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A Study on the Development of Speed Trait among Students Aged (7-9) Years in the Republic of Iraq

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Abstract

The importance of this research lies in establishing objective indicators for the development of the speed trait among primary school students (both males and females) and identifying appropriate objective indicators for speed. The research problem stems from the lack of recent studies addressing this age group since 1994, despite significant advancements in various fields, including educational curricula. Consequently, the absence of information regarding this age group and the lack of reference indicators for speed could impede assessing their developmental levels and evaluating student performance. Thus, the researcher aims to develop indicators for the speed trait to contribute suggestions benefiting both the educational and health aspects of this academic stage, based on the research findings. Research objectives include delineating the development of the speed trait among students aged (7-9) years in the Republic of Iraq, as well as identifying differences in speed indicators between boys and girls. The researcher utilized a survey method suitable for addressing the research problems. The research sample comprised primary school students (both boys and girls) representing administrative divisions of the provinces included in the study. The sample consisted of 4236 students distributed according to provinces, academic stages, and genders. The researcher administered final tests to the research sample on Sundays between November 1, 2023, and January 2, 2024. Statistical analysis and appropriate laws were employed to analyze the data. Key findings indicate that the development of the speed trait occurred naturally for both males and females, with differences between academic stages being a normal occurrence. Furthermore, male students exhibited superiority in most physical and motor skills compared to females across various academic stages.

Keywords: *Speed Trait Development, Primary School Students, Gender Differences in Speed, Objective Performance Indicators*

INTRODUCTION

The advancements in various educational domains owe much to progress in all spheres of life and ongoing research into new scientific findings and modern learning theories built upon scientific principles, foundations, and experiences. This has led to advancement and reaching the highest levels in various scientific fields and their areas, contributing to the development of mature personalities possessing physical, motor, psychological, and educational skills towards improvement. Such skills are acquired by learners through learning and educational experiences, which are retained in memory as previous experiences.

Understanding the indicator of speed development is crucial for assessing an individual's physical, mental, and emotional well-being, as it closely relates to societal life and philosophy. Many countries worldwide have shown significant interest in such studies, reflected annually through numerous scientific articles and research papers covering extensive information about children's growth in various aspects. Scientifically advanced countries and, on the Arab level, Egypt and its researchers have pioneered the study of growth at different stages. In Iraq, however, studies investigating growth in its various physical, motor, sensory, emotional, social, and sexual aspects have been scarce compared to Europe and America in this field. These studies have often focused on specific aspects or stages of growth, lacking comprehensiveness. Yet, they serve as a promising nucleus for broader studies addressing various aspects and all stages of growth.

Problem Statement:

The issue of identifying speed indicators at the Iraqi level is of utmost importance, necessitating comprehensive studies to indicate levels of physical growth among primary school students aged (7-9) years. The scarcity of research and studies specifically addressing childhood, especially physical growth indicators such as speed, in the Republic of Iraq poses a significant challenge. These indicators are vital in shaping many educational, health,

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economic, and sports programs. The problem of research lies in the absence of knowledge regarding the development indicators of speed for the first primary school stage (7-9 years) for both males and females in Iraq. Given the significant advancements in various life domains, including educational curricula, the lack of information about this stage and the absence of reference indicators for physical growth, particularly speed, will hinder assessing their developmental levels and evaluating student performance. Thus, the researcher aims to identify speed indicators to contribute suggestions benefiting both the educational and health aspects of this academic stage based on the research findings.

Research Objectives:

1. To delineate the development of the speed trait among students aged (7-9) years in the Republic of Iraq.

2. To identify differences in speed indicators between boys and girls.

3. To identify differences between regions in Iraq.

1.4.1 Human Field: Primary school students (both males and females) in the Republic of Iraq.

1.4.2 Temporal Field: From November 1, 2023, to January 2, 2024.

1.4.3 Spatial Field: The playgrounds and fields designated by the directorates of education for the tests.

METHODOLOGY

Research Method: The researcher employed a survey method suitable for addressing the research problems.

Research Sample: The research sample comprised deliberately selected provinces, including Basra, Qadisiyah, Babil, Baghdad, Salah al-Din, Kirkuk, and Nineveh. The purposive sampling method was utilized in selecting the research sample, which included primary school students (both boys and girls) representing administrative divisions of the provinces included in the study. The total sample size was 4236 students distributed according to provinces, academic stages, and genders.

Data Collection Methods, Devices, and Tools:

To conduct field research procedures, the researcher utilized the following devices, tools, and methods:

Data Collection Methods:

1. Arabic and foreign sources.

2. Observation and experimentation.

3. Individual result recording form.

2.3.2 Devices Used:

1. Test result recording form.

2. Eight timing watches.

3. Five 50-meter measuring tapes.

4. Five 10-meter measuring tapes.

5. Lenovo computer.

6. Two handheld calculators.

7. Assistant research team.

Study Tests:

The researcher employed the following tests:

2.4.1 Speed Trait Test:

The researcher used a test developed by Dr. Qais Naji Abdul Jabbar[1] (Speed Test).

