

Oral presentation

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## An early stage brace wear pattern during daily activities for AIS

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### Objective

To evaluate changes in compliance including both wear tightness and wear time during early brace treatment for AIS.

### Background

The efficacy of brace treatment for children with AIS has been hampered by the lack of comprehensive information about wear characteristics. Our group developed a reliable brace compliance monitoring system to measure and record the temporal profile of the loads on the pressure pad imposed on the trunk during daily living.

### Method

The brace compliance monitoring system was used to monitor how new brace subjects used their braces during first 4 months. Six AIS subjects (5 F, 1 M), between 10 and 13 years old (12.3 ± 1.0 years), prescribed TLSO with full time wear (22 hours per day) were monitored starting at the beginning of their brace treatment. The Cobb angles were measured at the initial visit, 4 weeks after the final brace fitting (in-brace) and the first follow-up visit (out-of-brace) approximately 4 months after initiation. The force average relative to the prescribed tightness level (set as 1.0) and the monthly force comparison were reported. The average wear time and monthly wearing pattern were calculated.

### Results

The brace monitor logged the data for 4 months without any data loss. The initial, the in-brace and the follow-up

Cobb angles were 33 ± 4, 21 ± 3, and 35 ± 5 degrees, respectively. During this study period, the daily force average relative to the prescribed level was 0.97 ± 0.20. The average force from month 1 to 4 was 1.12 ± 0.23, 1.02 ± 0.20, 0.92 ± 0.18, 0.83 ± 0.19, respectively. The average wear time relative to the prescribed time was 56 ± 15%. The monthly wear time from month 1 to 4 were 52 ± 8.6, 54 ± 13, 59 ± 16, 59 ± 21%, respectively. All subjects are still on their brace treatment.

### Conclusion

During the first 4 months of brace use, the wear time improves but brace tightness is lower.