

The Effectiveness of a Rehabilitation Program on Some Functional Variables and their Relationship to Women with Low Back Pain who have Frequent Births

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Introduction and research problem:

The physical aspect is one of the important dimensions of the individual's preparation, as it contributes to building the personality in all respects, and this can be translated through sports programs that suit the conditions of the individuals that have been developed for them under specialized and conscious conditions.

Hassan and Amin (2011) explain that rehabilitative exercises are one of the modern exercise methods that depend on a set of movements designed to strengthen the body's basic muscles and achieve its balance, accompanied by patterns of focused breathing. These exercises do not affect the development of (strength, endurance, flexibility, balance), but rather Its effect extends to the rehabilitation of the body in all respects, in addition to the fact that exercises work to prevent individuals from various injuries, and we do not lose sight of their therapeutic effect, which is one of the most important purposes, which is the treatment of diseases of the age and rehabilitation of individuals to return quickly to normal life.

And exercise is one of the important factors in the development of the vital organs of the body

associated with the growth of the multiple elements of physical fitness, especially the nervous muscular system and the circulatory and respiratory systems, which leads to the improvement of the work of these devices and the level of their functional performance.

And that lower back pain in women with repeated births is one of the common complaints and the pain may extend to the thigh and legs area, as it is the most vulnerable area to pressure when the person is sitting or carrying weight.

Bella Tess (Pilates, j2006) says that every woman dreams of pregnancy and childbirth, but there are changes that bring within her many manifestations of fear and anxiety from the moment of conception to the day of birth, as the body undergoes changes during the development of the fetus until the moment of birth and changes occur, including weight gain and fluid retention and secretion in the body Relaxin is released from the body during pregnancy, which helps to relax the cervix during childbirth and is secreted from the breast and placenta. The purpose of this hormone is to increase the flexibility in tissues to be able to accommodate rapid growth and prepare the body for childbirth, and the

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abdominal muscles are the muscles most affected by stretching during growth. The fetus, which leads to pressure on the lumbar region and causes more lower back pain in women with repeated births, where the rectus abdominis muscle sags, which is accompanied by weight gain and as the child grows, causing the lumbar spine to tilt to go forward

Portia (2011) adds that during pregnancy the abdominal muscles stretch more than 50% of their original length and affect the pelvic floor, which becomes with it strengthening the abdominal muscles is critical to relieve pressure on the lumbar region that leads to lower back pain.

Through the above and the researcher's work in the field of exercise and sports rehabilitation, as well as informing her of the scientific references made available to them, she found that the recurrence of pregnancy and the physical changes that occur during the growth of the fetus and the stretching of the spine forward in order to maintain the balance of the body, thus the pelvis moves forward and deviation occurs, causing problems in the column. As a result of changing the center of gravity, pain occurs in the lower back that may extend to the legs, and that there are types of exercises that can help achieve the goal that will be conducted for the study. These are rehabilitation exercises that help strengthen the abdominal and back muscles and increase the range of motion of the spine, which helps. It reduces pressure on the nerves in the lumbar region, reduces pain in the

lower back and helps to quickly restore strength after childbirth.

Research goal:

The research aims to identify the effectiveness of a rehabilitation program on some functional variables and their relationship to women with low back pain who have repeated births.

Research hypotheses:

In light of the research objective, the researcher puts the following hypotheses:

- 1- There are statistically significant differences between the averages of the pre and dimensional measurements and the percentages of change for the research sample in the physical variables under study and in the direction of the dimensional measurement.
- 2- There are statistically significant differences between the averages of the pre and dimensional measurements and the percentages of change in the variable degree of pain under study and in the direction of the dimensional measurement.
- 3- There are statistically significant differences between the averages of the pre and dimensional measurements and the percentages of change in the variable degree of lumbar concavity under discussion and in the direction of the dimensional measurement.

Terms used in the search:

lumbar lordosis

Hassanein (1995) indicates that it means the convergence of the back edges of the vertebrae, which narrows the space through which the nerves

pass, causing a kind of pain as a result of pressure on these.

Research plan and procedure:

Research Methodology:

The researcher used the experimental method due to its suitability to the nature of this research with the experimental design of one experimental group using the pre and post measurement.

Research community:

The research community represents women with repeated births in Cairo Governorate and those who frequent the fitness halls of Cairo Sports Club, and their ages range from 30: 40 years. The research community reached (38) women with repeated births.

