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THE IMPACT OF STRENGTH TRAINING ON THE INDEX OF THE BODY MASS IN ADULT WOMEN

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Key words: strength training, body mass, women, body composition, muscle.
Abstract: Strength training is a form of exercise that has been proven to confer positive effects on parameters and health status, sports performance and physical aesthetics.

The objective of the present study was to examine the effects of strength training for 28 weeks on body composition in adult women to provide baseline data for the prevention of obesity and reduced quality of life.

Introduction

Body dimensions and body composition are among the critical determinants of motor performance and physical capacity. Body composition can be understood as the proportion of individual tissues in the total body weight, with the assessment of the weight of each segment. Muscle, fat and bone components are involved in their weight. When evaluating the correct evolution of the individual, information about the proportionality of the body is very important. The human body is composed of fat and non-fat mass, which together create total body weight. Fat-free mass consists of water, minerals, skeleton and muscle. We also refer to fat-free mass as active body mass because it requires energy. Body composition information is important for understanding human health, body functions, and disease dynamics. Research in this field refers to methods of assessment and descriptive composition of the body according to development and aging, from the changes that occur in diseases and the changes that are manifested in movement activity [1]. Optimal body composition should be considered an adequate indicator of the body's functional status and capacity. To demonstrate the change in the somatic state, a change in the body composition is a suitable indicator, the proportion of its fractions - fat component, fat-free mass and health indicators [4].

Physical activity has long been associated with the mitigation of physical decline associated with aging. Subsequently, maintaining muscle mass and strength is imperative for maintaining a high level of quality of physical functioning and mitigating measures of frailty. Muscle adaptations to exercise (increase in muscle size, cross-sectional area, and consequent strength) may counteract the muscle loss and physical decline associated with sarcopenia. [3].

Thus, physical activity or exercise appears to play an essential role in mitigating physical decline and may improve physical functioning and quality of

life with age.(24, 25). In addition, maintaining adequate levels of physical activity may result in longevity. increased and reduced risk for metabolic disease along with other chronic diseases. A list of physiological changes associated with different modes of activity and their health potential are listed. [2].

Materials and methods

The program took place over a period of 28 weeks, starting on 09.05.2022 until 20.11.2022. Subjects underwent different monitoring periods because they were separated into two groups with different exercise programs.

The main selection criterion was the age between 35-55 years, not having participated in a physical training program with specific strength exercises in the last 6 months, having a state of health that allows them to practice such a program and have availability to the schedule and duration.

Group A, consisting of 8 subjects, underwent a bodyweight training program. Exercises were similar in muscle group addressability.

In the case of Group B consisting of 8 subjects, the training underwent changes. Keeping the training structure of Group A, we adopted the method of progressive difficulty, according to the progress and tolerance to effort of each subject.

The subjects were made aware of the implementation of the protocol as well as the possible risks to which they may be exposed during this program. A participation agreement was signed individually. Also, each participant completed a medical questionnaire and recorded known medical conditions. Only those medically fit at the time of the survey remained in the training program.

All training sessions took place in the ABC FITNESS CLUB gym, Suceava.

Each participant underwent initial testing in which we tested segmental strength and cardiorespiratory endurance. The segmental force was tested by 3 procedures:

1). – chest push-ups from sitting, on the machine

2). - squat with added weights

3). - trunk lifts from lying on the back with the palms at the back of the head

Figure 1. Training structure

Weekly session	The structure of training sessions
Tuesday	• Training • 6 exercises • squats • back lunge • push-ups/chest push-ups from sitting, on the machine

	• trunk lifts from lying on the back • trunk extensions from facial lying • 40 sec in effort • 120 sec at rest
Thursday	• Training • 6 exercises • Squats • back lunge • push-ups/chest push-ups from sitting, on the machine • trunk lifts from lying on the back • trunk extensions from facial lying • 40 sec in effort • 120 sec at rest

The training sessions were conducted as follows: 2 sessions per week, 50 minutes each session for both groups (A,B).

The training structure for both groups was similar across days. Each session was allocated a group of 6 exercises that address the muscles of the back, abdomen, arms and legs.

Subjects in group A performed 4 sets of each exercise for 40 seconds without setting a number of repetitions, and subjects in group B worked 4 sets of 12 repetitions with loading.

The rest time between sets was equal for each group, respectively 2 minutes between sets.

Monitoring took place in the fourth training session, session in which the evaluation exercises were performed, 4 sets per exercise, monitoring by noting the number of repetitions and the load used.

We also used material from the following electronic databases: PubMed, Physiotherapy Evidence Database (PEDro), Cochrane Register of Controlled Trials, Scopus and Web of Science to prepare this systematic review.

