



EFFICIENCY OF SEAS (Scientific Exercises Approach to Scoliosis) THERAPY IN ACTIVE SELF-CORRECTION OF PATIENTS WITH ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS)

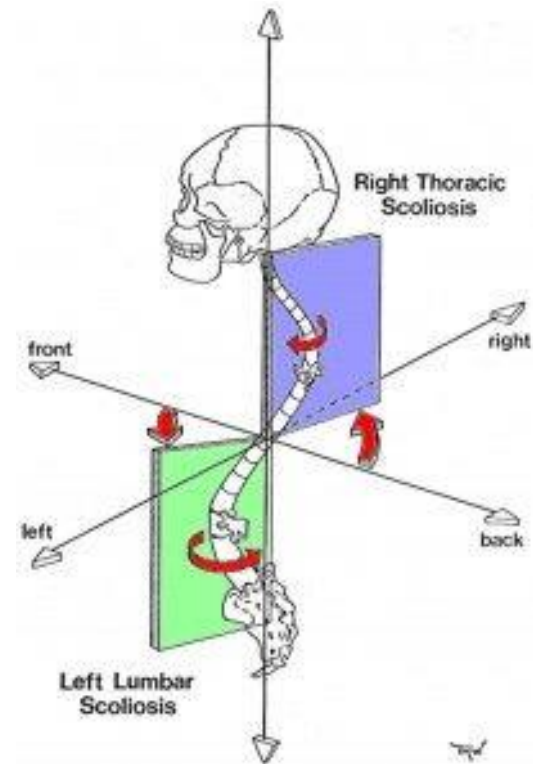
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Definition

- **Scoliosis** is a three-dimensional (**3D**) spinal **deformity** that involves
 - lateral curvature in **frontal** plane
 - anteroposterior deviation in **sagittal** plane
 - vertebral torsion in the **transversal** plane





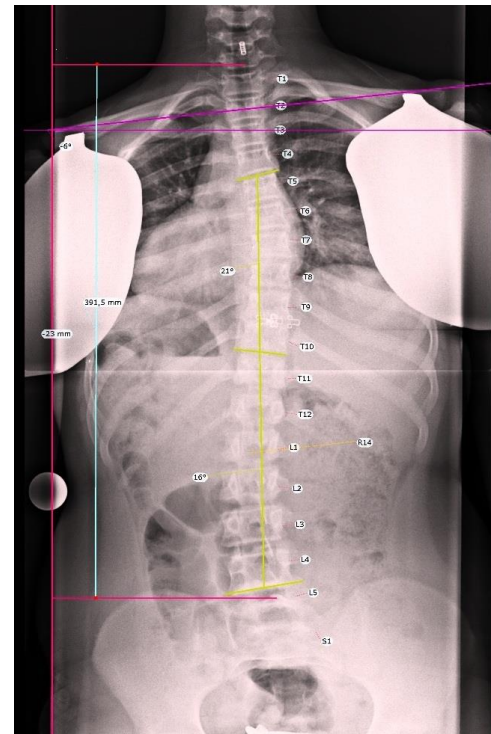
Etiology and epidemiology

- 80 % idiopathic scoliosis no specific cause
- 20 % secondary scoliosis
- The rate of development of spinal curvature changes the most rapidly at the beginning of puberty
- Progression of AIS is much more frequently seen in females.



Assessment of scoliosis

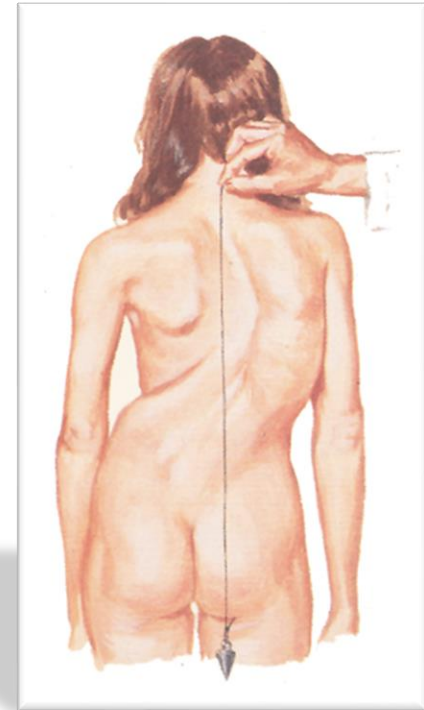
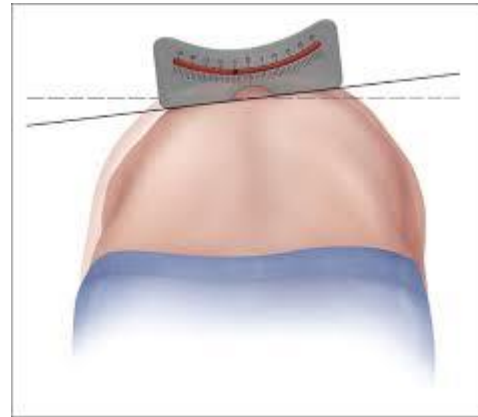
- Anamnesis
- Physical examination and clinical assessment
- Radiological assessment





