

“OMINO”: A Modern Approach to Postural Standing Reeducation through Breathing Techniques

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Abstract

Postural problems are very common, which is why plenty of Techniques have been created to solve them: Mezieres Technique (including muscle chains), RPG (Global Postural Re-Education, including pelvic diaphragm), Pilates Method (including core muscles), Bobath Concept (including COG, center of gravity) and Yoga. In this work, I show a new way of treating and solving postural problems. I am basing this physiotherapy approach on a new Image I created. Every patient can use it for every correction and change in posture. I called the new Image: “OMINO (little man)”. “Postural Card” could be a good work to make “OMINO” possible. “OMINO” is immediately understandable and, using “OMINO POCKET INSTRUCTIONS”, it can be easily done. Contribution of paper: • *Trunk is a vital element for any kind of rehabilitation*; • *“Core stability” is the key to activating the trunk*. • *Doing “OMINO” means working on “core stability”*; • *“OMINO” makes rehabilitation simple for the patient*.

Keywords

Trunk, Core, Stability, “OMINO”, Patient, Rehabilitation

1. Introduction

Posture is the human body’s position in space and the relationship among parts of the body.

Posture is expression of what we are, it is “talking about ourselves” without talking, and “Educate “or “Re-educate” posture means: preparing ourselves to face any situation in the best way.

Balance in Posture is good if the body’s median axis, from the head through

center of gravity, falls in the middle of base support (Sagittal plane), symmetrically dividing the body [1].

2. Posture Disorders

When there is no balance, there are tensions and problems in muscle and/or joint system, with spine and or 4 limbs diseases [2].

F. Mezieres in 1947 made what she called her “Capital Discovery.” [3]

“Capital Discovery” is the concept of all rear muscles behaving like a unique big strong muscle, without possibility of a “single muscle work”.

Mezieres introduced modern postural gym, thanks to “muscle chain concept” as the base of Mezieres Method, in which breathing itself is a real strategy of Action for various spine problems [3].

P. E. Souhard followed Mezieres writing his work named “Global Postural Reeducation” about a progressive active stretching of muscle chains, introducing some fundamental principles too, such as the use of “Pelvic Diaphragm” in posture and active work of patient through various “self-made postures” [4].

Bobath Concept (from K. and B. Bobath), represents a very big progress in posture work too [5] [6], with Center of Gravity (COG) control in order to manage trunk activities, moving or standing, with muscular or perceptive work.

We can find an efficient postural work in Pilates Method [7] too.

Pilates “Contrology” (that means “the art of control”) [7] Has first been brought in USA from J. H. Pilates in 1923, based on “core stability” concept, in order to prepare any limb movement [8].

3. Postural Gymnastic Reeducation

When we talk about “Posture” used in rehabilitation, we can mention Mezieres Method, Global Postural Rehabilitation from Souhard Method, or Pilates Method.

An interesting Study (2019) [9] has been done to examine the effectiveness of postural treatment with Mezieres Method on elite rhythmic gymnastics athletes with low back pain. Ninety gymnastics athletes were randomized into two parallel groups to demonstrate positive effects of Mezieres method on all the outcomes analysed, compared with the ones of control group.

In a literature review done in 2018 [10], Souhard Global Postural Re-Education is used to treat lower back, together with other postural rehabilitation Methods.

From this review we see that postural exercises, compared with a pharmacological or instrumental approach, show more efficiency both in reducing pain and disability and improving all psychological aspects due to chronic low back pain.

Even Pilates Method, used as Postural Gymnastics, has been resulting really useful for rehabilitation as we can see in a review (2018) [11] in which twenty-three studies are showing the efficacy of Pilates method in the rehabilitation of low back pain, ankyloses spondylitis, multiple sclerosis, post-menopausal os-

teoporosis, nonstructural scoliosis, hypertension and chronic neck pain. As we can see, Pilates means actually a rehabilitation tool [11], being effective in achieving desired outcomes, particularly in reducing pain and disability

4. Pelvic Floor Reeducation

Pelvic floor is made of all muscles, membranes, ligamentous and suspension structures that close abdominal-pelvic cavity [12].

