
Assessment and Construction of Muscular Strength among Adolescent School Boys of Jammu and Kashmir State

Mr. Javaid Ahmad Bhat

Research Scholar, Department of Physical Education & Sports Sciences, Annamalai University,
Annamalainagar, Tamilnadu, India

Dr. P. V. Shelvam

Professor, Department of Physical Education and Sports Sciences, Annamalai University, Annamalainagar,
Tamilnadu, India

Abstract

Physical fitness is the basis of dynamic and creative intellectual activity. The intelligence and skill can only function at the peak of their capacity when the body is healthy and strong. In the present situation there is need for the students to measure and analyze their physical fitness for their own benefit and improvement. The purpose of this study was to compare the muscular strength among the adolescent boys of Jammu, Kashmir and Ladakh regions of Jammu and Kashmir State. To achieve this purpose (N=1575) adolescent boys between 13- 15 years age group from different schools in different districts from Jammu (Rajouri, Reasi and Samba), Kashmir (Anantnag, Kulgam and Shopian) and Ladakh (Kargil), were selected randomly. Muscular Strength was selected as a criterion variable. The collected data were statistically examined by using ANOVA to find significant difference if any. Sheffe's post hoc test was applied to know the paired mean difference. The results show that adolescent's boys from Jammu area have better in muscular strength as compared to adolescent's boys from Kashmir and Ladakh area. To construct norms, Hull scale value of respected classes was continuously added and subtracted from the respective means for determining the values from zero to hundred in the scale.

Key words: *Jammu and Kashmir State, Adolescent Boys, Muscular Strength and Norms.*

Introduction

Physical fitness is defined as the ability of an individual to competently and capably perform everyday tasks without excessive fatigue, and with enough energy remaining to enjoy spending free time, as well as to resolve unusual situations of sudden and unforeseen emergency (Cvejic 2013). Physical fitness from pre-historic to the present day has been equated with survival and power. The earliest human beings were dependent mainly on their own individual strength, vigor and vitality for survival (Sanjeevi and Gopinath). Fitness remains paramount to health and well-being. Now a day's people are aware of physical fitness and they know the importance of fitness. Physical fitness of an individual depends on body composition, age, sex, training, nutritional status and environmental factors (Hasalkar 2005). Muscular strength is a component of both health-related and sport-related physical fitness. It is defined as the ability of a muscle group to develop maximal contractile force against a resistance in a single contraction and is either static or isometric, which involves no change in muscle length and dynamic, which involves either eccentric or concentric action (Heyward 2010). Muscular strength is the ability of a muscle to generate force against some resistance. Maintenance of at least a normal level of strength in a given muscle or muscle group is important for normal healthy living. Muscle weakness or imbalance can result in abnormal movement or gait and can impair normal functional movement. (Hoogenboom 2014). In a systematic review of muscular strength development in children and adolescents, the association of inadequate strength with increased injury risk, muscular

imbalance, decreased self-esteem and body image was also highlighted (*Manno 2008*). Everyone can benefit from being physically fit. Staying fit can help improve self-esteem and decrease the risk of serious illnesses (such as heart disease and stroke) later in life. And regular physical activity can help teens learn to meet the physical and emotional challenges they face every day.

Methodology

The purpose of the study was to compare and construct norms for muscular strength among Jammu, Kashmir and Ladakh region adolescent boys. To achieve this purpose (N=1575) adolescent boys between 13- 15 years age group from different schools of Jammu (Rajouri, Reasi and Samba), Kashmir (Anantnag, Kulgam and Shopian) and Ladakh (Kargil), were selected randomly. Muscular strength was selected as criterion variable. The collected data were statistically examined by using ANOVA to find significant difference if any. Sheffe's post hoc test was applied to know the paired mean difference. The confidence level of significance was fixed at 0.05. To construct norms Hull scale was calculated.