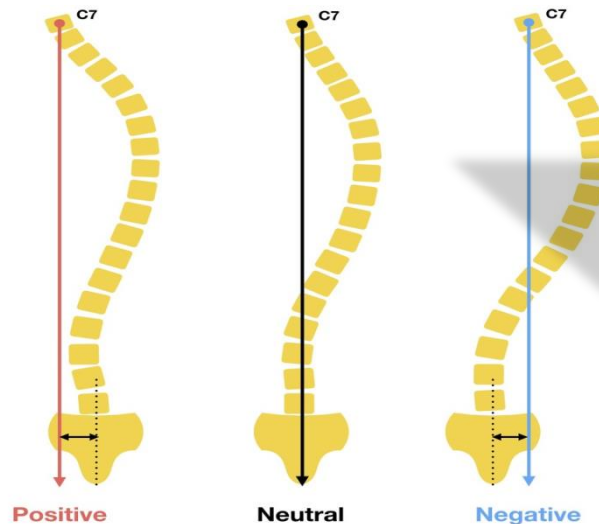
Clinical assessment

5-7 °



+/- 2 cm

- Adam's forward bending test
 - Angle of trunk rotation – scoliometer
- The plumb line





Clinical assessment

- The Scoliometer measures the angle of trunk rotation
- Selecting angles of trunk rotation larger than 5° as criteria for referral for radiography, the positive predictive value increased, but positive cases with larger Cobb angles also decreased markedly



The goals of treatment AIS according to the **SOSORT** consensus paper

Esthetics

Quality of life

Disability

Back pain

Psychological well-being

Progression in adulthood

Breathing function

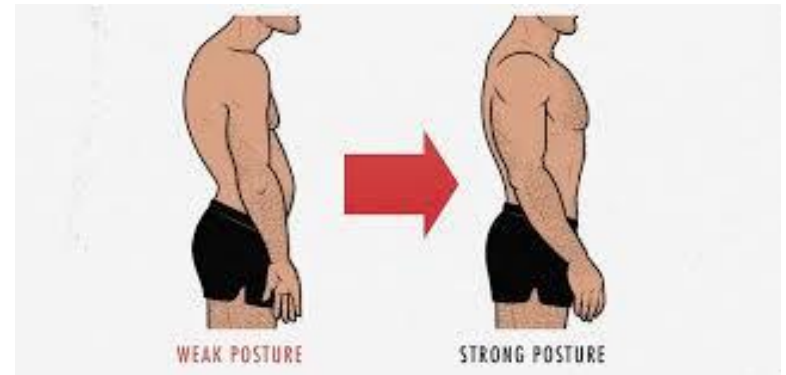
Scoliosis Cobb degrees

Need of further treatments in adulthood



Specific aims of conservative treatment during growth

- Avoid surgery
- Improve aesthetics
- Improve quality of life





The treatment of AIS

Conservative treatment

(depending on the degree of curvature)

- Observation
- Physiotherapeutic scoliosis-specific exercises (PSSE)
- Bracing

Operative treatment



Conservative treatment - PSSE

SOSORT experts agree that PSSE should consist of the following:

- Auto-correction in 3D
- Training in activities of daily living (ADL)
- Stabilizing the corrected posture
- Patient education

Different approaches with the same goal



Recommendation on physiotherapeutic scoliosis-specific exercises to prevent scoliosis progression during growth



