

The effect of special exercises for a proposed device in improving some bio-kinetic variables and learning the performance of the Arabic jump skill on the floor mat device in artistic gymnastics for female students

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Summary of the research

Using exercises The importance of research lies in working on the numbers of on the floor movement carpet Arabic jump learn the skill of the a proposed device to .device in artistic gymnastics

Observers as two teachers Through the presence of researchers **:The search problem** there is a difficulty in the students' that noticed of this sport in the gymnastics hall The rug of the earth's . device on the performance of the skill of the Arabic jump The reason for this is that movements, according to the opinion of the researchers istive devices, as well as the lack of use of these skills are taught with the lack of ass Kinematic, although it facilitates the .devices in exercises according to bio variables learning process for these skills and works to shorten the time and effort in the emoval of difficulties encountered by the students learning process and enables the r during performance and helps in the process of diagnosing that performance as well as the use of devices increases the learner's desire and appetite for learning and special this problem through preparing study To . performance enjoyment during using a proposed device to work on overcoming these difficulties and exercises . time and effort eliminating the weaknesses of the students while providing

:The research aimed to

It helps in overcoming the difficulty of Arabic jump teaches the skill of the that a proposed device to for preparing exercises and performing that skill among students

device in the artistic gymnastics for Arabic jump on the floor mat skill of the learn the students

the experimental method by designing the two equal groups for researchers used The the research community for its suitability to the nature of the research problem, and by the third stage students in the College of Physical Education and represented ences, it represented the entire community of origin and their number was Sports Sci female students, which were divided into two groups (control and (20) . students (30) experimental) by lottery and by (10) students in each group, and thus the percentage arch sample is (66%), which is an appropriate percentage to truly and of the rese . honestly represent the research community

the possibility of using the exercises with the :**As for the conclusions, they were** on curricula because they proposed device within the applications of physical educati are necessary in learning all stages of the technical performance of the skill of the Arabic jump, and that the use of the mechanical perspective helped as a basic factor in e kinematic feedback had a as well as that th ,explaining the technical performance .great effect in correcting many of the Errors in the technical performance stages

the need to conduct research in the :**As for the recommendations, they included** field of learning skills using educational curricula that include in their applications it is possible to use exercises with the proposed device in and ,special exercises need to take into account the s theas well a ,educational units to improve technique kinematic variables affecting the type of skill performed because of their great role in .interpreting And raise the level of performance

:Introduction to search -1

:research Introduction to the research and the importance of the 1-1

The sports field in general is one of the most important fields to express the extent of the development and advancement of peoples. Therefore, the pursuit was continuous to obtain the best in terms of to solve the problems education, through research, study, and work .facing students

And because the learner is the center of the educational process, and are the main goal of the Its capabilities his abilities the development of educational process, so careful attention should be paid to providing the requirements, conditions and opportunities to achieve the best paths performance that reflects the ability to understand the parts and . d its requirementsan .of the motor duty

Gymnastics is one of these sports that has received the attention of researchers and workers in the sports field, which requires a high degree of understanding and mastery of the motor duty in all the ncluding the ground movements. movements performed by students, i The Arabic jump, standing on the head, standing on the hands,)

which consists of several technical stages. However, performing these skills appropriately requires physical ability and high skill, and this is not from mere chance, but exercises play an effective role. It does not come from Skills, as it works on developing the In learning and refining this capabilities of students and raising their levels, thus reflecting positively on performance

So, through the experience of the researchers, they identified the problem that there is a difficulty in the students' performance of the Arabic jump skill on the floor mat device. According to the skills researchers' opinion, the reason for this is due to the fact that the lack of auxiliary devices, as well as the lack of use of these devices in the exercises according to the bio-kinetic variables, despite It facilitates the learning process for these skills and works to enable the shorten the time and effort in the learning process and removal of difficulties encountered by the students during performance and helps in the process of diagnosing that performance, as well as the use of devices increases the learner's desire and desire to learn and to study This decided he researchersenjoy during performance, so the problem is through preparing exercises using a proposed device to work on overcoming these difficulties and eliminating the weaknesses of the students while saving time and effort