It is made of three aponeurotic muscular plans: Urogenital diaphragm, pelvic diaphragm and shallow sphincter layer.

The first who dealt with pelvic floor rehabilitation has been the American gynecologist A. Kegel [13] [14], who had been studying about urinary incontinence and female uterine prolapse (his last scientific work is from 1960) [15].

P. E. Souchard [4] first talked about pelvic diaphragm in posture; J. Pilates then mentioned the importance of pelvic floor as a part of “core”, calling it: “the hidden power.” [16] About pelvic diaphragm role in his method, J. Pilates took all information directly from Yoga and Martial Arts [17].

In a very interesting work (2007 [18]) that uses anal and vaginal electromyographic activity (EMG) recordings during both movements and breathing, it is demonstrated that pelvic floor muscles (PFM) contribute to control lumbar spine and pelvis both during posture changes and during breathing activity.

In Another more recent Study (2018 [19]), eighteen volunteers are used (with Photogrammetric method and respiratory inductive plethysmography) to show the great connection between deep muscle Training, posture and breathing. Deep muscles are transversus abdominis muscle, intercostal muscles, internal oblique muscles and pelvic floor muscles.

5. Yoga and Pilates Reeducation

“Yoga” is a spiritual and ascetic discipline. It can be successfully used for health and relaxation, as a matter of fact “Yoga” is made not only of meditation, but also of breath control and specific postures [17]. In Yoga there are seven “chakras (that means “wheel” in Sanskrit),” they are base energy centers and ways to human body essence, with connection to principal ganglia that branch from the spine [17].

Pilates Method particularly appreciates first and third Chakra [17].

First Chakra, seat of Kundalini or base energy, is called Muladhar [17] from two Sanskrit words: “mula” meaning “root” and “adhara” meaning “base of support”. In “Yoga” discipline, Muladhar is positioned in coccyx center, exactly consisting in pelvic floor muscles of muscle-aponeurotic treat between anus and genitals [17].

Pilates called pelvic floor: “the hidden power.” [7]

The awareness of first Chakra, in Pilates Method, allows us to have both static and dynamic balance.

Third Chakra, called Manipura, is the one placed in solar plexus, just where

navel is.

A very common phrase in Pilates Method is “navel to the spine” [7], with the goal of pushing, when breathing out, abdominal muscles, particularly transversus abdominis muscle, in and up, in order to stabilize trunk.

By the way, transversus abdominis muscle is diaphragm antagonist and verticalizes the last six pair of ribs, contemporary opposing to abdominal viscera ptosis [20].

6. Core

The concept of CENTER or CORE MUSCLES is very important. When we talk about “core muscles” or “powerhouse” or “girdle of strength” we mean muscles surrounding trunk, from the lower rib cage until buttocks [16].

“Core muscles” include: pelvic floor muscles, transversus abdominis muscle, multifidus muscle, internal and external obliques muscles, sacrospinali muscles, diaphragm muscle, latissimus dorsi muscle, gluteal muscles, trapezius muscle [8].

In 1999 P. Hodges, in a work about lumbo-pelvic stability [21], talks about the importance of transversus abdominis in “abdominal canister” concept. This is just another way to talk about “core”, since “abdominal canister” is a kind of “box” wellprotected by trunk deep stabilizer muscles, that are: diaphragm muscle (upper part), transversus abdominis muscle (front part), multifidus muscle (back part), pelvic floor muscles (lower part).

Plenty of studies about “core training” in the meaning of “trunk stability” have been done to evaluate this considerations. We can mention Hodges cooperation in review of pelvic floor training to treat lower back in women (2020) [22]; naturally other trials will be needed to establish the real effectiveness of PFMT (Pelvic Floor Muscle Training), as a part of core, for lower back treatment.

7. Core Reeducation

As we already anticipated, “core stability” is used in many ways for rehabilitation.

