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Educational exercises using aids in some biomechanical and kinetic variables and their impact on developing the skill of the front hand jump skill on jump table apparatus in artistic gymnastics for men

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Abstract

The importance of studying Preparing effective and effective educational exercises by creating an effective educational environment that depends on the electronic educational aspect and multimedia of the skill under study, which interacts with biomechanical variables that cannot be seen with the naked eye, but rather in the manner of quantitative kinetic and kinetic analysis by trainers and educators, which affects the technical performance by providing multiple media, whether it was in the aspect of the ideal performance of the respondents according to or delayed feedback and the presence of immediate evaluation. The researchers used the educational curriculum on a sample of (30) third-students for the branches of applied and theoretical sciences \ University of Missan College of Physical Education, and it was divided into two experimental groups that used the electronic educational curriculum (computer, moving pictures, fixed audio-visual images, and data shop) and a control group that used the traditional curriculum used in the college and by (15), at the rate of (2) educational units per week, and a total of (24) educational units, for a period of (12 weeks, and their time is (90 minutes) and a total of (2160 minutes). It is safe to improve the biomechanical variables and reach the good performance of the experimental group only studied and included the time of the preparatory section (10d) that includes introduction, warm-up and physical exercises, and the main section (70d) which includes educational (30 and practical (40d). in a sequential manner, taking into account the individual differences between students and the final section (10d). And ensures finding the most important aspects of e-learning, which is a method of education using modern communication mechanisms such as computers, networks, media, and multiple models of sound, static and animated images, graphics, Research objectives The educational exercises had a positive effect on the experimental group through the significant differences in the variables The research hypotheses approach on a positive effect on the experimental group through differences variables. The researchers concluded that the use of e-learning by the computer and the Kenova device for motor analysis has contributed to the development of the cognitive and then the motor side. The researchers recommended Paying attention to this aspect to enter information on the computer to allow The learner to repeat and repeat to develop some of his biomechanical and kinetic variables and develop their cognitive ability to reach the development of the physical.

Keywords: Exercises, biomechanical, kinetic variables, hand jump skill on jump, artistic gymnastics

Introduction

Witness Our time the present Evolution big And quickly in different sports, This development has not be By chance but rather a result planning Scientific proper and use Different the sciences and acquaintances, from before a lot from researchers and experts and specialists in area learning The usual and modern training and teaching to find better Methods and models Educational, which is concerned with the behavior of learners and the growth and upgrading of the learner's abilities and change his behavior and success in learning and development his skills kinetic different. And he has appeared in the time Last endeavors many to find modes Educational and training to teach skills kinetic and develop it according to Techniques and modalities Modern The scientific and mechanical foundations of the motor analysis in the process of teaching skills by drawing the motor paths of the skill, which are among the influencing factors. take I see consideration considerate differences individuality and speed subjectivity for the learner from during learning self that multiplied his methods And his means, which help in investigation Goals specific Accredited on interaction what between learner and article according his capabilities and its potential mental and physical from through following a path specific in learning It contains on Material educational organized and threaded reach out learner to the goal Required from during learning self, and this is no Complete unless from through e-learning And who He

depends on educational curriculum perfect And distinguished with elements miscellaneous maybe for the learner that uses it By himself Without help the coach or teacher from Okay investigation Goals specific. Multimedia education is "a method of teaching using modern communication mechanisms such as computers, networks and multimedia such as sound, image, graphics, research mechanisms, libraries and electronic analytical programs, as well as Internet portals of all kinds in delivering information to the learner in the shortest time, the least effort and the greatest benefit", (Maher, 1999) [7] provided that an appropriate educational environment is provided for the information of the electronic curriculum in a variety of ways and different methods according to the availability of capabilities, requirements, and the teaching and training staff through evaluation processes, material explanation, or feedback by the academic teacher, which affects changing the behavior of the learner to improve his mechanical performance of the movement for the better. The gymnastics game is one of the games that is distinguished by its many motor and skill requirements and duties that beginners should learn and master and familiarize themselves with its technical and scientific aspects, and this always requires modern methods and new techniques to develop mastery of the technical performance of skills based on the learner's self-learning in order to reduce training times to perform these Skills and the exploitation of the principle of transmission of the effect of learning between skills with similar paths, through which more than one skill can be mastered at the same time in order to give more time to the more difficult skills by reducing the time for learning performance. The motor analysis is considered one of the most important tools of the scientific method and one of the educational tools and programs for the trainer and educator to discover the method of proper technical performance by identifying the discovery of the wrong paths in the skill performance and methods of correcting them through the analysis programs of the correct motor path, identifying the differences in the performance of similar skills and developing appropriate educational programs and methods. This is confirmed by both John and Shannon (John 1995 AD) that (biomechanical analysis studies aim to solve motor problems, discover information about skill performance, and compare motor skills with each other), (ohn J., 1995). The motor performance is based on continuity and diversity of movements and their interdependence between direct jumps in the first flight and with a quarter turn at an angle (45) before the winding of the movements (Tsukahara) and of the nature of front flips and Yamashita and jumps entering the tandem to perform a kinetic sentence that concludes at the end with the release of the player from the jump table in the second flight to accomplish a motor duty Perfect in the air and then landing on the feet, which is the only part of the body that is allowed by international law and has a difficulty degree (B). Which is different from the rest of the five devices (). Hence the importance of the research in preparing an educational curriculum with various educational means emanating from the kinetic curriculum of the International Federation of Gymnastics effective and influential through an effective environment that depends on the electronic and kinetic educational aspect of the skill under discussion in a modern manner and immediate evaluation and reinforcement according to scientific and mechanical methods by providing multiple media that affect The learner's technical performance, which contains

programmed materials that the learner exercises on his own, step by step, in proportion to his abilities, tendencies, and desires to reach the learner to an acceptable level of performance through actual evaluation of his learning of the required skill.

Research problem

Mastering the basic skills of gymnastics and developing the level of skillful performance is one of the most important goals which the educational process seeks, taking into account the level of learners as teachers in the future and the specified time for learning, and these are all changing circumstances, as it became necessary to find renewable means and methods to confront these changes in order to make the The educational process and the acquisition of skills by learners and their mastery according to an action plan to achieve specific behavioral goals through an electronic educational program planned according to the mechanical foundations for drawing the motor paths of the educational institution to bring about effective and influential changes and trends in modern learning processes through learning and training at the same time using all the senses of the learner's behavior to reach to teaching goals. In view of the fact that the skill under discussion is characterized by difficulty, which requires daring and the provision of safety means, and then removes the fear of injury, as well as dealing with the sample members as they will become teachers or trainers, it is necessary to expand their ideas and clarify the details of the movements from the technical and mechanical point of view. Here lies the problem of the research with the existence of a weakness in the process of delivering the material or an ineffective teaching process and only explaining the material to the skill or presenting an ideal model for one of the junior Iraqi gymnastics team for ages (12-15) years, so the researchers decided to use an electronic educational curriculum It is one of the most important means of self-learning in a high-tech way through the computer to explain and clarify the basic skills for the learner to know the movement formations and their impact on the skill according to their mechanical paths for the correct technical performance in changing the behavior of the learner, which needs art and movement compatibility through the rotation of the body, a complete rotation around the transverse axis and the center distance The weight of the body from the ground above the jump platform to the position of standing on the hands after the first flight with the moment of passing the center of gravity from the imaginary vertical line towards the ideal performance through the use of educational techniques in a simplified and gradual way outside the times of the educational units and thus we have dispensed with the educational section in the educational unit and gave Its time for the applied part, which leads to an increase in the number of repetitions and performance of the learners during the educational units, and the transition between parts of the difficult skill itself does not take place except after mastering and correcting each part separately because it is the most important problem in university education that learners perform at different levels.

Research aims

1. Preparing an educational curriculum for multimedia in the development of some biomechanical and kinetic variables for the skill of the front hand jump on the artistic gymnastics jump table apparatus.

- To identify the influence of the educational curriculum and its impact on the development of the biomechanical and kinetic variables of the skill under study in artistic gymnastics.
- To identify the differences in the variables under study, before and after, for the experimental and control groups to develop the skill of the front hand jump on the men's artistic gymnastics jump table.

Research assumes

- The educational curriculum is effective and positive in developing some biomechanical and kinetic variables and their impact on the skill under discussion in artistic gymnastics for the experimental group.
- There are statistically significant differences between the two groups, the experimental and the control, in the pre and post variables and skill test under study for the two groups and in favor of the experimental post variables.
- There are statistically significant differences in the variables of the motor and skill test under study in the dimensional research between the experimental and control groups and in favor of the dimensional test for the experimental group.

