The Effect of a Proposed Primary School Children Motor Program on Developing Sensory-motor Perception

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Abstract:
The study aims to investigate the effect of a proposed motor program in developing Sensory-motor perception among fifth-grade primary school children. The spatial scope of the study was conducted in the primary school of Maztaoua. The research sample consisted of 16 children from the fifth grade, selected intentionally. The experimental group included 4 boys and 4 girls who participated in the sports program. The results of the study showed that raising children's awareness of the importance of physical education and sports played a significant role in improving their Sensory-motor perception. Additionally, the use of correct and purposeful language was found to be a key factor in enhancing Sensory-motor perception.

Keywords: Proposed motor Program, Sensory-motor Perception, Primary School children

Efecto de un programa motor propuesto para escolares de educación primaria sobre el desarrollo de la percepción sensoriomotriz

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Resumen

El estudio tiene como objetivo investigar el efecto de un programa motor propuesto sobre el desarrollo de la percepción sensoriomotriz en escolares de quinto curso de educación primaria. La investigación se llevó a cabo en la escuela primaria de Maztaoua. La muestra estuvo formada por 16 escolares de quinto curso, seleccionados mediante un muestreo intencional. El grupo experimental estuvo integrado por cuatro niños y cuatro niñas que participaron en el programa deportivo. Los resultados del estudio mostraron que sensibilizar al alumnado sobre la importancia de la educación física y el deporte desempeñó un papel significativo en la mejora de su percepción sensoriomotriz. Asimismo, se constató que el uso de un lenguaje correcto y orientado a objetivos fue un factor clave para potenciar dicha percepción.

Palabras clave: programa motor propuesto; percepción sensoriomotriz; escolares de educación primaria.

Introduction:

The most critical stage in a child's development is primary school. Its importance lies in the fact that it is a phase of foundational growth. If the home fails to support children in their early educational journey, particularly

in acquiring basic learning abilities and adopting proper educational approaches, it can significantly impact their success. The primary education phase must focus on developing the individual by providing necessary information and skills that lay a strong foundation for shaping proper social attitudes and habits. These, in turn, will support the child's future life. (Shukri, 2006, p. 79)

The educational process is demanding, and every teacher must learn the basic principles of teaching. What can facilitate this process is the educational framework assigned to the teacher, as it determines the success or failure of the process. The classroom environment plays a crucial role in the educational process, affecting children's behavior, levels, and motivations. Additionally, physical education teachers must be aware of the psychological needs of children, especially in the primary school phase, which is a critical stage in a person's life (Omar, 2010, p. 17). Our study aims to examine the effect of a proposed motor program on developing sensory-motor perception in primary school pupils.

Among the studies that addressed this topic is a study by Al-Mulla, which focused on designing a proposed program in motor education to develop mental readiness and sensorimotor perception in children aged 4-5 years. A program was established aimed at developing sensorimotor perception, including a special setting for motor education lessons for children's sports, and Al-Mulla's study involved a proposed program for small games using computers to enhance motor perception and adaptation. His study aimed to examine the effect of the proposed program on the level of motor readiness and general adaptation (personal and social adaptation). The study reached the following results: there are statistically significant differences between the pre-test and post-test means for the second experimental group in motor perception and general adaptation individually, in favor of the post-test. There are statistically significant differences in the post-test measurements between the experimental groups in the level of (motor perception – general adaptation), in favor of the second experimental group. There are differences in the rates of improvement between the two experimental groups in motor perception and general adaptation. In his study, Abdelkader Boumsajd emphasized the importance of promoting the development of motor skills using a proposed program for motor education activities, which aims to identify the reality of teaching motor skills to preschool children at the elementary school level in light of the approved program, as well as to prepare a proposed program for psychomotor education activities that works to achieve cognitive development in preparatory education children and identify the reality of teaching psychomotor education classes to preparatory education children at the primary school level in light of the approved program. He prepared a proposed program for psychomotor education activities that works to achieve cognitive development in preparatory education children and reached the following results: the reality of teaching psychomotor education classes to preparatory education children at the primary school level in light of the approved program. a proposed program for psychomotor education activities that works to achieve cognitive development in preparatory education children and reached the following results: The reality of teaching psychomotor education classes to preparatory education children at the primary school level according to the approved program did not help to enhance the development of psychomotor abilities in this group. The proposed program psychomotor education activities helped to enhance the development of psychomotor abilities in preschool children, as shown by the results of the post-test compared to the pre-test. There were statistically significant differences in the level of development of psychomotor abilities. Among the studies is a study by Shehab focusing on the impact of a proposed program on some basic psychomotor skills basic motor skills in children. It found that there was an improvement in the measurements of all the basic motor skills studied in the experimental group as a whole, and that there were no statistically significant differences between males and females in the measurements of all the basic motor skills studied. mprovements in the measurements of the basic motor skills studied in the experimental group as a whole, as well as no statistically significant differences between males and females in the same measurements of all the basic motor skills studied Given the inconsistencies and differences in these studies, our study developed a proposed

