

Some kinematic variables and special motor abilities and their relationship to the effectiveness of performing the skill of the front drop kick from jumping and stability for badminton players

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ABSTRACT

The importance of the research lies in knowing the real role of some kinematic variables and special kinetic abilities and their relationship to the effectiveness of the front-kick skill performance of jumping and stability in order to reach the technique, good and accurate achievement, and upgrading the level of the player. Next: Do the kinematic variables and special kinematic abilities have an important role in the effective performance of the front dropped blow skill of jumping and stability in the flying feather in the research sample? The research sample, as well as identifying the correlation relationship between the values of some kinematic variables and the kinetic abilities of the effectiveness of the front drop strike skill of jumping and stability in the research sample. Research sample of governorate players Basra Badminton for the competitive season 2020-2021 for the category of applicants, which number (10) players. The fourth chapter is a presentation, analysis and discussion of the researcher's findings. The conclusions were: a significant correlation relationship appeared between the variables (the angle of the elbow joint, the angle of the knee joint, the angle of the shoulder joint, and the height of the hip joint) on the one hand, and the effectiveness of performing the front drop skill from jumping on the other hand. A non-significant correlation was also shown between the variables (the ankle joint angle, the highest height of the feather at the moment the racket touched the feather, the highest height of the feather after launch, the height of the feather over the net) on the one hand, and the effectiveness of the skill of the front drop hitting from jumping on the other hand, and recommendations included confirmation To direct the players to pay attention to the angles of the joints of the body during the technical performance of badminton skills, to use the kinematic analysis programs by coaches and specialists in this field to correct some technical errors of the players that are not seen with the eye due to the speed of movement, as well as to emphasize the increase in the tide in the joints of the body the moment the racket touches for the feather.

Definition of research

Introduction to research and its importance

Biomcanak science is one of the sciences that have contributed to sports, which is concerned with developing the motor performance of humans in general and sports in particular as the first content in the field of physical education and sports science is to study the causes of movement, present the most appropriate kinematic solutions and describe their occurrence using kinematic analysis to adopt modern scientific devices and methods to reach the achievement The high digital level of different sporting events, especially the badminton activity, by using kinetic analysis in order to reach the facts that may contribute to the development of performance skills in badminton effectiveness and this extends to the theoretical science in developing the game through various analytical programs as well as mobility abilities is the pillar The basic rule for that engine is skills that cannot be evaluated, and it is one of the requirements for good performance in the game of

badminton, and the player must possess high-level movement abilities in order to be able to implement the technical skills of the game because each skill in the game needs special movement abilities.

Badminton is one of the favorite games for most of the people of the world for convenience. That is, it sends the spirit of love and pleasure practiced anywhere and not to stay away from the badminton courts. Badminton skills are closely strained. Sports and other sciences, including biomcanak science, which reveals strengths and weaknesses and provides accurate information. The goods may not be seen with the naked eye from the speed possessed by the game of badminton in terms of performance skills or because of the nature of surrounding skills, including the frontal drop skill. The basic skills and the offensive task in the game, where the advantage of this skill is aesthetically pleasing when performed as well as with regard to the difficulty of its technique, so the player needs a high degree of neuromuscular compatibility,

compatibility, agility, balance, and the connection between the parts of the sequential movement and the application of the echo conditions of the performance, As the front hit that does well may contribute to the conclusion of the game when scoring points, and the expected blow is the sudden movement of dropping the shuttlecock directly behind the net in places with high accuracy, which makes it difficult to track the opponent.

Hence the importance of research in knowing the real role of some motor variables and special motor abilities and their relationship to the effectiveness of performing the front kick skill of jumping and stability in order to reach the technique and good and accurate achievement and upgrading. Player level.

Research problem

Through the researcher's experience, practice, and follow-up to the badminton match, being a former player and coach in the Iraqi Badminton Schools Federation, and his observations of many local tournaments and reviewing previous studies, the researcher noticed the lack of focus and attention to them. Employing the kinematic variables and kinetic abilities in performing the front blow skill for jumping and stability, as well as knowing the extent of their association with these variables, with what the individual can achieve from the positive results in matches. In an attempt by the researcher to discover the strengths and weaknesses, and to identify some of their causes, the following question was asked:

- Do the kinematic variables and special kinematic abilities play an important role in the effective performance of the forward landing skill of jumping and stability in the badminton of the research sample?

1-3 is a research objective

1. Knowing the values of some kinematic variables, kinetic abilities, the effectiveness of performing the skill hit dropped at the front of the jump plane, and the stability of the brush in the research sample.

