Musamus Journal of Physical Education and Sport (MJPES
http://ejournal.unmus.ac.id/index.php/physical
Volume 7, No. 4, October 2025, Pg. 156-168
DOI: 10.35724/mjpes.v1i4.7278

The Effect of Motor Balance Training on Certain Physical Variables and Skill Performance of Junior Futsal Players

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Abstract

This study aims to highlight the importance of balance for futsal players, especially youth teams, during training programs, and its impact on certain physical variables and skill performance. It is based on important training theories and methods that should be applied in futsal, given the different nature of performance in futsal. In this game, the researcher used the experimental method with two equivalent groups (experimental and control) through pre- and post-testing, as it suited the nature and objectives of the research. The experimental factor was applied to a research sample consisting of (20) players, and the research sample of (16) players was determined. They were randomly divided into two equal groups: an experimental group of (8) players and (4) players were used for the pilot sample. The following results were obtained: that the exercises prepared according to the kinetic balance training had an effect on the development of physical and skill variables in the research sample. We recommend focusing on balance training to develop the physical variables and skill performance of futsal players. It is also essential to integrate balance training into training sessions alongside physical and skill-based training, and to conduct similar studies on different samples at other stages.

Keywords: Kinetic balance, physical variables, skill performance, futsal

Introduction and Importance of the Research

There is no doubt that futsal is a sport that has gained great attention and widespread popularity, not only among its players but also among fans and followers, whether at the local, continental, or global level. It is an exciting and thrilling sport, especially for its followers.

Futsal is a highly competitive team sport that demands high levels of physical fitness and skill. Therefore, those interested in competitive sports strive to reach the highest athletic levels by paying attention to all modern training theories and methods. Numerous studies have shown that balance training has a positive impact on the physical and technical performance of futsal players. The need for balance training and programs for young players is crucial, given their early development and the nature of the game, which demands balance in all aspects of their performance. Performance and the use of a training program focused on motor balance lead to significant improvement

s in muscular strength, speed, and agility, as well as improved ball control and shooting skills.

Specific physical abilities are a fundamental requirement for all athletic activity, especially in sports. Futsal is characterized by its fast-paced and sustained performance, facilitated by the size of the field, the proximity of the opponent, and the rapid style of play. This demands a high level of physical proficiency to enable players to keep up with the game effectively and fulfill their responsibilities during matches. Physical abilities are fundamental to progress in training for a number of players. A specific component of physical fitness required for the activity being practiced.

Balance is considered one of the most vital components in many sports activities, as it helps the player perform the required skills accurately and execute the various movements necessary for the activity, especially with the early age groups that need balance for many performances. This is what they do, and this is what futsal performance requires, through dealing with the flow and movement of the game,

which requires consideration and mastery of its various aspects through dealing with the ball, teammate, and opponent, all of this takes place within the specific field area defined by the rules, as well as shooting at the goal and controlling the game. Controlling and retaining the ball, among other performances, involves specific characteristics depending on the nature of the game, as well as the player maintaining their center of gravity above the base of support during movement. Therefore, balance is considered one of the important movement elements that must be developed and improved when teaching and training any movement skill, as it is the essential element. The fundamental basis upon which athletic movements depend, these exercises can form an important part of the general training program and can be modified to suit the needs and abilities of young players, thus contributing to the overall development of their performance. Based on this, the importance of balance for futsal players, especially for teams, becomes clear. The impact of training programs on certain physical variables and skill performance in young athletes.

Research Problem: Good performance stems from training processes based on sound scientific principles and keeping pace with developments by utilizing all principles that can serve the skill and thus achieve the desired goal. Furthermore, balance training can help reduce injuries by enhancing [the body's natural balance]. Stability and basic muscular strength make players more resilient to shocks and sudden movements. Accuracy in executing futsal skills is a key factor in scoring goals during a match, in addition to the physical capabilities that enable players to... Their possession of skills, through ideal performance, enables players to achieve a positive match result. Mastering the skill helps decide match outcomes if it is performed by players with appropriate speed, accuracy, and power. This will not come without possessing dynamic balance during performance, the excellence of which is linked to several important physical attributes, as well asBalance is a crucial physical element upon which excellence in motor performance is based, especially among young players, and maintaining it helps prevent injuries. Therefore, the importance of balance for young futsal players, or those who have not received sufficient preparation and attention, becomes clear. During futsal training programs, compared to other training methods commonly used by coaches such as speed, strength endurance, or performance endurance, especially for youth teams, the research problem lies in the researcher's attempt to use kinetic balance training for young futsal players, which is considered an essential element.

