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The Effect of Special Exercises on Enhancing Some Body Composition Variables after Fat Removal Surgery in Women Aged (30-45) Years

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Abstract

The importance of the research emerged from the role of special exercises in improving some body composition variables after liposuction procedures in women aged 30-45 years. The problem of the research lies in the lack of attention by some women who have undergone liposuction to engage in sports and physical exercises, believing that liposuction is the ultimate solution for eliminating fats and excess weight. So, the researchers utilize specialized exercises to enhance body composition, aiming to achieve natural body symmetry, muscle toning, and weight reduction. The research aims to investigate the extent to which these specialized exercises can improve body composition variables after liposuction procedures in women aged 30-45 years. The research hypotheses posit significant differences between pre-operative and post-operative assessments in terms of enhancing body composition variables among the research sample. The researchers used an experimental approach, conducting a comparison between the pre-test and post-test for the group after performing the tests and applying special exercises to the women who underwent liposuction, totaling 6 participants. The researchers concluded that the special exercises applied had a positive effect on improving body composition and body measurements after liposuction in women aged 30-45 years, and this achieves one of the sustainable development goals of the United Nations in Iraq which is (Good Health). The researchers recommend using special exercises aimed at acquiring physical fitness and performing exercises that improve flexibility and agility to maintain body weight and achieve a well-proportioned body.

Keywords | Special exercises, body composition, fat removal

Introduction:

Obesity is considered one of the most prevalent health conditions in contemporary societies, with women being more susceptible to obesity than men. Obesity is a complex disease characterized by an excessive increase in body fat. It is not merely a concern for cosmetic appearance but rather a medical issue that escalates the risk of developing various health problems and conditions such as heart disease, diabetes, high blood pressure, and certain types of cancer. Numerous factors make it challenging for some individuals to lose weight. Obesity typically results from genetic, physiological, and acquired environmental factors. Additionally, dietary choices, physical activity levels, and a lack of exercise play a significant role. However, what is

encouraging is that even modest weight loss can improve or prevent health problems associated with obesity. Following a health-promoting diet, increasing physical activity levels, and implementing behavioural changes can assist in weight loss. Medically prescribed medications and surgical procedures are also viable options for addressing obesity. Furthermore, many women often do not prioritize following a balanced diet consume high-calorie foods, engage in minimal physical activity, and frequently lack exercise in their daily lives. This can be attributed to a changing lifestyle and dietary culture. Consequently, they are more susceptible than others to weight gain, a decline in functional efficiency, and the negative health and external

appearance effects associated with this condition. Hence, obesity is considered the primary factor contributing to the disproportion of certain body areas. The researchers emphasize the importance of conducting studies aimed at developing specific exercises for a sample of women aged between 30 and 45 years. These exercises can easily modify the external body shape, and these solutions have encouraged many women to adopt this approach. Some of these methods involve targeted fat removal procedures in specific body areas. However, it's important to note that these solutions may not have a permanent effect on a woman's body after the liposuction procedure. This is not the optimal solution for eliminating fat. There are important factors and post-operative measures that must be adhered to maintain body symmetry and ensure that fat does not accumulate again in those areas or accumulate in other parts of the body. Among these measures is the regular practice of physical exercises, particularly exercises designed to achieve weight loss in a systematic and scientifically based manner. Therefore, the researchers have deemed it necessary to develop specific exercise routines and investigate their impact on the body composition components after fat removal procedures for women aged between 30 and 45

