Format: Abstract

Construct validity of the Trunk Aesthetic Clinical Evaluation (TRACE) in young people with idiopathic scoliosis.

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Abstract

BACKGROUND: Aesthetics is recognized as a main outcome in idiopathic scoliosis (IS) treatment, but to date, there is no criterion standard for physicians' evaluation. Trunk Aesthetic Clinical Evaluation (TRACE) is a simple 12-point ordinal scale to quantify symmetry as a proxy of aesthetics. TRACE is already diffused worldwide and has been used in clinical research.

OBJECTIVE: We aimed to validate TRACE and improve it with Rasch analysis.

MATERIAL AND METHODS: This study involved an observational Rasch analysis validation of an evaluation tool in outpatient rehabilitation centres. From a clinical database, we randomly selected patients who had IS, were age 10 to 18, had brace prescription at first evaluation, and had at least 2 consultations. Rasch analysis (partial credit model) was used. Differential item functioning (DIF) was assessed for age, sex, disease severity, bracing and treatment. The median was chosen to dichotomize disease severity and bracing. We removed 64 outlier participants (4%).

RESULTS: We included 1553 participants (1334 females; mean [SD] age 13 [1.7] years old). TRACE items showed ordered thresholds and proper fit to the Rasch model. The score-to-measure conversion table showed proper length (range -4.55 to 4.79 logit) with a mean (SE) measure of -0.52 (0.04) logit. The principal component analysis supported the TRACE unidimensionality. The TRACE was free from DIF for age, sex and bracing.

CONCLUSIONS: The TRACE ordinal scale has been converted into a Rasch-consistent, interval-level measure of trunk aesthetics in IS patients and can be used to compare different populations. Its main flaw is low reliability, likely because of the small number of items. TRACE can be used as an outcome measure and in everyday clinical evaluation of IS, even if new developments of the scale are advised.