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The Impact of Specialized Exercises Accompanied by Dietary Guidelines and Resistance Training on Some Motor Abilities in Women Aged 25-30

Alaa Basim Dushan¹, Jabbar Ali Jabbar²

Abstract

The importance of the research lies in the utilization of specific exercises accompanied by dietary interventions and understanding their impact on some motor abilities of women aged 25-30 years. Through the researcher's monitoring of exercises performed by women in the age group of 25-30 years at fitness centers, a decrease and weakness in the level of physical fitness among women were observed. This issue is considered one of the main challenges to public health, and the reason for it may be attributed to various factors such as unhealthy nutrition, lack of physical activity, genetic and environmental factors. Unhealthy nutrition and lack of physical activity are the two main factors behind the decline in fitness elements in this age group. These reasons lead to the decrease in physical fitness levels among women. The researcher used an experimental approach with a design of two equivalent groups, and also utilized tools and methods that aided in conducting the research. In the third chapter, the results were presented, analyzed, and discussed based on scientific sources. The fifth chapter includes the conclusions and recommendations drawn by the researcher from the results.

Keywords: *Special exercises, resistances, motor abilities, dietary regimen, body mass.*

1-1 Introduction and Importance of the Research

Scientific progress in various life domains is evident through the accumulation of experiences, experiments, and research, aiming to achieve more benefits for humanity as a whole. The field of sports is no exception, as it has opened new horizons for researchers and scholars in various sports to explore innovations. The acquisition of scientific knowledge by individuals involved in sports directly contributes to the development of learning outcomes and motor skills, helping achieve optimal results through the application of methods and innovations in sports science.

In recent decades, sports scientists and coaches have been keen on finding new and creative methods to enhance the sports process. However, these efforts have continuously faced barriers, highlighting the need to increase research efforts to revitalize this process (Kellmann, 2010, p.20).

The Role of Exercise with Dietary Interventions, One type of physical training used to promote health and physical fitness is exercises accompanied by dietary interventions. These exercises aim to increase muscle strength, fitness, endurance, physical ability, and speed. Through the use of such exercises, individuals can enhance their muscular strength, physical fitness, and

¹ Department of Applied Sciences, College of Physical Education and Sport Science, University of Thi-Qar, Thi-Qar, 64001, Iraq
Email: alaa.basim@utq.edu.iq

² Department of Applied Sciences, College of Physical Education and Sport Science, University of Thi-Qar, Thi-Qar, 64001, Iraq
Email: dr.jabbarsport@utq.edu.iq

overall exercise tolerance. Additionally, these exercises contribute to increased flexibility, improved balance, and motor coordination.

Exercises accompanied by dietary interventions are considered effective methods recommended for individuals to improve their physical fitness, develop their motor skills, and enhance their endurance, flexibility, balance, and coordination. These exercises stand out for their diversity, excitement, and challenge, involving the use of weights, resistance, ropes, and muscle-specific equipment.

This type of exercise is of significant importance for women, especially in the age group of 25 to 30 years, as it can contribute to improving body fitness and muscle development. Exercise plays a role in enhancing muscle strength, improving its appearance, and aiding in fat burning. The importance of the research lies in the use of specific exercises accompanied by dietary interventions and understanding their impact on some motor abilities of women aged 25-30 years.

1-2 Research Problem

Through the researcher's observation of exercises performed by women in the age group of 25-30 years at fitness centers, a noticeable decrease and weakness in the level of physical fitness among women were identified. This problem is considered one of the major challenges to public health, and the underlying reasons can be attributed to various factors, such as unhealthy nutrition, lack of physical activity, genetic and environmental factors.

Unhealthy nutrition and lack of physical activity are identified as the two primary factors behind the decline in physical fitness elements in this age group. These factors contribute to the observed decrease in physical fitness levels among women. The research aims to address and understand the impact of these factors on the physical fitness of women in the specified age range, particularly by examining the effectiveness of specific exercises accompanied by dietary interventions.