Results

Table 1
ANOVA for Adolescent Boys on Muscular Strength

Age	Region	Mean	S.D	SOV	SS	DF	MS	F	Sig.
13 years	Jammu	16.60	5.77	B	793.05	2	396.52	14.56*	.000
	Kashmir	14.55	4.99						
	Ladakh	13.35	3.97	W	14208.74	522	27.22		
14 years	Jammu	17.09	6.68	B	762.23	2	381.11	9.23*	.000
	Kashmir	15.36	6.77						
	Ladakh	13.65	4.14	W	21554.76	522	41.29		
15 years	Jammu	18.51	6.99	B	458.89	2	229.44	5.42*	.005
	Kashmir	17.20	6.40						
	Ladakh	15.81	5.10	W	22068.22	522	42.27		

*Significant at 0.05 level of confidence

The table-1 shows that, there was a significant difference among Jammu, Kashmir and Ladakh adolescent boys on muscular strength of all age groups.

Table-2

Scheffe's Post Hoc Test for Significant Mean Difference between the Groups on Muscular Strength

	13 Years	14 Years	15 Years
Jammu Vs Kashmir	2.05*	1.73*	1.30*
Jammu Vs Ladakh	3.25*	3.43*	2.69*
Kashmir Vs Ladakh	1.20	1.70	1.39

*Significant at 0.05 level of confidence

In Table-2 result of Scheffe's post hoc test shows that Jammu boys were better on muscular strength than Kashmir and Ladakh adolescent boys of different age groups. However Kashmir adolescent boys were also better on muscular strength than Ladakh adolescent boys. Hence it was found that the muscular strength will be better for Jammu followed by Kashmir and Ladakh adolescent boys respectively.

Table-3
Norms for Jammu and Kashmir state adolescent boys of 13, 14 and 15 years on muscular strength

Score	Jammu			Kashmir			Ladakh		
	13	14	15	13	14	15	13	14	15
100	36.75	40.44	42.96	32	39.01	39.6	27.2	28.1	33.66
90	32.72	35.77	38.07	28.51	34.28	35.12	24.43	25.21	30.09
80	28.69	31.1	33.18	25.02	29.55	30.64	21.66	22.32	26.52
70	24.66	26.43	28.29	21.53	24.82	26.16	18.89	19.43	22.95
60	20.63	21.76	23.4	18.04	20.09	21.68	16.12	16.54	19.38
50	16.60	17.09	18.51	14.55	15.36	17.20	13.35	13.65	15.81
40	12.57	12.42	13.62	11.06	10.63	12.72	10.58	10.76	12.24
30	8.54	7.75	8.73	7.57	5.9	8.24	7.81	7.87	8.67
20	4.51	3.08	3.84	4.08	1.17	3.76	5.04	4.98	5.1
10	0.48	0	0	0.59	0	0	2.27	2.09	1.53
0	0	0	0	0	0	0	0	0	0
Mean	16.60	17.09	18.51	14.55	15.36	17.20	13.35	13.65	15.81
S.D	5.77	6.68	6.99	4.99	6.77	6.40	3.97	4.14	5.10

The Table-3 shows that the norms on muscular strength of different age groups and different regions of Jammu and Kashmir adolescent boys and the score was given from zero to hundred. The norms on muscular strength where vary from different age groups and regions of Jammu and Kashmir. The attained score on muscular strength can be used to identify the strength and weakness of students.

Table- 4
Qualitative grading (%age) for constructed norms for three regions of Jammu and Kashmir state boys of 13, 14 and 15 years on muscular strength

Scores	Qualitative Grading	Jammu			Kashmir			Ladakh		
		13	14	15	13	14	15	13	14	15
0-20	Very poor	0	0.88	0.44	0	0	0	5.33	2.66	4
21-40	Poor	24	17.77	20.44	28	26.22	20	18.66	22.66	24
41-60	Average	51.1	59.55	54.66	55.11	52	56.88	56	46.66	49.33
61-80	Good	22.66	20.44	19.1	13.77	20.88	20.44	18.66	26.66	22.66
81-100	Excellent	2.22	1.33	5.33	3.11	4	2.66	1.33	1.33	0

Table-4 shows the qualitative grading for the construction of norms for Jammu and Kashmir state adolescent boys on muscular strength.

