

COMPARATIVE STUDY OF THE BENEFITS OF BALL FUNCTION TRAINING PROGRAMS AND THE TRAINING OF STRENGTH IN THE RED TRAINING CONCEPT (Resistance, Endurance and Definition)

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Abstract: *RED (Resistance, endurance and definition) type resistance training is a training option based on the concept of special education of muscle strength, and also of other motor skills through complementary methodologies that are modern, efficient and fun. The way the operating systems that make this alternative education program are structured, we improve the functional capacity and the effort capacity, the muscle definition involved in movement and, not least, the weight loss.*

The 'Fitball' device is used in resistance training, for support muscle strengthening, for cardio-vascular training, joint mobility and stretching and relaxing the entire body, is used with children as a game, with sedentary persons affected by stress, stiffness and overweight, with the elderly to prevent illness and especially in balance training, positions and pre-roll acrobatics that are pursued in many sports (artistic gymnastics, rhythmic, dance, skiing, canoeing and kayaking, surfing, free climbing, figure skating, etc..).

This paper presents a detailed comparison of the advantages and disadvantages of one program over the other, the specific characteristics of RED Training & Fitball through the training lessons structure, the means employed, the objectives to follow and the other practical aspects that make these physical training programs distinct.

Key words: *strength, pace, training, attention, success, efficiency, innovation, flexibility, balance, toning.*

1. Introduction

From the United States in 1996 comes fitball, a PVC ball filled with air, which

proved to be a real help to improve the posture that is wrong usually.

The postural position mostly used by man has always been the seated

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posture. Man sits most of the day, in the office, plane, train, car, while eating, watching TV, in front of the computer. Man has evolved physically passing through the vertical position. He strengthened the joints and back by learning to use such a position. Thanks to a modern life that facilitates convenience and especially the activities performed in sitting position, we witnessed a weakening of the areas involved in this position therefore the manifestation of pain. Areas are exposed and involved more than just the back, shoulders and neck and all joints that, being no longer adequately required, they undergo the rapid weight loss physiological process.

Late twentieth century marks the introduction of fitball in the training programs, having an important role not only in recovery but in the general welfare, based on correct posture, toning muscles, preventing common disorders, body shaping and improving the balance being beneficial effects on the body, bettering the response to stimuli, in situations that determine changes in the center of gravity, helping to prevent inflammation, reshaping the burn fat figure, helping to achieve a good tone in the abdomen and inducing a good mood.

Fitball is indeed able to heal the pain, but also to train the muscles involved, a further strengthening avoiding future pain and contractures. If in addition the device used is fun for all ages, who may want more? People who study chinese recognize for twenty years in this area its extreme usefulness, a miraculous tool, according to some. With this, indeed, herniated discs are recovered, restoring lost joint mobility of the involved areas.

2. The program

Fitball is a training program conducted with the help and a huge PVC ball, inflated

with air, on which subjects sit, lie, contract, relax canceling and body weight that is often an obstacle to business.

With time this optimal physiotherapy care discipline has transformed in a very entertaining and original aerobics / acrobatics. Today the huge ball is also used for original choreographies of the aerobics lessons, matched for everybody.

With this huge ball anything can be done and specific lessons for any purpose can be designed: recovery of the physical form, static and isometric stretching, muscle strengthening and muscle high definition shaping, toning, balance development, explosion, pre Recovery and post operative spine flexibility raise, agility and training though free exercises for various types of sports, from figure skating, snowboarding, skiing to mountain biking, free climbing the martial arts.

3. Device

"Fitball - is, in practice, an air-filled PVC ball with a diameter varying from 45 to 75 cm, using a dynamic postural position most used in everyday activities: sitting position. The ball, in fact, gives the individual back the pressure arising from the body weight as energy this is used to move all the muscles of the body, almost in the absence of gravity. This is very useful because the joints can be "softened" without overloading their mobility due to weight and their mobility can be recovered or increased without risk of injury or micro-traumatism. (Motta S. 2009).