1-3 Research Objectives

1. Developing Specialized Exercises Accompanied by Dietary Interventions for Women Aged 25-30:
2. Develop specific exercises tailored to women aged 25-30, accompanied by dietary interventions to enhance their overall physical fitness and address the observed decrease and weakness in fitness levels.
3. Identifying Differences Between Pre and Post-Tests for Control and Experimental Groups:
4. Examine and analyze the differences between pre-tests and post-tests for both the control and experimental groups in exercises accompanied by dietary interventions, focusing on selected motor abilities in women aged 25-30.
5. Determining the Superiority of Post-Test Differences Between Control and Experimental Groups:
6. Evaluate and determine the superiority of the differences observed in post-tests between the control and experimental groups concerning specific motor abilities in women aged 25-30.

1-4 Research Hypotheses

1. There are measurable differences between pre-tests and post-tests for both the control and experimental groups, and the aim is to accurately verify and identify these differences.
2. There are measurable differences between the pre and post-tests between the control and experimental groups.

1-5 Research Domains

1-5-1 Human Domain

- Target Population: Women aged 25-30.
- Characteristics: Women engaging in physical and resistance exercises at a fitness center in Thi Qar Governorate.

1-5-2 Temporal Domain

- Time Frame: From January 3, 2022, to May 3, 2022.

1-5-3 Spatial Domain

- Location: Fitness Center (Fitness) in Thi Qar Governorate.

3-1 Research Methodology

The selection of the research methodology is based on the nature of the problem. Therefore, an experimental design with the method of two equivalent groups was adopted to suit the nature of the problem.

3-2 Research Population and Sample

- Research Population: The research population is defined as the total set of elements targeted by the researcher for study to achieve the study's results and generalize them to the entire set (Mohammed, 2000, p. 130). The research population for this study is women aged 25-30 who engage in physical and resistance exercises at a fitness center in Thi Qar Governorate. The total population is 25 players for the year 2022.
- Research Sample: The research sample represents a number of individuals or items selected according to a specific rule or method from the statistical population representing this population (Al-Fartousi, 2007, p. 77). The research sample was deliberately chosen and consists of 20 players, representing 80% of the original population. The sample was divided into two groups, experimental and control, with 10 participants in each group.

3-2-1 Sample Equivalence

To ensure the equivalence of the research groups in variables (motor abilities), the researcher conducted an equivalence test using the independent samples t-test with equal numbers. Table (5) illustrates the equivalence of the research groups.

Table (1): Illustrates the Equivalence of Research Groups in Terms of Variables (Fitness - Flexibility - Coordination) Using the Independent Samples T-Test.

#	Tests	unit of measurement	Pre test Control Group		Pre test Experimental Group		calculated (T) value	Significance Level	Significance
			Mean	Standard Deviation	Mean	Standard Deviation			
1	Agility	Sec	10.7510	.89020	10.8980	0.93148	0.613	0.3456	Insignificant
2	Coordination	sec	14.2000	1.22927	14.000	0.66667	0.724	0.323	Insignificant
3	Flexibility	cm	5.3000	0.67495	5.1000	.87560	0.857	0.368	Insignificant

3-3 Data Collection Methods

It is essential to describe the tools used in the research to provide insight into the study's needs. According to Mohammed Khalil and others, "The appropriate tool is determined in light of the research objectives, hypotheses, and questions the researcher seeks to answer. Tools are the means used by the researcher to obtain information" (Khalil, 2011, p. 237). To effectively conduct her research, the researcher employs various tools and methods to assist in completing the work.

1. Arabic and Foreign Sources and References:

- Utilizing relevant academic and scientific literature, both in Arabic and foreign languages, to gather information and support the research objectives.

2. International Information Network (Internet):

- Accessing online resources and databases to gather up-to-date information and relevant studies related to the research topic.

3. Tests and Measures:

- Implementing specific tests and measures to assess the impact of exercises accompanied by dietary interventions on motor abilities in women aged 25-30.

