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STUDY ON THE EFFECTIVENESS OF THERAPEUTIC EXERCISE IN PROMOTING AN ACTIVE AND HEALTHY LIFESTYLE AMONG YOUNG ADULTS

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Abstract

Therapeutic exercise is an effective and accessible method of intervention in the promotion of general health and is increasingly used in the prevention and recovery from physical and mental disorders. In this study, a personalized eight-week therapeutic exercise program was developed and delivered to a group of ten young adults with varying levels of physical activity and varying health conditions.

The program was structured progressively, starting with simple mobilization and general activation exercises, continuing with strength, coordination and stretching exercises, and ending with relaxation and physiological self-regulation components. The main objective was to improve cardiovascular parameters, body mass index, quality of life and reduce symptoms of anxiety and depression.

The results showed significant improvements in blood pressure, pulse, weight and psychological scores (QOL, IDS, ASQ), confirming the benefits of therapeutic exercise as an integrated tool to promote a balanced lifestyle. The study supports the integration of regular exercise into the daily routine, not only as a rehabilitation method but also as an active form of prevention.

Introduction

In a global context where sedentary lifestyles, chronic stress and psychological disorders are on the rise, therapeutic exercise is becoming increasingly important in promoting overall health. According to the World Health Organization (WHO), more than 1.4 billion adults worldwide do not achieve the recommended minimum level of physical activity, placing sedentary lifestyles among the leading risk factors for global mortality. The WHO recommends at least 150-300 minutes of moderate physical activity per week for adults, but this is not reached by about 27.5% of the world's adult population, according to data published over the last decade. [1],[2].

Prolonged physical inactivity has major negative effects on physical and mental health, contributing to increased incidence of cardiovascular disease, obesity, type 2 diabetes, depression and anxiety.[3],[4],[5]. In this sense, regular and structured exercise, integrated into a personalized program, can bring significant benefits both physically - by improving body mass index, cardiovascular fitness and muscle strength - and psychologically - by reducing depressive and anxiety symptoms and quality of life.[6],[7],[8].

The most commonly recommended forms of physical activity for therapeutic purposes include moderate-intensity aerobic exercise, resistance training, flexibility exercises, and breathing and relaxation techniques, all of which are adaptable to the functional level and needs of each individual. Combined programs that include multiple types of exercise have been shown to be most effective in increasing adherence and maintaining long-term benefits.[9],[10],[11].

The results confirm the hypothesis that therapeutic exercise is an effective, accessible and multi-beneficial method for promoting an active and healthy lifestyle, recommendable both in prevention and as an adjuvant support in classical therapies.[12],[13],[14].

The present paper is based on the study of a group of ten young participants who followed a structured therapeutic exercise program for eight weeks. Pre- and post-intervention assessments focused on objective physical parameters (weight, BMI, blood pressure, pulse rate) as well as subjective factors related to mental state and general well-being (quality of life scores, depression and anxiety).

Material-method

This study was conducted from 15.03.2025 to 10.05.2025 and is based on an applied interventional research. It included 10 participants aged between 19 and 28 years, recruited from a community setting (friends, colleagues, acquaintances), who voluntarily agreed to participate by signing informed consent according to the principles of the Declaration of Helsinki. [13].

The assessments were conducted at the beginning and at the end of the program, using validated instruments covering a wide range of physical and psychological parameters.

The validated instruments used were the following:

- The QOL (Quality of Life) Questionnaire - a standardized instrument used to assess subjective perceptions of quality of life, including dimensions such as physical well-being, emotional functioning, social relationships and personal satisfaction. It is commonly used in public health studies and psychophysical interventions. [15],[16],[17].
- IDS (Inventory of Depressive Symptomatology) - a validated questionnaire for assessing the level of depressive symptoms, both mild, moderate and severe. It covers cognitive, behavioral and physiological symptoms specific to depression. [18],[19],[20].
- ASQ (Anxiety Sensitivity Questionnaire) - a validated instrument used to measure anxiety sensitivity, i.e. the tendency of an individual to interpret anxious symptoms as dangerous or uncontrollable. It is an important predictive marker in clinical studies of anxiety disorders. [21],[22],[23].

Objective measurements were also used: body weight (kg), height (for BMI calculation), blood pressure (mmHg) and resting pulse rate (beats/minute), measured using an approved digital scale and a clinically validated automated blood pressure monitor according to the standards of the literature.

