

An Analysis on Anthropometric and Physiological Profiles of Indian Footballers

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Abstract – Football is probably the most popular game worldwide but there is still limited scientific information available concerning the physique and performance qualities of elite Indian footballers. Team games are sports where size, shape, body composition and fitness all play an important part in providing distinct advantages for specific playing positions. Hence an attempt has been made to study the various anthropometric parameters, motor ability and physiological profiles of the different Indian national club footballers and also to compare the above parameters with their international counterparts. Physical education assumes a basic part in teaching the Whole understudy. Research underpins the import expert of development in teaching both personality and body. Physical Education contributes straightforwardly to advancement of physical ability and fitness. It likewise causes understudies to make educated chicest and comprehend the benefit of driving a physically dynamic way of life. The advantages of physical education can influence both scholastic learning and physical movement examples of understudies.

INTRODUCTION

Anthropometric measurements are widely used to assess and predict performance in various sports. Anthropometric measurements and morphological characteristics play an important role in determining the success of a sportsperson. An athlete's anthropometric and physical characteristics may represent important prerequisites for successful participation in any given sport. Indeed, it can be assumed that an athlete's anthropometric characteristics can in some way influence his/her level of performance, at the same time helping to determine a suitable physique for a certain sport. It has been well established that specific physical characteristics or anthropometric profiles indicate whether the player would be suitable for the competition at the highest level in a specific sport. Sports play a very prominent role in the modern society.

At present, the sports competitions are highly competitive and challenging. Human beings by nature are competitive and ambitious for their excellence in all athletic performance. Every sportsman or nation wants to show their supremacy by challenging other nations by showing dominance and supremacy in sporting performance in international competitions. Thus this challenge stimulates, inspires and motivates all the nations to sweat and strive to run faster, jump higher, throw far and exhibit greater strength, endurance and skills in present competitive sports world. This can only be possible through scientific, systematic and planned sports training as well as channelizing them into appropriate games and

sports by finding out their potentialities. Volleyball players require well-developed muscular strength, power and endurance, speed, agility, and flexibility, and have a high level of jumping ability, fast reaction time and swift movements.

The idea of fitness has long and included history. As indicated by the writing on the subject, it can be followed to the work done by Charles Darwin of the survival of the fittest. Continuously the word fitness recommends the capacity of a creature or a human to work and play with a greatest level of physical effectiveness and to be set up to meet unexpected threat or obliteration. The cutting edge logical age, in each field of human undertaking orderly, objective and logical systems are followed as per the standards in light of involvement, under-standing and use of logical learning. The field of amusements and games has been made conceivable because of research, experimentation and logical information in recreations and games. A mistaken idea is pervasive among a sizeable area of individuals in India that sportsperson by and large are less wise and less caution than non-sportsperson. They believe that a great part of the physical vitality of a sportsperson is spent in his games interests. This channels his physical vitality as well as makes him rationally dull. Therefore, his insight and mental capacity endure. They, along these lines, are of the feeling that the time create to games and recreations on the plane field is a loss regarding vitality misfortune and of times, which could be all the more helpfully utilized in other(i.e. scholastic) profitable action. Mental components have a hugeness impact on a competitor's ability for preparing and inspiration for

rivalry. Sportsperson of a specific mental compose might be more inclined to damage. Games mentors most perceive this trademark. Factor that are by and large accepted to impact sports execution incorporate animosity, inspiration, uneasiness, focus, self-assurance, passionate state and torment resilience. With the assistance of games therapist's identity profile of every player might be readied which may help the coach in the preparation camps. The researcher, along these lines, has influenced an endeavor to concentrate to whether a physically fit individual is wisely fit, since physical education as far as anyone knows adds to the physical and additionally mental part of the identity. We, the Indians are particularly worried about the execution and status of the sportsperson at deferent levels. In any case, the execution is last out-put and the status incorporates different perspectives notwithstanding the execution. In the realm of games, each partaking individual and onlooker by and large, eye to the situated competitors and they likewise move toward becoming in the fundamental line light in the field of games. The selectors at different levels by and large thought about the execution in the preliminary and qualifying rivalries, while, the physical fitness premise more often than not as overlooked variable. The execution at abnormal state or exceptional execution depends on the establishment of the competitor, which ought to likewise be solid and potential. The establishment of sportsperson begins from his underlying improvement stage.

