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The effect of the (BOXING SMART GROUND) device in improving some Biokinematic variables and learning the movement of the feet in boxing for students

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Abstract

The importance of this study lies in entering into a topic that has an effective role in the use of an auxiliary device in the sports field, as this study invented "The effect of the smart boxing ground in improving some biokinematic variables and learning the movement of the feet in boxing for students" and trying to reach the ideal mechanical performance in the educational process, as finding this device will help to solve a mechanical problem that has a clear and effective impact on boxing effectiveness It is the movement of the feet, it accelerates the learning process, as well as this study, provides both the elements of suspense, excitement, safety and economy in effort and time in learning other boxing skills and the researcher assumed that the exercises of the smart boxing ground in improving some biokinematic variables and learning the movement of the feet in boxing for students. The researcher used the experimental approach in the manner of the two equivalent groups (control-experimental) with two measurements (pre- and dimensional). After analyzing the statistical data using the statistical bag SPSS, a development appeared in the movement of the feet and the studied variables and for the control and experimental groups, and the conclusions of the research were shown:

- The most important conclusions
- The proposed boxing smart ground has a positive effect in improving some biokinematic variables of the skill of movement of the feet.
- The most important recommendations
- Using the device (smart boxing ground) in the process of teaching beginner boxers the skill of moving feet.

Keywords: Gymnastics, Biokinematic, boxing, ground, physical.

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1. Introduction

It is necessary to pay attention to the study of biomechanical variables and to find solutions to reach the ideal performance in light of the rapid development of games in general and boxing in particular. Technical related to learning and training as it diagnoses and compares movements because it adopts accurate measurement to show the technical details of performance in its true form.

Boxing is a world-famous and well-known event, as it can be said that it is one of the most exciting sports and the Olympic Games. It occupied its place as one of the most respected and prestigious sports among the games, and hardly anyone does not know it. Illegal randomness and it is closely related to the mechanics of punching and the movement of the feet. The performance of straight punch has a special mechanism for the movement of the two feet, and the hook punch has a certain mechanism as well. If the movement of the feet changes, there is a clear deficiency that will appear in the performance in terms of speed, strength and perfect technique, as well as the safety of the player performing the punch, an ankle joint injury may occur, and this is common in boxing when performing punches. Hence the importance of this study by entering into a topic that has an active role in the use of an auxiliary device in the sports field, as this study devised "the effect of the (smart boxing ground) device in improving some biokinetic variables and learning the movement of the feet by boxing for students" and trying to reach performance The ideal mechanic in the educational process, as finding this device will help to solve a mechanical problem that has a clear and effective impact on the effectiveness of boxing, which is the movement of the feet.

2. Research Methodology

The researcher used the experimental method in the manner of two equal groups (controller-experimental) with two measurements (pre- and post-test), and this is what he deems consistent with the problem of his research and the achievement of the objectives of his study. Where he sees (Ibrahim, 2002) that the research method is "the method that the researcher takes to achieve the objectives of his research based on an appropriate sentence to reveal the truth."

2.1. The experimental design used in the research

The researcher used the experimental design of the two equivalent groups (experimental - control) with two tests (pre- and post-test) for its suitability to the nature of the research, as shown in Table (1).

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Table 1: The experimental design of the research

N	Group name	Pre-test	Independent variable	post test
1	Experimental group	Feet movement skill test Measuring biokinetic variables	The device prepared by the researcher	Feet movement skill test and measurement of biokinetic variables
2	Control group	Feet movement skill test Measuring biokinetic variables	Feet movement skill test Measuring biokinetic variables	Feet movement skill test Measuring biokinetic variables

2.2. The research community and its sample

The researcher identified the research community consisting of students of the second stage, College of Physical Education and Sports Sciences - University of Karbala, which numbered (122) students distributed over six study divisions as shown in Table (2)

Table 2. The studied sample of students.

Class	A	B	C	D	E	F
Number	20	20	20	21	21	20

Two divisions were chosen as a sample for the research and in a simple random way (the lottery method) and they are Division (A), which represents the control group and Division (B), which represents the experimental group, which numbered (40) students, with (20) students in Division (A) and (20)) A student in Division (B), as the research sample constituted (32.8%) of the research community, which is a standard percentage, and the learners are all males, from one school stage, and beginners who have never practiced boxing. For the total sample to be (40) students, the researcher conducted homogeneity and parity on the two groups and they were as follows:

2.2.1. The homogeneity of the sample and the equivalence of the research groups

A. Homogeneity of the research sample

Before starting the implementation, the researcher resorted to verify the homogeneity of the research sample in the variables related to anthropometric measurements (mass and age), as well as measuring the performance of the movement of the feet and the biokinetic variables of the arms (left and right), and as shown in the tables (3).

