Eurofit Special: European Fitness Battery Score Variation Among Individuals With Intellectual Disabilities

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The Eurofit Special Test is a battery of motor fitness tests resulting from a 10-year project of the Committee of Experts for Sports Research and is comprised of strength, speed, flexibility, and balance. The purpose of this study was to investigate whether the Eurofit Special was able to distinguish variations in functioning among individuals with intellectual disabilities. Significant differences were found in long jump flexibility, 25-m dash, medicine ball throw, balance walk, sit ups in 30-s. Analyses demonstrated that the Eurofit Special was able to discriminate performance levels by gender, age, and level of intellectual disability (mild: 177 female, 368 male; moderate: 359 female, 476 male; severe: 92 female, 111 male).

The Eurofit Special Test is a battery of motor fitness tests resulting from a 10-year project of the Committee of Experts for Sports Research (Eurofit, 1988; Grabowski & Szopa, 1991). In 1997 researchers applied the Eurofit Test Battery to 287 children (7–17 years) with intellectual disabilities noting significant differences between children with and without intellectual disabilities (Ślężyński & Gawlik, 1997). In addition, MacDonncha, Watson, McSweeney, and O’Donovan (1999) concluded that the Eurofit Test Battery was reliable with adolescent males with and without intellectual disabilities.

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In comparative studies conducted in the United States using a variety of motor assessment tools, children with intellectual disabilities consistently scored lower than their nondisabled peers on measures of strength, endurance, agility, balance, flexibility, reaction time, and running speed (Eichstaedt, Wang, Polacek, & Dohrmann, 1991; Horvat & Croce, 1995; Pitetti, Rimmer, & Fernhall, 1993; Rarick, Dobbins, & Broadhead, 1976). Moreover, the fitness and motor performance of individuals without intellectual disabilities exceeded that of children with mild intellectual disabilities, which in turn exceeded that of children with moderate and severe intellectual disabilities. The literature does not sufficiently explain these lower performance measures, although several contributing factors have been identified, ranging from a lack of quality instruction and motivation to lower levels of cognitive processing (Horvat & Croce, 1995).

In Europe, similar findings were found. For example, Wiśniowski and Woyciechowska (1965) in a large sample of females (n = 473) and males (n = 524), ages 9–15 years, found significant differences in motor fitness scores between individuals with and without intellectual disabilities. Results of this study indicated that students attending special schools had major difficulties performing motor fitness tests and provided a catalyst for the development of specific European tests for assessing the physical abilities of individuals with intellectual disabilities. In the same manner, Strzyżewski and Iwanowski (1971) reported that males with mild intellectual disabilities, ages 12–16 years, exhibited lower motor fitness scores than did males without intellectual disabilities, while Pańczyk (1974, 1975, 1976, 1979) and Pańczyk and Liman (1978) indicated that individuals with intellectual disabilities, ages 9–18 years, were significantly lower than their nondisabled counterparts in motor fitness profiles. Further research conducted in Poland throughout the 1980s (Jędrzejczak, 1981; Nowak, 1989; Pąchalski & Czerner, 1988; Ślężyński, Zichlarz, & Zosgórnik, 1983; Zosgórnik, 1989, 1989a) and 1990s (Maszczak, 1991; Pańczyk, 1992; Ślężyński, 1991) confirmed that individuals with intellectual disabilities had significantly lower levels of physical and motor functioning than did individuals without intellectual disabilities.

When summarizing the previous work in the United States and Europe, a continuing pattern of low levels of physical performance in individuals with intellectual disabilities can be seen. In applying the original Eurofit Test battery to the disabled population, however, many of the test items were not adaptable to this population because of difficulties in completing specific test items. This necessitated a revision that was subsequently developed for individuals with intellectual disabilities through the auspices of Special Olympics Belgian (Eurofit, 1988). Through a panel of experts, the test battery was further refined and validated. This resulted in the Eurofit Special, which was deemed a valid motor fitness assessment tool for individuals with intellectual disabilities (Skowroński, 1996, 1999, 2006; Skowroński & Ziemilska, 1996). They evaluated the reliability and validity of the Eurofit Special battery of tests for the population of Polish individuals with intellectual disabilities. To assess the consistency of the battery, the researchers compared the results obtained by 1,602 persons in two tests conducted with an interval of two weeks. There were no statistically significant differences between the first and second test applications (p > .05). The validity was based in part from the panel of experts and on comparing performance to the following criteria:
(a) the amount of participation in physical education classes (not taking part due to sickness, etc., limited participation, two hours a week, three hours a week, or four hours and more a week); (b) absence rate from school once a year, twice to three times a year, or four times and more a year; and (c) participation in different levels of Special Olympics events (not participating, only on school or club level, on regional level, on national level, or on international level).

