The Effect of Exercises with an Assistive Device on the development of the starting speed of shuttlecock and the accuracy of driver skill for players to (12-15 years) in badminton

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Abstract

Achieving sports achievements in many games in general and badminton in particular is closely related to various sciences, including kinetic learning and sports training that is concerned with the study of sports movements and work on diagnosing strengths and weaknesses and reaching skill to high learning stages that contribute to achieving achievement and the goal of the movement. The research problem is summarized by doing exercises with an assistant device that measures the height of the feather above the net with three heights. Point and win. The aim of the research is to identify the effect of exercises prepared with the auxiliary device on the variables of badminton launch and its accuracy of the frontal blow to players aged 12-15 years in badminton. The researchers used a sample of 6 players, who performed tribal tests on them, then the exercises prepared for them were applied, and then the post tests were conducted. The results were analyzed by the spss statistical bag, and then the results were discussed. The researchers reached the following conclusion The prepared exercises had a positive effect on improving the starting variables and the accuracy of the frontal strike for the players, the research sample The researchers also recommended the need to use exercises to improve the starting variables and the accuracy of the blow for players in other badminton skills, in addition to the use of assistive devices and techniques to accelerate the development of performance

1. Introduction

1.1 Introduction and the importance of research:

Achieving sporting achievements in multiple games in general and badminton, in particular, is closely related to different sciences. These include motor learning and sports training, which is interested in studying sports movements and working to diagnose strengths and weaknesses and bring skills to high learning stages that contribute to achieving the achievement and goal of the movement.

The Badminton game is similar to all other sports. It consists of several basic skills on which the game is based. The interdependence of these skills is the structure that pulls per other and prepares the motor path. The speed and accuracy of skill is an essential indicator in the achievement of the final learning result and provides an accurate indicator in adjusting the variables affecting skills According to the researcher, these indicators can be adjusted by studying variables affecting skill and using modern electronic technologies and assistance.

It is a critical means of adjusting the motor path and the speed and accuracy of performance, as the use of various means and devices makes the learning process more effective and positive. A strike is furthermore one of the main attacking skills in badminton, which the player constantly uses to settle points in his favor.

It is one of the most commonly used strikes on the side as the feather achieves very increased speed. So it's one of the hardest blows to competitors if they're in the right places. The players perform this skill frequently during their competitions.

Therefore, it requires high speed in addition to accuracy and the player may perform this skill more than once in a few minutes.

The use of special exercises, assistive devices, and the correct performance of skill will contribute to improving the variables affecting and accurately performing this strike.

1.2 Search problem

Each skill includes an essential goal that the player aims through his performance of skill to achieve and dealing with the bat in badminton skills is to achieve the basic purpose of accuracy and speed of the feather to ensure the achievement of the goal of skill and requires the investment of the player all his physical and skill abilities to ensure the victory of the game.

The researchers believe that the speed of the shuttlecock is one of the important and decisive variables in the success of the player's performance, in addition, speed must be crowned with accuracy, so the balance between speed and accuracy is one of the most important factors in achieving victory.

The strike skill is one of the main offensive skills of badminton players, so the goal of the attack is to send the feather in critical places to the opponent's stadium as shortly as possible in order to gain a direct point from it or put the opponent in a hard defense position and then control the sending of the feather in the areas far from him and achieve the goal of skill

Through the above, the researchers saw the work of exercises with an auxiliary device that measures the height of the feather above the net by three heights and the closer the feather to the net the better performance

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and the determination of the places of fall of the feather accurately within the area of the competitor is complementary to the effectiveness of the good performance of the player, which is an attempt to balance the speed of the feather with good accuracy and thus resolve the point and achieve victory.

1.3 Research Objective

To identify the influence of stomach exercises with the auxiliary device in developing the speed of the shuttlecock and the accuracy of the frontal strike for the players of the Specialized Training Center aged 12-15 years in badminton.

The exercises prepared with the auxiliary device positively affect the development of badminton launch speed and the accuracy of the frontal strike for the players of the Specialized Training Center aged 12-15 years in badminton.

1.4 Research Areas:

1.4.1 Human Field:

Players of the Specialized Training Center aged 12-15 years in badminton for the season 2021-2022.

