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The effect of physical exertion on some physiological indicators among gymnasts

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ABSTRACT

Identify the effect of hard work on few physical signs between gymnasts where the society and the research sample are the performers of the Baghdad Training Center, the one fated (10) performers and were intentionally picked and their allotment was (100%) of the society of inception In light of the results obtained, the investigator attained the decisions that hard work has a beneficial affect the incident of physiologic signs among gymnasts as There are no meaningful distinct nesses betwixt the pre- and post-test of the exploratory group of physiologic signs before the work of rings performers in addition to there are important distinctness's 'tween the pre- and post-test and prefer the post-test of the exploratory group in the upright contamination test of cohesion physical indicators later the work of calisthenics.

1 - Definition of research.

1.1 Introduction to the research and allure significance. The game of acrobatic exercise is individual of the sports that have excellent recognition in the world and systematizes worldwide, international and local championships and gym performers are from many tangible characters, containing substance, speed, stretching, elasticity, deftness and added values, that have excellent significance in consideration of complete the ability requirements concerning this game and reach the superior levels through new sports trainingWhere research engaged of realistic, material and sports has combine of the physiognomy of these nations to solve high triumphs through the produce of champions through the happening of their material, ability and strategic level and this growth in sports acting accepted a large scope by putting on the specific level of the performer in sports, containing acrobatic exercise, as the specific process leads to improving the corporal facets of the player through the growth of whole of working ploys. Also, the measurement of some physiological indicators that occur in the body as a result of the practice of gymnastics and the extent of functional adaptation that occurs as a result of specialized training of the game and these physiological indicators are heart rate, systolic and diastolic pressure, white blood cells and red blood cells through which the physical level can be developed when gymnasts.

1-2 **research problem.**

The specific preparation in the game of acrobatic exercise create skilled are corporal transformation happening through the preparation brought to a conclusion this study skilled will be many physiologic signs by which can be contingent on the condition of the material performer that will help her to answer the question of research and reach results that we can benefit from in judging the level of preparation and cultivating the level of attainment for this research question is rehashed in the following question Is the hard work overwhelmed few of the corporal variables of rings.

1.3 Research objective.

To identify differences in a good physical effect in physiological indicators of heart rate, systolic and diastolic pressure, leukocytes and red blood cells in gymnasts .

1-4 Imposing research.

The presence of significant differences for physical effort in the physiological indicators of heart rate, systolic and diastolic pressure, white blood cells and red blood cells in gymnasts .

1.5 Research areas.

1 - 5 - 1 human field: players of the gymnastics training center.

1- 5- 2 Temporal range: 1/1/2025 to 29/2/2025.

1.5.3 Spatial area: gymnastics hall of the specialized training center.

2 - Research methodology and field procedures.

2.1 Research methodology.

The researcher adopted the experimental approach to suit the nature of the problem and the objectives of the research.(1)

2.2 The research community and its sample.

The research sample was selected from the community of origin as the researcher applies the steps and vocabulary of the research on them, and the selection of the sample is a great necessity of the main vocabulary of scientific research and the sample is the model that the researcher is the whole currency", the community and the research sample are the players of the Gymnastics Training Center Specialized (10) players and were deliberately selected and their percentage was (100%) of the original community The homogeneity of the research sample was carried out by using the coefficient of variation as "used for comparison in the dispersion of groups in The case of the difference in the units of measurement used in each group, and the closer the coefficient of variation to (1%) is considered high homogeneity and if it exceeds (30%) means that the sample is heterogeneous " (3). Table 1 illustrates this.

Table 1

Coefficient of variation	Standard deviation	Arithmetic mean	Unit of measurement	Variables
6.01 %	0.08	1.33	poison	Length
15.95 %	4.69	29.40	Kg	Weight
9.90 %	13.91	140.40	Year	lifetime

(1) Abdul Rahman Badawi : Methods of Scientific Research, 1st Edition, Kuwait, Publications House, 1977, p. 5 .

(3) Wadih Yassin Muhammad and Hassan Muhammad Al-Obaidi: Statistical Applications in Physical Education Research , Mosul, Dar, Al-Kutub, 1996, pp. 161, 162.

2 - 3 means, devices and tools used in research.

2.3.1 Means of collecting information.

The research tools are the means by which the researcher can solve his problem, whatever those tools, data, samples and devices" [(1),] and the selection of appropriate devices and tools for data collection is necessary to achieve the objectives of the research.

1. Arab and foreign sources.
2. Observation and experimentation.
3. Personal interviews.
4. Measurements and tests.

2-3-2 Devices and tools used in research.

3 1. Tape measure

2. Stopwatch

4 3.Heart rate meter

5 4. Tube blood fillets

6 5.Syringes for drawing blood

7 6.Imaging camera

8 7.Computer type DEII

9 7. Oxymeter to measure the percentage of oxygen in the blood

10 8.Medical Scale

11 9.Pressure measuring device

2-4 Tests used in research.