Based on this effort it was determined that physically active individuals were participating in national and international Special Olympics events and obtained better/higher results. Overall, test results of the Eurofit Special indicated variations in the motor capabilities of persons with intellectual disability. However, compared with other tests measuring the psychomotor ability of individuals with disabilities, there is limited research on the discriminatory ability of the Eurofit Special and its applicability as a research and diagnostic tool. Croce, Horvat, and McCarthy (2001) have argued that test evaluation is a constant, ongoing process and that it is imperative to conduct evaluations of the psychometric properties of a test, especially when a test has been revised or when a test is in its nascent stages of development and use. To further document the effectiveness of the Eurofit Special and to determine its ability to adequately discriminate levels of psychomotor functioning in individuals with intellectual disabilities, this study was undertaken.

Methods

Participants

The first stage of this investigation was to conduct a pilot study on 198 individuals in a special school in Warsaw to assess the administration procedures. In the second stage, special schools were contacted throughout Poland and 1,583 individuals with intellectual disabilities (628 female and 965 male), ages 11–20 years, completed the study. Participants were grouped into the following age categories: youth (ages 8–11), adolescent (ages 12–15), and young adult (ages 16–22). Subgroups consisted of 545 individuals with mild intellectual disability (177 females, 368 males), 835 individuals with moderate intellectual disability (359 females, 476 males), and 203 individuals with severe intellectual disability (92 females, 111 males). Individuals at the profound level of functioning included only six individuals and were not included in the analysis. It should be noted that this level of designation is not currently used in the United States but was present at the time of this study. In addition, it was not possible to establish the precise number of individuals with Down syndrome because the reasons for intellectual disability were not specified for every participant. We were concerned with the various levels of function regardless of classification but realize this is a factor that should be considered in future research on the Eurofit Special.

In Poland, clinics and their adjudging boards are engaged in classification of the level of intellectual disability. The board consists of (a) a clinic’s director, (b) a psychologist, (c) an educator, (d) a speech therapist, (e) a doctor who provides the medical diagnosis, and (f) other specialists if their involvement in the board’s work is necessary. The classification of intellectual disability is based on IQ level in accordance with the Wechsler scale IQ. In Poland, the following categorical
definitions are used: (a) mild disability (55–69), (b) moderate disability (40–54), and (c) severe disability (below 40).

The procedure for the first stage consisted of obtaining the agreement from the Ministry of Education for conducting the research in special schools. Once this authorization had been granted, offers for conducting the second stage of research were sent to all special schools of Polish voivodeships (provinces) from which 73 teachers responded. For ethical reasons it was decided that the research would be conducted only on these individuals whose parents or guardians agreed to participate. In Poland, this is a very delicate matter and varies from using strict research rules for selecting a representative random sample from the population. No intervention from the lead researcher, however, was included in choosing the physical education teachers or collecting the data from the participants. Teachers received information packets including the aim of the research, instructions for the tests, and data collection forms. Physical Education teachers that completed the test instructions were used for test administrators.

Data Collection and Procedures

The Eurofit Special Test Battery consists of test components measuring strength, muscle endurance, speed, flexibility, and balance (Table 1). Each of these tests were administered by a teacher in special schools per precise guidelines from the researchers.

**Explosive Leg Strength.** The performance was measured using a long jump without a run-up. The participant stands with both feet behind the starting line and jumps forward, using a backward-forward movement of the arms. The performance was measured from the starting line to the nearest point of contact where the heels touched the ground. If the individual lost balance and touched the ground, the trial was repeated. Two practice and two trial jumps were recorded to the nearest cm.