Human settlements are arranged as rural or urban regions based on the thickness of populace and human shaped structures in a specific zone. Urban regions comprise of towns and urban communities while rural regions contain villages and villas. Rural territories may grow randomly on the establishment of characteristic vegetation and fauna accessible in an area, while urban settlements are appropriate, reasonable and arranged settlements developed as indicated by a procedure called urbanization. The urbanization procedure happens in different nations under different conditions as of late. The distinctions in development, body measurements, body composition and fitness levels of children because of urban and rural ecological differences have come into focus of attention amid the most recent couple of years.

These days ponders are led to analyze the evolutionary significance of contrasts in anthropometric characteristics, body extents and body composition between populaces whose precursors lived in various environmental settings. Numerous research considers in the human natural writing examined the distinctions in urban and rural populations and in various financial strata with respect to anthropometric qualities. Tallness, weight and other body measurements are contrasted in rural and urban children and in children from various financial groups in almost all the created and in creating nations. Numerous examinations have detailed that physical parameters identified with

development and advancement in urban children was at more elevated amount than in rural children (Sahoo et al, 2011). There are a few examinations from Europe in the previous 100 years demonstrate that urban children have more prominent body measurements and develop prior contrasted with children living in rural regions and urban and rural contrasts are existed among grown-ups in numerous nations. The more prominent anthropometric characteristics among urban children are ascribed to advantageous changes in wellbeing and abstain from food and in far reaching living conditions identified with urbanization. The distinctions among urban and rural children are misrepresented by unending dietary issues in the rural regions and recognizable financial incongruities in numerous African, Asian and Latin American countries. In the more created nations of these mainlands, the more prominent anthropometric attributes and prior development and advancement of children living in urban territories uncover the ad-vantageous results of urbanization related with upgraded monetary status and access to offices.

Anthropometry is the science that arrangements with measurements of size, weight and extents of human body. It gives logical strategies and perceptions on the living humans. Anthropometric methods (skinfold fat, circuit and breadth measurements) are mainstream for anticipating body composition since they are very little costly, require little space and can be performed effectively. Anthropometry is regularly utilized as a part of physical education, sports science, physical movement and biomedical sciences. Anthropometry is regularly utilized as a part of physical education, sports science, physical action and biomedical sciences. Anthropometric measurements can be isolated into tallness, weight and lengths, expansiveness or width, boundaries or circumferences, profundities and skinfolds. All measurements of individual are outer measurements of the body.

Anthropometric measurements were focal worries of the main period of the logical time of measurements which were started in the 1960s. Anthropometric qualities assume an imperative part in deciding the accomplishment of sportspersons. Anthropometric measurement might be distinctive between footballers of different playing positions for example safeguard and mid defender. Thus, distinction in Investigating. Anthropometry is the branch of human studies that is worried about the measurement of human body. The definition has kept to the sort of measurements ordinarily utilized as a part of partner physical execution with body assemble. Anthropometry includes the measurement of outer piece of the body, including body widths, body boundaries somatotypes.

Physical fitness is more than cardio-vascular fitness. The vast majority of the specialists concur that fitness has a wide range of components of which cardio-vascular fitness is just a single. From a general wellbeing viewpoint, quality, strong perseverance,

speed, adaptability, spryness and body composition shape the components of physical fitness.

The component of particular premise of choice is being accepted in the system of choice of competitors at different levels in some propelled nations. To exceed expectations in a physically focused game, the player must have such measurements of body qualities are known to be of major significance for singular improvement to accomplish Olympic level execution in a game. The body which incorporates the assessment of size, shape and type of an individual is of prime significance as to know how far an individual can prevail with regards to turning into a best competitor. Studies have likewise demonstrated that champions of various games require distinctive characteristics as for their occasions.

Anthropometry is the branch of anthropology that deals with human body measurement. The definition is confined to the kind of measurements commonly used in associating physical performance with body build. Anthropometry involves the measurement of external part of the body, including body diameters, body circumference, heights and breadth. Indeed, many experts in the field, such as soccer coaches, managers, and scientists believe that the success of this sport can be associated with anthropometric characteristics of players. Some studies have even focused on the relationship between anthropometric profiles of players and their standard positions.