About musculoskeletal diseases, we can mention recent studies about the use of “core stability” to treat low back pain [23], being “core stability training” more effective than general exercise. Anyway, even In moderate idiopathic scoliosis treatment [24] we can see similar effects both in treatment of scoliosis with “core stability” and in general treatment of scoliosis, and good results have been found also in treatment with “core stability” to prevent injuries [25].

But “core stability” is used in neurological rehabilitation too with very positive results, as we can see in studies about training with “core stability” to improve trunk functions, balance and mobility in stroke patients [26], or in other ones treating hemiplegia in stroke patients, [27] so that examiners concluded that “core stability training” should be included in stroke rehabilitation.

8. “OMINO”: A Modern Approach to Postural Standing Reeducation through Breathing Techniques

Experience of postural gymnastics, together with “core awareness”, made me think about “OMINO (that means: “postural standing re-education through breathing techniques”)” as a new strategy of rehabilitation.

The goal of “OMINO” is using “abdominal canister” [21] in postural work, that means: activating and always being aware of “core” [8].

“OMINO” works with basic principles: standing and activating “core” during breathing normal activity.

According to our “moving principles”, breathing activity is the first action when we start our life, as it is the last action when we finish it [20].

For the reasons above, any patient can be “OMINO”, any patient can use “OMINO” to get well or better.

Practicing “OMINO” does not cause fatigue for patients, since stabilizer trunk muscles are mostly composed of tonic fibers, which are both minimal intensity contracting and long lasting [4].

“OMINO” gives patients the possibility to work with pelvic diaphragm muscles, deep abdominal muscles and gluteal muscles at the same time, being this a real great support for balance problems [16].

In other words, doing “OMINO” means training “core stability” with optimal biomechanical results too, as shown in a study [28] on a group of female collegiate basketball players: after an eight week period of “core-training”, they improved neuromuscular control both of trunk and of lower limbs (with increasing of injury prevention) compared with a same aged control group trained with daily practice. Kinematics and kinetics data were used during tests of each group.

9. Principles for “OMINO”

1) Managing trunk means having balance and good, polite and easy moving without fatigue [7].

2) Everything starts from trunk that is why both spine and four limbs can be handled through trunk [5].

3) Working with trunk muscles (mobilizing rib cage first) means both correcting spine and protecting it with a kind of “anatomical corset” [16].

4) Managing trunk means controlling the only mechanism that works (together with heart) since the beginning until the end: breathing mechanism. Right trunk assessment is the base of proper respiratory mechanics [20], and exhaling process can be completely managed by trunk muscles.

10. Postural Card (Breathing Exercises) for “OMINO”

Even though doing “OMINO” is very simple, we need plenty of components working together. For this reason, it can be necessary a kind of training, consisting in postural gymnastic exercises, selected and put together in a “Postural

Card” in order to:

- 1) Make every patient understand how to find control and breath correctly;
- 2) Allow every patient to feel trunk stabilizer muscles aligning and correctly moving the spine;
- 3) Make every patient successfully practice relationship between the activation of trunk stabilizer muscles and 4 limbs consequent activation [29];
- 4) Prepare every patient to be “OMINO” in standing position.

Postural Card is done on the floor, assuming supine position, flexing knees and placing feet on the floor.

The patient is then positioning both hands in different parts of his or her upper and lower trunk, in order to understand the work during breathing kinematics [20], with chest mobilizing and torso-abdominal coordination, pelvic diaphragm activation and upper-lower trunk mobilizing to decompress the spine.

In other words, with postural card we “learn to breath correctly through “Proprioceptive Exercises”, placing hands in order to “feel” both thoracic abdominal synergy [20] and abdOMINOpelvic synergy [18] during breathing.

Trunk activation (expressed by “OMINO”) seems to be the best way to “educate” (in a child) or “Re-Educate” (in an adult) Posture in body for Rehabilitation.