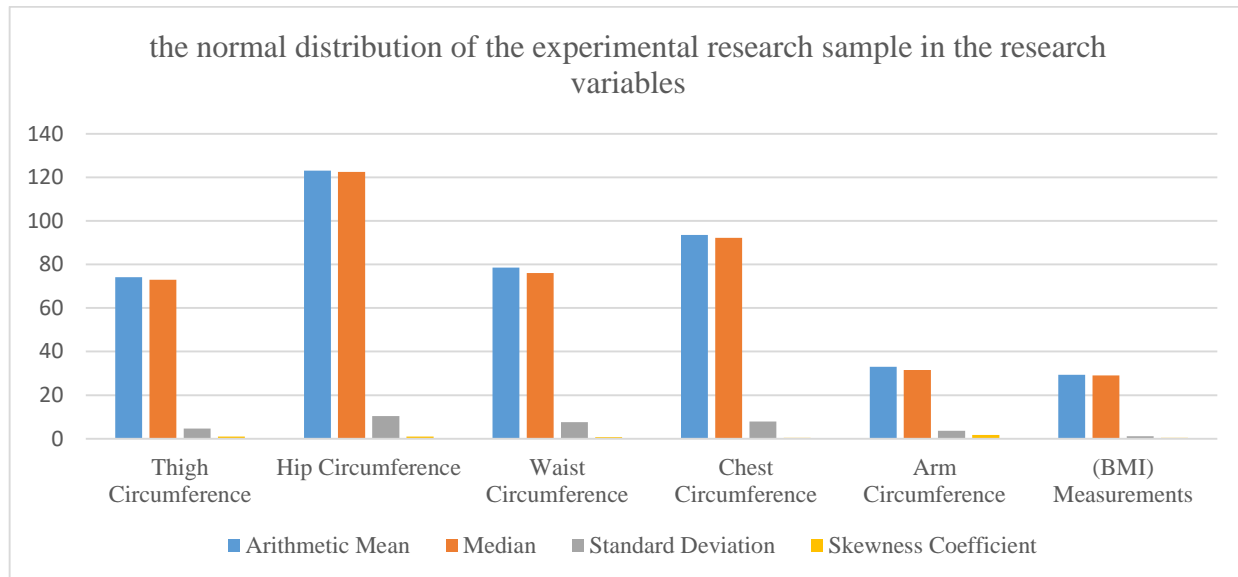
years. The research hypothesis states that there are statistically significant differences between the pre-test and post-test in some body composition variables of the research sample. The research domains are as follows: Firstly, the human domain includes some of the women participating in the Platinum Fitness Center after undergoing liposuction, totaling 6 participants. The temporal domain is from 5/02/2023 to 9/04/2023. The spatial domain is the Platinum Fitness Center in Al-Karkh, Baghdad.

Methodology and procedures:

The experimental approach is considered one of the most important research methodologies and the most commonly used in the field of sports science. This was emphasized in a study by Abdul -Muti Mohammed Assaf because "it relies on direct and realistic engagement with various phenomena and is based on two fundamental pillars: observation and experimentation" (1). The researchers employed the experimental approach to address the research problem and selected the research sample purposively, consisting of 6 women out of 8, aged between 30 and 45. The researchers also ensured the normal distribution of the research sample, as shown in Table (1).

Table .1 It shows the normal distribution of the experimental research sample in the research variables.

Variable	Arithmetic Mean	Median	Standard Deviation	Skewness Coefficient
Thigh Circumference	74.166	73	4.665	0.997
Hip Circumference	123	122.5	10.334	0.931
Waist Circumference	78.5	76	7.635	0.702
Chest Circumference	93.5	92.2	7.968	0.427
Arm Circumference	33	31.5	3.687	1.794
(BMI) Measurements	29.347	29.069	1.108	0.406



The devices, tools, and equipment used in the research:

- Camera
- Laptop
- Measuring tape
- Electronic Scale for Mass Measurement
- Electronic Stopwatch

Field research procedures

Tests Used in the Research:

Body Measurements Tests:

Body Circumferences: (Marwan Abdul Majeed)

(2)

Measuring the Circumference of the Arm, Chest, Abdomen, Hip, and Thigh

- Measurement Unit: Centimeters (cm).
- Tool: Linen Measuring Tape.
- Instructions: The participant stands, and the circumference of the arm is measured at the midpoint of the bicep. Measurements are also taken for the chest, abdomen, hip, and thigh circumferences.
- Recording: The tape measure is read to the nearest centimetre.

Pilot Study of the Tests Used in the Research:

The pilot study was conducted with 2 participants on Thursday 5/02/2023, at 9:00 AM. Through the pilot study, the following points and matters were identified:

* Determining the total time required to conduct the tests, which was one and a half hours.

* Assessing the efficiency of the support team and their understanding of the tests.

* Evaluating the validity of the tests used.