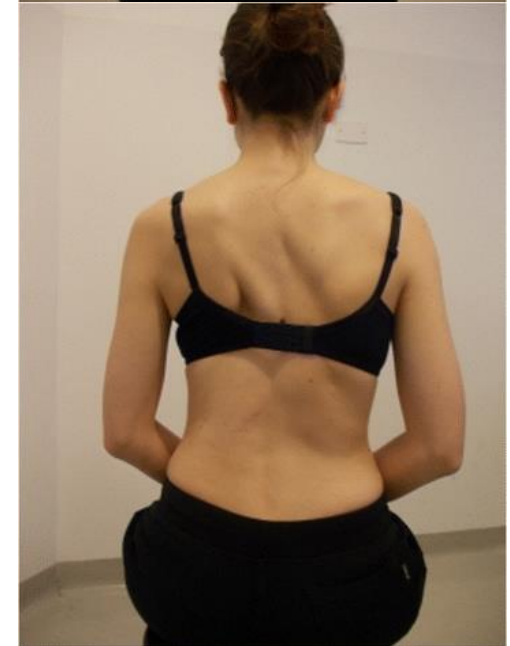
- 1. Physiotherapeutic scoliosis-specific exercises are recommended as the first step to treat idiopathic scoliosis to prevent/limit progression of the deformity and bracing**
- 2. It is recommended that physiotherapeutic scoliosis-specific exercises follow SOSORT Consensus and are based on auto-correction in 3D, training in ADL, stabilizing the corrected posture, and patient education**
- 3. It is recommended that physiotherapeutic scoliosis-specific exercises follow one of the Schools that have shown the effectiveness of their approach with scientific studies**
- 4. It is recommended that physiotherapeutic-scoliosis specific exercise programmes are designed by therapists specifically trained in the approach they use**
- 5. It is recommended that physiotherapeutic scoliosis-specific exercises are proposed by therapists included in scoliosis treatment teams, with close cooperation between all members**
- 6. It is recommended that physiotherapeutic scoliosis-specific exercises are individualized according to patient needs, curve pattern, and treatment phase**
- 7. It is recommended that physiotherapeutic scoliosis-specific exercises are always individualized even if performed in small groups**
- 8. It is recommended that physiotherapeutic scoliosis-specific exercises are performed regularly throughout treatment to achieve best results**
- 9. It is recommended that therapists implement a compliance system for exercise tracking**
- 10. It is recommended that therapists regularly assess patients' quality of physiotherapeutic scoliosis-specific exercises performed by the patients.**
- 11. It is recommended that physiotherapeutic scoliosis-specific exercises difficulty is progressively increased according to patient ability.**
- 12. It is recommended that physiotherapeutic scoliosis-specific exercises are taught individually in a 1 to 1 relationship to assure individualized care, while regular performance could also be at home or in little groups**



Conservative treatment SEAS

Scientific Exercises Approach to Scoliosis (SEAS)

- Active three dimensional self-correction
- Significant immediate improvement of the aesthetic of the torso by improved symmetry.
- Improvement of the frontal balance and weight distribution within the spine and through the peripheral joints.
- Improvement of the postural alignment of other body parts (eg. head, elbows).





Conservative treatment

SEAS

spinal stabilisation

- the improvement of spinal stability in active self-correction is the primary objective in the SEAS approach
- In practice, patients perform first the active self-correction, and then the exercises: these have the aims of challenging the obtained correction, improving stability function and reducing any functional impairment
- stimulate the maintenance of a three-dimensionally corrected posture during the activities of daily life



AIM

To analyse active self-correction in frontal plane by measuring coronal balance with plumb line and to investigate changes in trunk rotation measured with scoliometer before and after SEAS therapy.



METHODS

- Retrospective study conducted at Children's department in Institute for physical medicine and rehabilitation „Dr Miroslav Zotovic“.
- 45 patients (8 boys and 37 girls), age 10 to 16 years with diagnosis of idiopathic adolescent scoliosis where SEAS therapy was applied.
- Average Cobb angle in primary curve was 17,4 degrees.
- Skeletal maturity was measured with Risser's sign from 0 to 3.
- Training of patients lasted for 5 days.