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Table 3: The homogeneity of the research sample in anthropometric measurements.

Statistical	Units	Arithmetic mean	Std	Variation coefficient
Parameters Variables				
Mass	kg	13.838	10.106	73.033
Age	Year	2.662	0.536	20.133

As Vandalin (1985) sees that in order for the researcher to return the differences to the experimental factor, "the research groups must be completely equivalent in all circumstances and variables except for the experimental variable that affects the research groups." For the purpose of verifying the equivalence of the two research groups, the researcher conducted an equivalence procedure for the following variables (performance of the movement of the feet), as well as the equivalence procedure (for the biokinetic variables) between the two groups for the movement of the feet, as shown in Tables (4) and (5)**.**

Table 4: Shows performance of the movement of the feet to experimental and controller group

Test	Stand ready	Controller		Experimental		Calculated t value	Indication level	Indication type
		Std	Middle	Std	Middle			
Footwork	Right	0.464	4.055	0.411	3.944	0.982	0.330	insignificant
	Left	0.417	3.855	0.491	3.789	0.568	0.572	insignificant

Table 5: Shows for the biokinetic variables to experimental and controller group.

Biokinetic variables	Nature of movement	Controller		Experimental		Calculated t value	Indication level	Indication type
		Std	Middle	Std	Middle			
Left knee angle	Ready moment	3.848	146.767	4.411	146.3	-0.437	0.664	Insignificant
	Moment of progress	5.603	152.3	6.313	150.933	0.887	0.379	
Right knee angle	Ready moment	12.401	157.133	12.602	158.433	0.403	0.689	Insignificant
	Moment of progress	11.493	166.333	10.463	168.1	0.623	0.536	
Peripheral velocity of the body	m/s	0.378	4.717	0.412	4.673	-0.424	0.673	Insignificant
	S	0.013	0.105	0.097	0.102	-0.796	0.430	Insignificant

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We note from Table (3) and (4) that the tabular (t) value of (2.021) at the level of significance (0.05) and the degree of freedom (38), which is greater than the value of (t) calculated in all variables, which indicates that there are no significant differences between the variables investigated between the experimental and control groups.

After the idea was developed by the researcher and supervisor, the proposed device was designed in a stereoscopic image and the correct measurements were placed in proportion to the appropriate distance that gives the player or student the opportunity to perform movement, as a floor was designed with an area of 3 x 3 m, and accordingly the device was designed and as in Figure (1).

Figure 1: Designed device

B. Components of the boxing smart ground the device designed by the researcher consists of the following parts:

I. The base: It is a carpet measuring 3 x 3 the nature of the movements of the right and left-handed boxer was drawn on the floor and the nature of the movement varied from progress, retreat, side movement and rotation. during retraction, as shown in Figure (2).

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Figure 2. The base.

II. Control board: It is the device's control center, which contains an electrical circuit that works on electricity and the battery, as well as the ability to work with it on charging for a period of 3 hours, as well as controlling the slow and speed of the movement of the feet through its own switch, as shown in Figure (3).

Figure 3. Control board

III. Led: It is the main catalyst for the player's movement, which is installed on the areas where the feet are drawn, where two colors are installed on the floor, the green color for the right leg and the red color for the left leg. The red color, in this way, begins with the motor movement of the feet to ensure that the boxer moves in steps, as well as the movement in the form of jumping with both legs, as shown in Figure (4).

