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The effect of special exercises using (Dynafoot3) to develop the step and achievement in the triple jump for students of the college of physical education and sports sciences

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Abstract--It is necessary to search for new methods to detect the location of the defect and weakness in the motor performance and the muscle activity accompanying that performance, where the problem of the research lies about the lack of use of previous studies of modern devices to identify the amount of pressure and strength in addition to the balance of the feet and the difference between them and to identify the strength achieved by the muscles as Muscular strength is one of the most important physical elements that jump players need, because all of his movements depend on how he moves his body and muscles when performing the step. Dynafoot3 device for developing step and achievement in the triple jump, The researcher used the experimental method in a manner (the control and experimental groups) to suit the nature of the problem, where the experimental research is one of the best ways to research some educational problems, on students of the second stage in the College of Physical Education at the University of Al-Qadisiyah for the academic year 2021-2022, whose number is (205) students after excluding the female students The researcher used the simple random method by selecting the research sample, which numbered (20) students. (Dynafoot3) had a positive effect on the development of the step and achievement in the triple jump, the adoption of skillful physical exercises (special) in the training curricula, especially for raw students who face difficulty when performing the step in the triple jump,

conducting similar studies in the physical abilities and complex skills that the study did not address.

Keywords---special exercises, achievement, physical education, sports sciences.

Introduction

Here lies the importance of the research in the effect of special exercises on the (Dynafoot3) system to identify the amount of pressure and strength in addition to the balance of the feet and the difference between them and to know the strength achieved by the muscles, as muscular strength is one of the most important physical elements that jumpers need because all their movements depend on how Moving his body, muscles, and strength play an influential role in increasing the speed, agility, and ability of the player and its impact on the development of the step, physical abilities, and achievement in the triple jump. Despite the many studies that have taken place in this field. However, it is necessary to search for new methods to detect the location of the defect and weakness in the motor performance and the muscle activity accompanying that performance, as the research problem lies in the lack of use of previous studies of modern devices to identify the amount of pressure and force, in addition to the balance of the feet and the difference between them, and to identify the strength achieved by muscles, as muscular strength is one of the most important physical elements that jump players need since all their movements depend on how they move their bodies and muscles when performing the step. The research objectives are to prepare special exercises using the Dynafoot3 device to develop the step and achievement in the triple jump. using the Dynafoot3 device to develop the step and achieve the triple jump. (Barkoukis et al 2010)

The practical part

The researcher used the experimental method in a manner (the control and experimental groups) to suit the nature of the problem, where experimental research is one of the best ways to research some educational problems, on students of the second stage in the College of Physical Education at the University of Al-Qadisiyah for the academic year 2021-2022, whose number is (205) students after excluding the female students. The researcher used the simple random method by choosing the research sample, which consisted of twenty (20) students.

Determine your search metrics

The search variables are defined as follows:

- Measuring the achievement of the step by the triple jump
- Measuring achievement with the triple jump

Survey experience

The exploratory experiment was carried out on a group of ten (10) second-year students of physical education and sports sciences.

This experiment's goal was to

- Identifying the obstacles that may accompany conducting the tests and working to avoid and overcome them
- Knowing the time required to carry out the tests
- The efficiency of the assistant work team and their understanding of the tests, as they were good at performing their work.
- During this experiment, the sample's understanding of the tests was shown, as it was easy and clear to them.

Through this experience, the validity of the tests, devices, and tools and their suitability for the research sample were ascertained. (Nabi Hajji 2021)

The scientific basis for the tests

In order to complete the research procedures towards its correct scientific path, the scientific foundations of the tests are found, represented by the transactions of honesty, stability, and objectivity as three of the most important characteristics of a good test, and these foundations are achieved through several scientific steps, including them.

Test validity

Honesty is one of the indicators that must be available in the optional tool approved in the measurement, i.e., of the mathematical characteristics and phenomena, and the honesty of the test means that the test actually measures the ability, trait, tendency, or willingness that the test is designed to measure; that is, it actually measures what it is intended to measure. The validity of the test is related to what that test measures and to what extent it succeeds in its measurement. When we say that the test is valid, we mean that it measures what was designed to measure it. And the specialists who showed that the tests were honest in measuring what they were designed for? Thus, the researcher obtained the validity of the content. (Sallis et al 1999)

Test stability

When measuring any of the phenomena, there are errors called chance errors. These errors may be few and not significant, or they may be large to the extent that they affect the confidence of the measurement results. It is these chance errors that do not lead to congruence of the measurement results. The results of the measurement match when repeated more than once. It was calculated by the Simple Correlation Coefficient (Pearson) to know the value of the stability coefficient, and it was found that all tests have high stability.