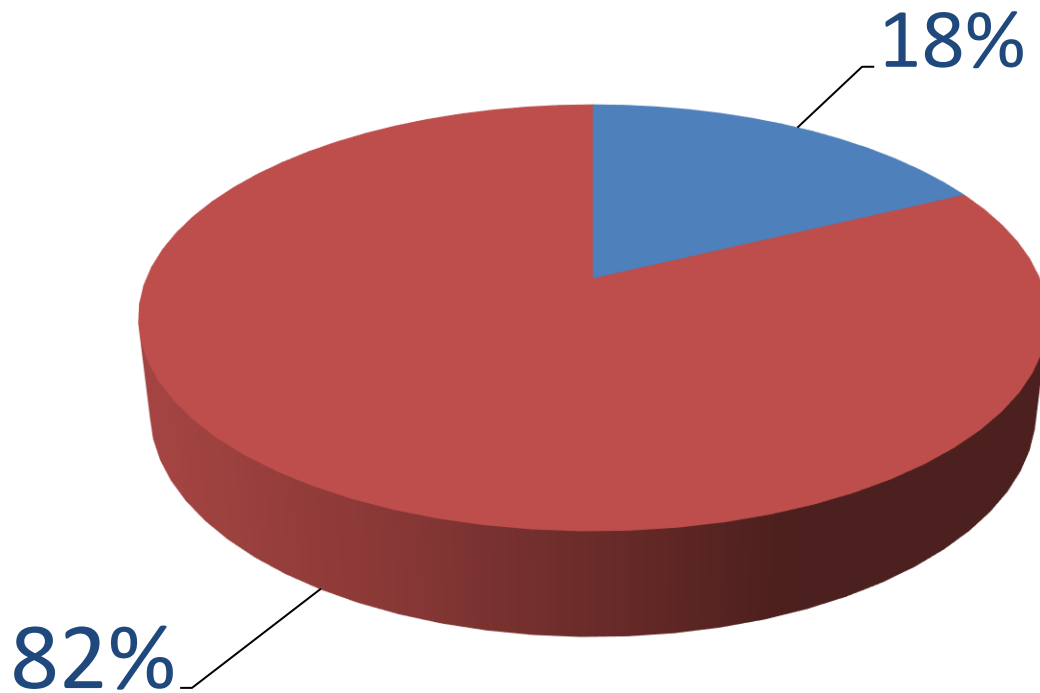
METHODS

- We measured angles of trunk rotation from all patients with scoliometer and we used plumb line to measure coronal balance before and after the treatment.



