



## Insufficient Evidence to Support Bracing Alone as a Method for Treating Adolescent Idiopathic Scoliosis

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### Braces for idiopathic scoliosis in adolescents

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**Editorial group:** [Cochrane Back Group](#).

**Publication status and date:** New, published in Issue 1, 2010.

**Review content assessed as up-to-date:** 29 December 2008.

**Citation:** Negrini S, Minozzi S, Bettany-Saltikov J, Zaina F, Chockalingam N, Grivas TB, Kotwicki T, Maruyama T, Romano M, Vasiliadis ES. Braces for idiopathic scoliosis in adolescents. *Cochrane Database of Systematic Reviews* 2010, Issue 1. Art. No.: CD006850. DOI: 10.1002/14651858.CD006850.pub2.

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## Abstract

### Background

Adolescent Idiopathic Scoliosis (AIS) is a three-dimensional deformity of the spine. While AIS can progress during growth and cause a surface deformity, it is usually not symptomatic. However, in adulthood, if the final spinal curvature surpasses a certain critical threshold, the risk of health problems and curve progression is increased. Braces are traditionally recommended to stop curvature progression in some countries and criticized in others. They generally need to be worn full time, with treatment extending over years.

### Objectives

To evaluate the efficacy of bracing in adolescent patients with AIS.



## Search strategy

The following databases (up to July 2008) were searched with no language limitations: the Cochrane Central Register of Controlled Trials, MEDLINE (from January 1966), EMBASE (from January 1980), CINHALL (from January 1982) and reference lists of articles. An extensive hand search of the grey literature was also conducted.

## Selection criteria

Randomized controlled trials and prospective cohort studies comparing braces with no treatment, other treatment, surgery, and different types of braces.

## Data collection and analysis

Two review authors independently assessed trial quality and extracted data.

## Main results

We included two studies. There was very low quality evidence from one prospective cohort study with 286 girls that a brace curbed curve progression at the end of growth (success rate 74% (95% CI: 52% to 84%)), better than observation (success rate 34% (95% CI:16% to 49%)) and electrical stimulation (success rate 33% (95% CI:12% to 60%)). There is low quality evidence from one RCT with 43 girls that a rigid brace is more successful than an elastic one (SpineCor) at curbing curve progression when measured in Cobb degrees, but there were no significant differences between the two groups in the subjective perception of daily difficulties associated with wearing the brace.

## Authors' conclusions

There is very low quality evidence in favor of using braces, making generalization very difficult. Further research could change the actual results and our confidence in them; in the meantime, patients' choices should be informed by multidisciplinary discussion. Future research should focus on short and long-term patient-centered outcomes, in addition to measures such as Cobb angles. RCTs and prospective cohort studies should follow both the Scoliosis Research Society (SRS) and Society on Scoliosis Orthopaedic and Rehabilitation Treatment (SOSORT) criteria for bracing studies.

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## Plain language summary

### Braces for idiopathic scoliosis in adolescents

Scoliosis is a condition where the spine is curved in three dimensions (from the back the spine appears to be shaped like an "s"). It is often idiopathic, or having an unknown cause. The most common type of scoliosis is discovered at 10 years of age or older, and is defined as a curve that measures at least 10° (called a Cobb angle; measured on x-ray). Because of the unknown cause and age of diagnosis, it is called Adolescent idiopathic scoliosis (AIS).

While there are usually no symptoms, the appearance of AIS frequently has a negative impact on adolescents. Increased curvature of the spine can present health risks in adulthood and in the elderly. Braces are one intervention that may stop further progression of the curve. They generally need to be worn full time, with treatment lasting for two to four years. However, bracing for this condition is still controversial, and questions remain about how effective it is.

This review included two studies; one multicenter international cohort study (a study where treatment groups were defined according to the centre where patients were treated) of 286 girls and a randomized controlled study (an experimental study that randomized the participants to treatment groups) of 43 girls. There is very low quality evidence that braces are more effective than observation (wait-and-see) or electrical stimulation in curbing the increases in the curves of the spine. There is low quality evidence that rigid braces are more effective than a soft, elastic one. Adverse effects of braces were not discussed.

Limitations of this review include the sparse data and studies available, and the fact that available studies only included girls (even if there is only one male with scoliosis for every seven females), making it very difficult to generalize the results to males. Due to the very low quality of the evidence in favor of bracing, patients and their parents should regard these results with caution and discuss their treatment options with a multi-professional team.

Further research is very likely to change the results and our confidence in them.