1.4.2 Spatial Field:

The indoor sports hall at Al-Mahweel Sports Club (Specialized Training Center for Badminton Players).

1.4.3 Temporal Field:

The period from 25/12/2021 to 10/4/2022

2. Research methodology and field procedures

2.1 Research Methodology:

The researchers used the experimental method with one equal group, which is consistent with the nature of the research problem.

2.2 Research community and sample:

The research community included the players of the Specialized Training Center aged 12-15 years in badminton in the province of Babylon, which numbered 12 players, and 6 players were selected as a research sample who are the players who train in the specialized center in the hall of the Sports Club of Al-Mahweel from the sequence of 1-6.

Due to the classification of the trainer in charge of the center (*), the research sample is made up of six players, representing 50% of the original research community, and the sample was selected in an intentional manner. Table (1) shows the specifications of the sample.

Table (1) Demonstrates the specifications of the research sample

Variables	Unit of measurement	average
Time age	Year	13.8
Training age	Month	26/Month
Length	Centimeter	52. 1
Body mass	Kg	54 kg
Trunk length	Centimeter	0.40
Arm length	Centimeter	0.58 cm

2.3 Instruments, means, and devices used in the search:

- A device for measuring height and weight.
- WALLSON badminton rackets, 10 rackets.
- WALLSON squash rackets, 5 rackets.
- Natural, legal plane feathers, type (YONEX), 60 packs.
- Badminton courts and their accessories (lists, nets) 2 pitches.
- Metal tape measure.
- Medical balls weighing (2 kg, 1 kg).
- Three (3) type electronic stopwatch (CASIO).
- Rubber ropes of different lengths and resistances.
- Dumbbells of different weights.
- A Japanese-made CASIO type camera with a frequency of 1200 images / sec. Number (1), it was set at a frequency of 125 y / sec.
- A Japanese-made CASIO hand-held calculator.
- Japanese-made LG display screen.
- A laptop computer (Inspiron-1520) of the type (HP).
- Software and applications used in the computer for kinetic analysis.
- The scale of the drawing (1 m length) to find out the real value that appears in the film. The length of the film is one meter in fact, and it is equal to (1.53 cm) in the picture.
- Adhesive tape with a width of (5) cm and stationery items.

2.4 Field Research Procedures:

2.4.1 Design of the auxiliary device and testing the accuracy and height of the shuttlecock for players

The researchers have designed an auxiliary device according measure the height and accuracy of the shuttlecock for the forehand-directed stroke of the players. The induction sample is as follows:

2.4.1.1 Device Specifications:

The researchers designed a device to measure the height and accuracy of the feather above the net for the skill of the forehand.

Device components and specifications:

The purpose of the device: Measuring the height and accuracy of the shuttlecock above the net and the pitch for the forward strike of the badminton players.

Components of the device: It is an electronic device inside a small rectangular box with a height of 60 cm and a width of 15 cm. It is installed on an iron base and a holder with a height of 1.55, which is the same height as the net column in badminton. The box contains:

First of all: Ten sensors installed along the device, type (E18-D80NK), and the distance between one sensor and another, all of the following:

The first level starts from the bottom of the device and reaches 15 cm above the net. The feather at this level is given a higher degree than the remains of the areas (5

* Mr. Taher Obeid, the trainer specialized in training players at the Specialized Training Center for players aged 12-15 years in the Al-Mahaweel Club hall.

points).
The following area (the second level) is 15 cm away from the last sensor from the first level, according to its height from the net is 30 cm, which it is given a score (3 points).
In the case of a feather between two levels (the first and the second), there is a sensor that measures this feather and provides a score (4 points), which it is one sensor between the two levels, measuring 10 cm (5 cm from each level from the bottom and top).
The third level has a measurement of 20 cm after the last sensor of the second level, which consists of 4 sensors. The recording of the degree at this level is as follows:
The feather that passes between the second and third levels is given 2 degrees, and there is a sensor installed between these levels that measures a distance of 10 cm between these(5 cm for each level and overlapping).
The feather that passes over the intercessor is given one point, and it measures 15 cm above the interfacing sensor.
Therefore, there will be 10 sensors 3 for the first level (2 sensors score 5 points and the third interphone sensor scores 4 points).
Sensors for the second level (2) two sensors that record 3 points and the interphone sensor records (2) two points for the feather passing through its field).
Third level sensors 3 sensors that record one point (and one sensor between records 2 points for the feather passing through its field).
The total height of the device is 50 cm, and the device measures 50 cm horizontally above the grille.
The total score for the total points is the maximum (5 points) and the minimum score (1 point).
A feather that passes over the device or after a distance of 50 transversely above the net is given a score of (0) points.
Thirdly: Screen (7segment): It is a small screen installed on the side of the box measuring (15 x 10 cm) on which the recorded points for each level are shown in color.
Fourth: The controller: (Arduino module 2560), which is the main part of the device. It is placed inside the box, connected to the sensors, and fed with the program designed to measure the device.
Fifth: (Relay module 8channel):
Sixth: OFF-ON Push Button Switch

