Journal of Physical Education

Volume 37 – Issue (3) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

The effect of static and dynamic balance exercises on developing some artistic gymnastic skills for female students of the College of Physical Education and Sports Sciences

Sabreen Hamid Shihab [1]

1 University of Baghdad, College of Physical Education and sport sciences.

DOI:

https://doi.org/10.37359/JOPE.V37(3)2025.2268

Article history: Received 30/ March /2025 Accepted 14/ April /2025 Available online 28/ September/2025

Abstract

The aim of the research is to identify the effect of using static and dynamic balance exercises in developing some technical gymnastics skills for female students of the Faculty of Physical Education and Sports Sciences. The research community consisted of second-year female students, while the research sample was chosen intentionally, and they are Section (B), numbering 20, female students, who were distributed into two groups (experimental - control), with 10 female students for each group. The researcher used the experimental method with a design of the experimental and control groups with pre- and post-tests, after applying the exercise components in the main experiment with 20 training units that lasted for 10 weeks. The results showed that there were significant differences in favor of the training group that used static and dynamic balance exercises.

Keywords: static balance, dynamic balance, artistic gymnastics, gymnastics skills.

[1] University of Baghdad, College of Physical Education and sport sciences.
Sabreen.h@copolicy.uobaghdad.edu.iq , https://orcid.org/0009-0009-9813-1239.

Journal of Physical Education
Volume 37 – Issue (3) – 2025 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

Introduction

In the past few decades, the sports sector has witnessed great progress in various fields and trends. This progress has been reflected in the development of athletes, administrators, sports facilities and all those working in them. This is what made sports reach what it has reached today. Gymnastics is one of these Olympic games that has developed like other games. This also included attention to the characteristics that included sports development, which is the training process or how to train players to reach their abilities to a higher and better level than before. Training includes all physical, motor, mental and respiratory aspects such as strength, speed, endurance, compatibility, abilities, etc.

Training physical and motor abilities and upgrading the skill and planning level of players is important. We often see in competitions athletes performing movements and sports skills that are almost free of errors, and have amazing and elaborate movement paths and at high speeds that the viewer can not follow. Sometimes we cannot determine how the movement was made, and this raises several questions about how this athlete performs these movements and skills in this way, which results in this elaborate movement sequence.

Motor skills are one of the most important abilities that must be developed for young players. One of these abilities is balance, which is the basic building block of mathematics, with its importance in achieving compatibility between the central nervous system and muscles, and ensuring (S. Ibrahim, Asleawa, and Farhan 2024) Dynamic equilibrium occurs when the sum of vertical forces, the sum of horizontal forces, and the sum of moments are equal to zero.

There are two main types of balance: static and dynamic balance. Static balance is defined as maintaining the postural balance while the body is in a static position, and dynamic balance is maintaining the postural balance while the body is moving(Jasim, Abed, and Ibrahim 2023) It is worth noting that balance is a skill that athletes need, as it is the basis for stability, movement, and even during training (coughlan G, Others, 2012) It is the basis of control for the human body, and the kinetic balance is the ability to maintain a certain position of the body during stability or movement. Balance is also the ability of a person to keep his body or its various parts in a certain position as a result of the complex, harmonious activity of a group of devices and vital systems directed to work against the effects of the forces of gravity (Asliwa & Ibraheem, 2024).

Several mechanical factors affect balance, which are (center of gravity, body weight, gravity line, friction, base of support, in addition to the level and type of resistance, and this is what trainers should pay attention to and work to develop. Athletes who have a very high level of skill performance, which is shown through the full control of the nervous system on all muscle groups involved in physical performance, and the adequacy of mental processes by sending accurate and fast signals to these muscle groups at studied times, which resulted in rapid and accurate motor responses that helped to show this wonderful picture of movement and skills, are athletes of a high level(Ali, Hameed, and Ibrahim 2020)

Journal of Physical Education
Volume 37 – Issue (3) – 2025 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

Gymnastics skills require in their performance method speed, strength, muscle power and balance in a sudden and sudden manner that is launched all at once with maximum effort in a short period of time, in addition to other physical and motor skills, as the smallest distance between players and the difficulty of the motor skills of the game(S. S. Ibrahim 2021) from here the problem of the research became clear to the researcher as a specialist in this field and through answering the following question: Do female students get a sufficient amount of static and dynamic balance training during the study units, considering that balance training is a basic requirement to achieve learning the basic skills and mastery of them for female students, as giving balance exercises that allow mastery of them is a very necessary requirement for training (Jasim, Hussein, and Ibrahim 2021) To know this, the researcher decided to give exercises specific to static and dynamic balance on a sample of female students from the College of Physical Education and Sports Sciences - University of Baghdad, and conducting this research helps us in reaching accurate answers that lead to following the best way to invest the time allocated for training and reach high levels of technical skills. The importance of the research comes from using balance exercises of both static and dynamic types for the purpose of developing some technical gymnastic skills for female students.

