

The percentage of contribution of kinesthetic perception to the performance of some boxing skills for students

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Abstract

What is happening now in terms of scientific growth and cognitive explosion in all aspects of life, including sports, is founded on concepts supported by scientific research, in addition to the utilization of educational and training methods and approaches. Boxing has particular features requiring mental preparation as well as personal attributes. The main objectives of this study are to determine the role of sensory-motor perception in the performance of certain boxing abilities among students. The researcher formulated several hypotheses that he sought to test through field research procedures. The study population consisted of second-year students at the College of Physical Education and Sports Sciences - University of Babylon for the academic year 2023-2024, totaling 115 students, from which a random sample of 30 students was selected. After employing various statistical methods to achieve the research objectives and test its hypotheses, the results of the study were presented, analyzed, and discussed. It was concluded that there is a significant positive relationship between the abilities of distance perception, time perception, and the skills under study. The researcher also made several recommendations, the most important being the necessity of developing curricula that help enhance the mental abilities of students in boxing.

Keywords: Kinesthetic; perception; boxing skills.

1- Introduction to the Research

1-1 Introduction to the Research and Its Importance:

Science and technology advancements have become a distinctive feature of this era in numerous fields, including sports, which is one of the most visible manifestations of human knowledge. This field began and continues to evolve from scientific research concepts and foundations. The aim is to develop a well-rounded athlete physically, mentally, socially, and psychologically by utilizing ideas, models, philosophies, strategies, methodologies, teaching approaches, and educational technology.

Sensory-motor perception is a set of qualities that an individual possesses or develops from the environment or through practice and training, allowing them to execute mental tasks with precision and accuracy. Mental qualities are interrelated components that interact strongly with one another. Each of these characteristics complements the others in executing motor tasks, resulting in high fluidity and aesthetic quality in movement or skill. They also serve as a means of learning and mastering diverse motor skills, which require more than one attribute during execution.

Boxing, on the other hand, is a significant sport that involves high physical and motor skills. As well as the athlete's psychological abilities to overcome fear due to the complexity of the task. It is a sport that combines art and performance in terms of speed, strength, precision, and responsiveness. Mental preparation is regarded as one of the most fundamental and essential parts of athletic performance, particularly for boxers. Boxers' mental well-being is a vital component of the sport. This sport requires specific psychological characteristics in order for its athletes to participate and succeed, emphasizing the significance and necessity of this research.

1-2 Research Problem:

As a result of the advancements in athletic performance among players, especially in boxing, and the players reaching similar levels of performance, coaches and researchers have begun to focus on the mental aspect due to the importance of this field and its impact on athletic achievement. As a result of this research, numerous scientific facts related to the sports field have become clear, including:

Each sport has unique characteristics that distinguish it from others. Neglecting this fact leads to poor selection of talented individuals, resulting in a decline in athletic performance.

In boxing, it is observed that the improvement in technical performance cannot be solely attributed to advancements in physical and skill aspects. Without progress in mental aspects and proper selection of talented individuals, researchers have studied the contribution of some sensory-motor perception variables to the performance of certain boxing skills among students.

1-3 Research Objectives:

- 1- To identify the sensory-motor perception abilities and the level of performance of boxing skills among the research sample.
- 2- To determine the percentage of sensory-motor perception abilities in performing skills (right straight punch, left straight punch, foot movements).

1-4 Research Hypothesis:

- 1- There is a significant relationship between sensory-motor perception abilities and the performance of certain skills (right straight punch, left straight punch, foot movements).

1-5 Research Domains:

1-5-1 Human Domain: Second-year students of the College of Physical Education and Sports Sciences - University of Babylon (2023 - 2024).

2-5-1 Temporal Domain: From 15/10/2023 to 10/1/2024.

3-5-1 Spatial Domain: The boxing hall at the college.

2 - Research Methodology and Field Procedures**1-2 Research Method**

The researcher used the descriptive method with a survey and correlational approach, as it is the most suitable method for the nature of the research problem and achieving the study's objectives. Choosing the appropriate method for the research problem is one of the fundamental issues that the researcher should consider. "The descriptive method represents an accurate representation of the interrelationships between the community, trends and inclinations, desires, and development. It provides a picture of the living reality and establishes indicators and builds future predictions."

