

A controlled prospective study on the efficacy of SEAS.02 exercises in preventing progression and bracing in mild idiopathic scoliosis

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1. Abstract

There is low evidence on the possible efficacy of exercises to treat idiopathic scoliosis, graded as C by the existing Italian Guidelines. Our aim was to verify if exercises quality has an effect on results. Design: prospective controlled study on idiopathic scoliosis patients that performed only exercises to avoid progression. Treatment: SEAS Group make exercises according to the protocol SEAS.02 (Scientific Exercises Approach to Scoliosis, version 2002). The CONT Group performed exercises at a local structure according to different protocols preferred by the treating therapists. Population. SEAS: 48 patients (37 females), 12.5±2.2 years, 15.1°±5.7° Cobb (°C), 9.0°±3.3° Bunnell (°B). The difference in the number of braced patients within the first year has been almost statistically significant (P=0.07): 1 in SEAS vs. 5 in CONT. Cobb degrees improved with treatment (P<0.05) only in the SEAS group. Clinical results (variation of at least 5°C or 2°B) were better in SEAS than CONT. Not all exercises for scoliosis have the same efficacy: this study proves the short term efficacy of SEAS.02 when compared to usual care.

Keywords. Idiopathic scoliosis, Physical exercises, Rehabilitation, Controlled study.

2. Introduction

There is evidence on the efficacy of exercises alone to treat idiopathic scoliosis [1-6] graded as C (multiple controlled non-randomised studies, whose results are consistent with each other) by the Italian Guidelines [5].

In the daily clinical practice, results are sometimes poor, but this could depend on the quality of proposed exercises. Our aim was to verify if exercises quality has an effect on results.

3. Materials and Methods

This is a prospective controlled study on idiopathic scoliosis patients that performed only exercises to avoid progression: all patients corresponding to the inclusion criteria were enrolled consecutively.

These results report on the first year of radiological follow-up. Each patient has been always evaluated by the same physician. The groups compared have been identified through self-selection by the patients.

3.1. Treatment

The SEAS Group performed exercises according to the protocol SEAS.02 (Scientific Exercises Approach to Scoliosis, version 2002) based on the active self-correction learning (Figure 1) with individually adapted exercises at a structure super-specialized on scoliosis treatment (1.5 hours single sessions every 2-3 months) with prosecution in a facility near home twice a week (40 min) plus 1 exercise daily (5 min).

The CONT Group performed exercises at a local structure according to the protocol preferred by the single treating therapist, usually 2-3 times a week per 45 to 90 minutes.

3.2. Population

SEAS: 23 patients (18 females), 12.7 ± 2.2 years, $15.3^\circ \pm 5.4^\circ$ Cobb ($^\circ\text{C}$), $8.9^\circ \pm 2.8^\circ$ Bunnell ($^\circ\text{B}$). CONT: 25 patients (19 females), 12.1 ± 1.1 years, $14.9^\circ \pm 6.0^\circ\text{C}$, $9.1^\circ \pm 3.7^\circ\text{B}$.

Active self-correction- ASC

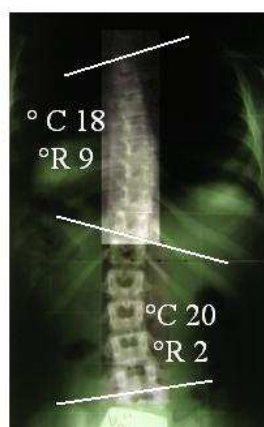
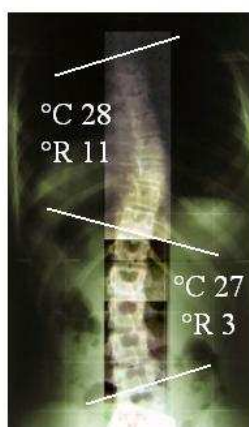


Figure 1

3.3. Statistical analysis

T-test for uncoupled data Mann-Whitney, Fisher's Exact and chi-square with $\alpha = 0.05$

4. Results

No statistically significant difference has been found between the two groups at baseline.

