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# Does Brace Design in terms of Symmetry, Comfort and Visibility Affect Quality of Life in AIS? Cross-Sectional Comparison and Four-Month Outcomes After Switching to a Push-Up Brace

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## Background

Currently, no comparative studies confirm the superiority of any particular brace type. Beyond clinical efficacy, when considering patients' Quality of Life (QoL), there are different types of braces in terms of symmetry, comfort, and visibility under clothing. We decided to assess the QoL of patients attending our Institute for their first evaluation, some of whom were already using a brace.

## Study Design

Secondary retrospective analysis of prospectively collected data, with a baseline cross-sectional comparison and a prospective follow-up.

## Objective (s)

To investigate whether 1) there are differences in QoL according to brace characteristics and 2) how changing the brace would affect QoL prospectively.

## Methods

We used data from a previous study verifying the efficacy of bracing for AIS. We included all braced Risser 0-2, and curves 20-45°, with QoL evaluation (SRS-22 and ISYQOL) at start and after 4 months of treatment. We cross-sectionally evaluated QoL at the first observation (start), comparing different subgroups of patients according to 1) wearing a Previous Brace (PB) or not (NPB), and 2) brace characteristics in PB according to an expert judgement: symmetrical or not, uncomfortable or not, visible under the clothes or not. QoL data have then been collected prospectively again after 4 months of treatment with a push-up, quite symmetrical and scarcely visible brace. We considered the Minimal Clinically Significant Difference of all variables (0.2 points for SRS-22).

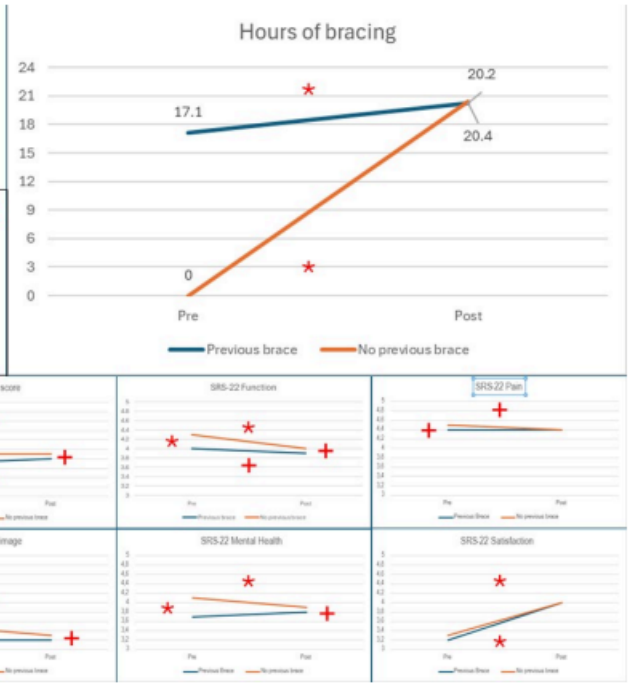
Within and between group comparisons were performed using appropriate paired or independent ANOVA or chi-square tests, with significance set at $p < 0.05$.

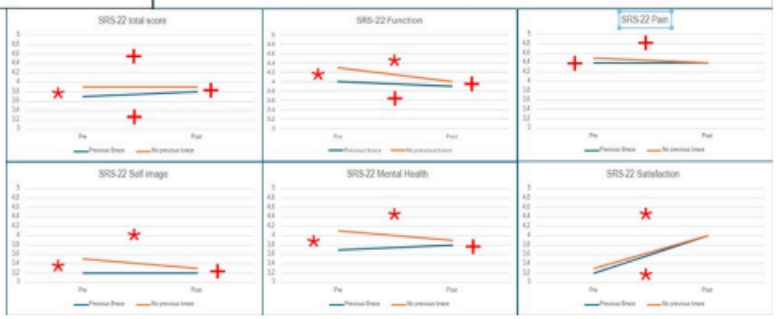
## Results

The cohort included 1,672 patients (1,366 NPB and 306 in PB). At baseline, PB showed statistically, but not clinically significantly larger curves (+3°) and higher skeletal maturity. NPB showed statistically superior QoL for all variables, but clinically significant only for Mental Health (0.4), Function, Self-Image (0.3) and total score (0.2). We did not find differences by brace symmetry, comfort or visibility.

Post-treatment measured compliance (91.6%) and hours of brace wear did not differ between NPB and PB. Increased brace wearing from 17.1 declared, to 20.2 monitored h/day. Satisfaction increased significantly (+0.8 points), with no differences between groups. Other domains showed changes, in some cases also clinically significant (see figure). Comparing groups, PB showed fewer negative changes and a statistically (but not clinically) significant improvement in total SRS-22.

Differences within and between groups
* Statistical & clinical
+ Statistical




## Conclusion(s)

Although baseline QoL differed between PB and NPB, no differences were found within PB by brace symmetry, comfort, or visibility. Prospective changes may reflect factors beyond the brace, including wearing hours, therapeutic environment, and overall results. Future studies should further clarify these factors.

## Clinical significance

These results confirm the Cochrane Review finding that QoL does not change with brace treatment and support the importance of multiple factors, including brace design, when evaluating QoL during bracing.