Early, Normal and Late Maturing Boys of Punjab School Boys Aged 12 To 15 Years

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Abstract

Maturation is a process, whereas maturity is a state. Maturation implies progress towards maturity. In case of children and adolescents, the term maturity refers to the extent to which individual has progressed to the mature state or adulthood. Malina (1980) maturity is a variably used term and in growth studies most commonly used term to indicate sexual maturity or attainment of adulthood, through various physiological and hormonal changes that occur in the human body. These changes occur during adolescent growth period. But according to Tanner (1978) these changes do not arise suddenly during maturation (adolescent period) though these are more obvious then, as these are present in all stages of life from birth to death. Just as an average girl is always ahead in maturity than an average boy, similarly an early maturing boy is always ahead than a late maturity boy. It is interesting to note that each child has an inborn biological maturation that influences progress to the mature state.

KEYWORDS: Growth, Development, Maturity.

Introduction:

Sports is now no more a hobby, it has become a full time profession. Modern sports, infact, compel athletes to take up sports competitions as a full time vocation besides making name and fame. Multi-disciplinary efforts are put together with the craze of taking human performance to its optimum possible level. The sports scientists and coaches are demanding full time involvement and round the year dedicated practice of sportsmen to reach the pinnacle of their performance. The international community of sports lovers is also curiously looking for better and superb performance of sports men and women in their respective fields. Aspirations and expectations of the people pertaining to the performance of sports man all over the world are going higher and higher. The high level of performance by sportsmen and women require a highly scientific approach and it should be done right from the level of identifying talents.

Anthropometric measurements were central concerns of the first phase of the scientific era of measurements, which began in 1860. Current interest in anthropometric measurements focuses on three areas: growth measures, body type and body composition. The use of such measures includes classification prediction of growth pattern and prediction of success in motor activities as well as assessment of obesity.

With the increasing awareness in the competitive sports and physical fitness all over the world, the endeavor of each nation is to attain the highest level of performance. Much emphasis is laid down today on physical fitness. The physical activities are thought to be very important for the all-around development

of human beings. If anybody wants to progress in any field, he should be healthy and physically fit. 'Our modern automated and sedentary life styles foster unfitness' (Bud Getchale 1976).

Garay et.al. (1974) after an intensive study of anthropometric measurements of Olympic Athletes concluded that top level performance in particular events demands particular size of the body and shape, other aspects being similar. They established strong relationship between the structure of an athlete and specific task (event in which he excelled) clear physical proto type exists for optimal performance at Olympic level.

Terrel (1968) determined the relationship anthropometric measurements and physical fitness scores of fifty pre and post puberty females of junior high school age. It was concluded that there was no relationship between anthropometric measurements and physical fitness scores. Negroes have significantly longer legs; longer arms, longer feet, a wider shoulder girdle and a narrower pelvic girdle than Caucasians on 50 yard dash and soft ball throw for distance.

In 1990, Sodhi, H.S. et al studied Kinanthropometric characteristics of Indian Junior Volleyball Players of North India ranging in the age between 16 to 18 years. They found that the volleyball players in each age group possess considerably greater length of their trunk, broader shoulders and hips, wider humorous and femur, greater size of hand span, larger chest, upper arm, and thigh and calf circumferences than the controls. The differences are found to be statistically significant in most of the cases. The skinfolds show almost similar status except the biceps, triceps and sub-scapular skinfolds showing significantly greater value than the controls in the 16 years age group. In somatotype the 16 year volleyball players are significantly more endomorphic than the controls of same age. But the other groups show similar status. In mesomorphy the 16 and 18 years volley ball players are considerably better developed than the controls. On the other hand in ectomorphy the sporting children have lower than the latter. On the average, the volleyball players are found to be mesomorphic-ectomorpthy.

Sample:

To achieve these objectives, boys from the age groups of 12 to 15 years have been examined from the different regions of Punjab for the assessment of their developmental age.

Hypothesis:

Developmental age as assessment of developmental age through morphological age is a valid and well established method.

SAMPLE OF THE STUDY

The data of 200 boys ranging in age from 12 to 15 years were collected from different schools of the Punjab. The subjects were divided into 4 age groups i.e. (12, 13, 14 and 15 years). Each group contains 50 subjects. The date of birth was converted into decimal age and categorized in to 4 age groups. The subjects following in the age groups of 11.501- 12.500 were considered as 12 years similarly the other age groups were formed.

CATEGORIZED DIFFERENT AGE GROUPS CONSIDERATION 12 TO 15 YEARS

Age group	Age group considered as	No. of subject
11.501 to 12.500	12 years	50
12.501 to 13.500	13 years	50
13.501 to 14.500	14 years	50
14.501 to 15.500	15 years	50

TOOL / MEASURMENTS AND INSTRUMENTS

The body development index (BDI) will be determined by taking the following Anthropometric measurements: -

1.   Body density (cms)

2.   Body weight (kgm)

3.   Fore – arm circumference (cms)

4.   Bicromial breadth (cms)

5.   Biliospihle breadth (cms)

The formula to calculate BDI will be used to find out body development index of each athlete the method is explained as follows: -

B.D.I. = Middle Breadth X Forearm circumference Breadth

Body Height (cm) X 10

Middle Breadth = Bicromial Breadth + Biliospinable Breadth
2

Forearm circumference (corrected) 2 x F.A.Circumference (given) – R. I. (correction value).

R.I. (Rother Index = Body Weight (kg)   X   10
Body Height ^{3} (meters) ^{3}

The body Development Index of 200 subjects of each age group will be calculated. The variations in the growth will also be determined by considering the mean values of chronological and developmental ages. Such variations can be considered under three categories viz early, normal and late developers. For examples subjects having one-year diffrence considered as normal individual. The subjects having different of two years or more in ascending manner will be considered as early matures and the subjects having the diffrence of two years or more in descending manner will be considered as late matures.

