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## The effect of a proposed training curriculum on different punching distances and some kinematic variables for junior boxers

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### Abstract

The purpose of this paper is to preparing a proposed training curriculum to develop different punching distances and some kinematic variables for junior boxers, knowing the effect of the training curriculum on different punching distances for junior boxers, and knowing the effect of a training curriculum on some kinematic variables for junior boxers. The researchers used a one-group design with a pre- and post-test. The researchers deliberately selected the research sample from (Al Kut Sports Club) and its number was (13) boxers aged (15-16) years. One of the most important results reached by the researcher is that: Using the training curriculum for different punching distances led to an increase in correct punches and a decrease in the number of stray punches, training boxers on different punching distances using the training curriculum led to developing the boxer's ability to act in the ring during a fight, and the increase in the number of repetitions of overlapping punching skills and different punching distances using the training curriculum led to the construction of general kinematic programs for these skills regarding the boxer's performance. One of the most important recommendations recommended by the researchers is that: Emphasis on training boxers on different punching distances using training curricula in real competition to avoid reckless punching and increase the number of correct punches that hit the opponent and raise his score in points.

**Keywords:** Boxing, kinematic variables, training curriculum, different punching distances

### Introduction

Boxing is one of the activities that has had a lot of research and studies in the field of kinematic learning due to what distinguishes this sport, and its reliance on many kinematic skills that require a high degree of precision and mastery to achieve the goal for which it is performed. Foot movements are considered one of the letters of the alphabet for the sport. Boxing is the basic rule upon which a boxer is built. Some of them play from a long punching distance, taking advantage of their height, and some of them resort to short distances due to their short stature, and others are good at playing from medium punching distances because they possess high technical and physical qualifications in attack, defense, and counterattack. The lack of estimation of the distance is one of the main reasons for this problem, hence the importance of research through developing a training curriculum that helps in dealing with different punching distances and some kinematic variables for young boxers.

### Research problem

Because one of the researchers has experience in the field of boxing as a boxer who represented Iraq internationally, he saw that most boxers, especially the younger age groups, punch their opponents with stray punches that did not reach the opponent due to not estimating the distance between him and the opponent, which is a problem that the Iraqi boxer suffers from, especially in the age groups, as well. The Iraqi boxer is distinguished by playing from one punching distance, as he cannot face different competitors who are distinguished by playing from different punching distances.

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Therefore, the researchers see the necessity of training all boxers at different punching distances, focusing on the punching distance and avoiding mistakes by not extending the elbow joint outward, away from the straight movement path during striking and pulling, as well as pulling the first downward, all of these things help in developing these skills to overcome these mistakes, so the researchers decided to prepare a training curriculum to influence the different punching distances and some kinematic variables for young boxers.

### Research objective

- Preparing a proposed training curriculum to develop different punching distances and some kinematic variables for junior boxers.
- Knowing the effect of the training curriculum on different punching distances for junior boxers.
- Knowing the effect of a training curriculum on some kinematic variables for junior boxers.

### Research hypothesis

- There are statistically significant differences in the development of punching distances between the pre- and post-tests, in favor of the post-test.
- There are statistically significant differences for some kinematic variables between the pre- and post-tests, in favor of the post-test.

### Research methodology and field procedures

#### Research Methodology

The nature of the problem to be studied requires us to use the experimental method, since the experimental method is “the most sufficient means of arriving at reliable knowledge” (Dieopold van Dalen. 1984) [3]. The researchers used a one-group design with a pre- and post-test.

#### Community and sample research

The researchers deliberately selected the research sample from (Al Kut Sports Club) and its number was (13) boxers aged (15-16) years.

#### Research tools and means of collecting information

They are “the means by which the researcher can collect data and solve the problem to achieve the research objectives, regardless of those tools, including data, samples, and devices” (Wajih, 2001) [6].

#### Research tools and devices

- Boxing training gloves (8-10 ounces).
- Boxing gloves for testing (8-10 ounces).
- Boxing ring.
- Stopwatch (2).
- Hand shield (2).
- A form to evaluate performance.
- A large-sized boxing bag.
- Automated arbitration device (manual).
- Video recording device.

#### Means of collecting information

- Arab and foreign sources and references.
- Related research.
- Scientific and experimental observation.
- Special skill tests.
- Personal interviews.
- Assistant work team.

### Experiment for reconnaissance

The researchers conducted the exploratory experiment on December 2-3, 2023, on Saturday and Sunday, before starting to implement the main experiment. In conducting the exploratory experiment, the two researchers aimed to do the following.

