

Ακτινολογική και κλινική βελτίωση σε ασθενείς με Θωρακοσφυϊκή σκολίωση, εφαρμόζοντας μόνο ασκήσεις της μεθόδου Schroth



**Schroth Scoliosis
&
Spine Clinic**

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Εισαγωγή

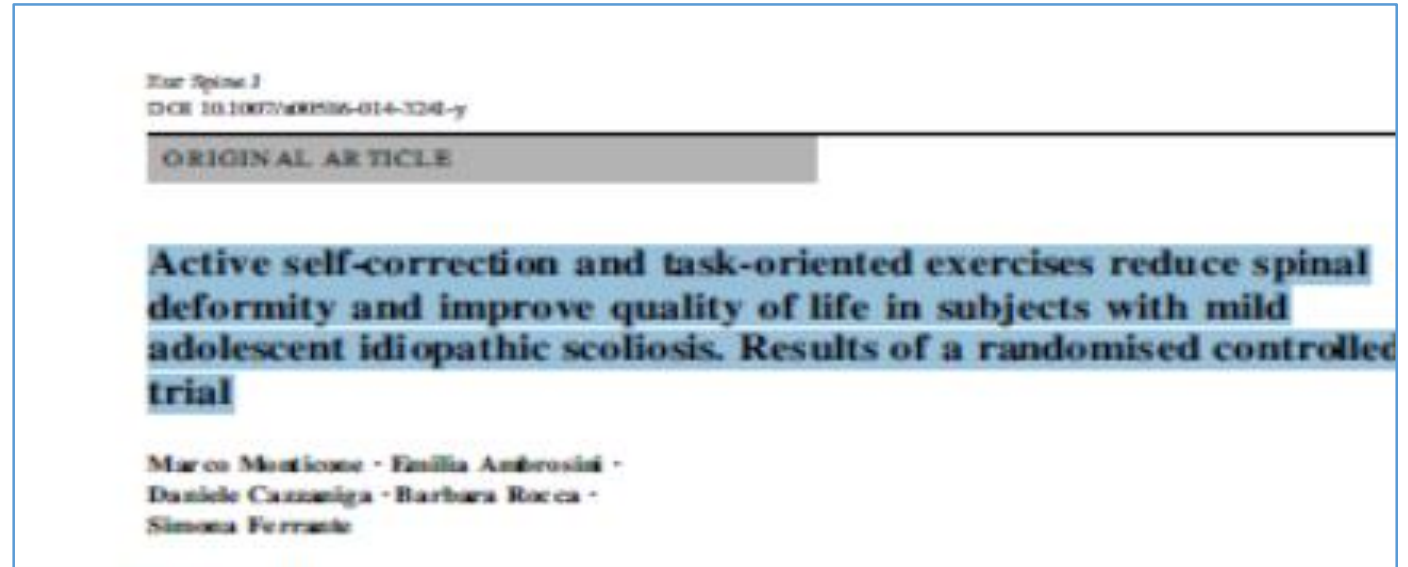
- **Ειδικές Φυσικοθεραπευτικές Ασκήσεις για την Σκολίωση**
Physiotherapeutic Scoliosis Specific Exercises (PSSE):

Curve pattern specific exercises

- **3D Auto-correction**
- **Self-Elongation**
- **ADL training**

- **Level of Evidence I**
- **Recent high quality studies [RCT] have proven the effectiveness of PSSE in scoliosis treatment**

(Monticone et al 2014, Schreiber et al 2015)



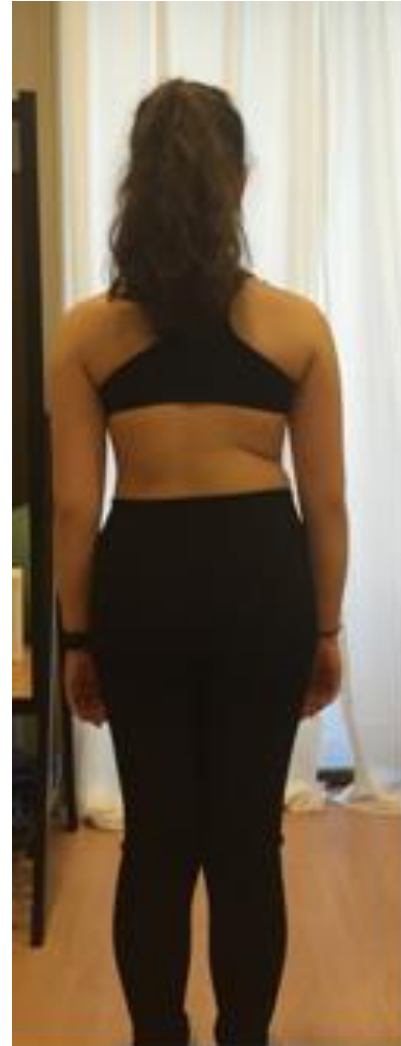
Scoliosis. 2015 Sep 18;10:24. doi: 10.1186/s13013-015-0048-5. eCollection 2015.

The effect of Schroth exercises added to the standard of care on the quality of life and muscle endurance in adolescents with idiopathic scoliosis-an assessor and statistician blinded randomized controlled trial: "SOSORT 2015 Award Winner".

Schreiber S¹, Parent EC¹, Moez EK¹, Hedden DM², Hill D², Moreau MJ², Lou E², Watkins EM², Southon SC².