) the objectives of the research, which are researchers identified The design and manufacture of a device that teaches the skill of the Arabic jump and helps in overcoming the difficulty of performing that skill for female students and prepare exercises with a proposed device to learn the skill of the Arabic jump on the floor movement carpet to . (device in the artistic gymnastics for students

there is a positive effect of exercise with a **As well as assuming that** And some biokinetic variables improving proposed device in On the carpet of ground jump the Arab skill of performing the .movements in the artistic gymnastics of the research sample

The human sphere **As for the areas of research, they were** stage students in the College of Physical Education represented in the third and ,2020-on and Sports Sciences, University of Kufa 2019Educational and the temporal domain was from ,their number was (35) students by to 3/16/2020, while the spatial domain was represented 2019/18/12 in the gymnastics hall in the College of Physical Education and Sports Sciences / University of Kufa

made, -Keywords: artistic gymnastics, the proposed ready •
.the Arab jump

:Research methodology and field procedure -2

:Research Methodology 1-2

The curricula are important in scientific research and that the value of the research and its results are closely related to the approach followed, and since the research problem is of an experimental nature, the experimental method is the closest research method to solving this problem, as experimental research aims to scientifically determine the cause and effect relationship between variables, as well as the experimental method is the only research method that can truly test the hypotheses of cause or effect relationships.

The research community is : **Community and research sample 2-2**

represented by the students of the third stage in the College of Physical Education and Sports Sciences, and it represents the entire community of origin, and their number .² students (was (30

ly and by lottery method from the The research sample was chosen random original research community consisting of (20) students, as it was divided into two groups (control and experimental) by lottery and by (10) students in each group, and which is an appropriate ,(thus the percentage of the research sample is (66% .proportion To truly and honestly represent the research community

:Devices, tools and means used in the research 3-2

:Means of data collection 1-3-2

- .Resolution •
- .Observation and analysis •
- .Personal interviews •
- .release form Scores •
- .Computer software •
- .Arab and foreign sources and the Internet •

:Tools and equipment used 2-3-2

The indoor gymnastics hall in the College of Physical Education and .1

Sports Sciences / University of Kufa

(Canon), speed (120) pictures per second ,(casio exilim) (Camera (2 .2

.(number (1

.(number (3, typePRINCO)) CDs of the **.3**

.(laptop calculator , number (1Toshiba .4

Sports stopwatch .5

.Plinths of different heights .6

.Rubber ropes .7

Kubaisi, The Researcher's Guide to -Shouk and Rafi' Saleh Al-Nouri Ibrahim Al - ¹

.Writing Research Papers in Physical Education, Baghdad, 2004, p. 59

Jubouri, the guide in writing scientific -Khikani, Ayman Hani Al-Amer Saeed Al -²
.f, 2016, p. 165 letters and theses, Bt, Naja

- .(Drawing scale (1 meter .8
- .(Whistle number (1 .9
- .(A tripod for installing cameras (3 .10
- .two (2) pcs ,(San Disk) (16 GB) Information storage memory type .11
- . (Kinovea setup.25) Analysis program .12

:Field Research Procedures 4-2

:The researchers did the following

:search variables Define 1-4-2

The research variables (biokinematics variables) were determined by relying researchers' on sources and references for similar scientific studies, as well as the . in the field of specialization experience

:Biomechanical variables -

It is the real distance **:The distance between the hands** •
traveled from a point (the first hand) to another specified point
(the second hand), and it is measured in (cm)

