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EMPLOYMENT OF RESISTANCE EXERCISE IN ACCORDANCE TO VARIABLE BIOMECHANICAL MARKERS TO DEVELOP THE STRENGTH AND THE SPEED OF ARM MUSCLES OF WATER POLO PLAYERS

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Abstract
This text discusses the importance of employing specialists in sports sciences, particularly in the field of biomechanics, to analyze and improve sports techniques, with a focus on swimming and water polo. The research aims to address weaknesses in physical abilities, particularly arm strength and speed, in young water polo players. It emphasizes the use of resistance training and kinetic analysis to develop these abilities. The study concludes that integrating resistance training and biomechanical analysis is crucial for effective training, and recommends coaches to incorporate scientific principles, including biomechanics, in their training programs. The research was conducted with swimmers from the national youth team, employing an experimental approach with control and experimental groups, involving 24 training units along with pre- and post-tests for analysis.

Introduction:
This text emphasizes the importance of employing specialists in sports with a scientific approach, particularly in swimming. It highlights the role of biomechanics in analyzing and enhancing playing techniques.(Kadhim, 2012) The text also stresses the need for ongoing research in water polo, focusing on motor analysis and the use of external weights to develop muscles. Water polo demands high physical requirements,(jawad kadhim, M., & Mahmood, 2023) especially for arm muscles, necessitating intensive and scientifically-based training programs. The researcher observed significant variations in physical capabilities and durability, prompting a focus on motor analysis to assess player performance fluctuations,(Ali, H., & Qasim, 2023) using added weights and water resistance to gauge their impact in relation to biomechanical variables.

Kinetic analysis:
Kinetic analysis helps workers in the sports field in choosing the correct and appropriate movements for sports achievement and that all workers in the sports field, (Ahmed Fadhil Farhan Mohammed Jawad Kadhim, 2016) including coaches and specialists in various sports sciences, (Easa et al., 2022) need fixed facts that support their decisions regarding the correct technique of motor performance, which answers us a lot about questions related to sports achievement through the perception of movement first and then deliver it to learning second and avoid mistakes and stay away from the wrong technique, (Moayed, 2016) no matter how the movement reaches stability and mastery. (Kzar & Kadhim, 2020) Kinetic analysis is also a key to defining the behavior or path that the process of distributing or fragmenting the whole into parts to enhance the nature of those parts or the relationship between them

Biomechanical variables:

The kinematic variables used by this science to describe and clarify movements are the variables of speed and acceleration,(Sami Rafat L, n.d.) which were determined on the basis of distance, time and variables associated with the movement of objects without exposure to the forces causing them, which determine the distance, displacement, speed, acceleration, and movement of projectiles, and includes angular movements

Strength stretching

It is one of the physical abilities that are important in physical performance, which requires compatibility in many games and sports events for a relatively long time, such as swimming or rowing The researcher believes that the strength is a necessary requirement and an important and basic ability to achieve achievement in the effectiveness of the courtyard in general The effectiveness of water polo in particular.

Speed prolongation:

The element of speed prolongation is "the possibility of resisting fatigue when completing muscular work, which requires high speed" (1) and also means "the continuation of the performance of high-intensity activities easily without the impact of some external variables on the level of performance" (2) and the researcher sees it as the ability to work continuously, quickly and in continuous time, especially in the last distance or the last time of the race.

Water polo

It is one of the 5 water sports that the (FINA) joins, which requires players to swim for a long time and a distance at a moderate and fast speed with frequent maximum speeds and is required to reach the play or to avoid competitors in this way in frequent swimming requires players to have the ability to withstand aerobic capacity and patio at maximum and frequent speeds, players must be able to stand in the water throughout the match using hands so that they are free to repel and deal with competitors The Ball

Research community and sample:

The researcher adopted the experimental approach to the use of design in the two equivalent experimental and control groups with pre- and post-tests to suit the nature of the research "as it represents the most honest approach to solving many scientific problems in a practical and theoretical manner and its contribution to the progress of scientific research in the human and social sciences, including sports science"

The sample is "the model in the light of which the researcher conducts the totality and focus of his work"

The researcher identified the research community of young water polo national team players aged 17 years and their number reached 12, while the research sample amounted to 8 players, as the sample ratio reached 66.66% and they were divided into two experimental groups of 4 players and 4 players in addition to the selection of 3 players for the exploratory experiment excluded from the main experiment and who were selected in a deliberate way