2.4.1.1 Running a Distance of 50 meters per second

Purpose of the Test: To measure speed capability.

Tools Used:

- Running area not less than 60m long and 5m wide.

- Two timers, recorder, stopwatch, whistle, 50m measuring tape.

Test Description:

The test starts with the participant standing at the starting line. Upon the examiner's signal, the participant starts running at maximum speed until reaching the finish line. The timer records the time from the start to the finish line. Results are recorded in seconds and fractions thereof.

Pilot Study for Speed Test:

The researcher conducted a pilot study on November 20, 2023, selecting 60 students representing both genders in the first three grades from primary schools in Thi-Qar Governorate. The Central School was deliberately chosen by the researcher due to its suitability for the test application, as well as the presence of both male and female students in each class. Through random selection, 10 male and 10 female students from each grade were chosen, totalling 60 participants. The researcher administered a set of tests on the same proposed test to assess:

1. The appropriateness of the tests for the research sample and their understanding of them.

2. The suitability and validity of the devices and tools used in the research to achieve its objectives.

3. The understanding of the assisting team in applying the tests.

4. The time taken by each group of students to complete the tests.

5. Identifying the main problems and difficulties encountered by the researcher during test implementation.

Main Experiment:

Firstly, after determining the research test, the researcher conducted the final tests on the research sample on Sunday, between November 1, 2023, and January 2, 2024. Secondly, the tests were conducted on school playgrounds, with specific times allocated from 8:00 AM to 12:00 PM. Thirdly, the researcher provided the necessary test requirements by organizing a team of six assistants in the visited governorates (Baghdad, Basra, Babil, and Al-Qadisiyah), as well as an assistant team in the governorates where the tests were conducted by the assistant team (Tikrit, Mosul, and Kirkuk). These teams consisted of physical education teachers and instructors in collaboration with the directorates of sports and scouting activities in each governorate, in addition to securing the test materials. Fourthly, the researcher ensured that the participants had a five-minute warm-up period before starting the tests and presented the tests to them to correct any performance errors.

Statistical Analysis:

The Statistical Package for Social Sciences (SPSS) was used to analyse the research data.

RESULT AND FINDINGS

Presentation of Speed Measurement Results and Analysis and Discussion According to Gender (Male - Female) for Grades (First, Second, Third):

Table (1) illustrates the differences between males and females in speed measurement for the first, second, and third grades of elementary school.

Significance Level	Calculated t-value	Female		Male		Measurement Unit	Variable	No.
		A	S	A	S			
0.001	3.275	0.531	10.989	0.437	10.900	second	1st Grade	1
0.237	1.183	0.492	10.956	0.476	10.923	second	2nd Grade	2
0.110	1.600	0.513	11.599	66.320	15.275	second	3rd Grade	3

Note: (S) main stands for Standard Deviation, (A) main stands for Mean (Average)

Based on the extracted data from the research sample, Table (1) illustrates the differences in speed measurement values (1st Grade, 2nd Grade, 3rd Grade) between males and females. As shown in the table above, the nature of the sample individuals showed differences between males and females.

In measuring speed for the first grade of primary school, using the independent samples t-test to extract differences, the calculated value was (3.275) at a significance level of (0.001) with a degree of freedom (1275), in Favor of females.

However, in measuring speed for the second grade of primary school, using the independent samples t-test to extract differences, no significant differences were observed. The calculated value was (1.183) at a significance level of (0.237) with a degree of freedom (1275), in Favor of females.

Similarly, in measuring speed for the third grade of primary school, using the independent samples t-test to extract differences, no significant differences were observed. The calculated value was (1.600) at a significance level of (0.110) with a degree of freedom (1275), in Favor of males.

Presentation of Speed Measurement Results for Males Across the Three Grades (1st, 2nd, 3rd) and Analysis and Discussion:

Table (2) illustrates the calculated F-value in speed measurement for males across the three grades (1st, 2nd, 3rd).

Significance	Calculated F-value	Mean Square	Degrees of Freedom	Sum of Squares	Source of Variation	Variables	No.
0.067	2.701	5052.132	2.000	10104.265	Between Groups	Speed	1
		1870.628	2168.000	4055521.083	Within Groups		
			2170.000	4065625.348	Total		

Based on Table (2), there is no statistically significant difference in the speed measurement results for males across the three grades (1st, 2nd, 3rd), indicated by the calculated F-value of 2.701 at degrees of freedom (2-2168) and a significance level of (0.067).