* Assessing the validity of the tools used in the tests.

* Understanding how well the research sample comprehended the tests used.

The Main Experiment:

Pre-Tests:

The assisting team, under the supervision of the researchers, conducted the pre-tests for the research sample on 7/02/2023, at 10:00 AM, at Platinum Fitness Center located in Al-Ameriya, Al-Munadama Street, Baghdad, Iraq. The pre-tests were administered in the presence of the assisting team. To ensure a consistent starting point, homogeneity was established within the experimental group, and Table (1) illustrates the homogeneity of the research group.

The Main Experiment:

The main experiment was conducted under the supervision of the researchers starting from 9/02/2023, until 6/04/2023, during the preparation phase. The training method used was low to moderate-intensity exercises (30-75%) in the training units, with attention to rest periods. The total number of training units was 24, with three training units per week. The training sessions were scheduled on Saturdays, Mondays, and Thursdays, starting at 10:00 AM. The experiment spanned 8 weeks, and the exercises were performed after warm-up sessions, and the team was engaged in the main part of the training. The group then underwent the exercises until the completion of the main section. The experimental group is given three exercises, each exercise

representing a combination of exercises in one performance, and each exercise differs from the other in the execution time until the end of the main section. The duration of the main part of the exercises applied to the experimental group is 20-25 minutes.

The post-tests were conducted on the research sample for both the experimental and control groups on 9/04/2023, at 10:00 AM, at Platinum Fitness Center located in Al-Ameriya, Al-Munadama Street, Baghdad, Iraq, with the presence of the assisting team, under the same conditions as the pre-tests.

Statistical methods: The researchers used the statistical package for data analysis.

Results:

Table .2 It illustrates the arithmetic means and standard deviations for the experimental group in the research for both pre-tests and post-tests.

Variables	Measurement Unit	Pre-test		Post-test		Difference	Deviation of Differences	Standard Error of the Mean Difference (SEMD)	Calculated t-value	Error level	Significance
		Arithmetic Mean	Standard Deviation	Arithmetic Mean	Standard Deviation						
Thigh Circumference	cm	74.166	4.665	72.00	4.516	2.166	0.752	0.307	7.050	0.001	Significant
Hip Circumference	cm	123.00	10.334	120.33	10.053	2.666	0.816	0.333	8.000	0.000	Significant
Waist Circumference	cm	78.50	7.635	76.333	7.174	2.166	0.983	0.401	5.398	0.003	Significant
Chest Circumference	cm	93.50	7.174	91.833	7.194	1.666	1.032	0.401	3.953	0.011	Significant
Arm Circumference	cm	33.00	3.687	31.666	3.265	1.333	0.816	0.333	4.00	0.010	Significant
(BMI) Measurements	Score	29.347	1.108	28.486	0.833	0.861	0.3649	0.149	5.779	0.002	Significant

Discussion:

As evident from the table above, after presenting the results of body measurements and body mass index (BMI) between the pre-tests and post-tests for the experimental group, an improvement in the post-tests for the experimental group becomes apparent. Body measurements and BMI are related to obesity, as they reveal the circumferences of body parts and indicate the level of fat and physical activity or lack thereof.

Body measurements (anthropometrics) are a branch of anthropology that focuses on measuring the human body to assess its structure and identify factors that can affect body composition. The Body Mass Index (BMI) is a measure related to an individual's weight and height. Weight and height are fundamental factors that determine body mass distribution. Therefore, the BMI is a clear indicator of body composition, indicating whether there is equal and balanced muscle mass