"The elasticity that Fitball gives to the whole body - continues the expert- is a cure even for those who, forced to spend long hours seated at work or in the car, accuse inflammation, tensions and painful contractions of the spine, such as acute lumbar disease, inflammation of the sciatic nerve, or simply, common back pain." (Motta S. 2009)

4. Practice

"In addition, the dynamic action of the ball, which at any movement "wraps" all body parts in contact with it, forces the body's proprioceptive receptors to be activated to cause muscle contractions needed to compensate for unexpected changes in body position in space and always keep in equilibrium. This Fitball property is also valuable as training for many sports (eg, artistic gymnastics, skiing, skating, rowing, dancing, and all other sports that require flight phase), which require a good capacity for rapid response to changes in the center of gravity. (Motta S. 2009)

5. FitBall Benefits

- The PVC ball, in fact, gives back the pressure, deriving from its own body, as energy, allowing the skeleton and musculature to work almost in the absence of gravity.
- Joint in this way can move freely from the body weight, lowering the risk of injury, false claims or simply reducing the back pain.
- Gives back the elasticity and mobility of "rusty" joints (arthritis and muscle hypotonia) and burns extra fat by moving on the ball.

6. Who is it for and how to use

- 30% of people suffer from back pain: officials, managers, secretaries, cashiers, truckers, obese belong to the category of people that are located more than 6-8 hours a day, motionless on a rigid chair, these individuals are prey to tensions in the lumbar area of the spine and to subsequent inflammation among which one of the famous is "witch attack" (acute lumbar disease) or the awesome "sciatica".

The "Fitball" program is designed precisely to prevent and solve these problems, restores elasticity and mobility of "rusty" joints (arthritis and muscle hypotonia) and burns extra fat by moving on the ball.

The "Fitball" presents itself not only as a fitness device, but as a new moving concept. (Motta S. 2009)

The training is structured on a PVC ball filled with air, in varying sizes from 45 to 75 centimeters in diameter, on which we can sit down, reach out, roll, in short take contact with all body parts and make it become part of ours.

Depending on the height of the subject, the corresponding ball will be chosen as far as diameter goes:

Height	Ball diameter
<165 cm	45 cm
65 -175 cm	55 cm
175-185 cm	65 cm
>185 cm	75 cm

The ease of use of this device makes it so that by sitting on 'Fitball', individual weight not only is "discharged" as in the absence of gravity, but returned dynamic by the ball as energy; this will be used to move all of our body muscle mass with extreme ease. The surface of the unit being shaped to contact each side of the body with the dynamic action of the ball due to pressure of our body weight, causes neuro-muscular receptors to be constantly stimulated in order to find balance of the body and therefore bring our muscles to continuous contraction. This causes a muscle contraction training capable of producing the famous and well searched "muscle tone" that allows us to be healthy and fit.

The 'Fitball' device is used in resistance training for muscle strengthening support, for cardio-vascular training, for joint

mobility and stretching and relaxing the entire body, is used with children as a game, with sedentary persons affected by stress, stiffness and overweight, with the elderly to prevent illness and especially in balance training, positions and pre-roll acrobatics that are pursued in many sports (artistic gymnastics, rhythmic, dance, skiing, canoeing and kayaking, surfing, free climbing, figure skating, etc.).

Advantages of using ball training function:

- Possible involvement of all muscle groups (the arms, legs, back, abdomen);
- Toning muscles and maintaining muscle tone;
- Muscle relaxation;
- Improve balance and coordination;
- Optimal for burning fat (sitting on the ball, the anti-gravitational activity of muscle groups is lower than for the position without support, so it is easier to maintain optimal heart rate to burn body fat).
- Final solution in the treatment of cellulite (curving the ball at a rate of 120 arch / minute acts as a special massage for cellulite so that at the end of warm-up it activates the deposition of fat cells on thighs and buttocks).
- Correct wrong postural positions;
- Allows the skeleton and muscles to work almost without gravity;
- Joints can move free of body weight, reducing the risk of injury, false claims or simply reducing back pain;
- Effective in preventing osteoporosis;
- A faster way to reshape the body;
- Protects the ankle and knee joints (the ball arch absorbs the effect of training with a third on the joints compared with the aerobic exercises with no support at a similar muscle intensity

To conclude, 'Fitball' approach is a new form of motor activity at 360 ° in an easy and pleasant way, especially the "right" way to reach our physical wellbeing.

In literature, the strength is limited conceptually in many definitions, all expressing the same general characteristics. Thus, this motor quality is "the psycho - physical capacity of the body to to achieve an effort of a certain intensity, prolonged, with overcoming the fatigue specific to the work performed" (Dragnea, Bota, 1999), "the time required by an individual to execute a thing of a certain intensity "(Bomp, 2002), or the "body's ability to perform work for a long time without obvious decrease of efficiency (Prescorniță, 2006). In a synthesis study, Oancea (2007) points out several key elements that characterize the resistance: *time* (indefinite when it can be determined according to the effectiveness of the work carried out and well determined when pm a certain duration a certain task to be executed), *effectiveness* (as constant as possible of motor activity throughout its duration) and *speed recovery after exercising the body*.