2. Identify the correlation between some values of the kinematic variables and the kinetic capabilities of the effective performance of hitting the skill projected in front of a jump and the consistency of the research sample.

1-4 Fled z Research

1. There is a significant correlation between the values of some Kinmetekih variables and the kinetic abilities to perform the skill hit dropped with the head of the jumping plane brush and the stability in the research sample effectively.

1-5 Research Areas

1. The Human Field: Badminton players from Basra Governorate / advanced category
2. Spatial Domain: Basra Governorate/ Specialized Schools Complex / Late Muhammad Ali Al-Saeed Badminton Hall.
3. The field is temporary: 11/03/2020 until 5/10/2021

3- Research methodology and field procedures

3.1 Research methodology

The researcher used the descriptive approach in the approach to studying relational relations, which is the best method for solving the research problem.

2-3 Research and sample community

The sample is the model that is being researched, and the researcher deliberately intended the sample for reasons related to achieving the objectives of the study, and they were players in Basra Governorate to tennis for the competitive season 2020-2021 for the category. Of the applicants and their number (10) players.

3-2-1 Sample homogeneity

The researcher made some measurements for (height, mass, age, training age, arm length, shoulder width, torso length) Lavra d sample so that the sample is homogeneous and does not

affect the individual differences within one group later as in Table No. 1).
on the statistical information that will be done

Table No. (1) Shows the homogeneity of the sample members

The length of the trunk (cm)	Shoulder width (cm)	Arm length (cm)	Age training of (The number of years)	Age (Year)	Mass (Kg)	Length (cm)	Statistical means
49.2	47.4	81.6	6.8	21.8	71	185.4	Arithmetic mean
4.76	2.88	2.70	1.92	1.64	7.74	3.43	Standard deviation
%9.67	%6.07	%3.30	%28.23	%7.52	%10.90	%1.85	Coefficient of variation

Electronic balance No. (1)

3-3 Means, devices and tools used in the research

The means used in the research

1. Arab and foreign sources.
2. Personal interviews.
3. Questionnaire forms.
4. Examination results registration forms related to the subject of study
5. Tests and measures used in the research.

Devices and tools used in the research-

iPhone 11 pro max (US-made) 240 images per second (3).

Tripod for photography (3)

lighting (600 watt (with lighting holder number) 2)

Black cloth wallpaper, size (4 x 8) m

Rope length of 25 meters

Manual numbers calculator (2)

An electronic stopwatch of the type (CASIO), count (2)

Computer type (Core i5 64-bit Dell) (1) US-made Windows 10

Storage device for storing blame T (1 TB hard disk), count (1)

Computer programs and applications used in kinematic analysis

Scale (1m length) to see the actual value that appears in the video

Adhesive tape 5 cm wide

A tape measure 7 meters

Numbered stickers

Pens

The Legal Court of Badminton

Plastic blades, according to the legal specifications of (Unix) type, (24) blades.

Badminton racket, type (YONEX) No. (6).

3-4 field research procedures

Determining the research variables and how to extract them

Through reviewing previous sources and studies in biomechanics and kinetic abilities as well as badminton, where the researcher prepared and distributed a questionnaire form to (15) experts to determine some kinematic variables and a

questionnaire form to experts (15) to determine the most important special motor abilities, as well as through the experience of the researcher and the supervisors who put the tests Suitable for each movement ability, which has been determined by experts and specialists.

After unpacking the data, an agreement emerged between experts and specialists on the motor

Table No. (3) Illustrates the special motor abilities

Relative importance	The weighted arithmetic mean	priority level	Special motor abilities	No
%97.2	4.86	73	Agility	1
%81.2	4.06	61	Motor alignment	2
%96	4.8	72	Balance	3
% 70.6	3.53	53	Kinematic velocity	4
%73.2	3.66	55	Flexibility	5

Field tests

Test the Skill of Front Drop Drop from Jumping and Standing

The purpose of the test: To measure front stroke skill

Required tools: badminton rackets, shuttlecocks, test strip design for the court

Performance description: After explaining the test to the testers, each player gives (5) test attempts to warm up, after which the player stands in the specified position (x) at a distance of (5) meters from the net. And hit Musk with a fist in front to receive the shuttlecock sent to him from the opposite court and on the right side of the player (to the right player) and vice versa to cross the net in an attempt to drop it in the area with the highest. A degree and graded (1-2-3) The area of each zone is (1) m

Performance evaluation:

- The player performs (12 (try and find the best for him) 10) efforts
- The result is given according to where the feathers fell
- The shuttlecock that falls on a line between two regions gives the highest score

variables shown in Table No. (2), as well as the special motor abilities shown in Table No. (3). Variables with less than agreement (75%) were excluded.