RESULTS

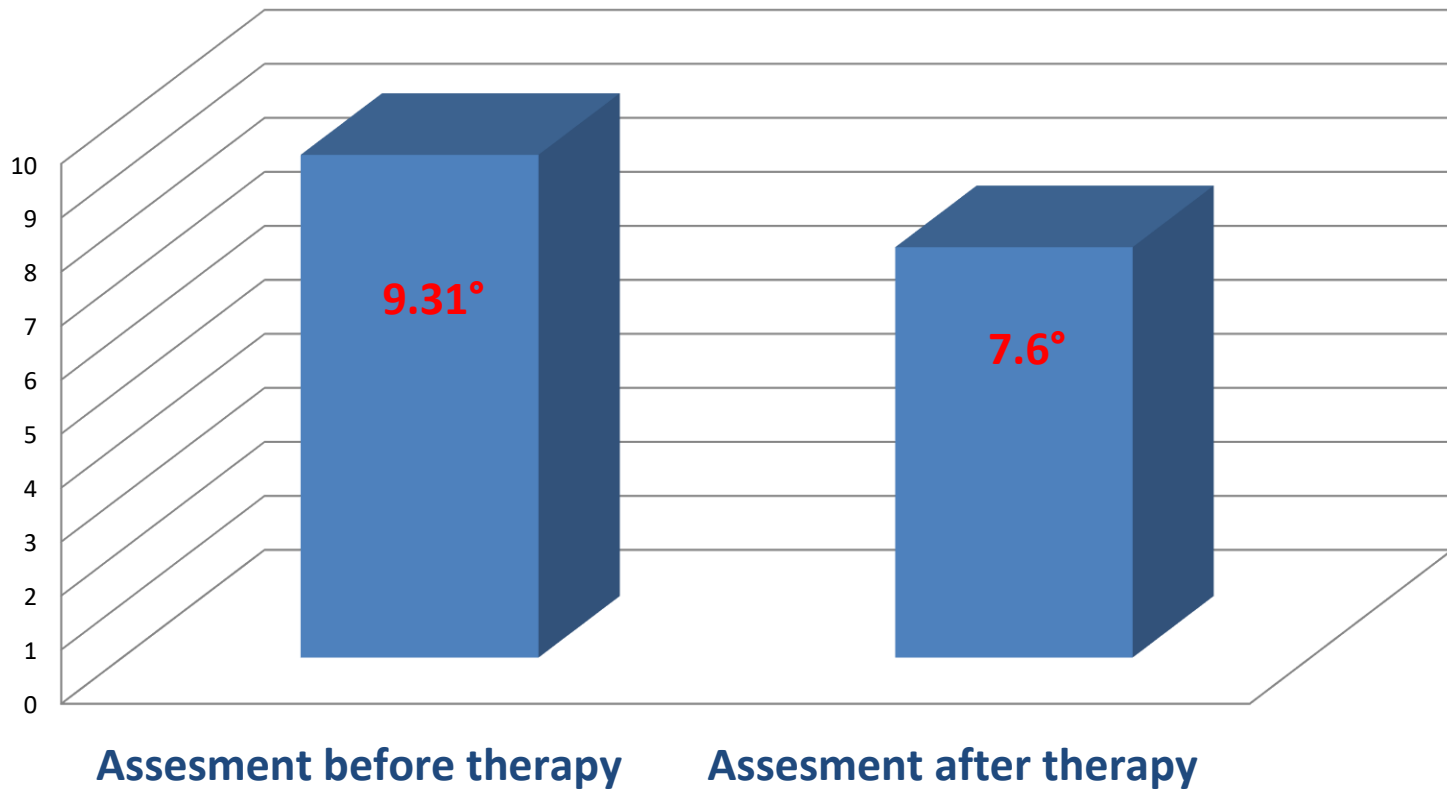
GENDER STRUCTURE





RESULTS

Angle of Trunk Rotation

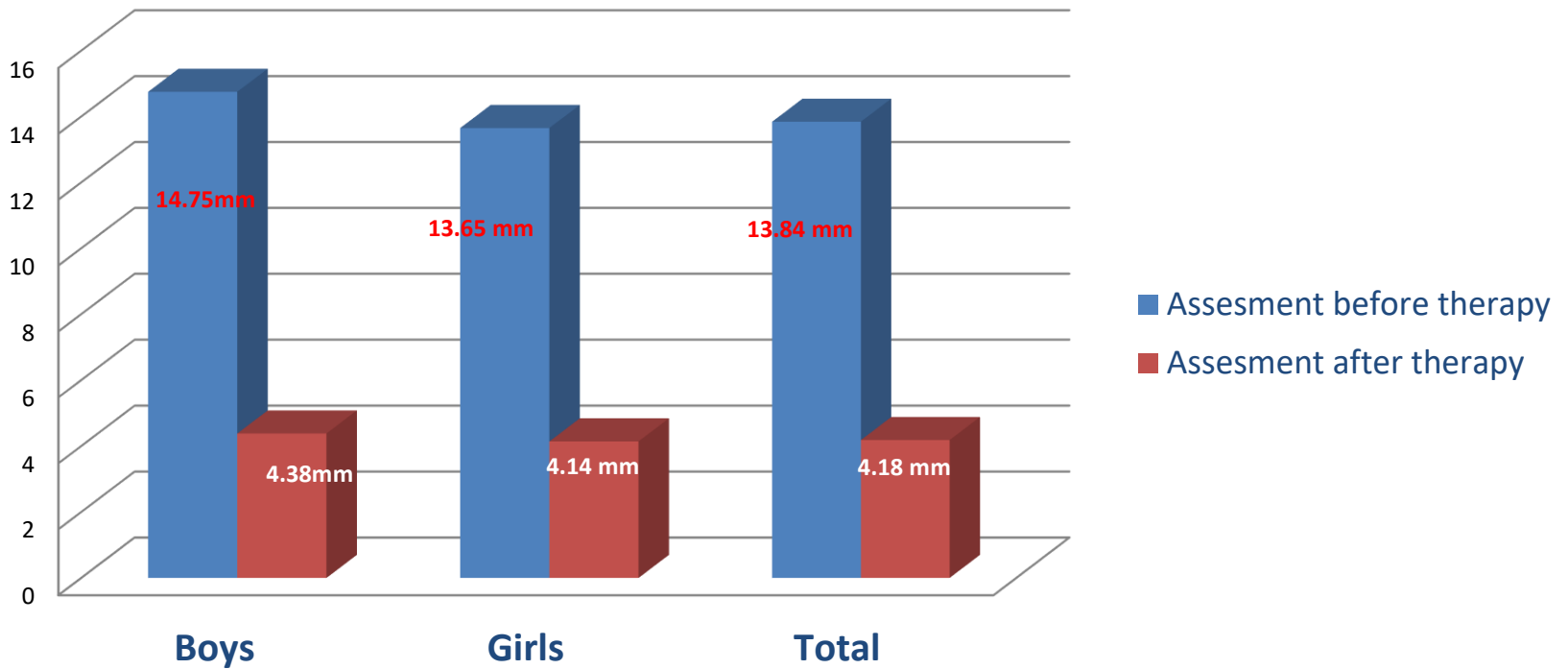


(p < 0,05)



RESULTS

Coronal balance



(p < 0,01)



CONCLUSION

- SEAS therapy enables active self-correction by improving balance and alignment in frontal plane and reducing trunk rotation, which positively influences trunk esthetics of the patients.

Thanks for your attention



**KEEP
CALM
AND
FIGHT
SCOLIOSIS**