Anthropometric quality of soccer players is a major determinant of their success in playing genuine soccer, however, it associates within a playing position. For example, a taller player is most suitable for central defensive positions, goalkeeping, and central attack. Not only these, but specific anthropometric characteristics needed to be successful in certain sporting events. It is also important to note that there are some differences in body structure and composition of sports persons involved in different sporting event. The process whereby the physical demands of a sport lead to selection of body types best suited to that sport is known as "morphological optimization". Physical characteristics and body composition have been known to be fundamental to excellence in athletic performance (Mathur & Salokun 1985). Specific athletic events require different body types and weights for maximal performance. Today it has been widely accepted by the experts that top performance in soccer is achieved if player possesses the basic body composition and anthropometric characteristics suitable for his/her position (goalkeeper, defense, midfielder, and striker). At present, sportsman for superior performance in any sports is selected on the basis of physical structure and body size.

PHYSICAL EDUCATION: AN OVERVIEW

The term physical education is deplorable. In contemporary usage physical infers the medium through which the education happens. One secures an education from various perspectives and from numerous sources, through perusing books as well as the through other critical encounters. The modifier physical it's creating physical power or developing physical aptitudes exclusively for their own particular sakes. Current physical education sees these aptitudes more as an unfortunate chore than as total or proceeding in themselves.

Truly there are not very many developments performed, or aptitudes created, which are held on in only for their own particular esteem, even in outset and adolescence. When an objective is wanted the development or expertise expected to achieve it is honed. The tyke who needs the treat figures out how to stroll over and get it. A tyke figures out how to ride a bike not simply so as to ride the bike but rather to safeguard status with the pack, go to school, or hotshot. Physical preparing is a more seasoned yet at the same time utilized term to portray the preparation of the physical components of the body with no fundamental reference to the reasons which are critical in current education. It ought not be mistaken for physical education. They are not synonymous, as we should find in the parts which take after.

Nor should the term physical education be permitted to infer a detachment from the psychological and accordingly sustain the appalling yet conventional thought that man exists as brain and body, and that education is worried about just a single, or and no more two, of these parts. The idea of man as a bound together being makes disarray on this score superfluous. Physical education fills in as a medium for man's aggregate education, scholarly, enthusiastic, formative, utilizing encounters focused in development. What's more, in the present schools these encounters are centered to a great extent around the characteristic developments of dynamic play or recreational life.

PHYSICAL FITNESS AND ANTHROPOMETRIC VARIABLES

Physical fitness as a term alludes to the aggregate unique physiological condition of the individual extending on a continuum from ideal human execution to serious incapacitation and passing. Competitors would be found towards the upper end of the continuum fluctuating up or down contingent upon their condition of preparing while at the other and states of ailment could exist while this term might be acceptable in a spellbinding sense, issues emerge when endeavors are made to characterize the idea in an operational way, that is, the point at which we attempt to gauge or create it. The multifaceted nature

emerges on the grounds that physical fitness is comprised of arrangement components, for instance speed, deftness, quality, continuance, adaptability and co-appointment, every single one of which makes some autonomous commitment to the entire state while a portion of these component and next to no of another.

Those parts of physical and mental make-up that manage the cost of and singular some assurance against coronary illness, issues related with being overweight muscle and joint tendon and the physiological entanglements of reacting to pressure.

This part of physical fitness concerns the advancement of characteristics important to work productively and keep up a solid way of life. The components of wellbeing related fitness are cardio-respiratory perseverance, strong quality and continuance, adaptability and body composition.

The components of both wellbeing related and execution related physical fitness are comparable cardio vascular capacity, body composition. Quality and adaptability. Be that as it may, the level of improvement of each shifts with the two sorts of physical fitness. Contrasted with wellbeing related fitness, a more broad advancement of these components might be required to accomplish and proper level of execution related fitness. Execution related fitness is regularly connected with sport; competitors may need to build up the fitness component of quality to a more noteworthy degree than average subjects intrigued by enhancing and keeping up their wellbeing.

Wellbeing related fitness requires alluring levels of cardio-vascular fitness, percentage body fat, adaptability and continuance. These assistance to keep the frequency and seriousness of degenerative sorts of sickness and increase work productivity. Cardiovascular fitness alludes to the effectiveness of heart and lungs. Solid quality and continuance is the limit of the muscles to conflict with the opposition for longer time. Adaptability is the capacity to move a joint uninhibitedly through its total scope of development. Percentage of body fat alludes to the extent of a person's aggregate body fat.

The investigation of human physical measurements managed by another overview anthropometry which was wide application as one of the fundamental parameters constituting the choosing diagnostics of any amusement or games. The investigation of body compose has noteworthy place in the field of games.