Results

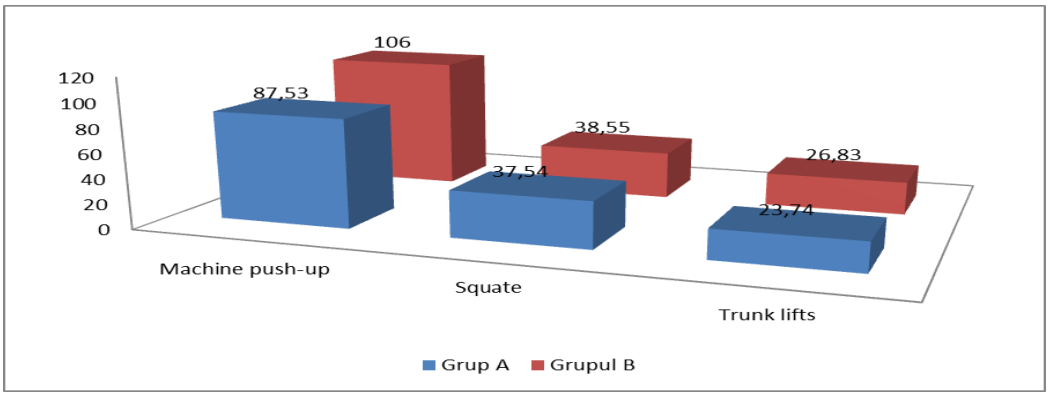

Figure 2. Correlates the evolution of Group A and B of the parameters measured in strength and muscular endurance exercises during the study. Group averages are recorded for each monitored exercise in the final phase.

Table 1. Values in percentages of BMI and VF, (visceral fat), measured in the case of GROUP A,during the data collection interval.

Subjects	BMI		VF	
	Initial	Final	Initial	Final
M.N.	24,4	22,6	4	3
P.P.	21,8	19,1	3	1
P.A.	22.5	21,8	3	2
G.E.	26,5	24,6	5	3
B.A	22,1	20,5	3	1
F.A	45,7	39,1	13	9
I.C	23,4	23	4	4
T.I	33,4	31	9	8
Arithmetic mean	27,42	25,29	5,55	3,87
Standard deviation	8,28	6,65	3,62	3,044
Variability	30,22(%)	26,39(%)	65,91(%)	80,11(%)

Table 2. Values in percentages of BMI and VF, (visceral fat), measured in the case of GROUP B, during the data collection interval

Subjects	BMI		VF	
	Initial	Final	Initial	Final
M.G	27,8	24,5	4	2
L.C	31,2	26,8	7	5
M.L	23,4	22,6	3	2
U.A	48,4	32,3	14	5
B.A	27,4	21,5	5	1
C.A	33,1	27,6	9	6
D.M	21,9	21,7	3	3
B.M	29,2	25,6	7	4
	30,38	25,32	6,51	3,56
Arithmetic mean	8,19	3,62	3,70	1,77
Standard deviation	27,05(%)	14,32(%)	56,97(%)	50,65(%)
Variability				

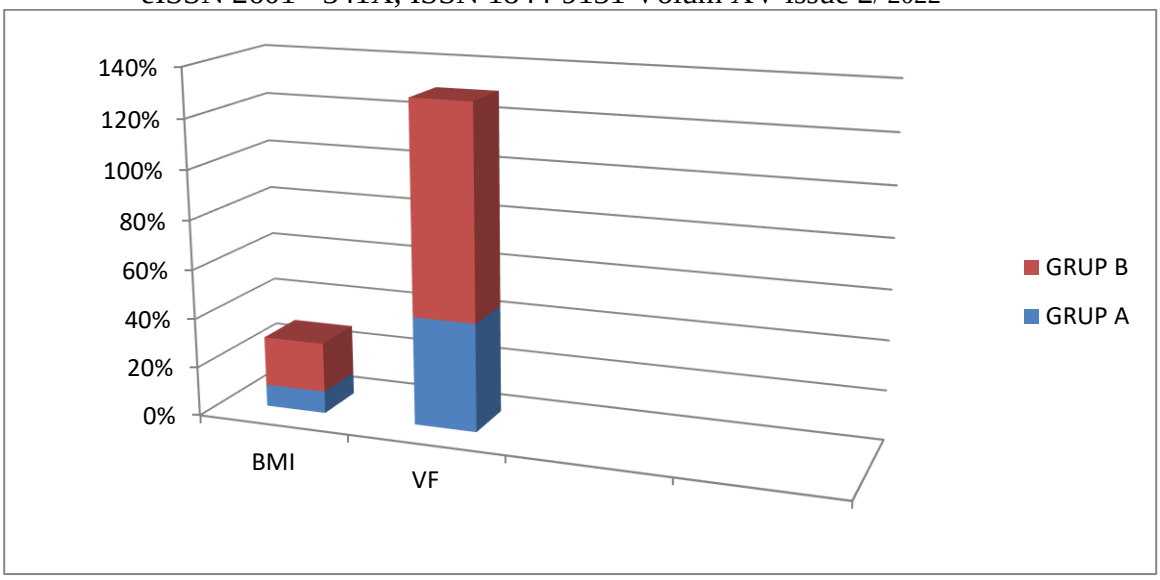

Figure 3 shows the average group evolution in terms of body composition: body mass index (BMI), visceral fat-VF. The values are calculated as a percentage precisely to highlight the difference

Conclusions

The present study confirms the purpose and the working hypothesis, thus in the case of adult female individuals, separated into two work groups, if a strength-specific exercise program associated with a high-protein diet (>2g/kg) is applied to them body), over a period of 28 weeks, determines the significant increase in strength, increases in aerobic resistance, loss of fat mass and changes in body composition. But if they were given a strength-specific exercise program paired with a high-protein diet over a 28-week period, the results in terms of strength gains, aerobic endurance gains, fat loss, and body composition changes corporal is much higher than the first version of the program, namely the one in which only physical exercises with own weight are present. Progress can be as much as 50% different between the two groups even if they followed the same number of training sessions per week and the same high-protein diet.

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