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Analysis of Musculo-Skeleted Fitness: Among Large Area Game Players of School Games Federation of India Competition Under-17 (2015-16)

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ABSTRACT

Musculo-Skelted fitness refers to muscular strength, muscular endurance and flexibility. It is an important factor inability to carry out everyday tasks and enjoyable life. Muscular endurance is the ability of muscle or muscle group to perform repeated contractions against a load for an extended period. A prospective study is necessary to clarify this issue, and few such studies have been undertaken. Adolescent players who turned professional within three years showed enhanced aerobic ability, anaerobic ability and musculo-skeletal fitness than those who became semi-professional players. Hence, the present study was undertaken with a view to compare the musculo – skeleted fitness among football, hockey and cricket players. The collected data on muscular strength - push-ups, muscle endurance – Sit-ups and Flexibility – sit and reach was analyzed by one way ANOVA and, if the obtained 'F' is significant LSD Post hoc test was employed to find out the mean difference among the groups. It was concluded that football players are having better musculo-skeleted fitness followed by hockey and cricket players. Musculo- skeleted fitness are also included to identify the sportsman for specific sports like Football and Hockey.

KEYWORDS | Muscular Strength, Muscular Endurance, Flexibility, Adolescent.

Introduction:

Fitness has become a national concern basically fitness being good physical condition able to function at any best level. Physical fitness has been accepted as one of the vital objectives of physical education *(Balemir,1992)*. Fitness is also specific to a particular physical activity. A person fit to run the Marathon will not necessary be fit to do Gymnastics *(Wilmore and Costill,2000)*. Regular physical activity would be important life's quality even if it had relationship to decrease or longevity. Musculo-Skelted fitness refers to muscular strength, muscular endurance and flexibility. It is an important factor inability to carry out everyday tasks and enjoyable life. Major physiologic, cognitive and behavioral changes take place during this period. During the period of adolescence, biological development and physiological development over lap. A person's body undergoes dramatic changes.

Musculo-Skeleted fitness refers is an important factor in ability to carry out daily tasks and enjoy life. Important Musculo-Skeleted fitness is associated with an enhanced health status. Muscular strength (dynamic) is defined as the maximum force a muscle or muscle group can generate at a specific velocity. Muscular endurance is the ability of muscle or muscle group to perform repeated contractions against a load for an extended period of time. Flexibility has two components, dynamic and static *(Kell,2001)*. The objective of examine the effects of changes in the individual components of Musculo-Skeleted fitness on indicators of health status. Intervention programs designed specially to enhance muscle strength force have been effective in improving several indicators of health status, including glucose metabolism, obesity, bone health, independent living, the incidence of falling and associated injuries and or psychological well being *(Warburnton,2001)*.

Large area games such as Football, Hockey and Cricket are the most popular sports in the world with player number increasing annually at an explosive rate. Children now tend to start specific sports training in a specialized environment at a younger age than in previous years. The desire to be professional soccer player is strong and future aspirations are usually relayed to the coaching staff. Coaches and physical education teachers are, therefore, increasingly interested in identifying talented students in their schools for development to a professional level.

A prospective study is necessary to clarify this issue, and few such studies have been undertaken. Some studied have reported that, 15 to 17 year old players who turned professional within three years showed enhanced aerobic ability, anaerobic ability and musculo-skeletal fitness than those who became semi-professional players. This result implied the existence of physiological factors separating future professional players from those destined to become non-elite and sub-elite players. However these physiological characteristics tend to develop only during late adolescence. Therefore this study is aiming to compare the musculo-skeleted fitness among the large area game players under 17 years (Football, Hockey and Cricket) of School Games Federation of India competition 2015-16.

Methodology:

The study was conducted for boys represented School Games Federation of India competition 2015-16 held at Karimnagar, Telangana (Football-100), Jalandhar, Punjab (Hockey-100) and Indore, Madhya Pardesh (Cricket-100) were selected as subjects (N=300) by adapting incidental sampling method, and their age ranged from 15 to 17 years as per the eligibility proforma. The dependent variable such as musculo-skeleted fitness (muscular strength - push-ups, muscle endurance – Sit-ups and Flexibility – sit and reach) were measured by most popular field tests. The collected data on musculo-skeleted fitness was analyzed by one way ANOVA, and if the obtained 'F' value is significant LSD test was employed to find out the mean difference. To test the significance the level of confidence is fixed at 0.05. All the statistical procedures were employed through SPSS – 21version.

Results:

Table-I One Way ANOVA on Musculo-Skeletal Fitness Variables of Large Area Game Players

Variable	SOV	SS	df	MS	F	P. Value
Muscular Strength	Between	728.00	2	364.00	337.48	.000
	Within	320.33	297	1.08		
Muscular Endurance	Between	767.06	2	282.53	23.83	.000
	Within	4779.19	297	16.09		

Flexibility	Between	1292.50	2	646.25	174.41	.000
	Within	1100.44	297	3.70		

Table-I shows the One Way ANOVA results of muscular strength, muscular endurance and flexibility of Football, Hockey and Cricket players of School Games Federation of India under 17 years (2015-16). The result clearly indicates that all their musculo-Skeletal variables are significantly differs among the selected large area game players. To find out the mean difference between groupd LSD (Post-hoc) test was employed and the results are presented in Table-II.