The research sample:

The researcher chose the research sample by the intentional method of women with repeated births in the city of Cairo who frequent the

Cairo Sports Club, where it consisted of (10) women, in addition to choosing (10) ten women with repeated births from the research community and from outside the basic sample to calculate Scientific transactions and to conduct the exploratory study on them, while the number of (8) women were excluded, and the researcher set the following conditions that must be met in the sample:

-Women with lower back pain caused by lumbar concavity should not be subject to any other rehabilitation program or do any self-exercises during the experiment.

Regularity in the qualifying program throughout the research period.

To have a personal desire to continue the experiment.

Repeated pregnancy and childbirth more than three times. Table (1) shows the description of the research community.

Table (1)
Arithmetic mean, standard deviation, median, and coefficient
Convolution of search variables (n = 20)

Variables	Measure unit	Study sample			
		SMA	Mediator	standard deviation	skew modulus
Height	Cm	161.9	162	2.47	-0.12
Weight	Kg	76.1	76	2.04	0.15
Age	Year	35.95	35.5	0.98	1.38
Abdominal muscle strength	No.	20.50	20	4.22	0.36
Back muscle strength	No.	9.6	10	0.84	-1.43
Flexibility of the spine	Cm	13.40	14	2.07	-0.87
degree of pain	Degree	4.60	4.5	1.43	0.21
The degree of deviation of the lumbar concavity	ml.	4.50	5	1.27	-1.18

It is evident from Table (1) that:

The values of the torsion coefficients of the research sample in the variables of length, weight, chronological age, physical variables, pain degree and the degree of lumbar concavity deviation under study ranged between (-1.43, +1.38), meaning that they were limited to (-3, +3), which indicates that they are It lies within the equilibrium curve, which indicates the moderation of the distribution of the sample under investigation.

Data collection methods and tools:

First: Arab and foreign references:

By informing the researcher of specialized scientific references as well as previous studies related to the field of research to benefit from them when conducting this research.

Second: Tools and Equipments Used:

The researcher used many tools and auxiliary devices, including:

- Restameter: to measure height in centimeters and a medical scale to measure weight in kilograms. (Appendix 4)
- The included ruler: to measure the flexibility of the spine in centimeters. (Appendix 2)
- Box
- Stopwatch to measure performance time
- Swiss balls with a diameter of (85) cm.
- a stick
- collars
- Posture Pro device for determining the degree of lumbar concavity deviation. (Appendix 5)

Third: The tests used in the research: (Appendix 2)

Through the researcher's review of the scientific references and previous Arab and foreign studies in physical tests, they concluded that the preparatory exercises work on developing some physical characteristics such as (muscular strength and flexibility), and tests were developed for these two characteristics and presented to the experts to determine the most important and most appropriate tests to measure that with their suitability. The research sample has appendix (2) and they reached the following tests:

- Sitting test from lying down (to measure the strength of the abdominal muscles, expressed in number of times)
- Trunk flexion test from prone (to measure the strength of the back muscles, quantified by number of times)

Forward torso flexion test from standing (to measure the forward flexibility of the spine, measured in centimeters)

Maternal score test (analog pain scale - to determine the degree of pain)

- Measuring the degree of lumbar concavity deviation (to measure the degree of deviation of the lumbar concavity in millimeters)
- Expert opinion poll form to determine the most important physical tests used in the research with defining the content of the program Annex (3) by designing a form that was presented to

the experts - Data registration form for women Research sample and measurements used before and after for each woman - Execution of program content:

The researcher implemented the program content for the two groups for a period of 12 weeks, starting from 25/7/2019 until 16/10/2019.

Second: Qualifying exercises program: (for the experimental group)

The researcher developed a program of qualifying exercises (for the experimental group) after conducting a reference analysis of the scientific references, accessing the information network and viewing the CDs of these exercises, which resulted in the following:

Program content:

Through the researcher's acquaintance with many previous Arab and foreign studies and scientific references, the appropriate exercises were identified for the nature of the research sample and were presented to expert professors, Annex (1), with the aim of determining their suitability for application to the research sample and the extent of their impact on the variables under study. The program was modified and reached The time period of the program is (12) weeks and the number of units is (3) units per week, and the time of the training unit including (warm-up and cool-down) is (45) s and gradually increases until it reaches (60) s at the end of the program.

Parts of the daily training unit:

1- Warm up:

The warm-up was divided as in the qualifying program and its duration is (10) m

2- The main part:

It is considered the most important part because it achieves the goal of the program and contains a set of rehabilitation program exercises, which were divided into four stages, and the time of each group took three weeks, with a gradual pregnancy, which started with a time of (30) s, and (5) s was increased every three weeks until It reached (45) BC at the end of the program. The researcher took into account the diversity of exercises during the weeks of the program as follows: Qualifying exercises on a Swiss ball from the first week until the third week

Qualifying exercises on a Swiss ball on the wall from the fourth week to the sixth week

Qualifying exercises using two Swiss balls from the seventh week to the ninth week.

