of Isolated And Combined Circuit And Fartlek Trainings On Selected Endurance Parameters Among College Men Students, 2016/9/15, International Education and Research Journal, 2,9.
19. M. Sankar, Dr.S.Suthakar, 2016. Influence of the Isolated and Combined Circuit and Fartlek Trainings on the Selected Strength Parameters among the College Men Students, International Journal of Recent Research and Applied Studies, Volume 3, Issue 8 (16) August 2016.
20. R. Ashok Kumar K. Babu , S. Suthakar, 2016. Effects of Volleyball Specific Resistance Training and Skill Training Packages on the Development of Leg Explosive Power and Agility on the Higher Secondary Level School Boys,2016/3, international journal of innovative research and development, 5, 4,231-235.
21. R.Ashok kumar Dr.S.Suthakar, K.M.Ashokkumar, 2016. An Effective Approach through Strength, Endurance and Skill Training Program Combinations on Muscular Strength and Endurance and Explosive Power of Male Basketball Players., International Journal of Innovative Research and Development., 5,4,218-220.
22. R.Ashokkumar K.Babu, S.Suthakar, 2016. Effect of Volleyball Specific Resistance Training and Skill Training Packages on the Development of Flexibility and Muscular Strength and Endurance on the Higher Secondary Level School Boys, 2016/3, International Journal of Innovative research and development, 5,4, 225-230.
23. S. Kanaka Vishnu Moorthi Dr. S. Suthakar, Dr. V. Perumal 2016 The Effects of Three Modalities of Resistance Circuit Training on Agility, Muscular Strength, Muscular Strength and Endurance of Collegiate Male Kabaddi Players, 2016/4, International journal of innovative research & development, 5,5, 282-287.
24. S.Suthakar and Dr.A.Pushparajan, Effects of Silambam and Karate with Yogic Training on Agility and Arm Explosive Power of Collegiate Male Students., International Journal of Innovative Research and Development|| ISSN 2278–0211
25. Satheesh B and Dr.S. Suthakar, 2016. Comparative study of the psychological well-being and self-confidence between the bicycle beneficiaries and non beneficiaries of the secondary school children,2016/8/27, International Journal of Physical Education, Sports and Health, 3,5, 495-497.
26. Satheesh B. and Dr.S. Suthakar. 2016.A Study on the selected motor fitness variables among the bicycle benificiaries and non benificiaries of the secondary school children, 2016/10, Indian Streams Research Journal6,9,1-4.