<table>
<thead>
<tr>
<th>Test Component</th>
<th>Eurofit</th>
<th>Eurofit Special</th>
</tr>
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<tbody>
<tr>
<td>Endurance</td>
<td>Endurance shuttle run or ergometer Bicycle test</td>
<td>Long jump</td>
</tr>
<tr>
<td></td>
<td>PWC (170)</td>
<td>Pushing a 2 kg ball</td>
</tr>
<tr>
<td>Strength</td>
<td>Hand grip</td>
<td>Long jump</td>
</tr>
<tr>
<td></td>
<td>Long jump</td>
<td>Pushing a 2 kg ball</td>
</tr>
<tr>
<td>Local muscle endurance</td>
<td>Bent arm hang</td>
<td>Sit ups (30 sec)</td>
</tr>
<tr>
<td>Speed</td>
<td>Shuttle run 10x5m</td>
<td>25 Meter run</td>
</tr>
<tr>
<td></td>
<td>Plate taping</td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td>Sit and reach</td>
<td>Sit and reach</td>
</tr>
<tr>
<td>Balance</td>
<td>Flamingo Balance Test</td>
<td>Balance walk</td>
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</tbody>
</table>
Arm Strength. The push was measured using a 2 kg medicine ball push. The push is performed with the preferred arm. From a standing position, the ball was placed in the palm, supported by the other hand and pushed forward. It was important that the ball was pushed and not thrown. Two trials are recorded to the nearest cm. Measurement was from the throwing line to the line at the nearest point of contact with the ground.

Local Muscle Endurance. Local muscle endurance was measured by sit-ups for 30 s. The legs are bent 90 degrees, the feet supported on the floor, secured by a helper. The participant raises the upper body until the knees touch the elbows, then returns to the prone position. The participant performs one trial of as many sit-ups as possible within the time limit of 30 s. Only accurately performed sit-ups are recorded.

Speed. Speed was measured by a 25 m run. Two flags (150 cm height or similar objects clearly marked) are placed 3 m apart and 25 m from a 5 cm wide starting line. The run is performed from a standing position. One trial is completed, measured to 0.1 s accuracy. The run is repeated in the event of a false start.

Flexibility. Flexibility was measured by the sit and reach test. The participant sits on the floor, with the shoes on, in front of the sit and reach apparatus, with the feet flat against the apparatus. The performer then bends forward with the arms extended for 2 s. One practice and one trial is recorded to the nearest cm. For a reach of 3 cm before the feet, the result is 27 (30–3); for +3 cm behind the feet, the result is 33 (30 + 3). The 0 point on the bench equals 30 cm.

Balance. Balance was measured by a walk on a bench. The participant stood facing the bench behind a line 2 m from the bench. Two test trials were performed without shoes. In test A, the participant approached the bench, stepped onto it and walked forward (without supporting and putting feet on the floor). If balance is lost, the test should be repeated. If Test A was successful, Test B is attempted. For Test B the same process applies, with the bench in the upside-down position on the narrow side. Bench dimensions were 350 cm in length and 30 cm in width for Test A and 350 cm in length and 10 cm in width for Test B. Each test must be completed within 30 s, with points recorded based on the following scale:

1 point if the participant responds to the instructions.
2 points if the participant approaches the bench.
3 points if the participant walks 2 m without support or the entire bench with support (Test A).
4 points if the participant walks along the entire bench without support (Test A).
5 points if the participant walks 2 m without support or the entire bench with support (Test B).
6 points if the participant walks along the entire bench without support (Test B).
<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Youth (n = 23)</td>
<td>Adolescent (n = 217)</td>
<td>Adult (n = 128)</td>
</tr>
<tr>
<td>Long Jump (cm)</td>
<td>115.7 ± 38.2</td>
<td>156.7 ± 32.6</td>
<td>183.5 ± 34.6</td>
</tr>
<tr>
<td>Sit-ups</td>
<td>16.0 ± 6.5</td>
<td>20.9 ± 5.5</td>
<td>21.7 ± 4.9</td>
</tr>
<tr>
<td>Flexibility (cm)</td>
<td>32.8 ± 7.8</td>
<td>34.3 ± 8.6</td>
<td>38.1 ± 9.3</td>
</tr>
<tr>
<td>25-m dash (sec)</td>
<td>6.0 ± 1.1</td>
<td>5.1 ± 0.7</td>
<td>4.7 ± 0.6</td>
</tr>
<tr>
<td>Medicine ball (cm)</td>
<td>411.1 ± 140.8</td>
<td>683.5 ± 244.6</td>
<td>884.8 ± 266.6</td>
</tr>
<tr>
<td>Balance (pts)</td>
<td>5.7 ± 0.6</td>
<td>5.9 ± 0.3</td>
<td>6.0 ± 0.2</td>
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</table>
### Table 3  Means and Standard Deviation by Level of Intellectual Disability and Age for Females

