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Assessment of developmental level of school going boys of age 13 and 14 years of Punjab state

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Abstract
In this research paper study is conducted to assess the developmental level of 13 and 14 years school going boys. For this purpose a data of 100 boys of age group 13 to 14 years has been collected from different schools of Punjab. All subjects divided into two groups i.e. 13 and 14 years. Each group have 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 13 years out of 50 boys, 10% normal, 20% early, 70% were late mature and at age group 14 years out of 50 boys, 30% normal 18% early 52% were late mature.

Keywords: developmental level, school going boys, Punjab state

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.

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. At every stage of life, there are physical and psychological changes in the human body.

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.

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.

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 were generally opposite to those of male adolescent athletes. In female athletes maturity was delayed.

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The Present Study Is Done To Assess the Developmental Level of School Going Boys of Age 13 and 14 Years of Punjab State

Objective of the Study
1. To assess the developmental level of boys.
2. To assess the terms of early, late and normal developmental level.

Methodology
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 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 (kgm)
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: -

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

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

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

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

The data of 100 boys ranging in age from 13 to 14 years were collected from different schools of the district Ludhiana (Punjab). The subjects were divided into 2 age groups i.e. 13 and 14 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 12.501-13.500 were considered as 13 years and age group of 13.501- 14.500 were considered as 14 years was formed.

Table 1: Categorized different age groups consideration 13 to 14 years

Age group	Age group considered as	No. of subject
12.501 to 13.500	13 years	50
13.501 to 14.500	14 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 13 and 14 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
12.501-14.500	13 Years	50	12.751	.268
13.501-14.500	14 Years	50	13.952	.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 13 to 14 years.

Table 3: Values of test of significance between chronological age and development age of boys of the age group of 13 and 14

Age (in Years)	Mean Chronological Age (years)	Mean Developmental Age (years)	T-test Value
13	12.861	13.340	5.973 S**
14	13.751	11.400	3.899 S**

Table 4: Percentage distribution of early, normal and late maturing boys of age groups of 13 years

Maturity Status	Number of Subjects	Percentage of distribution
Early	10	20
Normal	05	10
Late	35	70

Table 5: Percentage distribution of early, normal and late, maturing boys of age groups of 14 years

Maturity Status	Number of Subjects	Percentage of distribution
Early	09	18
Normal	15	30
Late	26	52

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 13 and 14 years. The first age group which contains the boys belonging to the age group of 12.501 to 13.500 years has shown the mean decimal age is 12.751 years with standard deviation as 0.268 and in second age group 13.952 years with S.D. value as 0.327 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 13 and 14 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 13 and14 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 13 years. After their examination the result has been found that out of 50 subjects only 10 (i.e. 20%) were found to be early in their developmental status out of remaining 40 subjects, 05 boys (10%) were normal and 35 (70%) 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 14 years during their examination. From the result it has been observed that out of total 50 subjects 18% (i.e.9) were found to be early developer and 30% (i.e. 15) were normal and 52% (i.e. 26) were late in their developmental level. These finding explore the fact that high percentage of boys are delayed in their developmental level.

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