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DEVELOPMENT OF PHYSICAL SKILLS THROUGH STEP AEROBICS PROGRAMS

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Abstract: *The step program successfully carries out an aerobic training at medium-high intensity, creating the possibility to vary the intensity by increasing the step higher or by performing propulsion exercises. The advantage is outlined by the possibility to apply the training more easily, by structuring it in simple stages and uniform repetitions, reaching the finality of a perfectly equilibrated program, with a popular activity practiced by both women and men.*

Key words: *step training, step benefits, dynamic exercises, posture*

1. Introduction

Step training is one of the few cardiovascular activities with high muscle benefits. This occurs due to the cyclic and continuous action involved by climbing on and descending off the step, with the need for a continuous activity of themain muscle groups of the lower limbs.

2. Step program

Step lessons provide a series of dynamic exercises by going up and down the step at a constant pace, defined by music.

The physical activity carried out using the step helps us improve and render more efficient the cardiovascular apparatus and at the same time, it influences the tone-trophic condition of the lower limbs with a high intensity work-out [4,5, 6]. The recent studies carried out in San Diego demonstrated that, during step execution, the biomechanical stress exerted upon the feet is similar to the one caused by a march performed at a 5 km/h speed, while the benefits obtained from the aerobic training are proportional to a run carried out at 11km/h [3], [10], [11].

Step program can address separate levels of training for participating in the training group, as follows:

2.1. Step Beginners: is a group introductory aerobic activity that requires use of the platform, which is studied in order to present all beginners basic steps and correct technical execution.

In this phase must demonstrate basic steps slowly, without music, for a maximum of 10 minutes and then with music. We will need to use alternate steps naturally.

We should not focus on this stage more than 2 weeks.

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2.2. Step medium: is the program through which teaches more complex combinations, associated with different stylistic variations and fun.

In this second phase we can add directional changes.

2.3. Step forward: it directed the execution of choreographic techniques with a high stylistic content and coordinator.

So, steppe may be characterized as mild exercises running in memory and teaching progressions very complicated.

To obtain best results, exercise should be done at a medium-high intensity (intensity being parameter in any type of workout).

Many people think they can benefit just by their mere presence regardless of the execution technique, rhythm or load, thus losing training effectiveness.

The instructor should convey a sense of personalized training students, but that has all the benefits of a workout group (motivation, competition, music).

A lesson step generally has a duration of 60 minutes and is divided into three parts:

1. Warm-up, has over approximately 8/10 minutes and exercises streaching which consists of the static and dynamic joint exercises aimed at general and specific training body for the execution of exercises that subsequently will be conducted within lesson.

   The Warm-up class is facing its course trying to make eye contact with each person individually. No exceptions should be made.
2. Specific part: Has for about 40/45 minutes and is the main part of the lesson.

   In this phase of the lesson we will use choreography to build a methodology to adapt better group of participants present at the time.
3. Cool down and Streaching Does for about 5/10 minutes and the goal is to return the body to the basal condition (cooling organic relaxation decontractarea metabolic and muscle to prevent a sharp drop in arterial blood pressure).

To sum up, the characteristics of the Step workout are:

- the achievement of a medium to high intensity aerobics training;
- the opportunity to adjust the level of intensity by inserting risers under the step to add extra height or by performing propulsion exercises;
- the easy application of the workout by using simple steps and even-rhythm repeats;
- carrying out a perfectly balanced training program;
- a popular activity which is equally practiced by women and men.

The fundamental rules which are meant to avoid the occurence of physical injuries of the participants during the step workout and which are genuine application parameters that lead to the maximization of benefits and to the reduction of potential risks to a minimum, are the following:

3. Correct Posture

The responsibility of the trainer is to adjust body posture and to emphasize the importance of posture especially during highly difficult workout sequences.

- The shoulders have to be relaxed;
- The chest has to be lined up with the whole body;
- Knee hyperextension when stepping up on the platform must be avoided by resorting to a natural flexion of the lower limbs;

- The entire surface of the sole must be securely placed on the platform while performing the movements;
- During step-down, participants have to remain close to the platform;
- At all times participants must face the platform;
- When performing repeaters, it is only the dorsum of the foot and not the entire sole or the heel which must be placed on the floor;
- Rotation movements on the leading leg must be avoided when the leg is positioned on the bench; a propulsion phase must be added if the final part of the movement involves a turn;
- One must never stump on the step platform;
- There should not be an excessive number of repeats on the same leg.

The height of the platform

There are three factors that have to be taken into account when assessing the appropriate height of the bench:

1. The height of the participant;
2. Age;
3. Level of technical training.

We must keep in mind that in the step-up phase, the resulting angle between the calf and the thigh must not be smaller than 90° because it would otherwise lead to an excessive pressure on the knee joints, which would implicitly result in an overstrain of the lumbar region.

- Platform without risers – for beginner level;
- One 15cm riser – for intermediate level;
- Two risers amounting to 20cm – for an optimal level of training;
- Three risers totaling up to 25cm – for highly-trained or very tall participants.

Step benefits involve the following:

1. Cardiovascular system **–** during the cardiovascular phase the movements must be continuous, without repeated interruptions and without significant intensity level fluctuations. The purpose of this phase is to increase the cardiovascular system's efficiency - while the heart muscle gets toned and more efficient, a major blood flow is sent towards the body with a minor number of contractions, thus facilitating the transport of oxygen to all the tissues with minimum effort. A trained cardiovascular system offers the possibility for a major effort and shorter recovery times [1, 2, 3], [9].