1. Identifying the boxers' abilities in order to design and develop a training program that suits their abilities, especially the number of training rounds and the time of the round.
2. Identify the time spent on performing tests.
3. Ensure the validity of the tools and devices used.
4. Avoid errors and obstacles that may appear when implementing tests in order to overcome them in the main experiment.
5. Knowing the number of assistant staff and assistant work team and training them on how to conduct and evaluate tests.

### Skill test

#### Testing total punches and successful punches in freestyle boxing

1. The aim of the test: to evaluate performance from punching distances.
2. Used equipments:
  - Boxing paws for playing.
  - Boxing ring.
  - Electronic stopwatch.
  - A special form for granting grades prepared by the researcher.
  - Video recording device.
  - Automated arbitration device.

**Performance description:** The two testers stand in the corners of the ring and when they hear the start of the round, the free competition begins for a period of (2) minutes (One round). International judges are tasked with recording points for the total number of punches and successful punches using an automatic scoring device, which are then recorded in the form prepared by the researcher for this purpose.

#### Performance conditions

- Freestyle boxing allows the use of all types of punches.
- Points are recorded for the total number of punches and successful punches.
- The process of awarding degrees is supervised by international referees.
- The manual drip device approved by the International Amateur Boxing Federation is used.
- The test is filmed with a video camera to ensure the accuracy of the grades awarded.
- Emphasis on calculating grades for group punches and successful punches.

#### Register

- The boxer's total number of punches is calculated during one round.
- The number of successful punches of the boxer during the round is calculated.

A form for testing total punches and successful punches using freestyle boxing.

#### Identifying the kinematic variables of foot movements

1. **The smallest lateral distance between the feet:** It is the

minimum distance between the feet on the inside, or the smallest distance between the soles of the feet, which is often the width of the player's chest.

2. **The largest lateral distance between the feet:** It is the largest distance between the feet from the inside or the largest distance between the soles of the feet, which is often equal to the smallest lateral distance plus the length of the lateral step.
3. **The smallest forward distance between the feet:** It is the smallest distance between the front foot and the back foot, which is often one foot.
4. **The largest forward distance between the feet:** It is the largest distance between the front foot and the back foot, and it is often equal to the smallest forward distance plus the length of the side step.

**Pre-test:** The researchers conducted the pre-test on Thursday, December 7, 2023, at two o'clock in the evening, where the freestyle boxing test was conducted by calculating the total number of punches and successful punches, and the test was filmed using a video camera to confirm the accuracy of the scoring.

**Training curriculum:** The researchers developed a training

curriculum consisting of (24) training units over a period of (8) weeks, with (3) training units per week. The time of each training unit does not exceed (55) minutes, as Saturday, Monday, and Wednesday of each week were set for training from 2 p.m. - 4 pm. The training curriculum for the experimental group included exercises that developed and controlled different punching distances prepared by the researchers, and some boxing training exercises similar to real competition situations, according to what the researchers prepared.

**Post-test:** As for the post-test, it was conducted on Monday, February 5, 2024, at two o'clock in the evening, where the free boxing test was conducted by calculating the total number of punches and successful punches. The test was photographed using a video device to confirm the accuracy of the marking.

**Statistical methods:** The search data was processed through the Statistical Package for the Social Sciences (SPSS).

## Results and Discussion

### Presentation, the results for freestyle boxing with different distances for the pre- and post-test

**Table 1:** Shows the arithmetic means, standard deviations, t-value, and significance level for freestyle boxing for the pre- and post-test of the research sample.

Variables	Pre-test		Post-test		T-Value	Type sig
	Mean	Std. Deviations	Mean	Std. Deviations		
Total punches	36,126	3,524	25,304	4,446	3,216	Sig
Successful punches	8,852	2,263	13,774	2,027	7,149	Sig

The tabulated t-value is under 12 degrees of freedom and at a significance level of 0.05.