It is the real distance traveled **:The distance between the feet** •
foot) to another specified point (the from a point (the first
(second foot), and it is measured in (cm)

is the angular **Angular velocity of the leading leg: It** •
during a certain time, and it is leg movement rate of the
(measured in (Sector/sec

is the angle between the It **:Angle of inclination of the body** •
foot point to the point of the body's center of -line from the mid
. ³ gravity with the horizontal line

:Measuring biomechanical variables 1-1-4-2

skill (Arabian jump), through the use of For the Kinematic variables were measured based on the video imaging of skills, , (kinovea v.8.25) the kinetic analysis program as , where the variables of the skill, which were previously identified, were measured :follows

- . dsThe distance between the han •
- .The distance between the feet •
- .The angular velocity of the leading leg •
- .Angle of inclination of the body •

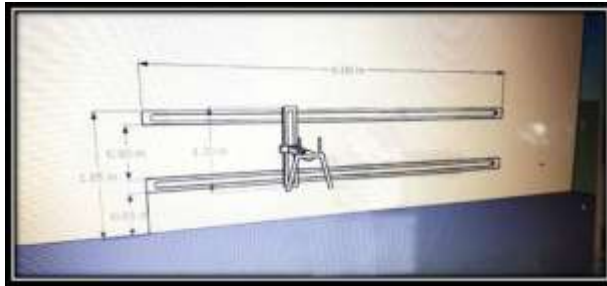
:(Measuring the skill performance of the skill (The Arab Leap 2-1-4-2

by The skill performance of the research skill (The Arab Leap) was measured evaluating the performance of the students by (4) experts and specialists in the field of gymnastics, where the degree of evaluation is according to a form prepared by the

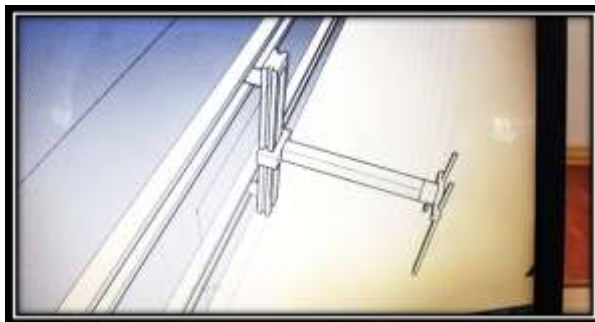
, **Mathematical kinetic analysis** .Yasser Najah Hussein, Ahmed Thamer Mohsen - ³
.AD, p. 87 2015 ,1

degrees Through the (10-ers for the evaluation degree that ranges from (0research students' performance of the two skills and by (3) attempts, the evaluation is for the best of them through video photography, which was presented to the evaluation .experts

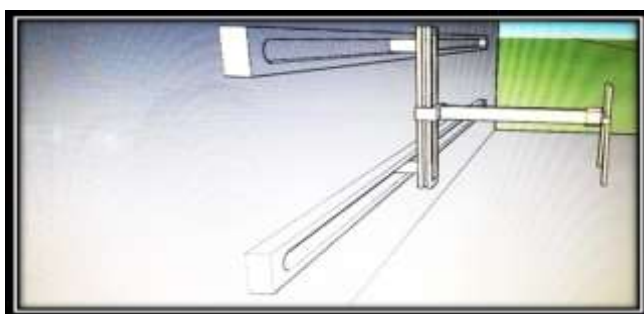
sted deviceSugge 2-4-2



.Figure 1 shows the device from the front



.Figure 2 shows the device from above



.Figure 3 shows the device from the side

Device details •

:The proposed device consists of
that Two iron rails: The two iron rails are fixed on the wall so •
they are parallel, and the length of both rails is (6) m, and the width is
.cm, and each one is separated from the other (1.30) cm (30)

Iron plate: It is fixed on both rails so that it connects them and •
cm, and it is movable on (has a length of (1.30) cm and a width of (50
.the two rails

.Installed on the iron plate, it is 15 cm long :Iron arm •

Two (2) are mounted on each other in a way that : bourberry •
.allows movement on three axes

.Belt: works to stabilize the body when moving •

ism of operation of the devicemechan **The**

The student stands so that her back is facing the device and wears the
belt that stabilizes the body and provides safety so as to prevent a fall.