Στόχοι Schroth BSPTS

- Αποφυγή επιδείνωσης της σκολίωσης ή ακόμα και μερική βελτίωση της
- Διόρθωση σκολιωτικής στάσης και ασυμμετριών σώματος
- Βελτίωση αναπνευστικής ικανότητας
- Εκπαίδευση για τις καθημερινές δραστηριότητες
- Βελτίωση εμφάνισης και αυτοεκτίμησης
- Μείωση πόνου



SOSORT guidelines (2011)

Society on Scoliosis Orthopaedic and Rehabilitation Treatment (SOSORT)

- PSSE πρώτο βήμα αντιμετώπισης της σκολίωσης, με στόχο την παρεμπόδιση της επιδείνωσης και την αποφυγή εφαρμογής κηδεμόνα
- Πάντα Κηδεμόνας + PSSE
- Συνεργασία πολύ-επιστημονικής θεραπευτικής ομάδας (Χειρουργός Ορθοπαιδικός – Ορθωτικός – Φυσικοθεραπευτής)
- Οι PSSE διδάσκονται και εφαρμόζονται μόνο από Πιστοποιημένους Φυσικοθεραπευτές

Negrini et al. *Scoliosis* 2012, 7:3
<http://www.scoliosisjournal.com/content/7/1/3>



METHODOLOGY

Open Access

2011 SOSORT guidelines: Orthopaedic and Rehabilitation treatment of idiopathic scoliosis during growth

Stefano Negrini^{1,2,3*}, Angelo G Aulisa⁴, Lorenzo Aulisa⁵, Alin B Circo⁶, Jean Claude de Mauroy⁷, Jacek Durlama⁸, Theodoros B Grivas⁹, Patrick Knott¹⁰, Tomasz Kotwicki¹¹, Toru Maruyama¹², Silvia Minozzi¹³, Joseph P O'Brien¹⁴, Dimitris Papadopoulos¹⁵, Manuel Rigo¹⁶, Charles H Rivard⁶, Michele Romano³, James H Wynne¹⁷, Monica Villagrasa¹⁶, Hans-Rudolf Weiss¹⁸ and Fabio Zaina³

Abstract

Background: The International Scientific Society on Scoliosis Orthopaedic and Rehabilitation Treatment (SOSORT), that produced its first Guidelines in 2005, felt the need to revise them and increase their scientific quality. The aim is to offer to all professionals and their patients an evidence-based updated review of the actual evidence on conservative treatment of idiopathic scoliosis (CTIS).

Methods: All types of professionals (specialty physicians, and allied health professionals) engaged in CTIS have been involved together with a methodologist and a patient representative. A review of all the relevant literature and of the existing Guidelines have been performed. Documents, recommendations, and practical approach flow charts have been developed according to a Delphi procedure. A methodological and practical review has been made, and a final Consensus Session was held during the 2011 Barcelona SOSORT Meeting.

Results: The contents of the document are: methodology; generalities on idiopathic scoliosis; approach to CTIS in different patients, with practical flow-charts; literature review and recommendations on assessment, bracing, physiotherapy, Physiotherapeutic Specific Exercises (PSE) and other CTIS. Sixty-five recommendations have been given, divided in the following topics: Bracing (20 recommendations), PSE to prevent scoliosis progression during growth (8), PSE during brace treatment and surgical therapy (5), Other conservative treatments (3), Respiratory function and exercises (3), Sports activities (6), Assessment (20). No recommendations reached a Strength of Evidence level I; 2 were level II; 7 level III; and 20 level IV; through the Consensus procedure 26 reached level V and 10 level VI. The Strength of Recommendations was Grade A for 13, B for 49 and C for 3; none had grade D.

Conclusion: These Guidelines have been a big effort of SOSORT to paint the actual situation of CTIS, starting from the evidence, and filling all the gray areas using a scientific method. According to results, it is possible to understand the lack of research in general on CTIS. SOSORT invites researchers to join, and clinicians to develop good research strategies to allow in the future to support or refute these recommendations according to new and stronger evidence.

Ενδείξεις εφαρμογής PSSE (SOSORT guidelines)

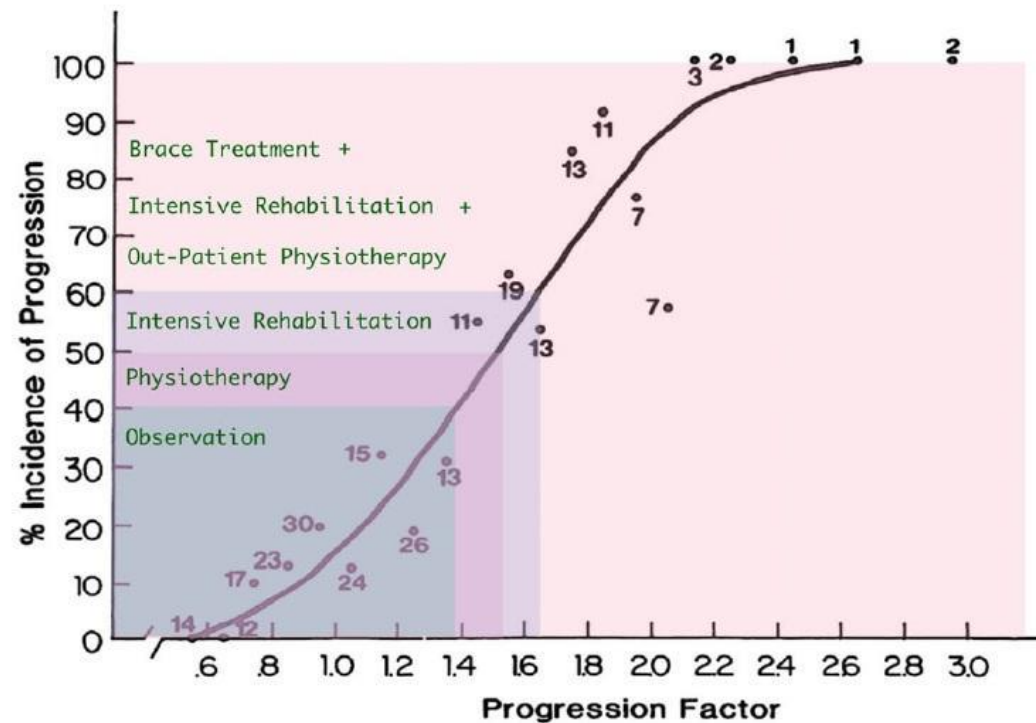
Αποκλειστική αντιμετώπιση

- Έφηβοι με γωνία Cobb $< 25^\circ$, Risser 0-3
- Έφηβοι με γωνία Cobb 20° - 29° , Πιθανότητα επιδείνωσης 40-60% (Lonstein formula)
- Έφηβοι με γωνία Cobb $< 35^\circ$, Risser 4-5

