

Distance to first symptoms measured by the 6-min walking test differentiates between treatment success and failure in patients with degenerative lumbar disorders

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PURPOSE

The smartphone-based 6-min walking test (6WT) is an established digital outcome measure in patients undergoing surgery for degenerative lumbar disorders (DLD). In addition to the 6WTs primary outcome measure, the 6-min walking distance (6WD), the patient's distance to first symptoms (DTFS) and time to first symptoms (TTFS) can be recorded. This is the first study to analyse the psychometric properties of the DTFS and TTFS.

METHODS

Forty-nine consecutive patients (55 ± 15.8 years) completed the 6WT pre- and 6 weeks (W6) postoperative. DTFS and TTFS were assessed for reliability and content validity using disease-specific patient-reported outcome measures. The Zurich Claudication Questionnaire patient satisfaction subscale was used as external criterion for treatment success. Internal and external responsiveness for both measures at W6 was evaluated.

RESULTS

There was a significant improvement in DTFS and TTFS from baseline to W6 ($p < 0.001$). Both measures demonstrated a good test-retest reliability ($\beta = 0.86$, 95% CI 0.81-0.90 and $\beta = 0.83$, 95% CI 0.76-0.87, both $p < 0.001$). The DTFS exceeded the 6WD capability to differentiate between satisfied (82%) and unsatisfied patients (18%) with an AUC of 0.75 (95% CI 0.53-0.98) vs. 0.70 (95% CI 0.52-0.90). The TTFS did not demonstrate meaningful discriminative abilities.

CONCLUSION

Change in DTFS can differentiate between satisfied and unsatisfied patients after spine surgery. Digital outcome measures on the 6WT metric provide spine surgeons and researchers with a mean to assess their patient's functional disability and response to surgical treatment in DLD.

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