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## INVERSION OF LUMBAR LORDOSIS IN SPORTY WOMAN OF 29 YEARS OLD TREATED WITH BAE METHOD: CHECKED AFTER 11 MONTHS <sup>10</sup>

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**Abstract:** Postural alterations of the rachis in female of 29 years doing underwater activity. The girl reports frequent lumbar back pain and hip and lower limb pain from the age of 18. She has been treated with biomechanical anthropometric ergonomic method (B.A.E.) with positive results. **Method:** Girl previously treated with physiotherapeutic protocols of the official medicine with negative results for many years. During the medical and physiotherapeutic management the pain improved only for short periods under treatment, was treated with the biomechanical anthropometric ergonomic method for 11 months with positive outcomes on both mobility and pain. She went back to sports after 3 months of B.A.E. treatment.

**Keywords:** Posture, Biomechanical Anthropometric Ergonomic Method, Scoliosis, Back Pain, Lower Limbs Pain

## INTRODUCTION

The girl is 29 years old and practices diving, she arrives with continuous pain in the back, lumbar area, pain in the hips and lower limbs. She refers to recurrent acute lumbar pain that limits or even makes it impossible for her to do exercise and sometimes to exercise (meant as moving). Over the years she has done cycles of physiotherapy, pain management with drugs and postural gymnastics without being able to mitigate the painful symptoms.

## MATERIALS AND METHODS

Baropodometer Footcheker Loran Eng., 2012  
Ergonomic Anthropometric Biomechanical B.A.E. Method

We can see in Fig.1 a lateral cervical RX-ray that shows an inversion of the physiological lordosis in the tract C3 - C6. In Fig.2 we have a lumbosacral NMR that shows an inversion of the rachis between D11 and L1 with a reptilization of the lumbar gross physiology. There are protrusions between L4 and L5 and between L5 and S1. There is also a retrolistese of L5 on S1. The person is visible in the following images, from Fig.3 to Fig.6, where we can observe the postural variations obtained with BAE method after 11 months of treatment. The arrows indicate the areas of greatest variation. The first observable variation is the greater distension of the rachis with consequent

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<sup>10</sup> The research paper was presented on October 29, 2021, at the Health Promotion Section of the 2021 Online Scientific Conference co-organized by University of Ruse and Union of Scientists - Ruse. Its title in Bulgarian is: „ИНВЕРСИЯ НА ЛУМБАЛНА ЛОРДОЗА ПРИ СПОРТУВАЩА ЖЕНА НА 29 ГОДИНИ ЛЕКУВАНА С МЕТОДА ВАЕ: ПРОВЕРЕН СЛЕД 11 МЕСЕЦА“.

increment of the height. This results in a greater symmetrization of the two hemispheres which allows a better coherence in the antigravity muscular response. You can see a greater head centering, the left shoulder raised, the shoulder blades in a more physiological position, the triangles of the size more symmetrical, the muscles buttocks and the abdominal ones more tonic. In general, the whole lower limb has a more toned musculature especially in the leg. The improvement of antigravitational functionality has allowed a reduction of the rotation of the rachis.

