

THE ROLE OF PHYSICAL THERAPY IN THE PREVENTION OF OBESITY

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Abstract

Unfortunately, in the 21st century, technology, modern society, and industrialization of work processes have only reduced the physical activity of people with adverse consequences on the whole body. As a consequence, the people's diet has become chaotic, inadequate, the prolonged adoption of vicious office positions favors fat growth, the decondition syndrome or hypokinetic syndrome, and obesity, which, to the surprise of many, affects the young population not only the adult, and for many people practicing physical exercise as a leisure activity has reached at the bottom's priorities list.

Introduction

The prevalence of overweight and obesity has increased significantly over the past 30 years and, unfortunately, is steadily rising (Finkelstein, et al., 2012). "Obesity means overcoming the ideal weight by 15 - 20%." (Borundel, Internal Medicine Manual for Mid-Levels, 2000, p. 727).. Thus, obesity has become a major health problem because it has unpleasant consequences on the whole organism, the risk of developing cardiovascular disease, type 2 diabetes, certain types of cancer, and the rate of premature death increases directly in proportion to the degree of obesity (Lu, Hajifathalian, Ezzati, Woodward, Rimm, & Danaei, 2014), (McGee, 2005). Lifestyle influences more than many would think of preventing the deconditioning syndrome, but also preventing the onset of metabolic syndrome (VanWormer J.J., Boucher, Sidebottom, Sillah, & Knicklbine, 2017). Intraabdominal visceral fat increases by up to 300% between 25 and 65 years of age, which should worry about our own health (Allison, Byrne, Hunter, Lara-Castro, St-Onge & Zakharkin, 2005) . Unfortunately, there are no countries who can say that they have been able to reduce the high rate of obesity in the last 30 years (Marie, et al., 2014) through various prophylactic programs. Physical activity plays a very important role in the prevention of obesity,

Hankinson and colleagues demonstrating in a 20-year study that women who performed high-intensity volunteer physical activities gained weight much slower (Hankinson, et al. ., 2010). The relationship between physical activity, cardiovascular functioning, body weight and obesity is inversely proportional, as we increase in weight, the cardiovascular, endocrine, metabolic system will record inferior indices (Chan, Spangler, Valcour, & Tudor-Locke, 2003), (Yoshioka, et al., 2005). The fact that obesity can also be influenced by genetic factors is known, but research conducted on twins investigating the relationship between obesity and physical activity, genetic or other family factors, and concluded that those who performed regular physical activities had a lower BMI (Piirtola, et al., 2017), the percentage of fat was also lower and visceral and hepatic fat was inferior to the non-physical twin (Waller , Kaprio, & Kujala, 2005), (Leskinen, et al. 2005). Physical activity prevents excessive weight gain and abdominal circumference (Mozaffarian, Hao, Rimm, Willett, & Hu, 2011) (Ekelund, et al., 2011) (Leskinen, et al., 2005; Sternfeld, et al., 2004), (Schmitz, Leon, Schreiner, & Sternfeld, 2000). Physical activity developed over a long period of time generates an energy deficiency and consequently induces weight loss (Donnelly, et al., 2013), (Rosenkilde, Auerbach, Reichkender, Jakicic, Marcus, , Ploug, Stallknecht, & Sjodin, 2012).

Methods

The study was conducted with 6 subjects, mean age 23 ± 3 years, all male subjects, height 1.81 ± 0.08 m, weight 98 ± 6 kg, body mass index 29.98 ± 1 for a period of 4 months In a fitness room in Suceava, the daily program was 50 minutes. For the initial and final evaluation, the following tests were used: The Abdominal Muscular Strength Test (consists of making a trunk flexion on the thighs, finding the dorsal decubitus with kneeling knees and soles on the ground; the level at which the subject is able to reach is recorded, being eight levels of difficulty in this test; level 0 - the subject is not able to lift the trunk; level 1 - the elbows were taken to the knee; level 2 - shoulders were taken to the knee; level 3 - the chest was taken to the knee, crossed chest; level 4 - the palms were kneeling, crossed arms; level 5 - knee chest, palms at the neck; level 6 - knee chest, weighing 2.5 kg in the neck; level 7 - knee chest, weighing 5 kg in the neck), 30-second flotation test (The subject sitting in ventral decubitus places the palms on the ground at the shoulder width where it will execute as many floats as possible 30 seconds), Resistance test for abdominal muscles (The subject, in dorsal decubitus,