Important in this game is its aim and effect on developing the skill and physical performance level of players in basic skills.

Research objectives:

1. To develop balance exercises to improve certain physical variables and skill performance in futsal players.

2. To identify the effect of balance exercises, as demonstrated by pre- and post-tests, on improving certain physical variables and skill performance in futsal players.

Research hypotheses

1. There are differences between the pre-test and post-test results for the experimental and control groups in developing some physical variables and skill performance in futsal.

2. There are differences between the post-test results for the experimental and control groups in developing some physical variables and skill performance, in favor of the post-test results

Research Areas:

1. Human Scope: Players of the Specialized Center in Dhi Qar for the 2023-2024 season

2. Temporal Scope: From June 15, 2024 to August 15, 2024

3. Spatial Scope: Sumer Forum / Dhi Qar

Research Methodology:

Research Methodology and Field Procedures:

The researcher used the experimental method because it was suitable for the nature of the problem to be solved and to achieve the research objectives and hypotheses,

using the method of two equivalent groups, the control and experimental groups, with pre- and post-tests.

Research Population and Sample:

Before delving into the details of the research sample, we must first identify the research population. The research population consisted of the futsal players of the specialized center affiliated with the Directorate of Education in Dhi Qar Governorate for the 2023-2024 academic year, totaling 20 players. The research sample was selected from this same population. The sample consisted of 16 players, divided into two groups: an experimental group and a control group, each with 8 players. This represents 80% of the research population.

Data Collection Methods, Equipment, and Tools
Data Collection Methods
- Arabic and foreign sources
- Personal interviews
- Expert opinion survey form to evaluate the exercises prepared by the researcher
- Supporting team
- Tests and assessments
- The internet

Equipment and Tools Used:
- Electronic stopwatch (PC396)
- Laptop (HP)
- Whistle
- 15 futsal balls
- Futsal field
- Measuring tape
- Adhesive tape
- Small and large cones, spikes, and barriers
- 5 Swedish benches
- Electronic weighing scale

Tests Used in the Research:
Physical Tests:

- Squat Test (Muscular Strength)
- 20-meter Sprint Test (Speed)

- Standing on One Leg Test (Motor Balance)

Skill Tests:
- Ball Control Test
- Accurate Passing Test
- Shooting Test

Main Experiment:

Pre-tests:

The pre-tests were conducted for the research sample on June 15, 2024, in the Sumer Model Hall. The tests were explained in detail by the researcher before and after the test, followed by a warm-up before the test.

Training Methodology: The researcher prepared a set of 24 specific exercises after reviewing sports training literature and references on futsal. As the researcher is a teacher and coach of the game, these exercises were implemented from June 15, 2024, to August 15, 2024, for a total of 8 weeks, with each week dedicated to a specific exercise.

Three training sessions per week (Saturday, Monday, and Wednesday). The researcher took the following into consideration:

1- Gradual increase in intensity, starting from 75% to 95%.

2- Variety in balance exercises.

3- The exercises were implemented in the main part of the training session using both interval and repetition training methods.

4- The exercises were implemented during the specific preparation period.

5. The researcher used a ripple pattern between training units, employing a 1:2 ratio between training units within the microcircuit and a 1:1 ratio between training sessions.