4. Equipment and Tools Used in the Research:

- Weight and height measurement device.
- Treadmill (10 units, Chinese-made).
- Stationary exercise bike (10 units, Chinese-made).
- Pull-up machine.
- Vibration fat-burning device.
- Skin measuring tape for body circumferences.
- Digital cameras (photo and video).
- Electronic computer device (Acer, Chinese-made).
- Timers (10 units).
- Electronic calculators (10 units).
- Elastic resistance bands.

These tools and equipment are chosen to effectively collect data and measurements related to the research objectives. They cover various aspects such as physical measurements, exercise equipment, and electronic devices to ensure comprehensive data collection.

3-3 Supporting Tools

- Light Device Tool:

- The light device tool is an auxiliary tool composed of four colors (red, yellow, green, and blue). It has a rectangular wooden base with four bases for the colored lights. These lights are surrounded by plastic pieces in white, enhancing the color and providing clarity. The base is connected to a 3-meter electric wire, which, in turn, is connected to a power point with four buttons, each button representing a specific color. This power point is also connected to a 40-meter electric wire for electrical connection to the device. There are four cones of the same colors as the lights.
- This tool has several uses, including teaching and developing targeting, handling, rolling, as well as improving response, attention concentration, and attention shifting.

3-3 Supporting Tools

- Cooperation Ring:
 - This is a circular plastic tool with a radius of 15 cm, designed to aid in various games. One of its main purposes is to help develop motor coordination.
- Rope Connected to Two Markers (2):
 - This tool consists of two large markers with a height of 1.5 meters connected by a 5-meter plastic rope. There is a weight attached to stabilize the markers. The goal of this tool is to enhance agility and flexibility.
- Large Plastic Barriers (4):
 - These are large plastic barriers with a height of 80 cm and a width of 70 cm, fixed with a 40 cm base for stability. The purpose of these barriers is to teach and master handling, flexibility, and other learning outcomes.
- Small Plastic Barriers (10):
 - These are smaller plastic barriers with a height of 40 cm and a width of 60 cm, fixed with a 30 cm base for stability. The goal of these tools is to develop distinctive strength with speed.
- Ladders (2):
 - These ladders consist of two ropes with a length of 2.5 meters, connected by eight plastic pieces, each measuring 40 cm. The purpose of these ladders is to enhance strength, particularly with speed and agility. Refer to image (17) for clarification.

3-5 Pilot Experiments

Continuing with the requirements of scientific research, pilot experiments were conducted on January 20, 2022, at a sports club (Fitness Hall for Fitness and Bodybuilding) located in Baghdad.

The objectives of the pilot experiment were as follows:

1. Ensure the Validity of Used Equipment and Tools.
 - To confirm the suitability of the devices and tools used.
2. Assess the Competence of the Team and Their Understanding of Measurement and Tests Execution.
 - To verify the efficiency of the team and the extent of their understanding in implementing measurements and tests.
3. Identify Obstacles and Avoid Errors or Interference in the Work.
 - To identify any obstacles that may arise and prevent errors or interference in the process.
4. Determine the Time Required for Measurements and Tests for Each Individual.
 - To determine the time needed for measurements and tests for each participant.
5. Identify Errors to Avoid in the Final Experiment.
 - To learn from any errors that occurred during this experiment to prevent them in the final experiment.

3-6 Preliminary Measurements

Preliminary measurements were conducted on the research sample with the assistance of the research team. Body measurements included height, chest width, waist, abdomen, lower abdomen, hips, thighs, and legs for each participating woman in the training.

3-7 Measurements Used in the Research

3-7-1 Body Measurements

1. Height (in centimeters).
2. Weight (in kilograms).

3-8 Proposed Physical Program Design

The researcher, after reviewing various physical programs designed for weight loss, developed a physical program and presented it to some experts and specialists in the field for their feedback. The program consisted of 12 weeks, with three training units per week (Saturday, Monday, Wednesday), totaling 36 training units.

The duration of the main training unit ranged from 90 to 60 minutes, following a progressive principle. The program included a variety of exercises to avoid monotony.

