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FITBALL - THE MULTIFUNCTIONAL TRAINING PROGRAM FOR POSTURAL ALIGNMENT

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Abstract: *The "Fitball" equipment is used for resistance training, strengthening core muscles, cardiovascular workout, joint mobility drills as well as for stretching and relaxing the entire body. A major benefit consists in the possibility of devising classes that target objectives which entail: restoring physical fitness, static and isometric stretching, high-level muscle strengthening and definition, toning, balance improvement, explosiveness, pre-operative and post-operative recovery, increasing spinal flexibility, agility and training through freestyle exercises for various types of sports.*

Key words: *fitball, dynamic action, training.*

1. Introduction

The *Fitball* is basically an air-filled PVC ball with a variable diameter ranging between 45 to 75 centimetres, which dynamically exploits the most frequently used postural position in our daily routine, namely the sitting position. In actual fact, the pressure generated by the individual's body weight is restored through the ball as energy, the latter being used to set all the body muscle groups in motion, almost in the absence of gravity. This feature is very useful because the joints can be "softened" in the absence of weight generated overstraining and their mobility can be recovered or enhanced without any risk of lesions or microtrauma.

2.The Fitball Program

The training program relies on a PVC ball filled with air, of variable sizes ranging between 45 to 75 centimetres in diameter, on which we can sit, stretch, roll and essentially involve all the parts of the body and become one with it [4,5,6]. What makes this equipment easy to use is precisely the fact that, by sitting on the *Fitball*, the weight of the person is not only "discharged" like in the absence of gravity, but it is also dynamically returned by the ball as energy; the latter is then used to put all our body muscle groups in motion extremely easily [3], [11], [13]. The surface of the equipment is mechanically altered when in contact with every part of the body and, on account of the pressure exerted by our bodyweight, the dynamic action of the ball subjects the neuro-muscular receptors to constant stimulation while attempting to regain balance and thus they continuously keep our muscles contracted.

This results in a muscle contraction training which is bound to generate the

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famous and longed for "muscle tone" that keeps us healthy and in good shape.

The *Fitball* equipment is used for resistance training, strengthening core muscles, cardiovascular workout, joint mobility drills as well as for stretching and relaxing the entire body; with children it is used as a structured form of play, with people leading a sedentary life who are affected by stress, joint stiffness and overweight or with seniors it is used for the prevention of illness and especially for the improvement of balance, rolls and pre-acrobatic elements which are practiced in numerous sports (artistic and rhythmic gymnastics, dancing, skiing, rowing and canoeing, surfing, free climbing, figure skating, etc.).

To sum up, the characteristics of Fitball are:

- performing a moderate to high intensity aerobic exercise.
- the possibility of toning the spinal muscles.
- the provision of training sessions for joint mobility.
- the provision of training sessions for general and specific flexibility.
- the provision of training sessions for postural stability and balance.
- the provision of training sessions for integrative coordination.
- the provision of training sessions for muscular balance.
- the possibility to adopt a training program that is focused on passive, active or isometric stretching.
- the opportunity to adjust the level of intensity by performing exercises for specific parts of the body.
- a popular activity which is equally practiced by women and men [1,2,3], [10].

3.The Typology of Exercises

3.1. Fundamental Exercises

The fundamental exercises consist of a series of effective and oriented movements which were selected for the purpose of developing functional gymnastics abilities. In their performance, the key principles of core muscle stability are emphasized.

Muscles of the Posterior Trunk

A correct elongation as well as a moderate conditioning of the posterior trunk muscles is of fundamental importance. This occurs when these muscles are indirectly engaged in other trunk stability exercises. The toning and elongation of the muscles of the lumbar region is important because they maintain the neutral alignment of the pelvis. Moreover, some muscles of the lumbar region do not directly ensure core stabilisation but contribute to all the movements involved in lifting objects and upper body bending [7,8,9], [11].

Close attention must be paid to the following guiding lines:

1. When performing exercises that involve the muscles of the lumbar region, a correct posture and alignment must be maintained.
2. A neutral pelvic tilt should be maintained and the trunk must always be in a vertical position when performing any type of exercise.
3. When bending the upper trunk forward, the flexion must start from the pelvis, there is no need for spinal flexion which may cause a hyperkyphotic curvature on account of the fact that it strains the muscles of the lumbar region pressing against the spinal ligaments.
4. Do not hyperextend the spine into unsupported positions, namely when the trunk is not in neutral position.

