

Eximia journal

www.eximiajournal.ro

Vol. 14/2025

PLUS
COMMUNICATION P



International
Communication & PR

The impact of utilizing an electronic dummy device on the development of motor response speed and the acquisition of the straight punch technique in boxing for novice practitioners

Asst. Prof. Dr. Aqeel Abdul Jabbar Abdul Rasool

College of Physical Education and Sport Sciences, University of Babylon, Iraq

phy.akeel.abd@uobabylon.edu.iq

Abstract. The present study aims to identify the impact of utilizing an electronic doll in the development of motor response speed. In addition, novice pugilists are instructed in the proper techniques for executing right and left straight punches. The researcher employed the experimental method to design the experimental single group to align with the research sample and problem. The sample comprised six novice players from the Al-Mahawal Boxing Sports Club. The subjects of this study are members of the experimental research group who are between the ages of 12 and 13. An exploratory experiment was conducted on two novices outside the research sample. This is to ensure the suitability of the exercises, according to the work of the device and the tests used. Concurrently, the pre-tests were conducted, and the modules were implemented using the electronic dummy device. The total number of educational units completed was 18, with three units being completed per week for a period of six weeks. Following the conduction of the dimensional tests, the results were obtained and statistically processed using the SPSS statistical bag. The researcher's findings indicated that the electronic dummy device is an effective educational tool for enhancing the speed of motor response and facilitating the acquisition of boxing skills among novice practitioners. It has been demonstrated to facilitate the enhancement of fundamental competencies. The researcher's most significant recommendations included the necessity of incorporating devices and tools into educational or training units. This is attributable to its role and effectiveness in the development of performance.

Keywords. learning devices, speed of movement response, boxing

1. Introduction:

Presently, the dissemination of information to players during training sessions has become contingent on the utilization of various auxiliary means. In lieu of conventional pedagogical approaches, which depend on oral exposition and hands-on demonstrations by instructors, an alternative method is employed.

This transformation is indicative of the significant advancements that the sport has undergone in recent years. In this setting, unprecedented achievements were accomplished and novel

records were established. This is due to the reliance on modern science and technology in the design and implementation of training programs.

This phenomenon is exemplified in prominent sporting competitions, such as the Olympic Games and the World Championships. The study demonstrates the impact of technological innovations on the performance and achievement of athletes.

As defined by Abdul Zaid (2008, 170), "it is defined as 'all methods, tools, equipment, and organizational structures used in a training system to achieve specific training goals.'"

Nashef (2015, p. 12) defined it as "a set of physical potentials that vary in their shapes and sizes, and play an important role in the development of motor skills. The percentage of their contribution to the development of these skills ranges from simple to complex, where they enter into the details and details of motor skills, and contribute to improving the performance of individuals."

The speed of motor response is a critical factor in achieving success. Additionally, it assists boxers in evading strikes. It is imperative to execute direct and effective punches while simultaneously maintaining equilibrium. This enhanced speed of response has been shown to facilitate optimal performance in competitive settings.

As posited by Khion (2010, 37), "time" is defined as "the period commencing from the reception of sensory stimuli and concluding with the full execution of a movement, incorporating reaction time and movement time."

Richard (2011.27) conceptualizes it as "the time interval that falls between the reaction time and the time of movement, meaning the time from the moment the stimulus enters to the end or completion of the response."

This technique enables the player to respond expeditiously to attacks and punches, evade strikes, and execute effective and swift punches. Furthermore, it has been demonstrated to facilitate equilibrium and stability during physical confrontations. This assertion is corroborated by Qadouri (2013, p. 98), who defined a "pre-prepared response" as "when the player is aware of the type of expected stimulus and is ready to respond in a specific way, having the response ready for immediate execution."

Boxing is a competition between competitors of equal weight, each utilizing their fists to deliver precise and varied punches within the permitted areas. The sport demands a synthesis of agility, accuracy, coordination, and rapid responsiveness. Moreover, it has been demonstrated to foster the development of personal qualities such as determination, willpower, self-confidence, and courage.