The variables of height, weight, age and training age were determined for the purpose of ensuring their homogeneity and that these variables are influential in the experiment that was adjusted using the torsion coefficient as in the results shown in Table (1)

No	variables	Measuring units	mean	Standard deviation	median	torsion coefficient	Total Sample
1	Length	Meter	178.11	5.62	180	1.01	8
2	Weight	Kg	65.47	5.08	66.50	1.33	
3	Training time	Month	26.63	8.53	28	0.58	
4	Age	Month	17.50	0.53	17.50	0.000	

The researcher conducted equivalence for the experimental and control research groups using the T test for the independent samples of the two groups in order to start from one line of initiation and that the experimental method has an impact on creating differences between the two groups as shown in Table (2)

Tests	Measuring units	Experimental group		Control group		Error rate	T value	significance
		mean	S	mean	S			
Stretched strength	Meter	2774.5	78.96	3600.25	196.00	0.63	0.750	Non-significant
Prolonged speed	Meter	2884	88.819	2779.25	85.300	0.280	1.668	Non-significant
Speed rate in force stretching test	Meter/ sec	11.539	1.111	11.565	0.899	0.989	0.045	Non-significant
Angular kinetic energy in the force stretch test	Jol	41995.491	7921.269	45225.953	10947.230	0.669	0.477	Non-significant
Angular velocity in the force	Round. Meter/ sec	374.750	69.640	37300	43.426	0.865	0.190	Non-significant

stretch test								
Speed rate in speed stretch test	Meter/ sec	11.945	0.385	12.032	44.87	0.695	0.437	Non-significant
Angular kinetic energy in speed stretch test	Jol	34559.433	11977.803	36355.40	10863.331	0.850	0.311	Non-significant
Angular velocity in the speed stretch test	Round /sec	337.000	41.999	306.600	74.991	0.600	-0.818	Non-significant

Methods of collecting information: references and Arab and foreign sources, personal interviews, forms for collecting and unloading data, tests and measurements

Tools and devices used in research, stopwatch, video camera (Sony) frequency of 120 images per second, tripod for cameras, kinetic analysis program (Kinovea), laptop computer, legal swimming pool, electronic scale, sensitive balance for added weights, added weight gaiters , length measuring tape.

The exploratory experiment "is a preliminary experimental study carried out by the researcher on a small sample before carrying out his research in order to choose research methods and tools"(2), the researcher conducted the exploratory experiment on (3) players on 5/6/2022 AD at four in the afternoon, and the aim of which is to identify the negatives and positives that encounter the main experiment and ensure the validity of the devices, angles or dimensions appropriate to analyze the field of motion of swimmers appropriate for photography and tools and their validity, train the assistant work team and the time required for tests and reach the coefficients of honesty and stability And the objectivity of the tests and know the percentages of added weights for swimmers and know their heights and weights and the results were the adequacy of the work team and the validity of the devices and tools and the appropriateness of the tests used in the research.

Scientific foundations of tests

Honesty: The team extracted the honesty in a way that the content of the content was truthful for the research tests, after presenting it to a group of experts and specialists* and finding a high percentage of agreement as in Table (3).

Tests	Correlation coefficient	significance
Stretched strength	0.850	Significant
Extended speed	0.910	Significant

Error rates (0.05)

Honesty: The team extracted honesty in a way that the content was truthful for research tests, after presenting it to a group of experts and specialists and finding a high agreement rate Table(5)

Tests	Correlation coefficient	significance
Stretched strength	0.850	Significant
Extended speed	0.910	Significant

Error rates (0.05)

Stability: The researcher reached stability by the method of testing and re-testing, which took place on 27/8/2020, Thursday, nine in the morning, and after five days, the test was re-tested on Sunday, 30/8/2019 at nine in the morning, and the results were processed using the Pearson correlation coefficient Table (6)

Tests	Correlation coefficient	significance
Stretched strength	0.920	Significant
Extended speed	0.940	Significant

Error rates (0.05)

Objectivity : Pearson's correlation coefficient was calculated between two arbitrators *as in Table (7)

Tests	Correlation coefficient	significance
Stretched strength	0.855	Significant
Extended speed	0.973	Significant

Error rates (0.05)

Statistical methods

The researcher adopted the ready-made statistical program in the statistical bag spss statistical treatments

1-Arithmetic mean

2. Standard error

3-Torsion coefficient

4-t-test for linked and unrelated groups

Presentation, analysis and discussion of results:

Presentation, analysis and discussion of the results of the biomechanical variables of the pre- and post-tests of the experimental group for speed prolongation

Table (8) shows the median, standard error, arithmetic media differences, standard error, calculated t-value, and the significance of the differences between the results of the pre- and post-tests of the speed prolongation test.