11. OMINO—Technical Notes

TRUNK IS AN “ACCORDION PUMP” (Figure 1):

- When “OMINO” inhales, dorsal muscle lengthens the spine, with the increase of vertical thoracic diameter (followed by increase of anteroposterior and transverse diameters too [20]), the nape comes up and chin comes in (for contraction of accessory inspiratory muscles) [29];
- When “OMINO” exhales, the chin returns in its anatomic position, and the expiratory muscles contract for “chest emptying” [29], as expressed in Mezieres Concept of “shortening distance between pubes and sternum [3]. When patient exhales he/she will be invited to breathe out “as bringing pubes to his/her own forehead, in order to have both abdominal muscles and pelvic floor muscles contraction.

TRUNK IS A “SPONGE FULL OF AIR” (Figure 1): when “OMINO” exhales and air comes out, every part of the sponge is squeezed: the upper side (chest and shoulders), the front side (abdominal muscles) the lower side (respiratory diaphragm and pelvis diaphragm) the back side (multifidus muscle) [17];

NAPE UP AND CHIN DOWN (Figure 1): “OMINO” stands as “hanging by a wire,” with a wall behind the spine (“shoulders to the wall”, with same line for: nape-shoulder blades sacrum [3]), so that to place trunk on median axis [1];

SHOULDERS (Figure 2 [7]): when “OMINO” inhales, shoulders move behind (as shown by the arrow starting from shoulders) for the contraction of dorsal muscles (trapezius, rhomboid muscles: shoulder blades adduction), with chest expansion [30]; when “OMINO” exhales shoulders go down, allowing chest emptying [7];

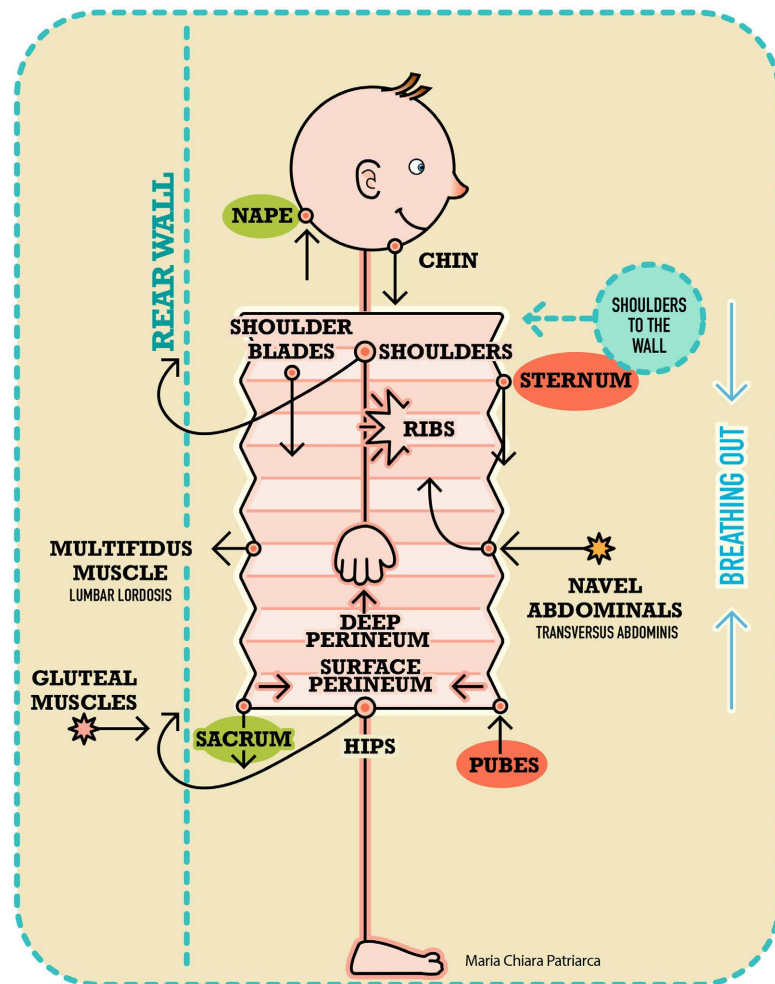


Figure 1. “OMINO”—standing position.

