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**Baneen Ibrahim Rbeh**  
College of physical Education  
and Sport Sciences – Wasit  
University – Iraq

**Dr. Mohammed Abdul-Nabi  
Mohammed**  
Prof., College of physical  
Education and Sport Sciences –  
Wasit University – Iraq

**Corresponding Author:**  
**Baneen Ibrahim Rbeh**  
College of physical Education  
and Sport Sciences – Wasit  
University – Iraq

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## The effect of special exercises on developing kinetic flexibility and backhand strike skill for badminton players under 19 years old

**Baneen Ibrahim Rbeh and Dr. Mohammed Abdul-Nabi Mohammed**

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### Abstract

The game of badminton requires precision in the dimensions of the shuttlecock on the opponent's court and the ability to send the shuttlecock to the back court and overcome the slowness of the shuttlecock in the air due to its structural nature and due to the lightness of the shuttlecock and its extreme speed when struck. It requires a quick response, quick reactions, quick strength and high agility. Players must move very quickly, have flexibility, and make explosive movements to use the racket very efficiently.

Kinetic flexibility is one of the bio-kinetic abilities that represents an important and major component of the kinetic aspect. Flexibility has a great benefit that is combined with the rest of the kinetic abilities and is considered one of the pillars upon which the acquisition of kinetic performance and mastery of the basic skills in badminton are based. The main goal of the special exercises is to develop the kinetic flexibility aspect that contributes to mainly in carrying out the required kinetic duty, and here lies the importance of the research. The research problem was that it was noted that there is a weakness among the players when performing the backhand clearance, and that the shuttlecock does not reach the back corners of the court, which gives the opportunity to win by putting pressure on the opponent and removing him from the player's center of control.

The skill of the backhand strike requires speed of performance and movement from one place to another in order to be executed well. Therefore, it is necessary for the player to have movement flexibility. The aim of the research is to prepare and identify the effect of special exercises in developing kinetic flexibility and the skill of the backhand strike for badminton players under 19 years of age. As for Conclusions: Special exercises have contributed positively to developing kinetic flexibility and the backhand strike skill for badminton players under 19 years of age. As for the recommendations, they should pay attention to developing the flexibility of the body's joints because of its positive impact on the level of accuracy of the backhand skill in badminton.

**Keywords:** Special exercises, kinetic flexibility, backhand strike, badminton

### Introduction

The achievement of sporting achievements in tournaments to the highest levels compared to the results of past centuries, especially in the game of badminton, came as a result of the broad development in the various sciences that contributed to the performance reaching the best required movement paths.

The game of badminton is one of the individual games that has witnessed clear development in recent times, as a result of its entry into the Olympics, which made most countries compete in devising the best scientific methods and means to develop the performance of their players, as badminton is considered one of the sports that requires a lot of physical effort and good physical fitness, and the game of badminton Flying requires precision in the dimensions of the shuttlecock on the opponent's court and the ability to send the shuttlecock to the back court and overcome the slowness of the shuttlecock in the air due to its structural nature and due to the lightness of the shuttlecock and its extreme speed when hitting it. It requires a quick response, quick reactions, quick strength and high agility, as players must move. Very quickly by having flexibility and making explosive movements to use the racket with great efficiency.

Kinetic flexibility is one of the bio-kinetic abilities that represents an important and major component of the kinetic aspect. Flexibility has a great benefit that is combined with the rest of the kinetic abilities and is considered one of the pillars upon which the acquisition of

kinetic performance and mastery of the basic skills of badminton are based. Kinetic flexibility is “the ability of the joint to perform movements within a range of motion.” Wide (Peter J. L. Thompson, 1996) <sup>[1]</sup>. The use of special exercises and the involvement of assistive devices and tools has an important role and positive impact, as it provides a good opportunity to raise the level of skill performance. It is a group of exercises that are similar in their kinetic composition and dynamic arrangement to skill performance, and therefore they achieve the utmost degrees of specialization in developing skill performance in quantity and quality. And in timing, these exercises are also considered auxiliary exercises aimed at developing kinetic skills specific to the type of sporting activity.

The main goal of the special exercises is to develop kinetic flexibility, which contributes mainly to carrying out the required kinetic task.

Here lies the importance of research in preparing special exercises to develop kinetic flexibility and the backhand strike skill of badminton players in order to reduce effort and time. From this logic, the researchers approached this study in the belief that these special exercises will contribute to developing the physical, kinetic and skill level of badminton players.