motor program for the development of sensory-motor perception in children, which includes games that develop sensory-motor perception and work to achieve the growth of cognitive abilities in school children.

Materials and methods

Study Area and Duration

The researcher contacted the school principal and obtained the necessary documents to carry out the fieldwork, such as children's lists. The researcher also contacted the teachers and the physical education teacher employed in pre-operational contracts to understand the characteristics of each child individually.

Spatial Scope The study was conducted at primary schools in the Hammam Dhalaa district, specifically at the Maztawa school as a model.

Research Design

The experimental method was used since it is suitable for the nature of this research. An experimental design with two groups was employed: one experimental group and one control group, using pre- and post-testing for both groups.

1. The experimental group was exposed to the independent variable (the proposed motor program).

2. The control group was not exposed to any new stimuli and remained under normal conditions..

Participants :

Sample Selection: The results obtained from the sample are generally considered acceptable and sufficient to generalize to the whole population (Khafaja, 2002, p. 165).

Research Sample and Population: The research population consists of children from Maztawa School in Hammam Dalaa, with a total of 16 fifth-grade students. The sample was selected using the purposive sampling method.

Experimental Group: Composed of 4 boys and 4 girls who participated in the proposed motor program.

Control Group: Composed of 4 boys and 4 girls who followed the traditional program.

A total of 20 children were used as an exploratory sample to calculate the reliability and validity of the tests used.

Study Tools: The proposed motor program. (Ibrahim, 2000, p. 102)

Procedure:

Program implementation: The 2018 study was conducted in Hammam Dhalaa, M'Sila Province, at a primary school The sensorimotor program was implemented on a sample of 16 children, including 8 experimental and 8 control children, for 9 weeks, with a number of sessions per week, for a total of 9 educational units, during the period extending from the beginning of March to the month of May

Dimensional measurement: After completing the application of the program, the dimensional measurements were made in the same way as the pre-measurements**.**

Sensorimotor program and recording method:

The first test: identifying the different parts of the body, realizing their capabilities, and how to use and control them

Objective of the test: attention, perception

Tools used: whistle, yard

Performance method: Running. When the whistle is heard, the children stand up and the teacher asks them to touch any part of the body: the hand, the right leg, the left leg, the head, touch the mouth, touch the humerus, touch the forearm, touch the shoulder, touch the right eye, touch the left eye

