Analysis of Selected Anthropometric and Motor Fitness Variables among District Level School Boys

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Abstract

The purpose of the study was to analyze the selected anthropometric and motor fitness variables among school boys. To achieve the purpose of the study totally forty five school boys in which fifteen students each from ramanagar, chikkaballapur and kolar district were selected and their age ranged from 12 to 15 years. The subjects were tested on selected anthropometric variables namely body weight was measured by weighing machine, height was measured by stadiometre and arm length was measured by tape and motor variables namely speed was measured by 30-m dash, flexibility was measured by sit and reach and explosive power was measured by standing broad jump. The investigators were well versed with the technique of conducting the test; the investigators had a number of practice sessions in the test administration. To test the significance of the mean difference among the school boys at three districts, analysis of variance (ANOVA) was used. In case of any significance of mean difference found on the criterion measures, the Scheffe's post – hoc test was applied.

Key words: Motor fitness, Anthropometry.

Introduction

A totally fit individual must have the motor ability. Motor fitness is one of the major components of physical fitness and includes such element as muscular strength, endurance, power, flexibility, speed, agility, balance and co-ordination these qualities are not as directly vital as cardio respiratory fitness for general health, but also play several important direct and indirect role both in functional health and performance capacity. Motor ability is the third classification of motor behavior. Sometimes it is referred as general athletic ability. Motor ability is a combination of innate acquires ability, which is general in nature.

Motor fitness refers to the ability of an athlete to perform successfully at their sport. The neuromuscular components of fitnes enable a person to perform successfully at a particular motor skill, game, or activity. Specific motor fitness components include agility, balance, coordination, power, reaction time, and speed. Agility is one of the main components of motor fitness. "Agility is the ability to move the body or parts of the body in space in order to change directions quickly and accurately". Coordination may be defined as, "The ability with which an individual can manipulate his body into specific pattern in which the sequence and timing of the act are well controlled". Speed may be defined as "the maximum rate of which an individual is able to move his entire body or part of his body over a specific distance is considered to be his speed movement".

Anthropometrical measurement for assessment of physical status was expanded quite naturally to include consideration of body types and the relation of physique to one's health, immunity from disease, posture, physical performance, and personality qualities. It soon became recognized that a single ideal physique was both impractical and unrealistic. Anthropometry provides scientific methods and observation to help in finding out talent in sports. There is profound positive relationship between performance in sports and the anthropometric aspects of an athlete's body. It has been scientifically proved that different sports or different events in a same sport require the demand of different bodily characteristics. In some games, where players have to play at different positions, there too, it has been found that the requirement of anthropometric characteristics is different.

The purpose of the study was to analyze the selected anthropometric and motor fitness variables among school boys.

Materials and Methods

To achieve the purpose of the study totally forty five school boys in which fifteen students each from ramanagar, chikkaballapur and kolar district were selected and their age ranged from 12 to 15 years. The subjects were tested on selected anthropometric variables namely body weight was measured by weighing machine, height was measured by stadiometre and arm length was measured by tape and motor variables namely speed was measured by 30-m dash, flexibility was measured by sit and reach and explosive power was measured by standing broad jump. The investigators were well versed with the technique of conducting the test; the investigators had a number of practice sessions in the test administration. To test the significance of the mean difference among the school boys at three districts, analysis of variance (ANOVA) was used. In case of any significance of mean difference found on the criterion measures, the Scheffe's post – hoc test was applied.

Results and Discussion

The results were presented in the following tables,

Table–I

Mean and Standard Deviation of Selected Anthropometric and Motor Fitness Variables among School Boys

Sl. No	Variables	Ramanagar		Chikkaballapur		Kolar	
		Mean	SD (±)	Mean	SD (±)	Mean	SD (±)
1	Body Weight	47.38	4.00	48.98	4.20	48.82	3.56
2	Height	152.85	4.22	153.67	4.40	150.58	3.81
3	Arm Length	63.86	3.45	63.21	2.72	65.05	3.85
4	Speed	4.89	0.53	6.14	1.13	5.41	1.79
5	Flexibility	23.67	1.91	22.62	1.80	19.75	2.89
6	Explosive Power	1.12	0.48	1.23	0.33	1.29	0.21

The mean and standard deviation of both anthropometric and motor fitness variables among school boys on district wise were numerically presented in the above table-I.