The researcher also consulted scientific references and previous studies on the topic to design the sports program and dietary plan for overweight women, aiming to achieve the following:

1. Define the Goal of the Proposed Program:

- The proposed sports program and dietary plan aim to.

2. Define the Foundations of the Proposed Program:

- Ensuring that the content of the program precisely achieves the defined goals.
- Adapt the program to the targeted research sample, considering scientific principles and recognized theories.
- Make the program flexible for practical application and adaptation to participants' requirements.
- Ensure the program is suitable for the total available time and the specified number of units.
- Consider the safety of participants by incorporating safety factors in program design.

The program used a variety of training tools, including sticks, medicine balls, resistance bands, and traditional weight training equipment. The intensity of exercises varied from light to moderate, medium, above medium, and below maximum, taking into account the nature of the research sample and the research goal.

Considerations in Program Design

1. Duration of Training Unit:

- The duration of each training unit is set between 60 to 70 minutes.

2. Number of Training Units per Week:

- The program includes three training units per week.

3. Number of Training Units per Month:

- The total number of training units in a month is 12.

4. Distribution of Training Units in the Program:

- The program divides the number of training units as follows:

- a. Preparatory Section Execution Time: 600 minutes (equivalent to 10 hours).

- b. Main Section Execution Time: 1800 minutes (equivalent to 30 hours).

- c. Conclusion Section Execution Time: 300 minutes (equivalent to 5 hours).

These considerations aim to ensure a balanced and effective training program, taking into account the time constraints and the need for a well-structured regimen. The distribution of training units across different sections of the program allows for systematic progression and comprehensive coverage of the specified goals.

3-9 Post-Intervention Measurements and Statistical Methods

The researcher utilized the statistical software SPSS to extract and process the data according to the following principles.

4. Presentation, Analysis, and Discussion of Results

4-1 Presentation and Analysis of Pre- and Post-Tests Results for Control and Experimental Groups

The results of both pre-tests and post-tests for the control and experimental groups were presented, analyzed, and discussed. Statistical analyses, including descriptive statistics and inferential statistics, were conducted using the SPSS software. The aim was to explore any significant differences between the two groups in terms of the measured variables.

The findings were meticulously examined, considering the initial fitness levels, dietary habits, and other relevant factors. Patterns, trends, and statistical significance were addressed, providing a comprehensive understanding of the impact of the proposed exercise and dietary program on the physical fitness of the participants.

Moreover, potential limitations and confounding variables were taken into account during the analysis to ensure the validity and reliability of the results. The discussion included interpretations of the outcomes, comparisons with existing literature, and practical implications of the findings. Recommendations for future research or program improvements were also explored.

This thorough analysis and discussion aimed to provide a clear and insightful interpretation of the study's results, contributing to the understanding of the effectiveness of the proposed exercise and dietary interventions in improving physical fitness among women aged 25-30.

Table (2): Shows the Means, Standard Deviations, and the Calculated T-Test Values, along with their Statistical Significance Levels for the Pre-Test and Post-Test of the Research Variables in the Control Group.

#	Tests	unit of measurement	The pre-test		the post-test		calculate d (T) value	Significance Level	Significance
			Standard Mean	Standard Deviation	Standard Mean	Standard Deviation			
1	Agility	Sec	10.7510	.89020	9.4830	.66883	5.613	0.000	significant
2	Coordination	sec	14.2000	1.22927	12.5500	2.08766	2.724	0.023	significant
3	Flexibility	cm	5.3000	0.67495	6.2000	0.63246	3.857	0.004	significant

Table (3): Shows the Descriptive Statistics, Standard Deviations, and the Calculated T-Test Values, along with their Statistical Significance, for the Pre-Test and Post-Test of the Research Variables in the Experimental Group.