Tests	unit	Pre test		Post tests		F	A.F	T value	error	Significance
		mean	S	Mean	S					
Speed rate in speed stretch test	m/sec	11.945	0.385	18.436	0.778	6.699	0.874	13.559	0.001	Significant
Angular kinetic energy in speed stretch test	Jol	34559.433	11977.803	8766.45	5551.998	55015.9	18197.190	9.177	0.00	Significant
Angular velocity in the speed stretch test	Round/sesc	337.000	41.999	1137.00	47.790	700.000	86.155	19.800	0.000	Significant

Discussion of the results: - It is clear from Table (8) that the post-test of the speed extension and biomechanical variables of the experimental group showed its results significantly and the researcher attributes this development to the positive effect on the muscular level of the working fibers of the arms according to the levels of technical performance and its impact on the variables angular velocity, kinetic energy and speed rate shown in the calculated value and as follows

(13.559, 19.800, 9.177 and this shows that the direction of the angles and their speed in a way that serves the optimal skill side has direct results towards Increase speed in general The researcher adds that this development in the values of variables and the physical ability to extend the speed of the arms is the effectiveness of the use of resistors and good distribution of percentages of weights according to scientific foundations in addition to the application of exercises in an elaborate manner and gradation in the difficulty of performing exercises in terms of training intensity and rest periods as he sees (Saadi, A., & Nezar, 2020)

The main objective of weight training is to try to reach the individual to the highest possible level of various sports competitions to obtain championships athlete develops muscle strength training organized and proper weights, which are the optimal ways of physical elements that improve and develop performance in addition to the use of various sports activities for easy control of resistors (Nazar, T., & Aladdin, 2018)

Presentation, analysis and discussion of the results of the biomechanical variables of the pre- and post-tests of the experimental group for strength stretching

Table (9) shows the arithmetic media, standard error, arithmetic media differences, standard error, calculated t-value, and significance of differences between the results of the pre- and post-tests Experimental group for strength stretching test

Tests	Measuring unit	Pre test		Post test		F	A.F	T	error	Significance
		Mean	S	Mean	S					Significant
Average speed in force extension	m/sec	11.539	1.111	18.648	2.759	7.099 -	3.659	4.00 -0	0.039	
Angular kinetic energy in force stretching test	jol	41995.491	7921.269	90324.832	10490.104	4933. -27	11705.870	8.413-	0.004	Significant
Angular veloci	r.m/sec	374.750	69.640	904.00	138.976	546.2 -50	95.740	11.454-	0.014	Significant

ty in force stretching tes										

Significant at P 0.05 and freedom point 3

Discussion of the results: It is clear from Table (9) and after comparing the results of the pre- and post-tests of the experimental group to test the strength stretching, it becomes clear to us the significance of the differences for the two tests and in favor of the post-in the values of the biomechanical variables, which amounted to the value of t calculated, respectively (4.000, 8.413.,11.454) and the researcher attributes this development to the importance of the exercises that had an effective impact and follow-up in the implementation of exercises and analysis of movements and diagnosis of fluctuations of performance and shortcomings by the work team and address it and enhance the strengths in directing the sample towards the implementation of Exercises in the direction that serves the technical side, which directly affected the variables and worked to develop them, which agreed with the nature of the performance of the motor skill that worked convergence with the variables of biomechanical values in terms of range, direction and the amount of force necessary in the player's use of muscle contractions in a style that was similar to the form of basic skills, which had a good return on the development of those values

And as "the upgrading of the level of performance and increase the efficiency of achievement must be designed exercises according to the model of movement used in the competition in terms of the position of the body and the range of movement and contractions prevailing for working muscle groups" (1) and biomechanics is the study of the movement of living organisms using mechanics and mechanics is a branch of physics is concerned with describing movement and how to generate forces for movement and also provides the necessary mathematical concepts to understand how organisms move and how the tasks of kinesiology and analysis of the improvement of movement or make movement Safer(2)

Presentation of the results of physical tests between the pre- and post-tests of the experimental group

