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Analysis of Running Speed and Agility among School Children Aged 7-12 Years

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ABSTRACT
The purpose of the study is to analyze the running speed and agility abilities among 7-12 aged School Children. To achieve the purpose of the study, two hundred school children were selected (n=200) from Sri Sarada Vidyalaiya Higher Secondary School, Ariyakulam, Little Flower Public School, Gandhi Nagar, Govt. Higher Secondary School, Gankaikondan, Tirunelveli District, Tamil Nadu, India as subject by stratified random sampling and their age ranged between 7 to 12 years. The selected participants were divided following category: area (Rural and Urban), and Gender (Boys and Girls). Member of these groups will consist of healthy school children from Tirunelveli District only. Prior to enrollment in the study, participants were informed of all possible risks involved in this study.The continuous variables selected for this study were running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two legged side hop. All the subjects were tested by BOT 2. Static group comparison design was used for this study. A collected data by stratified random sampling were divided into the following category: Area (Rural and Urban) and Gender (Boys and Girls). The collected data were analyzed data by using the independent t-test with the help of SPSS software. Rural and urban school children had significant difference on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop. However, urban school children aged 7-12 years outperformed than rural school children on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One-legged Side Hop and two-legged side hop. The boys & girls school children had significant difference on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop. However, boys school children outperformed than girls school children on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop.

Key Words: Balance Beam, One-Legged Stationary Hop, One- Legged Side Hop, One- Legged Side Hop And two-Legged Side Hop, BOT 2.

1. Introduction

Running speed and agility are critical components of motor skill development during childhood, particularly in the age range of 7-12 years, when children experience significant physical and cognitive growth. These abilities are essential not only for sports performance but also for overall physical fitness, coordination, and the ability to engage in daily physical activities. During this period, children's neuromuscular systems undergo rapid maturation, allowing for improvements in balance, coordination, and reaction time, all of which are necessary for speed and agility. Studying these abilities in school children can reveal important insights into how environmental factors, such as access to play spaces and physical education programs, as well as biological factors like gender, influence motor skill development. Differences in running speed and agility between children from rural and urban backgrounds, as well as between boys and girls, can help educators and policymakers tailor physical education programs to meet the needs of diverse groups, ensuring that all children have the opportunity to develop strong

motor skills. Understanding these variations is particularly important in designing interventions that foster healthy development and combat the growing trend of sedentary lifestyles among children, especially in urban areas. Thus, analyzing running speed and agility in school children provides a foundation for promoting lifelong physical activity and overall health.

Purpose of the study

The purpose of the study is to analyze the running speed and agility abilities among school children aged 7-12 years.

2. Methodology

Selection of Subjects

To achieve the purpose of the study, one hundred and eighty school children were selected (n=200) from Sri Sarada Vidyalaiya Higher Secondary School, Ariyakulam, Little Flower Public School, Gandhi Nagar, Govt. Higher Secondary School, Gankaikondan, Tirunelveli District, Tamil Nadu, India as subject by stratified random sampling and their age ranged between 7 to 12 years.

The selected participants were divided following category: Area (Rural and Urban) and Gender (Boys and Girls). Member of these groups will consist of healthy school children from Tirunelveli District only. Prior to enrollment in the study, participants were informed of all possible risks involved in this study.

Selection of Variables

The investigator in discussions with experts were selected the following variables for the present study after reviewing the previous studies and literature in this area particularly.

Running Speed and Agility

1. Shuttle run
2. Stepping sideways over a balance beam
3. One-legged stationary hop
4. One-legged side hop
5. Two-legged side hop

Selection of Tests

As per the available literature the following standardized test were used to collect the relevant data on the selected dependent variables and they were present in

Test Selection

Criterion variables	Test items	Units of measurement
Shuttle runs.	Bruinink-oseretsky test of motor proficiency ed-2 complete from Bruinink and Bruininks1978.	In points
Stepping sideways over a balance beam. One-legged stationary hop. One-legged side hop.		
Two-legged side hop.		

Statistical Technique

Static group comparison design was used for this study. A collected data by stratified random sampling were divided into the following category: Area (Rural and Urban) and Gender (Boys and Girls). The collected data were analyzed data by using the independent t-test with the help of SPSS software. In all the cases, .05 level was fixed as level of significance ($p<0.05$).