When the student begins to perform one of the two skills, the
help in rotation through the mechanism of its rotation porperine will
to the side, while the iron plate on both rails will move to the side In
.order for the student to continue to perform and repeat the skill

exploratory experience 3-4-2

on the exploratory experiment carried out The researchers
Tuesday (1/12/2020) in the Gymnastics Hall in the College of
Physical Education and Sports Sciences on a sample of (5)
female students. During the application of the main experiment
solutions for it, and how to avoid it and finding the optimal
knowing the amount of time required to conduct the main
experiment, as well as distributing the tasks of the auxiliary
as well as determining the appropriate ,(□) work team

:location for the cameras, which were set as follows

type, with a speed of (1200 (casio) :st cameraThe fir -
images / sec), installed on a tripod from the side opposite the
place designated for performing the skills of searching (ground
movements carpet), at a height of (1.50) m from the ground and
istance of (4) m It is measured from the focus of installed at a d
the camera lens to the middle of the rug in the place where the
. students perform skill

type, at a speed of (1200 (casio) :The second camera -
e images / sec) installed on a tripod in front (facing) of th
students during the performance on the (ground movement
carpet), at a height of (1.50) m from the ground and installed at
a distance of (5) m Measured from the focus of the camera lens
the skill is to the center of the rug in the place where
.performed

:The main experience 4-4-2

:Tribal tests 1-4-4-2

The two researchers conducted the tribal tests for the control and experimental groups of (20) female students on Monday (7/12/2020) in the Gymnastics Hall at the College of Physical Education and conducted The two researchers , Sports Sciences / University of Kufa

Indication type	Indication level	Calculate valueT d	experimental group		control group		measuring unit	variable
			p	s	p	s		

-the skill performance of research skill and bio measuring tests for through video imaging, which was presented to , variables kinetic mechanics, -experts and specialists in the field of gymnastics and bio test to assess -ults of the preas mentioned previously, to obtain the res -the skill performance as well as the kinetic analysis to extract the bio kinovea v.8.25) kinetic variables. Using the kinetic analysis program .(

:The equivalent of the research sample 2-4-4-2

The the two research groups, he benefited With regard to the equality of test to verify the equivalence of the level -researchers of the attempts of the pre of performance as well as the comparison in the values of the most important the researchers found when biokinetic variables for the two research groups, as noticing the significance ratios were greater than the level of the error rate at the degree of freedom (28), which means that all levels of the two (0.05) the groups (The experimental and control) were equivalent, which means that .(1) two groups were placed on one starting line, as shown in Table

insignificant	0.09	1.76	1.25	2.70	2.47	3	Degree	technical performance
insignificant	0.57	1.13	3.79	36.12	3.95	34.15	cm	The distance between the hands
insignificant	0.14	1.37	0.58	44.93	0.81	44.49	cm	The distance between the feet
insignificant	1.10	0.76	0.81	7.92	0.39	6.84	sector/second	Angular velocity of the leading man
insignificant	0.44	0.78	4.47	57.50	5.13	55.80	Degree	body inclination angle

(Table 1)

-test of technical performance and some bio-It shows the equivalence in the pre .kinetic variables for the control and experimental groups

test-Post 3-4-4-2

The researchers conducted the post tests for the control and experimental groups on Thursday 7/1/2021 in the Gymnastics Hall in the College of Physical Education and the Sports Sciences / University of Kufa, where the researchers applied tests for kinetic variables -technical performance of the skill of the Arab jump and extracted bio kinovea) through video imaging and analysis Using the kinetic analysis program o test, the researchers were keen t-In order to obtain the results of the post (v.8.25 provide the same conditions surrounding the tribal tests in terms of time, place, .implementation methods, sequence of tests, and control of extraneous factors