Registration method: A score is given for all items combined
1 – Performed all items correctly and appropriately 4 marks
2- Perform it with a little hesitation or disturbance, 3 degrees
3 – Some hesitation appears in one or more responses, or if only one of the paired organs is touched 2 degrees
5 – If he is unable to identify one or more organs or if he touches his body until he finds the organs 1 degree
The second test: testing the child's cognition and balance in the shortest time
Tools used: chalk, handball, whistle, stopwatch
Performance method: The tester stands on the starting line and rolls the ball with his feet between two straight lines 50 cm wide for a distance of 5 cm
Scoring method: The minimum time is recorded by rolling the ball correctly so that the ball does not come out between the two lines
Test 3: Name: Metatarsal stance
Purpose: To measure balance
Tools: Stopwatch or wristwatch with seconds hands
Performance specifications: The child assumes a standing position on one foot, preferably the step foot, then places the free leg on the inner side of the knee of the lower leg
Scoring: The best time for three attempts is calculated, which starts from the moment the butt is lifted off the ground
Even making some mistakes in performance and losing balance
Test 4: Small toy touching seat legs
Purpose of the test: to develop the neuromuscular compatibility component
Devices and tools: two seats, a whistle, a stopwatch
Performance specifications: Children stand in the form of two equal-numbered trains, each train in front of a seat. When they hear the teacher's signal, they touch the feet of the seat alternately and repeat for five seconds
Recording: Number of touches in 5 seconds
Fifth test: Developing and enhancing perceptual-motor abilities
Devices and tools: whistle, balls
Performance specifications:
1 Scoring with small balls over large balls 5 times
Registration method: Each correct attempt by the laboratory has a score, meaning that the final score is 5 scores
Sixth test: Test of throwing and receiving balls
Objective of the test: To measure eye-hand compatibility
Devices and tools: ball, wall, draws a line 5 meters from the wall
Performance specifications: The laboratory stands in front of the wall and behind the line drawn on the floor, where the test is carried out according to the following sequence:
1 Throw the ball fifteen times against the wall, and the tester will receive the ball after it bounces off the wall
Recording method: Each correct attempt at the laboratory has a score, meaning the final score is 15 scores
Test 7: Focus and scoring accuracy
Objective of the test: To measure concentration and throwing accuracy
Tools used: basket, ball.
Performance method: The tester stands by throwing the ball with a slight bend in the knee. The tester is given 10 attempts
Registration method: Records the number of successful attempts

Test 8: Test of throwing a ball as far as possible
Objective of the test: To measure aiming power
Tools used: two medical cards, a measuring tape, a flat area of land
Calculating grades: The throwing distance is calculated to the nearest 10 cm, and the laboratory is given two attempts, the highest of which is calculated provided that the ball falls within the specified throwing range

Test 9: Helps develop and understand trends
Tools used: whistle
Performance method: signal reversal game
The children stand in a semicircle and the teacher stands in front of them and facing them when the teacher raises and asks them
1 The teacher raises his left hand. The children raise the opposite hand
2 The teacher raises his right leg. The children raise their opposite leg
3. Place the right hand on the head. Children place the opposite hand
4 Place the left hand on the head Children place the opposite hand
Registration method: Each item has a score of 4 points in total

Table1 : Table showing the proposed motor sense program, number of weeks, and registration method:

Targeted skills from the program	Tools used	The purpose of the test	Registration method	Unit of measurement	Week
Recognition of body parts and understanding their functions, usage, and control	Whistle, arena	Attention, perception	A score is given for all items combined	Degrees	Week1
Perception test and child's balance in the shortest time	chalk, handball, whistle, stopwatch	Balance, perception	The minimum time is recorded for the ball to roll correctly so that the ball does not come out between the two lines	seconds	Week2
Standing on the balis of the feet	Stopwatch or wristwatch with seconds hands	Balance measurement	The best time for three attempts is calculated as the time that begins from the moment the heel is lifted off the ground Even making	Time minute - second	Week3

			some mistakes in performanc e and losing balance		
Touching the legs of the Swedich bench	Two seats, whistle, stopwatch	Developing the neuromuscular coordination component	Number of touches in 5 seconds	seconds	Week4
Shooting small balls onto large balls	whistle, balls	Developing cognitive-motor abilities	Each correct attempt at the laboratory has a score, meaning that the final score is 5 scores	Degrees	Week5
Throwing and catching balls	Ball, wall, draws a line 5 meters from the wall	Measuring eye-hand compatibility	Every correct attempt at the laboratory has a score, meaning the final score is 15 scores	Degrees	Week6
Throwing a ball into a basket 100 cm away	basket, ball	Measure concentration and throwing accuracy	Record the number of successful attempts	Number of successf ul attempts	Week7
Throwing a soft ball as far as possible	Two medical balls, a measuring tape, a flat area of land	Measure aiming power	The throwing distance is calculated to the nearest 10 cm, and the laboratory is given two attempts, the higher	Distance in meters	Week8

			of which is calculated		
Reversing the signal	Whistle	Develop and know trends	Each item has 4 points in total	Degrees	Week9

Discussion:

There are no statistically significant differences between the mean ranks of the experimental group and the mean ranks of the control group in the targeted skills of the program after the program was applied.