Method and tools

The researcher used the experimental method by designing two equivalent groups with a pre-test and a post-test, to suit the nature of the research and the problem to be solved, as the sample is the part that represents the original community or model on which the researcher conducts the entirety and focus of his work (Talib Jasim, Hayder Hussein, and Saad Ibrahim 2022)

The research community was determined as the second-year female students of the College of Physical Education and Sports Sciences - University of Baghdad for the academic year 2024-2025, numbering 152. The research sample was chosen intentionally, which is the second-year female students, Section (B), numbering 20 students. They were distributed into two groups (experimental - control), with 10 students for each group, after extracting the exploratory experiment sample and also excluding some students for not committing to the lesson, and they represent a percentage of 13.15%. The researcher used a number of means of collecting information, such as Arab and foreign sources, observation, courses, devices and tests through which the researcher measured the research variables. The homogeneity process was not carried out because the samples are from one age group, one academic stage and the same gender, and therefore the sample is considered homogeneous. Equivalence was carried out between the two groups in the skills selected for the research, as shown in Table 1.

Journal of Physical Education
Volume 37 – Issue (3) – 2025 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

Table 1. *It shows the equivalence of the two research groups in the pre-tests of the skills under study*

No	Tests	Experimental		control		t-value	sig
		mean	SD	mean	SD		
1	Bar Step	1.200	0.455	1.400	0.387	1.296	0.206
2	Back Roll	0.933	0.372	1.100	0.338	1.285	0.209
3	Balance Step	1.111	0.432	1.033	0.352	0.868	0.643

Note. Positive under 0.05

By observing Table (1) above, the significance value (Sig) for all tests is greater than the significance level (0.05%), which indicates that the differences are not significant between the two groups, which means the equivalence of the experimental and control groups. The researcher used the performance evaluation process of (10) points by the subject teachers in their semester exams. The pre-tests were conducted on Monday, November 4, 2024, while the main experiment began on Thursday, November 7, 2024, which included fixed and dynamic balance exercises twice a week, with 20 training sessions, i.e., for a period of 10 weeks. The post-tests were conducted on January 20, 2025. The researcher took into account all the conditions and considerations related to the test so that the conditions would be similar between the pre- and post-tests. The researcher used the necessary statistical methods through the statistical package (SPSS), in addition to using Microsoft Excel, to collect and tabulate data and process it statistically to extract the results. All search procedures are extended for the period from 11/1/2024 to 2/1/2025.

Results

The researcher presents the results in the form of tables.

Table 2. *It shows the arithmetic means, standard deviations, and the calculated T value between the pre- and post-tests of the skills under study for the two research groups*

Tests	groups	pre-test		post-test		F	Std. Error Difference	T	Sig
		mean	SD	mean	SD				
Bar Step	Experimental sample	1.200	0.455	7.903	0.568	6.703	0.094	70.803	0.000
	control sample	1.400	0.387	6.067	0.678	4.666	0.105	44.272	0.000
Back Roll	Experimental sample	0.933	0.372	7.800	0.455	6.866	0.090	75.581	0.000
	control sample	1.100	0.338	5.967	0.481	4.866	0.114	42.657	0.000

Journal of Physical Education
Volume 37 – Issue (3) – 2025 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

Balance Step	Experimental sample	1.101	0.432	7.867	0.399	6.766	0.082	81.742	0.000
	control sample	1.033	0.352	5.900	0.073	4.866	0.157	30.828	0.000

Table 3. *Shows the arithmetic means, standard deviations, and T-value calculated in the post-tests between the two groups*

Tests	Experimental		control		t	sig
	mean	SD	mean	SD		
Bar Step	7.903	0.568	6.067	0.678	8.045	0.000
Back Roll	7.800	0.455	5.967	0.481	10.728	0.000
Balance Step	7.867	0.399	5.900	0.573	10.902	0.000

Discussion

We note by viewing Table (2), which shows the sum of the arithmetic means, standard deviations and differences between the pre- and post-tests of the two groups (experimental and control), which shows that there are significant differences in all three tests, which are (climbing onto the crossbar, back roll and climbing onto the parallel bars). The results show that there is development for the experimental and control groups in all tests and for both groups, meaning that the exercises used in the main experiment for the second-stage students made a difference in developing these skills.

We see in Table (3), which shows the difference in the post-tests of the experimental and control groups, as it was shown that all the differences are significant, as the level of significance is less than the level of 0.05%. By comparing the arithmetic means of the tests mentioned in the table, we notice that in the test of climbing the crossbar that the value of the arithmetic mean of the experimental group is greater than the arithmetic mean of the control group, and this confirms the effectiveness of the exercises used in the research.

In this case (T. S. S. Ibrahim 2022)confirm that the compound exercises have an effect in different directions, and concerning the back roll and parallel climb tests, the significance of the differences is also in favour of the experimental group, by comparing the arithmetic averages, which show that the experimental group is better than the control group in the post-tests. The researcher explains this by saying that the various exercises that the researcher developed, which target static balance and dynamic balance, led to an increase in the students' ability to control parts of the body and motor control over the entire body.