Seventh: The badminton court on the opposite side plans five areas, and each area has a degree of accuracy, as shown in Figure (2) and my agencies:
The first zone: is 72 cm away from the front transmission line and up to the rear accuracy areas and is given one degree
The second zone: It is 100 cm away from the first zone and 60 cm wide, and it is given 2 degrees for the feather falling inside it
Zones (third, fourth, and fifth): They are in the form of a rectangle divided into three zones. Each zone is 300 cm long and 20 cm wide for each zone. Grades are given 3, 4 and 5 and start from the side of the center line, to the individual side line, and to the end of the playing field. Note that all areas of accuracy test are 60 cm wide and 60 cm wide. 60 cm and one degree is given in case the feather falls after passing the net in this area. Figure 1 shows the precision areas of the badminton court.

Performance specifications:

Firstly: The player stands in the designated area. Which is in the middle of the field. Assigned to him in a position of readiness to receive the shuttlecock coming from the coach, next to the field of the preferred arm of the tested player.
Secondly: The coach sends the shuttlecock to the performance area on the side of the tested player, then the player moves to the side of the field in the area specified by (1 x 1 m) and at a distance of (2. m) from the front service line in order for the researcher to ensure that the player performs the skill within the scope of The camera installed on the side of the stadium, which is 620 cm away from the player's readiness area and is perpendicular to the performance on the side of the stadium, and the height of the lens is 1.25.
Finally: the tested player plays the shuttlecock with the skill of the forward strike so that the shuttlecock passes over the net through the specified areas of the device, which are five heights and three levels distributed over the areas of the device and as follows:
The first zone (first level) is 15 cm above the net, and it scores 5 points.
The second zone (the second level) is 15 cm after the last sensor of the first level and its degree is 3 points (the feather that passes between the two levels, there is a sensor that measures on a range of 10 cm between the two levels, and its degree is 4 degrees, so the height of the two levels from the network to the last sensor of the second level 30 cm It is given 5-4-3 scores in a row and measures 30 cm).
The third zone (the third level) with a distance of 20 cm and after the last sensor from the second level up to 20 cm, the degree of the feather passing through it is 1 degree, while the 2nd degree is given to the feather that passes between the second and third levels, which is a sensor that reads with a field of 10 cm (5 cm for the second field), and (5 cm for the third field).
A feather that does not pass through the reading range of the device is given (zero)
Therefore, the degree of height of the feather above the net for the skill is (5, 4, 3.2.1), respectively

3. Register

The degree of reading the device is combined with the degree of accuracy inside the playing court so that the final score of the test is made up of the degree of the device recording the height of the feather above the net (1-5).
Each player is given 5 attempts, so the maximum final score for the test is from 50. The lowest score a player gets is zero, because for a feather that falls outside the test limits (the device and the playing areas are given zero).
The shuttlecock that falls on the line between two areas in the precision areas of the opponent's court is given the highest score.
For a feather that passes from the top of the net and above the device, a score of zero is given for the device,

while calculating the degree of accuracy of the shuttlecock inside the opposite court.

A shuttlecock that passes from the areas of the device above the net after its implementation by the laboratory and falls outside the planned accuracy areas on the competing court is given a degree of height above the net recorded by the device.

A shuttlecock that falls outside the bounds of the playing court is given a zero regardless of its trajectory from the equipment.