2.4.2.1 Wide jump test of stability

Objective of the test: Measure the muscular ability in the forward jump.

Tools and devices: a flat space area with a length of three and a half meters and a width of one and a half meters, metric tape, marks, chalk, the place of the jump plans parallel lines in meters, and the distance between each meter is divided by other parallel lines between each of them (5) cm.

Instructions: The tester stands behind the starting line, so that the feet are parallel and slightly apart, then the tester bends the knees and swings the arms behind, and jumps forward as far as possible, by raising the feet, extending the knees and swinging the arms.

Degree calculation: The measurement is made from the starting line to the last part of the body that touches the ground from the direction of the starting line, and the

(1) Wajih Mahjoub: methods and methods of scientific research, 2nd Edition, University of Mosul, Directorate of Dar Al-Kutub for Printing and Publishing, 1988, p 173.

measurement enters the distance and the measurement is made to the nearest (5) cm, and the laboratory has three attempts and the best attempt is calculated.
Test conditions: The feet are raised together, and the warm-up is done before performing the test, preferably the ground is not smooth to help push.

2-5 Exploratory experiment: For the purpose of identifying the difficulties that appear during the main experiment, the researcher conducted her exploratory experiment as a "preliminary experimental study carried out by the researcher on a small sample before doing his research in order to choose research methods and tools. (1)
The researcher conducted his exploratory experiment on 1/1/2025 in order to identify the time it takes to carry out the tests and their smoothness, to identify the safety of devices and tools, the extent of the sample experiments, the ease of tests, and to know the negatives and obstacles that may hinder the method of conducting tests.

2.6 Main experience.

The main experiment was conducted on 2/1/2025 on the research sample, as it included the vertical jump test of stability, as the measurements of the research were made before making any effort, then taking measurements for each player, taking the measurement of the number of heartbeats by a carpal loud on the forearm of the hand, measuring systolic and diastolic pressure, and the percentage of white and red blood cells in the blood by an oximeter, where samples of venous blood were taken from the forearm of the hand by 5 Sisi from the player's sitting position, then it was Conducting a physical and skill test, where after the test, blood samples were taken from the players by specialists and placed in special devices to preserve blood, where they were transferred to the country's laboratory in Qadisiyah to measure physiological variables.

2.7 Statistical methods used: The researcher used the statistical bag spss. To extract the search results.

3. Presentation, analysis and discussion of results:

3-1 Presentation, analysis and discussion of the results of the vertical jump test from the stability and physiological indicators of the control and experimental group.

(1) Dictionary of the Arabic Language: Dictionary of Psychology and Education , Part 1, Cairo, General Authority for Princely Printing Affairs, 1984, p 70.

Table (2)

Shows the arithmetic means and standard deviations of the pre- and post-tests of physical abilities, the value of (sig) and the statistical significance of the control and experimental group

Statistical significance	value sig*	Post-Test		Pre-test		unit scaling	Variables	The Collection
		±	Going to-	±	Going to-			
Moral	0.041	6.39	30.19	4.16	25.01	poison	Vertical jump test of stability	Control group
Moral	0.020	2.60	77.5	2.21	80.3	Z/D	Pre-exertion heart rate	
Moral	0.030	4.30	158.1	5.01	161.1	Z/D	Heart rate after exertion	
Moral	0.026	4.19	113.1	5.5	118.1	mm/g	Pre-exertional systolic blood pressure	
Moral	0.041	5.8	177.2	7.3	180.1	mm/g	Post-exertion systolic blood pressure	
Moral	0.020	2.7	79.2	3.1	82.1	mm/g	Diastolic blood pressure before exertion	
Moral	0.028	7.1	101.2	7.3	105.1	mm/g	Post-exertion diastolic blood pressure	
Immoral	0.230	0.70	7.11	0.700	7.10	number	Leukocytes before exertion	
Moral	0.040	0.80	8.70	0.91	7.48	number	Leukocytes after exertion	
Immoral	0.134	0.35	5.34	0.37	4.41	number	Red blood cells before exertion	
Moral	0.020	0.50	5.49	0.41	4.47	number	Red blood cells after exertion	
Moral	0.025	6.17	34.60	4.70	27.00	poison	Vertical jump test of stability	Experimental Group
Moral	0.020	2.20	75.80	3.1	80.5	Z/D	Pre-exertion heart rate	
Moral	0.028	3.20	150.87	4.176	159	Z/D	Heart rate after exertion	
Moral	0.030	4.21	114.20	6.11	123.50	mm/g	Systolic blood pressure before exertion	
Moral	0.045	5.6	180.3	7.10	182.3	mm/g	Systolic blood pressure after exertion	
Moral	0.025	4.1	83.22	5.4	83.11	mm/g	Diastolic blood pressure before exertion	
Moral	0.035	6.7	107.4	6.3	104.1	mm/g	Diastolic blood pressure after exertion	