Summary of mean and independent‘t’ test between Rural and Urban among 7-12 years aged School Children

Variables	Group	Number	Mean	Standard Deviation	‘t’ value	Sig
Shuttle run	Rural	100	8.35	1.03	17.58	.000
	Urban	100	4.91	1.66		
Stepping Sideways Over a Balance beam	Rural	100	3.50	0.00	4.18	.000
	Urban	100	3.00	1.97		
One-Legged Stationary Hop	Rural	100	8.02	0.14	11.68	.000
	Urban	100	5.62	2.05		
One- legged Side Hop	Rural	100	9.02	0.32	51.58	.000
	Urban	100	3.02	1.12		

Two- Legged Side Hop	Rural	100	5.05	0.26	14.33	.000
	Urban	100	3.50	1.05		

*Significant at .05 Level. Table value required for significance at .05 level for t 198 is 1.97.
(Scores are represented in points for the selected variables).
The t-test value of df 198, shuttle run 17.58 (p = .000), Stepping sideways over a balance beam 4.18 (p = .000), One-Legged Stationary Hop 11.63 (p=.000), One- legged Side Hop 51.58 (p = .000) and two-legged side hop 14.33 (p=.000) respectively. This means that the Rural and urban school children had significant difference on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop. However, rural area school children outperformed than urban area school children on running speed and agility namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop.

Summary of mean and independent't' test between Boys and Girls among 7-12 years aged School Children

Variables	Group	Number	Mean	Standard Deviation	't' value	Sig
Shuttle run	Girls	120	4.85	1.56	13.60	.000
	Boys	80	8.58	0.75		
Stepping Sideways Over a Balance beam	Girls	120	3.08	2.13	2.00	.038
	Boys	80	3.60	0.00		
One-Legged Stationary Hop	Girls	120	5.58	2.24	6.95	.000
	Boys	80	8.05	0.22		
One- legged Side Hop	Girls	120	6.93	0.97	17.68	.000
	Boys	80	9.08	0.35		
Two- Legged Side Hop	Girls	120	3.58	1.36	6.78	.000
	Boys	80	5.05	0.22		

*Significant at .05 Level. Table value required for significance at .05 levels for't' with 198 is 1.97. (Scores arte represented in points for the selected variables).
The t-test value of df 198, shuttle run 13.60 (p = .000), Stepping sideways over a balance beam 2.00 (p = .38, One-Legged Stationary Hop 6.95 (p=.000), One- legged Side Hop 17.68 (p=.000), and two-legged side hop 6.78 (p=.000) respectively. This means that the girls and boys school children had significant difference on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop. However, boys school children outperformed than girls school children on running speed and agility namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop.

3. Discussion

The results of the present study indicate a significant difference in running speed and agility between rural and urban school children aged 7-12 years, as well as between boys and girls. Across a variety of tests, including the shuttle run, stepping sideways over a balance beam, one-legged stationary hop, one-legged side hop, and two-legged side hop, rural children outperformed their urban counterparts. This performance gap can be attributed to the differing environments in which these children grow up. Rural children often have more opportunities for unstructured physical activity in open spaces, which likely contributes to their superior development of motor skills such as speed, agility, balance, and coordination. In contrast, urban children may face restrictions on space and may engage in more sedentary activities, potentially limiting their physical development.
The study also revealed significant differences in running speed and agility between boys and girls, with boys outperforming girls in all the tests. This finding is consistent with previous research, which suggests that boys typically develop greater muscle mass and strength at an earlier age, allowing them to perform better in activities requiring power and speed. Additionally, boys are often more socially encouraged to participate in sports and physically demanding activities, further enhancing their motor skills. On the other hand, girls may have less exposure to these types of activities, which could explain their lower performance in agility and speed-based tasks. These findings highlight the need for targeted interventions in physical education programs. Urban children may benefit from increased opportunities for physical activity, particularly unstructured play that encourages the development of balance, agility, and coordination. Furthermore, tailored training programs that focus on building strength and agility in girls could help close the performance gap between boys and girls. By addressing these disparities, educators and coaches can better support the physical development of all children, regardless of their environment or gender.

4. Conclusions

- Rural and urban school children had significant difference on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop.
- However, urban school children aged 7-12 years outperformed than rural school children on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop.
- The boys & girls school children had significant difference on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop.
- However, boys school children outperformed than girls school children on running speed and agility abilities namely shuttle run, Stepping sideways over a balance beam, One-Legged Stationary Hop, One- legged Side Hop, One- legged Side Hop and two-legged side hop.

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