The main research experience

Pretest

The researcher conducted tribal tests on the research samples of the two groups (experimental and control) in the gymnasium of the College of Physical Education and Sports Sciences, University of Al-Qadisiyah, under the supervision of the researcher, the supervisor, and the subject teacher, in addition to the assistant work team. speed, maximum speed) in addition to the device parameters (Dynafoot3)

Special exercise application

The researcher prepared the exercises for her research, which included jumping, jogging, partridge and jumping exercises with the use of boxes and barriers of different heights in order to improve the player's performance when performing the step and to improve the physical abilities of the player represented (the explosive power of the two legs and the strength characteristic of speed and maximum speed) and thus lead to a better achievement for the player, as these exercises were applied to the experimental group, while the control group was applying the curriculum followed by the teacher, and the time of the training unit was from (25 to 30) minutes, and the training units prepared by the researcher in the main section were implemented on the experimental research sample, and appendix (5) shows the exercises used in the search. (Hastie et al 2013)

Post-tests

Post-tests were conducted on the research samples of the two groups (experimental and control) and under the same conditions as the tribal tests, taking into account the same time and place as well as the assistant work team in the pre- and post-tests.

Statistical means

The researcher used the statistical software package (spss).

Results

Presentation, analysis, and discussion of the results

In the fourth chapter, the results from the two research groups' pre- and post-tests were analysed and talked about to figure out how much the level had improved. Presentation, analysis, and discussion of the results of the research groups in the pre and post tests in the research variables. Presentation, analysis, and discussion of the results of the control group in the pre and post tests of the kinetic variables, the step, and the achievement of the triple jump jumpers:

Table 1
The calculated t-value between the control group's pre and post tests in the Kentucky indicators, physical abilities, step, and achievement of triple jump jumpers

Statistical parameters		Pretest		posttest		(t) value	sig	significance
Kenticular variables		X	Y	X	Y			
	Average pressure on the right foot	743.70	22.08	789.34	21.05	5.36	0.000	Significant
	The average pressure period for the right foot	552.29	231.95	567.14	214.1	4.29	0.000	Significant
	The right foot force distribution ratio	85.02	67.55	89.87	52.53	3.26	0.006	Significant
step		2.41	0.59	2.68	0.47	3.22	0.004	Significant
achievement		9.36	1.67	10.11	1.59	3.17	0.003	Significant

Table 2
The kinetic indicators, physical abilities, and calculated t-value between the pre and post tests of the experimental group in the kinetic indicators, physical abilities, and step and achievement of the triple jump jumpers were significantly different

Statistical parameters		Pretest		posttest		(t) value	sig	significance
Kenticular variables		X	Y	X	Y			
	Average pressure on the right foot	754.23	21.02	801.36	20.34	6.39	0.000	Significant
	The average pressure period for the right foot	548.36	229.63	596.52	210.7	5.98	0.000	Significant
	The right foot force distribution ratio	83.25	66.31	95.85	61.86	6.78	0.000	Significant
step		2.44	0.54	2.74	0.51	5.87	0.000	Significant
achievement		9.49	1.74	10.98	0.85	6.12	0.000	Significant

Presentation, analysis, and discussion of the results of the experimental and control groups in the post-tests of the kinetic variables, the step, and the achievement of the triple jump jumpers.