2-2 Research Community and Sample

The research community was defined as the second-year students at the College of Physical Education, University of Babylon, for the academic year (2023-2024). The number of students reached (115), distributed across three study groups. The researcher selected a sample of (30 students) randomly, after excluding the absent students.

2-3 Research Tools and Devices Used**1-2 Research Tools**

- Arabic and foreign sources and references.
- Evaluation form
- Testing and measurement.
- Questionnaire form
- Internet.

2-2-3: Devices and tools used

- Sponge mats.
- Calculator.
- Pens
- Whistle
- Computer type (DELL).

2-1-4 Field Research Procedures**2-4-1 Description of Sensory-Motor Perception Ability Tests****2-4-1-1 Vertical Jump Distance Sensory-Motor Perception Test**

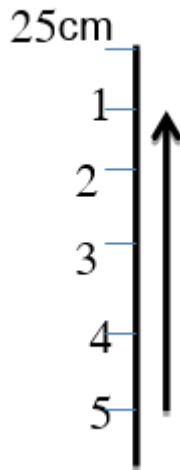
Purpose of the test: To measure the ability to perceive sensory-motor distance for vertical jumping.

Tools: A smooth wall graduated to 300 cm, measuring tape.

Performance specifications: The player's height is measured, and the arms are raised from the middle finger with a mark made at the nearest (25 cm) above the arms. The student is allowed to look at the specified distance for (5) seconds, after which their eyes are covered with a piece of cloth or any non-transparent material. The student then jumps upwards, and the area is marked, ensuring that the shoulders are raised and aligned.

Conditions: Each student is given 3 attempts.

Recording: The distance at which the tip of the test subject's finger lands is recorded, rounded to the nearest (cm).



2-4-1-2 Test of Sensory-Motor Perception for Horizontal Jump Distance

Purpose of the test: To measure the ability to perceive sensory-motor distance in horizontal jumping.

Tools: Blindfold, colored pen, measuring tape.

Performance specifications: Two parallel lines are drawn on the ground with a distance of (58.8 cm) between them.

The subject stands at the starting line, looking at the distance between the lines for (5) seconds, then their eyes are blindfolded, and they jump forward from the starting line so that their heels touch the ground at the finish line.

Conditions: The subject is given a score to the nearest (cm) for the jump distance between the lines, and each subject is allowed 3 attempts.

Recording: The distance from the finish line is counted as errors in estimation, indicating a deficiency in the perception ability of the jump distance.



2-4-1-3 Test of Sensory-Motor Perception with Time Measurement

Purpose of the test: To measure the ability to perceive sensory-motor timing.

Tools: Electronic stopwatch.

Performance specifications: The subject is asked to look at the stopwatch and to operate it (for the purpose of examining and feeling the watch). Then, they are asked to start and stop it at the times (5 seconds, 7 seconds, 15 seconds), with the requirement to repeat this three times for each of the above times.

Phase two: The subject is asked to perform the test without looking at the stopwatch, while standing. They should look straight ahead with their arm fully extended along the length of their body. The subject will start and stop the stopwatch at (7 seconds), repeating this measurement three consecutive times.

Recording: The results of the last three attempts at (7 seconds) are recorded for the subject, with each attempt being recorded separately. The amount of error for each attempt is calculated by recording the time that exceeds (7 seconds) or falls short (the arithmetic mean of the three attempts is found).

2-4-2: Identification of Boxing Skills and Tests.

The researcher, after reviewing the syllabus of the technical boxing curriculum for second-year students in the College of Physical Education and Sports Sciences, aimed to identify the skills being researched. The following skills were selected: (Right Straight Punch – Left Straight Punch – Footwork).

2-4-2-1: Description of the tests for the boxing skills studied.

2-4-2-2 Test of Right Straight Punch Skill.

- Test Name: Evaluation of Technical Performance for Left Straight Punch Skill.
- Tools Used: Boxing Ring, Performance Evaluation Form.
- Performance Specifications: From a standing position, after hearing the start signal, the student performs the left straight punch skill according to its technical conditions.
- Recording Method: Each student is given two attempts to perform the skill (taking the best) and is presented to the judges, with a score out of 10.

2-4-2-3 Test of Left Straight Punch Skill.