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Figure 4. Led figure

IV. Wires: They are wires to connect the leads to the control board measuring 75 mm, where all the leads were connected to each other with the positive pole and the other end of each lead was connected to the control board, as shown in Figure (5)

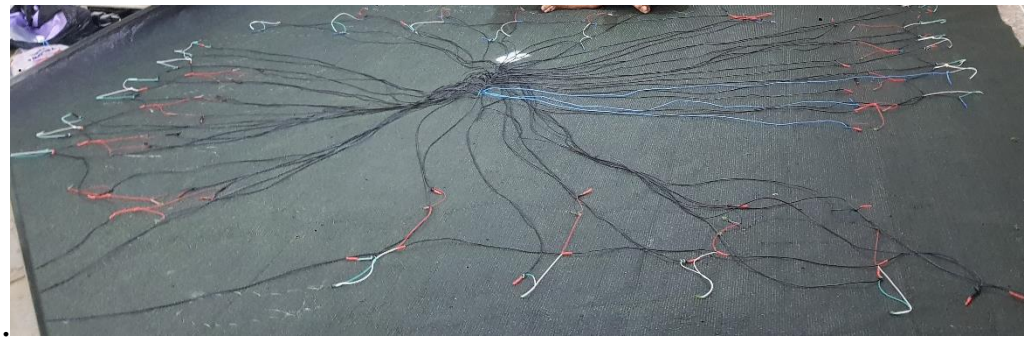

Figure 5. Wires

3. How to perform on a boxing smart ground device

The performance is on the boxing smart ground device by means of light stimuli for the right and left legs, as two methods of movement have been identified in the device, which is the basis for the boxer's movement. The first method is through the steps and here is the detail in the movement. The right player begins to move with the left foot forward, followed by a movement the right foot returns to the boxer's main position and continues with the same movement. When turning, the player rests on the comb of the left leg of the right player. This is what was applied in the prepared device, as the work of the device was programmed so that the player moves in this way, and we took into account the way the player rotates and moves sideways and back This includes movement The left player advances with the right leg first and pivots during his rotation on the right instep and moves sideways so that the two legs do not intersect and do not stand on the same line. The second method is jumping with both legs, as the boxing player usually moves forward and backward as well as rotation. The device has been

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programmed to change the movement settings from steps to jumping and according to the player's level. The speed of movement was also taken into account, as a temporary setting for the movement was made that includes progress and retreat, side movement and return to One-legged and two-legged back, with a duration of 0.25-13sec. As shown in Figures (6) and (7).

Figure 6. The real picture of the device for the two men working together from inside the boxing hall in the College of Physical Education and Sports Sciences – University of Karbala.

Figure 7. The real picture of the device during the application of exercises from inside the boxing hall in the College of Education Physical and sports sciences - University of Karbala.

4. Safety and security of the proposed device

The researcher presented the device and explained how it works to a group of experts and specialists in (boxing, biomechanics, electronics engineer) who emphasized the possibility of using the proposed device without harming the safety of students in learning the skill of movement of the feet, reinforced by the exploratory experience.

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5. Features of the designed device

A. It maintains the kinetic path of performance through the presence of light stimuli in the form of a foot and an LED is installed on it in red colors for the left leg and green for the right leg
B. It takes into account individual differences 3- It takes into account the nature of the human use of the hand or his favorite man (right, left)
C. The device can be divided into small pieces
D. It is light in weight and can be moved from one place to another
E. It can be made from simple and available materials
F. Take into account the principle of safety and security when performing for the learner
G. The speed of movement can be changed during performance
H. Multiple exercises can be performed on it

6. Presentation, analysis and discussion of the results

A. Presentation and analysis of the results of measurements of the skill performance of the movement of the feet for the experimental and control groups and their discussion:
B. Presenting and analyzing the results of the tribal and remote measurements teams of the skill performance of the movement of the feet for the members of the experimental group and discussing them:

In order to identify the significance of the difference between the tribal and remote measurements in the level of skill performance of the movement of the feet for the members of the experimental group, the researcher used the (t) test as a statistical means to achieve this purpose and to find out the reality of the difference in the research variables in the results of the tribal and remote measurements and Table (6). Table (6) shows the values of the arithmetic mean, standard deviation, (t) test and its statistical significance for the two measurements (pre and post) in the skill performance of the movement of the feet of the experimental group.

Table 6: The values of the arithmetic mean, standard deviation, (t) test and its statistical significance for the two measurements.

Test	Stand ready	Post test		Pretest		Calculated t value	Indication level	Indication type
		Std	Middle	Std	Middle			
Footwork	Right	0.759	8.1	0.411	3.944	-27.922	0.000	Insignificant
	Left	0.938	7.5	0.491	3.789	-19.106	0.000	Insignificant

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Table (6) shows the statistical indicators of the results of the tribal and remote measurements in the performance of the skill of the movement of the feet that the members of the experimental group underwent. Significance through the use of (t) for correlated samples, as it was less than the significance level (0.05), which indicates the existence of significant differences between the two measurements.