- Ενήλικοι με πόνο
- Ενήλικοι με οποιαδήποτε γωνία Cobb /άρνηση για χειρουργείο

Συνδυασμένη αντιμετώπιση

- Ένδειξη κηδεμόνα (έφηβοι με γωνία Cobb 25° – 40° , Risser 0-3)
- Μετά από σπονδυλοδεσία (προσαρμοσμένο πρόγραμμα)



$$\frac{\text{Cobb Angle} - (3 \times \text{Risser sign})}{\text{Chronological age}}$$

The prediction of curve progression in untreated idiopathic scoliosis during growth.

Lonstein and Carlson, 1984

SRS Official Statement on PSSE (2014)

Scoliosis Research Society

- **There is scientific evidence that PSSE are superior than general or no exercises**
- **A combination of brace and PSSE seems to provide better results in scoliosis treatment than bracing alone**
- **SRS actively supports studies with PSSE for scoliosis treatment**



The screenshot shows the Scoliosis Research Society (SRS) website. The header includes navigation links for Member Login, Become a Member, Find a Specialist, Calendar, Contact, and Donate. The main navigation bar features 'About SRS' and sub-links for Overview & History, Quality & Safety, Corporate Supporters, SRS Store, News & Announcements, and Contact Us. The page title is 'SRS Statement on Physiotherapy Scoliosis Specific Exercises'. The content is authored by M. Timothy Hresko, MD, Chair, SRS Non-operative committee, dated May 19, 2014. The text discusses the use of PSSE as a supplemental treatment to orthotic management of scoliosis, highlighting its benefits for pain relief and preventing progressive deformity in children and adolescents. It also mentions the historical context of PSSE, including the Schroth technique and various 'schools' of physiotherapy. The statement concludes by noting that while there is strong evidence supporting the use of brace treatment for moderate scoliosis and surgical treatment for progressive scoliosis in adolescents or painful scoliosis in adults, early detection of scoliosis is paramount to optimize the care of patients with spinal deformities.

Position Statement AAOOS,SRS,POSNA,AAP for AIS (2015)

- *Scoliosis Research Society (SRS)*
- *Pediatric Orthopedic Society of North America (POSNA)*
- *American Academy of Orthopedic Surgeons (AAOS)*
- *American Academy of Pediatrics (AAP)*

- **“AAOS, SRS, POSNA and AAP believe that recent high quality studies demonstrate that non-operative interventions such as bracing and scoliosis specific exercises can decrease the likelihood of curve progression to the point of requiring surgical treatment.”**



The screenshot shows the website of the Scoliosis Research Society (SRS). The header includes navigation links for Member Login, Become a Member, Find a Specialist, Calendar, Contact, and Donate. The main content area features a navigation menu with options like President's Message, Overview & History, Quality & Safety, Corporate Supporters, SRS Store, News & Announcements (selected), and Contact Us. The main heading is "Position Statement - Screening for the Early Detection for Idiopathic Scoliosis in Adolescents". Below this, it lists the authors: M. Timothy Hresko, MD; Vishwas R. Talwalkar, MD; Richard M. Schwend, MD. The date is 9/2/2015 v2. The text states that the SRS, AAOS, POSNA, and AAP believe that there has been additional useful research in the early detection and management of adolescent idiopathic scoliosis (AIS) since the review performed by the United States Preventive Services Task Force (USPSTF) in 2004. It emphasizes that this information should be available for use by patients, treating health care providers, and policy makers in assessing the relative risks and benefits of the early identification and management of AIS. An introduction section follows, defining scoliosis as a three-dimensional spine deformity and discussing its prevalence and genetic factors. It also mentions that prevention of severe scoliosis is a major commitment of physicians caring for spinal deformities, and that the SRS and AAOS formally endorsed the early detection of scoliosis in children whose deformities may have gone unnoticed in 2007.

Μεθοδολογία

- **Case series (6 κορίτσια, μονή αριστερή θωρακοσφυϊκή σκολίωση)**
- Παράμετροι που αναλύθηκαν

➤ Ακτινολογικές:

Γωνία Cobb

Στροφή σπονδύλων [Angle of Vertebra Rotation] (AVR)

(Nash and Moe method)

➤ Κλινικές:

Στροφή κορμού [Angle of Trunk Rotation] (ATR) *(scoliometer)*

Κλίμακα TRACE

Ερωτηματολόγιο SRS-22 (Αυτο-εκτίμηση)

• M.o. follow-up 16 μήνες

• Paired sample t-test για στατιστική ανάλυση

Αποτελέσματα

	Age	Risser	Cobb pre	Cobb post	AVR pre	AVR post	ATR pre	ATR post	TRACE pre	TRACE post	SRS-SI pre	SRS-SI post	Fol-up
P1	13	2	18	11	1	1	9	7	2	1	22	24	19
P2	14	3	30	20	2	0	7	6	4	2	18	21	18
P3	14	3	29	24	2	1	8	5	4	1	20	24	19
P4	16	4	25	10	2	0	12	6	4	1	16	24	19
P5	14,5	4	24	19	2	1	7	5	2	1	22	24	7
P6	14	1	21	19	1	1	5	4	2	1	20	23	14
	14,3	2,8	24,5	17,8	1,7	0,7	8,0	5,5	3,0	1,2	19,7	23,3	16,0