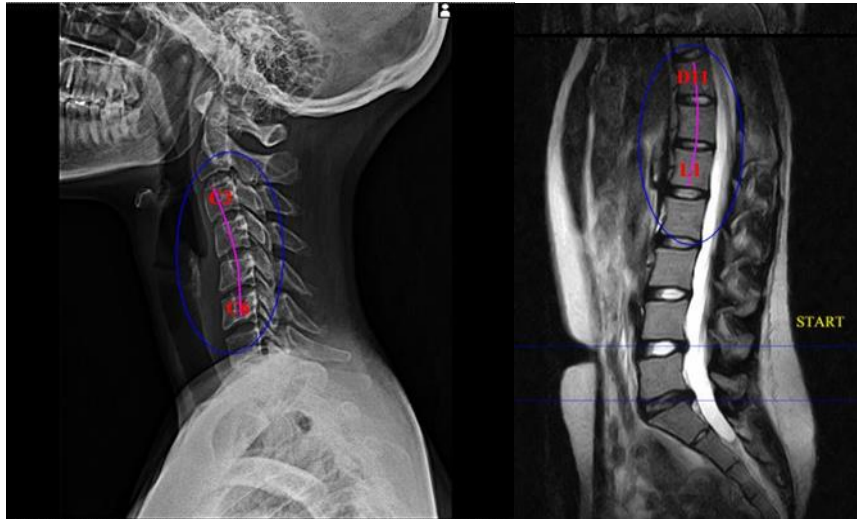


Fig.1

Fig.2

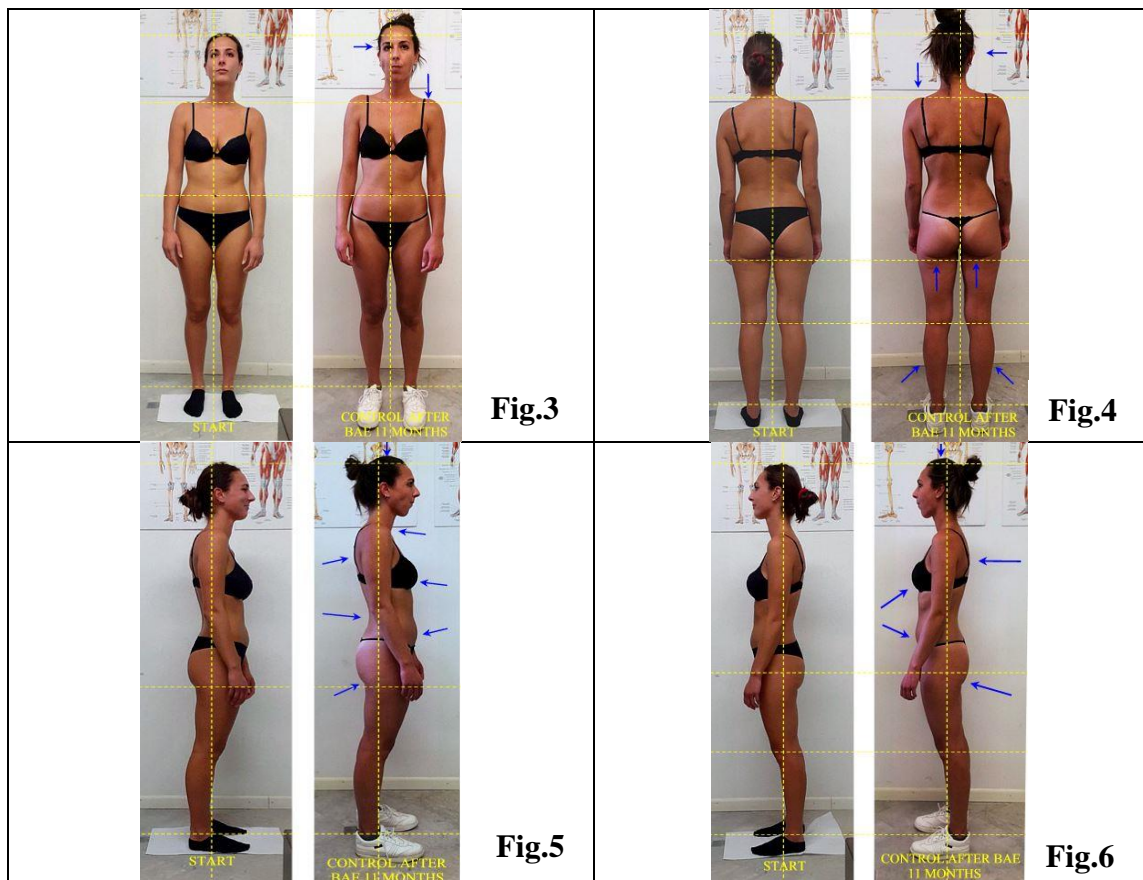


Fig.3

Fig.4

Fig.5

Fig.6

The postural variations found in the photographic images will necessarily have consistent feedback in the images normally used for diagnostics such as RMN and RX.

In Fig.7 we can observe the improvement of the position of the first two cervical vertebrae, Atlas and Epistropheus (green arrows) and of the seventh cervical vertebra (yellow arrows). Fig.8 shows how the inversion of the part of the rachis between D11 and L1 present at the beginning of the treatment with BAE method, has returned to its physiological position, normalizing, at the check carried out after 11 months.

