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## Does Time Influence Reproducibility of the Roland-Morris Disability Questionnaire?

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**Background:** Reproducibility of the Roland-Morris Disability Questionnaire (RDQ) has often been investigated with the correlation coefficient though it is considered a “totally inappropriate method”. The intraclass correlation coefficient (ICC) is also often used although it is strongly influenced by the variation between subjects, and it reflects rather reliability than agreement (absolute measurement error) which is preferable for evaluation purposes. So far, only a few authors studied parameters of agreement with regard to the RDQ. Furthermore, although literature reports higher reliability for short time intervals (0-14 days) compared to interval longer than 6 weeks, this needs further scientific proof. The purpose of this study was to assess the impact that influence of duration of time between test periods has on parameters of agreement.

**Methods:** The population consisted of 223 participants of a randomized controlled trial concerning the effectiveness of rehabilitation for patients with non-specific disabling chronic low back pain (Smeets et al., 2006). RDQ was administered three times (T1, T2 and T3) before any intervention period. We used the 3 time intervals (T1 until T2, T2 until T3 and T1 until T3) to estimate agreement parameters. As the duration could differ between assessments and between subjects, we constructed 6 categories of duration between the assessments of interest (1 to 2 weeks, 3 to 4 weeks, 5 to 6 weeks, 7 to 8 weeks, 9 to 11 weeks and 12 or more weeks). In case a subject had 2 or 3 time intervals being classified into the same category, we selected only one (in a randomized order), resulting in a total number of data which is lower than 3 times the total amount of included patients. The agreement parameters used in this study were:- LOA (limits of agreement) calculated as: mean change  $\pm$  1.96 x SDchange with mean change and SDchange = mean and standard deviation of the change in scores.- SEMagreement (standard error of measurement) calculated as: root square of within-subject variance based on variance between measures (to account for systematic error between measurements) and the residual variance.

**Results:** Data of 212 patients included in the trial could be analysed. The limits of agreement (LOA) and the standard error of measurement (SEMagreement) tended to increase as time between test periods increased. The 95% LOA were respectively -3.5 to 3.9 (1-2weeks), -5 to 5 (3-4weeks), -5.2 to 5 (5-6weeks), -3.8 to 4.8 (7-8weeks), -6.1 to 5.5 (9 to 11 weeks) and -5.8 to 7.8 (12 or more weeks). The corresponding SEM were 1.3, 1.8, 1.8, 1.6, 2.1 and 2.5 respectively.

**Conclusions:** Our study, which presents several LOA values to enable clinicians to interpret change scores across various time intervals, clearly demonstrates that duration of time between test periods affects the RDQ agreement parameters.

### Reference

Smeets RJ, Vlaeyen JW, Hidding A, Kester AD, van der Heijden GJ, van Geel AC, Knottnerus JA. Active rehabilitation for chronic low back pain: cognitive-behavioral, physical, or both? First direct post-treatment results from a randomized controlled trial [ISRCTN22714229]. *BMC Musculoskelet Disord* 2006;7:5.