STERNUM (Figure 1): Breastbone goes down breathing out [20];

RIBS (Figure 1): breathing out ribs get more vertical, “squeezing” and “lowering” chest [20].

NAVEL—ABDOMINALS—Transversus Abdominis (Figure 1): Pilates expression “Navel to the spine” [7] is perfect to illustrate the abdominal muscles working as an “anatomical corset”. [16] Abdominals are expiratory muscles [8], and, as Pilates said, they go “in and up (as shown by the arrow starting from navel)” [7]. As a matter of fact, transversus abdominis is the antagonist muscle of diaphragm [30]; the function of transversus is lowering last sixth pair of ribs, contemporary “containing” bowels [29] as a “girdle of strength” [7].

MULTIFIDUS MUSCLE, LUMBAR SPINE (Figure 1): Both multifidus and transversus abdominis muscles have a vital role in maintaining spinal stability [16]. Lumbar curve is made up by multifidus muscle and controlled (neutral spine) by opposite pushes of abdominal muscles (pushing back) and gluteal muscles (pushing forward). These muscles working together help pelvic posture against force of gravity.

SURFACE-DEEP PERINEUM (Figure 1): transversus abdominis muscle is

frontly containing abdomen as well as pelvic floor is containing it below, just as a “girdle of strength” [6]. As a matter of fact, pelvic floor muscles really support pelvis during abdominal changes of pressure (first of all during breathing), contracting (as a vital part of “core”) with deep trunk stabilizer muscles: diaphragm, transversus abdominis and multifidus [31].

When we breath in, pelvic floor muscles opposes to abdominal pressure (due both to gravity and to descent of diaphragm dome [31].

When we breath out, pelvic floor works against pressure of abdominal muscles contraction closing surface perineum muscles (sphincter muscles), so that intermediate and deep perineum aponeurotic muscular plans can go up (Figure 1) [12].

Pelvic floor muscles, as gluteus muscles, have their insertion in sacrum, that is why their importance in “OMINO” pelvic stability [16]. As a matter of fact, if pelvic floor muscles contract, transversus abdominis contract as well.

The anatomical similarity between laryngeal diaphragm and pelvic diaphragm makes possible to figure the movement of pelvic floor muscles contracting, as the one of lips when they are “sucking an ice-cream” [31]. As a matter of fact, pelvic floor contracts against gravity: when surface sphincter muscles contract, middle and deep pelvic diaphragm muscles rise in contraction, contemporary elevating pubes (Figure 1) [12].

Pilates compared shoulder blades to wings (Figure 2) [16]. As a matter of fact, in order to breath and activate trunk, is useful to see the “bell movement (Figure 2) [32]” that shoulders do during breathing (adduction of the two lower apices in inspiration, and abduction of the same ones in expiration).

Gluteal muscles contraction can be figured by two little arrows (Figure 3)

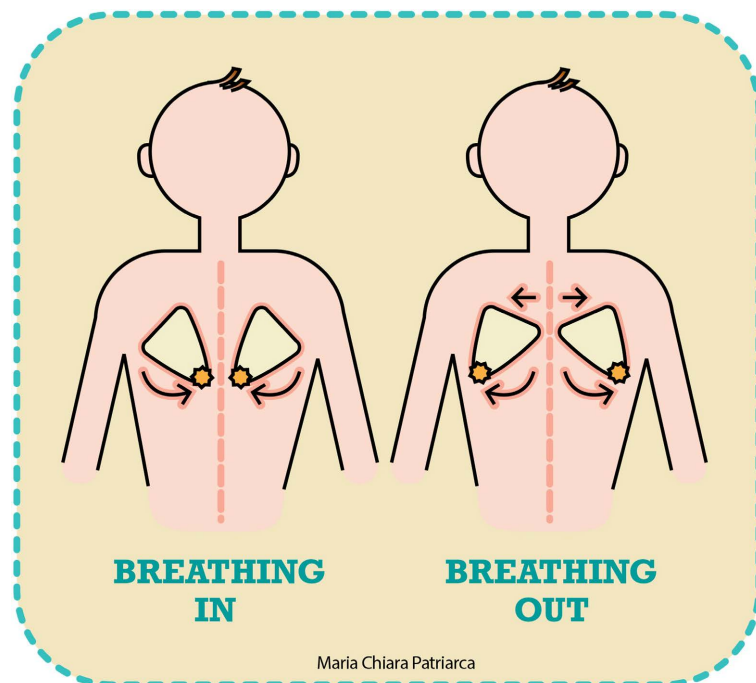


Figure 2. Activate the wings (J. H. Pilates).