2. Muscle system - four work phases:

- lifting phase.
- platform contact phase.
- platform detachment phase.
- return to the ground phase.

Step training is one of the few cardiovascular activities with high muscle benefits owed to the cyclic and continuous action involved by climbing on and descending off the step, with the need for a continuous activity of the main muscle groups of the lower limbs [7, 8], [11].

3. The energy consumption and the intensity must be moderate and the participants' heart rate should be comprised within 65 - 85 % of the maximum cardiac frequency (MHR = 220 **–** age).

The purpose of the proposed pedagogical experiment consists in the exercise's intensity control with the help of step class participants' heartbeats.

The participant may feel his/her carotid with two fingers or to press with the right thumb below the left thumb or even on his/her hand wrist counting the pulsations for 10 seconds then multiplying the obtained number by six.

Target heart rate zone Table 1

Target area		
Age	**Beginners**	**Experts**
16-20	120-140 bpm	140-160 bpm
21-25	117-137 bpm	137-156 bpm
26-30	114-133 bpm	133-152 bpm
31-35	111-113 bpm	130-148 bpm
36-40	108-126 bpm	126-144 bpm
41-45	105-123 bpm	123-140 bpm
46-50	102-119 bpm	119-136 bpm
51-55	99-116 bpm	116-132 bpm

What follows is the confrontation with the heartbeat diagram in order to see whether the training is made within the frequency limit suited for his/her age.

The research sample consisted of 16 persons, females, of an age comprised between 20 to 55 years old. The participants wanted to practice the step program so as to maintain their health, to correct their posture and to improve their physical qualities

The experiment unfolded within the We Play Recreational Centre, the sports program being held 2 times a week in 60-minute sessions. Diversified training programs were applied to these sessions with common purposes aimed at improving the cardiovascular system and rendering it more efficient.

A simple test was proposed, carried out periodically by the entire class in order to assess the situation's improvement at the level of the cardiovascular system: without warmup, the participants get on and off a 25 cm platform at a pace of 96 bmp for three minutes.

After the three minutes, the participants must count their beats for 60 seconds, thus determining their training level, according to the following indicators:

100 <100beats – good training
101–124 beats – moderate training
125 > 125 beats – weak training

This is not a very precise system (it disregards the age factor), nevertheless, through its simplicity, it offers us the possibility to understand collective cardiovascular efficiency during an ordinary class.

During the training programs and based on the protocols completed by the participants, their evolution showed a considerable progress of the training, as follows:

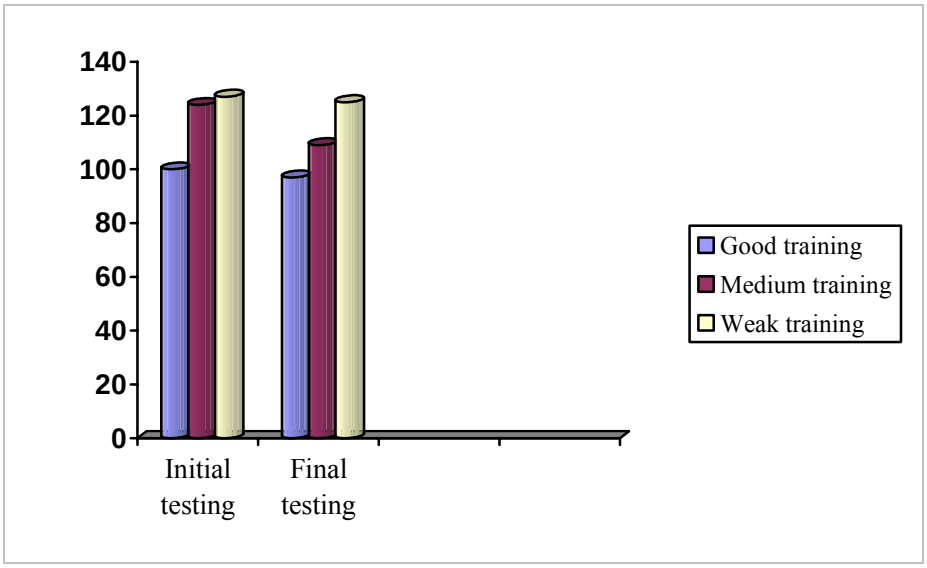

Chart 1. *Training evolution based on step-aerobic program*

The training was based on the trainer's technique who, through active participation, applied the key points for the development of the program.

The applied step program eventually led us to draw the following **conclusions:**

1. The systematic and assisted practicing of the proposed actuation systems led to the improvement of the subjects' health condition.

2. The correct application of step programmes led to the improvement of the cardiovascular apparatus and, at the same time, it positively influenced the tone-trophic condition of the lower limbs.

3. By correctly executing the action systems and following the directions of the coach-trainer led to the improvement of muscle strength.

Following the above-mentioned conclusions, the following **proposals** are imposed:

1. To recommend the step program to be applied into practice within all centres for the improvement and maintenance of the health condition.
2. To recommend the step programs within any sports centres, in order to develop the aerobic capacity in athletes.
3. To recommend the step program to be carried out by training levels.

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