growth or an increase in body length at the expense of muscle mass, which may lead to thinness. Hazza Bin Mohammed Al-Hazza states, "This index is not an indicator of obesity or overweight, but rather a measure of the proportion between weight and height only. Therefore, it is not suitable as an indicator of obesity for those with a large muscle mass" (3). The researchers believe that the body circumference is a measure of the distance around certain areas of the body, such as the waist, hips, and arms. Elevated body circumference measurements, especially around the waist, are associated with an increased level of unhealthy eating and slow metabolism rates. The results have shown the effectiveness of diverse exercises. Engagement in physical exercises can help individuals achieve a healthy body mass index by increasing muscle mass and reducing body fat. Resistance exercises, cardio exercises, Pilates, and HIIT exercises are all effective forms of exercise that can increase muscle mass and improve overall body composition. A study by Kessler has shown that "physical training or physical activities create new adaptations and visibly improve muscular appearance. Regular physical activity, especially cardio and resistance exercises, can reduce body circumference measurements by decreasing body fat and increasing muscle mass" (4). Body measurements involve studying the changes in the structural aspect of the human body under the influence of physical activities. According to Ezzat Mahmoud Al-Kashif, "Physical exercises play a role in body measurements and overall health and are related to various variables such as physical and skill-related characteristics, which often have a strong correlation. Therefore, the results appeared logically" (5). This is what the study by Alaa and Suaad concluded "Before starting any rehabilitation program, it is necessary to assess the individual's physiological and anatomical condition so that an appropriate rehabilitation program can be developed to achieve the desired results" (6).

The study by Aya and Abeer emphasized, "Engaging in physical activities is not only essential for overall health or gaining physical fitness and muscle toning but also an effective means and a key to weight loss" (7).

This is what the study by Rania and Muna concluded "Aerobics exercises with alternating effort between movement and stability have an effective impact on improving selected cardiovascular fitness components in the training period. They helped balance muscle activity in the trainees' bodies by diversifying the engagement of muscle groups, resulting in the activation of dormant and weak muscles" (8). This is what the study by Ruaa and Israa concluded "A positive impact was observed in the fat component and the Basal Metabolic Rate (BMR) for the experimental group, and the use of plank exercises contributed to the development of physiological variables in the research sample" (9). The study by Ishraq Ghalib emphasized "the importance of engaging in physical exercises due to their role in adopting exercises specific to different periods in improving some physical variables and functional indicators" (10).

The study by Ban and others concluded that "for different age groups, it is essential to plan future activities related to general health and expand the knowledge base on the importance of engaging in physical and sports activities for the benefit of public health through seminars and various media" (11). Additionally, the study by Mohsin and Al-Selmi, emphasized that "women who do not engage in sports and do not follow moderate dietary patterns are at risk of excessive obesity" (12). The study by Lamiaa and Widad highlighted the necessity of using diverse and purposeful exercises related to physical fitness and motor coordination to maintain bodily health. It also emphasized the importance of engaging in physical activities naturally and conducting periodic fitness and motor coordination tests to assess and enhance the fitness and coordination levels of female students (13). Additionally, the study by Israa and Muna noted that people in the

late 20th century were living sedentary lives filled with laziness and comfort due to the affluence surrounding individuals. This lifestyle led to increased leisure time and weakened their bodies, making it challenging to perform functional tasks without experiencing fatigue (14).

Conclusions:

1. Special exercises have contributed to the development of body composition components after the fat reduction process for women aged between 30 and 45 years.
2. The use of diversified exercises by the researchers has helped in reducing the thickness of skin folds after fat reduction procedures for women aged between 30 and 45 years.

Recommendations:

1. Utilize exercises in rehabilitation therapy for diverse samples.
2. The researcher suggests conducting similar studies on men. Gradually progress in the use of diversified exercises, starting with light intensity and advancing to higher levels.

Author's declaration:

Conflicts of interest: None

We confirm that all tables and figures in this article are ours and written by the researchers themselves.

Ethical-Clearance: this manuscript approved by local ethical committee of physical education and sport sciences college for women on (September /2023)

Author's contributions:

All contributions of this study were done by the researchers (I.Sh. and L.A.) who get the main idea and work on writing and concluding also with number of experts, Haider Nawar Hussein (Ministry of Education) in Statistics, Urska Dobersek in revision, Inaam Ghalib in translating, Khitam Mousa in proofreading

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Model .1 of the training units applied to the research sample Objective: Using diverse exercises in the training units
Exercise duration: 30 seconds - 3 minutes