Journal of Physical Education
Volume 37 – Issue (3) – 2025 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

Appendix(1)

Models for static and dynamic balance exercises

no	Section	Excercise	Time	rest	Groups
1-	Warmup		4x30		**30 Sec**
2-	Main Training Session		4x30		**30 Sec**
3-	Main Training Session		4 x ثا 20		**Sec 30**
4-	Warmup		4 x ثا 20		**Sec 30**

Journal of Physical Education
Volume 37 – Issue (3) – 2025 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

5-	Main Training Session	4x30	**Sec 30**
6-	Main Training Session	4 x ثا 20	**Sec 30**
7-	Warmup	4x30	**Sec 30**
8-	Warmup	4x30	**Sec 30**

Journal of Physical Education
Volume 37 – Issue (3) – 2025 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

References

Abdulkareem, O. W., & Hassan, M. F. A. (2025). The impact of mental games on improving shooting accuracy among young basketball players in Iraqi clubs. *Scientific Journal of Sport and Performance*, *4*(3), 342-351.

Abdulkareem, O. W., Jabbar, H. S., & Obaid, A. J. (2025). The Effect of Soft Toss Machine Training on Some Kinematic Variables and backhand accuracy of Tennis Players U16 years. *Journal of Physical Education (20736452)*, *37*(1).

Ali, Naji Kadhim, Saad Abdul Hameed, and Saad Ibrahim. 2020. "The Effect of Attacking Tactical Skill Exercises in the Skills of Dribbling and Shooting for Youth Football Players." International Journal of Psychosocial Rehabilitation 24(03).

Amer Abdulhussain, A., Sinan Atiyah, H., Hussain Jaber, O., Ridha Ghanim, M., Hashim Hammood, A., & Mohammed Saleh, Y. The Impact of Jesko's Strategy with Sequential Exercises on Learning the Skill of Dribbling in Basketball. *Annals of Applied Sport Science*, 0-0.

Asliwa, A.M.D. Wissam Najib, M.D. Samer Saad Ibrahim, and M.M. Sabreen Hamid Shehab. 2024. "An Analytical Study of the Scoring Accuracy of the Iraqi National Football Team Players in the First Stage of the 2026 World Cup Qualifiers." Sports Culture 15(Special): 348–55.

coughlan G, Others. (2012). A comparison Between performance on selected Diraction of sta Excurasion Balance test . Journal of athletic training.

Ibrahim, Samer Saad. 2021. "Comparing Some 10m Distance Acceleration Forms in Futsal Female Players." Journal of Physical Education 33(2).

Ibrahim, SamerSaad, WesamNajeeb Asleawa, and Ehab Mohammed Farhan. 2024. "THE EFFECT OF SPECIAL EXERCISES USING ASSISTIVE TOOLS TO DEVELOP MOTOR BALANCE AMONG AL-ZAWRAA FUTSAL CLUB PLAYERS." International Development Planning Review 23(1): 912–32.

Ibrahim, Teacher Samer Saad. 2022. "The use of complex (skill-mental) exercises in specific spaces and their effect on some complex skills of female futsal players." European Journal of Sports Science Technology 12(8): 350–60.

Jasim, Hayder Talib, Alameer Hayder Hussein, and Samer Saad Ibrahim. 2021. "Administrative Climate and Its Relationship to Psychological Stress among Workers in Baghdad Premier League Football Clubs." Revista iberoamericana de psicología del ejercicio y el deporte 16(6): 1–3.

Jasim, Hayder Talib, Sanaa Rabeea Abed, and Samer Saad Ibrahim. 2023. "Psychological Flexibility and Its Relationship to Competition Anxiety among Coaches of Iraqi First-Class Football Clubs." Revista iberoamericana de psicología del ejercicio y el deporte 18(4): 368–70.

Journal of Physical Education

Volume 37 – Issue (3) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

Louay Al-Sumaidaie and others. (2010). Testing statistics in the field of sports. Erbil.

Shaffer SW, Tezhen DS, Lorenson CL, Warren RL, Koreerat CM, Straseske CA Childs JD. (2013). Balance test areliabitity study involving multiple raters. Mil Mad.

Talib Jasim, Hayder, Alameer Hayder Hussein, and Samer Saad Ibrahim. 2022. "ADMINISTRATIVE CLIMATE AND ITS RELATIONSHIP TO PSYCHOLOGICAL STRESS AMONG WORKERS IN BAGHDAD PREMIER LEAGUE FOOTBALL CLUBS." Revista Iberoamericana de Psicología del Ejercicio y el Deporte 17(1): 1.

Waleed Abdulkareem, O., & Sattar Jabbar, H. (2025). Comparative Biomechanical Analysis of Three-Point Shooting Between Elite Iraqi Basketball Players and International Counterparts. *Journal of Sport Biomechanics*, *11*(3), 326-342.