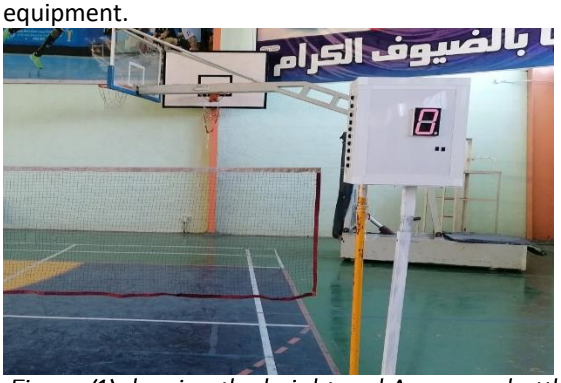

Figure (1) showing the height and Accuracy shuttle test

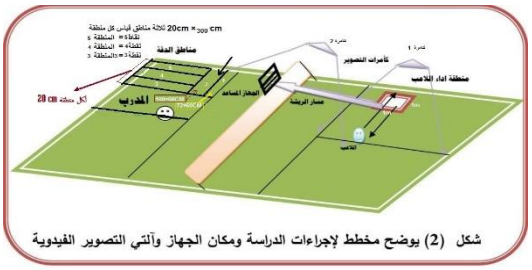

Figure (2) shows the designed device

2.4.1.2 The scientific basis of the device:

Device authentication:

In order to verify the validity of the test on the device, the researchers relied on the validity of the content by presenting the device to a number of experts and specialists (*).

Device stability:

In order to ensure the stability of the device to measure the accuracy of the height of the feather above the net, the researchers used the (test and re-test) method. Players in the same conditions and variables. After processing the data statistically by finding the correlation coefficient (Pearson) between the results in the first time and the second time. It has found that the device gives the same results in the two tests, which confirms that it has a high stability coefficient as shown in Table (2).

Device objectivity:

To ensure the objectivity of the test, the researcher used two assessors when applying the test to the device and after processing the data statistically by finding the simple correlation coefficient (Pearson) between the assessors' results. The result was the test has a high objective coefficient as shown in Table (2).

Table (2) Scientific bases for a device for measuring the accuracy and height of the shuttlecock above the net for badminton players

No.	auditions	constancy	Objectivity
1	Test the device feather height meter over the net with the forward steering stroke of badminton players	0.90	0.88

3.3.2 Calculating the starting speed of the shuttlecock

Feather launch speed:

The distance traveled between the first shot at the moment of striking to the second shot. After hitting (badminton with racket) over time. It was extracted through the camera that was installed inside the test field, as shown in Figure (2).

3.3.3 Survey experience:

The researchers conducted their pilot experiment on two players. The two players are from the Badminton Academy in Mahaweel and at the Mahaweel Sports Club Hall on January 24, 2022 at four in the afternoon.

For these purposes:

Firstly: To ensure the validity of the photocopiers and to inform the work team of the nature of the procedures.

Secondly: Determining the final location of the cameras, making sure the device is valid, working, and testing the accuracy.

In addition, the appropriate degree of illumination was determined. After the rise of the cameras and the time required to perform the experiment and practice measuring anthropometric variables.

As well as the demand for some essential supplies, in addition to identifying part of the research sample. After that determining the extent of their response, confirming that the player's performance appears in the photo, and after completing the reconnaissance experiment. This experiment was re-applied on 29/1/2022.

The purpose of it is to ensure the integrity of the performance test. By finding the scientific coefficients of the test (honesty, reliability, objectivity). And for the purposes of honesty, which is (an estimate to see if the test measures what we want to measure, and nothing but what we want to measure)(1) .

The researcher used apparent (logical) honesty. Which means that the test appears to be true in case of it purposes. The researcher also used the validity of the content. It adopts this kind of honesty on the basis of the judgments and estimates of experts. In fact, the estimates of experts with scientific and applied experience, which we obtain in conditions that have been carefully controlled. To reduce the impact of subjective factors is of great importance in determining the strength of this type of honesty.

Therefore, the experts must be selected with the exact specialization, after presenting the details of the

* appendix .

(1) Mustafa Hussein Bahi: Scientific Transactions between Theory and Practice, Al-Kitab Center for Publishing, Cairo, 1995, p. 23

performance effectiveness test and obtaining the approval of the experts on its content(*).

