Contribution of aerobic step and Pilates exercises to life quality increase

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Abstract

Physical activity practiced on a constant, regular basis contributes directly to the improvement of the structure and functions of different organs and body systems. It can also counteract the appearance of some anatomic and functional deterioration and contribute to the correction of certain deficiencies caused by improper conditions of life/work in people's life. This study analyses two forms of physical exercise – Aerobic Step and Pilates. The goal of the study is to identify the effects of practicing Aerobic Step and Pilates exercises on the bodies of those who practice these forms of physical exercise. The hypothesis of the research is that practicing on constant/regular basis different types of aerobic exercises combined with efficient nutrition ensures optimum physical condition for everyday activities. The activity was carried out at the "Beauty Centre" aerobic hall from Timisoara, Romania. The study was carried out between February and May 2013 on a sample of 25 people subjected to anthropometric and functional measurements (size, weight, hip perimeter and body weight index, percentage of muscular tissue) both before (initial test – It) and after (final test – Ft) Aerobic Step and Pilates programmes. Results show the efficiency of these programmes as pointed out by the diminution of hip perimeter, by normal IMC, and by the increase of the active muscular tissues.

***Key words**: fitness, Aerobic Step, Pilates, health*

Rezumat

Activitatea fizică desfășurată consecvent și regulat contribuie nemijlocit la îmbunătăţirea structurii și funcţiilor diferitelor organe și sisteme ale organismului. Totodată, ea poate contracara apariția unor deteriorări anatomice și funcţionale sau poate contribui la corectarea anumitor deficiențe apărute ca rezultat al condițiilor improprii de viaţă și/sau muncă, a înaintării în vârstă. Studiul de față se rezumă la analiza a două forme de practicare a exercițiului fizic și anume step aerobic-ul și pilates-ul. Scopul studiului este acela de a identifica efectele practicării step aerobic-ului și a exercițiilor pilates supra organismului celor ce practică aceste forme ale exercițiului fizic. Ipoteza: se presupune că, practicând în mod regulat/constant tipurile de aerobic cumulat cu o alimentație eficientă se obține o condiție fizică optimă necesară activităților zilnice. Activitatea s-a desfăşurat la sala de aerobic numită ,,Beauty Center" din Timișoara. Studiul a fost efectuat în perioada februarie - mai 2013, pe un eşantion de 25 de persoane. Acestea au fost supuse unor măsurători antropometrice și funcționale (talie, greutate, perimetrul şoldului şi indicele de masă corporală, procentul de ţesut muscular) atât înainte de efectuarea programelor de Step și Pilates (testarea inițială – Ti.) cât și la final, în luna mai (testarea finală – Tf.). Rezultatele obținute au demonstrat eficacitatea programelor abordate, eficacitatea exprimându-se prin reducerea valorilor perimetrului șoldurilor, prin obținerea unui IMC normal și prin creșterea masei musculare active.

***Cuvinte cheie**: fitness, step aerobic, Pilates, sănătate*

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Introduction

Modern humans feel, more than ever, the need to practice a form of guided and organised physical activity that compensates the negative influences of modern civilisation such as sedentarism, overweight, and overfeeding.

Physical activity practiced on a constant, regular basis contributes directly to the improvement of structure and functions of different organs and systems of the body.

It can also counteract the appearance of anatomic and functional deterioration and contribute to the correction of certain deficiencies caused by improper life and work conditions during one's life.

The notion of health is no longer seen as a lack of suffering caused by various diseases. Health is a life-quality state in which each component of physical, psychic, and social nature should be proper.

Though the concept of fitness has not yet been defined unanimously, it admits as a main reference element the motor and psychic capacity of an individual, i.e. his/her capacity of facing physical and functional demands in everyday life (1, 2).

Adapting to these demands is successful if the individual allots, in his/her timetable, the proper time to sports physical exercises.

In this context, physical exercise can be considered a natural medicine accessible and pleasant available to anybody willing to use it as it should be (in terms of time, place, and duration).

Practicing physical exercise under different forms and aiming at safeguarding the standards of optimum physical condition does not require particular sports skills. It suffices to do what you want and what you like, but not no matter how. The offer of sports activities is huge. It allows all those wishing to practice a form of organised movement to choose, according to their personal preferences, individual physical capacities, and specialised medical recommendations (3, 4).

In this context, maintenance aerobic gymnastics is a type of activity with multiple positive valences and beneficial effects both physically and psychically.

Efficiency is combined with the pleasure of working in an environment with artistic connotations due to the presence of music and style of moving. If we wish to reach the goals of maintenance aerobic gymnastics, we need it to be conducted and organised by specialists based on a deontological code.

Maintenance aerobic gymnastics is part of the major sphere of extra-professional occupations of women and not only.