### Research problem

The game of badminton in Iraq suffers from many obstacles that hinder its development for the better, despite the breadth of its base. Through the researchers' follow-up and observations of tournaments and educational and training units, they noticed that there is weakness among the players when performing the backhand strike, and that the shuttlecock does not reach the back corners of the court that It gives the opportunity to win by putting pressure on the opponent and removing him from the player's control.

The skill of back dimensions requires speed of performance and moving from one place to another in order to be implemented well. Therefore, the player must have flexibility of movement through which he can exchange his opponent's attack and defense and try to gain points quickly in order to win the match in the shortest time and thus maintain his physical fitness for the longest possible period. For each stage, he has to perform the specific skill perfectly.

### Research objectives

- Preparing special exercises to develop kinetic flexibility and backhand strike skill for badminton players under 19 years of age.
- Identify the effect of special exercises on developing kinetic flexibility and backhand strike skill for badminton players under 19 years old.

### Research hypothesis

- There are statistically significant differences in the development of kinetic flexibility and the backhand strike skill between the pre- and post-tests, in favor of the post-test for badminton players under 19 years of age.

### Research methodology and field procedures

#### Research methodology

The researchers used the experimental method with a design (one group with a pre-test and a post-test).

### Research population and sample

The two researchers conducted their research on the research sample, which numbered (7) players, representing the elite players in Wasit Governorate clubs under the age of 19 years.

### Methods, devices and tools used in the research

#### Methods of collecting information used in the research

- Arab and foreign sources
- The Internet
- Questionnaire form

#### Devices and tools used in the research

- Legal badminton court
- A box of 6 feathers
- 20 badminton rackets
- Adhesive tape
- Divided ruler

#### Tests used in the research

**Test of bending the torso forward from the seated position** (Kamal El-Din Darwish and others, 2002) <sup>[2]</sup>:

**Purpose of the test:** To measure the flexibility of the spine, to measure flexibility.

**Tools:** Divided ruler.

**Performance method:** The player takes the hurdles sitting position, then bends the torso forward from the right side and extends the right arm to the maximum possible distance on the included ruler.

#### Performance conditions

- Do not bend the knee while bending the torso forward.
- Stability at the maximum distance reached by the player for two seconds.
- Each player has two attempts, the best of which is recorded for him.

**Recording:** A unit of measurement (cm), which records the distance the player was able to reach.

**Backhand clear test** (Mazen Abdel Hadi Ahmed and Mazen Hadi Kazar, 2013) <sup>[3]</sup>:

**Test name:** Backhand clear.

**Test objective:** Measure the performance of the backhand kick.

**Evaluation of the test:** The degree of reliability was (0.81) and objectivity (0.74).

**Test tools:** badminton court, badminton rackets, shuttlecock, adhesive tape, information form, markers to indicate points.

#### The test

- After the test is explained to the testers, the testers are given an appropriate time to warm up, and then each tester is given (5) experimental attempts.
- The laboratory stands in the area marked with (x).
- The coach serves so that it reaches the left side of the tester (if he is holding his racket with his right arm and vice versa) so that he can hit it with a backhand kick.



### Main experience

After ensuring the safety and validity of all procedures implemented during the exploratory experiment, and the two researchers conducted the exercises by or through a shuttlecock launcher and applied them to the sample members, who numbered (14) players, the main experiment began on Monday, March 4, 2024, and ended on Saturday, 4/5/2024.

In order to follow scientific methods to reach the most accurate results to solve the research problem and in order to achieve the research objectives, the researchers used special exercises with the aim of developing kinetic flexibility and back strike dimensions for badminton players under 19 years of age.

### The training unit was distinguished by the following

- The prepared exercises were for youth under 19 years of age.
- The exercises were applied within the main part of the training unit.
- The number of training units prepared by the researchers (24) training units distributed over (8) weeks, for each training week (3) training units.
- The intensity of the exercises was determined by the best achievement as follows: (Fadel Dahham Mansour, 2022) <sup>[4]</sup>.
- Exercises that include speed:
- The intensity required in training = (best achievement x 100) ÷ the percentage of intensity required for training

- Exercises that include resistance:

Required intensity = (best achievement x percentage of required intensity) ÷ 100

### Post-tests

After the end of the period allocated for applying the special exercises, the researchers conducted the post-tests, where the researcher was keen to create the same conditions in which the pre-tests were conducted and similar ones as much as possible in terms of time and space and the tools used in all the pre-tests.