### Discussion of the results for freestyle boxing at different distances

By observing the arithmetic mean for the pre-tests, it was (36, 126) and the arithmetic mean for the post-tests was (25, 304). The researchers attribute this to the maturity of the player as a result of the exercises that lasted (24) training units, and it was reflected in the decrease in stray punches, as the punches were more focused in the post-tests. It also reflected a positive situation, which is the reduction in the effort exerted by the player and the increase in the number of successful punches that hit the opponent. As for the successful punches test, the development occurred in the post-tests by increasing the number of successful punches that hit the opponent, through which the boxer scores points to tip the balance in his victory. The researchers attribute the development that occurred to the sample to the sample's continuity in training throughout the period specified for the experiment, as well as the fact that the sample is junior, so any exercise adds something new to them. Also, the sample's training included the use of suggested exercises in addition to boxing training exercises in applying punching skills in the planned manner, which aims To apply these skills from different punching distances, we find that the increase in successful punches is good. The researchers attribute this to the proposed training curriculum, as confirmed by "The modern punching style is a combination of offensive, defensive and counter-attacking movements that are executed from different punching distances" (Abdel Fattah Fathi Khudair. 1994) <sup>[1]</sup>. In addition, the increase in the

number of repetitions of these skills and the diversity of their performance from different punching distances led to the formation of general kinematic programs for these skills around boxing performance, which leads to automatic performance characterized by speed and accuracy. This test is considered a real test to determine the player's skill potential and the extent of his qualifications for the official competition. The researchers also used a variable training method where the boxer performs the offensive, defensive and counter-attacking punching skills overlapping within one exercise but from different punching distances, as well as the constant switching of duties between the boxers after the end of the fight all round. As well as diversifying the application of punching skills from different punching distances, that is, the overlap between random and variable exercise and the use of (Random and variable) exercise, "Both random and variable training are superior to sequential and fixed training, and by uniting them we will obtain better learning." (Schmidt. (1992) <sup>[5]</sup>. The researcher also used different training methods that would develop the level of boxers and make it close to the situation of real competition, such as the use of (Training boxing) and the use of hand-shield training, which are situations similar to real competition situations in that they combine offensive, defensive, and counter-attack performance with a constant change in the different punching distances, as she confirmed. "The diversity and complexity of movement models is necessary in order to meet the changing needs for skills" (Afaf Abdel Karim, 1990) <sup>[2]</sup>.

### Presentation, the results of some kinematic variables for foot movement skills

**Table 2:** Shows the values of the arithmetic means and standard deviations for the kinematic variables of the foot movements for the tests (Pre, post, retention) for the sample members

No.	Variables	Pre-test		Post-test	
		Mean	Std. Deviations	Mean	Std. Deviations
1	Smallest forward distance	6.498	1.143	10.155	1.580
2	largest forward distance	38.675	2.34	31.903	2.458
3	Smallest lateral distance	6.381	1.136	10.768	1.578
4	largest lateral distance	39.996	1.016	31.658	2.325

### Discussing the results of the kinematic variables for foot movement skills

By observing Tables 2, it becomes clear to us that there are significant differences between the results of the two tests (Pre and post) in the kinematic variables of the foot movements, in favor of the post-test. This means the development of the skill performance of the members of this sample in the skill of foot movements. The researchers attribute this to several reasons: The training curriculum used is based on scientific foundations, which helped the development process occur through practice and progression. This is what many experts have said, that reaching championships in sporting events is linked to an integrated series of procedures based on scientific foundations to prepare the boxer in order to save effort and time and reduce mistakes. "Mastering, consolidating and refining kinematic skills plays a major role in an individual's reaching the top of local and international sports levels. To achieve this, there are several scientific methods suitable for learning kinematic skills, as well as many scientific aspects that the individual must be familiar with and follow in skill preparation". (Muhannad Hussein Al-Bashtawi and Ahmed Ibrahim Al-Khawaja, 2005) [4]. We can notice the improvement in the arithmetic mean values of some kinematic variables between the two tests (Pre-test and post-test). From Table 2, we note that the arithmetic means in the posttest for the smallest distance (Side, front) were wide. The arithmetic means for the greatest distance (Frontal, lateral) in the post-test are wider among the sample members, and this means that the step length was large, which in turn leads to a lower center of gravity of the body and slow movement for the sample members.

### Conclusions and Recommendations

#### Conclusions

**Through the researchers' application of the proposed approach, the following conclusions were obtained.**

- Using the training curriculum for different punching distances led to an increase in correct punches and a decrease in the number of stray punches.
- Training boxers on different punching distances using the training curriculum led to developing the boxer's ability to act in the ring during a fight.
- The increase in the number of repetitions of overlapping punching skills and different punching distances using the training curriculum led to the construction of general kinematic programs for these skills regarding the boxer's performance.

#### Recommendations

Emphasis on training boxers on different punching distances using training curricula in real competition to avoid reckless punching and increase the number of correct punches that hit the opponent and raise his score in points.

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