The difference in the number of braced patients within the first year has been almost statistically significant ($P=0.07$): 1 (4.3%) in SEAS vs. 5 (20%) in CONT (Figure 3).

Cobb degrees improved with treatment ($P<0.05$) only in the SEAS group (Figure 2) in the total of curves ($-3.2\pm 6.2^\circ$), worst curve ($-2.6\pm 5.2^\circ$) and thoracic localization ($-3.1\pm 5.1^\circ$) with a tendency ($P<0.1$) also for thoracic ($-3.1\pm 5.1^\circ$) and thoraco-lumbar ($-1.7\pm 2.7^\circ$).

Clinical results (variation of at least 5°C or 2°B) were better in SEAS than CONT: radiographically ($^\circ\text{C}$) 28.9% improved and 2.7% worsened vs. 5.0% and 12.9%; clinically ($^\circ\text{B}$) 30.4% improved and 13.1% worsened vs. 36.4% and 27.3%.

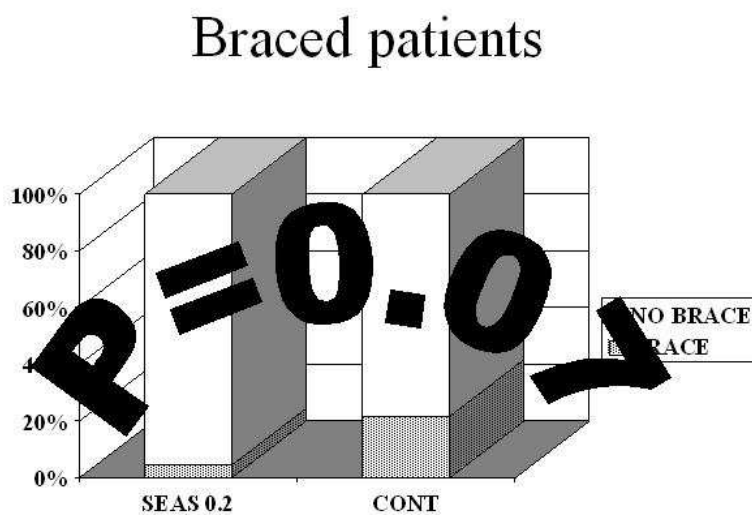


Figure 2

5. Discussion

Not all exercises for scoliosis have the same efficacy [2]: this study proves the short term efficacy of SEAS.02 when compared to usual care.

In an age at risk, the group with the qualitatively better treatment (SEAS) has demonstrated an improvement of median values, but also the less effective treatment has allowed a higher stabilization if compared to natural history. The difference in terms of bracing has been impressive, with 83% of prescribed braces (5 out of 6) in CONT: this datum documents the clinical value of SEAS.

The quality of work is crucial in this field: if the therapeutic team is not conveniently prepared in all its components, results cannot be guaranteed. A limit of the study has been the relatively short control time, but it is focused on the most critical period.

Xr & cl. Result positive in SEAS

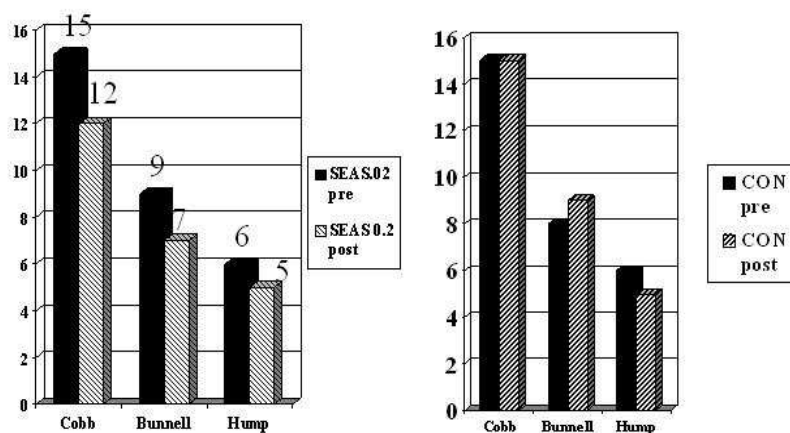


Figure 3

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