In the context of a discussion on the educational value of boxing, Hafez (2010, p. 22) emphasizes the distinction between amateur and professional boxing, underscoring the significance of differentiating between these two forms of the sport. Although serious injuries may occur in professional matches, amateur boxing is governed by stringent safety regulations designed to safeguard participants from physical harm. In this discourse, the emphasis is placed on the positive and uplifting aspects of boxing, particularly in the context of amateur boxing."

According to Arab et al. (2011, p. 55), "punches in boxing are used to implement various strategies and plans, aiming to hit the opponent and score points by applying precise and diverse techniques, which enables the boxer to excel in the match and achieve victory."

The significance of this research lies in the use of an electronic dummy device to improve reaction speed and learn fundamental boxing skills. For novice practitioners, the straight right and left punches can have a beneficial effect on the development of training in this sport.

1.2. Research Problems:

A review of international competitions reveals that players from these countries exhibit capabilities that significantly surpass those of Iraqi players. Drawing from the researcher's experience as a boxing instructor and enthusiast, a discernible deficiency in the efficacy of the technical execution of Iraqi players in international arenas is evident. This phenomenon can be attributed to a variety of factors, the most salient of which pertains to the relative paucity of emphasis on the swiftness of decision-making during circumstances involving immediate performance demands. Furthermore, the majority of educational units employ conventional methodologies to instruct novice players, who are regarded as the fundamental constituents and must be prepared in an optimal manner, as they serve as the primary support for clubs and national teams. The researcher distilled the research problem into the following query:

The objective of this study is to examine the impact of utilizing an electronic dummy device on the development of motor response speed and the acquisition of the straight punch technique among novice boxers.

1.3. Research Objective :

1 -To identify the impact of using an electronic dummy device on developing the speed of motor response and learning the straight punch skills (right and left) in boxing for beginners .

1.4. Research Hypothesis :

1 -There are statistically significant differences between the pre-test and post-test for the experimental group in the research variables .

1.5. Research Domains :

1 -Human Domain: Beginner players of Al-Muhawil Sports Club .

2 -Temporal Domain: From March 29, 2025, to May 19, 2025 .

3- Spatial Domain: Al-Muhawil Boxing Club hall.

2. Methodology and Field Procedures:

2.1. Method:

The researcher implemented an experimental method with a single experimental group design, as it aligns with the nature of the research sample and the research problem. This methodological approach enables precise measurement of the impact of the independent variable on the dependent variable.

2.2. Research Sample:

The research sample was selected intentionally and consists of novice boxers aged 12-13 years at the Al-Muhawil Sports Club. The sample includes six players who constitute the experimental group for the research study.

2.3. Instruments and Information Collection Methods:

2.3.1 Instruments:

- Dell computer
- HD camera
- Electronic dummy device
- Pairs of boxing gloves (16).
- Boxing ring
- Data show device (1)

2.3.2. Information Collection Methods:

- Arabic and foreign sources and references.
- Scientific observations.
- The international internet networks.

2.4. Procedures:**2.4.1. The Electronic Dummy Device Used in the Research:**

An electronic dummy has been developed to enhance the speed of motor responses and direct punches to the head and torso (left and right). The player maintains a distance from the body and head of the dummy, equivalent to the range of a front punch. This configuration enables the player to execute punches at the illuminated targets.

Upon pressing the start button and subsequent illumination of the light, the boxer is signaled to initiate the performance by executing punches at the light that remains illuminated. These punches are directed towards the head or torso of the opponent. The lights are positioned in front of the head as well as in front of the chest and abdomen, with punches aimed at touching the illuminated lights only. The objective of the device is twofold: first, to learn offensive punches, and second, to improve and measure motor response.



Figure 1

Illustrates the electronic puppet device

2.4.2. Tests:

First: The motor response test entails the administration of a 10-meter running test to an unknown stimulus (Ali, 2004, p. 72).

The objective of the test is to: measuring the time of motor response to sequential stimuli.