The researcher sought to ensure the reliability of the test, which means (the extent of accuracy with which the test measures the phenomenon that is the subject of the measurement)(1) .

By showing the video imaging - twice in succession to the experts(*), so that there is a time interval between the two shows (two weeks) and the test was set under the same conditions in the first test.

The retest method is one of the most appropriate methods for determining the stability of many scales and tests, and this is done by finding the correlation coefficient between the first and second measurements, as its calculated value is (0.93).

In order to ensure the objectivity of the test, which means (there is no difference between the estimators in judging something, or on a particular subject)(researcher the 2) resorted to using Kendal's coefficient among the degrees of experts, "as this coefficient is used for the purpose of measuring the agreement between three or more experts" The Kendall coefficient reached (0.89), which indicates a high objectivity, especially in the tests that rely heavily on the subjective estimates of experts(*).

3.4 Main experience:

3.4.1 Tribal tests:

The exemplary experiment was conducted by pre-testing the research, experimental and experimental sample on 5/2/2022 in the Al-Mahaweel Sports Club Hall at exactly three o'clock in the afternoon.

The performance was filmed, due to evaluate the sample in tribal tests. Secondly, recording the tribal data in the registration form, in addition to showing the videography to the assessors.

3.4.2 Trainings used in the study:

The exercises prepared by this device According to the motor performance characteristics of the skill: to adjust the motor path of the skill.

By preparing exercises that enable the player to perform the skill. This is according to working angles. That force the player to adjust the variables affecting the effectiveness and accuracy of the skill. Due to the kinematic paths of the badminton, which ensures that the badminton is played in the opponent's court. Which contributes significantly to scoring points and controlling the motor performance of the skill in a highway.

The exercises prepared to contribute to the following:

The skill evolves a movement mechanism.

Decreased effort exerted in performance as a result of low levels of muscle tension.

Achieving the highest degree of accuracy.

Streamlined and uninterrupted performance.

Complete the least possible effort while performing at a high level.

Disappearance of performance defects (motor appendages that are of no use in skill).

Minimize feedback from the trainer.

Reaching the degree of performance mechanism through the specifications of the previous goals gathered together.

Approaching the right performance model.

Exercising using technical equipment is the "optimal method for adjusting the motor path of the badminton and the performance of the players, which is similar to the time course of strength with the muscle groups working during the exercise with the technical path of them during the same skill."(3)

It is through these special (motor) exercises used. The researcher intends to use exercises with the help of an innovative device (feather height measurement device over the net). Kinetic style similar to the perfect performance of the skill studied. By emphasizing the parts of the skill. In addition, the effectiveness of its performance for the players (stages of technical performance of skills).

From the time of the unit, 25-30 minutes were allocated for the exercises used by the device. Due to capabilities, level and physical ability of the research sample. The researcher depended on the development of the exercise vocabulary with the designed device. The opinions of experts and specialists in kinesiology, kinematic analysis, badminton were taken and based on scientific sources.

These exercises applied from 22/1/2022 to 2/3/2022. Which will be overlapping with the curriculum prepared by the coach of the team.

The researchers were keen to present the exercises immediately after the warm-up in the first section of the main part of the training unit. Because exercise depends on high mental focus and neuromuscular coordination in particular. Any fatigue in this aspect will have negative repercussions in the development of neuromuscular compatibility. So it was at the beginning of the training unit. If fatigue is found in this aspect, it will have negative repercussions in the development of neuromuscular compatibility. So it was at the beginning of the training unit.

The researchers directly followed the trainer's application of the exercises to the research sample. In addition, they were keen to gradually increase the difficulty of performing each exercise, advancing the level of exercise in the learning dose.

This was done by conducting average tests every two weeks for the research sample. Through competition and semi-competitions between players, photographing and displaying the performance and comparing it to the players and the information obtained from measuring the device in each test in addition to the researcher's notes and explaining the kinetic analysis of skills and what is

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* appendix 2 .

(1) Laila El-Sayed Farhat: A previously mentioned source, 2000, p. 144

* appendix 2.

(2) Mustafa Hussein Bahi: Scientific Transactions between Theory and Practice, Al-Kitab Center for Publishing, Cairo, 1995, p. 23

* appendix 2.