Qualifying exercises on a Swiss ball and holding another Swiss ball in the hands from the tenth to the twelfth week.

Each of the previous stages included (12) exercises, and the intensity of the exercises varied to restore the range of motion, as well as exercises to develop the muscular strength of the muscles working around the spine.

3- Conclusion:

Its duration is (5) s, and it aims to return the body's organs to a normal state.

Table (2)
Percentage of expert opinions on program content

The content of each program	Expert's point of view	%
Determine the total period	12 weeks	90%
Determine daily units	3units	80%
Determine the unit time at the beginning of the program	45 m	80%
Determine the unit time at the end of the program	60 m	80%

The researcher satisfied 80% of the experts' opinions on the program's content.

Table (3)
Divide the training unit time by the number of weeks for each program

unit parts	Week 1 - 3	The fourth-sixth week	Seventh - Ninth week	The tenth-twelfth week
Warm-up	10m	10m	10m	10m
main part	30m	35m	40m	45m
Final	5m	5m	5m	5m
Total	45m	50m	55m	60m

Presentation and discussion of the results:

First, show the results:

Table (4)
The significance of the differences between the mean of the pre and post measurements Eta values in physical variables (n = 10)

Variables	Measure unit	Pre measure		Post measure		average differences	standard deviation of differences	T value calculated	ETA Rate
		M	E	M	E				
Abdominal muscle strength	No.	20.50	4.22	38.6	3.60	18.1-	5.76	*9.93	0.92
Back muscle	No.	9.6	0.84	17.1	2.02	7.5-	2.59	*9.15 15	0.94
Flexibility of the spine	Cm	13.40	2.07	24.0	3.59	10.6-	4.33	*7.75	0.87

Tabular (T) value at a degree of freedom (9) and a level of significance (0.05) = 1.823

It is clear from the following table (4) that there are statistically significant differences between the

averages of the pre and dimensional measurements in the physical variables under discussion and in the direction of

the dimensional measurement, as the calculated (T) values are greater than the tabular (T) value at the level of significance (0.05), as The ETA values

showed a significant effect of the proposed program on improving the variables under investigation.

Table (5)

The percentages of change for the experimental group in the physical variables under study (n = 10)

Variables	Measure unit	Pre measure	Post measure	% change
		M	M	
Abdominal muscle strength	No.	20.50	38.6	88.3%
Back muscle strength	No.	9.6	17.1	43.86%
Flexibility of the spine	Cm	13.40	24.0	79.1%

It is clear from table (5) the following: The presence of the percentages of change for the experimental group with which the

rehabilitation exercises are used in the physical variables under discussion and in the direction of the dimensional measurement.

Table (6)

The significance of the differences between the mean of the pre and post measurements and the ETA values of the experimental group in the variable muscle pain level under study (n= 10)

Variables	Measure unit	Pre measure		Post measure		average differences	standard deviation of differences	T value calculated	ETA Rate
		M	E	M	E				
Pain degree	Degree	4.60	1.43	0.5	0.71	-4.1	1.52	8.51*	0.89

The value of (T) tabular at the degree of freedom (9) and the level of significance (0.05) = 1.823

It is evident from Table (6) that: There are statistically significant differences between the averages of the pre and post measurements of the experimental group with which rehabilitation exercises are used in the variable of the level of muscle pain under study and in the direction of the

post measurement, as the calculated (t) values are greater than the (t) value. Tabular at the level of significance (0.05), and the ETA values showed a significant effect of the proposed program on improving the variables under study.

Table (7)
The percentages of change for the experimental group in the variables under investigation (n= 10)

Variables	Measure unit	Pre measure	Post measure	% change
		M	M	
Pain degree	Degree	4.60	0.5	89.1%

It is evident from Table (7) that: The presence of the percentages of change for the experimental group with which the qualifying exercises were

used in the variables under study and in the direction of the dimensional measurement.