The following tools were utilized in the study:

- ❖ The following instrument is required: one electronic stopwatch.
- ❖ A running field measuring five meters in length is delineated, with an additional five-meter segment situated to the right and a corresponding five-meter segment situated to the left.
- ❖ The device is characterized by its minimalist design, incorporating a directional indicator in the form of two arrows, one pointing to the right and the other to the left. The functionality of this device is facilitated by a trigger mechanism that enables the user to control its operation.

Performance Specifications:

The participant assumes a high starting position at the starting line, maintaining this position until the starter signals the commencement of the race with a blow of the starting whistle. Subsequently, the participant will be instructed to run swiftly until reaching a distance of 3 meters, demarcated by a signaling flag.

When the initiator utilizes the signaling apparatus to indicate a direction (right or left) over a distance of 5 meters, the participant will have traversed an additional 2 meters. Upon reaching the intersection of the two lines, the participant will proceed in the direction indicated by the signaling device. Subsequent to this initial segment, the participant is to complete the remaining 5 meters of the test, as illustrated in the diagram.

The following section delineates the methodology employed in the recording process.

The temporal interval measured from the initiation of the signal at the starting line to the participant's completion of the race in the prescribed direction is documented.

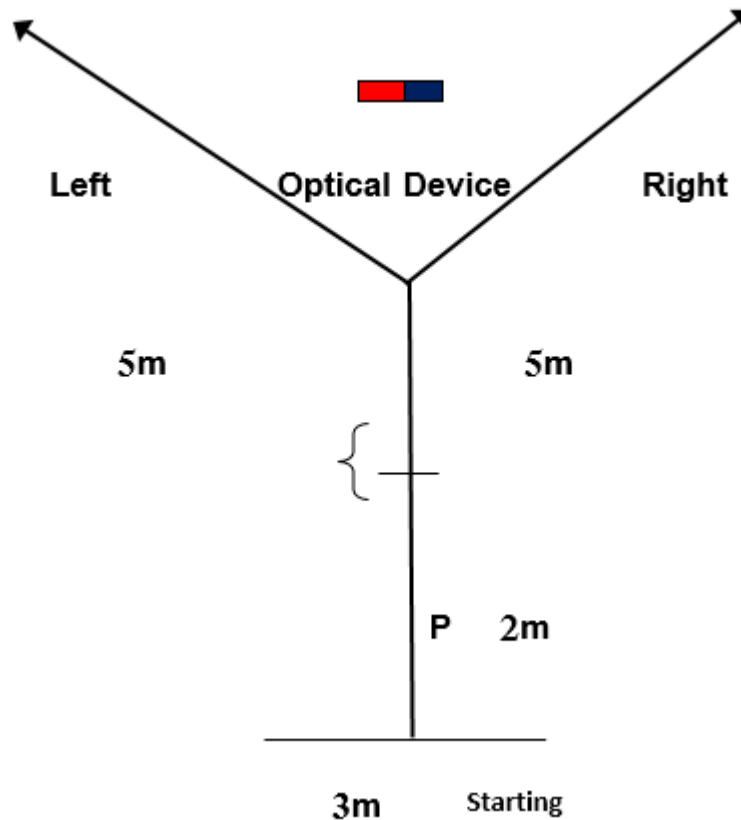


Figure (2)

Represents the 10-meter running test of a serial stimulator

Second: Testing the Performance of Left and Right Straight Punches to the Head and Torso:

Purpose of the Test:

-To assess the performance of left and right straight punches to the head and torso.

Tools Used:

- 4 -pairs of boxing gloves
- A handheld stopwatch
- An evaluation form
- One video camera

Execution of the Test:

- Boxers perform the left straight punch to the head and torso for one and a half minutes.
- Boxers perform the right straight punch to the head and torso for one and a half minutes.

-Required Conditions:

- The punch must be executed correctly.
- The punch must follow through with body weight.
- Accuracy in hitting the target.