- Test Name: Evaluation of Technical Performance for Left Straight Punch Skill.
- Tools Used: Boxing Ring, Performance Evaluation Form.
- Performance Specifications: From a standing position, after hearing the start signal, the student performs the skill according to its technical conditions.
- Recording Method: Each student is given two attempts to perform the skill (taking the best) and is presented to the judges, with a score out of 10.

2-4-3-4 Test of Footwork Skill.

- Test Name: Evaluation of Technical Performance for Footwork Skill.
- Tools Used: Boxing Ring, Performance Evaluation Form.
- Performance Specifications: From a standing position, after hearing the start signal, the student performs the skill according to its technical conditions.
- Recording Method: Each student is given two attempts to perform the skill (taking the best) and is presented to the judges, with a score out of 10.

5-2 Exploratory Experiment

The researcher began conducting an exploratory experiment on 15/10/2023 with (5 students) from the second stage of the College of Physical Education and Sports Sciences at Babylon University. The purpose was to identify the main difficulties and obstacles the researcher might face during the main experiment.

6-2 Main Experiment

After completing the procedures for extracting the results of some sensory-motor perception ability tests and the skill assessment form, and identifying the main obstacles and difficulties, the researcher proceeded to apply the tests and evaluate the performance of the research sample

members, totaling (30 students) from the second stage of the College of Physical Education at Babylon University on 22/10/2023.

7-2 Statistical Methods

The researcher used the Statistical Package for Social Sciences (SPSS) to extract the following values:

- Percentage
- Arithmetic mean
- Standard deviation
- Spearman correlation coefficient
- Pearson correlation coefficient

3- Presentation, analysis and discussion of the results

The researcher performed several procedures to achieve the study's objectives and test its hypotheses, including: -

1-3 Preparation of research variables' initial data

After the researcher administered the sensory-motor perception ability assessments. Following that, determine the level of performance of the abilities being studied. In addition to gathering performance evaluation forms and test data forms, he attempted to sum precisely what the student learned from expert and specialized evaluations. According to his performance on each skill and his responses to each test. subsequently extracted the data, processed it statistically, and extracted the arithmetic mean and standard deviation. These are related to the study factors represented by the skills under study and mental talents, as illustrated in Table (1).

Table 1. illustrates the arithmetic mean and standard deviations for the research variables

No	Variables	Sample size	Unit of measure	Arithmetic mean	Standard deviation
1	Right straight shot	30	degree	6.5	1.40
2	left straight shot		degree	7.5	1.69
3	foot movements		degree	6.8	1.86
4	Perception of vertical distance		degree	11,170	0.274
5	Horizontal distance perception		degree	2.65	0.183
6	sense of time		degree	1.24	0.073

2-3 Presentation of Research Variable Correlation Results

In order to identify the correlation coefficients of the research variables and attain the study's major purpose, the researcher utilized the Pearson correlation coefficient as a statistical method.

1-2-3 Presentation, Analysis, and Discussion of the Results of the Correlation between Right Straight Punch Skill and Sensory-Motor Perception Abilities:

After the data was statistically evaluated and the right straight punch skill was compared to sensory-motor perception abilities, it was shown that there is an important beneficial connection between the two. It should be noticed that the tabular value of the correlation coefficient at a degree of freedom of (18) and a significance level of (0.05) is (0.475). Table (2) demonstrates this.

Table 2. presents the Pearson correlation coefficient and % contribution of each ability to the right straight punch skill

No	Variables	Correlation coefficient value	Contribution rate	Moral significance
1	Perception of vertical distance	0.551	0.303	moral
2	Horizontal distance perception	0.154	0.023	Non-moral
3	sense of time	0.611	0.373	moral

Table 2 demonstrates that the coefficients and contribution ratios of the variables (perception of vertical distance and sense of time) to the skill of the right straight punch were statistically significant. The researcher attributes these correlational relationships, along with substantial contribution ratios, to boxing's relevance to exercise as well as its preparation through activity training. Many motor, physical, and cognitive skills can be developed.

Boxing promotes the development and strengthening of motor and physical traits such as flexibility, agility, balance, strength, and speed, while also having a direct impact on the athlete's organic systems. It improves the athlete's performance by enhancing willpower, observation skills, endurance, personality strength, and the ability to be innovative in their work.

