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Analysis of BMI and motor skills among children aged 6-8 years

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Abstract

The purpose of the study was to analyze the BMI and Motor Skills among school Children. For this purpose, forty (n=40) school children were selected from Vivekananda Vidyashram Matriculation Higher Secondary School, Vannarpettai, Tirunelveli, Tamil Nadu, India during the academic year 2017 - 2018. The subjects' age ranged between 6 to 8 years. The BMI and motor skill variables such as Running ability, Jumping ability and Hopping ability were selected for this study. The selected motor skill variables were assessed by using the standardized test manual (TGMD-2). The collected data on the selected variables were treated with descriptive statistics and simple correlation at 0.05 level of confidence. The results of the study indicate that the children had significant relationship in Motor skills such as Jumping ability and Hopping ability when compared with BMI and also that the children had no significant relationship in Motor skill such as running ability when compare with BMI.

Keywords: BMI, motor skills, TGMD-2

Introduction

Motor ability can be defined as a person's movement coordination quality when performing various motor skills, ranging on a continuum from gross to fine motor skills. Nevertheless, the majority of available studies on motor skill ability in overweight and obese children focus wholly on gross motor skills, like balance and gait. In laboratory settings as well as in standardized field tests, it has been shown that overweight and obese boys display impaired performances on several static and dynamic postural skills (Deforche, Hills, Worringham, Davies, Murphy, Bouckaert, & De Bourdeaudhuij, 2009; Goulding, Jones, Taylor, Piggot, & Taylor, 2003) [7, 2].

Children grow continually throughout their childhood years. Specifically, a critical period for the acquisition of motor skills is preschool years because motor skills and fundamental neuroanatomic structure show significant development, elaboration, and myelination (Denckla, 1974) [3]. Many factors contribute to the ability and the rate that children develop their motor skills. Unless having a severe disability, children are expected to develop a wide range of basic movement actions and motor skills (Malina, 2004) [4].

Motor skills are movements and actions of the bone structures. Typically, they are considered into two groups: gross and fine motor skills. Gross motor skills are involved in movement and coordination of the arms, legs, and other large body parts and movements. Example actions such as running, crawling and swimming. Fine motor skills are involved in smaller movements that occur in the wrists, hands, fingers, feet and toes. Example such as picking up objects between the thumb and finger, writing carefully, and even blinking. These two motor skills work together to provide coordination.

Purpose of the Study

Keeping the above concept, the purpose of the study was to analysis the BMI and motor skills such as running, jumping and hoping abilities among school children aged 6-8 years.

Methodology

Participants

To achieve the purpose of the study, Forty (n=40) school children from Vivekananda

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Vidyashram Matriculation Higher Secondary school, Vannarpetai, Tirunelveli, Tamil Nadu, India where selected

as subjects at random and their age ranged between 6 to 8 years.

Variables and test items

Criterion variables	Test items	Units of measurement
BMI	BMI Method by using Peters formula	In Kilogram
Running ability	60feet run test	In seconds
Jumping ability	Horizontal jump	In meters
Hopping ability	Single leg hopping	In meters

Statistical Techniques

The collected data were analyzed by using the descriptive statistics and simple correlations with the help of SPSS version 20.0. All of the analysis tests were computed at 0.05 level of confidence ($p < 0.05$).

Analysis of Data

Table 1: The summary of descriptive statistics and simple correlation value on BMI and running ability among children aged 6-8 years

Variables	N	Mean	S.D	Obtained r_{12} value
BMI	40	15.93	1.67	0.23*
Running Ability	40	6.15	1.03	

*Significant at 0.05 level. The table value $r_{78} = 0.22$.

From the table above, the obtained mean value on BMI and Running ability among children aged 6-8 years are 15.93 and 6.15 respectively. The obtained simple correlation value between BMI and running ability is 0.23 which is higher than the tabulated 'r' value of 0.22 with df 78 at .05 level of confidence. It was concluded that there was significant relationship between BMI and Running ability among school children aged 6-8 years.

Table 2: The summary of descriptive statistics and simple correlation value on BMI and jumping ability among children aged 6-8 years

Variables	N	Mean	S.D	Obtained r_{12} value
BMI	40	15.93	1.67	0.41*
Jumping Ability	40	6.05	1.74	

*Significant at 0.05 level. The table value $r_{78} = 0.22$.

From the table above, the obtained mean value on BMI and Running ability among children aged 6-8 years are 15.93 and 6.05 respectively. The obtained simple correlation value between BMI and running ability is 0.41 which is higher than the tabulated 'r' value of 0.22 with df 78 at .05 level of confidence. It was concluded that there was significant relationship between BMI and jumping ability among school children aged 6-8 years.

Table 3: The summary of descriptive statistics and simple correlation value on BMI and hopping ability among children aged 6-8 years

Variables	N	Mean	S.D	Obtained r_{12}
BMI	40	15.93	1.67	0.28*
Hop	40	8.56	1.15	

*Significant at 0.05 level. The table value $r_{78} = 0.22$.

From the table above, the obtained mean value on BMI and Running ability among children aged 6-8 years are 15.93 and 8.56 respectively. The obtained simple correlation value between BMI and running ability is 0.28 which is higher than the tabulated 'r' value of 0.22 with df 78 at .05 level of confidence. It was concluded that there was significant relationship between BMI and hopping ability among school

children aged 6-8 years.

Discussion on Findings

The result of the study indicates that there was a significant relationship between BMI and selected motor skill variables among School children aged 6-8 years.

The study by Graf *et al.*, (2004) [6] suggested that obesity hampers motor performance in youth without ID, but it is important to note that previously reported correlations between measures of body composition and motor skills have been small to moderate (range = -0.10 to -0.33).

The study by D'Hondt (2009) investigated gross and fine motor skill in overweight and obese children compared with normal-weight peers.

Conclusion

The following conclusions were drawn from the present study.

1. There was a significant relationship between BMI and running ability among school children aged 6-8 years.
2. There was a significant relationship between BMI and jumping ability among school children aged 6-8 years.
3. There was a significant relationship between BMI and hopping ability among school children aged 6-8 years.

Recommendations

With the help of results derived from the present study, the following recommendations can be made.

1. The results of the present study can be very much useful for Physical educators, coaches and trainers for screening and selecting potential children at school level.
2. The findings of this study can help trainers and coaches in systematizing and modifying their training at various levels.
3. Further, the results of the study can help to frame different methods of training by laying emphasis on the development of factors which are significantly related to performance at different levels.
4. It may be recommended that the present study may be repeated by selecting subjects belonging to lower age groups.

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