Factor and item level analysis of the activity scale for kids-performance (ASKp)

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Background/Objectives: The ASKp is a self-report measure of common physical activity for children 5-15 years of age with limitations due to musculoskeletal disorders. The ASKp measures how often a child performed specific activities over the past week using a five point Likert scale. Since the original psychometric properties were published, the ASKp has appeared in 30 and 38 item versions. The objective of this study was to perform exploratory and confirmatory factor analyses of the 38 item ASKp and determine model and item fit statistics.

Design: Instrument Development & Validation

Participants and Setting: The ASKp38 was administered to 200 children (mean age 12.2 ±2.3 years) with a variety of physical impairments. Administration of the ASKp occurred during IRB approved home or center based research visits.

Materials/Methods: Confirmatory (CFA) and exploratory (EFA) factor analyses were done in M Plus. Item fit statistics were calculated using the Rasch partial credit model in Win steps.

Results: EFA with unweighted least squares and Quartimax rotation was done. Five factors with eigenvalues >1 were identified, but only two factors explained>5% variance. Comparison of one and two factor models indicated better fit for the two factor model based on higher communalities and higher factor loadings. There was good separation between the two factors with three cross-loaded items (Figure 1). CFA fit statistics for a two factor model were acceptable (CFI=0.974, TLI=0.991, RMSEA=0.049). Fit statistics for higher factor models were better but exhibited significant item cross-loading. The first factor consisted of “physical activities of daily living” (ADLs): all Personal Care, Dressing, Eating & Drinking, Miscellaneous, Locomotion, Standing Skills, Stairs, and Transfers items, with the exception of #19 “kept up with friends outside”, and #28 “sat on the floor”. The second factor consisted of the one Play item, the eight sports-focused Additional items, and items 19 and 28. Rasch analysis created a hierarchy based on the frequency of successful performance of items. “ADLs” showed a range from -0.67 (least frequently performed: stood still for 10 minutes) to 0.85 logits (most frequently performed: got around inside my home). For the “sports” activities, the range was from -1.19 (least frequently performed: ran in a race) to 0.63 logits (most frequently performed: sat on the floor). Infit (range 0.42-1.56 logits) and outfit statistics (range 0.13-1.59 logits) were acceptable.

Conclusions/Significance: Factor analysis reveals a two-factor model underlying the ASKp38 instrument indicating two different constructs. One factor consists of 27 “ADLs” and the other factor consists of 11 sports-related physical activities. Clinicians should consider other factors such as motivation, opportunity, inability, and lack of need when interpreting this performance measure. Acknowledgement: Research
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