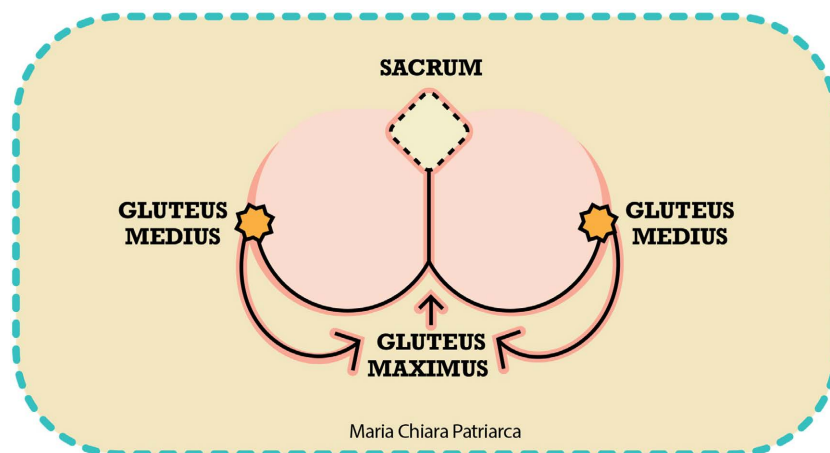


Figure 3. Gluteal muscles work.

starting from a fixed left and right side point (gluteus medium muscle at both sides [29]) and going along both the right and the left gluteal fold, arriving to intergluteal line with a vertical end (sacrum bone kept vertical by gluteal muscles contraction) as “inserting a suppository”.

As a matter of fact, gluteal muscles contraction stabilizes a good foot base-support, all over foot plant (for each foot), even though it can be perceived 20% more on the side of it, according to biomechanical axis of lower limbs [29].

12. For Use by the Patient

POCKET INSTRUCTIONS FOR “OMINO”

Starting position: Standing up (or thinking to be standing up):

- “TWO WIRES” (**Figure 1**): Try to feel a “SILK WIRE” pulling up nape and a “LEAD WIRE” pulling down sacrum [33];
- “STERNUM GOES DOWN, PUBES COMES UP AND ABDOMINALS DEFLATE” (**Figure 1**): Do it to breath out correctly;
- “PLACE PUBES IN FOREHEAD” (**Figure 1**): Exhale closing pee and flattening your belly, in order to bring pubes on your own forehead (abdominal muscles contraction with pelvic floor muscles contraction);
- “INSERT A SUPPOSITORY BEHIND” (**Figure 3**): Keep your balance by squeezing gluteal muscles as you insert a suppository (sacrum vertical beneath feet);
- “SUCK AN ICE-CREAM IN FRONT” (**Figure 1**): Your pelvic floor muscles contract as you were “sucking an ice-cream” with them [30].
- “AND WITH SHOULDERS DO THE SHAKE” (**Figure 2**): Keep shoulders relaxed (no tension) so that you can “shake” them, like you were dancing.

13. Conclusions

“OMINO” can be useful to any patient, based on three vital principles of rehabilitation:

- 1) Working with trunk is necessary to prepare patient for standing activity;

- 2) Working with trunk is necessary during patient standing activity;
- 3) Working with trunk is necessary during patient walking activity.

Although “OMINO” is already been successfully used for treating various patients in rehabilitation, we expect “OMINO” to be very soon supported by science evidence based data.

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Conflicts of Interest

There are no conflicts of interest for this manuscript.

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