(8) Kinematic variables were selected from (12), and (3) locomotor abilities from (5).

- The highest point a player can get is (30) points
- This test (badminton) can be performed anteriorly and obliquely

Special motor abilities tests

Agility test

Quinn agility test

PURPOSE OF THE TEST: This test measures a player's ability to start, stop, and change direction.

Tools: feather plane, stopwatch, feather bat, feathers

Test application:

The player stands in the middle of the field (the imaginary line under the net) and the coach's laboratory is standing in front of him.

Distributing (8) blades on the corners of the stadium

- The tester holds a paddle in his hand and points it to one of the corners of the case, and at the same time calls the direction, for example (front right) or (left side), and at the same time the tester starts the timing of the watch saved in the other hand.

- The player moves quickly to the shuttlecock, touches it, and then returns to the middle of the field

- The tester summons quickly in another direction once the player reaches the middle of the box

- The player moves quickly to this direction and touches the shuttlecock, then returns to the middle of the field and so on to the rest of the corners of the field.

This movement is repeated (8) times (once in each direction) in succession and without stopping.

The laboratory has to change the orientation system at every attempt, so that it is unknown to the subject and who should respond to the lab and the brush.

- The clock stops as soon as the player reaches the middle of the field after completing his eighth badminton move.

- Score is calculated by recording the best time from two attempts, with a two-minute break.

2. Kinematic test

Numbered Circuits Test

The purpose of the test: to measure compatibility (legs and eyes).

Tools: a stopwatch, draws (8) circles on the ground with a diameter of (60) cm, and circles number (1-8).

Performance specifications: The tester stands inside the circuit (1) and when hearing the start signal, it jumps according to circuit (2) and then to three ... up to circuit (8) as in Figure (15). Calculate the result: It records the time taken for the laboratory to move to the octet circles.

3. Balance test

- Go to the test above the marks

The purpose of the test: to measure balance during and after movement

Tools: stopwatch, metric tape measure, chalk or colored pen

Performance specifications: The player stands on the starting line with the right foot, then stands on the marker (1) with the left foot's instep (notes the

mark is covered with the foot) and tries to stay in this position and then jumps to place a mark (2) to stand on the right metatarsal and so on until he reaches the mark The last and the same pattern for every jump, as shown in Figure 16.

Score Calculation: The test will score (10) marks for every attempt, rebound and stability.

3-5 exploratory experience

An exploratory experiment is a preliminary experimental study that the researcher conducts before conducting his research, with the aim of choosing research methods and tools, and that the aim of the exploratory experiment is:

Identify errors and obstacles

Learn about the validity of the devices and tools

Determine the ability of the sample members to apply the test

Know the ability of the support staff

Defining the assistant work team of the nature of the test and how to implement it

The researcher conducted the exploratory experiment on 01/22/2021 by chance on Friday in Basra Governorate (Specialized Schools Complex / the late Muhammad Ali Al-Saeed Badminton Hall) at three in the afternoon. The quiz was applied to three players from the research sample. The aim of the exploratory experiment was to determine the final location of the cameras and their distance from the movement of the player in a way that provides a comprehensive coverage of the player's field of movement, as well as determining the distances and heights within them. Cameras and a drawing scale must be placed, as well as determining the appropriate lighting and suitability of the test for the research sample. The experiment was conducted with the help of the auxiliary crew.

3-6 Practical principles of the tests

3-6-1 Test validation:

The apparent honesty was approved by presenting tests on the effectiveness of the front blow of jumping and stability, as well as tests of motor

abilities during personal interviews with specialists and experts, and they agreed (100%) that these tests measure what was set for.

3-6-2 Stability Test:

The reliability coefficient was found by retesting three players in the research sample on the same day as Friday's Poll. 1/22/2021 in Basra / Specialized Schools Complex / Late Muhammad Ali Al-Saeed Badminton Hall at (3) in the afternoon, tests were re-applied to the same players and under the same conditions on 5/2/. 2021 is also on Friday at (3) in the evening, which is the period (14 days) for the first test.

The simple correlation coefficient was found by Pearson and the value of the correlation coefficient was high, which means that the tests have a high degree of stability as shown in Table No. (4).