Table (10) shows the arithmetic means, standard error, arithmetic differences and standard error, calculated t value and the significance of the differences between the results of the pre- and post-tests of the experimental group in physical tests prolonged strength and speed

Tests	Measuring unit	Pre test		Post test		F	A.F	T	error	Significance
		S	a	s	A	585				Significant
Prolonged speed	m	2774.5	78.96	3367	45.565		45.755	25.514	0.00	

Prolonged strength	time	2884	88.819	3851.85	80.569	585	100.589	25.250	0.00	Significant

Significant at P 0.05 and freedom point 3

Discussion of results-:

It is clear from Table (10) that the results of the experimental group of tests stretched speed and strength showed their morale and in favor of the post-test, as the researcher believes that the added weights and according to the parts of the arm and the addition of 3% in resistance training and stressed studied has contributed positively to the development of biomechanical variables and the validity of the exercises used that were prepared scientifically applicable in addition to continuous analysis and giving notes to the research sample to ensure the validity of the exercises selected for correction to be re-analyzed and observed from time to time to monitor development What happens in the performance or not, the presence of development means that the exercises are positive, but if the development is not done, the type of exercises must be changed to serve the correction of the error"

Presentation, Analysis and Discussion of the results of the biomechanical variables of the pre- and post-test tests of the speed extension control group

Table (11) shows the arithmetic media, standard error, arithmetic media differences, standard error, calculated t-value, and significance of the differences between the results of the pre- and post-tests of the speed prolongation test.

Tests	Measuring unit	Pre test		Post test		F	A.F	T	error	Significance
		S	a	S	a	5.104				Significant
Average speed in force extension	m/sec	3600.25	196.00	16.145	69577	-5	7.8821	11.43-0	0.000	
Angular kinetic energy in force	jol	2779.25	85.300	52333.19	4499.889	16995-9.	7336.501	4.721-	0.001	Significant

stretching test										
Angular velocity in force stretching tes	r/sec	11.565	0.899	1008.400	46.753	702.0-00	81.321	17.56-1	0.001	Significant

Significant at P 0.05 and freedom point 3

Discussion of results-:

It is clear from Table (11) for the pre- and post-tests of the control group shows the calculated values of t,(Yousif, T. A., Almogami, A. H. B., & Khadim, 2023) which achieved significant differences and in favor of the post-tests and attributed by the researcher to the regularity in training and the training curriculum of the trainer and to enhance the results, (Abbas, M., & A. Abdul, 2023) the trainers must rely on the analysis of skills mechanically because of their great importance in identifying areas of weakness and addressing them with scientific methods and methods, strengthening and stabilizing areas of strength and focusing on them in order to achieve achievement with the least possible effort,(rashed, mohamed, & Ghazi, 2023) saving time and qualitatively and staying away from quantity in training And with high accuracy and agrees researcher with Wadih Yassin and others that reduce the deviation or difference in performance to the maximum possible for optimal performance mechanical calculations and aesthetic movement all and is the main goal in the process of learning and training for most sports events and depends on the results of many sports events on accuracy in performance" (Hamza et al., 2020)

Presentation, Analysis and Discussion of the Results of Biomechanical Variables of Pre- and Post-Force Strength Extension Control Group

Table (12) shows the arithmetic media, standard error, arithmetic media differences, standard error, calculated t value and significance of differences between the results of the pre- and post-tests of the strength stretch test

Discussion of results-:

It is clear from Table (12) for the pre- and post-tests of the control group shows the calculated values of t,(Mahde et al., 2023) which achieved significant differences and in favor of the post-tests and attributed by the researcher to the tendency of the coach and players to correct errors in the training curriculum prepared by the coach through observation and recording errors and explain them during and during the training units,(Kamil & Sabhan, 2022) but they were not in the complete form and either need to accurate scientific analysis and stay away from orality and

explanation in correcting the errors contained in the training and this is confirmed by Wajih Mahjoub "(Muhsen, 2020)The importance of Internal mechanical analysis is no less important than external mechanical analysis, but the body tends to make some automatic adjustments involuntary movement in internal mechanics " (Hani et al., 2020)as the researcher agrees with Wajih Mahjoub that most trainers are interested in external mechanical analysis more than their interest in internal mechanics sometimes(Jaafer et al., 2023).