Ασθενής 2 – Schroth BSPTS method



29°
pre-ex



24°
post-ex

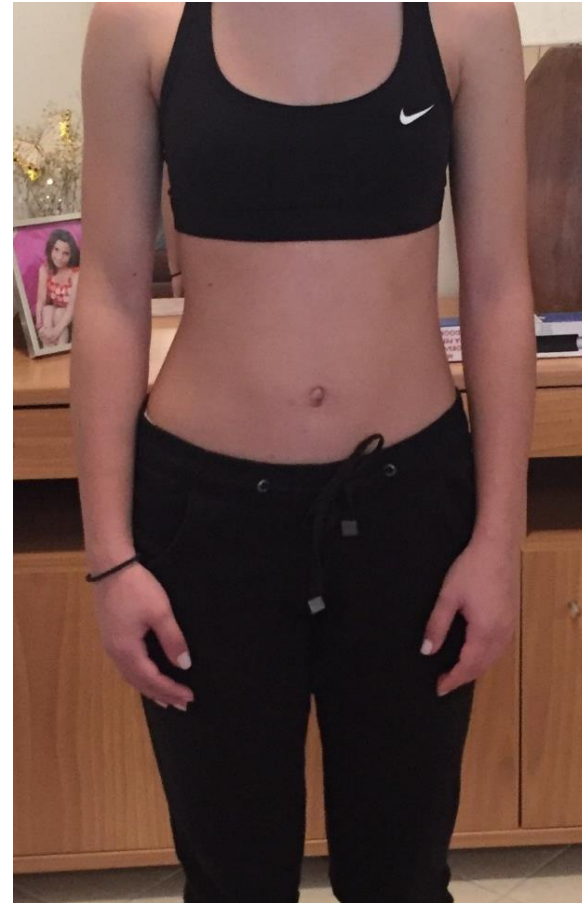
Ασθενής 2 – Schroth BSPTS method



pre-ex



post-ex



pre-ex



post-ex

Ασθενής 2 – Schroth BSPTS method

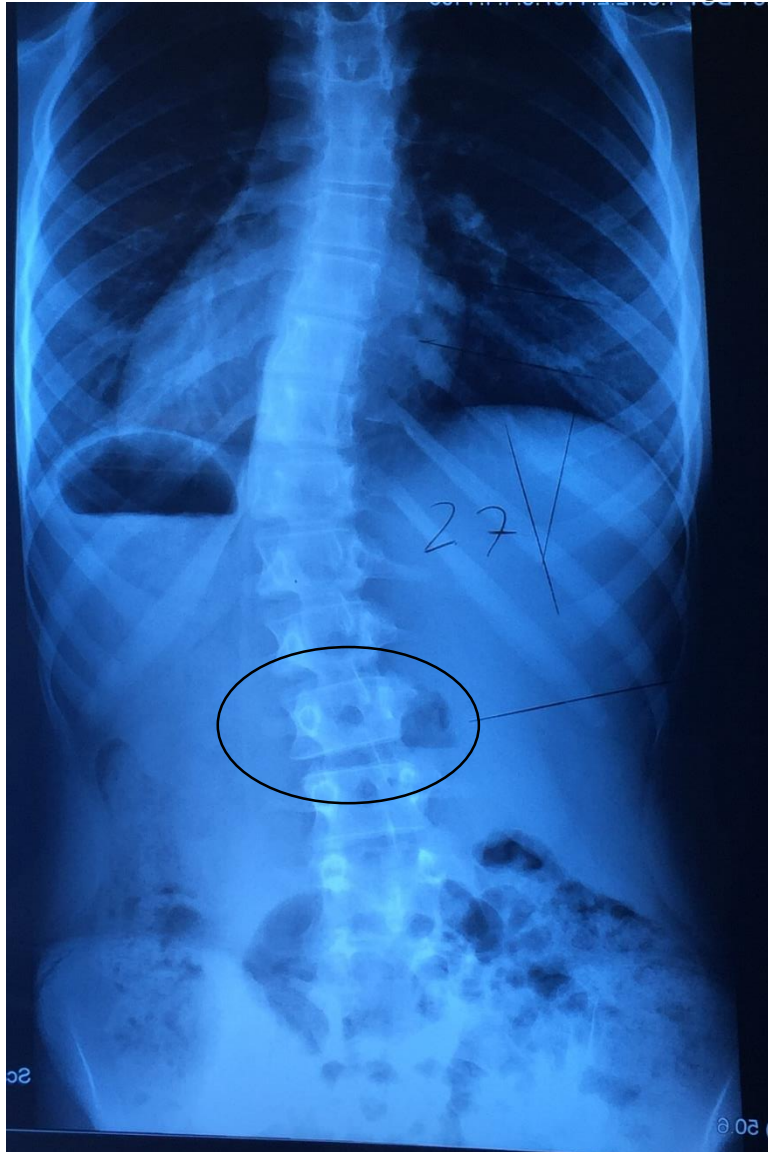


pre-ex



post-ex

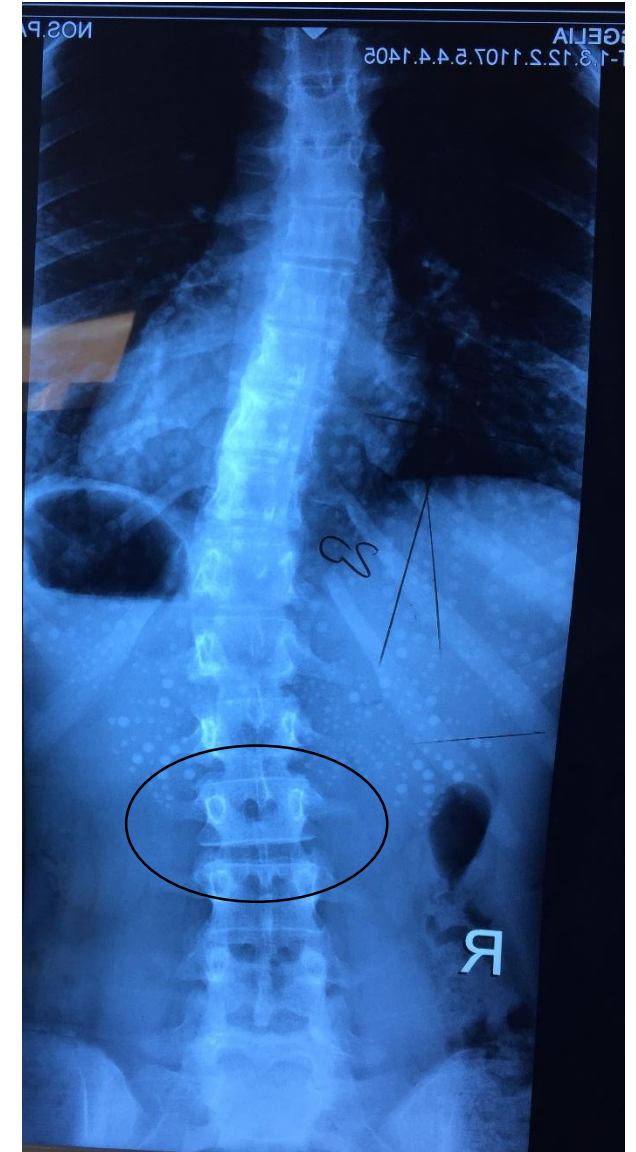
Ασθενής 3 – Schroth BSPTS method



27°
pre-ex



30°
pre-ex



20°
post-ex

