CZU 37.015.3:796.015.572

ABDOMINAL STRENGTH DEVELOPMENT USING THE PILATES PROGRAMS

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Abstract. *Pilates is considered an ideal system, involving both the body and the mind. The Pilates method ensures the harmonious development of the body. The mind takes control of the body, involving the work of all the muscles in a balanced way, starting from the deep ones, which are rarely stimulated to the peripheral ones. Concentration to maintain certain positions and to work only certain muscles ensures the person that makes them stronger, will help burn more calories and tone the body. In addition, breathing is very important in Pilates because it helps to keep your attention. Pilates practitioners will notice some similarities in movements and yoga concepts.*
Keywords: *abdominal force, Pilates program, subjects testing.*

Introduction

Pilates is a method used for several years by many coaches and dancers. Recently this method has begun to be adapted to the general public as well. Moreover, some techniques are used in physical therapy and rehabilitation as it can help patients to return to the strength and balance they need, as this method focuses more on body-mind interaction and increases brain activity [1, 13].

The Pilates method is an exercise method proposed by German Joseph Pilates, more than 70 years ago. It includes about 500 exercises on the mattress or with special equipment based on elastic spring resistance. The basic purpose of this method is to improve muscle strength that stabilizes the posture of the body, especially the central area, which involves the abdomen and the pelvic belt and the muscles supporting the spine. In particular, the exercises help to strengthen and increase the elasticity of the muscle fibers, having an effect of musculature abutment and contouring [13].

The abdominal muscles are some of the most important ones, being practically those that, among other things, make the connection between upper and lower body. It is not by accident, in Oriental philosophy, the area where these muscles are located is the most important (hara to japanese, dan tian to chinese. As such, a well-assembled abdominal musculature may be a protective "fortification" for this bodily area. In this article, we will identify in which ways abdominal muscles can be improved by using Pilates exercises [2,5,6]. In spite of appearances, Pilates is a complex discipline that gives the practitioner many benefits such as: increasing lung capacity; improving blood circulation; increasing joint mobility and muscle elasticity.

Pilates have movements that offer both excellent physical tone and well-being at the psychic and emotional level [4,7,8].

Research hypothesis: we assume that by using Pilates programs, we can achieve better toning of the abdominal muscles.

The aim of the research is to establish the appropriate structures, requirements and methodology for Pilates sessions.

The objective of this work is to observe in a period of time that abdominal muscles develop and tone up, following the systematic exercise of Pilates exercises and including aerobic exercise.

Research tasks:

- Studying the theme in the literature;
- Initial testing of Pilates trainees;
- Applying the means in the training program;
- Final testing of the research batch.

Research methods used:

- Methods with high degree of generalization

(historical method);

- Private investigation methods (observation and experimental methods);

- Methods of analysis and interpretation (statistical method, mathematical method).

Tests and measurements made

In order to evaluate the amplitude of the movement under the conditions of the research, it was necessary to assess these qualities according to objective criteria by measurements expressed in number of repetitions, imbalances and centimetres.

Test for the strength of the abdominal muscles

The test consists of 15 lifting of the trunk executed in 3 series, the positions of the arms varying from one series to another. The starting position is lying with knee bends at 90 degrees, soles on the ground, legs fixed by a partner, or the first fixed-scale bar. The first 5 lifting of the trunk are executed with the arms extended so that they touch the knees at each execution. In the next 5 executions the arms are crossed to the chest. At each lifting, the performer must touch the knees with his elbows. For the next 5 liftings the performer holds his hands at the neck. At each execution the tendency is to reach the knees with the elbows. The 15 liftings will be made without stopping and quickly. The number of successful repetitions (0-15) will be entered. The force of the abdominal muscles was checked.

Processing and interpreting the results

Table 1. Test of the abdominal muscle strength

No. Crt.	Initials of name surname, (age)	Initial testing (reps)	Final testing (reps)	Difference
1	I.S.(35)	11	14	3
2	M.D.(33)	12	15	3
3	C.O.(39)	5	8	3
4	I.A.(28)	9	13	4
5	O.L.(29)	12	15	3
6	C.L.(30)	13	17	4
7	M.M.(41)	7	10	3
8	U.V.(27)	10	12	2
9	U.A.(27)	5	8	3
10	D.E.(52)	4	6	2
11	E.A.(32)	11	15	4
12	I.R.(24)	7	10	3
13	O.D.(28)	8	10	2
14	B.A.(40)	9	13	4
15	C.S.(30)	9	14	5
16	B.M.(60)	6	10	4