Boxing skills rely on the flexibility of the knee and foot joints, the vertebrae of the spine, and the shoulders. In order to perform effectively, one must have significant muscular strength and speed, which requires the availability of speed-specific strength along with agility and neuromuscular coordination.

2-2-3 Presentation, analysis, and discussion of the results of the association between left straight shot skill and sensory-motor perception abilities:

After the data was statistically processed and the skill was compared to other mental abilities, it was discovered that there is a substantial positive association between it and (perception of vertical distance, perception of horizontal distance, sense of time), as shown in Table 3.

Table 3. demonstrates the Pearson correlation coefficient and the percentage contribution of mental abilities to left straight shot skill

No.	Variables	Correlation coefficient value	Contribution rate	Moral significance
1	Perception of vertical distance	0.711	0.505	moral
2	Horizontal distance perception	0.591	0.349	moral
3	sense of time	0.620	0.448	moral

Through Table (3), it is evident that the values of the coefficients and the contribution rates of the variables of mental abilities to the performance of the left straight punch were significant. The researcher attributes these correlational relationships and the significant contribution rates of certain mental abilities to skill performance to the importance and role of cognitive processes, as they are considered among the highest levels of human activity and sports activity in particular.

Sources indicate that in order for a coach to improve the performance of boxing movements and skills, they must be able to convey information effectively, using words that the player can understand. The coach should also pay attention to what the player sees and imagines, so that the player can be aware of the internal and external influences that distract them, in order to assist them. The motor sentence in boxing is formed through training a set of psychological and mental skills, including relaxation, mental imagery, and attention. Additionally, emotional traits and coping strategies for psychological stress and anxiety are also included.

Mohammad Al-Arabi Shammoun (2001) noted that one of the most important types and contents of direct mental training is mental imagery and attention. These types and contents provide various facilities to enhance performance levels, and the choice of type and content depends on several conditions related to the goal to be achieved, with selections tailored to the individual circumstances of each player.

3-2-3 Presentation, analysis, and discussion of the results of the association of foot movement skill with sensory-motor perception abilities:

As a result of processing the data and studying the correlation between the skill and mental abilities, Table (4) indicates that the skill and abilities (perception of vertical distance, perception of horizontal distance, sense of time) have a significant positive relationship.

Table (4) shows the values of the correlation coefficient (Pearson) and the percentage of contribution of mental abilities to the foot movement skill

T	Variables	Correlation coefficient value	Contribution rate	Moral significance
1	Perception of vertical distance	0.776	0.602	moral
2	Horizontal distance perception	0.721	0.519	moral
3	sense of time	0.693	0.480	moral

From Table (4), it is evident that the values of the coefficients and the contribution rates of the mental ability variables to skill were significant.

The researcher attributes these variables to certain mental abilities in performing the skill, highlighting the importance and role of mental abilities in learning and acquiring skills and movements for all sports, including boxing.

Studies have shown that psychological preparation and mental training facilitate learning and acquiring motor skills because they provide external information through a variety of methods aligned with internal feelings, facilitating integration into performance development. As a result, learners are able to achieve self-correction, desire, and determination.

The researcher believes that the role of mental abilities in performing boxing skills is crucial when the player directs and controls their attention effectively. Studies have proven that the optimal mental energy zone for athletes is crucial to achieving high sports performance, as some experts in the sports field agree.

It has been found that one of the key characteristics is that attention must be fully directed towards performing the skills. Additionally, psychological and mental skills are among the most essential skills for successful performance.

4- Conclusions and Recommendations

1-4 Conclusions

Based on the results of the study and their analysis, the researcher reached several conclusions, including:

- The results showed that the individuals in the sample exhibited a high level of mental abilities.
- The results indicated a significant positive correlation between the ability (sense of time) and some boxing skills of the students.
- The results showed no significant correlation between the ability to perceive horizontal distance and the straight right punch skill.

2-4 Recommendations

Based on the results of the study, their analysis, and discussion, the researcher reached several recommendations:

- It is required to focus on developing mental abilities among students during practical lessons.
- It is essential to prepare curricula that help in developing mental abilities among students.
- It is required to conduct studies that include other mental abilities and different sports.
- It is important to conduct studies on larger samples that include most Iraqi universities.

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