Research areas

- The human field:** Students of the third stage of the branches of applied and theoretical sciences of the Faculty of Physical Education and Sciences Sports \ Missan University.
- Time range:** 10/25/2021 to 3/1/2022
- Spatial field:** The inner hall of gymnastics and computers in the College of Physical Education and Sports Sciences\University Maysan.

Literature review

E-Learning

It is a method of education using modern communication mechanisms such as computers, analytics, networks, media, multiple models of sound and image, graphics, search mechanisms, electronic libraries, as well as Internet portals, whether remotely or in the classroom. The important thing is to use technology of all kinds to deliver information to the learner. In the shortest time, the least effort, and the greatest benefit", (Hassan, 2003) ^[5], as well as "providing multiple and disparate sources of information that allow opportunities for comparison, discussion, analysis, evaluation, and re-engineering of the educational process by defining the role of the teacher, the learner, and the educational institution in using e-learning media in linking and interacting with the educational system to develop skills and capabilities Students and building their personalities to prepare a generation capable of communicating with others and interacting with the changes of the times through modern technical means." (Talha, 1994) ^[17].

Biomechanical analysis and its importance in gymnastics

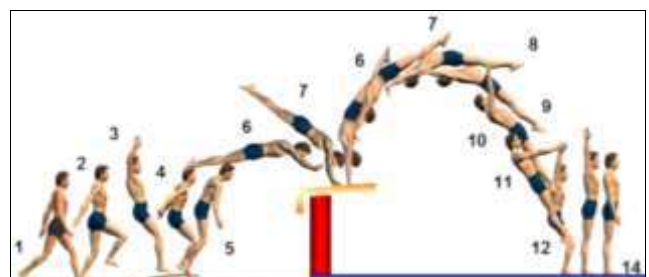
Analysis in its general sense "is the key in dividing the complete movement into parts and studying the relationship between them in order to reach a comprehensive understanding of all these parts and knowing the deficiencies in the player's performance of the skill with increasing knowledge in its detailed minutes and monitoring the imbalance in its performance, especially in a complex sport such as gymnastics because most of its skills are

complex and difficult." (Mohammed, 2008) ^[20].

The motor analysis is "the study and interpretation of the phenomenon or the motor skill after fragmenting it into its constituent elements and parts in order to identify the impact of the mechanical and anatomical variables on its motor performance, which reveals the wrong and correct motor paths through the weakness and strength of motor performance in different fields, not by using the naked eye, but by standard means and devices." and codified and put appropriate solutions to solve the problems of failure of technical performance." (Mohammed, 2006) ^[8].

Biomechanical aspects affecting the performance of the skill of the front hand jump on the jump platform device: (Spiros, 2006) ^[16].

The horse is placed lengthwise at a height of 135 cm and the rocking jump ladder is 2 feet away from the back end of the horse, and the movement begins with a close run from a distance of 20 meters. Ladder jumping with both feet in the middle of the front half to take the ascent and ascend in the direction of an angle (85 degrees) approximately near the horizontal level with the ground with the feet thrown back high with the force of the reaction of the jumping device with the arms raised in front high as the body pushes forward and up flying in the air for the first flight, When the body reaches the maximum height and before reaching the resting point, the body rotates around its transverse axis half a turn forward with the arms continuing to be raised high and the body straightening, as it reaches the resting point in a position that allows it to descend, as it lands with outstretched arms and the head between them on one side above the middle of the front horse to position the vertical support with the continuation of The movement of the body's rotation in front, and when the shoulders reach after the almost vertical level, the arms push the horse with explosive action force, noting the straightening of the angle of the torso arm to the maximum extent, and as a result of the reaction of the device, where the body rushes in the shortest possible time, flying again, leaving the device forward and up 0, and when the body reaches the maximum possible height and before reaching a point The stillness arches the lumbar region with the arms raised high and the head between the arms perpendicular to the torso. When the body reaches the point of rest, all angles of the body are extended to stop the rotational velocity (angle), where the forward rotational movement takes place around the transverse axis of the body in a position that allows it to descend, as it descends to the bottom of the device and in it it heads The two legs stretched towards the ground, and the torso rises to the top until the player, due to the earth's gravity, reaches a standing position with moving the arms in front of the bottom with the work of bending the knees to absorb the momentum of the shock of the fall, then extends them to take the parallel cross stand behind the jumping platform device.



Phase Approximate run P. (1-2)
 Double upgrading stage (Picture 3-5)
 Phase First flight p(6)
 8 رحلة
 الطيران الأول
 (ص6)
 9 رحلة
 الطيران الأول
 (ص6)
 The stage of leaning on the arms (pp. 8, 7)
 The second flight stage (pp. 9-10)
 Phase Preparing to descend to the ground
 (pp. 11-12-13-14 10)
 الطيران الأول
 (ص6)
 11
 الطيران الأول
 (ص6)
 12
 الطيران الأول
 (ص6)
 13
 (ص6)
 14
 الطيران الأول
 (ص6)
 15
 الطيران الأول
 (ص6)

Form (1) Demonstrates the skill of the front hands jump on the jump table

Chapter III
Research methodology and field procedures
Research Methodology

The researcher used the basic experimental design called (the design of the two equal groups) with the pre and post-test due to the appropriateness of the problem (Experimental (Research), as the experimental research aims to bring about

"a deliberate and controlled change in the specific conditions of an event, while observing the realistic changes in that event and its interpretation and analysis." (Sami, 2000) [13].

Curriculum

Experimental tests, pre-tests, educational models, post-test
 Before-after comparison

Comparison

Controlled tests Pre-tests The curriculum followed by the college Post-tests

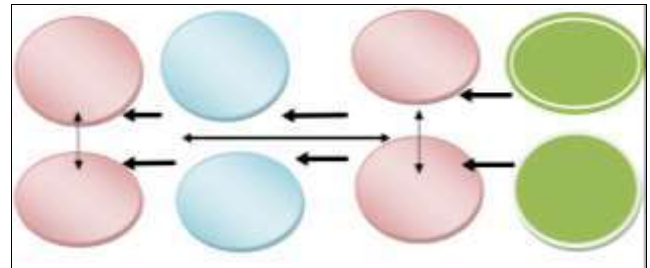


Fig 1: Demonstrates the experimental design of the research

The research community and its designation

The research community was determined by students of the third stage of the College of Physical Education and Sports Sciences \ University of Maysan for the branches of applied and theoretical sciences, and it represents the entire community of origin. Their number was (40) players who were chosen in the intentional way. And the female officer, with (15) players for each. And as shown in Table No. (1) below, which shows the number of members of the two groups, the educational units, and the percentage of each group compared to the research community. The remaining (8) players were selected for the exploratory experiment of the research, and they were excluded later in the main experiment, and those who were excluded (2) were motivated by absence and injury.

Table 1: Shows the number of members of the experimental and control groups and the number of educational units per week with percentage

	Totals	The educational method used	The number of group members	Percentage
1	Experimental	Two educational units per week, on which exercises and different educational and motor models are applied by the researcher	15	37,5%
2	female officer	The traditional educational curriculum followed by the college	15	37,5%
		the total:	30	75%
	Research community and sample	The number of sample members	Percentage	
1	Research community	40		
2	Experimental	15	37,5%	
3	control	15	37,5%	
4	main sample	30	75%	
5	survey sample	8	20%	
6	The excluded	2	5%	

Then the researchers divided the research sample into two groups, experimental and control, by lottery method, and after completing the tribal tests, a (T) tribal test was conducted for the two samples to detect the equivalence of the two groups before implementing the curriculum, in order to proceed from one line, as the results of the calculated and tabulated (T) value for all variables Which was used is

smaller than the tabular (T) value of (2,101) under a degree of freedom (22) and a level of significance (0.05), and therefore the results are non-significant and random, and this indicates the equivalence of the research sample in variables and the skill performance evaluation test as shown In Table No. (2) below.

