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ISSN: 2278-9529

GALAXY

International Multidisciplinary Research Journal

Vol. 3, Issue-IV July 2014



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Comparative Study on Balance and Coordination of 12 and 13 Years Boys

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Introduction

Human beings differ in many ways in their external body form. The variations in physical out look of human are interesting an aspect which has tempted the scientists to analyze and classify them. Morphological characteristics have an important role to play in the performance of various physical activities. Research findings shows that performance is significantly related to body weight, height, arm length, thigh and calf circumference and other parameters. Sexual maturation should be used to assess the extent of biological growth and development and the individual nutritional needs of adolescents in place of chronological age. Children grow at different rates at different ages, and different children also develop at different rates, so there will be early and late developers. Not only are the rates of growth different, but also the changes in the body proportions can vary, and this will directly affect the ability to perform. A sound knowledge of processors of growth and development will enable coaches and physical education teaches who are working with children, to organize the training programs that will be more beneficial to the children from a physical and psychological perspective. Performance means to get into action as much higher degree as possible. There are four major groups of factor that are responsible for athletic performance. (i) Genetic traits. (ii) Acquisition of specific skills, (iii) Specific type and level of physical fitness, (iv) General psychological fitness. Sports performance is a unity of execution and result of sports action or a complex sequence of sports action measured or evaluated according to agreed and socially determined norms. The general anthropometric measures are depending upon the genetic factor, one inherited from his ancestors who ultimately influence the athletic performance. Performance related fitness, is necessary for the execution of sports skill. Speed, strength, power, endurance, balance, co-ordination, agility, reaction time etc., are the components of performance related fitness. It is for the performers who targeted for a goal.

The Purpose of the study

- 1) To observe the Balance ability status of 12 - 16 years boys.
- 2) To observe the Coordination status of the said group of boys.
- 3) To analysis and compare the age wise differences, if any, the Balance ability and Coordination among the 12 - 16 years boys.

Methodology

Subjects

The subjects of the present study were selected randomly from the school Naihati Narendra Vidyaniketan, 24 Pgs (N), WB,India. Thirty students of each age group's i.e. total 60 male

students were selected for this purpose. According to facilities available and on the basis of contact with the school authorities the subjects were selected randomly.

Criterion Measured

Parameters	Measured by
1) Balance (min)	Stork Stand
2) Coordination (No. of times in 30s)	Wall pass

The data on the Balance ability and Coordination were analyzed by applying ANOVA to find out significant differences if any among the age groups.

Results & Discussion

Discussions were made on the basis of the findings of the present study and compared with available literatures. The level of significance to assess the statistical values obtained was set at 0.05 and also 0.01 level of confidence.

Stork Stand

Table-1: Mean and SD of Stork Stand (min) between the two groups.

Age of subjects	Mean	SD
12 yrs.	65.87	24.94
13 yrs.	87.97	44.52

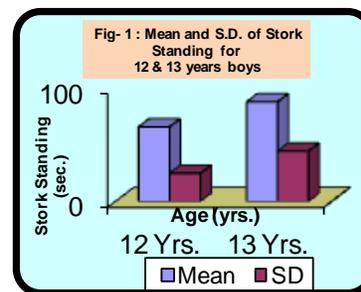


Table-2: ANOVA between the two age groups for Stork Stand (min)

Source of variance	SS	df	MS	F
Between Groups	36575.02	4	9143.76	4.18 **
Within Groups	308396.48	141	2187.21	
Total	344971.51	145		

* Sig. at 0.05 levels

** Sig. at 0.01 levels, NS –Not significant, $F_{0.05(4,141)} = 2.44$, $F_{0.01(4,141)} = 3.46$

Since the mean scores of the two groups were not equal, analysis of variance was computed to find out the significant difference between the means. It appeared from the Table-2 that the computed 'F' value was 4.18 which were higher than the table value of 'F' to be significant. Gallahue (1982) reported from the findings of Kcogh (1965), De Oreo (1971) and Van Slooten (1973) that static balance ability of children showed a linear trend toward improved performance with age from 2 through 12 years. Geuze (2003) opined that the development of static balance is

a basic characteristic of normal motor development. Most of the developmental motor tests include a measure of static balance. The results showed improvement of static balance with age. So, from the findings of study and analyzing the relevant data it appeared that 13 years boys had better balance ability than the 12 years group.