<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
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<tbody>
<tr>
<td></td>
<td>Youth ((n = 13))</td>
<td>Adolescent ((n = 96))</td>
<td>Adult ((n = 68))</td>
</tr>
<tr>
<td>Long Jump (cm)</td>
<td>110.7 ± 51.9</td>
<td>145.9 ± 29.0</td>
<td>156.8 ± 26.8</td>
</tr>
<tr>
<td>Sit-ups</td>
<td>14.2 ± 7.4</td>
<td>16.7 ± 5.3</td>
<td>16.4 ± 6.0</td>
</tr>
<tr>
<td>Flexibility (cm)</td>
<td>37.8 ± 11.0</td>
<td>35.5 ± 7.1</td>
<td>43.6 ± 15.0</td>
</tr>
<tr>
<td>25-m dash (sec)</td>
<td>7.0 ± 2.2</td>
<td>5.5 ± 1.0</td>
<td>5.5 ± 0.6</td>
</tr>
<tr>
<td>Medicine ball (cm)</td>
<td>286.1 ± 163.9</td>
<td>496.5 ± 147.2</td>
<td>518.5 ± 137.7</td>
</tr>
<tr>
<td>Balance (pts)</td>
<td>5.2 ± 1.4</td>
<td>5.9 ± 0.5</td>
<td>5.9 ± 0.6</td>
</tr>
</tbody>
</table>
Data Analysis

Content Examination Data. Means and standard deviation by level of intellectual functioning and age for males and females are presented in Tables 2 and 3, respectively. Between subjects 2 (gender) × 3 (level: mild, moderate, severe) × 3 (age group: youth, adolescent, young adult) independent-groups factorial analysis of variance (ANOVA) were used to determine differences in long jump (LJ), sit-and-reach flexibility (FLEX), 25-m dash (DASH), medicine ball throw (MED), balance walk (BAL), and number of sit-ups in 30 s (SIT) scores.

Post Hoc Comparisons. Subsequent to ANOVA analyses, Tukey Post hoc comparisons were performed on the data. Because of the number of analyses performed, alpha level was established at $p \leq .01$ to control for Type II error.

Administration of the Tests. The Eurofit Special was designed to assess the motor fitness of persons with different levels of intellectual disability. The test was developed for use by physical fitness teachers, experts in rehabilitation and recreation, as well as special sport coaches, volunteers, and parents of the athletes. It was also developed to facilitate the following:

- Components of the test could be integrated into the physical education process.
- Youth with intellectual disabilities could be encouraged to develop positive attitudes toward physical activity.
- Proper delivery and interpretation of the test could be realized through the comparison with a larger sample of Polish athletes who have taken the test previously.
- Test results could be used to facilitate communication between students/pupils and their parents in motor fitness.
- Physical activity for the persons with intellectual disability could be designed to produce lifetime benefits.
- Target results could design individual programs for each athlete—for those functioning at a higher or lower level of motor fitness.
- Training recommendations can be based on the level of functioning and incorporate varying intensities and effort for higher functioning individuals.

Modifications for the Eurofit Special. A comparison of the Eurofit and Eurofit Special is included in Table 1. Changes to the original test resulted from pilot research on the adaptability of test items for the population (Skowroński 1996, 1999). Modifications included the pushing a 2 kg medicine ball, which replaced the handgrip dynamometer. This modification was deemed necessary because of difficulties in concentrating on applying force for a sustained period (Skowroński, 1996, 1999). This was also the rationale for eliminating the bent arm hang from the Eurofit Special Test Battery and is a common characteristic of this population (Horvat et al., 2003).

We did not include the endurance tests from the Eurofit Test Battery because of the participants’ difficulty in sustaining the movement and the inability to generate a prolonged effort. This was evident in earlier work that cited difficulties in
motivation, not seeing the importance of a task, or generating sufficient intensity to produce changes in function (Croce, 1990; Croce & Horvat, 1992; Montgomery, Reid, & Seidl, 1988). To introduce this component, it is suggested that items such as a pulse recovery or walk-run test be implemented that can be completed in a short period of time with minimal instructions (Horvat, Block, & Kelly, 2007). The speed test (25m run) replaced the agility test in the Eurofit Test Battery to avoid complicated movements and patterns and concentrating on running from one spot to another. The balance beam test item of the Eurofit Test Battery (standing on one leg on a balance beam) was also perceived as complicated and induced anxiety in the participants, especially for those with severe intellectual disabilities. After the pilot research was conducted, the assessment of the balance test was modified by replacing the beam with a bench. This was subsequently completed by all of the participants (Skowroński, 1999). The use of the sit and reach test, sit-up and long jump tests were not modified from the Eurofit Test Battery.