The responsibility of the trainer is to adjust body posture and to be familiar with the essential issues for the development of the program.

- to be aware of the principles of physiology and kinesiology.

- to adopt a customized approach to the training session.
- to possess general fundamental knowledge of plantar reflexology.
- to offer appropriate suggestions in order to prevent accidents.
- supervise the proper execution of exercises, body alignment and control.

Verbal cues:
Verbal cues are used to anticipate information by communicating with participants in order to:

- change the working plan
- pass to another muscle group
- motivate during "Stretching"
- oversee the proper execution of exercises

Visual cues:

- the proper execution of all the recommended exercises
- the demonstration should be made either facing the participants or the mirror.
- always use the "show the properly executed and wrongly executed exercise" technique
- use facial expressions

Communication with the participants:
There should be a technical orientation before and after class.

- an introduction and presentation of the activity should be made
- participants should be informed about the main goal of the class.
- participants ought to be informed about the main personal goal.
- all participants must be encouraged and praised.
- safety measures should be enhanced.
- there should be a dialogue regarding the type of exercises included in the program in such a way as to obtain a more accurate feedback.

Among the benefits of Fitball the following can be mentioned [14]:

1. Fitball has no contraindications – this method is fully recommended not only for the post-operative recovery of certain patients but also for the recuperation of patients suffering from spinal cord (back), knee joint, hip joint and ankle joint conditions.
2. Fitball is a method which controls various back problems such as young-onset scoliosis.
3. The Fitball program stimulates all age categories to exercise, and as a matter of fact, the ball leads to the adoption of correct and healthy physical habits by everyone.
4. Fitball is genuinely able to alleviate pain but also to train the targeted muscle group by strengthening it and thus preventing future pain and muscle contractures.
5. Fitball is a miraculous instrument by means of which herniated disk recovery is definitely possible and lost joint mobility of the affected areas can be regained.
6. The exercise ball returns the pressure that derives from the body weight in the form of energy, thus allowing the skeleton and muscles to work when there is hardly any gravity.
7. The joints can be discharged of the body weight thus diminishing the risk of injury, of unsuitable impact load or alleviating the typical back pain.

3.2. The Aim of the Present Pedagogical Experiment

It is the correct, systematized and customized application of the Fitball program in such a way as to obtain positive effects in alleviating back pain, which

would enable the accomplishment of the research objectives.

The group subjected to investigation consisted of two female subjects aged between 32 and 44. The participants wanted to pursue the Fitball program for the purpose of health preservation, increasing joint mobility and improving physical fitness.

The research period of the subjects M.A. (32) and G.E. (44) extended over a period of 4 months, between 10 January 2016 and 10 June 2016.

Table 1

The evolution of pain intensity

Subjects	Pain intensity level Initial testing	Pain intensity level Final testing
M.A.	4	1
G.E.	3	0