Presentation of the results of physical tests between the pre- and post-tests of the control group

Table (13) shows the arithmetic means, standard error, arithmetic media differences, standard error, calculated t-value, and the significance of the differences between the results of the pre- and post-tests of the control group in physical tests, strength and speed.

معنوي عند مستوى خطا (0.05) ودرجة حرية3

Tests	Measuring unit	Pre test		Post test		F	A.F	T	error	Significance
		s	a	S	a	590				Significant
extended speed	m	3600.25	196.00	3466	45.665		48.750	27.300	0.00	
Extended force	time	2779.25	85.300	3751.85	79.569	690.35	101.33	25.200	0.00	Significant

Discussion of the results:

The results show Table (13) with the significance of the post-tests of the control group, which the researcher attributes by choosing the coach prepared for his training program, the validity of the exercises in addition to the field experience and knowledge of the physical level of the players, (rashed, mohamed, & Ghazi, 2023)(Jaafer et al., 2023)s but it is possible that there will be greater development of the players depending on the development of the values of biomechanical variables and attention to the analytical process of the parts of the movement and its sections and the closest ways to overcome resistances and accurate knowledge of the particles of kinetic paths and take them into account accurately because they are national team players.(nbraz, younis, & Lazim, 2023) The molecules are understanding and absorbing analytical programs helps them greatly by investing the effort and time spent during the skill performance, which is based mainly and for all games on physical abilities and their effective impact on the athlete and the coach alike during the implementation of motor duty in competition or exercises, (Rija, 2023) and this is confirmed by Ahmed Khater and others,(Hussein, 2021) "that exercise is the characteristic that distinguishes the training unit, and accordingly the amount of development in performance is built as a performance

or completion of a specific work or duty repeatedly,(Al-fatlawi et al., 2023) the purpose of which is to learn a skill acquired in a way complete. "

Presentation, analysis and discussion of the results of the biomechanical variables of the dimensional test of the experimental and control groups for force stretching

Table (14) shows the arithmetic means, standard error, arithmetic media differences, calculated t value and the significance of the differences between the experimental and control groups for the post-tests of strength extension.

Tests	Measuring unit	Experimental group		Control group		T	erro r	Significa nce
		s	a	s	a			Significa nt
Average speed in force extension	m/sec	18.64 8	2.75 9	11.565	0.899	4.555	0.0 04	
Angular kinetic energy in force stretching test	r/sec	9032 4.832	1049 0.10 4	45225. 953	10947. 230	9.833	0.0 00	Significa nt
Angular velocity in force stretching	r/sec	904.0 0	138. 976	37300	43.426	3.929	0.0 08	Significa nt

Discussion of the results:

It is clear from Table (14) for the arithmetic media of the biomechanical variables and for two experimental and control groups for the dimensional test and according to the value of T calculated for the variables 4.55, 9.833, 3.929 and respectively for the rate of speed,(Ahmed Fadhil Farhan Mohammed Jawad Kadhim, 2016) kinetic energy and angular speed for the strength stretching test, (Shukr & Obaid, 2020) as the researcher attributes that progress to the two groups in the two dimensional tests came as a result of their use of exercises according to the biomechanical foundations, the experimental group was the level of development greater,(Sami Rafat L, n.d.) and (Mousa, A. M., & Kadhim, 2023) which came because of the development of exercises in scientific ways and methods, (Jamal, A., & Muayed, 2023) which effectively affected the performance of exercises, which affected in a way Positive on the ability to agree to the work of the neuromuscular system because muscle fibers produce great strength when they are trained by adding weights and in a codified and thoughtful manner,(Jawad, M., & Jabbar Shinen, 2016)(Abdulhassan et al., 2022) (Mohsen, M., & Sabieh, 2021) especially if those muscles is the part that falls on the shoulders of work in the performance of skill and agrees researcher with

Hassan Kazem that "focus on exercises in which the same muscle groups are used common in sports activity is more effective and useful "(Jawad, M., & Jabbar Shinen, 2016)(Essam, F., & Shaboot, 2023)

Presentation, analysis and discussion of the results of the biomechanical variables of the dimensional test of the experimental and control groups for speed prolongation

Table (15) shows the arithmetic means, standard error, differences in arithmetic media, calculated t value, and the significance of the differences between the experimental and control groups for the post-tests of speed extension.