Table 2: It shows the equivalence of the research sample for the two groups (experimental and control) in all research variables and the value of (T) calculated and tabulated for the pre-tests and the statistical significance

Variables	Statistical processors Variables biomechanical Skillful and motor performance	Measuring unit	Pre-tests				T value		Indication statistic Sig
			The control group kiss me15 The experimental group before me 15				Calculated	Tabular	
			s	± p	s	± p			
Kentucky	Kinetic energy at the moment the glove first leaves for the first flight	Joule	2269	19,63	2286	17,57	2,031	random	
kinematics	The angle of rise at the moment of first letting go of the glove device for the first flight	degree	80,70	2,791	81.10	2,643	0,329	0,058	
	The time of leaning on the platform from the moment of touching it to the moment of the first leaving	one thousand					The time of leaning on the platform from the moment of touching it to the moment of the first leaving	random	
	The angle of the knee joint at the moment of first touching the rug to land on the ground	degree	136	3,399	138	4,163	0,278	0,694	
	The total time of movement from the first touch of the glove to the first touch of the rug	one thousand						random	
kinetic	Compatibility test (digital circuits)	second	4,735	0,046	4,755	0,055	0,067	0,495	
Skill calendar	Front hands jump on a vaulting platform machine	degree	4,5	1,414	4	1,165	0,770	random	

At the sample size (n-2) (30-2 = 28) and at the level of significance (0.05).

Means of collecting information, equipment and tools used

Means of collecting information

- Arabic and foreign sources. International Information Network (Internet).
- SPSS) program for statistical equations, version (18), the Arbitration and Statistical Processing Committee.
- A questionnaire survey of expert opinions on a selection of biomechanical variables and their extraction from Kenova for kinetic analysis
- Personal interviews. Auxiliary staff. Draw (8) numbered circles

Equipment and tools used

- (2) Japanese-made Casio iPhone (12 Pro) video camera, with a frequency of 300 images / s.
- Barrier (4), markers (chalk-burck-adhesive tape), stopwatch, foam mat, lines (5-7 cm) wide
- Sponge mat number (4). Two small parallelepipeds for handstand and control.
- The legal parallel device and the ground parallel device (40 cm), the horizontal bar device, the ground ring device and the small pony device.
- Weight 5 kg, iron dumbbells, semi-cylindrical box, wooden stairs. And a rubber rope number (4).
- Mastaba. Whistle., Measurement of heart rate. Weight 5 kg. RAM (32) GB. A wooden pony divided into several panels.

How to implement the search

Choose kinetic compatibility (digital circles)

Testing digital circuits for compatibility: (Abdel Moneim, 1999)

Measure the compatibility of the legs and eyes together.

Tools used: The tools are a stopwatch. Eight circles are drawn on the ground, each with a diameter of (60) centimeters. The circuit number is as shown in the figure below

Test procedures: The tester stands inside circle No. (1), when he hears the start signal, he jumps with both feet together to circle No. (2), then to circle No. (3), then to circle No. (4) until circle No. (8), this is done at maximum speed

Scoring: The tester records the shortest possible time it took him to move through the eight circles in succession.

Determine the variables for evaluating skillful performance: Front hands jump on a platform (table) jump.

The aim of the test

Knowing the degree of special requirements and the final degree obtained by the junior from the performance of the kinetic series on the jumping platform, where each jump begins with an approximate run, then taking off (jumping) with two joined legs over the jumping ladder with a short support with the palms of the arms or one arm on the jumping table and measuring the ability of the player to perform complex movements.

Test tools

A jumping horse (platform), a gauntlet, the simplest sponge, a stopwatch, a whistle, and a skill performance registration form.

Test procedures

The player starts in a standing position with the two legs joined at a distance not exceeding (25 m) measured from the

depth of the table, and the jump begins from the first step or jump performed by the player and the evaluation begins from the moment the foot touches the jump ladder board after performing the approximate run distance that is measured and hit with the feet on the top of the jumping device is at the end of the jogging track and it can be performed from a distance of (5m) and then resumed and it is not allowed to go back to repeat it. Each jump ends with a descent along the legs and the body is straight, with the arms raised high to end the skill behind the jump platform. Each laboratory is given three attempts.

Registration

The skill is evaluated by agreement of the members of the arbitration committee, so that the final degree of technical performance only for the skill is (10) degrees, and the researcher has used an international rule and four first-class referees accredited by the Iraqi Federation of Gymnastics as a committee to evaluate the skill of students for the control and experimental group for the pre and post-test on the jumping horse. By watching the video presentation of the test, I used the special evaluation form, which contains the degree of the arbitration committees, which is stipulated in the International Arbitration Law for Gymnastics (2017-2020), then the dismissal referee crosses out the highest and lowest score, and the two intermediate scores are combined and divided by (2) to extract the player's score final as indicated in the equation below.

The sum of the mean of the two middle scores
Final player score = ----- 2

The electronic curriculum

The two researchers prepared an educational curriculum using various media and special educational models to teach students comprehensively, and the method of the stages of practical education, which included professional competence and the skills that male and female students need during the practical application stage in secondary schools, as follows:

The electronic educational curriculum using forked models: Before starting the implementation of the curriculum in the style of models and cross-platform multimedia, the researchers prepared the curriculum through several procedures according to several stages related to this method of education.

The dynamics of the sample's performance using the e-learning method:

1. Displaying the educational material according to the skills related to the curriculum applied by the college electronically.
2. The article contains presentations of skills for an ideal national performance of all parts of the movements related to the skill under study.
3. There is a presentation through media learning of all the biomechanical variables that pertain to the movement

under study and the relationship of each variable

4. There is a video presentation of all errors and a call for direct correction according to an electronic method, which contains the text (sections and parts of the lesson plan, movement, time and presentation of the text) represented by sound, shapes and colors.
5. There is a partial display of the movement and several movements, as well as a total display of the wrong and ideal biomechanical variables according to the movement under study. This multimedia curriculum can be used before, during and after skill performance.
6. There is a filming of the performance of each part of the movement sections for all members of the sample by watching the student perform it for each part and with the presence of immediate electronic reinforcement feedback to reach the ideal skillful performance.
7. Discussing the sample members for each performance, whether negative or positive, by comparing it with the ideal performance.
8. Modifying the skillful performance in accordance with these procedures. The learner can take this educational material through the means of modern communication at any place and time in the hall, college and home, and the possibility of direct communication with the rest of the sample and the subject educators, and then improve and develop the ideal skillful performance.

Performance dynamics according to the electronic educational curriculum

An educational curriculum was developed by the two researchers according to the educational models for the skill under study, where its contents were presented to experts and specialists, where some contents were added, deleted and modified by them, and thus the electronic educational curriculum appeared in its final form as it contained (24) educational units and the number of units per week (2) units for a period of (12) weeks and for each variable is biomechanics and a skill under discussion (4) educational units (3) units for teaching the variable within the gymnastics hall and (1) units for observing the student's performance and correcting his mistakes in comparison with the ideal performance inside the computers hall through feedback. The reinforcement section for Sunday and Wednesday, and the time of the educational unit was (90) minutes, which contained three sections, which are the preparatory section, which had a time of (10) minutes, which contained the warm-up (public - and private), and the main section, which reached (70) minutes, divided into (30) minutes, an educational section. And a video filming of the ideal performance and (40) minutes an applied section. This section is related to the curriculum in the style of educational models and will be explained later. The final section contained (10) minutes. Table No. (3) shows the size and sections of the electronic educational unit.

Table 3: shows the sections of the educational unit in the manner of e-learning stages

Educational unit	The week	Number	Biomechanical and motor variables and skill performance	Unit history	Biomechanical and motor variables and skill performance
The first the second	The first	2	Kinetic energy at the moment of jumping	11/29/2021 2/12/2021	The inner hall for gymnastics equipment
Third Fourth	The second	2	Kinetic energy at the moment of jumping Kinetic compatibility	6/12/2021 9/12/2021	The inner hall for gymnastics equipment Computer room for perfect photography presentation
Fifth Sixth	The third	2	The angle of rise for the first flight	12/13/2021 12/16/2021	The inner hall for gymnastics equipment
Seventh eighth	The fourth	2	The angle of rise of the first flight and the kinetic compatibility	12/20/2021 12/23/2021	The inner hall for gymnastics equipment
The ninth tenth	Fifth	2	The time to lean on the table from the first touch to the first let go.	12/27/2021 12/30/2021	Computer room for perfect photography presentation
Eleventh twelfth	VI	2	The time to lean on the table from the first touch to the first let go	3/1/2022 7/1/2022	The inner hall for gymnastics equipment
Thirteenth fourteenth	VII	2	The angle of the knee joint of the two legs at the moment of landing	10/1/2022 13/1/2022	The inner hall for gymnastics equipment
Fifteenth sixteen	VIII	2	The angle of the knee joint of the two legs at the moment of landing	1/17/2022 1/20/2022	Computer room for perfect photography presentation
Seventeenth eighteen	Ninth		Total movement time	1/24/2022 1/27/2022	The inner hall for gymnastics equipment
Nineteenth XX	The tenth	2	Kinetic compatibility	31/1/2022 3/2/2022	The inner hall for gymnastics equipment
Twenty one twenty two	Atheistic ten	2	total movement time	7/2/2022 10/2/2022	The inner hall for gymnastics equipment
Twenty three Twenty four	The second ten	2	Movement in search and compatibility	2/2022 2/17/2022	Computer room for perfect photography presentation

Multimedia Model

This model includes the following

- Filming with an iPhone (12 Pro) for biomechanical variables and a skill under study in an electronic educational video film.
- Divide the variables to clarify the sections of the movement accurately. Merging the text with the variables under study.
- Finding texts related to the technical performance of each section of the biomechanical and kinetic variables and the research skill.
- Entering sound with text, photography, and entering shape and movement (on texts and videos).