(3) Zaki Mohamed Hassan: Volleyball, Defense and Attack Training Strategy. Alexandria, 1998. p. 153.

required of the player when performing the skill.
As (Muhammad Hassan Allawi 1997) indicates, "The gradual rise in the degree of pregnancy does not mean that the pregnancy increases from day to day, but rather means that the level of pregnancy continues for a certain period." (1)
The researcher adopted the principle of gradualness in the prepared exercises. In order to develop motor work and learn the link between the stages of performance. Plus how to take advantage of each part of the movement. Using exercises of appropriate intensity. Then move on to more complex exercises and then increase the difficulty of the exercises. By overlapping exercises such as jumping, jumping, using hurdles, and gradual exercises. As well as by the number of repetitions in relation to the size and the approach or distance from the network and the different heights.
For the purpose of performing the exercises with the designed device and informing the sample of the results of the exercises directly. In order to correct performance and adjust distances, speeds and times in relation to intensity. As well as to achieve the best performance and gain the appropriate strength and speed of performance to reach the effective performance of the skill. Thus achieving high accuracy with physical work balance. Through the optimal skill work to shorten the effort so that the number of success times and accuracy of the skill is calculated after each performance, which was measured after each performance.
As for the rest period. It was between the groups and between each exercise and another. So that rest was enough to restore strength and start the second exercise. The times were adjusted through the tests conducted by the researchers on the research sample before starting to put the exercises.
The duration of the exercises was 6 weeks, with 3 educational units per week. That is, a total of 18 educational units and it lasted for the period from 22/1/2022 to 2/3/2022.

3.5 Dimensional tests:

After completing the prepared exercises syllabus using the assistive device. Post-tests were conducted for the research sample on 5/3/2022 at 3:00 pm in the closed sports hall of the Al-Mahaweel Sports Club, the training center for the research sample. In the same conditions in which the pre-tests were conducted, the researchers were keen to provide the conditions and procedures for the pre-test.

3.6 Statistical means:

The researchers utilized the statistical package (SPSS), in which the statistical means of the crisis were extracted to process the results.

3.4 Presentation, analysis and discussion of the results:

3.4.1 Presentation, analysis and discussion of the results of the variables, the speed of the shuttlecock and its accuracy for the forehand directed stroke of the research sample players.

No.	Variables/Unit of Measurement	Pretest		Post test		Calculated	sig	Significance
		Q-	on	Q-	on			
1	Choose the precision of the feather for skill	22.8	0.04	30.9	0,02	22. 14	0.000	Moral
2	Speed of launch of the feather M/Tha	74.77	5,10	107. 15	4,15	18.29	0.000	Moral

4. Discussing the results:

Discuss the results of the studied tests:

The results of Table (3) showed that there was a significant difference in the accuracy variable of the forehand stroke and the starting speed of the shuttlecock for players aged 12-15 years, the research sample. This indicates that the exercises with the auxiliary device have achieved their goal. The badminton player needs the explosive power of the striking arm. Due to achieve the greatest amount of force at the moment of striking.
During the performance of offensive skills, in addition to achieving the required speed and lightning resulting from the strength of the shoulder muscles and the striking arm. Which is characterized by these skills, especially in the skill of the front paid strike. Also, the exercises prepared with the device forced the saliva to play badminton at a close level on the net to get a good score. As the lower the blade at the level of the net, the better the degree recorded from the device. This hitting the shuttlecock at this level makes the player make a good starting angle (reducing the launch angle).
Thus shortening the turning radius of the striking arm before the moment of striking to ensure good timing of the striking stage of the shuttlecock. This enhances the angular velocity of the racket. The arm thus gains a good rotational speed at this point. After that, the player extends the striking arm from the elbow joint while maintaining the starting angle represented by the angle of the wrist. This is what gives the shuttlecock a high linear velocity. So the shuttlecock takes off at a high speed. This explains the significant results in the differences between the pre and post tests of the feather launch speed variable.
The researchers believe that what determines the success and effectiveness of the skill is the speed of the feather after striking. Which you gain from the amount of power gained from the explosive power of the striking arm. As the speed increases by increasing the amount of force of the striking arm, and this was confirmed by (dxion) (the starting speed increases as the forces of instantaneous thrust increase). The starting speed is equal to the total force exerted in the different directions made by the

(1) Muhammad Hassan Allawi: The Science of Sports Training, 6th Edition, Cairo, Dar Al Maaref, 1997, p. 159.

player from the movements of the extension of the body all the way to the striking arm. The higher the speed, the greater the power. This is what the researchers confirmed during the exercises used with the device and for movements similar to the performance of the racket. The movement of rapid parts of the body during performance. The player was able to get the maximum movement between the parts of this movement.

