STUDY DESIGN: Comparative effectiveness study OBJECTIVE.: To evaluate factors leading to higher percentage of brace failures in a cohort of North American patients with AIS relative to their peers in Italy.

SUMMARY OF BACKGROUND DATA: Studies of bracing in USA have shown worse outcomes than studies from European centers, possibly due to sample characteristics or treatment approaches.

METHODS: Sample: Braced patients, age 10-15, Risser< 3, Cobb 20-40°, observed to Cobb ≥40° and/or ≥Risser 4 selected from prospective databases. Comparators: Bracing per BrAIST (TLSO) and ISICO protocol (SPoRT braces with or without SEAS exercises). Baseline characteristics (sex, age, BMI, Risser, Cobb, curve type) and average hrs of brace wear/day. Differences in programs (e.g. SEAS, type of brace, weaning protocol) were captured by a variable named "SITE."

OUTCOME: Treatment failure (Cobb≥40 before Risser 4).

STATISTICS: Comparison of baseline characteristics, analyses of risk factors, treatment components and outcomes within and between cohorts using logistic regression.

RESULTS: 157 BrAIST and 81 ISICO subjects were included. Cohorts were similar at baseline but differed significantly in terms of average hrs of brace wear: 18.31 in the ISICO vs. 11.76 in the BrAIST cohort. 12% of the ISICO and 39% of the BrAIST cohort had failed treatment. Age, Risser, Cobb and a thoracic apex predicted failure in both groups. SITE was related to failure (OR =0.19), indicating lower odds of failure with ISICO vs BrAIST approach. With both SITE and wear time in the model, SITE loose significance. In the final model, the adjusted odds of failure were higher in boys (OR=3.34), and those with lowest BMI (OR=9.83); the odds increased with the Cobb angle (OR=1.23), and decreased with age (OR=0.41) and hours of wear (OR=0.86).

CONCLUSION:
Treatment at the ISICO resulted in a lower failure rate, primarily explained by longer average hours of brace wear.

LEVEL OF EVIDENCE: 3.

PMID: 32205704   DOI: 10.1097/BRS.0000000000003506