This study analyses two forms of physical exercise – Aerobic Step and Pilates.

Goal of the Study

The goal of the study is to identify the effects of practicing Aerobic Step and Pilates on the bodies of those who practice these forms of physical exercise.

Hypothesis

The hypothesis is that, by practicing on constant/regular basis aerobic exercises combined with efficient nutrition results in the optimum physical condition required by everyday activities.

Material and Method

Aerobic Step is a form of physical exercise that burns calories, fortifies the muscles of the legs and teaches elements of choreography – all this in a dense, gay environment.

A stepper is a platform 8-16 cm tall that can also be considered a cardio apparatus which, besides the heart muscle, also works the muscles of the legs (buttocks, hips, and legs).

The basic movement resembles climbing the stairs accompanied by music which dictates the tempo and rhythm of execution. Aerobic Step exercises suppose increased focus on body position and stepping.

It is a comforting activity with quick, controlled movements.

Aerobic Step is a physical training that helps maintaining the health of the cardio-vascular system. By practicing Aerobic Step, the body will benefit from an improvement of muscular resistance, an improvement of flexibility, an increase of the muscular tonus in the legs, buttocks, back, and arms, an increase of cardio-respiratory resistance, a development of muscular groups, and a quick diminution of the fat layer (5).

This type of training is recommended to all except those who have serious health issues (lung, heart, or joints).

Pilates is one of the most modern and efficient variants of body reshaping and post-traumatic recovery.

Documenting and analysing the literature in the field (6, 7, 8, 9), we have excerpted a few ideas on the specificity of this method.

The method was invented by Joseph Pilates over a century ago. Initially, it was a medical method; it is, nowadays, a form of fitness for both body and soul.
Pilates exercises have a great advantage: they can be practiced by anybody, no matter the age or level of physical training, and with minimum risk of injury.
This method aims at producing a muscular balance by fortifying weak muscular groups and by relaxing contracted muscular groups. It aims mainly at protecting the backbone and the joints.
The Pilates system initially consisted in free soil exercises; it now consists of exercises with different items and even weights. The exercises are executed in dorsal decubitus to avoid stressing the backbone and joints. In the methodological succession of the exercises, the final position is sitting. This system consists in totally controlling the body, respiration, and psychic. Exercises are executed slowly focusing on being aware of all movements and breathing.
Pilates principles combine physical exercises and good functionality of the circulatory system with strength and flexibility of the entire body aiming at reaching perfect harmony.
Unlike other exercises/methods, Pilates focuses not only on effort parameters but also on being aware of the activities of the entire body.
The accessibility of the system consists in the fact that it can be applied in both people who do not carry out continuous motor activities and people who wish to reach perfection in a certain field.
Literature mentions such benefits of this method as increase of muscular tonus, reduction of stress level, increase of joint mobility, improvement of circulation and body posture, energy and vitality for the entire body.

Goals of the Study

Among the goals of the study directly related to the education of the motor skills through Pilates and Step Aerobic are the study of references, the choice of experimental groups, the investigation of the level of development/education of motor skills, the development of motor content, and the presentation of study results.
In the carrying out of the study and in data interpretation, we have sued research methods from literature (10, 11).
The study was carried out between February and May 2013, on a sample of 25 people, at the "Beauty Centre" aerobic hall from Timisoara, Romania. Of the 25 people studied, 15 made an option for Aerobic Step and 10 made an option for Pilates.
The training frequency was as follows:

- Aerobic Step 2 times a week for 55 minutes;
- Pilates 2 times a week for 55 minutes.

We need to mention that the subjects did not attend training hours on a constant basis.
During the training hours, both forms of aerobic exercises were used. The exercising was organised, observed in the group using active breaks in the cardio part and passive breaks after the cardio part and mattress exercise part.
The 25 people subjected to anthropometric and functional measurements (size, weight, hip perimeter, and body weight index, and percentage of muscular tissue) both before (initial test – It) and after (final test – Ft) Aerobic Step and Pilates programmes.
The results of measurements in both Aerobic Step and Pilates pointed out the way the bodies responded to the motor activities.
We compared the activities starting with the age of the subjects in the two types of physical exercises.
We calculated the arithmetic mean of the ages of the 15 subjects in the **Aerobic Step** group (**28.6 years** with **S=±7.118**) and that of the 10 subjects in the **Pilates** group (**38.6 years** with **S=±3.658**). The difference between the means of the ages of the two groups is 10 years.
We also calculated the arithmetic means of the size of the 25 subjects: in the Aerobic Step group it was $\overline{X}$ **=163.8 cm** with **S=±5.387** and in the Pilates group it was $\overline{X}$ **=165.9 cm** with **S=± 5.343**.
The difference between the sizes of the subjects in the two groups is 2 cm in favour of the Pilates group.
For our study, the most relevant measurements are body weight, hip perimeter, body weight index and muscular tissue index.
As far as body weight is concerned in the Aerobic Step group, we can say that the arithmetic mean shows a decrease of the body weight from the initial test ($\overline{X}$ **=55.26 kg**) with **S=±2.553** to the final test ($\overline{X}$ **=53.66 kg**) with **S=±2.155**, i.e. a difference of **1.6 kg**.
The decrease in weight is due to the exercises, to the dynamic elements of the programmes with a training rate of 2 times per week for 55 minutes and 3 stages of the training session (warming up, cardio, and stretching). We need to mention that *a subject lost 3 kg* and *another subject gained 1 kg*.