درجة حرية (6) عند مستوى خطأ (0.05)

Tests	Measuring unit	Experimental group		Control group		T	erro r	Significa nce
		s	a	s	a			Significa nt
Average speed in force extension	m/sec	18.43 6	0.77 8	16.145	69577	2.545	0.0 04	
Angular kinetic energy in force stretching test	r/sec	8766. 45	5551 998.	52333. 19	4499.8 89	2.837	0.0 00	Significa nt
Angular velocity in force stretching	r/sec	1137. 00	47.7 90	1008.4 00	46.753	2.529	0.0 08	Significa nt

Discussion of the results:

It is clear from Table (15) for the arithmetic media of the biomechanical variables and for the experimental and control groups for the dimensional test and according to the value of T calculated for the variables 2.545, 2.837, 2.529 and respectively for the rate of speed, kinetic energy and angular speed for the force stretching test,(Ibrahim, A. M., Aswad, K., & Ahmed, 2023) as the researcher attributes that development in the values of the biomechanical variables for the speed prolongation test came convergent because of the relationship between the variables and affected one on the other, which positively affected the level of development,(Saeed , W., Abdulaa, A., & Sakran, 2023) which formed a difference in favor of the experimental group, which adopted partial weights in Exercises,(Khadair, Y., & hamdan, 2023) (mohammed , Y., & Sabeeh, 2022) which were directed correctly and codified in periods of rest and work and strongly studied as well as the use of kinetic analysis in the diagnosis and treatment of errors,(Tawfeq, A., & Jalal, 2023) which in turn develops physical abilities and this is confirmed by Mufti Ibrahim Hammad " (Ibrahim, A. M., Aswad, K., & Ahmed, 2023)that special physical abilities are what enable the individual to

perform various skills for the colors of multiple activity and is the cornerstone of the individual's access to the highest levels of sports.

Conclusions

1- Resistance training using added weights was instrumental in developing the strength and speed of the arms for young water polo players.
2- The diversity of training loads stressed according to the training situation and mechanical indicators had a great and positive role in developing the level of water polo players for youth.
3- The biomechanical analysis and its adoption in the movement of the arms had a positive and effective impact on the legalization of exercises used in the research.
4- Exercises that lack mechanical indicators and modern methods of training have a negative indicator in terms of feeling bored and suspense.

References

Abbas, M., & A. Abdul, H. (2023). The effect of dynamic lactic training according to the target time fo developing special endurance, lactic acid concentration, and achievement for 800m runners under20 years old. *Journal of Physical Education*, *35*(3), 728–719. https://doi.org/10.37359/JOPE.V35(3)2023.1517

Abdulhassan, G. A., Shnawa, T. F., & Qaddoori, Y. W. (2022). the Effect of Katsu Exercises on Some Abilities of Strength and Achievement of Advanced Weight Lifters, Baghdad Clubs. *Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte*, *17*(6), 416–418.

Ahmed Fadhil Farhan Mohammed Jawad Kadhim, G. M. S. (2016). THE EFFECTIVENESS OF INJURY PREVENTION PROGRAM ON REDUCING THE INCIDENCE OF LOWER LIMB INJURIES IN ADOLESCENT MALE SOCCER PLAYERS. *Injury Prevention*, *22(Suppl 2*, 346. https://www.proquest.com/openview/fd995719bc359d2e05fa6fe346bed0f6/1?pq-origsite=gscholar&cbl=2031963

Al-fatlawi, A. H. A., Al-, P. A. M., & Abd, P. H. (2023). The Effect of Using Adhesive Tapes (Kenzo Tape) in Rehabilitating the Shoulder Muscles of Throwing Players in Paralympic Athletics Events. *Pakistan Heart Journal*, *56*(02).

Ali, H., & Qasim, S. (2023). The Effect of Game – Like Exercises on the Development of Some Physical Abilities and Fundamental skills In Futsal. *Journal of Physical Education*, *35*(2), 563–575. https://doi.org/10.37359/JOPE.V35(2)2023.1479

Easa, F. A. W., Shihab, G. M., & Kadhim, M. J. (2022). the Effect of Training Network Training in Two Ways, High Interval Training and Repetition To Develop Speed Endurance Adapt Heart Rate and Achieve 5000 Meters Youth. *Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte*, *17*(4), 239–241.

Essam, F., & Shaboot, A. (2023). The effect of preventive exercises on the range of spine motion for squash players under 20 years old. *Journal of Physical Education*, *35*(2), 528–540. https://doi.org/10.37359/JOPE.V35(2)2023.1469

Hamza, J. S., Zahraa, S. A., & Wahed, A. A. (2020). The history of rhythmic gymnastics for women. *International Journal of Psychosocial Rehabilitation*, *24*(03), 6605–6612.

