Do You Know What I'm Saying?
Strategies to Assess Motor Skills for Children with Autism Spectrum Disorder

All educators can relate to the quote, "I know you think you understand what you thought I said, but I'm not sure you realize that what you heard is not what I meant" (Unknown). Instructions and directions get misunderstood or "selectively understood" in educational settings all the time. This is especially true when working with children with autism spectrum disorder (ASD), who have difficulty with language, communication, and social interaction. As the prevalence of children with ASD increases (Centers for Disease Control and Prevention, 2012), more and more teachers are interacting with children with ASD and are realizing that these children also have difficulty with motor function.

Poor performance in fundamental motor skills can lead to avoidant and disruptive behaviors (e.g., tantrums) and further isolation from social interactions with peers (MacDonald, Lord, & Ulrich, 2013). In contrast, well-developed motor capacities may facilitate

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children's cognitive functioning (Fick, Dawson, Smith, & Gasson, 2008), language development (Hill, 2010), social communication (MacDonald et al., 2013), and daily life skills (Watkinson et al., 2001). Thus it is important that physical educators focus on how motor assessments are being administered in order to ensure reliability and reduce barriers toward understanding the fundamental motor performance of children with ASD. However, researchers suggest that some physical educators may not feel competent in administering motor-skill assessments to children with disabilities such as ASD (Block, Taliaferro, & Moran, 2013). The purpose of this article is to provide tools to physical educators to increase their success in administering motor-skill assessments to children with ASD. The article focuses on six major areas: (1) visual supports, (2) language, (3) attire, (4) environment, (5) support personnel, and (6) testing equipment that may affect the motor skill performance of children with ASD when being assessed. Guidelines and strategies are provided for each of these areas.

Visual Supports

Children with ASD are often visual learners, meaning that they can interpret and use information more effectively if it is presented in a way that they can see, rather than hear (Bryan & Gast, 2000; Welton, Vakil, & Carasea, 2004). An instructional approach that uses visual supports capitalizes on the individual with ASD's strengths in processing visual information while minimizing that individual's difficulty in processing information presented through other modalities (Simpson, 2005). The use of visual supports paired with spoken language allows physical educators to communicate effectively with children with ASD without adding anxiety and stress (Breslin & Rudisill, 2011; Liu & Breslin, 2013). Therefore, visual supports should be considered when conducting motor-skill assessments of children with ASD.

Visual supports may include, but are not limited to, picture cards and picture activity schedules that represent people, places, objects, actions, or movements (National Research Council, 2001). Researchers report that when conducting motor-skill assessments without visual supports, sometimes children with ASD may not understand what they are being asked to do (Berkely, Zittel, Pitney, & Nichols, 2001; Bhat, Landa, & Galloway, 2011; Staples & Reid, 2010). That is, for galloping and throwing, rather than performing the motor skill as demonstrated, the children with ASD may focus on achieving an end result similar to the demonstration, such as running across the room instead of using a specific galloping pattern, or placing a ball against a wall instead of throwing it (Berkely et al., 2001). Visual supports such as picture task cards and picture activity schedules have been found to be effective at eliciting higher scores on assessments such as the Test of Gross Motor Development – Second Edition (TGMD–2; Breslin & Rudisill, 2011) and the Movement Assessment Battery for Children – 2 (MABC–2; Liu & Breslin, 2013). Figure 1 represents visual supports for the TGMD–2 assessment.

When visual supports are included in motor assessments, they help direct the child's attention to the relevant stimuli of the task and result in a more successful completion of the assessment. Thus visual supports should be provided during motor assessments to maximize the performance of children with ASD by increasing their understanding of what to do. It is also recommended that if educators use visual supports for the motor assessment, they should provide specific descriptions of the visual aids when they report the assessment results to help others better interpret the data.

Language

Besides the use of visual supports to convey meaning, it is also useful for physical educators to limit the amount of auditory or verbal instructions that must be followed (Breslin & Rudisill, 2011; Liu & Breslin, 2013). Using short, verbal commands or pithy language to convey the essence of the movement to be performed for the assessment can help a child with ASD understand what to do (Breslin et al., 2013). When presented with complicated, detailed auditory stimuli (e.g., complex speech), children with ASD often misunderstand the spoken language (O'Connor, 2012). For this reason, less is better for children with ASD, and minimizing verbal instructions can help improve their motor performance.

Not only should physical educators consider limiting the amount of auditory or verbal instructions they provide to a child with ASD, but they should also consider how they are speaking (Lee, Hobson, & Chiat, 1994). Children with ASD can struggle with the concept of "theory of mind" — the idea that other people have a different perspective than their own (Baron-Cohen, 2001). In other words, children with ASD may have trouble imagining the point of view of another person. For example, if you told a child with ASD "break a leg" before a game, that child would take it literally and wonder.

![Figure 1](image-url)
why the teacher or a friend is asking him or her to break a leg. It is difficult for children with ASD to comprehend beyond the meaning of the words themselves. One should simply tell the child “good luck.” Therefore, when an educator provides a physical demonstration, a verbal cue such as “watch me!” may result in a child staring at his or her own body parts, as opposed to watching the demonstration. Instead, the educator should state “Watch Sam (demonstrator’s name)” in order to direct visual attention to the person performing the skill demonstration.