To test this hypothesis, the Mann-Whitney U Test (non-parametric) was used to calculate the significance of differences between the mean ranks of the experimental group and the control group in each skill of the program after applying the program.

The table below illustrates the results of the Mann-Whitney test, showing the significance of differences between the mean ranks of the experimental and control group participants in each skill after the program was applied.

Table2 : U Critical Value for Statistical Significance of Differences Between Mean Rank Scores of the Experimental and Control Groups in Each Skill After Implementing the Program:

	Groups	**Number**	**Mean of Ranks**	**Sum of Ranks**	**U Value**	**Significance Level**	**Statical Decision**
Recognition of body parts and understanding their functions, usage, and control	**Experimenta** **Control** **Total**	**8** **8** **16**	**12,50** **4,50**	**100,00** **36,00**	**0,000**	**[b]000,**	**Significant at (0.01=α).**
Perception test and child's balance in the shortest time	**Experimental** **Control** **Total**	**8** **0a** **8**	**5,63** **11,38**	**45,00** **91,00**	**9,000**	**,015[b]**	**Significant at .(0.05=α)**

Standing on the balis of the feet	Experimental Control Total	8 8 16	12,00 5,00	96,00 40,00	000,	[b]002,	Significant at (0.01=α).
Touching the legs of the Swedich bench	Experimental Control Total	8 0a 8	12,31 4,69	98,50 37,50	1,500	,000[b]	Significant at (0.01=α)
Shooting small balls onto large balls	Experimental Control Total	8 8 16	12,25 4,75	98,00 38,00	2,000	001[b]	Significant at (0.01=α)
Throwing and catching balls	Experimental Control Total	8 0a 8	12,00 5,00	96,00 40,00	4,000	002[b]	Significant at (0.01=α)
Throwing a ball into a basket 100 cm away	Experimental Control Total	8 8 16	10,63 6,38	85,00 51,00	15,000	083[b]	Not significant at (0.01=α)
Throwing a soft ball as far as possible	Experimental Control Total	8 0a 8	12,50 4,50	100,00 36,00	0,000	,000[b]	Significant at (0.01=α)
Reversing the signal	Experimental Control Total	8 8 16	12,50 4,50	100,00 36,00	000[b]	000[b]	Significant at (0.01=α)

Analysis:

The results in the table above indicate statistically significant differences between the mean ranks of the experimental group's scores and the mean ranks of the control group's scores in the post-test for the following skills: (recognizing different body parts and understanding their potential and how to use and control them / standing on tiptoe / touching Swedish bench legs / shooting small balls into large ones / throwing and catching balls / throwing a soft ball for the greatest possible distance / reversing the signal). This is confirmed by the (U) values, which were as follows for these skills: (0.000 / 4.000 / 1.500 / 2.000 / 4.000 / 0.000 / 0.000b0), all of which were statistically significant at the 0.01 level of significance (α). However, for the skill (testing the child's balance and perception in the least time), the result was significant in favor of the control group, with a U value of (9.000), which was statistically significant at the 0.05 level of significance (α). As for the skill (throwing a ball into a basket 100 cm away), there was no statistically significant difference between the two groups, even though the experimental group's mean rank was higher than that of the control group.

Results:

Therefore, we can reject the null hypothesis, which states that there are no statistically significant differences between the mean ranks of the experimental and control groups after applying the program. In other words, we can conclude that there are statistically significant differences between the mean ranks of the experimental and control groups after the application of the program in favor of the experimental group. This implies that the program was effective.