The physical structure particularly the tallness and a safe distance have unmistakable definitive advantage in numerous recreations and games, comparably segmental length of individual body parts, particularly the leg length and a safe distance are of impressive advantage in specific diversions. The anthropometric variables selected for the examination are tallness, weight and a safe distance.

Anthropometric measurements of body structure are the most seasoned kind of body measurement, known, going back to the start of written history. It was additionally an early sort of testing in physical education. On the hypothesis that activity ought to be recommended to influence muscle estimate, accentuation was set upon muscle symmetry and extent. In 1861 Hit Chock and later Sargent, delivered profile outlines to uncover how individual contrasted and their gauges.

Sargent outlines contained forty four anthropometric measurement, and additionally number of quality tests. Fifty such tests were suggested by the American Association for the Advancement of physical education.

Another utilization of anthropometry is to decide connection amongst structure and engine execution. Perceptions of such relationship are regular place watch the well corresponding collections of wrestlers and gymnasts, the super structure of incredible sportsman. The basketball contenders, the solidarity of best flight bal competitors, the enormous forms of incredible shot-putters and disk hurlers.

The anthropometric measurements, for example, stature, weight and a safe distance were probably going to impact expertise advancement and execution in the diversion. Assist the anthropometric measurement, for example, stature, weight and a safe distance were probably going to impact ability improvement and execution in the diversion. Advance the anthropometric components were formal to impact the capability of games and recreations. Stature has the potential situation as ideal perquisite for the execution perfection in numerous games or amusements. Anthropometric measurements have uncovered co-connection between body structure and physical attributes and games capacities.

Anthropometry is that branch of human sciences which is worried about the taking of measurements of the human body. This definition has been bound to the sorts of measurements generally utilized as a part of partner physical execution with body fabricate.

The measurement of structure and extent of the body is called anthropometry. It has wide application as one of the fundamental parameter constituting the particular indicative of any amusements or games.

Anthropometry comprises of making outer measurements of the human body. The outcomes can be utilized to evaluate body manufacture, nutritious status and stance. Human engine execution is a composite of numerous variables one of which is the structure of the body. The particular measurement of the appendage lengths, boundary, breadths and body fabricate lists can delight the connection between the anthropometry long legs to the length and mass of the body, is work to bounce. The constitution might be helpful in picking a reasonable physical movement for an individual as a result of the

way that as per body they have numerous mechanical advantages.

Anthropometric measurement was focal worries of the main period of the logical time of measurements, which started in 1860's. Current enthusiasm for anthropometric measurements centers around three zones, development measures, body write and body composition. The utilization of such measures incorporates grouping. Expectation of development examples and forecasts of achievement in engine exercises and in addition evaluation of weight.

Measurement of body estimate incorporates such enlightening data as stature, weight and surface territory, while measures of body extent depict the connection amongst tallness and weight and among legs, widths and perimeters of different body sections. It was been discovered that best competitors in a few games have a tendency to have those extents that bio-mechanically help the specific execution required. The execution conclusion must be done through clear information and comprehension of physical attributes, and their relationship to the unpredictable development mechanics.

Anthropometric measurements have uncovered co-connection between body structure, physical attributes and the games abilities. This information of numerical co-connection grants sports doctor to assess and to anticipate execution possibilities based on physical attributes and particular necessities of the amusement.

METHODOLOGY

With the end goal of the investigation 100 urban and rural football players, examining in the distinctive schools of Haryana, were selected. Their age went between 15 to 19 years. Every one of the 100 understudies were selected randomly, for anthropometric measurements; twenty nine distinct measurements were taken from each subject. The components and test things spoke to in the first battery were as per the following:

1. Cardio-respiratory endurance - 600 yard run-walk
2. Muscular power - Standing broad jump
3. Speed - 50 Yard dash
4. Flexibility - Reach and sit test
5. Agility - Zig Zag Run

Statistical Design-

To look at the physical fitness of Haryana school young men in connection to their anthropometric and financial status,'t' test was utilized to discover the

critical contrast between various groups, the level of importance was set at .01 and .05