The Aerobic Step group was homogeneous from the point of view of body weight: **Ch_{It}=4.6%** and **Ci_{vet}=4.08%**.

In the Pilates group, there was a decrease of the body weight from the initial test ($\overline{X}$ **=66.28 kg**) to the final test ($\vec{x}$**=63.38 kg**), with an average of **2.9 kg**.

The decrease in weight was due to the exercises in the programme with a training rate of 3 sessions a week for 55 minutes and 3 training stages (warming up, fundamental part, and stretching).

We need to note that *one subject lost 6 kg* and *two subjects remained constant*. The Pilates group was homogeneous from the point of view of body weight: **Cv_{It}=18.68%** and **Cv_{Ft}=16.50%**.

Figure 1 points out the differences between the two groups from the point of view of arithmetic means in the two tests It to Ft.

Of the 15 subjects in the **Aerobic Step** group, *only PA lost 4 cm*, while the other ones lost 1-5 cm. Of the 10 subjects in the **Pilates** group, *7 lost between 1-7 cm*, while DA and RC kept the same hip perimeter.

Figure *2* shows the progress of the subjects in the two groups from the perspective of hip perimeter. The progress is expressed as the difference between the arithmetic means in It and Ft. Thus, *in the Aerobic Step progress was 1.733 cm, and in the Pilates group it was 3.000 cm*.

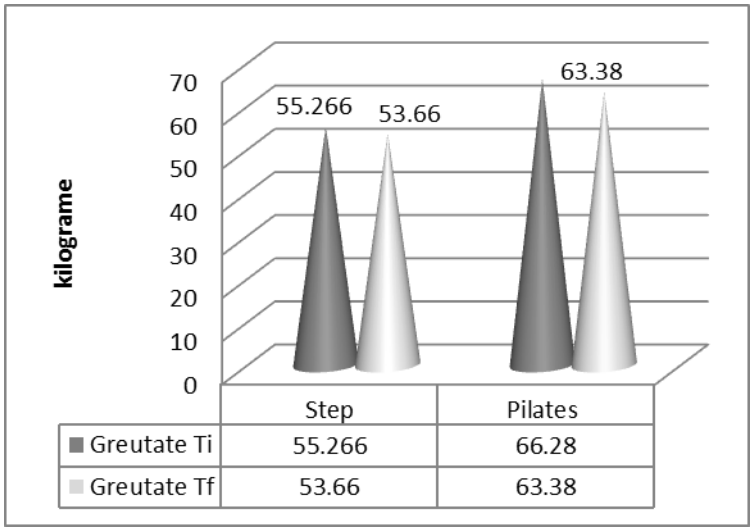

Figure 1. Comparison of the evolution of arithmetic means of subjects' weights in the two tested groups It to Ft
Legend: It = initial test; Ft = final test

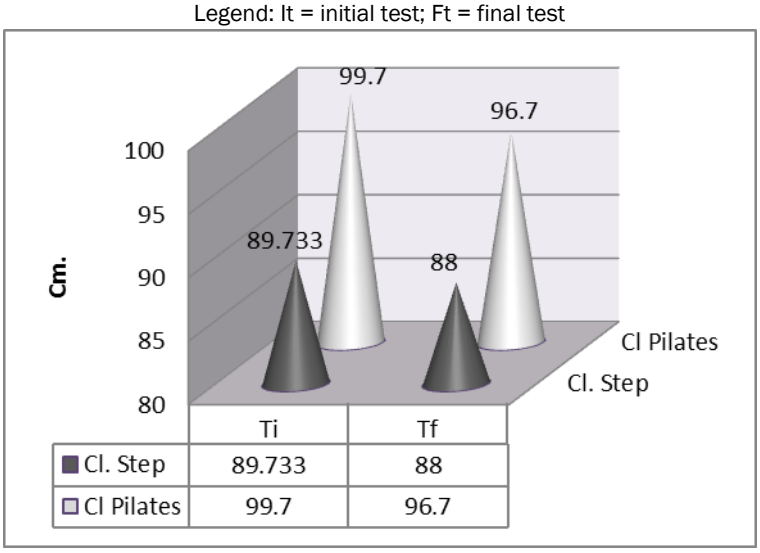

Figure 2. Comparison of the evolution of arithmetic means of subjects' hips in the two tested groups It to Ft
Legend: It = initial test; Ft = final test

Analysing the values of the body weight index in the Aerobic Step group, we can say that upon initial test 14 subjects ranged within the normal weight range and that only PA was below normal weight; upon final test, all 15 subjects ranged within the normal weight range.

