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The Effect of Physical Exercise on Motor Ability Measures

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***Abstract*—In this present study the investigator has selected four motor abilities and four from coordinative abilities are assessed by using separate standardized test. The results of test does not depends upon the other.**

***Keywords*— motor abilities, coordinative abilities, fitness ability.**

I. INTRODUCTION

The analysis of data in various motor ability test did not found any significant difference among 11 to 14 year school boys. Insignificant difference might be the subject age 11, 12, 13 and 14 years is still developing stage of various motor and fitness ability and they are all restricted in similar physical activities in school.

Similarly in case of analysis of data revealed that variances existed among different age groups in all four coordinative ability test, such as differentiation ability, space orientation ability, dynamic balancing ability and reaction ability has linear increase was shown in most of the cases with the advancement of age.

The results of the study indicates that the differentiation ability, 14 years school boys had shown the best performance and 11 year school boys had the lowest performance. This may be due to the fact that differentiation ability greatly depends upon the mental development, which has two important aspects; sensation and perception. A boy lack in both, and at this time he does not have a precise parameters of motor process and those existing in one's mind. But gradually this ability of perception gets developed and reaches the peak of perceptual pattern of a more refined and organized form at the time of adolescence.

In case of orientation ability of the subjects the same trend was observed as in differentiation ability. 14 years school boys were superior in orientation ability compare to all other age groups. It is clearly indicates that orientation ability of the subjects increased with the advancement of age as it depends upon a number of abilities, such as, perception of position, movement space, the mechanics to change the position etc. In fact there abilities are largely related with the mental abilities of the individuals.

Balancing ability of the subjects was also seen linear improvement as age increases. This may be because of the fact that the ability to maintain balance in static state depends primarily on Kinesthetic, tactile and to some extends on vertibular sense organs. Vision also assists in producing information about body's position with regard to its environment. Even with the destruction of the vertibular apparatus, vision can compensate and allow the person to maintain a degree of equilibrium. Therefore, the various sense organ involved are necessary biological pre-requisites for the improvement of balance ability. Thus with the advancement of

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age, the functional capacity of these sense organs are enables in improving balancing ability to great extend. The findings of the result in reaction ability of the subjects was shown improvement with the age advancement. This can be attributed because of the fact that reaction ability is not a single ability, reaction time includes sense-organ time, brain time, nerve time and muscle time. Hence, it is clear that reaction time in the ability which depends upon both mental and motor abilities which on the other hand develops with the advancement of age.

Motor ability measures

*Balance beam walking***.**
Children attempted to walk across an 8-ft-long-by-1.5-in.-wide (2.44 m 3.81 cm) beam placed 4 in. (10.16 cm) off the ground. Distance traveled on the beam was recorded.

Balancing block on head.
The experimenter balanced a small wooden block on each child's head. Children were permitted to adjust the block if they felt it was balanced poorly and then were asked to walk beside a wall, up to 12 ft (3.66 m), or until the block fell off their head. Children were not allowed to touch the wall. The distance traveled before the block fell was recorded.
Balancing on one foot.
Children stood comfortably in the middle of a room, closed their eyes, and were instructed to hold the foot of their choice in front of them while balancing on the second foot. The time children maintained balance without hopping or placing their second foot on the ground was recorded.

Ball retrieving by hand.
Nine tennis balls were spread around a medium-sized rectangular room. The balls were placed uniformly for all children, at distances ranging from 38 to 120.5 in. (96.52 – 306.07 cm) from a box placed on the floor in the center of the room. Children retrieved balls one at a time, in any order, and returned them to the box. The time from leaving a uniform starting position until the final ball was placed into the box was recorded.

*Ball retrieving by foot***.**
Four tennis balls were spread around the same room. Again, balls were placed uniformly for all children, at distances ranging from 53 to 120.5 in. (134.62 – 306.07 cm) from a box placed on the floor. In this case, the box had a sloped entry on one side, and a small lip at the top of the entry to retain balls inside the box. Children were permitted to use only their feet to push the balls into the box. On the rare occasion when a child attempted to use his or her hands, the experimenter redirected the child and replaced the ball where it had been. Again, children retrieved only one ball at a time, in any order, and the time from leaving a uniform starting position until the final ball was placed into the box was recorded.

Water pouring.
Children stood beside a small table and were given a measuring cup filled with 500 ml of water. Children were successively given six other containers and poured the original water from one container into the next. Four containers had wide openings and two had small openings approximately the size of plastic milk jugs [1.5 in. (3.81 cm) diameter]. Children were cautioned that time was unimportant in this task; focusing on avoiding spills was more critical. The last container children poured water into was the same measuring cup used at the beginning, allowing the experimenter to record the amount of water left and compute the quantity of spilled water.

Beanbag tossing.
Children stood in a small box marked on the floor and were given a beanbag. A large bucket with a 10-in. (25.4 cm) diameter opening was placed 6 ft, 10 in. (2.11 m) from the child. Children made seven attempts to throw the beanbag into the bucket. The experimenter recorded the number successfully tossed.

II. Injury Risk Measures

While children completed the laboratory battery, their mothers completed several questionnaires. The only questionnaire pertinent to the present study was the Unintentional Injury Questionnaire (UIQ), which asked parents to report all lifetime injuries children experienced that required a visit to a doctor or hospital. Details concerning the UIQ are available elsewhere (Plumert, 1995).

After completing the laboratory session, families were invited to complete a daily injury diary to record all injuries that the children incurred over the subsequent 14 days. Eighty-five (85%) of the families agreed to complete diaries and returned them. Details about diary administration are available elsewhere (Schwebel, Binder, & Plumert, 2002), but briefly, parents recorded on a daily basis the circumstances of each injury, minor or major, that children incurred. Administration allowed for forgotten days (22% of families in this study skipped one or more days but still provided complete 14-day diaries); diaries were completed only during warm parts of the year, when children tend to play outdoors. To deal with possible misinterpretations concerning what constituted an ''injury'' (Peterson, Brown, Bartelstone, & Kern, 1996), families were instructed to record anything they considered injurious to the children in the diary and coders later reviewed the recorded injuries and removed any injuries that did not include either tissue damage or pain on the part of the child.

After diaries were returned, research assistants coded the severity of each injury on a 4-point scale. The most minor injuries—those requiring no treatment—were scored 1. Minor injuries requiring home first aid were scored 2; those that were more major, but still did not require professional medical treatment were scored 3. Unlike injuries scoring 2, injuries coded with a severity of 3 generally required multiple types of treatment (e.g., washing, ointment, and bandages) or required substantial amounts of time for treatment (e.g., cleansing and bandaging for more than 5 min). Finally, those injuries requiring professional medical treatment were scored 4. To assure reliability, injury severity was coded independently by two research assistants on a randomly selected 16% of the sample; $j = 1.00$.

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