Ασθενής 3 – Schroth BSPTS method



pre-ex



post-ex

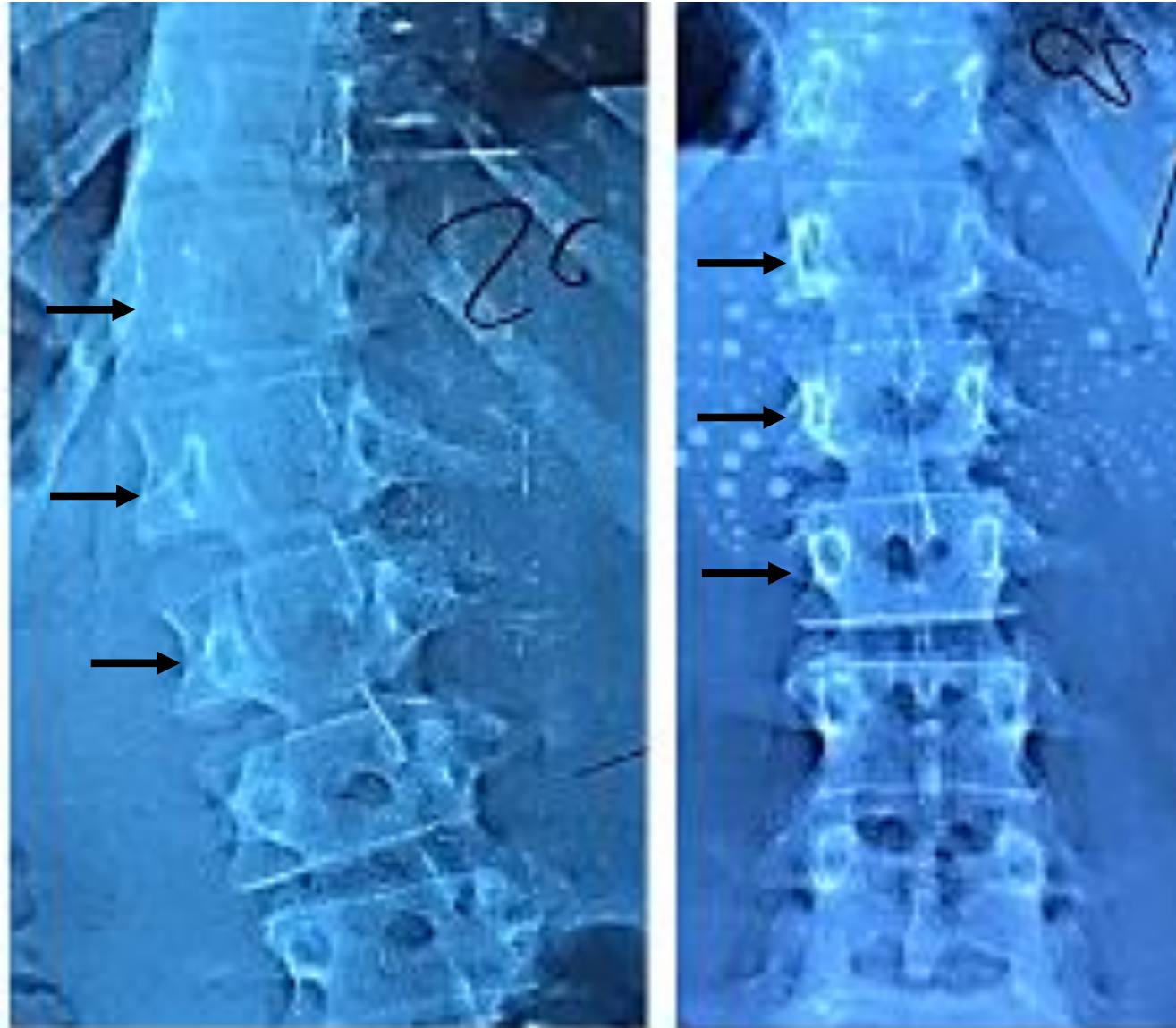


pre-ex



post-ex

Ασθενής 3 – Schroth BSPTS method



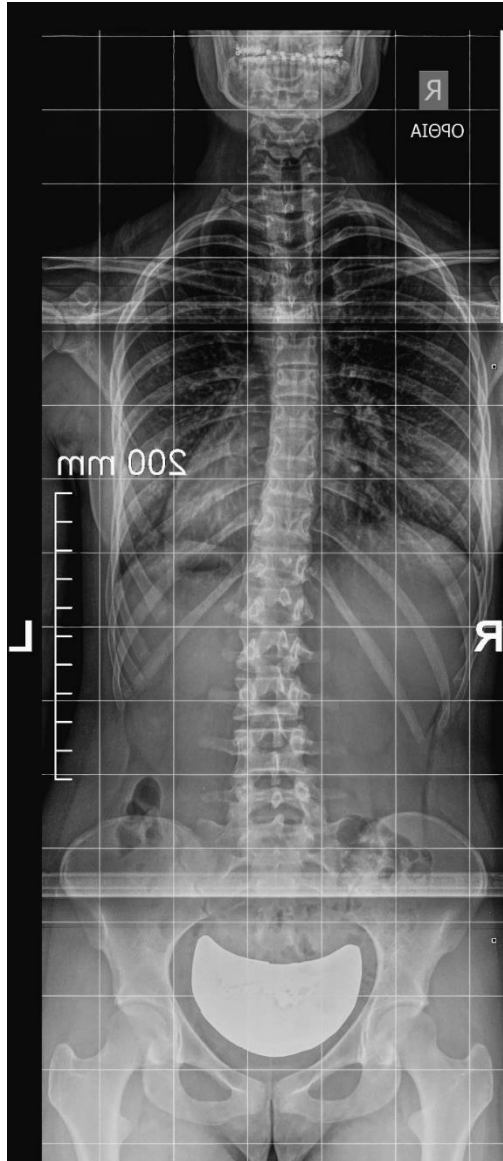
pre-ex

post-ex

Ασθενής 4 – Schroth BSPTS method



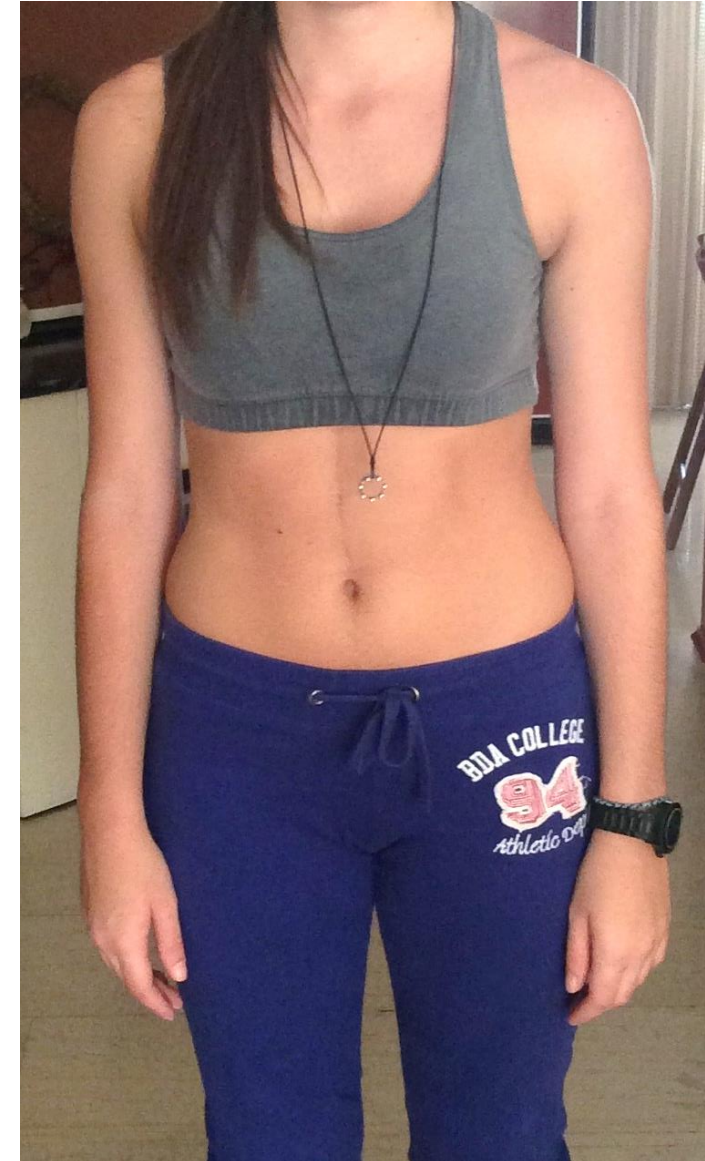
25°
pre-ex



10°
post-ex



pre-ex

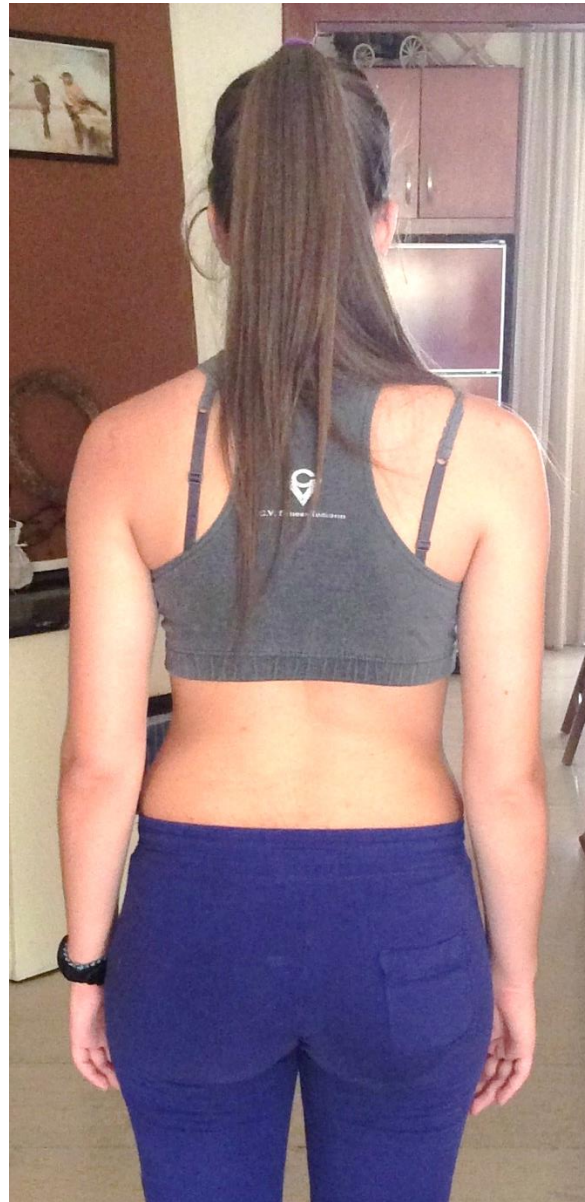


post-ex

Ασθενής 4 – Schroth BSPTS method