Results

Means and standard deviation for each test component are included in Tables 2 and 3. Results for the following components included the following:

Long Jump

For LJ, there were significant gender, $F(1, 1565) = 27.20, p \leq .0001$; level, $F(2, 1565) = 176.72, p \leq .0001$; and age-group, $F(2, 1565) = 80.76, p \leq .0001$ main effects and a significant gender $\times$ age group, $F(2, 1565) = 10.34, p \leq .0001$ interaction effect.

Posthoc Analyses

Post hoc analyses indicated that individuals with severe intellectual disability had the lowest performance scores and those with mild intellectual disability had the highest performance scores. Relative to the gender $\times$ age group interaction, results indicated that there were significant differences between male and female subjects at adolescent and young adult age groups but not at the youth age group, and males scored better as they increased in age from youth to young adult, while females scored better only from youth to adolescent.

Sit-and-Reach Flexibility

For FLEX, there was a significant gender, $F(1, 1565) = 36.37, p \leq .0001$ main effect and a significant level $\times$ age group, $F(4, 1565) = 3.70, p \leq .01$ interaction effect. Posthoc analyses indicated that across levels of intellectual disability and age groups females had greater flexibility than did males. Relative to the level $\times$ age group interaction, individuals with mild intellectual disability were the only subjects showing increased flexibility based on age group (from adolescent to young adult), and the only significant difference found across levels of intellectual disability was with adolescent subjects, where individuals with severe intellectual disability had greater flexibility than individuals with mild intellectual disability.
25-m Dash

For DASH, there were significant gender, $F(1, 1565) = 68.21, p \leq .0001$; level, $F(2, 1565) = 95.19, p \leq .0001$; and age group, $F(2, 1565) = 46.43, p \leq .0001$ main effects and a significant gender $\times$ level, $F(2, 1565) = 4.68, p \leq .01$ interaction effect. Posthoc analyses indicated that (a) across levels of intellectual disability and gender young adults had faster times than did adolescents and youth; (b) individuals with mild intellectual disability had the fastest times and individuals with severe intellectual disability had the slowest times; and (c) at each level of intellectual disability, males had faster times than did females.

Medicine Ball Throw

For MED, there were significant gender, $F(1, 1565) = 110.91, p \leq .0001$; level, $F(2, 1565) = 140.03, p \leq .0001$; and age group, $F(2, 1565) = 103.06, p \leq .0001$ main effects, and significant gender $\times$ level, $F(2, 1565) = 9.42, p \leq .0001$; gender $\times$ age group, $F(2, 1565) = 21.33, p \leq .0001$; and level $\times$ age group, $F(4, 1565) = 4.62, p \leq .001$ interaction effects. Posthoc analyses of simple main effects indicated that (a) males performed better than females did; (b) individuals with mild intellectual disability performed best and those with severe intellectual disability performed worst; and (c) young adults performed best and children performed worst. Relative to the interaction effects, posthoc analyses indicated that (a) there were significant differences between males and females in adolescents and young adults but not in children, and that in females there were no significant differences in throwing distance between adolescents and young adults; (b) individuals with mild and moderate intellectual disability showed a steady increase in throwing distance with increasing age, but individuals with severe intellectual disability only displayed increases in throwing distance in the young adult age group; and (c) at the child age-group level, there was a significant difference in throwing distance between individuals with mild intellectual disability and those with moderate and severe intellectual disability, with no significant difference between individuals with moderate and severe intellectual disability. At the other two age groups (adolescent and young adult) there were significant differences in throwing distance between the three levels of intellectual disability.

Balance Walk

For BAL, there were significant gender, $F(1, 1565) = 7.16, p \leq .01$; level, $F(2, 1565) = 60.55, p \leq .0001$; and age-group, $F(2, 1565) = 90.47, p \leq .0001$ main effect. Posthoc analyses indicated that (a) males had better balance scores than females; (b) individuals with mild intellectual disability had the highest balance scores, while those with severe intellectual disability had the lowest; and (c) adolescent and young adults had better balance scores than did children.

Sit Ups in 30-s

For SIT, there were significant gender, $F(1, 1565) = 50.13, p \leq .0001$; level, $F(2, 1565) = 151.10, p \leq .0001$; and age-group, $F(2, 1565) = 20.56, p \leq .0001$ main effects. Posthoc analyses indicated that (a) across levels of intellectual disability
and age groups males performed better than females did; (b) individuals with mild intellectual disability had the highest number of sit-ups in 30 s, and those individuals with severe intellectual disability had the lowest number of sit-ups in 30 s; and (c) young adults had the highest number of sit-ups in 30 s and children had the lowest number of sit-ups in 30 s.