3.1.2- Presentation of Speed Measurement Results for Females Across the Three Grades (1st, 2nd, 3rd) and Their Analysis and Discussion:

Table (3) shows the calculated F-value for speed measurement results for females across the three grades (1st, 2nd, 3rd).

Significance	Calculated F-value	Mean Square	Degrees of Freedom	Sum of Squares	Source of Variation	Variables	No.
0.000	370.992	97.577	2.000	195.155	Between Groups	Speed	1
		0.263	2062.000	542.341	Within Groups		
			2064.000	737.496	Total		

Based on Table (3), there is a statistically significant difference in the speed measurement results for females across the three grades (1st, 2nd, 3rd), as indicated by the calculated F-value of 370.992 at degrees of freedom (2-2168) and a significance level of (0.000). To determine the direction of the difference in favor of which of the three grades, the researcher relied on the calculation of the Least Significant Difference (L.S.D) value among the three grades.

Table (4) Shows the Least Significant Difference (L.S.D) for comparisons in the speed measurement values for females across the three grades (1st, 2nd, 3rd).

Significance	Standard Error	Mean Difference	Mean for Grade		Central Tendency Tests		Variable	No.
0.267	0.029	0.032	10.956	10.989	second row	first row	Speed	1
0.000	0.027	0.611-	11.599	10.989	third row	first row		
0.000	0.028	0.643-	11.599	10.956	third row	second row		

From Table (4), it is evident that there is no significant difference between the first and second grades at a significance level of (0.267). However, there is a significant difference between the first and third grades at a significance level of (0.000), favoring the third grade. Similarly, there is a significant difference between the second and third grades at a significance level of (0.000), favoring the third grade.

Presentation of the speed measurement results for the provinces of Iraq according to gender (males and females) and by educational stages, and analysis and discussion:

Presentation of the speed measurement results for the provinces of Iraq for males in the first grade of primary school and analysis and discussion:

Table (5) shows the calculated (F) value for speed measurement in the provinces of Iraq for males in the first grade of primary school.

Significance	Calculated F-value	Mean Square	Degrees of Freedom	Sum of Squares	Source of Variation	Variable	No.
0.972	0.214	0.041	6.000	0.247	Between Groups	Speed	1
		0.193	626.000	120.560	Within Groups		
			632.000	120.807	Total		

From Table (5), it is evident that there is no statistically significant difference in the speed measurement results for males in the first grade among the provinces of Iraq (Basra, Qadisiyah, Mosul, Babylon, Baghdad, Salah al-Din, Kirkuk). This is indicated by the calculated (F) value of 0.214 at a degree of freedom of (6-626) and a significance level of (0.972).

Presentation of the speed measurement results for the provinces of Iraq for females in the first grade of primary school, and analysis and discussion:

Table (6) shows the calculated (F) value for speed measurement in the provinces of Iraq for females in the first grade of primary school.

Significance	Calculated F-value	Mean Square	Degrees of Freedom	Sum of Squares	Source of Variation	Variable	No.
0.300	1.208	0.340	6.000	2.040	Between Groups	Speed	1
		0.281	637.000	179.283	Within Groups		
			643.000	181.323	Total		

From Table (6), it is evident that there is no statistically significant difference in the speed measurement results for females in the first grade among the provinces of Iraq (Basra, Qadisiyah, Mosul, Babylon, Baghdad, Salah al-Din, Kirkuk). This is indicated by the calculated (F) value of 1.208 at a degree of freedom of (6-637) and a significance level of 0.300.

Presentation of the speed measurement results for the provinces of Iraq for males in the second grade of primary school, and analysis and discussion:

Table (7) shows the calculated (F) value for speed measurement in the provinces of Iraq for males in the second grade of primary school.

Significance	Calculated F-value	Mean Square	Degrees of Freedom	Sum of Squares	Source of Variation	Variable	No.
0.838	0.460	0.105	6.000	0.628	Between Groups	Speed	1
		0.227	608.000	138.232	Within Groups		
			614.000	138.859	Total		

From Table (7), it is evident that there is no statistically significant difference in the speed measurement results for males in the second grade among the provinces of Iraq (Basra, Qadisiyah, Mosul, Babylon, Baghdad, Salah al-Din, Kirkuk). This is indicated by the calculated (F) value of 0.460 at a degree of freedom of (6-608) and a significance level of 0.838.

Presentation of the speed measurement results for the provinces of Iraq for females in the second grade of primary school, and analysis and discussion:

Table (8) shows the calculated (F) value for speed measurement in the provinces of Iraq for females in the second grade of primary school.