By noting Table (5), it becomes clear to us that there are significant differences between the results of the two measurements (pre and post) in the skill performance of the movement of the feet and in favor of the dimensional measurement of both feet (right and left) for the experimental group, as the researcher attributes this development in the skill performance of the experimental group in Performing the skill of the movement of the feet to the educational program used for the device and built according to scientific foundations, and this is what contributed to the occurrence of the learning process through practice and the clarity of the motor path of the skill in the proposed device and its important role in providing assistance and a sense of safety for the experimental group and this is what Many experts said that reaching an advanced level in sports events is linked to an integrated set of procedures based on scientific foundations and rules for student education and preparation in order to save time and effort and reduce errors and injuries, as it agrees with that (Al-Bishtawi and Al-Khawaja, 2005). The stabilization and refinement of motor skills plays a major role in the individual reaching the top of the sporting levels. To achieve this, there are several suitable scientific methods for learning motor skills, as well as many scientific aspects that the individual must be familiar with and follow in the skill numbers, including the auxiliary devices. so that it fits with The shape of the movement and the nature of its performance through the presence of the lighting element, which serves as a determinant of the path of movement of the feet, as well as the distance between both feet in proportion to the physical measurements of the learner and the speed of controlling the speed of movement as it gives the movement its appropriate flow and rebound, each according to his physical and skill level, and also the researcher believes that the proposed device has been economized At the same time, it allowed the performance of high repetitions, which played a major role in the process of learning motor skills, since the sample was from students who had never practiced boxing skills. Therefore, this improvement that occurred is due to the repetition that led to the acquisition of movement form during the educational process and the ability to think, and this goes with the opinion of (Youssef and Salah, 2014) "The increase in the number of repetitions resulting from training and practice in responding to a stimulus leads to Expediting the appropriate decision and reducing the reaction time for the required movement.

In order to identify the significance of the difference between the dimensional measurements in the level of performance of the movement skill of the feet For the members of the two groups (experimental and control) right and left, the researcher used the (t) test as a statistical means to achieve this purpose and to find out the reality of the difference in the research variables in the results of the dimensional measurements of the two groups and the table (7)

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Table 7: It shows the values of the arithmetic mean, standard deviation, and (t) test and their statistical significance.

Test	Stand ready	Controller		Experimental		Calculated t value	Indication level	Indication type
		Std	Middle	Std	Middle			
Footwork	Right	0.759	8.1	0.885	5.1	14.097	0.000	Moral
	Left	0.938	7.5	0.738	4.7	12.851	0.000	Moral

Table (7) Statistical indicators of the results of the dimensional measurements of the two groups (experimental - control) in the performance of the skill of the movement of the feet, as the members of the experimental group underwent exercises of the device, while the control group was subjected to the educational program prepared by the teacher, as the results showed that the values of the arithmetic circles were greater in the measurement The dimensionality of the experimental group compared to it in the dimensional measurement of the control group, a significant change occurred between the two measurements in favor of the dimensional measurement of the experimental group, and this indicated the level of significance through the use of (t) for independent samples, as it was less than the significance level (0.05), which indicates the existence of significant differences between the two measurements. For the benefit of the experimental group.

7. Discussion

By noting Table (7), it becomes clear to us that there are significant differences in the skill performance between the dimensional measurements of the two groups (experimental and control), as the researcher attributes the reason for this to the experimental group's use of the proposed device in the educational units and exercises of the device and the correct movement mechanism for all parts of the body in the The performance of the skill of the movement of the feet and the immediate feedback on the performance, which contributed to the clarity of the motor path and its development among the students, which gave the student additional attempts and repetitions, and this is confirmed by (Abdullah et al., 1990) in "The use of Auxiliary devices and tools generate in the learner the harmonious abilities required by the boxing technique and tactic, which plays a prominent role in the formation of the skill level of the student's performance." The researcher also attributes the reason to the use of the proposed device, which led to adjusting the movement distance of the feet and the motor path of the knee joint for the feet and also took into account the individual differences between The students, unlike the control group, as it was difficult for them to determine the distance between the feet, as well as the speed of movement and the method of performance, due to their lack of experience in this field, lack of clarity of purpose and the presence of individual differences in willingness to learn, as well as the