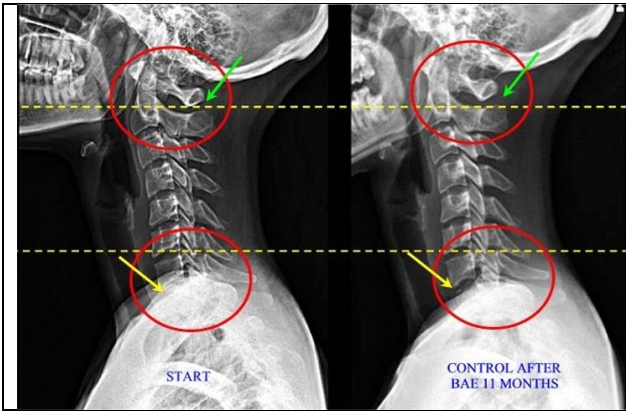


Fig.7

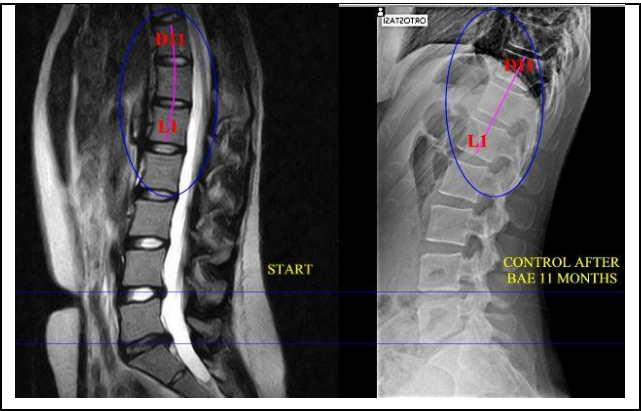


Fig.8

In line with the results previously highlighted through the images, we now demonstrate how the baropodometric evaluations carried out with BAE method confirms how **these results are predictable through the application of a mathematical model**. This makes it clear that variations in the gravitational field management have consequences in postural variations proportional to the model applied.