The usual curriculum

The control group used the college curriculum Where it shows the educational unit of the curriculum followed by the college.

Exploratory experiments

Exploratory experience (the first) for skillful performance. This exploratory experiment was conducted on a sample consisting of (3) players from the research community, and the tests were conducted on Monday and Thursday on 9-11 / 11 / 2021 at exactly (10) am in the Interior Hall of Gymnastics at the College of Physical Education / University of Maysan before performing the main experiment The purpose of conducting it was to find out the difficulties and obstacles before conducting the main tests and try to avoid them. The experiment was repeated on the players after (7) days.

Exploratory experience (the second) of the electronic curriculum.

This exploratory experiment was conducted on the same sample consisting of (3) players from the research community, and the tests were conducted on Saturday and

Sunday on 16-18 / 11 / 2021 at (10) in the morning in the Interior Hall for Gymnastics and Computers at the College of Physical Education / University of Maysan before it took place. In his research to find out the suitability of exercises and educational models for the abilities and capabilities of students.

Field research procedures

Pre-video photography of the research sample

Videotaping was conducted to test the skillful performance of the research subjects with difficulty (B) on Monday corresponding to 11/23/2021 at (10:30) in the morning in the gymnastics hall in the College of Physical Education / University of Maysan, using two cameras (Konica) with a frequency speed 300 images / sec, where each student from the two groups was given (3) attempts in the test, and the researcher relied on the opinions of experts. As for the dimensions of the cameras:

The first camera (side facing): This camera was placed next to the right side of the vaulting platform, at a distance of (9.10m) and at a height of (1.37m) from the edge of the vaulting platform's legs to the focus of the lens.

The second camera (side facing): This camera was placed next to the jumping platform to the left of the device, at a distance of (9.10 m) and at a height of (1.37 m) from the edge of the platform legs to the focus of the lens, as shown in Figure (2) below.

The running distance from the beginning of the upper edge of the jumping device is (25m) and the distance from the camera is (6m) from the device. The researcher also used a drawing scale to be a reference for the analysis. And according to the camera used, as each (1) m is naturally equal to (1.05) cm in the image, as shown in Figure (3) below.

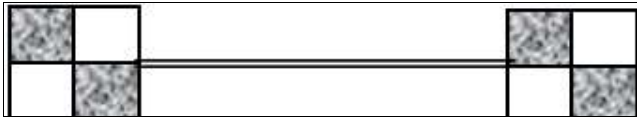
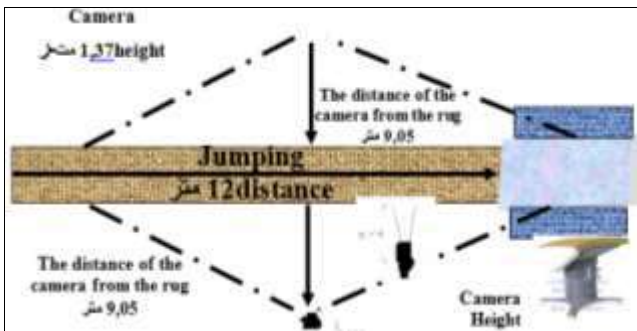


Fig 2: Shows the scale of the drawing



1,37 m Left side mat 6 pm Large squishy mat 12 pm Right side mat 9.10 m For the safety of the player, 37 m

Fig 3: Shows the dimensions of the cameras used in videography

Dimensional video imaging of the research sample

The performance evaluation test for the skillful performance was conducted in the hall of the Architecture Youth Forum Center for Gymnastics on Sunday corresponding to 28/2/2022 at (11) in the morning, where the same devices, tools and measurements were used, and the work team of biomechanics and analysis professors and the camera imaging device (Konica) for analysis and photographers, and under the same conditions similar to the conditions of the pre-video filming.

Computer analysis And the Kenova program

The researchers proceeded to conduct the biomechanical analysis (kinetic and kinetic) of the skill under study, and the first step of the biomechanical analysis is to determine the goal of the skill. The researcher conducted the video analysis using an electronic calculator (Dell) laptop with high specifications (4). The analysis procedures included the following steps:

1. The photographed material has been converted from the camera's memory to a DVD. The extension of the video clips was converted by the analysis program itself, Kenova, because the extension of the camera cannot be dealt with by the analysis program
2. The film was stored in the form of clips inside the calculator, and then these files were transferred to the analysis program, version (0.819), which is a program dedicated to motion analysis, as shown in Figure (4) below.

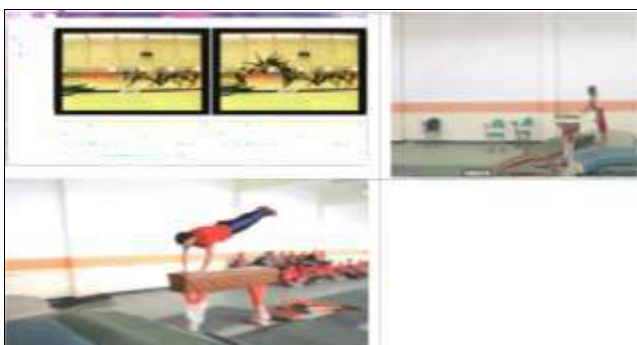


Fig 4: A program dedicated to motion analysis

Biomechanical research variables (kinetic and kinetic) and methods of extracting them

The kinetic energy at the moment of jumping first flight: - It is half of the mass of the body multiplied by the square of the speed of the player that was extracted from dividing the amount of the vertical distance between the body center of gravity (hip) of the image (1) and the center of gravity of the image (10) by the total time of the image (1 - 10) The distance and time were measured by the analytical device (Kinovea 0.819). 1

Kinetic energy = $\frac{1}{2} m v^2$, its unit of measurement is (joules) or (kg / m / s). (Mohammed, 2010)

1. The angle of rise at the moment of first leaving the first flight: - It is the angle confined between the horizontal plane of the ground and the line connecting from the point where the feet meet the edge of the jumping device (the pivot) to the point of the player's body's center of gravity to the point of the shoulders, the moment of breaking the connection from the jumping device, and it is measured from the front. (Michael, 2000)
2. The time of leaning on the platform device from the moment of touching it to the moment of leaving it: - The time elapsed from the moment of first touching the platform device with outstretched arms after the end of the first flight in the air to the moment of the first breaking of the contact of the arms at the end of leaning and preparing for the second flight, measured by the analyzer (Kenova 0.819 (In thousands per second. (Abdul Karim, 2010)
3. The angle of the knee joint of the two legs at the moment of first touching the ground to land on the rug: - It is the angle confined between the thigh line (from the point of the hip to the knee) and the line of the leg (from the point of the knee joint to the heel of the feet on the ground) at the moment of the first touch of the feet to the ground rug at the end of the knee. Skill is measured from the back and its unit of measurement is (degree). (Adly, 1998) [1].
4. The total time of the skill, the moment of the first leaving the jumping device to the moment of the first touching the ground: - the time taken from the moment of the first disconnection from the ground towards the first ascent in the air, then leaning back, and then the second ascent to the moment of the first touching of the feet to the rug at the end of the movement and measured by the analytical program device Kenova is measured in thousands per second.

The statistical methods used

The researcher used the statistical method of the program (SPSS) for statistical equations, version (23), which helped him to process, analyze, interpret and discuss the results of his research.