In the Pilates group, the situation was rather different: upon It, subjects 1, 2, 7, 8, 9 and 10 were overweight, subjects 3 and 5 had a normal weight, and subjects 4 and 6 were below normal weight; upon Ft, subjects 1, 3, 5, 7, 8, 9 and 10 ranged within the normal weight range, subject 2 was overweight, and subjects 4 and 6 kept below normal weight.

The Aerobic Step group was a homogeneous group from the point of view of the body weight index and the Pilates group was relatively homogeneous.

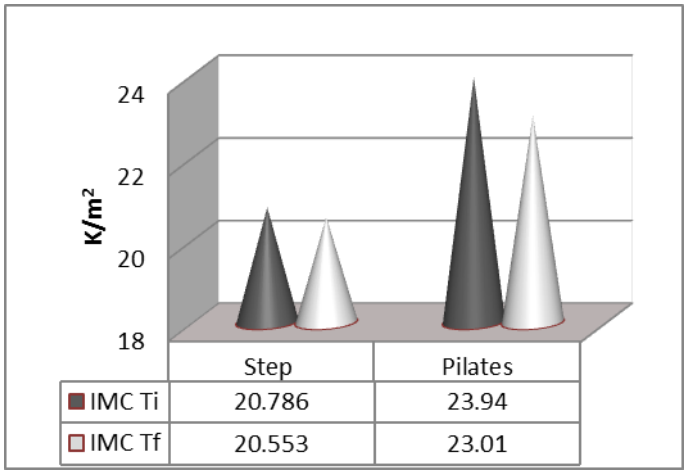

Figure 3. Comparison of the evolution of mean values of subjects index of body weight in the two tested groups It to Ft
Legend: It = initial test; Ft = final test; IMC = index of body weight

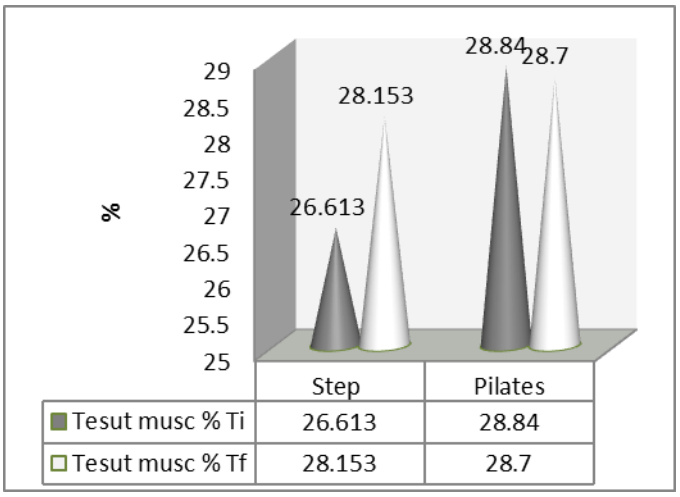

Figure 4. Comparison of the evolution of mean values of subjects % muscle tissue in the two tested groups It to Ft
Legend: It = initial test; Ft = final test

Analysing the values of the muscular tissue index in the Aerobic Step group, we can say that, upon initial test, 10 subjects had a normal body weight index (24.3-30.3%), 4 subjects had a low body weight index (<24.3%) and 1 subject had a high body weight index (30.4-35.3%); upon final test, nine subjects had a normal body weight index, 4 subjects had a high body weight index and 2 subjects had a low body weight index.

In the **Pilates** group, upon initial test, there were 7 subjects with a normal body weight index, 2 subjects had a high body weight index, 1 subject had a low body weight index; upon final test, 6 subjects had a normal body weight index, 3 subjects had a high

body weight index, and 1 subject had a low body weight index.

Conclusions

Results show the efficiency of the programmes: diminution of hip perimeter, normal body weight index, and increase of active muscular tissue. There are numerous articles on the role of physical exercise in the improvement of health state and, implicitly, on the increase of life quality. These articles refer to a programme for the management of obesity correlating physical exercise and healthy diet (12, 13). Our study presents a similar topic and the motor content of Aerobic Step and Pilates fits the age of the 25 subjects and contribute to the increase of the motor capacity of the people involved.

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