3-6-3 Objectivity of the test

The tests were conducted under the supervision of the arbitrators, taking into account the composition of the same conditions and the method of conducting the tests. The results were collected and then statistically treated, and (Pearson) the simple correlation coefficient used the values of the high correlation coefficient. This means that all the tests have a high score, as shown in Table (4).

Table No. (4) Shows the value of the simple correlation coefficient (Pearson) for the results of the stability and objectivity of research tests.

Objectivity	Persistence	Name of the test	No
0.92	0.93	Agility test	1
0.89	0.88	Compatibility test	2
0.92	0.98	Balance test	3
0.90	0.85	Test the accuracy of the front drop hit from a	4

		jump	
0.89	0.83	Test the accuracy of the front drop hit from stability	5

3-7 House of Expertise

The researcher conducted field tests on the research sample to identify the values of some movement variables and the most important special movement abilities and determine the effectiveness of the frontal blow to jump and stability with the feather for the research sample. The main experiment was conducted on 2/19/2021 by chance on Friday at (2) in the afternoon in Basra Governorate. / Specialized Schools Complex / Late Muhammad Ali Al-Saeed Badminton Hall. Where the researcher used three imaging devices to photograph the accuracy test of the fallen blow to extract the kinematic variables for the players as well as the badminton variables, as the first device was installed at a distance of (5 meters) for the player with a height focus. With an area of (1.55) m. As for the second device, it is far from the side line Doubles of the stadium (1) M and the focus height (1.55) M against the transmission line for extracting the variable feathers, the third device was placed in the middle line, i.e. the opposite network, at a distance of (1) meters from the equal side line of the playing field. Playing at a height of (1.55) meters also to extract the variable height of the blades over the net, and all these devices were on the right side of the player and the devices were high-quality imaging and accuracy in imaging (12) mega-pixel, 4K and HD video recording, (240) images / Second, with an accuracy of 720-1080 seconds, the researcher also used a length scale (1) meter in the field of movement of the player to compare with the measurement in the image, and the main experiment was under the supervision of an angel specialized in biomechanics and kinematic analysis, as well as in the field of volleyball as well, where the fall test was from jumping The first stability is performed to extract the kinematic variables, after which tests are performed of the motor abilities

3-8 statistical methods

The researcher used the SPSS to process the data statistically

4- Presentation, analysis and discussion of the results:

After the researcher conducted tests and measurements of the research variables, the results were statistically treated. Below, the results are presented in tables, analyzed, then discussed and supported by the sources.

indication	Indication level	(R) Values Calculated	standard deviation	Arithmetic mean	measuring unit	Variables	No
—	—	—	926 . 0	000 . 16	Degree	Front drop kick from jumping	1
.D	* 0.018	0.600	710 . 0	374 . 15	Time	Agility	2
.D	* 0.001	0.750	926 . 0	000 . 9	Degree	Balance	3
.D	* 0.013	0.626	968 . 0	696 . 8	Time	Motor alignment	4

*D when the value of R (Below the level of significance (0.05) at the degree of freedom(8)

It is noticed from Table (7) that the arithmetic mean of the variable (**agility**) was (15.374) and the standard deviation .(0.710) As for the arithmetic mean of the effectiveness of the skill of the front drop from jumping ,it was (16.000) and the standard deviation (0.926) for the research sample , and the value was simple correlation coefficient (Pearson) between them (0.600)under the level of significance (0 (018. ,which is smaller than the probability value , (05 . 0) which means there is a significant correlation between the two variables.

As for the arithmetic mean of the variable (**balance**) was (9.000) and the standard deviation ,(0.926)while the arithmetic mean of the effectiveness of the skill of the front drop hit from the jump was (16.000) and the standard deviation (0.926)for the research sample , and the value of the simple correlation coefficient was (Pearson) between them (0.750) under the level of significance (0 , (001. which is smaller than the probability value , (05 . 0) which means there is a significant correlation between the two variables.

4-1-3 Presentation and analysis of the results of the association between some special motor abilities and the effectiveness of the front kick skill from jumping and discussing them

Table No. (7) Shows the results of the media, the standard deviations, the calculated (r) values, and the level of significance.

Between some special movement abilities and the effectiveness of the front kick skill of jumping

While the arithmetic mean of the variable) **motor compatibility** (was (8.696) and the standard deviation ,(0.968) while the arithmetic mean of the effectiveness of the skill of the front drop hit from the jump was (16.000) and the standard deviation (0.926) for the research sample , the value of the simple correlation coefficient was (Pearson) between them (0.626) under the level of significance (0 , (013. which is smaller than the probability value , (05 . 0) which means there is a correlation between moral variables.