Figure-1

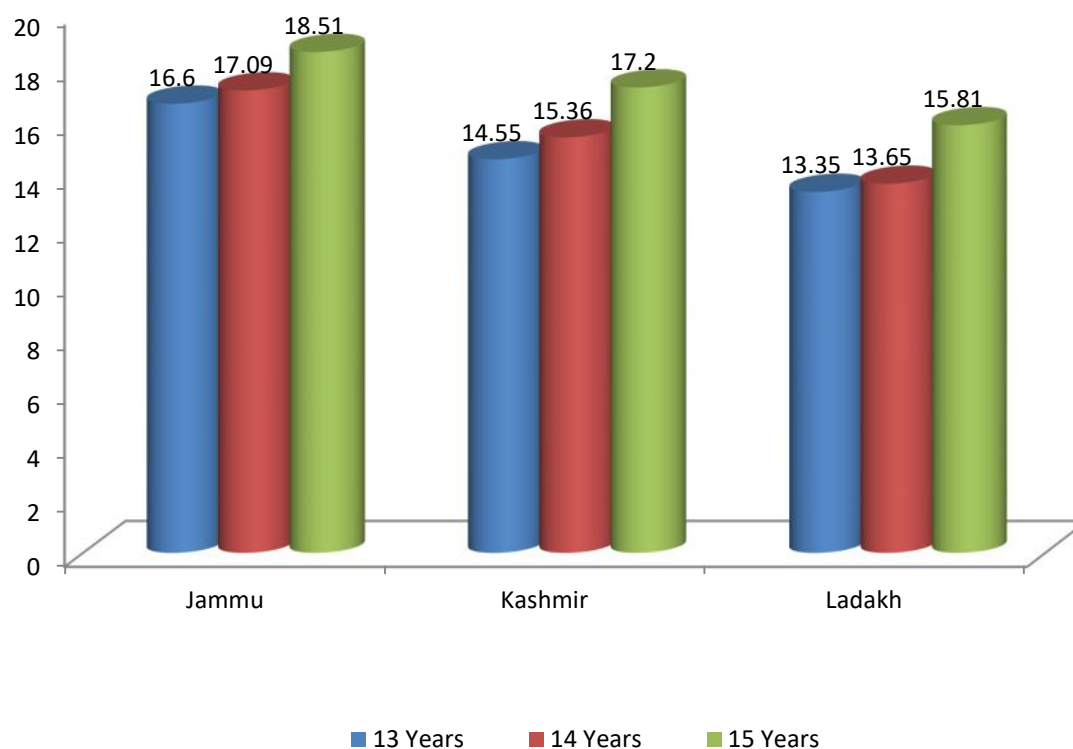


Fig.-1 shows the Mean score on Muscular Strength of Jammu, Kashmir and Ladakh adolescent boys of different age groups.

Conclusion

It was concluded that Jammu adolescent boys were better in muscular strength than Kashmir and Ladakh adolescent boys. Hence, the study suggest that the Jammu and Kashmir area adolescent boys have chosen to achieve more in muscular strength related sports and the Ladakh area boys have to be improved their muscular strength by adopting specified training programme. The existing norms implanted by the ministry of sports and youth affairs may not be suitable for the different regions in the state. Hence the present norms may be recommended separately for Jammu, Kashmir and Ladakh adolescent boys. So that this may be helpful to physical education teachers and coaches to select students for better sports activity in the different regions.

Implications

The following suggestions were made to improve the muscular strength of adolescent boys. Those who score below the 50th deciles on muscular strength in their respective age group should be encouraged to improve their muscular strength. National level norms may be constructed for the Jammu, Kashmir and Ladakh areas and it may be used as standardized norms for normative studies. Norms may be constructed for other age groups. Ministry of youth affairs and state education department has to take some initiation to fix the norms for different region in a State. State Government and ministry of youth affairs and sports should come forward to follow the norms as suggested for different age groups and different geographical regions.

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