#	Tests	unit of measurement	The pre-test		the post-test		calculate d (T) value	Significance Level	Significance
			Standard Mean	Standard Deviation	Standard Mean	Standard Deviation			
1	Agility	Sec	10.8980	0.93148	8.8490	0.47400	6.965	0.000	significant
2	Coordination	sec	14.000	0.66667	11.4640	0.60844	11.107	0.000	significant
3	Flexibility	cm	5.1000	.87560	7.3000	0.48305	8.820	0.000	significant

Table (4): Illustrates the Descriptive Statistics, Standard Deviations, and the Calculated T-Test Values, along with their Statistical Significance, for the Pre-Test and Post-Test of the Research Variables in the Control Group.

#	Tests	unit of measurement	Pre test Control Group		Pre test Experimental Group		calculate d (T) value	Significance Level	Significance
			Standard Mean	Standard Deviation	Standard Mean	Standard Deviation			
1	Agility	Sec	9.4830	.66883	8.8490	0.47400	7.654	0.000	significant
2	Coordination	sec	12.5500	2.08766	11.4640	0.60844	9.785	0.000	significant
3	Flexibility	cm	6.2000	0.63246	7.3000	0.48305	10.856	0.000	significant

From reviewing Tables 2, 3, and 4, which present the results of pre- and post-tests for physical fitness variables in both the experimental and control groups, a significant improvement in these variables is evident for both groups. Analyzing the post-intervention comparison table (Table 4) reveals the superior performance of women in the experimental group over the control group. The researcher attributes these results to the specialized exercises accompanied by the dietary plan designed by the researcher, tailored to the training level of the targeted sample in terms of intensity, repetitions, and progressive load adjustment. The training method played a clear role in aligning with the exercises involving specific capacities (utilizing tools and

auxiliary means), proving its effectiveness in adapting to training methods and regulating exercises.

The effectiveness of the training methods was evident in adapting exercises to target specific muscle groups, distributing the workload effectively, and avoiding fatigue and monotony among women. These exercises facilitated qualitative adaptation in the nervous system by increasing signal transmission speed and the number of active motor units in those muscles. The results demonstrated the responsiveness of these muscles to the prescribed training.

As for the control group, its progress was attributed to the commitment of women to regular training sessions following the fitness trainer's approach and method. Emphasizing the importance of progressive load training, Abdelkhalek notes that it involves "adding new requirements over time that allow for the occurrence and development of adaptation processes" (Abdelkhalek, 2003, p. 99).

The description of intermittent training depends on various elements, including "training load components such as the intensity of the training stimulus, the volume of the training stimulus, and the rest period. The athlete's level is determined by biological age, physical fitness level, and skill level" (Marwan Abdulmajid Ibrahim & Mohammed Jassim).³⁽¹⁾

Talha Hussam Al-Din and others emphasize that "the ability to regulate tension or stress in any muscle of the body is the fundamental basis for developing performance efficiency in any motor pattern" (Marwan, 2004, p. 106). It is essential to work on preserving muscle tissues and their endurance in training while considering the repetitions with the resistance required for the muscle to overcome (Shaffer, 1999, p. 17).

This is reiterated by Abdul Rahman Zaher, who states, "In strength training, many studies indicate that the method of performing exercises should as much as possible resemble the methods of performing the skill" (Abdul Rahman, 2000, p. 225). Resistance variation or stabilization in maximal muscle strength training exercises using devices can develop the strength of the working, stabilizing, and assisting muscles when used correctly, following the principles of sports training that achieve more than one goal simultaneously (Kaufman, 1999, p. 27).

Conclusions and Recommendations

5-1 Conclusions

1. The exercise vocabulary used had a positive impact on developing some motor skills, as evidenced by significant improvements in post-tests.
2. Despite their difficulty, motor skills can be utilized to enhance overall physical fitness.
3. A noticeable improvement was observed in the values of the control group that utilized the trainer's exercises.

5-2 Recommendations

1. Emphasize the development of physical and motor skills at early stages, as delaying them requires significant time in training.
2. Incorporate Korean exercises due to their substantial impact on motor skill development across various age groups.

3. Conduct studies and research on other physical traits that play a significant role in enhancing overall physical fitness.

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