RESULTS AND DISCUSSIONS

Table 1 Linear Measurements

Variables	Urban		Rural		Sed	T-Test
	Mean	S.D.	Mean	S.D.		
Height	166.54	1.69	167.36	1.11	0.37	2.22*
Sitting Height	85.41	2.66	85.40	2.17	0.626	0.015
Trunk Length	63.2	2.53	64.74	2.07	0.60	2.60*
Leg Length	98.95	1.97	100.79	1.25	0.426	4.32**
Total Arm Length	74.06	1.07	74.51	1.78	0.37	1.18
Upper Arm Length	33.3	2.19	33.44	2.05	0.548	.255
Fore Arm Length	41.8	1.87	41.06	1.83	.477	1.535
Lower Leg Length	48.68	1.82	49.87	2.37	.545	2.18
Thigh Length	50.27	1.11	50.92	1.17	.293	2.21
Foot Length	18.14	1.02	18.4	1.69	.36	.721

*Significant at 5% level = 2.00 ** Significant at 1% level = 2.65

Table 1 demonstrates that implies and standard deviation of Haryana urban and rural football players. The distinctions in mean score of tallness, trunk length, leg length, bring down leg length and thigh length of rural basketball players are discovered more than those of urban basketball players as the 'T' estimation of these variables are noteworthy at 5% level. It is unmistakably demonstrates that rural football players are taller than those of urban football players.

Table 2: Circumference Measurements

Variables	Urban		Rural		Sed	T-Test
	Mean	SD	Mean	SD		
Neck	32.96	1.97	32.3	2.21	.54	1.17
Shoulder	101.51	2.37	103.09	2.02	0.57	2.78**
Chest	82.86	2.11	81.56	2.71	.63	2.07
Abdominal	68.5	2.71	66.74	3.54	0.81	2.16*
Hip	85.74	1.11	85.97	2.3	0.47	0.49
Knee	34.56	2.34	33.96	2.18	0.58	1.025
Thigh	45.12	5.07	44.49	3.70	1.15	0.55
Calf	31.99	2.92	31.81	2.77	0.73	0.25

*Significant at 5% level = 2.00 ** Significant at 1% level = 2.65

It is clear from the table 2 that the distinctions is mean scores of stomach and chest boundaries of urban football players are bigger than those of rural football players as the 'T' values are noteworthy at 5% level. The distinctions in mean scores of shoulder circuits are discovered more in rural football players. Different peripheries have no noteworthy contrasts.

Tables 3: Diameter Measurements

Variables	Urban		Rural		Sed	T-Test
	Mean	SD	Mean	SD		
Biacromial	37.68	1.08	37.41	1.23	.298	.903
Bitrochantric	28.13	.94	27.42	1.36	.301	2.35*
Femur bycondylar	8.81	0.97	8.97	1.31	.297	0.537
Ankle Diameter	6.68	0.74	6.75	0.81	0.200	0.35

*Significant at 5% level = 2.00 ** Significant at 1% level = 2.65

Further table 3 shows the significant differences in the mean scores of bitrochantric diameter between urban and rural football players as the 'T' values is significant at 5% level in favors of urban football players. Other diameters have no statistically significant differences. It suggests that bitrochantric diameter is found more in urban football players than that of rural football players.

Tables 4: Physical Components Measurements

Variables	Urban		Rural		Sed	T-Test
	Mean	SD	Mean	SD		
Endurance	2.24	0.12	2.16	0.11	0.029	2.680**
Speed	7.76	0.17	7.65	0.22	0.05	2.19*
Strength	1.68	0.08	1.74	0.05	0.017	3.43**
Flexibility	27.13	0.97	27.90	1.3	0.297	2.59*
Agility	8.90	1.02	8.51	1.12	0.289	1.35

Promote from the table 4, It is plainly evident that the distinctions in mean scores of continuance, speed, quality and adaptability components of physical fitness of rural football players are discovered huge at 1% and 5% level with the exception of nimbleness. It demonstrates that the rural football players have more perseverance limit, speed, quality and adaptability when contrasted with urban football players. Spryness has been discovered statistically level with in the two groups of Haryana football players.

CONCLUSIONS

Anthropometric characteristics of footballers may be indicators of the level of physical fitness of an athlete and therefore anthropometric examination is an important segment of the athlete’s physical examination. The youngest subgroup of footballers (aged up to 20 years) showed significantly different values for the majority of the parameters compared to older footballers. There was a critical distinction between anthropometric variables (stature, trunk length, leg length, stomach, bear peripheries, bitrochantric width, triceps, subscapular, thigh and calf skinfold) and physical fitness components (continuance, speed, quality and adaptability).