Table (8)
The significance of the differences between the mean of the pre and post measurements and the ETA values for the experimental group In the variable degree of lumbar concavity deviation (n = 10)

Variables	Measure unit	Pre measure		Post measure		average differences	standard deviation of differences	T value calculated	ETA Rate
		M	E	M	E				
The degree of deviation of the lumbar concavity	ml.	4.50	1.27	0.78	0.44	3.7	1.48	7.96*	0.88

Tabular (T) value at a degree of freedom (9) and a level of significance (0.05) = 1.823

It is clear from Table (8) that: There are statistically significant differences between the averages of the pre and dimensional measurements for the second experimental group with which the qualifying exercises are used in the variables under research and in the direction of the dimensional

measurement, as the calculated (t) values are greater than the tabular (t) value when Significance level (0.05), and ETA values showed a significant effect of the proposed program on improving the variables under investigation.

Table (9)
The percentages of change for the experimental group in the variable of the degree of lumbar concavity deviation under investigation (n = 10)

Variables	Measure unit	Pre measure	Post measure	% change
		M	M	
The degree of deviation of the lumbar concavity	ml.	4.50	0.78	82.7%

It is clear from Table (9) the following: There are percentages of change for the experimental group with

which the qualifying exercises are used in the variables under research and in

the direction of the dimensional measurement.

Discuss the results

It is clear from Table (4), (5) that there are statistically significant differences and a change in the level of improvement in the level of physical variables among women with lumbar concavity in the research sample. The researcher attributes this change in the variables under research to the regularity of this group in training and the implementation of rehabilitation exercises regularly as it reinforces The researcher caused the efficiency of the control group to continue to practice remedial home exercises and compete with each other, which in turn led to the development of muscular strength of the abdominal and back muscles and an increase in the range of motion of the spine, which in turn was reflected in the degree of lumbar concavity deviation.

The researcher attributed this to the diversity of the use of rehabilitation exercises, as the exercises varied during the twelve weeks between freestyle without tools, as well as with the support on a chair or the use of a collar, which led to a change in the form of the exercises, as well as the variety of muscle groups that women work on, which helped to develop the muscular strength of the muscles Abdominal and back and increasing the range of motion of the spine by changing the direction in performing exercises.

Badran (2004) indicates that exercise has physical, psychological and physiological benefits, as it strengthens muscles, increases joint flexibility, stimulates blood circulation, and relieves psychological pressures. This reinforces that when exercising, the functional state of the circulatory system and breathing improves, and the lungs are filled with air. Inhale, and the amount of oxygen reaching the brain and muscles increases, in addition to strengthening the muscles that lead to the convergence of feelings of pain and muscle spasm, while reducing the degree of psychological pressure and increasing the ability to meet the demands of life.

Hassan, Amin (2011) adds to the positive impact of the rehabilitation exercise program on the physical variables (abdominal muscle endurance - flexibility - back muscle strength) for the women in the research sample, where the rehabilitation exercise program included focusing on large muscles in the body such as abdominal muscles, back and legs, which work It strengthens and lengthens the muscles and ligaments that surround the joint and leads to its flexibility. It also increases the degree of flexibility of the pelvic joints and the elasticity of the muscles and tendons.

This is consistent with what was indicated in the study of Moses (2007) that exercise works to strengthen the muscles and increase their size and that

the improvement in muscular strength and flexibility as a result of continuing to train with moderate intensity with a gradual time from (30) s to (45) s and repeating the longest period for a period (12) a week, which led to an increase in the degree of muscular endurance, and this depends on the strength of the muscles.

The results of this study are in agreement with the results of the study of Al-Najjar (2005) and Musa (2007) that practicing different exercises and rehabilitation exercises have a positive effect on improving physical variables such as the strength of the abdominal muscles, back and legs and the flexibility of the spine forward and backward, as it reduces injuries. Spine and inorganic lower back pain relief.

This result is consistent with the results of the study of Casio, Cosio, Reynold (2003, p. 721), Stanton, Reynold, and Stanton. Reaburn, Humphries, (2004, p. 522), Reaburn James and Carl James, (2004, p. 106), and Abdel Baseer (2008, p. 45)

The researcher believes that moving all the muscles simultaneously, taking into account the six principles of performance, and through the previous results, verify the validity of the first hypothesis, which states that there are statistically significant differences between the averages of the pre and dimensional measurements and the percentages of change in the physical variables under discussion and in the

direction of the dimensional measurement.

It is clear from Table (6), (7) that there are statistically significant differences between the averages of the pre and post measurements in the level of the degree of muscle pain. The researcher returns that result to the proposed rehabilitation program in the variables under consideration due to the regularity of this group in training and the implementation of rehabilitation exercises regularly, where the consideration was taken The multiplicity and diversity of exercises, which gave an opportunity to focus on performance with high efficiency, which showed its effect in improving the variables under consideration, which helped in a change in the degree of muscle pain.