knee bent at 90 degrees, soles on the ground, will execute torso flexion on the thighs, recording the maximum number of repetitions in 30 seconds), Test of genuflexions (Standing away , with the legs on the ground at the shoulders, will execute as large a number of squats until the thighs of the performer reach parallel to the ground. The number of repetitions is recorded in 30 seconds) and the Ruffier test (The heart rate is measured at rest 15 s sitting, reading the value with P1, then counting the cardiac frequency all sitting, 0-15 s after exercise, the value marked with P2 The same operation is performed in seconds 45-60 postfort, obtaining the value P3 or the return pulse. multiply by 4 to have heart rate per minute, apply the formula: $[(P1 + P2 + P3) - 200] / 10$, and the interpretation is as follows: very good values: negative values; good values: values ranging from 0 to 5; mean values: values ranging from 5 to 10; weak values: values ranging from 10 to 15; very low values: values above 15). Physical Activity Program took place 5 times a week, alternating aerobic exercises under the under anaerobic work intensity is between 50-70% of FCMt (theoretical maximum heart rate) and 1RM (one repetition maximum), increasing progressively from the first month to the last. For the 1RM calculation we used the One Repetition Maximum (1RM) Calculator (Lesuer, McCormick, Mayhew, Wasserstein, & Arnold, 1997), and for the Ruffier sample we used the metronome.

Results and discussions

Table 1. Initial and final results

N.P.	AST		PUT		ART		S		BMI	
	I	F	I	F	I	F	I	F	I	F
P. O.	2	4	9	16	15	21	16	22	31	28
I.A.	2	4	15	22	18	24	23	27	27	26
S. D.	3	4	12	16	15	23	24	28	31	29
D. E.	3	5	15	22	15	24	24	28	28	25
R. A.	3	4	8	15	12	17	20	26	30	28
T. M.	2	4	11	16	17	21	26	30	30	27

Note. N. P. - Name surname; I - initially; F - final; AST - abdominal strength test; PUT – Push-ups test; ART - abdominal resistance test; S - squats; BMI - Body Mass Index;

For the first subject, body weight decreased by 7%, the body mass index decreased by 3 units, from the obese area to the overweight area; strength in upper limbs and chest improved by 77%; resistance to abdominal muscles increased by 40%; abdominal muscle strength has increased by 2 units in the specific test used; strength and resistance in lower limb muscles increased by 37%; functional capacity improved by 40%. For second subject, body weight decreased by 5%; the body mass index decreased by about 2 units, from the overweight area to the area near normal; upper and chest strength improved by 46%; resistance to abdominal muscles increased by 33%; the abdominal muscle force has increased by 2 units in the specific test used, going from the acceptable level to the good level; strength and resistance in lower limb muscles increased by 17%; functional capacity improved by 44%. For the third, body weight decreased by 8%; the body mass index decreased by 2 units, from the obese area to the overweight area; strength in upper limbs and chest improved by 33%; resistance to abdominal muscles increased by 53%; abdominal muscle strength has increased with a unit at the specific test used, going from the median to the good level; strength and resistance to lower limb muscles increased by 16%; functional capacity improved by 41%. For the fourth, body weight decreased by 9%; the body mass index decreased by approximately 2.5 units, from the overweight area to the near-normal area; upper and chest strength improved by 46%; resistance to abdominal muscles increased by 60%; the force in the abdominal muscles recorded an increase of 2 units in the specific test used, moving from the medium to the very good level; strength and resistance to lower limb muscles increased by 16%; functional capacity improved by 43%. For fifth subject, body weight decreased by 5%; the body mass index decreased by 2 units, from the obese area to the overweight area; strength in upper limbs and chest improved by 87.5%; resistance to abdominal muscles increased by 41%; abdominal muscle strength has increased a unit at the specific test used, going from the median to the good level; strength and resistance to lower limb muscles increased by 30%; functional capacity improved by 45%. For the last subject, body weight decreased by 6%; the body mass index decreased by 3 units, from the obese area to the overweight area; strength in the upper limbs and chest improved by 45%; resistance to abdominal muscles increased by 23%; the abdominal muscle force has increased by 2 units in the specific test used, going from the acceptable level to the

good level; strength and resistance to lower limb muscles increased by 15%; functional capacity improved by 33%.