	Variables	Unit of Measurement	Pre-test Control		Post-test Control		T	Sig	Significance
			x	Sd	X	Sd			
1	Squat Test	Second	23.8750	1.55265	22.8750	1.24642	2.000	.086	Significant
2	Sprint Test	Second	3.9875	.51113	3.3375	.24458	2.745	.029	Significant
3	Single-Leg Stance Test	Second	22.7500	1.03510	21.6250	1.40789	3.813	3.813	Not Significant

4	***Ball Control***	**Score**	**5.0000**	**.75593**	**5.8750**	**.83452**	**3.862**	**.006**	**Significant**
5	**Passing**	**Score**	**5.2500**	**1.0351**	**6.3750**	**.91613**	**2.553**	**.038**	**Significant**
6	**Scoring**	**Score**	**5.2500**	**1.03510**	**6.1250**	**.99103**	**2.966**	**.021**	**Significant**

6. Rest time between repetitions was determined based on a heart rate of 120-130 bpm, while between sets, the heart rate was 110-120 bpm. This is confirmed by Bastawisi Ahmed (1999): "Active rest periods vary between exercises, and the duration is extended according to the athlete's effort."

The training methods and techniques vary, as does the intensity of the stimulus. A return of the heart rate to 110-120 bpm is considered a beneficial positive rest period between high-intensity sets.

7- The total time for the specific exercises used was 623 minutes, with each exercise lasting 70-90 minutes. week.

Post-tests:

The researcher, along with the assisting team, conducted the post-tests for the two research groups on 8/15/2024 in the Sumer Model Hall. The researcher took into account all the temporal and spatial conditions as much as possible that were used in the pre-tests.

Statistical Methods:

The researcher used the SPSS statistical software to process the data.

3- Presentation, Analysis, and Discussion of Results

3-1 Presentation, Analysis, and Discussion of the Results of the Study Variables' Pre- and Post-Tests for the Control Group

Table (1) shows the arithmetic means, standard deviations, and calculated t-value for the study variables in the pre- and post-tests of the control group.The results in Table 1 indicate significant differences in the test results of the control group.

Which implements the trainer's curriculum vocabulary between pre- and post-tests in all variables and in favor of the post-test.
-2 Presentation, analysis, and discussion of the results of the study variables for the pre- and post-tests of the experimental group.

Table (2) shows the arithmetic means, standard deviations, and calculated t-value for the study variables in the pre- and post-tests of the experimental group.

On	Variables	Unit of Measurement	Pre-test *Experimental*		*Post-test* Experimental		T	Sig	Significance
			x	sd	x	sd			
1	Squat Test	Second	25.1250	1.72689	23.2500	1.38873	2.707	.030	Significant
2	Sprint Test	Second	3.8625	3.7009	3.9125	3.3568	.314	.763	Significant
3	Single-Leg Stance Test	Second	24.2500	1.03510	22.6250	1.59799	3.529	.010	Significant
4	Ball Control	Second	4.8750	.64087	6.0000	.75593	9.000	.000	Significant
5	Passing	Second	6.5000	1.1952	8.0000	1.0690	3.550	.009	Significant
6	Scoring	Second	5.2500	1.03510	6.5000	.92582	2.376	.049	Significant

The results in Table (2) show that there are significant differences in the results of the control group tests that implement the trainer’s curriculum items between the pre-tests and post-tests in all variables, in favor of the post-tests. The variables were presented and analyzed as follows.
The results in Tables 1 and 2 show significant differences in the pre- and post-test scores of the experimental and control groups across all variables, with the post-

test scores showing higher results. The researcher attributes this improvement to the use of balance exercises, which can help in...

Reducing injuries by enhancing stability and core muscle strength, making players more resilient to shocks and sudden movements, as well as contributing to improved physical and technical performance, helping them progress in their sport and reach higher levels of competition and enhanced ability.

This aims to improve players' performance comprehensively and in a balanced way, which aligns with what Amr Allah Al-Basati (1998) indicated: that maintaining kinetic balance helps achieve maximum speed in muscle contraction and relaxation, and that balance must be maintained when training motor skills, and that it is not Athletic skills can be performed correctly regardless of balance.The researcher attributes these statistical differences and improvement rates to the use of balance exercises in the experimental group's training program. The program included balance exercises of varying difficulty, designed to be balanced with the participants' physical and skill attributes, leading to significant improvement in these variables. The best, in addition to the fact that the significant differences between the pre- and post-test results favor the post-test, in

The variation in physical and skill abilities results from the application of the proposed balance training exercises, which were designed to match and resemble the skill performance required in futsal and the nature of the game.