This is consistent with the results of Hassan and Amin (2011, p. 225) that as a result of continuing training for a period of (12) weeks, equivalent to (36) training units, it helped to raise the degree of muscular endurance and this depends mainly on muscle strength, as improving muscular endurance is linked to improving muscular strength. And the use of the program through rehabilitation exercises, which helped to correct muscle function, has helped reduce muscle tension and thus relieve pain and improve blood circulation to the muscles and thus strengthen weak muscles.

This result agrees with the results of the study of Cosio, Reynold,

(2003, p. 722) and Humphries Stanton, Reabum (2004, p. 532) by Carl James and Carl (2004, p. 106). Positive rehabilitation exercises.

The researcher believes that moving all the muscles simultaneously, taking into account the six principles of performance, and through the previous results, the validity of the second hypothesis is verified, which states that there are statistically significant differences between the averages of the pre and remote measurements and the percentages of change in the variables of the degree of muscle pain in question and in the direction of the post measurement.

It is clear from Table (8), (9) that there are statistically significant differences between the averages of the pre and dimensional measurements in the level of lumbar concavity in the research sample. The researcher attributes this to the use of rehabilitation exercises as they are considered part of the fitness development programs for specific parts of the body and its benefits. The development of many physical attributes such as muscular strength, muscular endurance, lengthening and flexibility and works to tighten and strengthen the working muscles and improve the internal stability and internal strength of the individual, as well as the researcher refers that to the program during its various stages, which focused on developing the strength of the surrounding and

opposite back muscles because of its positive impact on relieving pain. Muscular weakness in the back, abdomen and legs is one of the important causes of back pain.

As well as to the use of the program through exercises, which led to raising the capacity of muscles and ligaments and increasing the compatibility between the nervous and muscular systems, which led to an activity in the circulatory system, increasing blood flow to the injured place and helping to provide oxygen to the injured muscle, which works to strengthen the muscles that have weakened as a result of the injury, as well as sends performance. The Swiss ball brings joy and pleasure to the sound of music and improves the psychological state of the ladies.

The researcher believes that the change in the degree of lumbar concavity under discussion is logical, so the improvement of physical variables through rehabilitation exercises on the Swiss ball under discussion has moved to the degree of lumbar concavity deviation and this is due to the fact that rehabilitation exercises on the Swiss ball work to increase flexibility at the time given. The strength of the muscles, which helps to improve the degree of flexibility of the joints and the trunk from the front and the back, thus reducing the exposure to injuries, as indicated by the study of Cruz Vera, Fernandes, Larango, Bernardo, Silva,

2071), Stuge, Hilde, Vollestad (2003, p. 983)

Abdel-Fattah (2003) (2) believes that flexibility and stretching help to increase strength production, as they reduce muscle hypertrophy resulting from strength exercises and reduce internal resistance in the muscle, thus increasing the strength and speed of muscle contraction.

This is consistent with what Khalil and Al-Ajmi (2007, p. 382) indicated that one of the benefits of rehabilitation exercises is that it modifies the position and shape of the body, improves muscle tone and strength, and develops the deep abdominal muscles, which in turn affects the control of the trunk.

In this research, in addition to the weakness of the muscles of the back and abdomen, we single out the case of women from repeated pregnancy and childbirth, following some wrong positions during the day and making a lot of daily effort.

This result agrees with the results of the study of Cosio and Reynold (2003, p. 722) and Humphries Stanton and Reabum (2004, p. 532), Renville James, Carl (2004, p. 106), Khalil (2009, pg. 25), where these studies demonstrated the positive effect of rehabilitation exercises on the Swiss ball in the variables (muscular strength of the abdominal muscles - muscular strength of the abdominal muscles - flexibility of the spine - the degree of

lumbar concavity deviation) under consideration.

From the foregoing, it is clear that the third hypothesis is correct, which states: "There are statistically significant differences between the averages of the pre and dimensional measurements and the percentages of change in the variable degree of concavity of the back under discussion and in the direction of the dimensional measurement".

Abstracts:

1- The rehabilitation program has a positive effect in increasing the flexibility of the spine and in the muscular strength of the abdominal muscles and back muscles.

2- The rehabilitation program has a positive effect in an improvement in the degree of lumbar concavity, which helps to relieve lower back pain in women with repeated births.

Recommendations:

1- The use of the rehabilitation program has an effect on improving the flexibility of the spine and the muscle strength of the abdominal and back muscles in rehabilitating many injuries and relieving lower back pain in women with repeated births.

2- The need to use the rehabilitation program to reduce the increase in injury under the supervision of specialists.

3- Using the proposed program to rehabilitate some injuries on other samples.

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