Significance	Calculated F-value	Mean Square	Degrees of Freedom	Sum of Squares	Source of Variation	Variable	No.
0.996	0.106	0.026	6.000	0.155	Between Groups	Speed	1
		0.244	581.000	141.799	Within Groups		
			587.000	141.954	Total		

From Table (8), it is evident that there is no statistically significant difference in the speed measurement results for females in the third grade among the provinces of Iraq (Basra, Qadisiyah, Mosul, Babylon, Baghdad, Salah al-Din, Kirkuk). This is indicated by the calculated (F) value of 0.106 at a degree of freedom of (6-581) and a significance level of 0.996.

Presentation of the speed measurement results for the provinces of Iraq for males in the third grade of primary school, and analysis and discussion:

Table (9) shows the calculated (F) value for speed measurement in the provinces of Iraq for males in the third grade of primary school.

Significance	Calculated F-value	Mean Square	Degrees of Freedom	Sum of Squares	Source of Variation	Variable	No.
0.679	0.664	2924.959	6.000	17549.754	Between Groups	Speed	1
		4407.982	916.000	4037711.663	Within Groups		
			922.000	4055261.417	Total		

From Table (9), it is evident that there is no statistically significant difference in the speed measurement results for males in the third grade among the provinces of Iraq (Basra, Qadisiyah, Mosul, Babylon, Baghdad, Salah al-Din, Kirkuk). This is indicated by the calculated (F) value of 0.664 at a degree of freedom of (6-916) and a significance level of 0.679.

Presentation of the speed measurement results for the provinces of Iraq for females in the third grade of primary school, and analysis and discussion:

Table (10) shows the calculated (F) value for speed measurement in the provinces of Iraq for females in the third grade of primary school.

Significance	Calculated F-value	Mean Square	Degrees of Freedom	Sum of Squares	Source of Variation	Variable	No.
0.175	1.501	0.394	6.000	2.362	Between Groups	Speed	1
		0.262	826.000	216.702	Within Groups		
			832.000	219.064	Total		

From Table (10), it is evident that there is no statistically significant difference in the speed measurement results for females in the third grade among the provinces of Iraq (Basra, Qadisiyah, Mosul, Babylon, Baghdad, Salah al-Din, Kirkuk). This is indicated by the calculated (F) value of 1.501 at a degree of freedom of (6-826) and a significance level of 0.175.

DISCUSSION

Based on the statistical study conducted and as indicated in the tables above for both males and females, as well as for different age groups of students and the variations among provinces, there appears to be a continuous and increasing trend in speed rates with the advancement of age categories.

It is natural to expect differences in the biological functions and physiological efficiency in favour of males, which assist them in excelling in races and various sports due to anatomical, morphological, anthropometric, biological, and physiological differences. Men tend to excel in most of these qualities. It is difficult to completely eliminate these differences due to the natural variations mentioned above. Even if there are similarities in anatomical structure and morphology between genders, the effects of estrogen, androgen, and testosterone hormones continue to create functional efficiency differences.

Childhood is a critical period, representing the most fertile periods of motor skill development. Any deficiency in the development of motor skills during this age period adversely affects subsequent stages of motor development.[2] Behavioural patterns and tendencies formed during early childhood tend to persist later in life.

Children who achieve good social adaptation in their early years tend to be more adaptable in secondary and university education compared to children who are less socially adapted during the early school years.[3]

The most prominent characteristics in physical growth and mental maturity that distinguish the lower primary stage lie in the annual increase in height, reaching 5 cm, and in mass from 3.5 to 2.5 kg. Additionally, the brain volume reaches almost its full size by the eighth year, although neural connections are not fully completed. Furthermore, the central nervous system's high capacity for analyzing information through sensory efficiency is notable. Regarding the development of compatibility skills and some motor skills, they reach their peak levels at the end of this age stage, and physical activity is considered essential.[4]

Individual differences between males and females have been and continue to be of interest to many researchers, especially sociologists, psychologists, educators, and trainers. Several explanations have been provided for the phenomenon of individual differences in abilities between males and females. The most plausible of these explanations attribute gender differences to culture and societal values that encourage one gender over the other to develop specific skills and interests.[5]

CONCLUSION

The development of the speed indicator occurred naturally for both males and females, and the increase and variation between different stages of education are natural occurrences for each educational stage. The development of the speed indicator for males showed superiority in most physical and motor skills over females in most educational stages. The development of the speed indicator occurred naturally, as indicated by the differences in test results in favor of the higher grade level.

RECOMMENDATIONS

There is a necessity to monitor the growth of physical attributes (speed) for children within studies extending before and after the primary education stage at the national level in Iraq. We recommend the importance of observing the development of speed as a physical attribute during the primary education stage when designing educational, sports, and health programs. It is crucial to pay attention to the development of speed for children in the primary education stage, especially in variables that yielded weak results in the current study.

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