

# EFFECTIVENESS OF THE SPINECOR BRACE BASED ON THE NEW STANDARDIZED CRITERIA PROPOSED BY THE S.R.S FOR ADOLESCENT IDIOPATHIC SCOLIOSIS

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## INTRODUCTION

Many conservative treatments are available for adolescents with idiopathic scoliosis (AIS). Although there are numerous studies in literature which have tried to summarize the results of treatment, the evidence for their accepted use is still unclear. In addition, the lack of consistency for both inclusion criteria and the definitions of brace effectiveness make many clinicians skeptical about the efficacy of conservative treatments (1).

The Scoliosis Research Society (SRS) thought it was necessary to establish parameters for all future AIS bracing studies (2) in order to be able to make comparison amongst more valid and reliable studies. Such guidelines will allow promotion of the effectiveness of different braces using different approaches, for instance the three point pressure principle used by rigid braces and the Corrective Movement© used by the Dynamic SpineCor brace.

The effectiveness of the SpineCor brace has been shown for milder and moderate curves (3). The purpose of the present review is to evaluate the effectiveness of the SpineCor brace for AIS following the new standardized criteria proposed by the SRS Committee on Bracing and Nonoperative Management.

## METHOD

From 1993 to 2006, 493 patients were treated using the SpineCor brace. 249 patients fitted the criteria for inclusion and 79 patients were still actively being treated. After all, 170 patients have a definitive outcome. All girls were premenarchal or less than one year postmenarchal.

Assessment of brace effectiveness included; 1) percentage of patients who have 5° or less curve progression and the percentage of patients who have 6° or more progression, 2) percentage of patients who have been recommended/undergone surgery before skeletal maturity, 3) percentage of patients with curves exceeding 45° at maturity (end of treatment) and 4) 2-years follow-up beyond maturity to determine the percentage of patients who subsequently underwent surgery.

## RESULTS

Successful treatment (correction  $>5^\circ$  or stabilization  $\pm 5^\circ$ ) was achieved in 101 patients of the 170 patients (59.4%) from the time of the fitting of the SpineCor brace to the point in which it was discontinued. 39 immature patients (22.9%) required surgical fusion whilst receiving treatment. Two patients out of 170 (1.2%) had curves exceeding  $45^\circ$  at maturity. One mature patient (2.1%) required surgery within 2 years follow-up beyond skeletal maturity.

## DISCUSSION

Several authors (1,4) concluded that the average long term effect expected from the use of rigid braces is stabilization of curves to pre-treatment levels. Our results, however, show that it is possible to improve the pre-treatment Cobb angle and maintain this 5 years after the end of SpineCor treatment. It is postulated that the stability post SpineCor treatment is due to the positive rehabilitation of the neuromuscular system preventing collapse. Rigid braces in contrast tend to have a negative effect on the neuromuscular system increasing post treatment progression of curves (5).

## CONCLUSION

In summary, the SpineCor Brace is effective for the treatment of AIS. Moreover, the positive outcomes are maintained up to 2-year follow-up beyond skeletal maturity. This particular feature of the SpineCor brace makes it very different to the already published literature on brace in which apparent correction obtained during treatment can be expected to be lost over time. However, future studies that will support and reinforce this finding are necessary. Forthcoming studies using the same standardized criteria for AIS brace studies as used in this study will allow valid and reliable comparison between the SpineCor brace and any others rigid braces.

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Effectiveness of the SpineCor brace based on the new standardized criteria proposed by the SRS for adolescent idiopathic scoliosis

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