The improvement in the experimental group can be attributed to the fact that the proposed sports program did not focus solely on the quality of performance and skill achievement, but rather on developing cognitive experiences that help this group identify directions, body parts, and auditory-visual coordination. The program also took into account the children's interests and their need to engage actively. Various tools with different shapes, colors, and sizes were used in narrow and wide spaces, helping the children learn how to handle tools and develop their senses while acquiring the ability to use them effectively.

Moreover, practicing sports activities often creates psychological stability and emotional balance within the individual through its various activities. It also encourages a competitive spirit that fosters ambition to reach higher levels in sports. Physical education helps individuals perform their roles effectively within the community and is also an aid in creating motivation and perseverance to perform work efficiently and with a positive spirit. This enables them to control their emotional reactions and deal calmly in challenging situations that require psychological and social balance.

Hypothesis No. 2: There are statistically significant differences between the mean ranks of the experimental group's scores in the targeted skills of the program in the pre-test and post-test, in favor of the post-test.

To test this hypothesis, the non-parametric Wilcoxon Test was used to detect the significance of the differences between the mean ranks of the experimental group's scores in the targeted skills of the program in the pre-test and post-test (before and after applying the program).

The following table shows the results of the Wilcoxon test for the significance of the difference between the mean ranks of the experimental group's scores in the pre-test and post-test for the targeted skills of the program.

Table3 : The critical value (Z) for the significance of the difference between the mean ranks of the experimental group's scores in the pre-test and post-test for the targeted skills of the program.

	Pre/ post measurmeent results	**Number**	**Mean Ranks**	**Sum Ranks**	**Z value**	**Significance level**	**Statical decision**

Targeted skills from the program							
Recognition of body parts and understanding their functions, usage, and control	**Nagative ranks** **Nagative ranks** **Ties ranks** **Total**	**0a** **7b** **1c** **8**	**0,00** **4,00**	**0,00** **28,00**	**-2,401[b]**	**,016**	**Significant at (0.05=α)**
Perception test and child's balance in the shortest time	**Nagative ranks** **positive ranks** **Ties ranks** **Total**	**8d** **0[e]** **0f** **8**	**4,50** **0,00**	**36,00** **0,00**	**-2,521[c]**	**,012**	**Significant at (0.05=α)**
Standing on the balis of the feet	**Nagative ranks** **positive ranks** **Ties ranks** **Total**	**1g** **7h** **0i** **8**	**1,00** **4,50**	**1,00**	**-2,383[b]**	**,017**	**Significant at (0.05=α)**
Touching the legs of the Swedich bench	**Nagative ranks** **positive ranks** **Ties ranks** **Total**	**0j** **8k** **0l** **8**	**0,00** **4,50**	**0,00** **36,00**	**-2,585[b]**	**,010**	**Significant at (0.05=α)**
Shooting small balls onto large balls	**Nagative ranks** **positive ranks**	**0m** **8n** **0r**	**0,00** **4,50**	**0,00** **36,00**	**-2,565[b]**	**,010**	**Significant at (0.05=α)**

	Ties ranks Total	 8					
Throwing and catching balls	Nagative ranks positive ranks Ties ranks Total	0p 8q 0r 8	0,00 4,50	0,00 36,00	-2,536[b]	011,	Significant at (0.05=α)
Throwing a ball into a basket 100 cm away	Nagative ranks positive ranks Ties ranks Total	0s 6t 2u 8	0,00 3,50	0,00 21,00	-2,226[b]	,026	Significant at (0.05=α)
Throwing a soft ball as far as possible	Nagative ranks positive ranks Ties ranks Total	0v 8w 0x 8	0,00 4,50	0,00 36,00	-2,524[b]	,012	Significant at (0.05=α)
Reversing the signal	Nagative ranks positive ranks Ties ranks Total	0y 8z 0aa 8	0,00 4,50	0,00 36,00	-2,588[b]	,010	Significant at (0.05=α)

Analysis:

The results in the table above indicate statistically significant differences between the mean ranks of the experimental group's scores in the pre-test and post-test for the targeted skills of the program (recognizing different body parts and understanding their potential and how to use and control them / perception test and child's balance in the shortest time / standing on tiptoe / touching Swedish bench legs / shooting small balls into

large ones / throwing and catching balls / throwing a ball into a basket 100 cm away / throwing a soft ball for the greatest possible distance / reversing the signal) in favor of the post-test. This is confirmed by the (Z) values, which were as follows: (-2.401b / -2.521c / -2.383b / -2.585b / -2.565b / -2.536b / -2.226b / -2.524b / -2.588b). All of these were statistically significant at the 0.05 level of significance (α).