This is consistent with what was mentioned (Abu El-Ala Ahmed, 1997) "that speed exercises are performed with the maximum possible intensity." Also, performing exercises in a manner similar to the movement with a feather is consistent with what Biron mentioned "The basic rule of any approach to preparation and preparation depends on the specificity that means that The movements performed shall be as close as possible to the movements that the player will direct during the competitions.

The results of Table (3) also showed significant differences in accuracy in favor of the post-test. It is noted that these differences were not at a high level, although they are positive, as the player here focuses on the accuracy of performance at the expense of speed, and this was confirmed by (Yarob Khayun 2000) (when we train on accuracy, we reduce movement speed

Conclusions and recommendations:

4.1 Conclusions:

Exercises prepared by the auxiliary device positively improve the accuracy of the forward strike in the players of the search sample.

The exercises prepared by the auxiliary device positively improve the speed at which the feather starts to the front-oriented strike in the players of the search sample.

The designer device achieved the desired goal of manufacturing it.

The factory device came safe for the members of the search sample as it is easy to transport and cheap recommendations:

Handle exercises based on scientific foundations and training on them and according to the stages of performance in succession so that the basic conditions and requirements of motor performance are met.

Training programs prepared by trainers should contain scientifically based exercises based on kinetic analysis, techniques and auxiliary equipment for the purpose of contributing to the development of basic skills in the flying feather.

Conduct similar studies with exercises and aids to develop other basic skills that the researchers did not address in this study.

Recourse

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Appendix

Appendix No. (1)

Names of experts and specialists who were offered the test and the device for the purpose of scientific foundations

No.	Name and scientific title	Jurisdiction	Workplace
1	dr Mazen Abdul Hadi Ahmed	Motor Learning	Babylon University Physical Education College
2	Dr. Mazen Hadi Kazar	Learn a feather	Babylon University Physical Education College
3	Dr. Maher Abdul Hamza Hardan	Feather Training	Babylon University Physical Education College
4	Dr. Wissam Salah Abdul Hussein	Learn a feather	Karbala University Physical Education College
5	Dr. Hisham Hindawi Houidi	Racket analysis	Al'Qadisiyah University Physical Education College
6	Dr. Nada Nabhan Ismail	Feather tests	Baghdad University Physical Education College
7	Dr. Louay Hussein Shukr	Badminton	Faculty of Physical Education - University of Baghdad

Appendix No. (2)

Exercise	Duration of exercise	Duplicate		Rest		Total time	Exercise goal
		exercise	set	exercise	set		
Coach	20min/Trainer's workouts					Body configuration (experimental + officer)	
Main section 60 minutes exercise time of the device 30-35 minutes							
Stand in the middle of the field and then move on the side of the un favorite arm plays a backhand without a feather and then back to the middle and move and play the feather sent from the coach with a driven blow so that it falls in the farthest place of the opposite field and passes through the device	12shuttle 1.5m	3	2	1m	3m	10m	Development of the dynamic path and strength of the feather

The player in the middle of the field then moves towards the net to the other side and then returns to the center and then moves with a quick movement to the side and plays the spray sent from the coach with a push blow to pass through the device trying to put it in the basket in the opposite field on 2.5 m of the net	12 Shuttle 1.5	3	2	1.D.	3.m.	10 m	Developing the smoothness of movement of players
Play with the colleague through the device with score points (calculate the number of attempts to feather according to its passage from the areas of the device)	10m	1	1	-	-	10m	Develop the speed and trajectory of the feather above the grid
Trainer exercises	Various skill exercises (30-35 min) To develop skill performance (experimental + control)						
20 minutes Trainer exercises							