Hani, A. T., Abdulhameed, A. S., & ... (2020). Psychological pressures and their relationship to the competitive orientation of football players in the Iraqi Premier League for the 2018-2019 season. *International Journal of …*, *24*(02), 6839–6847. https://www.researchgate.net/profile/Ali-Saad-14/publication/350040911_aldghwt_alnfsyt_wlaqtha_baltwjh_altnafsy_llaby_krt_alqdm_fy_aldwry_alraqy_almmtaz_llmwsm_2018-2019_Psychological_pressures_and_their_relationship_to_the_competitive_orientation_of_foot

Hussein, H. K. (2021). A Study of Actual Training Time Administration in Bedra Specialized Weightlifting Club. *Journal of Physical Education*, *33*(3), 167–177. https://doi.org/10.37359/jope.v33(3)2021.1201

Ibrahim, A. M., Aswad, K., & Ahmed, S. H. (2023). Specifying Training Need through Occupational Competency Analysis Required for Coaches for Physically Challenged Athletes in Water According to International Standards ISO 10015. *Journal of Physical Education*, *35*(2), 517–527. https://jcope.uobaghdad.edu.iq/index.php/jcope/article/view/1404

Jaafer, M. T., Luay, P., & Refat, S. (2023). Some Manifestations of Attention According to the HRP System and its Relationship to the Accuracy of the Shooting Performance from the Free Throw in Basketball for Junior Players. *Pakistan Heart Journal*, *56*(02), 165–172.

Jamal, A., & Muayed, G. (2023). The effect of using an auxiliary device in teaching the spindle skill on the pommel horse in the artistic gymnastics for juniors. *Journal of Physical Education*, *35*(2), 413–421. https://doi.org/10.37359/JOPE.V35(2)2023.1456

Jawad, M., & Jabbar Shinen, I. (2016). Prediction by the maximum oxygen consumption in terms of the concentration of lactic acid after the maximum physical effort for football players (18-25 years). *Journal of Physical Education*, *28*(3), 99–115. https://doi.org/10.37359/JOPE.V28(3)2016.1063

jawad kadhim, M., & Mahmood, H. (2023). The effect of special exercises for some physical, motor and electrical abilities accompanied by symmetrical electrical stimulation in the rehabilitation of the muscles of the arms of patients with simple hemiplegic cerebral palsy. *Journal of Physical Education*, *35*(3), 618–593. https://doi.org/10.37359/JOPE.V35(3)2023.1515

Kadhim, M. J. (2012). The effects of drinking water, magnetized through training on some biochemical variables in blood. *Journal of Physical Education*, *24*(1), 453–480.

Kamil, W. S., & Sabhan, M. H. (2022). the Effect of Special Exercises for Some Physical and Compatibility Abilities and Their Relationship To Some Basic Skills of Female Football Futsal Players. *Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte*, *17*(5), 307–310.

Khadair, Y., & hamdan, A. G. (2023). The Role of Academic Supervisor in Students of Physical

Education and Sport Sciences Field Performance Training in Schools. *Journal of Physical Education*, *35*(2), 363–376. https://doi.org/10.37359/JOPE.V35(2)2023.1505

Kzar, F. H., & Kadhim, M. J. (2020). The Effect of Increasing Rehabilitation Program Using Electric Stimulation On Rehabilitating Knee Joint Working Muscles Due to ACL Tear In Athletes. *Journal of Physical Education*, *32*(3), 14–18. https://doi.org/10.37359/jope.v32(3)2020.1012

Mahde, M. A., Hamedd, P., Abdul, A., & Prof, A. (2023). The Effect of Dynamic Lactic Training According to the Target Time to Develop the Achievement of 800m Runners Under 20 Years Old. *Pakistan Heart Journal*, *2706*(02), 317–323.