Enoiu (2008) considers that depending on requests, resistance can be: "general and specific (by type of effort), aerobic and anaerobic (by energy substrate), or resistance of long, medium and short term (by length of effort).

Dragnea and Bota (1999), emphasize that "the development of resistance is reflected in a high cardiovascular, respiratory, metabolic, nervous and coordinative functional capacity", for which all the authors argue that "among all forms of motor application, strength, also called endurance is part of the known qualities (capacities) that are conditional or organic because it is based on the energetic processes as basis for movement. Maximum absorption of O₂ (VO₂max) is the main criterion for assessing the endurance capacity."

R.E.D. Training is a program of physical training in Muscle Conditioning which has the basic principle of quality driven

education, training taking place in fitness and aerobics rooms.

This type of program is especially designed to develop muscle strength (anaerobic and aerobic) and strength, flexibility (joint mobility), the coordination capacity (orientation, rhythm, balance), kinaesthetic control.

The overall objective is to address new training programs and diversification of traditional methodologies thus creating additional versions of theoretical, practical and innovative training resulted in a safe, fun dynamic and localized muscular resistance.

Operating systems within R.E.D. Training result in improvement of functional capacity and exercise capacity, muscle definition not involved in the movement and ultimately weight loss. Given the above, we consider that this type of program can be a real alternative to motric expression in our country especially for young people (students), objectified in a "different kind of lesson" of physical education or training designed to attract them to the joy of physical exercise in a new and safe manner. In Romania, R.E.D. Training is still not included in school programs and school or university sports activities, is a method used with success in the fitness rooms in Italy. According Fiteducation Courses, R.E.D. Training offers:

- Providing an alternative methodology that allows periodization of work-out muscle training;
- Promotion of motivating action sessions, created by an innovative system of lessons;
- Improve the technique (execution and position of each pupil);
- Eliminate the traditional boring lessons presented in toning.

A very important aspect of this program is the awareness of instructors and performers of a series of exercises that are contraindicated (in terms of their execution, execution of basic positions and

exercise movements) due to the negative effects they have on the human body. In this sense, posture and body alignment in the execution of the exercises (especially the exercises with weights) is very important so it is recommended that these exercises should be done preferably in an upright position and attention is always focused on proper basin posture, because it produces a amelioration of lumbar area. Using improper posture may cause negative effects on the intervertebral discs and therefore produce serious complications due to pressure (mechanical stress) at the lumbar level.

We give some examples of exercises done from wrong executing positions, but which may have a good effect when we find the correct positions in their execution:

1. *Forward torso tilting-bending* (trunk forward flexion) (Fig. 1).

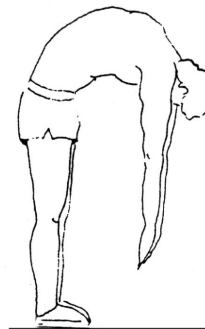


Fig. 1. *Forward torso tilting-bending* (trunk forward flexion) according to Motta, 2008

Starting from the standing position, concentric contraction of bust flexors pushes the trunk forward. Immediately after this contraction we will find gravity pushing down the trunk. So the trunk extensor eccentric contraction comes into play to slow the motion. At that time, the center of gravity will be at 5 cm before the L3 disc, thus causing an interdisciplinary high pressure. If to this movement we add an additional load (dumbbell, bar), pressure rises further (Fig. 2).

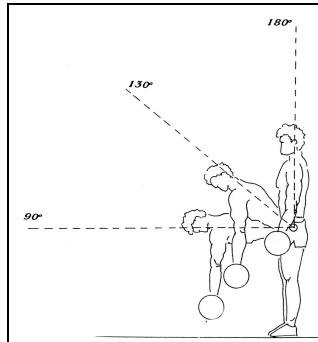


Fig. 2. *Trunk forward flexion with additional load - according to Motta, 2008*

When you reach a 90° angle between torso and thighs (trunk bent position), the "arm" of resistance increases 6 times compared to the standing position. The most common lesion associated with this type of "work-out" is a herniated disc.