Presentation, analysis and discussion of the results

Presentation and analysis of the results of the tests under study for the experimental and control groups:

Table 4: It shows the arithmetic mean, the mean deviation, the calculated and tabulated (T) value, and the significance of the differences in the pre and post tests of the experimental and control groups for the variables under study.

Statistical processors Biomechanical variables, motor and skill performance	Measuring unit	experimental group				the control group				Value (T)		Significance of differences			
		Pre-test		Post-test		Pre-test		The test is after me		Calculated	Tabular	T	z		
		Middle of my account	Average deviation	Middle of my account	Average deviation	Middle of my account	Average deviation	Middle of my account	Average deviation						
		T	z												
Maximum kinetic energy from the moment of first letting go of the glove towards the first flight	Joule	2286	17,57			Joule	2286	17,57		Joule	6	1,87		D	Gerdal
The angle of rise of the two legs at the moment of first letting go of the glove for the first flight	degree	84,10	2,643	90,40	4,221	85,70	2,791	888,2	6,99	82	1,94		D	Gerdal	
The time of leaning on the horse from the moment of the first touch to the first leaving to rise towards the descent	one thousand	0,345	0,005	0,250	0,024	0,340	0,007	0,320	0,048	9,2	2,6		D	D	
Knee angle at the moment of first touching the floor mat during landing	per second	138	4,163	128	4,011	137	3,399	135	3,69	6,	2,16	2,145	D	non d	
The total time from the moment of first touching the glove for the first flight to the moment of first touching the carpet during landing	degree	1,62	0,034	1,58	0,050	1,64	0,040	1,62	0,062	3,1	2,246		D	non d	
Evaluation of the skilful performance of the front hand jump on a vaulting platform	one thousand	4	1,165	7.8		4.3	1,414	5,8	1,344	4,	1,97		D	non d	
Digital circuit test	per second	4,755	0,055	3,480	0,251	4,735	0,041	4,13	0,240	6	2,01		D	Gerdal	

When sample size (n-1) (15-1 = 14), significance level (0.05), and tabular value (2.145)

Table No. (4) shows the values of the mean, the average deviation, the value of (T) calculated and tabular, and the significant significance in the pre and post tests of the two experimental and control groups for the variables under consideration, as we find that the value of the arithmetic mean of the pre-experimental test for the maximum kinetic energy at the moment of leaving the glove (2286) and with an average deviation (17.57), and the mean value of the post-test (2379), with a mean deviation (24.48). While the control, the mean value of the pre-test (2269) with a mean deviation of (19.63) and the post-test (2299) with a mean deviation of (18.15) and when calculating the value of The

calculated results are (1.87) for the control and (6.55) for the experimental, and when compared to the tabular (2,145) at the level of significance (0.05), indicating the existence of significant differences for the experimental and non-significant for the control, in favor of the post-test for the experimental. While we find that the mean value of the experimental pre-test for the angle of rise at the moment of first leaving the glove is (84.10) with a mean deviation (2.64), and the mean value of the post-test (90.40) with a mean deviation (4.22). While the control, the mean value of the pre-test (85.70) with a standard deviation (2.79) and the post-test (88.20) with a mean deviation of (6.99), and when calculating the value of The calculated ones, we find them (1.94) for the control and (8.20) for the experimental, and

when compared to the tabular, this indicates that there are significant and non-significant differences for the experimental and non-significant for the control and in favor of the post-test for the experimental, while we find that the value of the pre-experimental mean for the time of leaning on the horse from the moment of the first touch to the first leaving To rise towards the drop (0.345) per thousand per second with a mean deviation (0.005), and the median value for the post-test (0.250) and a spring deviation (0.024), while the control value for the mean for the pre-test (0.340) with a standard deviation (0.007) and for the post-test (0.320) and with a mean deviation (0.048).), while we find that the mean value of the knee angle at the moment of first touching the ground towards the pre-experimental landing (138) and with an average deviation (4,163), and the mean value for the post-test (128) and with an average deviation (4,011), while the control value for the pre-test mean (137) and with a standard deviation (3,3999) and the post-test (135) with a mean deviation of (3.69), and when calculating the value of The calculated results are found to be (2.16) for the control and (6.95) for the experimental, and when compared to the tabular, this indicates that there are significant and non-significant differences for the experimental and non-significant for the control and in favor of the post-test for the experimental, while we find that the value of the mean for the total time is the moment of the first touch of the glove to the first touch of the ground with the feet of the experimental ((1.62) with a mean deviation (0.034), the mean value for the post-test (1.58) and a mean deviation (0.050), while the control mean value for the pre-test (1.64) with a standard deviation (0.040) and for the post-test (1.62) with a mean deviation (0,062), and when calculating the value of The calculated results are (2,242) for the control and (3,120) for the experimental, and when compared to the tabular, this indicates that there are significant and non-significant differences for the experimental and non-significant for the control and in favor of the post-test for the experimental, while we find that the mean value of agreement for the experimental is (4.75) with a mean deviation of (0.055), and the mean value for the post-test (3.48) with a mean deviation of (0.251), while the control value of the mean for the pre-test was (4.73) with a standard deviation of (0.041) and for the post-test (4.49) with a mean deviation of (2.24), and when calculating the value of The calculated results are (2,010) for the control and (6) for the experimental, and when compared to the tabular, there is a significant and non-significant difference for the experimental and for the control, in favor of the post-experimental test, while we find that the mean value of the experimental to evaluate the skill performance of the movement before (4) and with a mean deviation (1,165), and the mean value For the post-test (7.8) with a mean deviation (0.732), while the control mean value for the pre-test (4.3) with a standard deviation (1.414) and for the post-test (5.8) with a mean deviation (1.344), and when calculating the value of The calculated results are (1.97) for the control and (4.32) for the experimental, and when compared to the tabular, this indicates that there are significant and non-significant differences for the experimental and for the control, in favor of the post-test for the experimental.

Discussing the results of the pre and post tests under discussion for the experimental and control groups

Significant differences appeared between the results of the

pre and post tests for the variables and the skill evaluation test, which was shown in Table (5) between the two groups and in favor of the experimental at the expense of the control, except for the variable (the time of leaning on the horse). The prepared curriculum exercises, which proved their positive impact through the obtained results. The researchers attribute this improvement in learning to the multi-cushion teaching method in which the educational models were presented. It has an impact on the emergence of these results because it is commensurate with the capabilities and tendencies of the research sample and its suitability for their level of awareness in adopting it as a model that facilitates comparison of their performance with the ideal performance of one of the youth chosen with him. In fact, it is not the means. Educational is the one that achieves learning to the extent that this medium contains educational content that achieves the educational goals in a way that allows the skill to be divided or displayed entirely according to its mechanical motor paths to facilitate the application of ideal skillful performance, as it refers to "where audio-visual multimedia helps to expand students' perceptions and horizons by overcoming The limits of time and space, and the transfer of their senses, minds, and thinking to environments other than their local environment, and multimedia helps to simplify facts, clarify them, and bring them closer to their minds (Fawzi, 2011) ^[3] and this is confirmed by "notifying the learner of the results of his work, comparing it with his colleagues, and realizing the extent of his progress or delay is one of the strongest motives for learning While it was found that neglecting the learner and not notifying him of his position or paying attention to the extent of his progress or delay would lead the learner to boredom and indolence" (Saleh, 2013), as well as the biomechanical variables of kinetic energy depend on the process of pushing with the feet and shoulders, swinging the arms up, and very little flexion in the knees (15-20 d) because it produces a counter reaction, and the angle of flexion of the joint of the feet ranges from (160-165 d), all of which help to increase the square of the vertical speed, which has the most impact on energy and a decrease in the time of getting up The eccentric ground propulsion, with the occurrence of the line of action of the force behind the center of gravity of the body and the weighting of the arms and shoulders, are factors that increase the speed of the body's ejection to the top and the occurrence of a forward rotational movement, and thus increase the kinetic energy of rotation and rolling, "(Talha, 1993) ^[17] as a result of training in special exercises for jumping and pushing and similar to skillful performance, The researchers also indicate that the abduction and stopping of the arms and the eccentric push of the two legs to the ground during the ascent phase leads to an increase in the angle of ascent and thus an increase in the angle of departure, depending on the physical and kinetic abilities and capabilities of the students to transfer the largest amount of energy to the speed vehicle closest to the vertical and obtain a very simple height that increases the speed of rotation The body in relation to the skill whose performance requires the main part of it to stage a second flight, and the research agrees with "that increasing the amount of the angle of rise and thus increasing the angle of departure, depending on their capabilities and capabilities to transfer the largest amount of energy to the vehicle of the speed closest to the vertical and obtaining the very simple height through the relative reduction of the height of the