Or after completing the exercises in the training curriculum and its vocabulary for skills, the researcher conducted the post-tests for the research sample represented by the sample members on (8/5/2024) at (2) pm.

### Statistical methods

The researchers used the statistical package (SPSS) to process the results.

- Arithmetic mean
- standard deviation
- T-test for correlated samples.

### Presentation, analysis and discussion of results

Presentation and discussion of the results of the kinetic flexibility test and the backstrike in the pre- and post-test

**Table 1:** Shows the arithmetic means and standard deviations between the results of the pre- and post-tests in kinetic flexibility and backstrike

No.	Bio-kinetic abilities	Measuring unit	Experimental group			
			Pre-test		Post-test	
			Mean	Standard deviation	Mean	Standard deviation
1	Kinetic flexibility	Cm	128.571	4.790	134.428	5.740
2	Backhand clear	Degree	21.571	3.047	29.857	2.267

**Table 2:** Shows the difference of the arithmetic means, its standard deviation, the calculated (T) value, and the result of the differences between the results of the pre- and post-tests in the bio-kinetic abilities of the experimental group

No.	Bio-kinetic abilities	Measuring unit	Arithmetic mean of difference	Standard deviation of differences	Calculated t value	Level of confidence	Sig.
1	Kinetic flexibility	Cm	5.857	4.561	3.397	0.015	Sig.
2	Backhand clear	Degree	8.285	3.860	5.678	0.001	Sig.

From what was presented in Tables (1) and (2), it was shown that there were statistically significant differences in the pre- and post-tests of the kinetic flexibility test and the badminton backhand strike, in favor of the post-tests. The researchers attribute the reason for these differences to the fact that the special exercises had an effective role in Developing flexibility and the skill of the backhand strike with badminton. The exercises prepared by the researchers had an effective impact in dealing with the specificity of the skill by choosing modern exercises appropriate to the level of the sample members. In light of the above, it is clear that the range of motion in the joints is one of the requirements. Essential for achieving high athletic levels, as the availability of a high level of flexibility in some specific joints is a basis for achieving good technical performance, in addition to contributing to the manifestation of other physical qualities such as compatibility and the ability to perform artistic movements specific to the activity, and in

confirmation of this, (Muhammad Hassan Allawi, 1984) <sup>[5]</sup> points out. (However, the quality of flexibility is one of the important qualities of kinetic performance, both qualitatively and quantitatively, as it constitutes, along with other physical qualities such as strength, speed, and endurance, the pillars upon which the acquisition and mastery of kinetic performance is based, which is the basis for reaching high athletic levels. The growth of this characteristic enables the athlete to Speedy mastery of the technical aspect of various sporting activities.

Good flexibility enables the player to control the body position and ease of movement, as the high level of range of motion of the joints makes movement easy and fast, and also provides economic and effectiveness at the same time, and it has an important and fundamental role in raising the level. The higher the level of range of motion, the more the individual achieves the level of skill performance. Better, and there was a role for the proper application and

organization of the special exercises, which were characterized by giving a variety of exercises for the skill form, balancing rest times with the exercise, and choosing the appropriate location for the exercise and pairing it with the form of the studied skill. The trainees were also introduced to the type of skill, how to perform it, and the purpose of using it, along with a description of the conditions in which the player will perform it. During it with the tool and focusing on the mechanics of the movement to ensure economy of time and effort (Mazen Hadi Kazar, 2003) <sup>[6]</sup>.

### Conclusions

- The special exercises contributed positively to developing kinetic flexibility and the backhand strike skill for U-19 badminton players.
- The special exercises were appropriate for the training level of the sample members.
- The results showed that there is a positive effect of special exercises in developing kinetic flexibility and the backhand strike for badminton players under 19 years of age.

### Recommendations

- Attention is paid to developing the flexibility of the body's joints because it has a positive effect on the level of accuracy of the back dimensions skill in badminton.
- The necessity of coaches using special exercises to develop kinetic flexibility and the backhand sweep skill for badminton players under 19 years of age.
- Ensure that similar studies are conducted in developing kinetic flexibility and other skills for badminton players and for different age groups.
- It is necessary to pay attention to the skill of the backhand strike and focus the coaches on allocating training units for it, because it is one of the skills that forces the opponent to return to his backcourt area and not make him control the center of the court. This makes him move away from the middle of the court and also makes his body's center of gravity move farther back.

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