REFERENCES

1. Abdulnour Jamal Ahmad. (2006). A Comparatives Study of the Physical Fitness of Secondary School students in Kuwait and America, Dissertation Abstracts International.
2. Abraham, G. (2010). Analysis of anthropometry, body composition and performance variables of young Indian athletes in southern region. *Indian Journal of Science and Technology*, 3(12), pp. 1210-1213.
3. Ahmed M. (2010). Comparison of selected physical fitness variables of 18 years old male cricket players, *International Journal of Physical Fitness*; 3: pp. 50-52.
4. Alston and Dorthy J. (2001). The Physical Performance of High School Girls on two Physical Tests. *Completed Research*. 77
5. Amusa L.O. and C.O. Udoh. (2006). Physical Fitness among University of Ibadam FemaleMember of staff.SNIPES. 8: pp. 3
6. Brahim, M. B., Bougatfa, R., & Mohamed, A. (2013). Anthropometric and physical characteristics of Tunisians young soccer

7. Brongden, Gayle Lyndon (2007). A comparison of Physical Fitness and Anthropometric Measurement of Mexican - American and Anglo- America Male, *Dissertation Abstracts International*. p. 33
8. Choudhuri D., Choudhuri S., Kulkarni V.A. (2002). Physical fitness: a comparative studybetween students of residential (Sainik) and nonresidential schools (aged 12-14years) indian *J PhysiolPharmacol*. 46(3):328-32. Department of Physiology,B.L.D.E.A’s Shri B.M Patil Medical College, Byapur, 586, p. 103
9. Darshan Kaur (2015). A study on physical fitness components between basketball and korfbal girls players of Haryana *International Journal of Physical Education, Sports and Health*. 2015; 2(1): pp. 286-287.
10. Diwakar Lal Amatya (2010). Anthropometry Physical Fitness Relative Strength and Heart Rate Response of Nepalese Weightlifters *Research paper submitted in to National Sports Council, Vol 56. 220]*
11. Ferenc Ihasz, Lee Chee Pheng (2003). “An Anthropometric and Physiological Charactersitics of Normal, Fat and Obese children in Primary School of Gyor”. In *Research Bi- Annual for Movement*. Vol. 19, No. 2., pp. 16-29.
12. Gabbett J.J. (2000). Physiological and anthropometric characteristics amateur rugby players. *British Journal of Sports Medicine*; 34: pp. 303-307.
13. Gil S., Gil J., Ruiz F., Irazusta A., Irazusta J. (2007). Physiological and anthropometric characteristics of young soccer players according to their playing position: relevance for the selection process. *J Strenght Cond Res.*; 21: pp. 438–45.
14. Gopal Chandra Saha (2012). Comparative Study of Anthropometric Measurements and Body Composition among Individual and Team Game, *International Journal of Behavioural Social and Movement Sciences*; 01(03): pp. 69-74.
15. Gopinathan P. & Helina G. (2009). Correlation of selected Anthropometric and Physical Fitness Variables to Handball performance. *Journal of sports and sports sciences*; 32(1): pp. 2530.
16. Hailu, E., Kibret, D., & Tomay, A. (2016). Assessment of anthropometric measurements and body composition of

- selected beginner South West Ethiopian soccer players. *Turkish Journal of Sport and Exercise*, 18(2), pp. 56-64.
17. Kolekar, S.M. and Sawant, S.U. (2013). A comparative study of physical growth in urban and rural school children from 5 to 13 years of age. *International Journal of Recent Trends in Science and Technology*, 6(2): pp. 89-93.
 18. Reilly T, Bangsbo J., Franks A. (2000). Anthropometric and physiological predispositions for elite soccer. *J Sports Sci.*; 18(9): pp. 669–683.
 19. Sahoo, K., Hunshal, S. and Itagi, S. (2011). Physical growth of school girls from Dharwad and Khurda districts of Karnataka. *Karnataka Journal Agricultural Science*, 24(2): pp. 221-226.
 20. Shukla, N. B., Sharma, S.S., Herm, K.P., Sodhi, H.S. (2002). "Anthropometrical Examination of Punjab State Weight Lifters, India", *Journal of Physical Education, January*, pp. 8-13
 21. Singh, S., Singh, K., & Singh, M. (2010). Anthropometric measurements, body composition and somatotyping of high jumpers. *Brazilian Journal of Biomotricity*, 4(4).
 22. Swapan K.D., Nabanita K., Debray P. (2010). Anthropometric, motor ability and physiological profiles of Indian national club footballers: Comparative study. *South African Journal for Research in Sport, Physical Education and Recreation*; 32(1): pp. 43–56.

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