center The weight of the body and the distance for the first flight to preserve the amount of movement stored and exploit it in the pivot and push, which allows a second high and long flight to accomplish the main part of the skill and to compensate for the loss of horizontal speed and strong angular propulsion 0 (Mohamed, 2003) ^[9]. The two legs during the first ascent back by increasing the starting speed and increasing the height of the hip and then its height in the stage of resting on the platform as a result of developing the muscles of the legs and arms and saving effort to reduce the periods of muscle contraction to increase the momentum of the force upwards and thus increase the angular velocity of the body in front and its direct relationship with the angle of transition and the lack of transition time (supporting)) and the very simple flexion of the arms during the fulcrum, and this is consistent with "the development of the explosive force of the arms works to reduce the time of the fulcrum on the platform by taking advantage of the slow speed of the rapid snatching of the two legs back and pushing the platform with the largest explosive force of the arms, helping to increase the angular velocity that is inversely proportional to the time The transition to the second flight" (Talha, 1994) ^[18]. The researcher also attributes that the effect of the electronic curriculum, including effective exercises, various educational media, and watching the ideal performance helped in improving the muscles of the lower extremity and improving its angles, which made the members of this group achieve a lower resistance force and move away from negative bending. And the increasing, which leads to the loss of a large part of the kinetic energy when initiating the descent, and thus absorbing the momentum of the landing shock and the balance of the body, and the researcher agrees with "that the twin muscle in the knee joint performs a preparatory work downwards during the descent, and this downward movement leads to a negative force impulse, and at the end of the negative acceleration is The speed of the descent reached its maximum, and in order to stop it, a force directed upwards is used, and the acceleration of the jump is greater and positive so that it does not take longer to balance and not fall" (Ahmed, 2001) ^[2]. Large joints of the whole body after completing the approach run and jump to hit the glove strongly by reducing the time of getting up and to avoid the members of this group the large tendency when rising forward to avoid loss in the vertical distance and increase in the horizontal and push the glove apparatus strongly and get up a little height by reducing the height of the center of gravity of the body as much as possible Closer to the vertical and maintaining the horizontal as much as possible reflects the interdependence and compatibility of the performance of the skill under discussion and its performance is closer to the ideal by the members of the group, as Talha Hussam indicates that "the large angle of rise and flight, the speed of departure and the great lack of inclination forward, as well as the weighting of the arms when rising in front of high and stopping them properly A sudden and significant increase in the simple little height, which depends on increasing the vertical speed slightly and maintaining the horizontality to throw the center of gravity of the player's body in the air a little and create additional

momentum and sufficient acceleration that pulls the body to the maximum in front of the top and the smallest horizontal distance to increase the angle of departure in addition to the survival of the two legs They are slightly bent for a moment late during the landing, all of which increase the time of upgrading the motor performance of the skill to give an opportunity for the player to perform ideal rolls and rotations around the longitudinal axis of rotation in a clockwise manner and with external influences." (Muhammad, 2010) ^[11].

Presentation, analysis, interpretation and discussion of the results of the post-tests under study for the experimental and control groups:

For the purpose of knowing the differences of achievement in the search variables and the skill performance evaluation test between the two groups in the post-test variables, as shown in Table No. (5) of the arithmetic mean, mean deviation, coefficient of variation, and development ratios for the experimental and control groups, so the results showed that there were significant differences in the results of the variables under study. Except for the total time variable from the moment of jumping on the glove to the moment of landing on the ground, where the value of (T) calculated for the variable was (2,099), which is smaller than the tabular (T) value of (2,048) and below the level of significance (0.05), all of which are in favor of the posttests of the experimental group. And through the table above, which shows the results of the post-tests for the experimental and control research groups, where the table shows that the value of (T) calculated for the variable of maximum kinetic energy amounted to (6.55), which is greater than the value of (T) tabular amounting to (2,101) and below the level of significance (0.05), and reached The value of (T) calculated for the angle of rise variable at the moment of first leaving (2,530) and greater than the tabular (T) value of (2,101) and below the level of significance (0.05). For the second flight (4.830), which is greater than the tabular (T) value of (2,101) and below the level of significance (0.05). The value of (T) calculated for the knee angle variable at the moment of the first touch of landing was (3,522), which is greater than the tabular (T) value of (2,101.) and below the level of significance (0.05), and the value of (T) calculated for the ability of motor compatibility was (3,940), which is greater than the value of (T) tabular amounting to (2,101) and below the level of significance (0.05), and the value of (T) calculated for the skill performance evaluation test of movement Under discussion (3), which is greater than the tabular (T) value of (2,101) and below the level of significance (0.05). In addition, the experimental group has a lower coefficient of variation for the values of its variables than its control counterpart, as the larger the coefficient of difference, the lower the rate of development, meaning that The experimental group is the best and has the best development and progressed positively at the expense of the control group. From Table (5), which shows the results of the post-tests for the two research groups, there is a preference for variables in the research and in favor of the post-tests for the experimental group. This is what the hypotheses of the second and third studies of the study achieved.

Table 5: It shows the arithmetic mean, mean deviation, coefficient of difference, evolution rates, calculated and tabulated (T) value, and the significance of the differences in the posttests of the experimental and control groups for the variables under study

Statistical processors biomechanical variables motor, and skillful performance	Measuring unit	Experimental group (10)				Control group(10)				value (T)		Significance of differences
		Post-test				Post-test				Calculated	Arithmetic mean	
		Arithmetic mean	Average deviation	Coefficient of difference	Evolution ratios	Arithmetic mean	Average deviation	Coefficient of difference	Evolution ratios			
Maximum kinetic energy from the moment of first letting go of the glove towards the first flight	Joule	2379	20,10	0,85	3,91	2299	22,85	1	1,30	6,55	2,048	D
The angle of rise of the two men at the moment of the first leaving the glove for the first flight	degree	93,40	4,221	4,52	15,17	86,2	6,99	8,11	6,82	2,53		D
The time to stay on the platform from the moment of the first touch to the first departure of the second flight towards landing	one thousand per second	0,250	0,024	9,06	38	0,320	0,048	15,73	6,30	4,83		D
Knee angle at the moment of first touching the floor mat during landing	degree	128	4,011	3,23	13,33	135	3,695	5,13	5,41	3,52		D
The total time from the moment of first touching the glove for the first flight to the moment of first touching the carpet during landing	one thousand per second	1,58	0,054	3,42	2,54	1,62	0,062	3,83	1,24	2,099		Gerdal
Evaluation of the skillful performance of the front hand jump on a vaulting platform	degree 10	7,8	0,732	9,35	48,72	5,8	1,344	223,10	25,86	3		D
Digital circuits	Tha	3,480	0,175	5,03	36,3	4,136	0,594	14,36	14,48	3,940		D

At a sample size (n-2) = (2-30 = 28) and at a significance level (0.05)

As for the lack of significant dimensional differences for the total time variable from the moment of ascent on the glove to the moment of descent, the researcher attributes to both groups, which were presented in Table (5) that the experimental and control groups were practicing and rehearsing in one style, except for the independent factor represented by the electronic curriculum in which the experimental one specialized, and this It was not a negative factor in the development of the skillful and physical side, and the absence of moral differences does not indicate the weakness of the two groups due to the lack of time. On the contrary, a clear development appeared clearly between the

pre and post tests and in favor of the experimental one. 0.12) of a second, which was lengthened to end the skill by landing in it because they are students and not your gymnasts, and this is a natural thing, as it is benefited from stopping for a very short period in converting the horizontal velocity (kinetic energy) obtained through the approximate run into potential energy, and the jump must be done in a very short period And this indicates to him, "as the longer the time it takes to perform the jumping process, the player will lose a large amount of kinetic energy for the purpose of converting it into full energy." (Gluck, 1982) [4].

