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A study of motor coordinative ability in pre-adolescent and adolescent boys

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Abstract
The aim of the present study was to assess development of motor coordinative ability during pre-adolescence and adolescent period among boys. This study was carried out on 300 t boys studying in various schools operational in Chhattisgarh. The age range of selected subjects was 12 to 17 years. Motor coordinative ability of selected subjects was assessed with the help of Cooper's Modified JCR test. Results revealed a continuous improvement in motor coordinative ability of boys during from pre-adolescence and during adolescence period. The results are discussed in the light of theories related to motor coordinative abilities.

Keywords: Motor coordinative ability, pre adolescence, adolescence

Introduction
The term motor is evolved from the association of a nerve or nerve fibre to the one that joins the central nervous system with muscles through their convections. This ultimately produces movement. Useful motor movement can only occur if there is smooth combined effort of muscular and the nervous system. The activities that engross hanging, jumping, dodging, leaping, kicking, bending, throwing enables a person to perform his daily work much effectively without reaching a point of wearing out, so quickly. To perform any physical act a proper bodily coordination is required. The various coordinative abilities are agility, balance, reactive ability, rhythmic sense and orientation. These abilities are important for effective human movement to perform certain tasks. Certain tasks although looks simple are actually complex motor tasks such as pouring water in a glass (Scholz, *et al.*, 1999) [11]. Effective motor movement can only be achieved if the muscle and nervous system work harmoniously. It helps to keep a wider gap between fatigue and peak performance. The activities involving hanging, jumping, dodging, leaping, kicking, bending, throwing allow a person to perform his daily work very effectively without getting to a point of wearing out, so fast. One such motor coordinative ability is agility. Agility was defined as "the physical ability that enables rapid and precise change of body position and direction" (Johnson & Nelson, 1986) [5]. Agility is the ability of the body or parts of the body to change direction quickly and to control body movement (Hockey, 1973) [3]. Agility is the ability to change the direction of the body in an efficient and effective manner. The main component of agility are balance, speed, strength and coordination. It is the ability to maintain equilibrium when stationary or moving through the coordinated actions of our sensory functions. The static balance is the ability to retain the centre of mass above the base of support in a stationary position while dynamic balance is the ability to maintain balance with body movement. Speed is the ability to move all or part of the body quickly while strength is the ability to of a muscle or muscle group to overcome a resistance. Coordination required to control the movement of the body in co-operation with the body's sensory functions e.g. catching a ball (ball, hand and eye co-ordination)

Adolescence is a transitional stage between childhood and adulthood of physical and mental human development. This transition involves biological (i.e. pubertal), social, and psychological changes, although the biological or physiological changes are the most objectively measurable. Number of researchers namely Williams (1983) [14], Ruiz *et al.* (2003) [10], Lopes *et al.* (2011) [6], Ulrich (1987) [12], Ghai *et al.* (2007) [2], Orit Bart (2007) [8], Panagopoulou *et al.* (2008) [9], Houwen, S. *et al.* (2010) [4], Vasilios Tsimaras *et al.* (2011) [13],

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Nayak (2015) [7], Fernandes Fernandes et al. (2016) [1] studied motor coordinative ability from various perspective but the development of motor coordinative ability i.e. agility among pre-adolescent and adolescent boys has not been studied so far. Hence the present study was planned.

Hypothesis
It was hypothesized that motor coordinative ability as assessed by agility will show continuous improvement during the course of pre-adolescent and adolescent period among boys.

Methodology
Sample
This study was carried out on 300 adolescent boys studying in various schools operational in Chhattisgarh. The age range of selected subjects was 12 to 17 years. 50 subjects from every age group was selected. Random sampling method was used in the present study.

Tools
The motor coordinative ability of selected pre-adolescent and adolescent boys was assessed with the help of Modified JCR test battery of Cooper. Shuttle run item of this test battery was used to assess agility among pre-adolescent and adolescent boys. This test is highly reliable and valid. The motor coordinative ability was judged on the basis of shuttle run timings.

Procedure
300 school boys between the age range of 12 to 17 years were selected as sample. Shuttle run test item of Cooper's Modified JCR was conducted under the supervision of researcher. Shuttle run timings were tabulated for each age group. Descriptive statistics and Pearson correlation coefficient was computed. Results are shown in table 1 and 2 respectively.

Result and Discussion

Table 1: Descriptive Statistics (Mean and S.D.) of Selected Tribal Boys on Motor Coordinative Ability (Agility) with Varying Age Groups

Age Groups	N	Mean	S.D.
12 Years	50	31.28	3.55
13 years	50	31.20	2.95
14 years	50	26.34	1.55
15 years	50	25.68	1.39
16 years	50	25.06	1.74
17 years	50	23.43	0.95

Table 2: Correlation Coefficient (r) between Age and Motor Coordinative Ability among Pre-Adolescent and Adolescent Boys

	N	Agility
Age	50	-.792**

** Significant at .01 level

Perusal of correlation coefficient of -.792 as shown in table 2 reveal statistical significant but negative association between age and motor coordinative ability of selected pre adolescent and adolescent school boys. The descriptive statistics given in table 1 also indicate decrease in shuttle run timings with advancing age. The shuttle run timings in boys belonging to 12 years age group was 31.28 followed by 31.20 for age group 13, 26.34 for age group 14 years, 25.06 for age group 16 years and 23.43 for 17 years age group. The descriptive statistics and correlation coefficient clearly indicate a decreasing trend in shuttle run timings i.e. increasing motor coordinative ability with age in selected subjects.

Conclusions based on AAHPER Youth Fitness Test (1976) revealed that agility of boys increases throughout childhood period. After 13 years of age agility in boys keep on enhancing. This may be due to the fact that boys actively participate in physical activity and results shown that agility enhances all through childhood to adolescent period due to participation in physical activity (Williams, 1983) [14].

Conclusion
On the basis of results it may be concluded that motor coordinative ability in boys keep improving from childhood to adolescent period hence a proper physical activity program should be designed for boys to development of motor coordinative ability in boys during childhood to adolescent period.

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