Statistical methods 5-2

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

:Presentation, analysis and discussion of the results -3

Presentation and discussion of the results of the pre and post tests of 1-3

.the control and experimental groups for the variables under study

Its of the pre and post tests of the experimentalPresentation of the resu 1_1_3

investigated and control group for the variables

(Table 2)

indication type	indication (Sig.) level	Calculated _ _ valueT	telemetry		Tribal measurement		measuring unit	Variables	T	
			- p	-s	- p	- Q				
moral	000	15.65	0.67	6.25	0.26	2.75	Degree	he perfor mance artistic	1	xperim ental

moral	000	7.46	0.68	44.86	3.79	36.12	cm	The distance between the hands	2	
moral	000	148.87	0.83	82.31	0.58	44.93	cm	The distance between the feet	3	
moral	000	6.49	0.59	10.11	0.81	7.92	sector / s	Angular velocity of the leading man	4	
moral	000	12.10	0.69	75.40	4.47	57.50	Degree	body inclination angle		
moral	000	10.02	0.25	4.80	0.51	3.10	Degree	technical performance	1	
insignificant	016	1.49	0.46	35.93	3.95	34.15	cm	The distance between the hands	2	
moral	000	33.34	0.56	54.87	0.81	44.49	cm	The distance between the feet	3	
moral	000	13.83	0.62	8.07	0.39	6.84	sector / s	Angular velocity of the leading man	4	
insignificant	0.12	1.68	0.67	58.70	5.13	55.80	Degree	body inclination angle	5	

Presentation of the results of the tests (postural.postural) for the two 3-1-3 experimental and control groups for the variables investigated

(Table (3

Indication type) Indication level (Sig.	T) value	experimental group		control group		Variables	T
			-p	-s	-p	-s		

mor al	0.00	6.32	0.67	6.25	0.25	4.80	Degree	technical performan ce	1
mor al	0.00	34.13	0.68	44.86	0.46	35.93	cm	The distance between the hands	2
mor al	0.00	86.34	0.83	82.31	0.56	54.87	cm	The distance between the feet	3
mor al	0.00	7.49	0.59	10.11	0.62	8.07	sector/second	Angular velocity of the leading man	4
mor al	0.00	54.34	0.69	75.40	0.67	58.70	Degree	body inclination angle	5

:Discussing the results 2-3

The results presented in tables (2) and (3) for the technical performance tests kinetic variables showed that there were significant differences between -and the bio the tribal and remote tests and in favor of the post tests for the control and researchers attributed the reason for this moral groups, and the experimental difference to the members of the control group in the variables (technical performance, The distance between the feet, and the angular velocity of the leading o the exercises that were applied by the skill teacher, as leg) in the pre and post test t biomechanical they contributed to the development of technical performance and variables (distance between the feet, and the angular velocity of the leading leg) while nificant for both Variable (the distance between the the difference appeared insig of the body), as for the moral difference that inclination hands and the angle of Kinematic, .appeared in the above table for the members of the experimental group according to scientific g the deviceand these exercises were performed usin foundations and educational principles aimed at building the body and assortment to reach the learner and the player. To the best possible performance in various games

(and in particular the skill (Arabian jump ,gymnastics skills including ,⁽⁴⁾) and activities kinematic variable (the distance between the -In effecting an improvement in the bio⁵ by focusing in the and the researchers attribute the reason for this improvement (hands device on the flow of performance, control and exercises applications of the proposed control, where the proper transition is between the different movements in the motor as well as an ,⁽⁶⁾) In the form of arcs or rotation without the presence of any angle . duty Without flexion in the knee joint, .(improvement in the variable (distance between the feet which led to the smoothness and aesthetics of movement, which in turn was positively and also the , group. B tests of the experimental-reflected on the results of the post The researchers (improvement in the variable (the angular velocity of the leading man attribute the reasons to the exercises with the proposed device that were applied to the nematic feedback members of the experimental group, in addition to the ki accompanying the performance of these exercises and their repetitions, which worked And on the smoothness of movement and the continuity of performance in agreement kinetic energy, avoiding hesitation in it, which increased the possibility of preserving which was positively reflected on the increase in the angular velocity for the members as well as the variable (the angle of inclination of the , of the experimental group performance information about the kinematic aspects of body). The feedback gives when applying, as it is considered the best in producing information about the ,⁽⁷⁾ performance form