pre-ex



post-ex

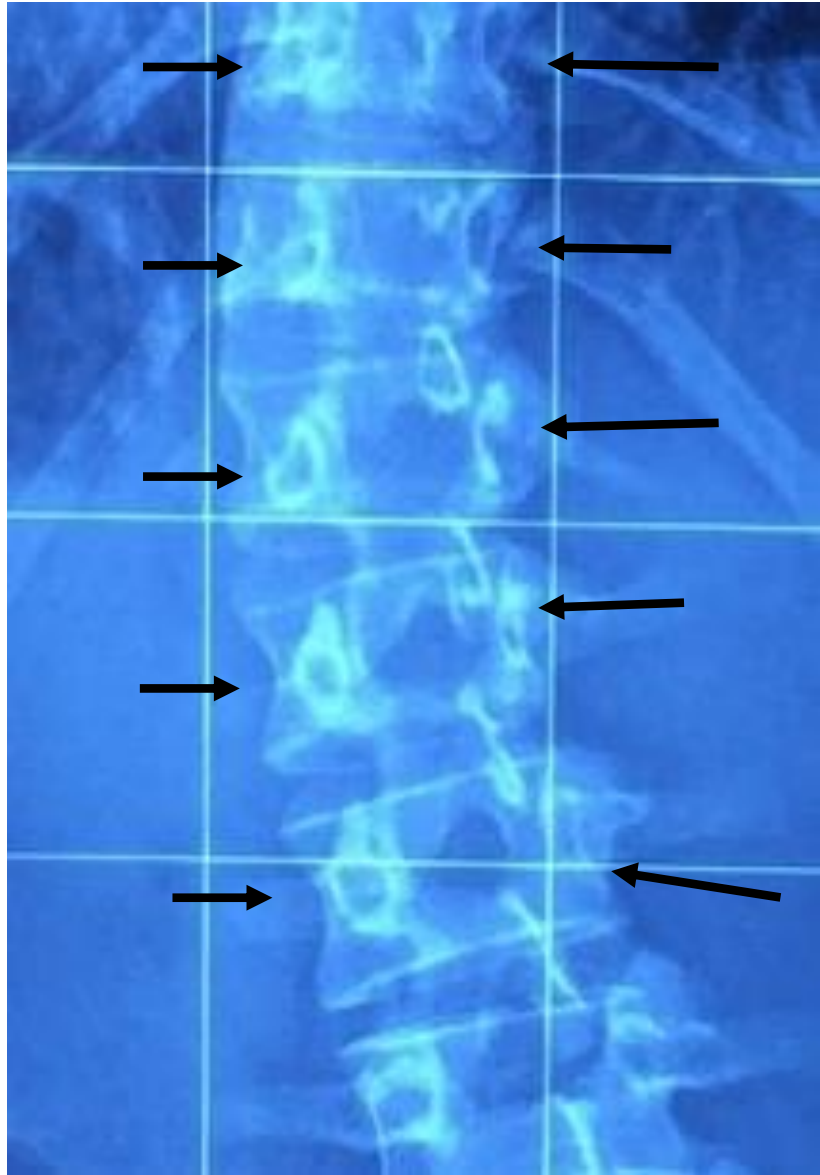


pre-ex

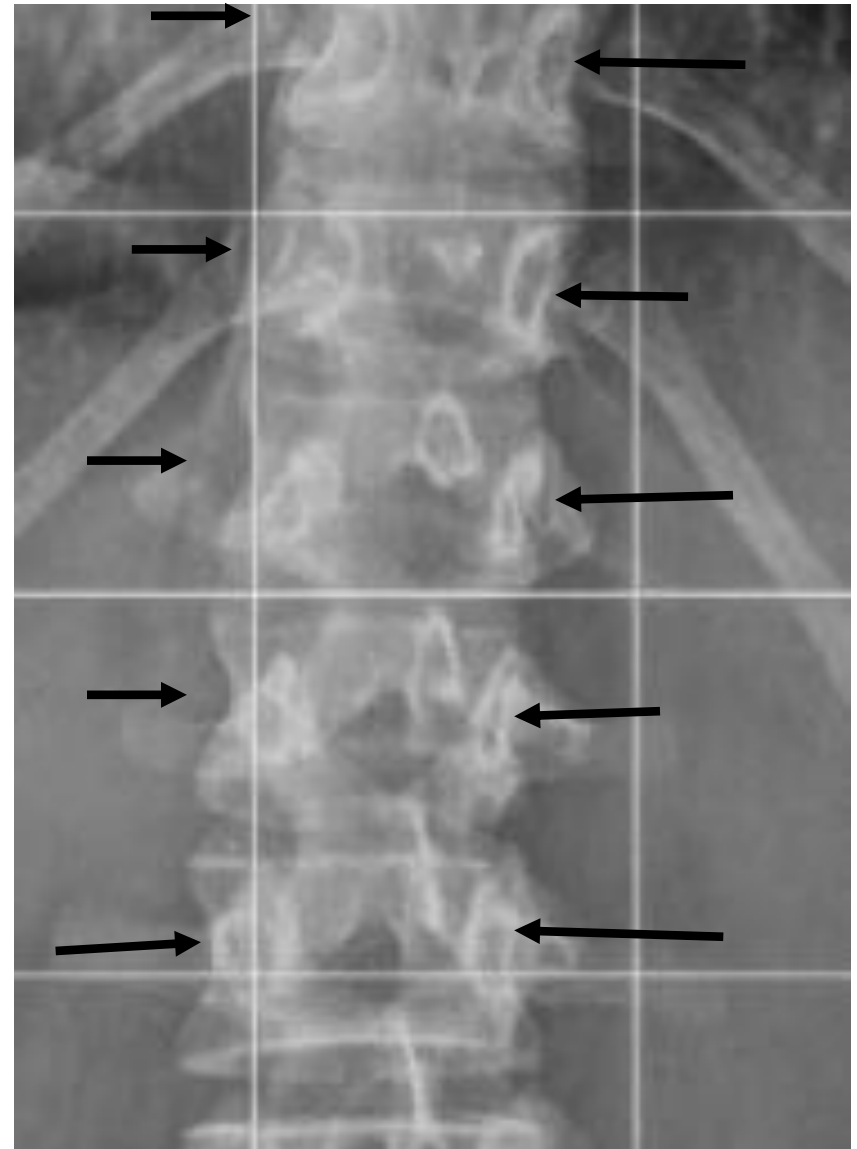


post-ex

Ασθενής 4 – Schroth BSPTS method

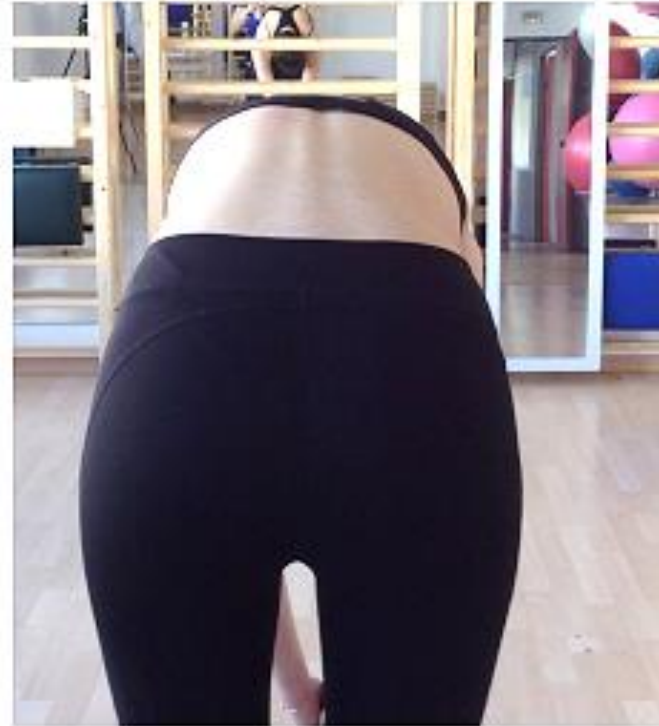


pre-ex



post-ex

Ασθενής 4 – Schroth BSPTS method



12 μήνες μετά την δεύτερη x-ray, κάνοντας ασκήσεις μόνο 1 ημ/εβδ

Συμπεράσματα

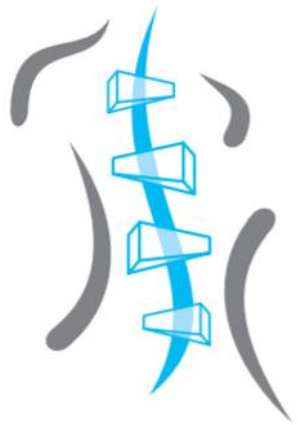
- Οι ασκήσεις της μεθόδου Schroth BSPTS, ως αποκλειστική θεραπεία, αντιμετωπίζουν αποτελεσματικά μεσαίες θωρακοσφυϊκές σκολίωσης
- **Οι ασκήσεις Schroth BSPTS βελτίωσαν σημαντικά**

Ακτινολογικές παράμετροι: Γωνία Cobb, Στροφή Σπονδύλων (AVR)

Κλινικές παράμετροι: Στροφή κορμού (ATR), TRACE, SRS-22

- **PSSE: Level of Evidence I, επιστημονική υποστήριξη από όλες τις διεθνείς επιστημονικές κοινότητες: SRS, SOSORT, AAO, AAP, POSNA**
- Η εκπαίδευση των ασθενών για διατήρηση μιας διορθωμένης στάσης και κατά τις καθημερινές δραστηριότητες είναι σημαντική στην μακροπρόθεσμη διατήρηση του θεραπευτικού αποτελέσματος
- Μεγαλύτερα δείγματα ασθενών και μελέτη άλλων τύπων σκολίωσης προτείνονται για το μέλλον

Ευχαριστώ για την προσοχή σας



**Schroth Scoliosis
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