Today	Exercise Number	Repetitions	Sets	Rest periods		Intensity
				Between repetitions	Between sets	
Saturday	3	5	3	1 min.	3 min.	%30
	7	4	3	1 min.	3 min.	%30
	11	3	3	1 min.	5 min.	%30
	16	3	3	1 min.	5 min.	%30
Monday	2	3	2	2 min.	3 min.	%35
	6	3	3	2 min.	3 min.	%35
	9	4	3	1 min.	5 min.	%35
	18	4	4	1 min.	5 min.	%35
Thursday	17	2	2	1 min.	2 min.	%30
	22	3	2	2 min.	3 min.	%30
	25	3	3	2 min.	3 min.	%30
	1	4	3	2 min.	4 min.	%30

Model .2 of the exercises used

Exercise Number	Basic and Derived Positions	Exercise Description
1	(Standing/bending the leg with touching the opposite arm)	The exercise starts from a standing position, and upon the signal, the participant bends the right leg upward and touches it with the opposite arm while continuing the exercise by alternating.
2	(Standing / half squat)	The exercise starts from a standing position, half-squatting. Upon receiving the signal, the participant performs a half-squat, so that both legs are bent at a 90-degree angle at the knee joint, with arms extended in front of the body.

Then, return to the initial position, and raise the arms upwards. This sequence continues throughout the exercise.

3	(Standing - lateral - opening)	The exercise starts from a side-standing position with one arm extended forward. Upon receiving the signal, the participant rotates the trunk to both sides while carrying a weight of 1/2 kilogram, switching sides during the exercise.
4	(Standing / lateral, bending both arms sideways)	The exercise starts with a side-standing position, with both arms bent to the side. Upon receiving the signal, the participant pulls the body to the other side while extending one of the arms to the side, combining the arm movement with the trunk rotation.
5	(Standing - bending and extending the arms forward)	The exercise starts from a standing position with legs shoulder-width apart and arms extended, holding dumbbells in front of the chest. When given the signal to start, the participant performs a simultaneous movement of bending and extending the arms.

تأثير تمارين خاصة في تحسين بعض متغيرات التركيب الجسماني بعد عملية سحب الدهون للنساء بأعمار (30-45) سنة

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انبثقت اهمية البحث من دور تأثير التمارين خاصة في تحسين بعض متغيرات التركيب الجسماني بعد عمليات سحب الدهون للنساء بأعمار (30-45) سنة. اما مشكلة البحث تكمن في عدم اهتمام بعض النساء اللاتي خضعن لعمليات سحب الدهون لممارسة الرياضة والتمارين البدنية بأعتقادهن ان عمليات سحب الدهون هي الحل النهائي في التخلص من الشحوم والوزن الزائد ،حيث تلجأ الباحثتان الى استخدام تمارين خاصة في تحسين التركيب الجسماني من اجل تناسق اجزاء الجسم بشكل طبيعي وشد الجسم والعضلات وتخلص من الوزن الزائد. ويهدف البحث الى التعرف على مدى تأثير تمارين الخاصة في تحسين التركيب الجسماني بعد عمليات سحب الدهون للنساء بأعمار (30-45) سنة. اما فروض البحث فتكمن في وجود فروق معنوية بين الاختبار القبلي والبعدي في تحسين متغيرات التركيب الجسماني بعد عملية سحب الدهون لعينة البحث. واستخدمت الباحثتان المنهج التجريبي بعمل مقارنة بين الاختبار القبلي والبعدي للمجموعة بعد اداء الاختبارات وتطبيق التمارين الخاصة على النساء ممن اجرين عمليات سحب الدهون والبالغ عددهم (6) مشتركات. واستنتجت الباحثتان ان تمارين خاصة التي تم تطبيقها كان لها تأثير ايجابي في تحسين التركيب الجسماني والقياسات الجسمية بعد عمليات سحب الدهون للنساء بأعمار (30-45) سنة، وهذا ما يحقق احد اهداف التنمية المستدامة للامم المتحدة في العراق (الصحة الجيدة). وتوصي الباحثتان الى ضرورة استخدام التمارين الخاصة التي تهدف الى اكتساب اللياقة الصحية واداء تمارين تحسن المرونة والرشاقة من اجل الحفاظ على وزن الجسم والحصول على جسم متناسق .

مستخلص البحث

التمارين الخاصة ، التركيب الجسماني ، سحب الدهون

الكلمات المفتاحية