Coordination

Table-3: Mean and SD of Wall pass (cm.) between the two groups.

Age of subjects	Mean	SD
12 yrs.	22.67	3.15
13 yrs.	25.30	1.80

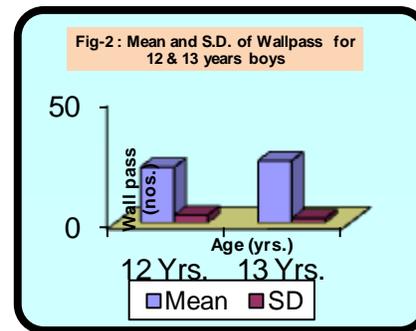


Table-4: ANOVA among the five age groups for weight (Kg.)

Source of variance	SS	df	MS	F
Between Groups	250.54	4	62.03	16.91 **
Within Groups	522.15	141	3.70	
Total	772.68	145		

Analyzing the present study it was observed that 13 years boys had performed better than 12 years group. Therefore, it may be inferred that the wall pass performance score was related to the age of the subjects. It appeared from the Table-4 that the mean scores of wall pass were not equal. Analysis of variance was computed to find the significant difference between the mean scores. It appeared from the above table that the computed 'F' value was 16.91 which were much higher than the table value of 'F' to be significant. Mean scores of wall pass were statistically different. Barnekow-Bergkvist et al. (1998) found that performance in physical tests; height, weight and physical activity at the age of 13 contributed best of explain adult physical performance and physical activity. Therefore, it may be concluded that so far wall pass was concerned age factor was responsible for the higher mean value. 13 years boys having higher age, they had significantly performed better in comparison to 12 years boys. Balance and coordination were also related to limb length, general musculature and neuromuscular coordination, which are definitely influenced by the advancement of age. The remaining motor performance is related to lean body mass, general musculature, aerobic capacity and certain psychological state of mind (willingness to accept pain) and development of all of which are influenced by advancement of age. Therefore, it is obvious that 12 years group will have less motor quality than that of 13 years group because of structural and functional differences with the higher age groups. From the foregoing discussion of the leading researchers it has also been

evident that the growth and development of body parts and functional capacity of the organs and systems improve rapidly during pre-pubertal stage and each year during this stage results significant improvement in stature. Obviously, this improvement will have a bearing on motor performance. Chatterjee et al. (1992) has also reported that gradual increase in motor fitness measurements with the advancement of age on school going boys of 9-12 years age. The morphological status had played significant role in motor performance of the higher age groups. Coordination is the function of nerve and muscles. With the advancement of age motor quality develops with the refinement of the muscle action coordination by an efficient neural control. Therefore, it is expected that during pre-adolescent stage with the advancement of age (12-16 years) the motor activity involving neuromuscular coordination will also increase.

In modern sports, the anthropometric measurement and their relationship with various motor abilities are an important guide for coaches for classification and selection of sportsperson according to their age, ability etc. From this it may be concluded that morphological characteristics have an important role to play in the performance of various physical activities. Extensive studies available around the periphery were also insufficient to bridge the gap in the knowledge of the influence of multifarious factors on physical and motor performance development of the adolescent boys between 12-16 years of age. Furthermore, due to lack of tests as well as norms based on State variation were not readily available in India, which was a matter of great concern, while dealing with the developing the evaluation process of the secondary examination, the development of Physical Education extension program and also the selection of the talented boys for sports.

Conclusions

Stork Stand

- 13 years group were performed better than 12 years group in respect of age.

Coordination

- Wall pass performance score was related to the age of the subjects. Better score was observed in 13 years boys.
- Mean scores of Wall pass were statistically different.

Recommendations

1. The present study was delimited only to male students; the same type of study may be made with female students.
2. Similar investigation may be done using different growth and motor performance parameters other than those used in the study. Psychological and Physiological parameters which were not considered in the present study.
3. Similar study may be conducted on large samples and age groups other than those used in the study.
4. A comparative study can be undertaken using the same parameters of Indian and foreign subjects.
5. Similar study may be done using tribal and non tribal boys and girls.

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