Table-II

Analysis of Variance of Selected Anthropometric and Motor Fitness Variables among District Level School Boys

Sl. No	Variables	Source of variation	Sum of squares	df	Mean squares	F-value
1	Body Weight	BG	23.33	2	11.66	0.75
		WG	649.48	42	15.46	
2	Height	BG	76.79	2	38.39	2.22
		WG	725.02	42	17.26	
3	Arm Length	BG	26.00	2	13.00	1.13
		WG	479.49	42	11.41	
4	Speed	BG	11.80	2	5.90	3.68*
		WG	67.28	42	1.60	
5	Flexibility	BG	123.65	2	61.82	12.15*
		WG	213.70	42	5.08	
6	Explosive Power	BG	0.23	2	0.12	0.90
		WG	5.54	42	0.13	

*Significant at 0.05 level of confidence

It was very clear that the obtained F-value on speed and flexibility were 3.68 and 12.15 respectively, which were greater than the table value of 3.21 indicating that it was significant ($P<0.05$) for the degrees of freedom (2,42) at 0.05

level of confidence. Thus it was concluded that there was significant differences on speed and flexibility. The F-value on body weight, height, arm length and explosive power were 0.75, 2.22, 1.13 and 0.90 were lesser than the table value of 3.21 indicating that it was significant (P<0.05) for the degrees of freedom (2,42) at 0.05 level of confidence. Thus it was concluded that there was no significant differences on body weight, height, arm length and explosive power.

Since the F value was significant on speed and flexibility, the scheffe's post-hoc test was further computed to find out which group was better among others and the results are tabulated in the table III.

Table-III

Scheffe's Post-Hoc Test for Mean Differences among the District Level School Boys

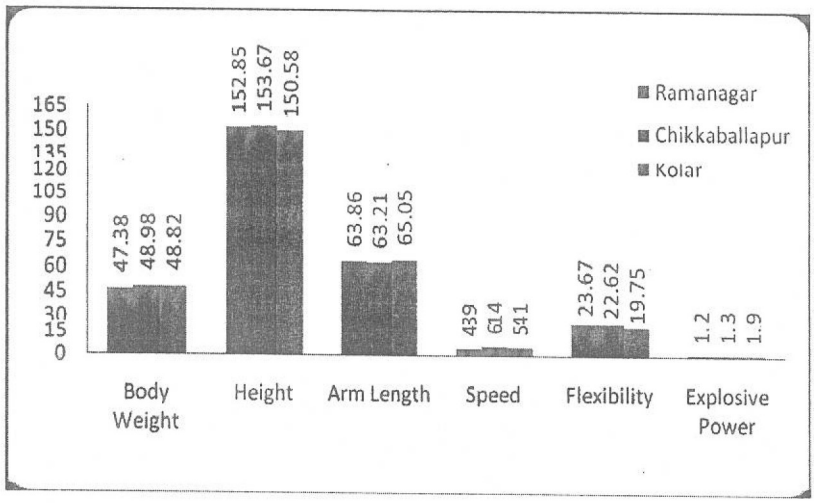
Sl. No	Variables	Means			Mean Difference	CI - Value
		Ramanagar	Chikkaballapur	Kolar		
1	Speed	4.89	6.14	--	1.25	**1.11**
		4.89	---	5.41	0.52	
		--	6.14	5.41	0.73	
2	Flexibility	23.67	22.62	--	1.05	**2.64**
		23.67	---	19.75	3.92	
		--	22.62	19.75	2.87	

*Significant at 0.05 level of confidence

From the table III it can be seen that the mean differences of speed between ramanagar and chikkaballapur were 1.25 were greater than the confidential interval value 1.11. The mean difference between ramanagar & kolar and chikkaballapur & kolar were 3.92 and 2.87 respectively, were greater than the confidential interval value 2.64 which was significant at 0.05 level of confidence. The other districts did not show any significant difference.

Figure-1

Bar Diagram Showing the Means of Selected Anthropometric Motor Fitness Variables among School Boys



After the analysis of selected anthropometric and motor variables among school boys at three districts, it was noted that the variables namely body weight, height, arm length and explosive power have not shown any significant difference. Even though the individual differences were observed on above said variables, statistically it was not significant. These results were arrived based on the data available.

Conclusions

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

1. The results show that there was a significant difference on speed and flexibility among school boys at three districts.
2. From the results it was observed that Ramanagar school boys showed good performance in speed as well as in flexibility.

References

Damsgaard R, Bencke J, Matthiesen G, Petersen JH, Müller J. (2000). Is prepubertal growth adversely affected by sport? Med Sci Sports Exerc;32:1698-703.

Maffulli N. (1992). The growing child in sport. Br Med Bull;48:561-8.

Naughton G, Farpour-Lambert NJ, Carlson J, Bradney M, Van Praagh E. (2000). Physiological issues surrounding the performance of adolescent athletes. Sports Med ;30:309-25.

Rogol AD, Clark PA, Roemmich JN. (2000). Growth and pubertal development in children and adolescents: effects of diet and physical activity. Am J Clin Nutr ;72(Suppl.):521S-8S.

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