Assessments were performed under standardized conditions in the following ways:

- BMI was calculated on the basis of weight and height measured in the morning, without eating, with participants dressed casually and without shoes, using an approved digital scale and a stadiometer.
- Blood pressure (BP) was measured in the morning, between 8:00-9:00, in a sitting position, after at least 10 minutes of physical and mental rest, using a clinically validated automatic blood pressure monitor on the left arm.
- Resting pulse rate was assessed under the same conditions as BP, radially, in supine position, using an electronic device to ensure accuracy.

For data accuracy, all measurements were performed before the start of the day's exercise on the first and last day of the program, by the same person, under constant environmental conditions (temperature, noise level, light).

The exercises were structured in stages: warm-up, strength and stability, mobility and stretching, endurance and coordination, followed by relaxation. Throughout the program, participants' progress was monitored and adjusted based on individual response and scores obtained at periodic assessments.

Working assumptions:

- An 8-week therapeutic exercise program decreases body mass index (BMI) in young people with baseline values outside the optimal range.
- Participation in the therapeutic exercise program leads to blood pressure regulation and reduced resting heart rate.

- Quality of life (QOL) scores increase significantly after completing the therapeutic exercise program.
- Depressive and anxiety symptoms, as measured by the IDS and ASQ questionnaires, are significantly reduced after the intervention.

Phased recovery plan

The therapeutic exercise program lasted 8 weeks and aimed to improve the overall physical and mental health of the participants through a structured and progressive approach. The exercises were organized into four major components: warm-up, strength and mobility exercises, resistance and coordination exercises, and relaxation.

Weeks 1-4

In the first stage, the focus was on adapting the body to moderate exertion, improving mobility and activating core muscles. Simple exercises were used, performed in comfortable positions (standing or lying), with body weight or elastic bands.

The exercises aimed at:

- Warming up joints and activating large muscles (shoulders, trunk, lower limbs);
- Isometric and isotonic exercises with minimal resistance;
- Basic balance and coordination exercises (standing on toes, side steps);
- Maintaining a moderate heart rate by stationary walking or light aerobic movements.

This period was aimed at strengthening the general physical base, reducing muscle tension, regulating the pulse and improving motivation for regular movement.

Weeks 5-8

The second phase introduced exercises with an increased level of intensity and complexity, without exceeding individual tolerance. Exercises included:

- Combined movements with elastic bands, in series and progressive repetitions;
- Functional exercises (chair squats, wall push-ups, controlled lunges);
- Endurance activities (sit-sit with knees up, rhythmic side stepping);
- Active and passive stretching exercises to relax muscles and maintain mobility;
- Breathing techniques for relaxation and regulation of cardio-respiratory response.

The daily program lasted about 45 minutes and was adapted to be performed at home or in accessible spaces, without special equipment. Exercises were dosed according to the initial level of physical fitness and the progress observed each week.

Results

Following the 8-week therapeutic exercise program, significant changes were recorded in the physical and psychological parameters of the 10 participants. Assessments were performed before and after the intervention, using objective measurements (weight, BMI, blood pressure, pulse) and validated psychological scales (QOL - Quality of Life, IDS - Inventory of Depressive Symptomatology, ASQ - Anxiety Sensitivity Questionnaire).

To illustrate the general evolution of the participants, three comparative graphs are presented, showing the average changes in the scores obtained on the three questionnaires:

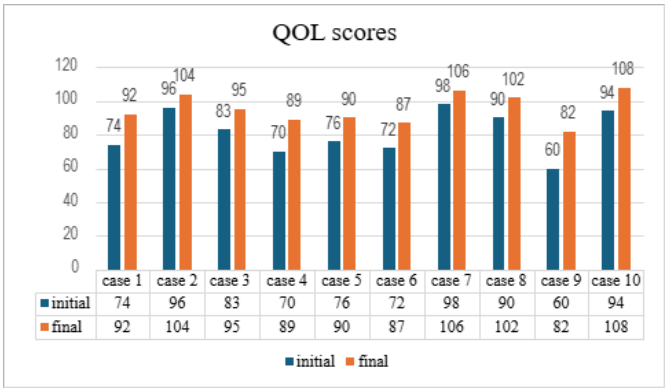

Figure 1: Evolution of QOL scores

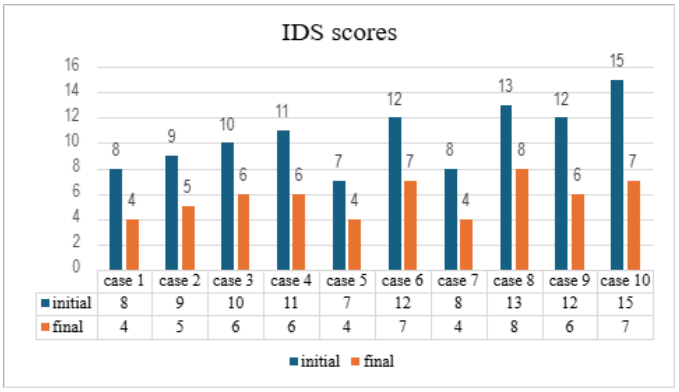

Figure 2: Change in depression scores (IDS)

