

# Response to “Objective Functional Testing in Patients With Lumbar Degenerative Disc Disease”

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Kevin Phan<sup>1,2</sup> and Ralph J. Mobbs<sup>1,2</sup>

We thank Joswig and colleagues<sup>1</sup> for their insightful comments on our article<sup>2</sup> and for highlighting the extra value objective assessment tools can add to the current clinical tests and patient-reported outcome measures. We agree with the authors that the benefit of available patient-reported outcome measures is that they encapsulate the patient’s own perception of his/her current disability related to pain and functional restraint. However, this is a double-edged sword as such scores are limited by their very subjective nature.<sup>3</sup>

The authors are to be commended for introducing the Timed Up and Go (TUG) Test to measure objectively functional impairment in lumbar degenerative disc disease. In contrast to a measure of distance travelled and steps taken as seen by the use of an accelerometer, the TUG test involves additional components of function—such as sitting up from a chair, turning around, walking, and sitting down again. As Joswig et al state, this may be more reflective of “majority of activities of daily living.”<sup>4,5</sup> We are also excited to hear that the authors have developed a smartphone software corresponding to the TUG test for lumbar degenerative disc disease and we hope to see some results in the near future regarding this application.

Over time, it is likely that we will see the introduction of multiple different ways of measuring objectively the functional capacities of patients with spinal disorders. The next challenge will be to determine which measures are most valid for the studied patient population. Indeed, existing objective measures in spinal surgery include range of movement, muscle strength, walking speed, walking distance, as well as based on global positioning systems.<sup>6</sup> The ideal measurement would be one that can be quick to apply and obtain data in the clinic, with high interrater reliability and low interrater variability, and can be easily understood by both clinicians and patients.<sup>4</sup> We have also shown in a case report 12-month follow-up of using an accelerometer to collect distance and walking data, which is feasible and easily managed by the patient.<sup>7</sup> The available preliminary data holds promise for objective functional measures in the context of spinal conditions and spine surgery, but further studies are required to determine the optimal tool for objective evaluation of functional impairment.

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<sup>1</sup> Prince of Wales Private Hospital, Randwick, New South Wales, Australia

<sup>2</sup> The University of New South Wales, Sydney, New South Wales, Australia

## Corresponding Author:

Ralph J. Mobbs, Neuro Spine Clinic, Suite 7a, Level 7, Prince of Wales Private Hospital, Barker Street, Randwick, New South Wales 2031, Australia.  
Email: ralphmobbs@hotmail.com