This aligns with what Muhammad Hassan Alawi and Muhammad Nasr Al-Din Radwan (2000) emphasized, namely that... When an athlete possesses good balance and stability, it contributes to learning, improving, and raising the overall level of performance.

-3 Presentation, analysis, and discussion of the results of the post-tests for the control and experimental groups**.**

Table (3)

Shows the arithmetic means, standard deviations, and calculated t-value for the study variables in the post-tests for the control and experimental groups.

The results in Table (3) show significant differences in the post-test scores of all study variables between the control and experimental groups, favoring the

	Variables	Unit of Measurement	Experimental Control		Post-test Experimental		T	Sig	Significance
			x	s	x	s			
1	Squat Test	Second	23.8750	1.24642	23.2500	1.38873			Significant
2	Sprint Test	Second	3.9375	.24458	3.3125	.33568			Significant
3	Single-Leg Stance Test	Second	24.6250	1.40789	22.6250	1.59799			Significant
4	Ball Control	Score	5.8750	.83452	6.0000	.75593			Significant
5	Passing	Score	5.2500	1.03510	6.5000	1.19523			Significant
6	Scoring	Score	6.1250	.99103	6.5000	.92582			Significant

experimental group. The variables were presented and analyzed as follows.

The researcher attributes this superiority to the program's inclusion of a set of exercises specifically designed for physical abilities and skill performance. The futsal training, in addition to the kinetic balance exercises, had a clear impact on developing the physical and skill abilities of the game. The researcher also points out that balance is a fundamental component of athletic performance, as players rely on it to maintain control of their bodies during repetitive dynamic movements and defensive and offensive situations that require rapid changes of direction in futsal. When movements such as dribbling, changing direction, shooting accurately, reacting quickly under pressure, and transitioning from attack to defense or vice versa are considered situations that require a high level of balance, this is what Qasim Lazam (2009) pointed out, indicating that the importance of

balance stems from the sudden changes that occur in Movements, or when the body's position changes from one equilibrium position to another, where the individual needs to regain balance to continue their movement or to start a new movement. Balance also helps control the directions of movements to reach the optimal level of motor performance.
Furthermore, using balance exercises leads to improved control and accuracy in performance, as can be seen from:

It improves the stability of the player's center of gravity, which leads to better ball control during offensive movements, such as dribbling and shooting on goal. Improved balance also increases shooting accuracy under various conditions. Pressure, where the player is able to maintain the optimal position during execution. This is what Muhannad Al-Bashtawi and Ahmed Al-Khawaja (2010) pointed out in developing static and dynamic balance through practicing movements that put the body in different states of balance and training in rotation for movement views. Required and balanced on one foot The researcher also attributes the superiority to the effective nature of the exercises used, which were in the right direction towards what the player, especially the futsal player, needs in terms of balance in all the performances used in the game, and that the player's possession of balance means speeding up offensive decisions.
Or defensively, as a player's good balance reduces the time required to readjust the body after movement, allowing the player to make faster and more accurate offensive decisions. This is what Amr Allah Al-Basati (1998) indicated when he stated that maintaining kinetic balance helps achieve maximum contraction speed. Muscle tone and relaxation, and that balance must be maintained through training in motor skills, and that sports skills cannot be performed properly without being linked to the quality of balance. Balance exercises also enhance a player's ability to handle collisions or defensive resistance without losing control of the ball. This improves performance under defensive pressure, increasing the likelihood of successful attacks due to the players' balance and performance. The defensive aspect that enables them to build counter-attacks better, and this is what was indicated by (Dhafer Jassim and Nagham Salman 2023). Balance plays an important role in the player’s performance, especially the football player, while performing some movements, whether on the ground or in the air. Therefore, it is necessary to obtain the quality of balance during movement.

Conclusions:

1. Using balance training led to an improvement in the physical variables of the research sample.

2. Using balance training led to an improvement in the skill variables of the research sample.

3. Using balance training for eight weeks improves performance levels.
Skills Development for Futsal Players

Recommendations
1. Focus on balance training to develop the physical attributes of futsal players.
2. Utilize balance training to enhance the skill performance of futsal players.
3. Integrate balance training into training sessions alongside exercises for various physical attributes. Physical and skill-based assessments
4. Conducting similar studies on a different sample at other stages**.**

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