

Oral presentation

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A reliable dosage meter to track brace usage

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Objective

To objectively measure brace usage in terms of wear time and wear tightness during daily activities.

Study design

A reliable brace dosage monitoring system consisting of a microcomputer and a force transducer was developed. This device measures how tightly and how long the patient uses her brace per day. Five AIS subjects who met the SRS Brace Study inclusion criteria were recruited to date. All subjects were new to brace treatment and used the Boston brace. Force transducers were embedded at the major pressure pad location. The sample rate was 1 sample per minute. Each subject had an in-brace x-ray 1 month after they received their brace and returned to the scoliosis clinic approximately 4 months later.

Hypothesis

Understanding how much time per day the brace is used, how tightly the brace is worn during daily activities and correlation with treatment outcomes may improve the science behind brace treatment.

Results

The dosage meter was small (4 cm × 6 cm × 1.7 cm), light weight (25 g), had sufficient memory and power for 4 months and was low cost (CND\$ 200). No subjects dropped out of the study. Three subjects' data had been analyzed. Each data set consisted of at least 3 months

data. Brace usage was typically less in the first month average 42% increasing to 62% in next 3 month.

The average time that the brace was worn above 80% of prescribed tightness level was 47%.

Conclusion

A reliable dosage meter was developed that can monitor brace usage without restricting patients' activities and requiring their attention.

References

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