Therefore, we can reject the null hypothesis, which states that there is no difference between the pre-test and post-test, and accept the research hypothesis that states: "There are statistically significant differences between the mean ranks of the experimental group's scores in the targeted skills of the program for the impulsive children in the pre-test and post-test in favor of the post-test."

Results:

There are statistically significant differences between the mean ranks of the experimental group's scores in the targeted skills of the program in the pre-test and post-test in favor of the post-test. In other words, we can conclude that the program was effective in improving the targeted skills for the study sample.

It is clear from the table that there are statistically significant differences between the pre-test and post-test for the experimental group who participated in the motor education program, specifically in the tests for recognizing different body parts and understanding their potential and how to use and control them / perception test and child's balance in the shortest time / standing on tiptoe / touching Swedish bench legs / shooting small balls into large ones / throwing and catching balls / throwing a ball into a basket 100 cm away / throwing a soft ball for the greatest possible distance / reversing the signal. The results favor the post-test. This improvement can be attributed to the fact that the proposed motor education program provided children with opportunities for organized physical practice through various activities, games, and exciting competitive contests. These increased opportunities for fun, satisfaction, and challenge helped the child push their abilities, leading to the integration of mental and physical efforts, which in turn improved performance.

Additionally, the program, which included a series of recreational activities, aimed at developing the child's personal and social adaptation, indicates that learning movements was supported by adaptation development. The program's focus on developing cognitive-motor abilities played a significant role in improving the distance required for eye-hand coordination, thus reducing the confusion and weakness that the children experienced prior to the program, enhancing their cognitive abilities. Therefore, Hypothesis 2 was confirmed, suggesting statistically significant differences between the pre-test and post-test in favor of the post-test for the experimental group's scores in the targeted skills.

It is also evident from the table that the differences between the pre-test and post-test were significant in skills like recognizing body parts, understanding their potential and ways of using and controlling them / perception test and child's balance in the shortest time / standing on tiptoe / touching Swedish bench legs / shooting small balls into large ones / throwing and catching balls / throwing a ball into a basket 100 cm away / throwing a soft ball for the greatest possible distance / reversing the signal. These results suggest that the program, which aimed to improve motor skills and basic skills, contributed to their development, especially since the relationship between cognitive-motor abilities and coordination was taken into account.

Furthermore, the use of tennis balls, other colored balls, tools, and hoops helped install confidence, determination, and perseverance in performing exercises to the best of their abilities. This also contributed to the children's cognitive-motor development and demonstrated that the first hypothesis of the research had been achieved. This hypothesis assumed statistically significant differences between the pre-test and post-test in cognitive-motor abilities, in favor of the post-test.

Additionally, the program plays a significant role in shaping the child's personality, both emotionally and mentally, through the activities performed. It develops the child's sensory organs, including hearing and sight, all

of which help the child retain and organize information. The recreational activities, with their recreational and competitive objectives, are factors that assist in organizing perceptions and making information processing easier, leading to better understanding and storage. This, in turn, positively impacts the children.

CONCLUSION

During this age phase, children encounter problems due to changes and transformations in all aspects, whether psychological or physical. Several studies have proven that engaging in physical activities helps reduce such behaviours as it aids in the development of motor, mental, and cognitive abilities, while also contributing to feelings of satisfaction and enjoyment.

From this, we can say that our research has achieved its objectives, which were to reveal the effect of a proposed motor program on the development of sensory-motor perception in fifth-grade primary school children. The child benefits from the emotional and affective factors associated with practicing the activities within the proposed program. All of this helps in achieving emotional stability and maturity with the aim of achieving psychological adaptation and emotional balance, which in turn helped children develop their sensory-motor perception.

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