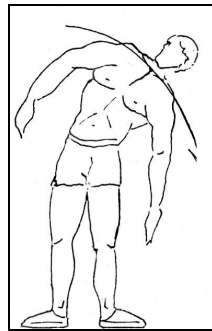


Fig. 3. *Lateral trunk bending (lateral trunk flexion) according to Motta, 2008*

2. *Lateral trunk bending (lateral trunk flexion)*

This movement causes damage to spinal discs and there is the possibility of microtraume (Fig. 3). As a way of avoiding negative effects, strengthening the muscles of the trunk side (oblique external/internal square lumbar, abdominal and right latissimus dorsi) can be done from the lateral decubitus position and / or with slight rotation of the trunk "Crunches Sides" (Fig. 4).

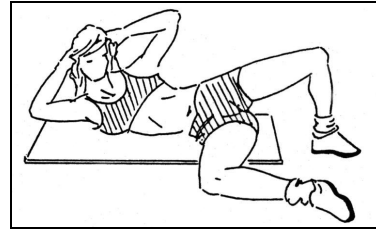


Fig. 4. *Strengthening the lateral trunk muscles (according to Motta, 2008)*

3. *Abdominal toning exercises*

In those exercises the most common error is the possibility of interfering in the moment of the forward flexion of the bust, thereby reducing the effectiveness of the exercise (Fig. 5). In these cases the correct execution of abdominal exercises is to have hip bent so as not to cause muscle contraction, the knees bent at an angle of 45 degrees, performing a maximum trunk flexion of 30 degrees (Fig. 6). The implementation of alternative positions have "Crunches with long lever" and "Reverse Crunches (Fig. 7 and Fig. 8).

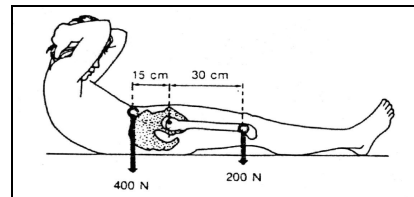


Fig. 5

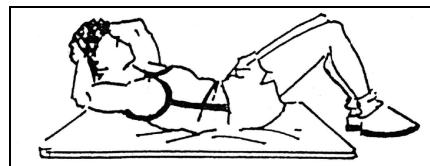


Fig. 6

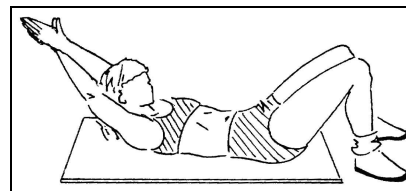


Fig. 7

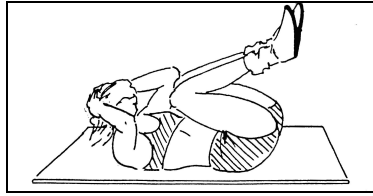


Fig. 8
(according to Motta, 2008)

4. Exercises for the lower limbs

These exercises are often used and as often done wrong, but they too have safety measures that should be respected in order to avoid problems in the knee joint, such as that when carrying out the flexion, the angle between the thigh and lower leg is not less than 90 degrees.

According to Motta (2008), as basic guidelines, we remind:

- Limit to 90 degrees of knee flexion angle,
- Compliance with an adequate execution speed while working with weights,
- Avoid placing under the heel of accessories for the so-called relief of the exercise thus forming a tibial projection forward that makes the resistance force to increase,
- Avoid excessive flexion of the trunk forward
- In performance from the "Butterfly" and "Wide Squat" positions (Fig. 9), the tips of your feet should be aligned with the knees,
- In the execution of the "Squat Speakers" hands should be placed near the foot,
- The implementation of "lunges" (Fig. 10) the rear leg must form an angle of 90 degrees between the thigh and calf,
- During all the movements should be taken care of the ankle - knee alignment

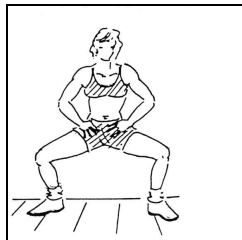


Fig. 9

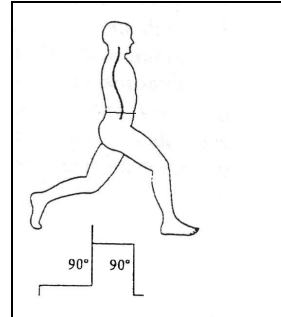


Fig. 10
(according to Motta, 2008)

5. Exercises for the pelvic strap muscles (gluteal large, medium gluteal, gluteal small abductor muscles and adductors)

In muscle groups too, exercises that are executed starting from the wrong position can bring discomfort in the spine, specifically at the lumbar level.