Immoral	**0.481**	**0.77**	**7.23**	**0.63**	**7.07**	**number**	**Leukocytes before exertion**	
Moral	**0.045**	**0.81**	**9.52**	**10.1**	**7.48**	**number**	**Leukocytes after exertion**	
Immoral	**0.820**	**0.33**	**4.50**	**0.35**	**4.37**	**number**	**Red blood cells before exertion**	
Moral	**0.025**	**0.46**	**6.83**	**0.95**	**4.50**	**number**	**Red blood cells after exertion**	

* SIG Value ≤ (0,05)

3.1.1 Discussing the results of the pre- and post-tests of the control group and experimental. The researcher attributes the moral of these differences to the pre- and post-tests of the control group to the development of capabilities as a result of the impact of the curriculum prepared by the trainer and the exercises used for this purpose have led to the improvement of this ability The experimental group attributes the development to the effectiveness of the training (Jawee, 2025) exercises developed by the researcher, which worked on the development of physiological indicators These exercises relied on scientific planning to achieve the goal of the subject and since "muscle intensity is the force resulting or exerted by the muscle when contracted, which is the number of The muscle fibers involved in contraction also vary according to the type of muscle contraction" [(1).]

3-2 Presentation and analysis of the results of the post-tests of the vertical jump of stability and physiological indicators of the control and experimental groups.

Table (3)

Shows the arithmetic means and standard deviations of the post-tests of physical abilities and the value of (sig) and statistical significance of the control and experimental groups

Statistical significance	**value *sig**	**Experimental Group**		**Control group**		**unit scaling**	**Variables**	**T**
		±	**Going to-**	**±**	**Going to-**			
Moral	0.042	8.17	35.60	6.90	31.20	**poison**	**Vertical jump test of stability**	**1**
Moral	**0.032**	**2.20**	**75.80**	**2.60**	**77.5**	**Z/D**	**Pre-exertion heart rate**	**2**
Moral	**0.041**	**3.20**	**150.87**	**4.30**	**158.1**	**Z/D**	**Heart rate after exertion**	**3**
Moral	**0.027**	**4.21**	**114.20**	**4.19**	**113.1**	**mm/g**	**Systolic blood pressure before exertion**	**4**
Moral	**0.024**	**5.6**	**180.3**	**5.8**	**177.2**	**mm/g**	**Post-exertion systolic blood pressure**	**5**

(1) Mohamed Sobhi Hassanein: measurement and evaluation in physical education and sports , part 1, 3rd floor, Cairo, Dar Al-Fikr Al-Arabi, 1995, p 236.

Moral	0.026	4.1	83.22	2.7	79.2	mm/g	Diastolic blood pressure before exertion	6
Moral	0.014	6.7	107.4	7.1	101.2	mm/g	Diastolic blood pressure after exertion	7
Immoral	0.884	0.77	7.23	0.70	7.11	number	Leukocytes before exertion	8
Moral	0.008	0.81	9.52	0.80	8.70	number	Leukocytes after exertion	9
Immoral	0.941	0.33	4.50	0.35	5.34	number	Erythrocytes before exertion	10
Moral	0.028	0.46	6.83	0.50	5.49	number	Erythrocytes after exertion	11

* SIG Value ≤ (0,05)

3.2.1 Discussion of the results of the post-tests of the physical tests of the control and experimental groups.

Where he noted from the results of the post-test that there is a development in the level of performance in the experimental group as well as the control group, but at a lower rate, and the researcher attributes the moral of these differences to the pre- and post-tests of the experimental group this to the application of the experimental group for special exercises that work to develop physical qualities that had a great impact on stimulating the central nervous system, which in turn developed the nerve signals

4. Conclusions and recommendations.

4-1 Conclusions.

1- The physical effort has a positive impact on the development of physiological indicators in gymnasts.

2- There are no significant differences between the pre- and post-test of the experimental group of indicators before the effort of gymnasts.

3 - There are significant differences between the pre- and post-test and be in favor of the post-test of the experimental group in the physiological indicators after the effort of gymnasts.

4- The approach adopted by the control group has a positive impact on the development of physiological indicators among gymnasts.

4.2 Recommendations.

1- Attention to the physiological variables under study because of their important role in identifying the adaptations of gymnasts.

2- Taking into account the physical effort used during training to bring about the physiological adaptations required for gymnasts.

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[2]- Mohamed Hassan Allawi and Osama Kamel Rateb: Scientific Research in Physical Education and Sports Psychology , Cairo, Dar Al-Fikr Al-Arabi, 1999.

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5- Wajih Mahjoub: Methods and Methods of Scientific Research , 2nd Edition, University of Mosul, Directorate of Dar Al-Kutub for Printing and Publishing, 1988.