Table-II LSD comparison of Independent and Dependent Variables

Variables	Group	Mean Difference	P. Value
Muscular Strength	Football vs Hockey	3.40	.000 (S)
	Football vs Cricket	3.20	.000 (S)
	Hockey vs Cricket	0.20	.174 (NS)
Muscular Endurance	Football vs Hockey	3.67	.000 (S)
	Football vs Cricket	2.02	.000 (S)
	Hockey vs Cricket	0.65	.253 (NS)
Flexibility	Football vs Hockey	2.96	.000 (S)
	Football vs Cricket	5.06	.000 (S)
	Hockey vs Cricket	2.10	.000 (S)

The result of LSD indicates that Football players are significantly better than Hockey and Cricket players on muscular strength, muscular endurance and flexibility. Further, it reveals Hockey players are better on Flexibility than Cricketers. But, the comparison between Hockey and Cricket players show insignificant difference on muscular strength and muscular endurance.

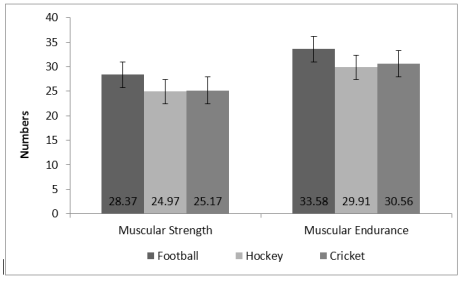

FIG-I Mean and Standard Deviation of Football, Hockey and Cricket players on Muscular Strength and Muscular Endurance.

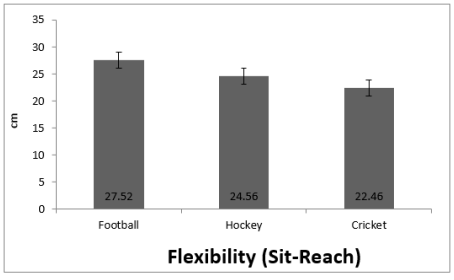

Fig-II Mean and Standard Deviation of Football, Hockey and Cricket players of Flexibility

The study was aim to compare the musculo-skeletal fitness among large area players of School Games Federation of India players of under 17 years (2015-16). From the result it is clear that, Football players are dominating all the musculo-skeletal fitness variables than Hockey and Cricket players. Hockey players are also shows high flexibility than Cricketers. However, the result of muscular strength and muscular endurance have no significant difference between Hockey and Cricket players at School Games Federation competition of 2015-16.

Growth, development and maturation are terms that can be used in describe changes starting at conception and continuing through adulthood that occur in the body. With the increasing popularity of youth sport and an emphasis on children's physical fitness must understand the physiological bases for growth and development. The growth and development of their bones, muscles, nerves and organs largely dedicate their physiological and performance capacities. As children increase in size, so do almost all of their functional capacities. This is true of motor ability, strength, strength endurance, aerobic and anaerobic capacity.

The motor ability of boys and girls generally increases with age for the first 18 years. The improvements result primarily from development of the neuromuscular and endurance systems and secondly from the children's increased activity. From the birth through adolescence the body's muscle mass steadily increases, along with the youngster's weight gain. In male the total muscle mass increases from 25% body weight at birth to 40% or more in the adult. Much of this gain occurs when the muscle development rate peaks at puberty. This corresponds to a sudden, almost 10 fold increase in testosterone production *(Monyeki,2006).*

Increases in muscle mass with age appear to result primarily from hypertrophy of existing fibers, with little or no hyperplasia. This hypertrophy results from increases in the myofilaments and myofibrils. Increases in muscular length as young bones elongate results from increases in the length of existing sarcomeres. The bone mass in later life depends upon the peak attained during skeletal growth and the subsequent rate of bone loss. From the results of epidemiological studies it is known that body composition, weight-breaking activities, muscle strength and also genes and intrauterine factors, contribute to future bone mass *(Mikelsson,2006, Nieman,1998 and McHugh,1999).*

Physical fitness can be thought of as an integrated measure of most, if not all the body functions involved in the performance of daily physical activity and or physical exercise *(Oretega et al,2008)*. Include in this definition are characteristics such as cardio-respiratory endurance, muscular strength, muscular endurance and flexibility *(Howley,2001).* The elite soccer players are better on muscular strength, endurance and anaerobic power *(Reilly,2000)*. Aerobic endurance, sprint, fat free mass, lower limb explosive strength are the strong predictor of soccer players *(Valente,2012).*

Conclusion:

From the result it is concluded that, Football players are having more muscular strength, muscular endurance and flexibility than Hockey and Cricket players. Further Hockey players are more flexible than Cricket players.

Implications:

The football players may be identified through musculo-skeletal fitness, quality above with skill, anthropometric and physiological characteristics. Further, the early development of musculo-skeletal fitness is needed to become elite in future.

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