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absence of a sign showing the way of movement through which they can perform repetitions within the appropriate distance of the feet , confirms that (Mahjoub, 2002, pg. 195) "When the teacher performs, the student cannot know whether the attempt given for performance was correct or not, because he does not have the correct indication through which he can evaluate the outcome." And also emphasizes (Al-Hilah, 2007, pg. Teaching aids take into account the individual differences between students, as they help learners to understand the information and skills contained in the educational material closely, even if the levels differ. Table (8) shows the values of the arithmetic mean, standard deviation, t-test and their statistical significance for the two measurements (pre and post) for the biomechanical variables of the movement of the feet of the experimental group.

Table 8: The values of the arithmetic mean, standard deviation, t-test and their statistical significance.

Nature of movement	Controller		Experimental		Calculated t value	Indication level	Indication type
	Std	Middle	Std	Middle			
Ready moment	3.848	146.767	4.411	146.3	-0.437	0.664	Insignificant
Moment of progress	5.603	152.3	6.313	150.933	0.887	0.379	
Ready moment	12.401	157.133	12.602	158.433	0.403	0.689	Insignificant
Moment of progress	11.493	166.333	10.463	168.1	0.623	0.536	
m/s	0.378	4.717	0.412	4.673	-0.424	0.673	Insignificant
S	0.013	0.105	0.097	0.102	-0.796	0.430	Insignificant

Table (9) shows the statistical indicators of the results of the tribal and remote measurements in the biokinetic variables of the skill performance of the movement of the feet that the members of the experimental group underwent. It indicated the level of significance through the use of (t) for the correlated samples, as it was less than the significance level (0.05), which indicates the existence of significant differences between the two measurements.

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Table 9: The statistical indicators of the results of the tribal and remote measurements.

Biokinetic variables	Unit	Stand ready	Nature of movement	Post test		Pretest		Calculated t value	Indication level	Indication level
				Std	Middle	Std	Middle			
Left knee angle	Degree	Right	ready moment	4.099	146.43	2.25	168.8	26.099	0.000	Moral
		Left	moment of progress	6.026	151.6	7.359	169.1	9.935	0.000	
		Right	ready moment	4.305	140.23	4.411	146.3	4.907	0.000	
		Left	moment of progress	7.528	165.13	6.313	150.9	-6.999	0.000	
right knee angle	Degree	Right	ready moment	10.70	162.73	4.288	157.4	-2.688	0.012	Moral
		Left	moment of progress	8.619	169.83	4.442	162.3	-3.794	0.001	
		Right	ready moment	16.17	148.46	12.60	158.4	2.451	0.021	
		Left	moment of progress	9.673	153.23	10.46	168.1	5.663	0.000	
Peripheral velocity of the body	m/s	Right		0.647	5.585	0.411	4.68	-5.925	0.000	Moral
		Left		0.739	5.643	0.412	4.673	-6.67	0.000	
Time	s	Right		0.013	0.104	0.013	0.12	4.965	0.000	Moral
		Left		0.004	0.097	0.009	0.102	2.759	0.010	

In order to identify the significance of the difference between the tribal and remote measurements of the biokinetic variables in the level of skill performance of the movement of the feet for the members of the experimental group, the researcher used the (t) test as a statistical method to achieve this purpose and to determine the reality of the difference in the research variables in the results of the tribal and dimensional measurements and the table (8). By noting Table (8), it becomes clear to us that there are statistically