Therefore, the researchers attribute that training and learning on a skill under discussion by using educational models and media through physical and skill exercises and using the skill method on devices in the electronic curriculum and the multiplicity of audio-visual media has led to the improvement of biomechanical variables due to the difficulty of the skill and that the process of training and education through the media had a significant impact on eliminating From the factor of fear and anxiety of getting injured and reaching a performance close to ideal, which gives the movement under study a faster and better acquisition, which contributed to raising the experimental development rate (and the lack of coefficient of difference) from the control, which made a significant development and improvement, more economical, performing the movement correctly and reaching the technique The closest to the ideal, and the researcher attributes it back to the use of modern technologies in knowing the right angles of the motor paths and investing them in the form of some special exercises using educational models as a teaching method in improving the mechanical paths by achieving the amount of thrust in the shortest possible time, i. Therefore, the player controls the performance of gymnastic skills, including aerial skills, as he needs a high degree of sensation, neuromuscular and motor compatibility, awareness of distance, time, positions and angles of the body, and this only comes through training organized paths in changing conditions in the air in different directions. A, 1996)

Conclusions

1. The effectiveness and impact of educational exercises using various media Positive in developing the biomechanical variables under study and the pre and post skill evaluation of the experimental group at the expense of the control group to reach the best skill and style.
2. The experimental group achieved a significant difference in all the studied biomechanical variables and the dimensional skill evaluation except for the total time variable from the moment of breaking the connection from the glove device to the moment of landing for the skill under study.
3. The control group achieved a significant difference only in the pre-post kinematic variable of the time the arms rested on the platform from the moment they first touched them until the moment they left for the second flight, in a less significant way than their experimental counterpart.

Recommendations

1. Generalizing the results of this study to the research community and emphasizing the learner's freedom in choosing the educational model within the continuing education programs in the faculties of physical education and sports sciences to develop the capabilities of teachers in it.
2. The need for education and training to perform the skill, taking into account the values of the biomechanical variables required in the performance.
3. Carrying out similar studies on different movements and different devices concerned with models and educational media of learners with a rough level in bringing them to the level of teachers of gymnastic movements, as well as to develop and improve performance compared to international models of champions, as well as equipping indoor gymnastics

halls with what modern technology provided in teaching and education.

References

1. Adly Hussein Bayoumi. The Artistic Group in Ground Movements, Cairo, Dar Al-Fikr Al-Arabi for printing and publishing; c1998.
2. Ahmed Fouad Al-Shazly. Foundations of Biomechanical Analysis in the Mathematical Field, I, Kuwait: That Al-Salasil for Printing and Publishing; c2001.
3. Fawzi Al-Sherbiny, Effat Al-Tanawi. Developing Educational Curricula, Amman: Al-Masirah House for Publishing and Distribution, 1st Edition; c2011.
4. Gluck MH. Mechanics for Gymnastics Coaching, Charies's Thomas Publisher. Ill. USA; c1982. p. 110.
5. Hassan Shehata Rabie, Curricula between Theory and Practice, 1st Edition, Cairo: Dar Al Arabiya Bookshop; c2003.
6. John J, Shannon M. young gymnastic.PK publishing USA; c1995. p. 200.
7. Maher Ismail Youssef: From Teaching Aids to Educational Technology, 1st Edition, Riyadh: Al-Shaqari Bookshop; c1999.
8. Mohamed Ibrahim Shehata, Ahmed Fouad. Field Applications for Gymnastics Analysis, Alexandria: Modernity for Printing and Publishing; c2006.
9. Mohamed Ibrahim Shehata. Foundations of Teaching Gymnastics, 1st Edition, Dar Al-Fikr Al-Arabi, Cairo; c2003.
10. Mohamed Ibrahim Shehata. Kinetic and Skill Analysis of Gymnastics, Alexandria University: Origin of Knowledge for Publishing; c2014.
11. Muhammad Jassim Al-Khalidi, Haider Fayyad. Basics of Biomechanics, 1st Edition, Amman: Dar Al-Fikr for Printing and Publishing; c2010.
12. Saleh Majeed Al-Azzawi, Basman Abdel-Wahhab. Applied Artistic Gymnastics, Baghdad: Dar Al-Diyaa Press; c2013.
13. Sami Muhammad Melhem. Scientific Research Approach in Education and Psychology, 1st Edition, Amman: Dar Al-Masra for Publishing and Distribution; c2000.
14. Sareeh Abdel-Karim Al-Fadhli. Biomechanical applications in sports performance, 2nd edition, Baghdad: Dar Al-Kutub and Documents; c2010.
15. Seven Muhammad Aboub. Principles of Psychological Measurement and Educational Education, 1st edition, Amman: Dar Al-Fikr Al-Arabi; c2008.
16. Spiros Prasad. What is done, What is needed, (USA Gymnastics, On line), Biomechanical research in Gymnastics; c2006. p. 188.
17. Talha Hosam El-Din, Kinetic and Functional Foundations for Sports Training, Cairo: Dar Al-Fikr Al-Arabi; c1994.
18. Talha Hosam El-Din. Theoretical and Applied Foundations of Biomechanics, Helwan University: Dar Al-Fikr Al-Arabi; c1993.
19. Talha Hossam El-Din and others: Applied Kinesiology, Part 2, I, 1, Cairo: Al-Kitab Center for Publishing; c2001.
20. Mohammed MA, Worthington P, Woodall WH. Plotting basic control charts: tutorial notes for healthcare practitioners. BMJ Quality & Safety. 2008 Apr 1;17(2):137-45.

Supplement (1)

It clarifies the opinion of specialists about determining the most appropriate biomechanical variable for gymnastics for college students.

Missan University

College of Physical Education and Sports Sciences

Department of Applied Sciences questionnaire form

Opinion of specialists about the identification of selected biomechanical variables

Honorable Professor. Respected

In the intention to conduct research tagged with (the effectiveness of an electronic educational curriculum for some biomechanical variables and its impact on developing the skill of the front hand jump on the artistic gymnastics jump platform device In view of your experience and know-how in this field, please choose the most appropriate kinematic and Kentucky variant that is suitable for this age group of students. With a great appreciation and respect.

Note: Please put a tick in front of the most appropriate variable to measure the strength.

Teaching name:-

The scientific title:

The university:

Jurisdiction:

The date:

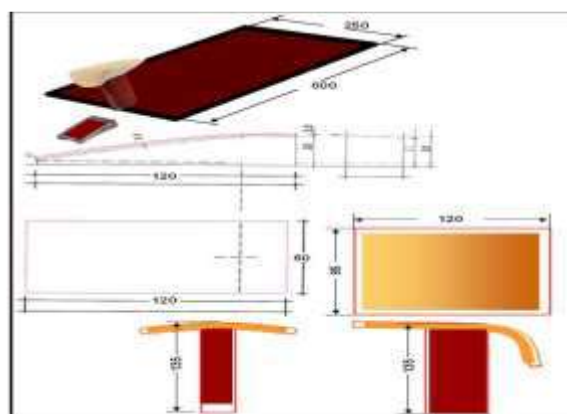
T	Biomechanical variable selected by experts	T	candidate variables	Signal
1	Kentucky	1	Maximum kinetic energy at the moment of the first rise of the glove	
2	kinematics	1	The angle of the rise of the two legs at the moment of the first letting go of the glove	
		2	The time to stay on the platform from the first touch to the first leaving the second flight	
		3	Knee angle at the moment of the first touch of the landing	
		4	The total time from the moment of the first touch of the glove to the first touch of the landing	

Accessory 1: Explains the names of the specialists and experts in learning and gymnastic methods who presented the specialized electronic curriculum and the suitability of the teaching aids for the research sample

T	The name of the specialist	Jurisdiction	Workplace
1-	a. Dr. Lamia Diwan	Teaching methods/gymnastics	College of Physical Education / University of Basra
2-	Prof. Dr. Fatima Abdel Malik	Your gymnastics training	College of Physical Education/ Al-Waziriya/University of Baghdad
3-	Prof. Dr. Nabil Al-Azzawi	Teaching methods\Gymnastics	College of Basic Education/Department of Sports/Mustansiriya University
4-	Prof. Dr. Aida Ali Al-Bayati	Learn your gymnastics	College of Physical Education/ Al-Jadriya
5-	Prof. Dr. Muhammad Ali Faleh	Teaching methods \ presented	College of Physical Education/University of Maysan

Accessory 2: Explains the names of the gentlemen specialists and experts by identifying the biokinematic variables of the composite skill

T	The name of the specialist	Jurisdiction
1	Prof. Sareeh Al-Fadhli	College of Physical Education/Baghdad/Bayo Square and Square
2	Prof. Dr. Basman Abdel Wahab	College of Physical Education/ Maysan University/ Biogymnastics
3	Prof. Dr. Yasser Najah	College of Physical Education / University of Baghdad / Biogymnastics
4	A. M. Ismail Ibrahim Muhammad	College of Physical Education / University of Baghdad / Biogymnastics
5	Prof. Dr. Osama Abdel Moneim Al-Salhi	College of Physical Education / University of Babylon / Biogymnastics
6	Prof. Dr. Bushra Kazem Abdel-Reda	College of Physical Education / Al-Waziriyah / University of Baghdad / Biogymnastics
7	Prof. Dr. Abdul Sattar Jassim	College of Physical Education / University of Diyala / Bio Gymnastics





Accessory (3): The arbitration form shows the division of the junior score (10 degrees) into its components through the judges' evaluation of the front hand jump on the jumping platform apparatus.