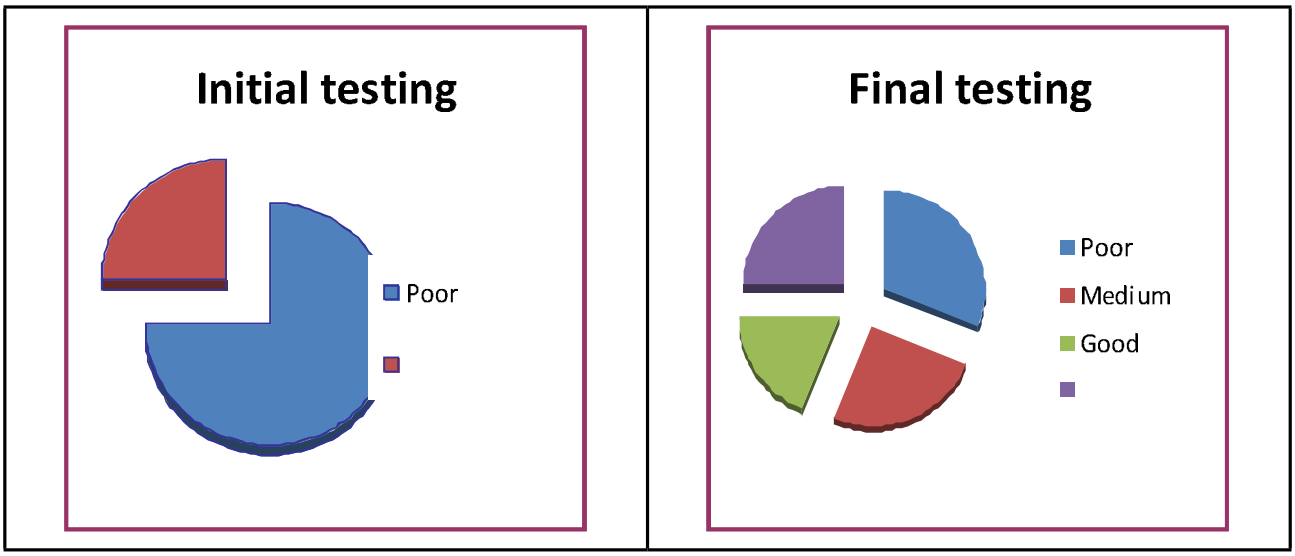

Fig. 1. Graphic representation of results interpretation to abdominal muscle strength test

In Figure 2 are graphically represented the initial and final average values to the mobility and elasticity test.

The collected data were statistically and mathematically interpreted, giving a synthesis of the main considered values.

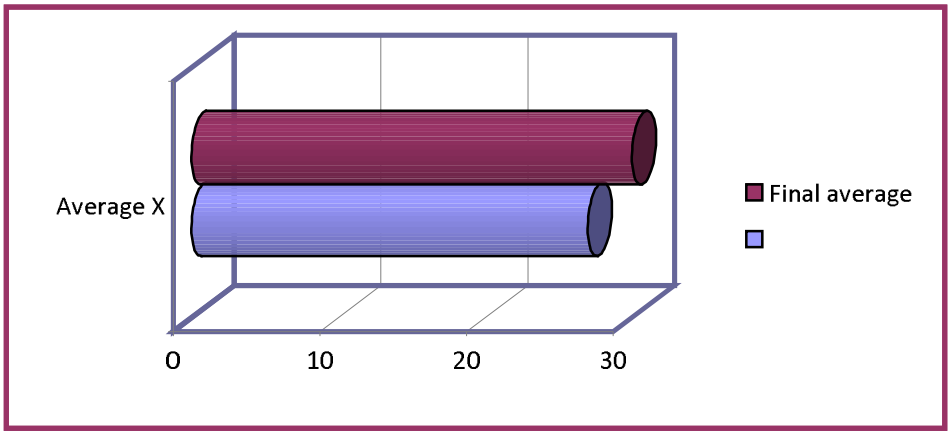

Fig. 2. Graphic representation of the initial and final average values to the mobility and elasticity test

By interpreting and analysing data, we can emphasize the following aspects:

In the experimental group, the arithmetic average at the initial testing is 8.625 reps, while at the final testing is 11.875 reps, the progress being 3.25 reps;

In the experimental group, values of 9 reps in the initial testing and 12.5 reps in the final testing were obtained, with a progress of 3.5 reps.

By comparing the results obtained by the two tests, it can be concluded that in the final test values are higher while observing an improvement, the experimental group having a better degree of homogeneity in final testing.

Concluding, we can say that due to the slow nature of music and movements, like all possibilities of practicing almost everywhere, the simplicity, the efficiency and the high degree of adaptability to particular situations, Pilates exercises are an interactive activity and also a great help for personal requirements [9, 10].

These exercises have multiple positive and beneficial effects manifested both physically and mentally [11, 12].

The following conclusions can be drawn from the application of Pilate's programs as an independent variable to the experimental group:

Applying the independent variable we could see that the waist did not change because the experimental ages had completed the growth process, but we cannot say the same thing about weight that made significant progress but which would have been influenced by diet.

There was a higher progression of the strength indices, on the level of scapular belt and upper limbs, abdominal force indices, and motor memory capacity against the same indices of experimental groups.

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