Thus, in forearms and knee support exercises, ground support needs to be done in six points, namely hand-elbow-knee support and leg tip, thus maintaining trunk and hip joints 90 degrees, ie a balanced distribution of body avoiding an excessive lumbar lordosis.

Adduction movements, abduction and extension of thigh achieve good results when synergistic exercises are combined involving as many muscle groups as possible. Lateral decubitus position or positions in which there are 5-6 points of support can have overweight (instep filled with sand), and in these positions the knee of the active leg should always be semi-bent.

To isolate the external muscles of the thigh, resistance should be done during lifting, not during adduction; the leg should be raised so as to work the muscles without loss of proper body posture. The knee should be placed in the sagittal plane during performance of all movements of exercises, and if it rotates in the frontal plane, it is possible that the correct body position is changed.

Advantages of using red training:

This program has as its primary focus the development and improvement following physical abilities:

- improve muscle strength,
- improving employment,
- improve flexibility (joint mobility)
- coordination abilities (orientation, rhythm, balance)
- Kinesthetic control (control of space time)

RED training offers:

- improve the quality of life
- a way of life beneficial to modern man
- many ways to train both individually and collaboratively,
- out of classical training monotony using music.

7. Conclusions

R.E.D. Program Fiteducation Training is approached by a new concept for improving professional performance through the multitude of methods of training that combine work both individually and in teams (the physical circuit or work with partners), which offer a wealth of material (Aqua bags, TRX-Suspension Training, Kettlebells, Fittbox bags, Gymball, Step, etc..) and that break the monotony by using music as a means of training in terms of rhythm and tempo.

Practicing R.E.D. program Training results in better quality of life and may represent a manifestation of a beneficial life style of modern man, who "appreciates the value of physical, motor activities, regardless of age, physical or social condition" (Dragnea 2000).

References

1. Auriol, B.: *Toate Metodele de Relaxare*- CESI, 1996.
2. Bompa, T.O.: *Teoria și metodologia antrenamentului. Periodizarea*. Bucureşti: Editura Ex Ponto C.N.E.P.A., 2002.
3. Dougall, M.: *Manuale del fitness*. I.D.E.A. e A.F.F.A., 2006.
4. Dragnea A.: *Teoria Educatiei Fizice si Sportului*. Ed. Cartea Şcolii, 2000, 214.
5. Dragnea, A., Bota, A.: *Teoria activitatilor motrice*. Bucureşti, Ed. Didactică și Pedagogică R.A., 1999, 222 -224.
6. Enoiu, R.: *Baschet. De la teorie la practică*. Brasov. Ed. Universităţii Transilvania Braşov, 2008, 142.
7. Fucci, A: *Linee generali della teoria dell"allenamento*, 2008.
8. Motta, S.: *R.E.D. Training. Fiteducation Courses*. Braşov. A.S.D Fiteducation, 2008, 4, 18-20, 32.
9. Motta, S.: *Ball Function training. Fiteducation Courses*. A.S.D Fiteducation, Braşov, 2009, 5-7.
10. Oancea, V. (coord.): *Factorul fizic în jocul de fotbal*. Brasov. Ed. Universităţii Transilvania din Braşov, 2007, 51-52.
11. Prescorniţă, A.: *Antrenamentul sportiv. O viziune integrativă*. Braşov. Ed. Universităţii Transilvania, 2006, 169.
12. Raggi, D.: *Ginnastica Posturale. Esercizi e consigli per conquistare una postura coretta*. Edizione 2006.
13. Souchard, E.: *Lo stretching globale attivo*. Editore Edizione Marrapese, 1995.
14. Wharton, J., Wharton, P.: *Stretch Book*. Times Book, 2006.
15. Wirhed, R.: *Athletic Ability and the Anatomy of Motion*. Third Edition, 2006.
16. *** *Aerobic methodology system*. Fiteducation, Italia, 2006.
17. *** *Metodologia învăţământului sportiv. Curs de ştiinţe motorii*. ISEFTO.
18. <http://www.nonsolofitness.it/approfondimenti/personal-trainer/fitball-forma-rotolando.html>