Moayed, G. (2016). The Effect Of Van Hiele Style According To Cognitive Control Patterns On Learning The Skill Of The Background Rolling Over The Balance Beam In Artistic Gymnastics For Women. *Journal of Physical Education*, *28*(2), 183–198. https://doi.org/10.37359/JOPE.V28(2)2016.277

mohammed , Y., & Sabeeh, Y. (2022). The Effect of Special Exercises Using Variable Aid on the Development of Endurance (Speed, Strength) and 100m Freestyle Swimming Achievement in Handicapped Men Class 9S. *Journal of Physical Education*, *34*(3), 317–324. https://doi.org/10.37359/JOPE.V34(3)2022.1308

Mohsen, M., & Sabieh, Y. (2021). A Historical Study of Iraqi Paralympic Participations in IPC World Championships Athletics from 1990 till 2017. *Journal of Physical Education*, *33*(2), 62–70. https://doi.org/10.37359/jope.v33(2)2021.1142

Mousa, A. M., & Kadhim, M. J. (2023). NMUSING AN INNOVATIVE DEVICE TO IMPROVE THE EFFICIENCY OF THE ANTERIOR QUADRICEPS MUSCLE OF THE INJURED KNEE JOINT AFTER SURGICAL INTERVENTION OF THE ANTERIOR CRUCIATE LIGAMENT IN ADVANCED SOCCER PLAYERS. *Semiconductor Optoelectronics*, *42*(1), 1504–1511.

Muhsen, A. S. (2020). A study of some special physical characteristics and their relationship in developing rhythmic steps to achieve a javelin throwing activity for beginners. *International Journal of Psychosocial Rehabilitation*, *24*(08), 14839–14855.

Nazar, T., & Aladdin, M. (2018). The Effect Of Small Games On Learning Floor Exercises In Artistic Gymnastics for Children With Learning Disabilities Aged 7 Years Old. *Journal of Physical Education*, *30*(2), 350–365. https://doi.org/10.37359/JOPE.V30(2)2018.369

nbraz, younis, & Lazim, A. (2023). The effect of using aids manufactured to perform the maximum speed of the hands in learning the skill of hitting baseball for ages (under 12 years). *Journal of Physical Education*, *35*(3), 628–619. https://doi.org/10.37359/JOPE.V35(3)2023.1526

rashed, mohamed, & Ghazi, A. W. (2023). The impact of an educational curriculum using delayed feedback according to different times in learning and retaining the skill of shooting at several goals distributed on the field during (30) for cross-ball players ages (13-15 years). *Journal of Physical Education*, *35*(3), 703–694. https://doi.org/10.37359/JOPE.V35(3)2023.1527

Rija, T. H. (2023). THE ROLE OF ORGANIZATIONAL DEVELOPMENT IN IMPROVING THE REALITY OF THE WORK OF THE. *Ibero-American Journal of Exercise and Sports*

Psychology, *18*, 298–304.

Saadi, A., & Nezar, T. (2020). The Effect of Using Immediate Feedback on Learning Double Tuck Backflip on Floor Exercises in Artistic Gymnastics For Men Aged 14 – 16 Years Old. *Journal of Physical Education*, *32*(3), 93–98. https://doi.org/10.37359/jope.v32(3)2020.1024

Saeed , W., Abdulaa, A., & Sakran, J. (2023). The Effect of Skill Performance – Like Exercises on the Improvement of Horizontal bar Shtalder and Endo Skill in Artistic Gymnastics for Men. *Journal of Physical Education*, *35*(2), 483–493. https://doi.org/10.37359/JOPE.V35(2)2023.1400

Sami Rafat L, S. A. (n.d.). Effect of rehabilitation exercises in low back flexibility and muscle strength working for men by age (40-45) years. *Journal of Physical Education*, *31*(1), 105–120.

Shukr, A. H., & Obaid, A. J. (2020). The effect of using the interactive video accompanying the static training in learning some basic skills of a model school in squash. *International Journal of Psychosocial Rehabilitation*, *24*(04), 10474–10488.

Tawfeq, A., & Jalal, K. (2023). Mental Speed Exercises and Their Effect on Some Special Abilities and Punches Speed in Young Boxers. *Journal of Physical Education*, *35*(1), 247–256. https://doi.org/10.37359/JOPE.V35(1)2023.1427

Yousif, T. A., Almogami, A. H. B., & Khadim, W. I. (2023). ACCURATELY PREDICTING THE PERFORMANCE OF THE BLOCKING SKILL FROM THE CENTERS (2,4) IN TERMS OF SOME KINETIC INDICATORS OF VOLLEYBALL PLAYERS. *REVISTA IBEROAMERICANA DE PSICOLOGÍA DEL EJERCICIO Y EL DEPORTE*, *18*(4), 371–374.