الاسم	التاريخ	الدرجة الكلية	الدرجة الفنية	الدرجة البدنية

Note

The form was used for the purpose of dividing the student's score only for the technical performance, whose highest value is (10 degrees) and its components, as shown above, for the purpose of determining the final technical performance score only for the device under study that the student obtains from the total components of the above degree.

Appendix No. (4-A): Choosing the most appropriate test for the motor ability of the research sample

T	special motor characteristic	T	Candidate tests	Signal
	Compatibility	1	Rope skipping test	
		2	Running in the form of an 8	
		3	Digital circuit test	

Appendix No. (4-B): Explains the names of the gentlemen specialists and experts in training and choosing motor ability

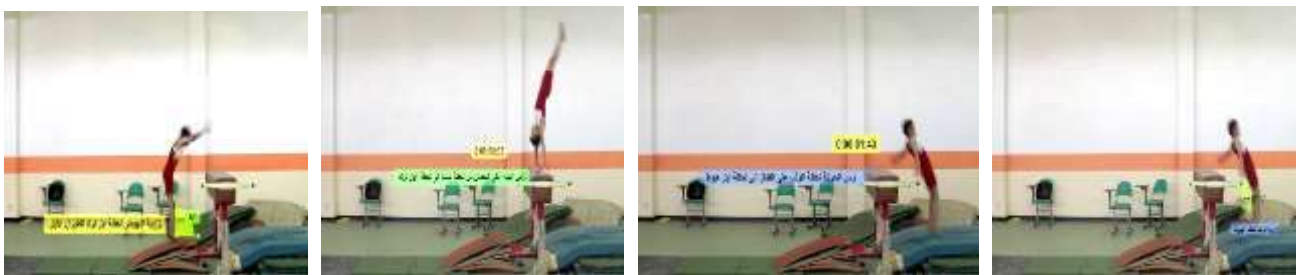
T	the name	The scientific title	Specialization	Enterprise
1	Samir Muslat	Mr. Dr	Training/Bayou	College of Physical Education / Al-Mustansiriya University
2	A slave to Razzaq Kazem Al-Zubaidi	Mr. Dr	Training/gymnastics	College of Physical Education/University of Baghdad
3	Prof. Dr. Firas Hassan	Mr. Dr	Training / gymnastics	College of Basic Education / University of Basra
4	Ali Abdul Hussein Hassan	Mr. Dr	Learn/your gymnastics	College of Physical Education/University of Baghdad
5	Saleh Majeed Al-Azzawi	a. Dr	Training/gymnastics	College of Physical Education/University of Baghdad

Appendix No. (5): Pictures of the biomechanical variables under study, the devices and tools used, and physical exercises using the skill of the electronic curriculum

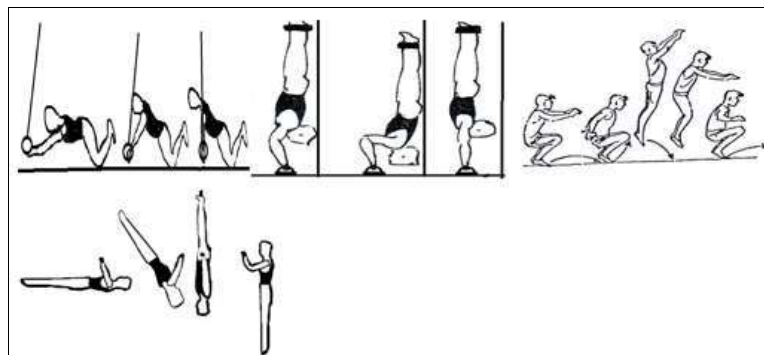
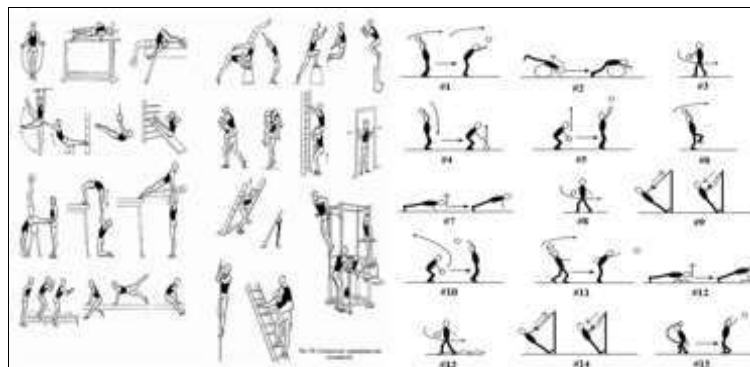




Kinetic energy, the moment of first leaving the glove, the angle of rise of the two legs, the moment of first leaving, the time of staying on the jumping platform






The knee angle of the two legs, the moment of the first touch of the landing, the total time from the moment of hitting the glove to the moment of the first touch of the landing of the legs



Appendix No. (7) 21

Educational objectives: - A model of an educational unit for the control group according to the vocabulary of the college curriculum. Educational objectives: - Developing cooperation among students.

1. The student performs the front hand jump skill on the jumping platform device 1- Stage: - the third
 2. Number of students: -10
 3. Date
- Unit time: -90 minutes 5- Teaching unit number:-

T	Departments of the educational unit	Time	Activity and motor skills	Profiles	Notes
1	Numerical section	20 d	Standing in a straight line to register attendance and perform the lesson greeting, then the usual walk in the form of two parallel lines - jogging with touching the ground with the hand left and right in succession, then jogging to the side with raising the arms successively up and down, then jogging and jumping up, then turning half a cycle, general preparation for all body parts, especially those that serve the section Then walk and stand in a circle.	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX x 	1- Restriction on attendance 2- Emphasis on sports uniforms 3- Applying a warm-up for the students of the sample 4- Executing physical and motor exercises well, and emphasizing consistency in performance
	Introduction and warm-up	10 d			
	physical exercises		(long sitting) raising the legs high with clapping hands from under them and lowering them down (10 times) (Lying on the back and leaning on the elbows) rotating the legs in succession (bicycle movement) (Standing openly) raising the arms to the sides while twisting the head left and right in succession (4 times) (Standing - arms in front of you) bending and extending the knees (4 times)		
	main section	60 d	The educator explains the activity in front of the platform device through verbal explanation with the use of the data shop The educator applies what has been explained or through one of the students to be a model for presentation The educator explains some paragraphs of the cognitive domain The individuals of this sample are distributed according to groups, after confirming that the work is according to what has been explained, and each individual has a group		1- Pay attention to the teacher's explanation and presentation during the implementation of the skill 2- Pay attention to the model while performing the skill, and all students understand the explanation provided
	The educational part	20 d			
	applied part	40 d	The members of this sample see what was explained and presented by the educator by performing the skill on his own and a better model for one of the students. Students form a discussion circle in which they exchange performance and ideas about the nature of performing the required skill. One of the students performs a skill in question. Work the skill from above the device by jumping, then a wooden horse divided in height and starting gradually upwards. Work the skill with the help of the educator and one of the students to help the performer push him over his belt and spin forward Work the skill with several repetitions to remove fear and injury. Work the skill on a legal device with the help of the educator and one of the students, after performing it by an ideal model for one of the students, and stressing not to flop with the rough run and hit the glove device with both old hands vigorously Review what has been explained by the educator for the cognitive side carefully		
3	Concluding section	10 d	Calm down and relax exercises and a small game by circling around the barriers, then standing in one line and ending the lesson Dismissal from the lecture	XXXXXXXXXXXXXXXXXXXX 	1- The educator shall give the winning points on the basis of individual and team competition 2- Determine the starting line for each group, and it is not permissible to cross it 4- Not to move the second student unless the student before him reaches and touches him with his hand