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significant differences between the results of the two measurements (pre and post) in the biokinetic variables of the skill performance of the movement of the feet and in favor of the dimensional measurement (right and left) of the experimental group, as the researcher attributes this development in the skill performance of the experimental group to the variables The biokinematics in the skillful performance of the movement of the feet to the device used and built according to scientific foundations, and the exercises prepared by the researcher for the device, which achieved its goal, which he used in a gradual way from easy to difficult, as well as he explained and presented the skill in a simplified way in front of the students and then presented the kinetic sequence of the skill on The device and emphasizing the movement directly after the light mark and not moving except at the instigation of the device, as well as maintaining individual differences by controlling the speed of movement and then allowing the students to apply exercises with correcting errors and giving simultaneous feedback, as the researcher quickly indicated the error and corrected it through the presence of lighting (Lod), which facilitates giving instant feedback to the student by determining the distance between the feet and which feet move during progress and which move during retreat and lateral movement and then is considered as feedback to know the appropriate performance as this helps to know the path of the movement of the body through the clarity of the angles of the variables investigated and the speed of performance This is also in agreement with the opinion of (2000, P125, Hudets) that the starting angle of the trunk is useful in terms of the trajectory of movement and the nature of its performance. Then the increase in the speed of performance gradually and in proportion to the ability of the students, and this was emphasized by (Faraj, 2007) "The process of elaborate training must be an important factor for success in any exercise, and the coach or teacher must take into account not only the speed, height, and distance, and direction, but also the time period of performance and its appropriateness to the age of the student and the level of his ability when planning the exercise, as well as the accurate description of each skill gives the learner an idea of the principles of movement. They practice this kind of sporting event, so this improvement that happened It goes back to the repetition that led to the acquisition of the form of movement during the educational process and the ability to think, and this is confirmed by (Shalash and Sobhi, 2000) "The practice and effort in training and continuous repetitions are necessary in the training process, and training is an assistant and necessary factor in the process of the individual's interaction with the skill Controlling his movements and achieving coordination between movements The constituents of the skill in proper successive performance in an appropriate time and continuous training alone increases the development and mastery of the skill. Presentation and analysis of the results of the dimensional difference measurements of the biokinetic variables of the skill performance of the movement of the feet for the members of the two groups (experimental and control) and their discussion: In order to identify the significance of the difference between the dimensional measurements of the biokinetic variables in the level of skill performance of the movement of the feet for the members of the two groups (experimental and control), the researcher used (t) test as a statistical means to achieve this purpose and find out the

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truth of the difference In the research variables in the results of the dimensional measurements for the two groups and table (9).

Table 10. The statistical indicators of the results of the dimensional measurements.

Biokinetic variables	Unit	Stand ready	Nature of movement	Controller		Experimental		Calculated t value	Indication level	Indication level
				Std	Middle	Std	Middle			
left knee angle	Degree	Right	ready moment	5.872	143.933	4.099	146.433	2.855	0.006	Moral
		Left	moment of progress	8.289	156.667	6.026	151.6	-2.708	0.009	
		Right	ready moment	5.149	147.8	4.305	140.233	-6.175	0.000	
		Left	moment of progress	5.363	144.167	7.528	165.133	12.424	0.000	
right knee angle	Degree	Right	ready moment	14.213	150.933	10.709	162.733	2.205	0.031	Moral
		Left	moment of progress	11.482	153.567	8.619	169.833	6.206	0.000	
		Right	ready moment	6.683	161.6	16.171	148.467	-4.111	0.000	
		Left	moment of progress	5.532	159.433	9.673	153.233	-3.048	0.003	
Peripheral velocity of the body	m/s	Right		0.253	5.062	0.647	5.585	4.125	0.000	Moral
		Left		0.423	5.021	0.739	5.643	3.998	0.000	
Time	s	Right		0.267	0.122	0.013	0.104	-3.373	0.001	Moral
		Left		0.013	0.165	0.004	0.097	-21.335	0.000	

Table (10) shows the statistical indicators of the results of the dimensional measurements of the two groups (experimental - control) in the biokinetic variables of the skill performance of the movement of

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the feet. Greater in the dimensional measurement of the experimental group than in the dimensional measurement of the control group, a significant change occurred between the two measurements in favor of the dimensional measurement of the experimental group, and this indicated the level of significance through the use of (t) for independent samples, as it was less than the significance level (0.05), which indicates that there are differences Significant difference between the two measurements and in favor of the experimental group