**Discussion**

Based on work completed in the United States and Europe, it is apparent that there are functional variations between individuals with and without intellectual disabilities (Eichstaedt & Lavay, 1992; Horvat, Pitetti, & Croce, 1997; Jędrzejczak, 1981; Maszczak, 1991; Nowak, 1989; Pąchalski & Czerner, 1988; Pańczyk, 1992; Pitetti, Rimmer, & Fernhall, 1993; Ślężyński, 1991; Ślężyński, Zichlarz, & Zosgórnik, 1983; Zosgórnik, 1989, 1989a). The general consensus of this earlier research depicts delays in motor functioning, lower functioning for females, and lower functioning by level of intellectual disability. Previous work by Horvat and colleagues (Horvat et al., 2003; Horvat et al., 1999; Horvat, Pitetti, & Croce, 1997) also identifies deficiencies in strength, power, cardiovascular functioning, and motor unit recruitment as well as balance in individuals with intellectual disabilities (Smail & Horvat, 2005).

**Implications**

Based on this information, it was our intent to build on these earlier efforts, as well as to investigate whether the Eurofit Special was able to distinguish differences in motor fitness among individuals having varying levels of intellectual disability. Based on the results of this investigation, it would appear that the Eurofit Special is a well-designed psychomotor test that is sufficiently sensitive to ascertain differences in general motor fitness functioning among individuals with mild, moderate, and severe intellectual disability. This conclusion is based on the stringent procedures used by Skowroński (1996, 1999, 2006) for the original Eurofit Fitness Battery. In addition, an examination of each component of the test follows general findings from earlier investigations (Skowroński, 1996, 1999; Skowroński & Ziemilska, 1996). One trend verified in our results was that individuals with severe intellectual disability demonstrated lower levels of motor fitness than those with either moderate or mild disability and a similar difference was found between individuals with mild and moderate involvement. This was consistently demonstrated (Table 2 & 3) in the data analysis of all factors and is consistent with earlier reports (Eichstaedt et al., 1991). For example, explosive leg strength is highest in males functioning at the mild intellectual disability in the young adult group. This is also consistent with Burton and Miller (1998), who indicated that motor abilities tend to differ with age, and Horvat et al. (2003), who noted differences in strength and power by age in this population. The ability to test a large number of participants allowed us to specifically target each assessment component of the Eurofit Special by level of intellectual disability, age, and gender. In this context, we were able to differentiate between males and females, younger and older age groups, as well as the level of intellectual disability to get an accurate measure of
performance. Overall, the statistical analyses showed that the Eurofit Special was able to discriminate performance levels by gender, age, and level of intellectual disability. The importance of this finding is that researchers not only in Europe but North America, have an additional tool that is sensitive to performance variations in individuals with intellectual disabilities. This builds upon previous efforts on ascertaining motor fitness for individuals with varying levels of functional ability. Our results are also consistent with a recent study (Bolach 2006) that used the Eurofit Special to differentiate between women (42–56 years) with what he described as moderate and large involvements. This conclusion is acceptable because of the differences found between all levels of intellectual disability.

Limitations of the Study

It should be noted that we were not able to identify individuals with Down syndrome, although we placed participants into categories by intellectual disability, age, and gender. This component should be added to future research with the Eurofit Special. In each case, the results supported our contention that we could discriminate performance based on these variables. Performance was lower by level of intellectual disability in all components and reflects the overall conclusion that level of disability affects performance. Overall, the Eurofit Special can be sensitive to components of gender, age, and level of functioning in specific motor fitness items. This is an important concept for teachers and coaches who need consistent assessment data that can be used in developing instructional and/or training protocols. With the availability of such a large sample size, we believe the Eurofit Special is able to discriminate between performance levels and therefore recommend that it be used to evaluate the motor performance of individuals with intellectual disabilities in the areas of strength, balance, muscular endurance, speed, and flexibility.

Recommendations for Further Research

Although we feel strongly that the Eurofit Special is an acceptable test for individuals with intellectual disabilities, it is essential to document comparative scores of individuals with Down syndrome as a separate entity. As mentioned earlier in the modifications, it is also recommended that a test for cardiovascular endurance should also be included in future adaptations of the test.

References


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