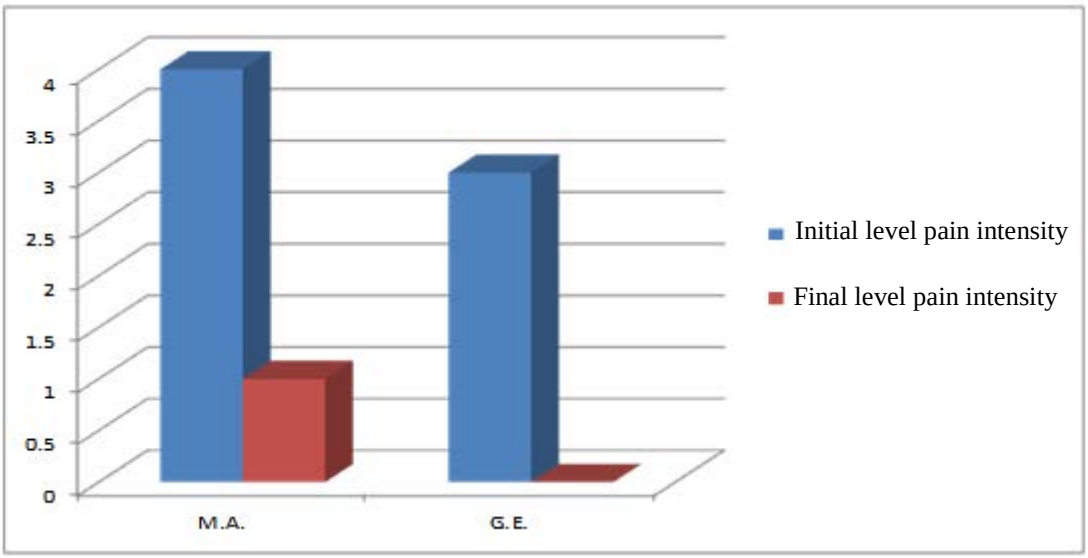

Fig. 1. *The Pain Intensity Chart*

Table 2

Spine mobility. Fingertip-to-Floor Index

Spine Mobility		
	Initial Testing	Final testing
M.A.	3	0
G.E.	2	0

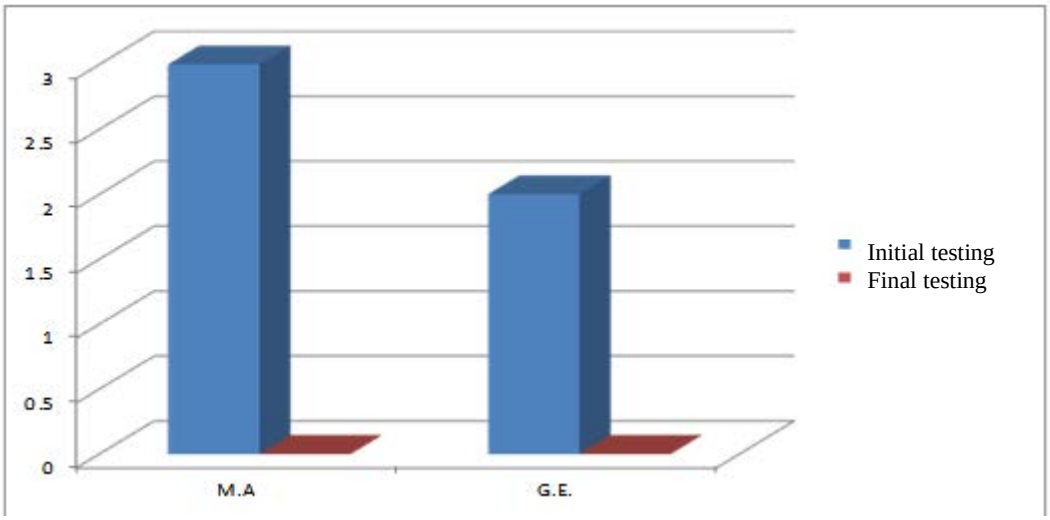

Fig. 2. *The Muscle Grading Chart*

The training was based on the approach of the instructor who, through active involvement, applied the key points for the development of the program.

The implemented Fitball program ultimately led to the following conclusions:

1. The systematic and supervised practice of the recommended training systems led to the improvement of the subjects' health status.
2. The correct application of the Fitball program resulted in a considerably increased joint mobility in both subjects.
3. The correct performance of the training systems by following the trainer's instructions led to a considerable alleviation of pain, the latter even disappeared altogether during the period of rest; during the specific training sessions and afterwards pain became mild, bearable, thus allowing the subjects to execute the movements correctly.
4. Due to the positive effects of the Fitball program on the alleviation of pain, the subjects significantly improved their joint mobility and muscle grading therefore their amplitude of movement was significantly restored.

The conclusions presented above entail the following **suggestions**:

1. The recommendation that the Fitball program should be applied effectively in all the centres for health improvement and preservation.

2. The recommendation of Fitball programs in every sports centre for the development of the aerobic capacity of athletes.

3. The recommendation that the application of the Fitball program should be adapted to different training levels.

The conclusions presented above entail the following **suggestions**:

1. The recommendation that the Fitball program should be applied effectively in all the centres for health improvement and preservation.
2. The recommendation of Fitball programs before and after every specific training session in order to prevent any regression of the accomplished results.
3. The recommendation to continue the routine established throughout the 4 months of training.

4. Adding more complex exercises with new equipment that would allow the skeleton and muscles to work when gravity is nearly absent.

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