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**Topic** **Bracing for Scoliosis**

**Title** **Efficacy of bracing immediately after the end of growth: final results of a retrospective case series.**

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**Abstract** **Objectives:** verifying the efficacy of bracing for adolescent idiopathic scoliosis (AIS) after the end of growth (Risser 4 and 5, until 20 years of age).

**Background:** it is widely thought that bracing after skeletal maturity is useless; even if some results we previously published drive to different hypothesis. According to our experience and some old masters proposals (Stagnara, Sibilla), in these cases we propose bracing for aesthetic reasons and/or in worst cases for a possible curve reduction. Methods. Study Design:

retrospective study. Population: all AIS patients with Risser 4-5 at start that reached the end of treatment since our database start in 2003; we had 23 females and 2 males; at start: age  $16.5 \pm 1.6$ , Cobb degrees  $27.4 \pm 8.4$ .

**Methods:** Lyon or SPoRT braces 18 to 24 hours per day plus specific exercises, respecting SOSORT criteria, with a rapid weaning (2-3 hours every 6 months). Outcome criteria: SRS (unchanged; worsened over  $6^\circ$ ; over  $45^\circ$  at the end of treatment; surgically treated; 2 years follow-up); clinical (ATR, hump, Aesthetic Index, plumbline distances); radiographic (Cobb degrees); and ISICO (optimum; minimum).

**Statistics:** ANOVA and chi-test.

**Results:** reported compliance during the  $2.6 \pm 0.6$  treatment years was  $95.1 \pm 7.8\%$ , while residual growth was  $0.9 \pm 1.1$  cm.. No patients progressed over  $45^\circ$ , no one was fused and this remained true at the 2 years follow-up for the 25% that reached it. Improvements have been found in 48% and 36% of worst and average curves, and in 45%, 58% and 36% of Thoracic, Thoracolumbar and Lumbar curves respectively. We found highly statistically significant reductions of maximal ( $-4.4^\circ$ ), average ( $-4.2^\circ$ ), Thoracic ( $-6.0^\circ$ ) and Thoracolumbar ( $-6.6^\circ$ ) curves. Statistically significant improvements have been found for Aesthetic Index, but not for ATR or plumbline distances. Clinically, 30% of patients improved over the measurement error for Aesthetic Index. According to ISICO criteria 50% of patients had minimum and 35% optimal results.

**Conclusion:** Before 20 years of age, even in skeletal mature patients, it is possible to reach radiographic and aesthetic improvements, although not as good as during growth. Correction is based on bone growth, but also ligaments and neuromuscular control of posture can be involved.

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