Evaluation:

- Points are distributed as follows:
- Execution of the punch: 2 points.
- Follow-through with body weight: 4 points.
- Accuracy in hitting the target: 4 points.
- Total score: 10 points.

2.3.4.Pilot Experiment:

Subsequent to the completion of the device's design and the selection of the tests, the researcher conducted a pilot experiment on Saturday, March 29, 2025, with two novice players who were not part of the research sample. The objective of this study was twofold: first, to assess the functionality of the device utilized in the study, and second, to ascertain the device's suitability for the research sample. Additionally, the study sought to verify the tests employed in the study.

2.3.5.Pre-tests:

The preliminary assessments were administered to the research sample on Friday, April 4, 2025. The assisting team administered the Nelson test and recorded the players' performance on video, which was subsequently presented to the experts for evaluation using a performance assessment form. All procedures and conditions were meticulously documented to ensure their replication in the post-tests with the utmost fidelity.

2.3.6.Main Experiment:

Subsequent to the completion of the preliminary assessments and the acquisition of the resultant data, it is imperative to initiate the implementation of the educational units on the research sample. The educational units commenced on Saturday, April 5, 2025, in the boxing hall at Al-Muhawil Club, with a cohort of six novice players. An electronic dummy device was utilized, and the units were characterized by excitement and engagement from the research sample with the device's operation. The duration of the experiment was six weeks, with three units per week (Saturdays, Mondays, and Thursdays), yielding a total of 18 instructional units.

Each unit was scheduled to last for 90 minutes, with a 20-minute preparatory segment and a 60-minute instructional segment. The preparatory segment comprised both general and specific warm-up exercises, while the instructional segment involved the use of an electronic dummy device and instructional exercises. The final segment of the session, spanning ten minutes, incorporated a series of cool-down exercises or a brief game, followed by the collection of equipment and the subsequent dismissal of the participants.

2.3.7.Post-Test:

Following the completion of the primary experiment, it is critical to evaluate its impact on the research sample by administering post-tests and comparing them to pre-tests. As a result, the post-testing of the research sample began on Monday, May 19, 2025. The aiding team sought to provide the identical conditions as the previous tests, which helps to increase the trustworthiness of the results acquired.

2.3.8.Statistical Methods:

The results of the pre-tests and post-tests were compared using SPSS software to ascertain the influence of the training program and whether there were statistically significant differences.

3. Presentation of Results and Discussion

3.1. Presentation of the Experimental Group Results in Pre-Test and Post-Test:

Table (1)

It illustrates the arithmetic means and standard deviations in the pre-test and post-test, as well as the calculated t-test value

No.	Variables	Unit of Measurement	Pre-Test		Post-Test		Calculated T	Error Rate	Function
			-S	A±	-S	A±			
1	Motor Response Speed	Seconds	2.49	0.067	2.40	0.074	9.221	0.000	Significant
2	Left Punch	Degrees	2.17	0.687	5	1.29	4.75	0.001	Significant
3	Right Punch	Degrees	2.33	1.098	5.43	1.177	4.90	0.000	Significant

3.2. Discussion of Results:

Table 1 presents the findings regarding the existence of statistical differences in reaction speed and the learning of right and left straight punch skills in boxing for beginners.

This phenomenon can be attributed to several factors, including the design of the device itself. Furthermore, the operational method employed significantly impacts the efficacy of learning. When designed effectively, such devices have been shown to enhance reaction speed and technical proficiency by providing immediate and accurate feedback.

This finding aligns with the observations made by SCHMIDH (2000). "Feedback has been shown to increase energy and motivation levels, enhance correct performance, prevent incorrect performance, and increase learners' independence in identifying and addressing mistakes. Finally, it provides learners with insight into the nature of their errors and suggests corrective methods."

The utilization of an electronic dummy apparatus has been demonstrated to facilitate the enhancement of reaction speed. This is achieved by providing an interactive and dynamic training environment through repeated rapid responses to simulated attacks and punches. Consequently, this training method has been shown to result in the improvement of both speed and reaction time.