Table 3
The calculated t-value in the Kentucky indicators, physical abilities, step, and achievement of the triple jump jumpers between the post-tests of the two experimental and control groups

Statistical parameters		Pretest		posttest		(t) value	sig	significance
Kenticular variables		X	Y	X	Y			
	Average pressure on the right foot	789.34	21.05	801.36	20.34	5.39	0.000	Significant
	The average pressure period for the right foot	567.14	214.1	596.52	210.7	4.64	0.000	Significant
	The right foot force distribution ratio	89.87	52.53	95.85	61.86	4.52	0.000	Significant
step		2.68	0.47	2.74	0.51	3.27	0.009	Significant
achievement		10.11	1.59	10.98	0.85	6.31	0.000	Significant

Discuss the results

The results that have been presented indicate that there are statistically significant differences between the scores of the experimental group members between the results of the pre-and post-measurement of kinetic variables, structural abilities, step and achievement after applying the special exercises and in favour of the post test. This difference is due to the special exercises that the experimental group members underwent, which aimed to improve the physical abilities of the players and improve their performance in the step and triple jump. This result indicates the effectiveness of the special exercises that were prepared by the researcher, as the results of the test of Kenticular variables (pressure rate on the right foot, average pressure period for the right foot, and average force distribution of the right foot) were measured by the dynafoot system, and it showed a remarkable development. This is the result of applying the special exercises prepared by the researcher to the experimental group, which included jumping exercises and others with the use of barriers and boxes of various sizes, where the application of special exercises helped improve the results of the post tests for the experimental group. (Corbin et al 2014).

The results of the explosive strength variable test for the muscles of the legs showed a remarkable development in it and in favour of the post tests, and this development is due to the special exercises prepared by the researcher to develop

them through the use of the various compound and jump exercises that the muscle groups were exposed to in the lower extremity while maintaining the appropriate and correct tactical position, which had an effective effect in stimulating the general muscle groups positively, which raised the intensity of the training load to a high degree and for a short period, and thus improved the results of the post-test for the research sample and improved the rate of development in this test, as the development of the explosive power of the two legs well helps the players to perform well and achieve their goals. (Kelly et al 2004). The required goals, therefore, the training condition of the explosive force "achieves the largest amount of force in the shortest possible time, and this is highlighted by overcoming the friction resistance for the muscles of the legs and other resistances resulting from the weight of the body. In the post-tests of the experimental group. (van der Niet et al 2014).

The results of the pre and post tests of the speed-distinguished strength variable for the muscles of the legs showed that there was a remarkable development in it and in favour of the post tests, and this development is due to the special exercises prepared by the researcher to develop them, represented by the exercises of jumps and jumps that the muscle groups were exposed to in the lower extremity while maintaining the appropriate and correct tactical position. In performance, where these exercises were characterised by fast nature and high motor performance, and where the researcher relied on the viewpoint of Carol Haynes, "The strength characterised by speed is highly related to skill performance. The higher the level of skillful performance, the higher the level of compatibility between fibres and muscles as well as improving the dynamic distribution of performance." These exercises aim to shorten the time of contact of the feet with the ground after landing and to produce the largest possible force in the jump up or forward. These exercises were of appropriate training size and intensity, as the exercises that include a cycle of extension and contraction of the muscle help in its flexibility and work on benefiting the muscle from the reflected mechanical energy. resulting from the effect of lengthening, which leads to strength and speed in performance, i.e., the special exercises improve muscle groups through jumping exercises with one foot or both feet, together with the use of barriers in order to strengthen the muscles of the legs and other special exercises that helped improve the results in the post tests and the experimental group.

The results of the two tests, pre and post tests for the variable of maximum speed, showed that there are significant differences in favour of the post test, and this development is due to the special exercises prepared by the researcher to develop them, represented by jumping exercises with the use of boxes of different heights and seats (where the level of maximum speed is related to the motor frequency, which is the number of periodic movements). In a certain unit of time (such as running races per second or per minute), these special exercises led to an improvement in the results of the maximum speed in the post tests of the experimental group. (Hastie et al 2013). The results of the pre and post tests showed that there were significant differences in favour of the post tests as the special exercises that the researcher used to develop the step and improve some physical abilities represented by performing the stages of the triple jump and the use of boxes and barriers at different heights when performing the step led to the

improvement and development of the step in the post tests of the experimental group.

Conclusions

The exercises used to use the Dinovot device have a positive effect on the development of the step and achievement in the triple jump; the adoption of skillful physical exercises in the training curricula, especially for raw students who face difficulty when performing the step in the triple jump; conducting similar studies in the physical capabilities and complex skills that the study did not address.

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