European Journal of Pain 13 (2009) 111–112

Contents lists available at ScienceDirect

European Journal of Pain

journal homepage: www.EuropeanJournalPain.com

Reply

Reply to Rob Smeets' letter to the editor regarding the article "A comparison of the relationship between depression, perceived disability, and physical performance in persons with chronic pain" (2008)

We wish to thank Dr. Smeets for his letter, and acknowledge that the study by Smeets et al. (2006) represents an important advance in research addressing the reliability and clinical utility of various functional performance tests among persons with chronic pain. While Dr. Smeets indicates that we provided insufficient evidence to support the use of the PILE in our article, we wish to expand on this issue here. In the manuscript, we indicated that natural variability in pain may cause a measure of pain experience to be unstable, and still believe that this is a factor which may influence the test–retest reliability of the PILE. In addition, we wish to highlight that there are limitations to the statistical approaches used by Smeets et al. (2006), and because of this, we believe a more conservative approach to the interpretation of their data is warranted. With regard to not referencing Dr. Smeets' manuscript on various factors that predict physical performance in our publication, we do acknowledge that we were not aware of this manuscript at the time our paper was submitted for publication, as these events occurred simultaneously.

As noted in Dr. Smeet's letter, there are limitations to assessing reliability using the intraclass correlation coefficient (ICC), and the Bland and Altman method of assessing limits of agreement (LOA) has become a popular alternative technique. In their study, Smeets et al. (2006) found that the LOA for the PILE was 48%, and concluded that this value was "too high for the PILE to be of any clinical use". However, this method is valid only under certain circumstances, and some of the additional calculations performed by the authors have limitations which are not outlined in their article. Specifically:

(1) The Bland and Altman procedure used by Smeets et al. (2006) was intended for situations where the researcher wishes to examine agreement between two tests given to the same person, and not to examine the repeatability of a test in the same person. In subsequent articles, Bland and Altman (1999, 2007) published alternative procedures for calculating the LOA for within-subject designs. Bland and Altman (2007) indicate that when the original formula is applied to within-subject designs, the LOA obtained is likely to be too narrow.

(2) Dr. Smeets indicates in his letter that the LOA "is best expressed as the percentage of the mean population being studied". This statistic is similar to the coefficient of variation, and researchers advise against using this statistic to examine reliability, with one reason being that value obtained can be scale dependent (Chinn, 1991; Rankin and Stokes, 1998). Chinn (1991) indicates that the data used to compute the coefficient of variation should be log transformed prior to analysis. If the variable requires some other transformation to normalize the data, or if no transformation is undertaken, Chinn (1991) indicates that coefficient of variation should not be used to assess reliability.

(3) Smeets et al. (2006), and others indicate that there are no accepted guidelines for interpreting the LOA, and the values themselves may not be directly comparable for the reasons outlined above. How can the authors definitively conclude that the PILE is of no clinical use? Also, there are several measures that can be derived from the PILE. In our study, we examined the percent of the maximum predicted weight lifted, which controls for gender and body mass. It is possible that this measure or other measures derived from the PILE may have a more favorable LOA.

References

Bland JM, Altman DG. Measuring agreement in method comparison studies. Stat Meth Med Res 1999;8:135–60.

Bland JM, Altman DG. Agreement between methods of measurement with multiple observations per individual. J Biopharm Stat 2007;17:571–82.

Chinn S. Scale, parametric methods, and transformations. Thorax 1991;46:536–8.

Rankin G, Stokes M. Reliability of assessment tools in rehabilitation: an illustration of appropriate statistical analyses. Clin Rehab 1998;12:187–99.

Smeets RJ, Hijdra HJ, Kester AD, Hitters MW, Knottnerus JA. The usability of six physical performance tasks in a rehabilitation population with chronic low back pain. Clin Rehab 2006;20:987–96.

Michael E. Geisser
The Spine Program,
Department of Physical Medicine and Rehabilitation,
University of Michigan Health System,
Ann Arbor, MI,
USA
Tel.: +734 615 1750; fax: +734 615 1770.
E-mail address: mgeisser@umich.edu

DOI of original article: 10.1016/j.ejpain.2007.11.003

doi:10.1016/j.ejpain.2008.08.007

Kevin N. Alschuler
The Spine Program,
Department of Physical Medicine and Rehabilitation,
University of Michigan Health System,
Ann Arbor, MI, USA
Department of Psychology,
Eastern Michigan University,
Ypsilanti, MI,
USA

Mary E. Theisen-Goodvich
The Spine Program,
Department of Physical Medicine and Rehabilitation,
University of Michigan Health System,
Ann Arbor, MI,
USA

Andrew J. Haig
The Spine Program,
Department of Physical Medicine and Rehabilitation,
University of Michigan Health System,
Ann Arbor, MI,
USA

Available online 14 September 2008