The electronic dummy device has been demonstrated to facilitate the enhancement of motor response speed by providing an interactive and variable training environment through repeated practice of rapid responses to attacks and punches. This, in turn, has been shown to enhance speed and reaction.

Concurrently, the pugilist can acquire the ability to direct punches with precision and speed, thereby enhancing combat skills and increasing self-confidence. This is achieved by providing a safe and effective learning environment.

This perspective aligns with the findings of Ahmed (2014, p. 117), who asserts that the utilization of assistive tools has played a pivotal role in the development of the neuromuscular system, enabling the execution of motor tasks. These tools, employed within the instructional units, effectively translate the desired movement or skill into the learner's cognitive representation, thereby facilitating the acquisition of motor skills.

4. Conclusions and Recommendations:

4.1. Conclusions:

1. The electronic dummy serves as an effective training instrument, facilitating the acquisition of essential competencies in motor response speed and the development of fundamental boxing techniques for novice practitioners.
2. The utilization of the electronic dummy has been demonstrated to engender heightened self-assurance and diminished the likelihood of physical harm. Concurrently, it fosters an interactive and dynamic instructional milieu that amplifies the efficacy of the educational endeavor.

4.2. Recommendations:

1. The researcher posits that the electronic dummy serves as an efficacious educational instrument in the domain of boxing for novices, with a particular emphasis on enhancing motor response speed and the proficiency of right and left straight punches.
2. It is recommended that further studies be conducted on the effectiveness of the electronic dummy in improving the performance of boxers, with a particular focus on its impact across different levels and age groups.

References:

- ❖ Mateen Salman Saleh Ali: *The Impact of Using Exercises in Floor Routines to Develop Coordination and Reaction Time in Intermediate Stage Female Students* (Master's Thesis, College of Physical Education, University of Diyala, 2004).
- ❖ Naheda Abdul Zaid; *Fundamentals of Motor Learning*, 1st Edition (Najaf, Dar Al-Diya Printing and Design, 2008).
- ❖ Rafiq Mahdi Qadoori; *The Essence of Motor Learning*: (Diyala, Central Printing House, 2013).
- ❖ Richard A. Magill; *Motor Learning and Control*, Ninth Edition. New York, 2011.
- ❖ Salma Zaki Nashaf; *Sports Technology*, 1st Edition (Amman, Jordan, Dar Al-Manahij for Publishing and Distribution, 2015).
- ❖ Sami Mohib Hafiz: *Introduction to Modern Boxing*, 3rd Edition, Mansoura, Shajarat Al-Durr Library, 2010.
- ❖ Schmidt, Richard A. *Motor Learning and Performance*, 2nd Edition.
- ❖ Ya'rob Khayoun; *Motor Learning Between Principle and Application*, 2nd Edition. Baghdad: Al-Sakhra Printing, 2010.

Names of Expert Evaluators for Performance Assessment of Left and Right Punches

No.	Name	Degree	Academic Title	Specialization	Workplace
1	Firas Abdul Moneim	PhD	Professor	Boxing Psychology	University of Diyala, College of Physical Education and Sports Science
2	Saif Saad Al-Azzawi	PhD	Instructor	Boxing Training	Al-Warith University, College of Physical Education and Sports Science
3	Muthana Iyad Quduri	PhD	Instructor	Boxing Teaching Methods	University of Diyala, College of Physical Education and Sports Science

Appendix (2)

Evaluation Form for the Left Straight Punch to the Head and Torso

<i>Player Number</i>	Left Punch	Total	
Punch Exit (2 pts)	Body Weight Follow-Up (4 pts)	Target Accuracy (4 pts)	(10 points)
1			
2			
3			
4			
5			
6			
7			
8			

Assessment Form for Right Straight Punch to the Head and Torso

Player Number	Right Punch	Total	
Punch Exit (2 min)	Follow Through with Body Weight (4 min)	Target Accuracy (4 min)	(10 points)
1			
2			
3			
4			
5			
6			
7			
8			