❖Discussing the results of the correlation between special movement abilities and the effectiveness of the frontal kick skill performance of the jump

Through the aforementioned presentation of the statistical parameters in Table (7) for the results of the arithmetic means, the standard deviations, and the value (r) Calculated to test the skill of the front drop hit from the jump.

We note that there is a significant correlation relationship in the **following special motor abilities with the variable of the effectiveness of**

the front drop stroke skill of jumping, which is (agility) (balance) (motor compatibility).

Through the results of tests of the experiment key shows a significant correlation between the **fitness variable and the effectiveness of the performance of the skill of the beating of the projected front of the jump**, attributed the researcher why the emergence of this relationship to the fitness element is very important for the players, badminton, especially in the skill strike projected front while moving the player from the Center The arena and the return of the shuttlecock from different places to the playing field of the opposing player and return to his position inside the arena, i.e. moving inside the field and changing direction quickly with the possibility of performing the kinetic duties as well as moving to the places expected for the shuttlecock, which led to the emergence of that moral relationship and confirms (Qasim Hassan Hussein 1998) quoted On the authority of Hara, Agility is the ability of the individual to control the momentary alignments and the abilities of rapid control of sports movements and the application of movement performance in a specific and appropriate manner according to the requirements of rapid and feasible change, and also confirms (Wissam Salah Abdel Hussein and others 2013) "that agility is one of the most important qualities in the game of badminton. The plane, because the player's movement in various directions and the great speed of the shuttlecock makes the player in constant motion".

On the other hand, the researcher believes that the agility of the great role of good move and get to badminton and quickly taking the time to hit badminton and directed to the stadium rival in the areas of t Z sees fit behind the network.

As for the moral relationship between **the kinematic variable and the effectiveness of the performance of the front drop hit skill from jumping**, the researcher attributes this to the interest in the kinetic abilities that have an effect on the performance of badminton skills as well as the performance of the front drop strike skill from jumping and it is one of the deceptive offensive skills that are performed from the back

area From the field to the front areas of the opponent's court, i.e. behind the net, to increase the difficulty of the opponent by returning it or obtaining a point. The researcher adds that the performance of the front drop strike skill needs good motor coordination between the legs, arms, eyes and the tool (the shuttlecock) as well as the appropriate height for the player to hit the shuttlecock at the top It has a point, which gives the player the possibility of harmonizing the movement parts, the racket, the shuttlecock, and the eye in order to hit the shuttlecock well, and this is confirmed by (Owaisi Al-Hayani 2000), "The player's possession of high compatibility abilities not only helps his performance of motor skills completely and accurately, but goes beyond that to include avoiding mistakes Expected".

Moreover, the researcher believes that the player's acquisition of the feeling and sense of a motor skill through the actual performance of the movement, as the player's sense of his ability to implement the skill means a sense of movement, which plays an important role in the process of kinematics, and confirms (Jamal Sabri Faraj 2019) "is the ability to perform movements With a degree of difficulty and speed, while providing competencies and accuracy in them, and an athlete with good compatibility is able not only to perform the skill well, but also solve other training duties.

As for the moral relationship between **the balance variable and the effectiveness of performing the skill of the front drop hit from jumping**, the researcher attributes this to that balance is one of the important elements in the performance of mathematical skills by controlling and maintaining the position of the body vertically during jumping and in the field of gravity and requires the player of the badminton while performing the skill hit the projected front of the jump to balance dramatically because the player needs to determine his status during the performance by the movement time and height appropriate speed and accuracy of implementation of the strike, leading to the accuracy of directing badminton and keep intact the body during the flight and to just g n a role in the base of equilibrium stability). Salih Shafi Al-Ayedhi 2001) asserts, "It is not possible to achieve any

success in sport and to reach high levels without the growth of this functional aspect of balance in the individual.

5- Conclusions and recommendations

5.1 Conclusions

1. The presence of a statistically significant correlation with the variables of special motor abilities (agility, kinematics, balance) on the one hand and the effectiveness of the frontal blow skill of jumping and stability.
2. The level of the research sample was average in (10) attempts for the effective performance of the frontal landing skill of jumping and standing.

2.5 Recommendations

1. Emphasis on modern training of motor abilities because of its effective role in the game of badminton
2. Conducting studies similar to other skills in the game of badminton

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