By noting the table (10), it becomes clear to us that there are significant differences between the results of the experimental and control groups in the two-dimensional measurements in the biokinetic variables of the skill performance of the movement of the feet and in favor of the experimental group. As it was found that the experimental group members' use of the proposed device worked to perfect the Improving the motor path of the feet according to the studied biokinetic variables and bringing the learner to advanced stages of elaborate learning, which facilitates the learning process and improves the biokinetic variables on a regular and ideal basis, reducing injuries, thinking and understanding the motor path of skillful performance, and this is confirmed by (Al-Samarrai and Mahmoud, 1991) "that the use of Assistive devices lead to an increase in the impact of what he learns This allows learners in the mathematical field to have a broader scope for observation, thinking, understanding, exploration and consolidating the information in their minds." For the coach or the teacher, as we know that when teaching the skill of moving with the feet, the coach or teacher closely follows the player during the movement for fear of performing a wrong movement that hinders the correct movement of the boxer, especially during the retreat and side movement, as it is clear from the results of the angles of the biokinetic variables, which led to taking the ideal position of readiness as well as Preventing excessive movements from the performance of the movement of the feet as a result To adjust the biokinetic variables by means of the device and to determine the motor path of the feet and the distance between the feet, as (Hussain and Shaker, 2000) see that the wrong and common method used when performing is bending or bending (breaking) forward, through the inclination of the upper part of the body, which is done Often more than what is required due to the inclination of the trunk, which affects the result of performance, as it is variable in the control group according to the movement of the teacher or coach. As for the experimental group, the performance in it is fixed and the reason is the ideal design of the device in proportion to the nature of the movement learners on the device and the speed and quality of movement, whether steps Or jump, and therefore all of these things were taken into account in the work of the device, as it effectively contributed to learning and development The technical performance and the kinetic path of the biomechanical variables of the skill of the students and the provision of effort for the teacher as well as the shortening in the performance time and thus the device has allowed to increase the number of repetitions for each student, and this is consistent with (Abdullah et al, 1990) The harmonic abilities required by the boxing technique and tactics, which play a prominent role in shaping the technical level of the boxer's performance and improving his motor path." He also confirms (Osman, 1987). There is confirmation by experts that there are some variables that directly affect the educational

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process, including: The element of surprise, excitement, and the desire to use the device and know how to perform as it is one of the important and basic conditions for the learning process, and also the presence of the device in this way helped the students to adjust the distance of movement between the feet and their speed when performing through which the performance of repetitions within the appropriate distance resulted in an improvement in the motor path of performance, And he confirms this (Mahjoub, 2002, pg. 195) "that when the coach and the teacher move, the student cannot know if the given attempt to move was True or not, because he does not have the correct signal through which he can evaluate the outcome, while the evaluation of the yield was clear to the students by knowing the appropriate distances for all parts of the body and its distance from the device. the intruder by performing the movement of the feet according to the path set by the device and thus directing the student's performance on the floor (boxing smart ground), and this is what was recommended (Allawi, 2002, pg. One of the stimuli that can distract the student.

8. Conclusions and recommendations

8.2. Conclusions

In light of the results of the research and the statistical treatment of the data obtained in assessing the skill performance of the movement of the feet and the kinematic analysis, the researcher reached the following conclusions:

1- The perfect performance of the skill according to the biokinetic variables speeds up the process of mastering the skill and does not allow for technical errors in the performance, and this is what the device worked on by determining the movement distances of the feet. The proposed device provided an increase in the number of repetitions for each student.

5- The proposed boxing smart ground device has effectively contributed to learning the skill of the movement of the feet.

6- A clear development appeared in the values of some kinematic variables during the progression stage of the research sample (post-test) when compared with the values of the post-test of the control group.

7- The proposed boxing smart ground device has a positive effect on improving some biokinetic variables for the skill of the movement of the feet.

8- The boxing smart ground device gave students self-confidence and desire to perform by overcoming the fear factor of incorrect performance in learning to perform the skill of the movement of the feet. The use of the proposed device has saved the effort and time for both the teacher and the student in teaching and learning the movement of the feet, and it had a positive impact on the students' interaction with the lecture. 4.2 Recommendations

The researcher recommends the following:

1- Using the boxing smart ground device in the process of teaching beginner boxers the skill of the movement of the feet.

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2- Conducting similar studies to find out the effect of assistive devices in learning other basic skills in boxing and other sports activities.

3- Designing and manufacturing suggested auxiliary devices from simple materials available in the local markets to teach Different sports skills. Circulating the proposed device to faculties of physical education and sports sciences in Iraq and abroad to benefit from them in teaching the skill of the movement of the feet first and sports institutions secondly.

1- Emphasis on the correct construction of students in the early stages of their education of the basic skills of various sporting events.

2- Emphasis on making learning methods and methods in line with the learner's requirements and abilities, and that some means may be sufficient to facilitate the learning process

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