Introduction to the Special Section: Evaluation of the Psychometric Properties of the TGMD-3

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The Test of Gross Motor Development (TGMD; Ulrich, 1985; 2000) has been used by elementary and adapted physical education teachers and pediatric physical therapists to establish the current level of gross motor skill development of children with and without disabilities for more than 30 years. These professionals use results to determine if children are deficient in motor skill development and their level of delay in comparison with national norms for children aged 3 through 10 years. The continued popularity of the TGMD has been associated with its increasing use in research in child development, physical activity, and public health; the TGMD-2 alone has more than 1,000 research citations. International popularity has been reflected in the high number of research studies using the TGMD-2 and TGMD-3 presented at the second annual conference of the International Motor Development Research Consortium (http://i-mdrc.com/) in 2016 and at the annual conference of the North American Society for the Psychology of Sport and Physical Activity (http://www.naspspa.org/). Early in 2018 the TGMD-3 will be published with new U.S. norms and test manual. The TGMD-3 score sheet has been available since 2015 to aid researchers, although they are able only to use raw scores as their dependent variables. Use of raw scores is considered acceptable for some research questions.

History of the TGMD Development and Revisions

The TGMD test items emanated from my dissertation, completed at Michigan State University (Ulrich, 1981). As an entering doctoral student following several years of teaching adapted physical education, I recognized a critical need for motor skill assessment instruments that matched the typical elementary physical education curriculum and that could be used to achieve several goals. The most common curricular content for young children was fundamental motor skills (FMS), which typically emerge in early childhood but continue to develop through childhood. They are believed to be acquired by children across cultures and become the foundation for specialized skills used in games and sports (Burton...
An important element in my dissertation was a review of motor development publications, textbooks, and many elementary school physical education curricula dealing with FMS. I developed a list of common FMS from all of these sources including a listing of common qualitative criteria used for each FMS. The listing of common skills and criteria were submitted to a large group of motor development experts and elementary physical education teachers to independently rate each skill and their criteria in an effort to establish content validity. Those skills and criteria that received a 90% agreement across experts were included on the test.

**Summary of Changes Made for the TGMD-3**

National standards for evaluation of educational and psychological tests recommends that standardized norm-referenced tests should be renormed about every 15 years because people change over time. This renorming is an opportunity to make some needed changes to a test. A challenging aspect of designing the TGMD was to describe clearly the performance criteria (qualitative components) so testers understood and could determine validly the appearance of criteria when children performed them. Most changes to the test over more than 30 years has been to clarify wording of performance criteria. This may be a reason test reliability continues to increase. Changes coming in the third edition were based on continuous feedback I received from test users since the TGMD-2 was published in 2000.

In the TGMD-3, the object control subtest was renamed ball skills subtest. This change was primarily made because many new users from public health and other professions outside of kinesiology did not automatically understand the phrase object control skills. They quickly grasp what is meant by ball skills. In the locomotor skill subtest, skip was reinstated from the original TGMD and leap was deleted. Many adapted physical education teachers who work with students identified on the autism spectrum believed that many of those students became ineligible for adapted physical education services when skip was removed from the original TGMD. In those cases, students displayed significant gross motor skill deficits, but their test scores fell one or two points outside of the eligibility score required to receive services. They also claimed that most of those students had major problems learning to skip.

In the ball skills subtest, underhand roll was deleted and underhand throw was added. Reasons for deleting underhand roll included that many preschool children spontaneously drop to their knees to perform this skill, eliminating the possibility of demonstrating all performance criteria. In addition, underhand throw is used more often in games and sports. I added one-hand strike to the ball skills subtest while keeping two-hand strike. Because the TGMD-2 is used around the world, especially in Asian countries, some children never practice two-hand strike, as presented in the TGMD-2. They do, however, use a one-hand strike, as is used worldwide in racket sports. Given that public health research suggests that a child’s ball skill competency relates to their future level of physical activity, I believed it was important to increase the number of ball skills on the TGMD-3. The result of these changes is that there are six locomotor skills and seven ball skills with a total raw score of 100.