Table- 1
PERCENTAGE DISTRIBUTION OF EARLY NORMAL AND LATE MATURER BOYS OF AGE GROUP OF 12 YEARS

Maturity Status	Number of Subjects	Percentage of distribution
Early	9	18
Normal	17	34

Late	24	48

Above table 1 has shown the percentage distribution of early, normal and late maturer of boys of 12 years age group. It has been observed from the above table that only 34% were normal in their maturity status and approximately 50% boys were late in their maturity and remaining 18% were early in their maturity status.

Table-2

DISTRIBUTION OF BOYS ON THE BASIS OF THEIR MATURITY STATUS OF THE AGE GROUP OF 13 YEARS

Maturity Status	Number of Subjects	Percentage of distribution
Early	10	20
Normal	10	20
Late	30	60

Table 2 has shown the distribution of number of male children and their percentage according to this maturity status for the children belonging to the chronological age of 13 years during their examination. It has been observed from the table that at the age of 13 years out of total 50 subjects only 10 (i.e. 20%) have been found to be normal. Whereas 30 subjects (i.e. 60%) are found to be late maturers and 10 (i.e. 20 %) are observed as early maturers. From the above results it is appeared that 60 % boys were lower in their maturity status as compared to their chronological age.

Table-3

PERCENTAGE DISTRIBUTION OF EARLY, NORMAL AND LATE MATURING BOYS OF AGE GROUP OF 14 YEARS

Maturity Status	Number of Subjects	Percentage of distribution
Early	02	04
Normal	23	46
Late	25	50

Table 3 has depicted the results of percentage distribution and the number of early, normal and late maturing boys of the chronological age group 14 years. After their examination the result has been found that out of 50 subjects only 2 (i.e. 4%) were found to be early in their developmental status out of remaining 48 subjects, 23 boys were normal in their developmental status were as 25 (i.e.50%) were late in their maturity status.

Table-4

DISTRIBUTION OF BOYS ON THE BASIS OF THEIR MATURITY STATUS FOR THE AGE GROUP OF 15 YEARS

Maturity Status	Number of Subjects	Percentage of distribution
Early	12	24
Normal	05	10
Late	33	66

Above table has depicted the number of subjects and their percentage distribution on the basis of their maturity status (i.e. early, normal and late maturers) for the boys belonging to the age group of 15 years during their examination. From the result it has been observed that out of total 50 subjects 66% (i.e. 33) were found to be late maturers were and 24 % (i.e. 12) were early and 10% (i.e. 5) were normal in

their maturity status. These finding explore the fact that high percentage of children are delayed in their developmental maturity.

Table-5

OVERALL STATUS OF MATURITY IN THE BOYS OF 12 TO 15 YEARS OF AGE GROUP

Age Group	% Early Maturers	% Normal Maturers	% Late Maturers
12 Years	18 %	34 %	48 %
13 Years	20 %	20 %	60 %
14 Years	4 %	46 %	50 %
15 Years	24 %	10 %	66 %

Table 5 depicts the overall maturity status of male children belonging to the age groups of 12 to 15 years. It is clear from the above table that in the age group of 12 years 48% boys have been found to be late maturers followed by normal maturers with 34% and the lowest percentage of early maturers i.e. 18%. In the age group of 13 years, percentage of late maturers has been increased to 60% followed by early and normal maturers both contain the same percentage (i.e. 20% each). Similarly percentage status of physiological development of the boys belonging to the other age groups up to the age of 15 years has been presented in the table 4.

From the above table it has been observed that highest percentage of late maturers is in the age group of 15 years i.e. 66% followed by 13 year of age i.e. 60%. In case of normal maturers, not even 50% boys were found to be normal in the maturity status in any age group.

The reason why we don't have desirable and fruitful results at international level in spite of good facilities, food training and abundance of talent.

Maximum percentage of normal maturers has been observed in the age group of 14 years i.e. 46%. It is again very hard to except that not only even 50% boys were found to be normal maturers in any age groups. These findings of biological status of boys indicate that in India sports competitions should be organized on the basis of their biological age instead of their chronological age. As chronological age based competition will be responsible for wrong selection of talent and will not give fruitful results. For example at the age of 15 years maximum percentage of boys were late maturers and their peak performance has yet to come but they are marked by early maturers of the same group whose peak performance level has started and performed better than late maturers. But when these early maturers get selected for higher level competition their performance level gets restricted. This may be comparison of decimal age with developmental age.

As the present study is a longitudinal study so chronological age of all the male children belonging to the age groups of 12 to 15 years was compared with their developmental age in all age groups from 12 to 15 years.

Comparison of Chronological Age and Developmental Age:

In the following tables an attempt has been made to make a comparison between chronological age and developmental age of boys in the age group of 12 to 15 years.

Table-6

VALUES OF TEST OF SIGNIFICANCE BETWEEN CHRONOLOGICAL AGE AND DEVELOPMENTAL AGE OF BOYS OF THE AGE GROUP OF 12 TO 15 YEARS

Age (in Years)	Mean Chronological Age (years)	Mean Developmental Age (years)	T-test Value
12	11.967	11.080	2.766 S**
13	13.000	11.180	3.578 S**
14	13.751	11.400	5.973 S**
15	14.952	13.220	3.899 S**

Table 6 has shown the comparison between chronological age and developmental age for the male children belonging to the age group from 12 to 15 years during their examination. From the results of above table, it has been observed that in the examination, chronological age and developmental age has shown statistically significant differences at 1% level in all the groups belonging to 12 to 15 years. In these age groups of boys passed lesser developmental age as compared to their chronological age in the first phase of testing and this difference is of approximately 2 to 3 years.

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