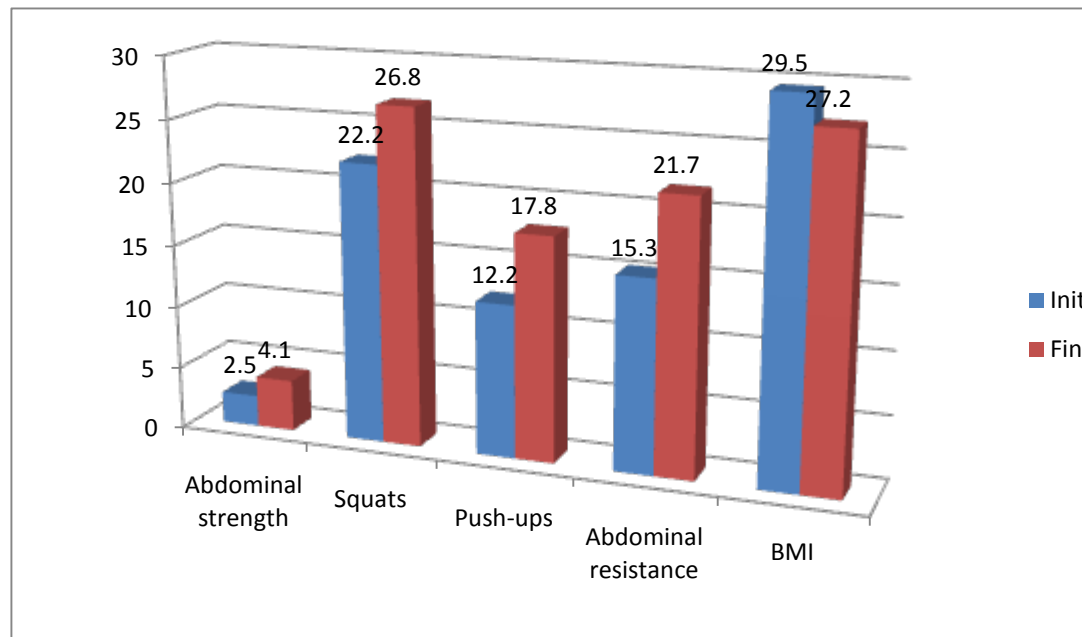


Chart 1. Initial and final results

Conclusions

Following this program, body weight decreased by at least 5% and a maximum of 9%, the body mass index (BMI) declining by up to 3 units / numbers. Muscle strength in upper limbs and chest increased by at least 33% and maximum 87.5%. Muscle resistance has improved between 23% and 60%, and muscle strength at the same level (abdominal) increased by at least one unit at the specific test. At lower limb muscles, muscle strength and resistance increased by at least 15%, reaching even 37%.

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ROLUL KINETOTERAPIEI ÎN PREVENIREA OBEZITĂȚII

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Cuvinte cheie: kinetoterapie, supraponderal, prevenție, obezitate

Rezumat

Din păcate, în secolul XXI-lea, tehnologia, societatea modernă și industrializarea proceselor de muncă nu au făcut altceva decât să scadă activitatea fizică a oamenilor cu consecințe nefaste asupra întregului organism. Drept consecință, dieta oamenilor a devenit haotică, necorespunzătoare, adoptarea prelungită a pozițiilor vicioase la birou favorizează creșterea țesutului adipos, apariția sindromului de deconționare sau a sindromului hipokinetic precum și apariția obezității, care spre surprinderea multora afectează și populația tânără nu doar pe cea adultă, iar pentru foarte multe persoane practicarea exercițiilor fizice ca activitate de timp liber a ajuns la coada listei de priorități.