Evaluation of Developmental Age of Students of Age 16 and 17 Years

Abstract

In this research paper study is conducted to evaluate the developmental age of 16 and 17 years school going boys. For this purpose a data of 100 boys of age group 16 to 17 years has been collected from different schools of district Hoshiarpur (Punjab). All subjects divided into two groups i.e. 16 and 17 years. Each group has 50 students. Then their decimal age according to Tanner 1964 (table) and their developmental age according to B.D.I. method have been assessed. It has been observed that the subjects of age group 16 years out of 50 boys, 12%normal, 22 % early,66% were late mature and at age group 17 years out of 50 boys, 22% normal 16 % early 62 % were late mature.

Keywords: Evaluation, Mature, Developmental Age.

Introduction

Although every person experiences growth and development uniquely, the patterns are almost similar for all humans. Different tissues and different regions of the body mature at different rates, and the growth and development of a child consist of a highly complex series of changes. It is like the weaving of a cloth whose pattern never repeats itself. The underlying threads, each coming off its reel at its own rhythm, interact with one another continuously, in a manner always highly regulated and controlled.

At every stage of life, there are physical and psychological changes in the human body. Human beings like other animals start life a single fertilized ovum, in mother's womb, develop into infants in the womb and then meet the large world of adulthood through an organized and channelized phenomenon of growth. Growth and development in humans occurs over a lifetime. Growth, development and maturation, these three concepts are more often used together and sometimes considered as synonymous. But it is important to realize that growth, development and maturity are essentially three different concepts. Growth implies changes in size and shape only, development means the integrated functioning of the body, emotional makeup and motor behavior etc, while maturity means maturation of various biological systems towards the adult status. In layman's language, growth of a human being is the increase in size and shape of the body. It starts in mother's womb as a zygote and continuous at the age of approximately 18 years from the birth. In case of males, it takes twenty years for completion from conception. However, in case of females it is shorter by approximately two years i.e. takes place up to years.

Malina (1977) compared maturity status of male athletes with non athletes and found that athletes are generally advanced in their maturity status as compared to their counterpart non athletes. But the finding in case of female's adolescent athletes was generally opposite to those of male adolescent athletes. In female athletes maturity was delayed. In many research papers and studies shows that regular training accelerates the growth process. Increase in stature and weight has also been seen when regular endurance training was given. (Godin 1920, Ekbom 1969, Ericon 1972). It is important to know that children subjected to training were adolescents. Thus it is very difficult to attribute these differences to the specific effect of exercise.

Methods and Materials

Collection of Data

The body Development index of 50 subjects of each group was calculated. The variations in the growth were also determined by considering the mean values of chronological and developmental ages. Such variation can in to three categories viz early, normal and late

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developers. For examples subjects having one year difference considered as normal individual. The subjects having difference of two years or more in ascending manner are considered as early matures and the subjects having the difference of two years or more in descending manners considered as late maturates.

The body development index (BDI) was determined by taking the following Anthropometric measurements

1. Body weight (kg)
2. Body height (cm)
3. Forearm circumference (cm)
4. Bicrominal breadth (cm)
5. Billiospinal breadth (cm)

The formula to calculate BDI was used to find out body development index of each subject, the method is explained as follows

$$B.D.I. = \frac{\text{Middle Breadth} \times \text{Forearm circumference Breadth}}{\text{Body Height (cm)} \times 10}$$

$$\text{Middle Breadth} = \frac{\text{Bicromial Breadth} + \text{Biliospinable Breadth}}{2}$$

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

$$\text{R. I. (Rohrer Index)} = \frac{\text{Body Weight (kg)}}{\text{Body Height}^3 \text{ (meters)}^3} \times 10$$

The data of 100 boys ranging in age from 16 to 17 years were collected from different schools of the district Ludhiana (Punjab). The subjects were divided into 2 age groups i.e. 16 and 17 years. Each group contains 50 subjects. The date of birth was converted into decimal age and categorized in to 2 age groups. The subjects following in the age groups of 15.501-16.500 were considered as 16 years and age group of 16.501- 17.500 were considered as 17 years was formed.

Table-1
Categorized Different Age Groups
Onsideration 13 to 14 Years

Age group	Age Group Considered as	No. of Subject
15.501 to 16.500	16 years	50
16.501 to 17.500	17 years	50

Total no of subjects examined = 100

Age (Years)

The date of birth of each subject was taken from the documentary record of the school and the date of birth data were converted into decimal age by using Tanner's calendar (1964).

These 100 boys of different schools of Punjab examined their developmental level of age groups of 16 and 17 years.

Statistical Analysis

"T" ratio was used to find out significance difference between the different age group of school boys of Punjab.

Findings

The finding of the study are as under

Table-2
Mean and F Ratio of Decimal Age for
13 to 14 Years Old Boys

Age group	Age Group Consider as	No. of sub	Mean Decimal Age	S.D
15.501-16.500	16 Years	50	14.751	.268
16.501-17.500	17 Years	50	16.952	.327

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 16 to 17 years.

Table- 03
Values of test of Significance Between
Chronological age and Development age of Boys
of the age Group of 16 and 17

Age (in Years)	Mean Chronological Age (years)	Mean Developmental Age (years)	T-test Value
16	15.861	16.340	5.973 S**
17	16.751	17.400	3.899 S**

Table- 04
Percentage Distribution of early, Normal and Late
Maturing Boys of age Groups of 16 Years

Maturity Status	Number of Subjects	Percentage of distribution
Early	11	22
Normal	06	12
Late	33	66

Table- 05
Percentage Distribution of early, Normal and Late,
Maturing Boys of age Groups of 17 Years

Maturity Status	Number of Subjects	Percentage of distribution
Early	08	16
Normal	11	22
Late	31	62

Discussion

The table no-02 has presented the mean and standard deviation values of Decimal Age for all the boys belonging to the age group of 16 and 17 years. The first age group which contains the boys belonging to the age group of 15.501 to 16.500 years has shown the mean decimal age is 14.751years with standard deviation as 0.268 and in second age group 16.952 years with S.D. value as0.327 respectively.

The table no- 03 has shown the comparison between chronological age and developmental age for the male children belonging to the age group from 16 and 17 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 the groups belonging to 16 and17 years. In these age groups of boys passed lesser developmental age as compared to their chronological age in the testing and this difference is of approximately 2 to 3 years.

The table no- 04 has depicted the results of percentage distribution and the number of early, normal and late maturing boys of the chronological age group 16 years. After their examination the result

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has been found that out of 50 subjects only 11 (i.e. 22%) were found to be early in their developmental status out of remaining 40 subjects, 06 boys (12%) were normal and 33 (66%) were late in their developmental level.

The table no- 05 has depicted the number of subjects and their percentage distribution on the basis of their developmental level (i.e. early, normal and late developer) for the boys belonging to the age group of 17 years during their examination. From the result it has been observed that out of total 50 subjects 16% (i.e.08) were found to be early developer and 22 % (i.e.11) were normal and 62% (i.e.33) were late in their developmental level. These finding explore the fact that high percentage of boys are delayed in their developmental level.

Conclusion

After Evaluation It has been observed that from the subjects of age group 16 years 06 boys (i.e.12%) were normal in their developmental age out of 50 boys, 11 boys (i.e.22 %) were early and 33 boys (i.e.66%) were late mature and age group of 17 years 12 boys were normal in their developmental age out of 50 boys (i.e.20%) 8 boys were early (i.e. 16 %) and 30 boys are (i.e. 64 %) were late mature.

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