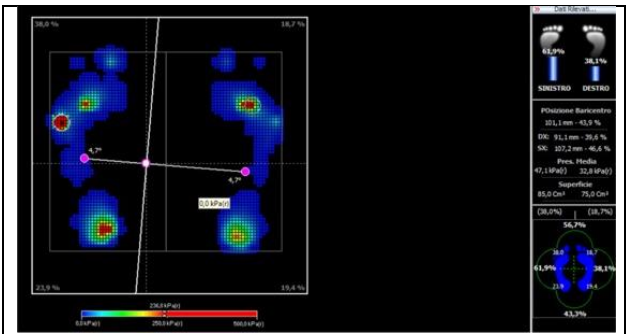


Fig.9 START

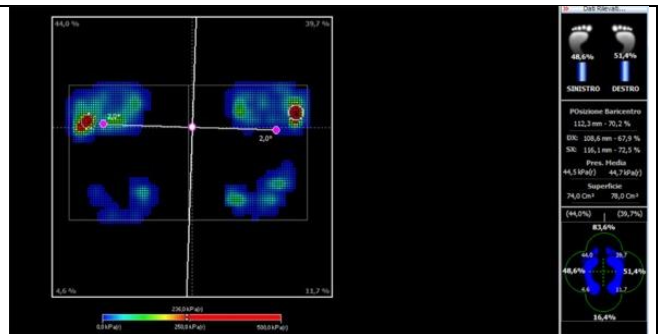


Fig.10 AFTER 11

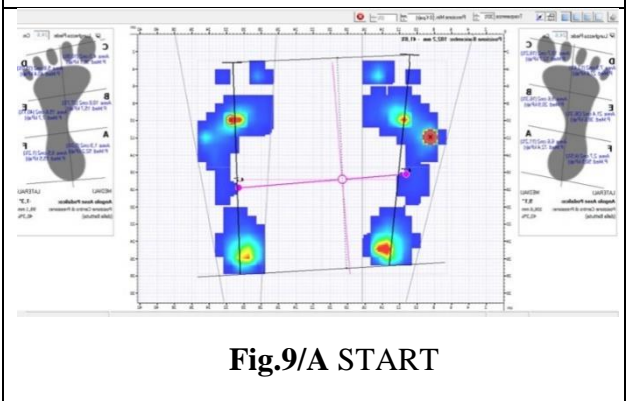


Fig.9/A START

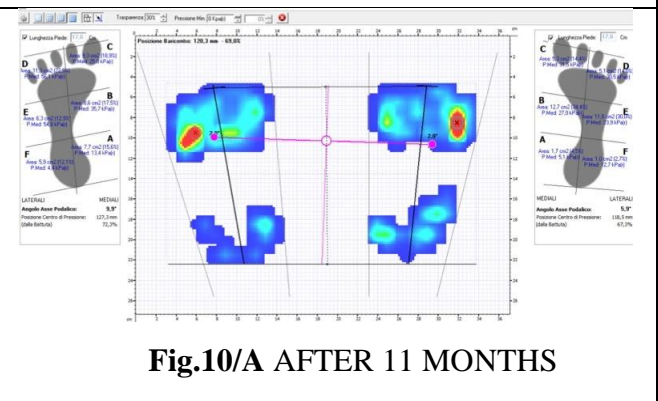


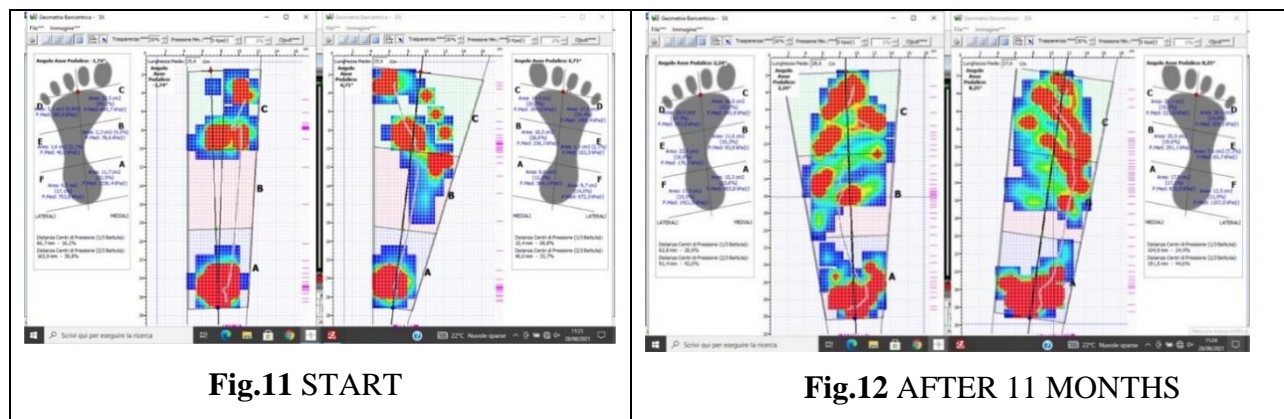
Fig.10/A AFTER 11 MONTHS

In Fig.9 - 9/A and Fig.10 - 10/A relative to the stationary images of the person obtained on baropodometer according to BAE method, it can be observed an advance of the general center of gravity of the body and a symmetrization of the percentage loads of the hemispheres.

From the images of Fig.11 and Fig.12, relative to the deambulation of the person, it can be observed as in Fig.11 the left foot (left footprint) is placed in relation to the sagittal plane with an

angle of the negative breech axis equal to  $-1,74^\circ$ , outside of the BAE normality indices. The right foot (right footprint) is placed at  $+6,71^\circ$ , within the BAE normal indices. In Fig.12 the left foot is placed with the angle of the podalic axis to  $+2,24^\circ$ , at the limit of the BAE normal indices.

Instead, the right foot is placed at  $+8,25^\circ$ , within the BAE normal indices. Concluding the position of the feet shows, after 11 months of BAE treatment with ergonomic interfaces, within the values of normality and much more symmetrical.



This produces a muscular activity of the whole locomotor apparatus more functional and therefore closer to the physiology with consequent minimization of the dystonia. This condition is observed both stationary and walking with improved performance, reduction of fatigue with disappearance of painful symptomatology. We can say that the application of the BAE method allows a strong action of **prevention** against postural difficulties.

## CONCLUSIONS

After 11 months of Ergonomic Postural Treatment, we evaluated the results according to the parameters of the Biomechanical Anthropometric Ergonomic Method.

The situation is:

1. The painful symptomatology disappeared completely after about two months of the usage of the Ergonomic Braces made according to the B.A.E Method.
2. Person reports that she has again started diving after three months.
3. She reports that she wears the braces daily with great comfort and it is demonstrated by the photographic improvement obtained after 11 months.
4. It is also shown that in cases in which there have been failures of the traditional methods of rehabilitation it is possible to achieve results never achieved until today with rehabilitation treatments implemented with Ergonomic Postural interfaces to improve the management of the gravitational field.

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