Table 1. Weight and BMI – Before and After

No.	Age	Sex	Initial weight (kg)	Final weight (kg)	Initial BMI	Final BMI
1	21	F	66,5	62	24.4	23.1
2	24	M	85	82,5	24.3	23.6
3	28	M	88	85,7	25.7	25.0
4	24	F	58,5	56,2	20.2	19.4
5	20	F	58	56,2	21.8	21.3
6	20	F	51	50	19.4	19.1
7	20	M	68	72,7	20.5	21.9
8	23	F	70	68	24.2	23.5
9	19	F	77	74	30.1	28.9
10	26	M	95	92,6	26.3	23.7

Table 2. Blood Pressure and Pulse – Before and After

No.	Age	Sex	Initial BP (mmHg)	Final BP (mmHg)	Initial pulse(bpm)	Final pulse(bpm)
1	21	F	117/77	125/80	101	91
2	24	M	110/60	117/66	65	70
3	28	M	122/70	126/74	77	73
4	24	F	105/60	112/63	68	65
5	20	F	120/80	123/78	70	67
6	20	F	120/72	122 /70	64	68
7	20	M	110/67	118/65	80	76
8	23	F	130/75	126/72	90	86
9	19	F	140/90	130/85	89	85
10	26	M	110/70	123/68	70	68

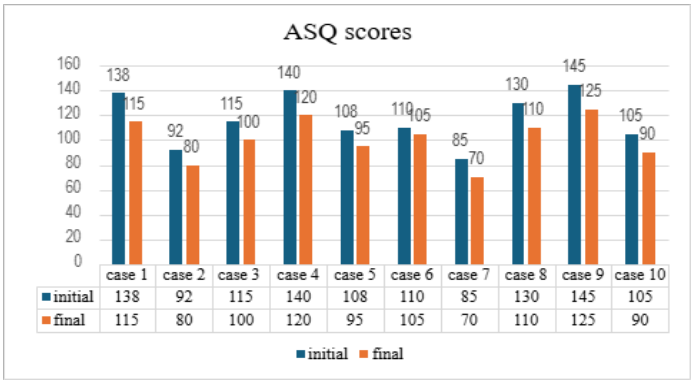

Figure 3: Evolution of Anxiety scores (ASQ)

Table 1 and Table 2 also shows the individual values of each participant for the physical parameters assessed before and after the 8-week intervention: body mass index (BMI), blood pressure (BP) and heart rate (pulse). These data provide an overview of the positive impact of therapeutic exercise on participants' physical health status.

The results show a general trend towards an improvement in physical fitness, with a decrease in BMI values, stabilization of blood pressure and reduction in resting heart rate. These changes were more marked in the participants who initially had unbalanced values, confirming the effectiveness of therapeutic exercise in optimizing physiological parameters.

Interpretation of the results

The results obtained after the 8 weeks of intervention indicate favorable effects of therapeutic exercise on several dimensions of participants' health.

Figure 1 shows a steady increase in quality of life scores among all participants. owoLs This positive development suggests that the program contributed not only to improved physical fitness but also to emotional and social balance. Participants reported a general feeling of well-being, with a focus on increased energy, self-confidence and motivation for an active lifestyle.

Figure 2 shows a clear decrease in depression scores, indicating a positive psychological impact of the program. The shift from moderate or high levels to low or normal scores for several participants confirms the hypothesis that physical activity has a therapeutic role in regulating emotional state and combating depressive symptoms.

Figure 3 reflects a significant decrease in anxiety in most participants, with many participants moving from medium or high scores to low or normal levels. This effect supports the literature emphasizing the benefits of exercise in reducing stress and improving emotional control.

Physiologically, Table 1 shows a general trend of decreasing body mass and optimizing body composition among participants. Although values varied

individually, in all cases a BMI in the normal range was maintained or achieved, supporting the idea that the intervention contributed to metabolic balance and weight management.

Table 2 shows that, for most participants, blood pressure values remained within normal limits or even decreased slightly (e.g. case 9 - from 140/90 mmHg to 130/85 mmHg, a clearly favorable decrease). However, in some cases (e.g. cases 1, 2, 3, 4, 5, 7 and 10), there was a moderate increase in systolic and/or diastolic blood pressure values.

