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**It is worth treating adolescent with idiopathic scoliosis when bone maturity passed US Risser 2: Bracing can improve curves and aesthetic**

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**Hypothesis:** Bracing can help Risser 3-4, 30-45° adolescents with idiopathic scoliosis (AIS) to achieve 1) curve reduction (with reduced risks in adulthood) and 2) improved aesthetics.

**Study Design:** Retrospective analysis of prospective clinical data (2003 to 2021).

**Introduction:** The SRS (Richards 2005) developed criteria that provided the minimum standards for bracing research, but 1) they could not be standard for clinical practice, and 2) research should test new hypotheses. The SOSORT-SRS research criteria (Negrini 2014) state that, when surgery is avoided, the aim of treatment is to achieve at the end of growth a curve below or as close as possible to 30° Cobb to minimize risks in adulthood (progression, pain).

**Methods:** Inclusion: IS, age 10-18, EU Risser 2-4 (corresponding to US Risser 3-4), primary curve 25-45°, females > 1-year post menarche, first consultation at our Institute. Exclusion: still in treatment. Treatment: brace (SPoRT concept) ≥18 hours/day w/o Physiotherapeutic Scoliosis Specific Exercises (PSSE) (SEAS school). Controls: patients with same Cobb, ATR and TRACE at baseline but starting at EU Risser 0 or 1. Outcome measures: °Cobb, °ATR, TRACE index (aesthetics). Observations: start and end of treatment; in and post brace. Statistics: paired t-test for continuous variables, one-way ANOVA for multilevel categorical variables and Chi-square for proportions. Propensity score matching for treatment effect and linear and logistic regression modelling. Level of significance p<0.05.

**Results:** Out of the 1,542 subjects fulfilling the inclusion criteria, 1,089 reached the end of treatment. Females represented the 82.6% of the sample, mean age 14.50 (SD 1.40) and major Cobb angle was 34.14(SD 6.02). In the propensity score matched cohort the average Cobb angle at start was 0.30 higher than in younger patients starting treatment at US Risser 0 to 2. This very small difference was not significant as 95% CI was -0.35-0.96 and p=0.368. The treatment effect of bracing was very similar in the two groups.

**Conclusion:** Bracing provides curves' reduction and aesthetics improvement of 25-45° Risser 3-4 AIS more than controls.