

# Is nighttime bracing effective in the treatment of adolescent idiopathic scoliosis? A meta-analysis and systematic review based on scoliosis research society guidelines

[Abdul Fettah Buyuk<sup>1</sup>](#), [Walter H Truong<sup>2,1</sup>](#), [Sara J Morgan<sup>1,4</sup>](#), [Andrew J Snyder<sup>1</sup>](#), [Dan J Miller<sup>1,5</sup>](#), [Kristine K Nolin<sup>1</sup>](#), [Kristin J Smith<sup>1</sup>](#)

Affiliations Expand

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## Abstract

**Purpose:** Standard treatment for skeletally immature adolescents with moderate Adolescent Idiopathic Scoliosis (AIS) is a full-time spinal orthosis. However, adherence to full-time wear ( $\geq 18$  h/day) is often challenging for these patients. Nighttime bracing is an alternative option that may improve patient adherence and/or satisfaction. This systematic review and meta-analysis assessed the effectiveness of nighttime bracing in patients with AIS.

**Methods:** A systematic review of studies evaluating nighttime bracing was performed. PubMed, Medline, Embase, CINAHL and Cochrane library databases were searched (01/1975–03/2020); two reviewers assessed eligibility. Eligible articles were peer reviewed, in English, and reported outcomes for patients who met Scoliosis Research Society (SRS) criteria. The primary outcome was curve progression  $\geq 6^\circ$ . Pooled progression rates were calculated from random effects meta-analyses with inverse-variance weights; 95% CIs were calculated.

**Results:** Nine studies ( $n = 595$ ) were included. The overall pooled progression rate to  $\geq 6^\circ$  was 40.7% (95% CI: 30.4–51.5%). The pooled progression rate to surgical magnitude was 24.8% (95% CI: 4.5–53.6%). The most successful outcomes were in subjects with thoracolumbar/lumbar curves and subjects who initiated bracing at Risser 1/2 (pooled progression rates were 27.8% (95% CI: 17.0–40.0%) and 16.5% (95% CI: 11.7–21.8%), respectively). Univariate sub-analyses were conducted due to sample sizes.

**Conclusions:** Progression rates in patients with primary thoracolumbar/lumbar curves and in patients who initiated nighttime bracing at Risser 1/2 were comparable to published progression rates for full-time bracing, indicating that nighttime bracing may be equally effective for these patients. However, the strength of these conclusions is limited by the sample size and the overall quality of included studies.

**Keywords:** Brace; Charleston; Nighttime; Providence; Scoliosis; TLSO.