As for the results presented in Table (3) that show the preference of researchers tests, both-differences in favor of the experimental group in the post believe that the exercises with the proposed device prepared by the researchers for the experimental group, which are characterized by their gradation in members of the terms of difficulty and forgetfulness of their home, and their compatibility with the skill path and their distribution based on Scientific foundations and principles on the the performance of these exercises with the proposed s, as well as educational unit These exercises contain the aids and tools that have a major role in learning .device and acquiring mathematical skills in the various practical lessons, as well as being , .help learners to perform difficult and dangerous movements safety means that

Ashraf, -st floor, Najaf Al1 , Selections in kinetic learning :Dulaimi-Nahida Abdul Zaid Al (⁴)

.p. 58 and 2011 ,Diaa for printing and design-Dar Al

nd floor, Basra 2 , Kinetic learning :Najah Mahdi Shalash, Akram Muhammad Sobhi (⁵)

.University, b. M, 200 AD, p. 129

-Principles of Kinetic Learning, Dar Al : Hadi-Najah Mahdi Shalash and Mazen Abdel (⁶)

.p 120 , Ashraf, 2010-Najaf Al-Diaa for Printing, Al

Joseph H.Rogers; Coaching.usATrakand Field Rogers Project Coordinator:)(⁷

.333 ,p ,2000 ,(Human Kinetics

-contributed significantly to the development of both technical performance and bio-kinetic variables in the skill of the Arab jump

:Conclusions and Recommendations -4

:Conclusions 4.1

bility of using the exercises with the proposed device within the The possi -1

applications of physical education curricula because they are necessary in

.learning all stages of technical performance for the skill of the Arab jump

helped as a basic factor in the The use of the mechanical perspective -2

.interpretation of technical performance

The kinematic feedback had a great impact in correcting many errors in the -3

.technical performance stages

:Recommendations 2-4

skills using It is necessary to conduct research in the field of learning -1

.educational curricula that include in their applications special exercises

It is possible to use the exercises with the proposed device in the educational -2

.units to improve the technique

iables affecting the type of It is necessary to take into account the kinematic var -3

skill performed because of their great role in interpreting and raising the level of

.performance

Sources

Joseph H.Rogers; Coaching.usATrakand Field Rogers Project Coordinator: -1
.2000 ,(Human Kinetics

the guide in writing , Jubouri-Khikani, Ayman Hani Al-Amer Saeed Al -2
.scientific letters and theses, Bt, Najaf, 2016

Kubaisi, The Researcher's -Shawk and Rafi' Saleh Al-Nouri Ibrahim Al -3
.AD Guide to Writing Research Papers in Physical Education, Baghdad, 2004
st Edition, 1 , Selections in Kinetic Learning :Dulaimi-Nahida Abdel Zaid Al -4
.Diaa for Printing and Design, 2011-Ashraf, Dar Al-Najaf Al

nd 2 , Kinetic Learning :Najah Mahdi Shalash, Akram Muhammad Subhi -5
.m 0 0 Edition, University of Basra, b. m, 20

Principles of Kinetic Learning , :Hadi-Najah Mahdi Shalash and Mazen Abdel -6
.2010 ,Ashraf-Diaa for Printing, Najaf Al-Dar Al

Mathematical kinetic .Yasser Najah Hussein, Ahmed Thamer Mohsen -7
.st floor, 20151 , **analysis**