This increase can be interpreted as a physiologic adaptation of the cardiovascular system to the sustained effort during the 8 weeks. For example:

- Case 1 (female, 21 years old) had an increase from 117/77 mmHg to 125/80 mmHg, in parallel with a decrease in resting pulse rate from 101 bpm to 91 bpm, suggesting an improvement in cardiac efficiency.
- Case 3 (male, 28 years old) had a slightly increased blood pressure from 122/70 to 126/74 mmHg, but also a decrease in heart rate, which is commonly seen in adaptations of recreational athletes.
- Case 2, although he had an increase in BP from 110/60 to 117/66 mmHg, remains within the optimal range for a young man with a stable pulse (65 → 70 bpm), and this variation may reflect toning of the circulatory system.

Thus, these increases are not pathologic, but reflect in some cases a redistribution of vascular tone, increased muscle mass, or simply normal individual variability. All participants remained within physiologically safe ranges, without signs of hypertension, and the decrease in resting pulse rate in 7 of the 10 subjects supports the hypothesis of favorable cardiovascular adaptation.

Also, the play questionnaires applied for cognitive stimulation, although not validated, were well received by the participants and supported active involvement in the program. Although they did not have a diagnostic role, they contributed to the maintenance of a positive and stimulating climate, essential in the context of a healthy lifestyle.

Discussions

Functional recovery and optimization of general health through therapeutic exercise involves a set of key components, the effectiveness of which has been supported by numerous studies. First, a key element is the gradual integration of physical activity in a controlled setting, adapted to the individual's initial level, with careful monitoring of progress and progressive adjustment of exercise intensity[9],[10],[24].

Another fundamental aspect is the promotion of an active and balanced lifestyle, including not only regular exercise, but also improvements in psycho-emotional factors, nutrition and sleep. These changes support the positive impact of

the intervention on indicators such as quality of life, cardiovascular status and mental state [8],[14],[25].

Quality of life was one of the most relevant parameters in the present study. After 8 weeks of therapeutic physical activity, all participants had higher scores on the QOL scale (Figure 1), reflecting significant improvements in physical, emotional and social levels. This result confirms the hypothesis that regular physical exercise has the potential to increase self-confidence, functional autonomy and overall life satisfaction [15],[16],[17].

Psychologically, questionnaire results for depression (Figure 2) and anxiety (Figure 3) demonstrate a significant decrease in negative symptoms after the intervention, particularly among those who initially had high scores. These data correlate with the literature emphasizing the antidepressant and anxiolytic effects of physical activity as a non-pharmacological complementary method. [1],[3],[12],[18],[19],[21],[22].

Physiologically, the data in Tables 1 and 2 show decreases in body mass index, resting pulse rate and blood pressure regulation, indicating a favorable cardiovascular adaptation to exercise and an improvement in general metabolism. Although the variations were moderate, they are relevant in the context of a group of healthy young people, and maintaining or improving values within optimal physiological limits is in itself a valid goal of primary prevention.[4],[7],[26],[27],[28].

From a methodological perspective, the intervention included progressive, individually tailored exercises performed daily, in accessible environments and without the use of complex equipment. Thus, the study demonstrates the feasibility of a therapeutic exercise program applied under real-life conditions, with tangible results on overall health.

Following the results obtained, therapeutic exercise can be considered an effective strategy for improving physical and mental health, with a visible impact on quality of life, reduction of mental symptoms and stabilization of physiological parameters. Programs of this type should be widely promoted, especially among young people, as simple but effective interventions in the prevention of chronic diseases and in reinforcing an active and healthy lifestyle.[6],[13],[29].

Conclusions

Based on the results of the research, the following conclusions can be drawn:

- Physical activity performed constantly under specialized supervision contributed to a reduction in body weight and body mass index (BMI) in the majority of participants, indicating an improvement in body composition and supporting the physiological benefits of therapeutic exercise.
- At the cardiovascular level, decreases in resting heart rate were observed in almost all participants. Blood pressure values were slightly elevated in some

cases but remained within normal limits, suggesting a favorable physiological adaptation to exercise.

- From a psychological perspective, there was a significant decrease in symptoms of depression and anxiety, as evidenced by lower scores on the questionnaires, which emphasizes the positive role of exercise on mental health.
- Quality of life was also improved in all participants, as reflected in increased scores on the final QOL assessment. This change confirms the importance of exercise in supporting overall well-being.

Overall, the applied program had a multiple beneficial impact - physical, psychological and functional, confirming the value of therapeutic exercise as an accessible, effective and sustainable intervention to promote general health.

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