Attire

Before administering a motor assessment, the physical educator should first build rapport with the child to ensure mutual trust and to relieve anxiety and prevent temper tantrums (Horvat, Block, & Kelly, 2007). While building this rapport, important information can be learned about the preferences and sensory issues of the child with ASD. These preferences and sensory issues may result in the physical educator changing their attire to reflect the needs of the child. Many physical educators choose to wear warm-up track suits or chino pants with a collared knit shirt. Both of these outfits can be very professional and appropriate for movement settings and in alignment with the school dress code. However, it is possible that some aspect of the outfit may be disruptive to a child with ASD. Logos on clothing, for example, can be very distracting to a child with ASD whose perseverative interest includes that specific mascot, animal, or object represented by the logo. That child may get overly excited about the logo and devote attention to that as opposed to the demonstration or instructions being provided by the practitioner. Similarly, novel attire, such as a new pair of pants made from a fabric that rustles in motion, may cause an unpleasant sensory experience for the child with ASD, resulting in disruptive behavior. To ensure an accurate understanding of the motor-skill abilities of a child with ASD, physical educators should refrain from wearing new attire on the day of the assessment.

Although practitioners have less control over what children wear than they do over their own attire, the impact of the children’s attire is also worth considering because children with ASD are sensitive to tactile sensations (Baranek, 2002; Cascio et al., 2008). For example, some children have the urge to take off their shoes and socks when they come into the room. Tags inside of clothes may be unbearable for a child, but that same child may find a silky shirt intriguing and want to touch it. Some researchers suggest that the tactile sensitivity of children with ASD may be closely linked to emotional expression (Gucu, Tanidir, Mukaddes, & Unal, 2007; Permon, Pry, & Baghdadi, 2007). This explains why a child with ASD may have a temper tantrum when his shirt is a little wet after getting a drink of water. A child with ASD may also choose to wear clothing that is inappropriate for the temperature of the assessment space, or wear footwear that could negatively influence his or her performance. It has been reported that the use of flip-flop sandals results in lower scores on the TGMD-2 in preschoolers than the use of athletic footwear (Robinson et al., 2011). Physical educators may assess children both with and without shoes, especially on balance activities. However, for legal and safety reasons, it is recommended for children to wear well-fitting shoes during motor assessments (Wegener, Hunt, Vanwanseele, Burns, & Smith, 2011). If a child shows up for testing without shoes or with shoes that do not fit properly, or brings shoes but refuses to put them on, the assessment may go ahead without shoes. In this case, a statement should be included in the assessment report that the child did not wear appropriate footwear. This notation will help practitioners determine the validity and reliability of the assessment results when comparing it to standardized normative data.

Environment

Practitioners need to consider the environment in which the assessment will be conducted for children with ASD. Conscious physical educators note the situations in which children with ASD are most successful and compliant with instructions. If possible, the physical educator should select an environment such as a closed space rather than an outdoor playground to ensure the safety and successful performance of the motor activities while being sensitive to each child’s unique abilities. It can be difficult to control all aspects of the physical environment, but the practitioner can take steps to minimize distractions. Assessing a child with ASD in a cavernous space such as an open gym can be an overwhelming experience, which may result in the child exhibiting contextually inappropriate behaviors to cope with those feelings. If an enclosed space is not available for assessment, the practitioner should make an effort to limit distractions and ambient noise within that environment (Davis & Stiegler, 2003). If it is safe, the physical educator could partition a section of the gym for assessment using a physical boundary. Within the assessment area of the gym, it would be wise to remove unnecessary decor. Should assessment require a target, cone, or other placeholder, these should be visible. If they are not required for the skills being assessed at that moment, they should be stored away. The assessment should also be conducted where there are minimal floor markings. Pieces of tape utilized for classroom management and for marking personal space boundaries can prove distracting for the child with ASD. If there are windows in the area, the windows should be covered so that the children being assessed do not gravitate away from the assessment area. Figure 2 depicts a workspace that has been carefully arranged to conduct motor-skill assessments.

Support Personnel

Given that motor-skill assessments are used to evaluate instructional programming and to determine whether individualized education plan goals are being met, it is important that assessments be done as accurately and efficiently as possible (Block, 2007). Support personnel or peer tutors can be used during motor-skill assessment to help conduct assessments and record data. Some children with ASD are assigned a paraeducator who assists the child in completing the activities and lessons throughout the school day. The paraeducator can be a wonderful resource for the physical educator to use during motor-skill assessments. Besides knowing the strengths, weaknesses, and work habits of the child with ASD, the paraeducator can help the child with ASD complete motor-skill assessments by modifying the environment to ensure that the child attends to relevant stimuli. Additionally, the paraeducator, if provided appropriate training regarding the purpose of the assessment and the criterion used to score the performance, can help the physical educator to record assessment data (Lieberman & Mulawa, 2007).

With proper training a peer could also serve as support personnel for the child with ASD during the motor-skill assessment. Using a peer tutor can minimize the time spent on the assessment, improve motor performance, and increase opportunities for social interaction (Cervantes, Lieberman, Magnesio, & Wood, 2013).
culture of education today, it is common for children with ASD to express distress over a classroom assessment (Gulek, 2003). If the child with ASD thinks they are being tested on their motor skills, they may be uncomfortable. Instead, a carefully selected peer buddy could perform the tasks with the child with ASD and help him or her feel as though it is playtime rather than an assessment (Figure 3). Choosing an appropriate peer buddy is the key to this strategy (Jackson & Campbell, 2009). The peer buddy should be someone who follows directions well and who is very patient with the child with ASD. It will be up to the teacher to discern whether using a peer buddy who the child with ASD is familiar with will facilitate or hinder the child’s focus and performance. The presence of a friend may result in better or worse performance, depending on the relationship and on the particular child with ASD. Siblings

![Figure 2.](image)

To reduce distractions for this child with ASD during assessment, a partition divides the gymnasium and all unnecessary equipment and decor have been removed.

The peer tutor should express interest in helping the child with ASD during the assessments, and then be carefully trained to monitor the child with ASD during the motor-skill assessment to keep him or her appropriately engaged. Depending on the Abilities of the child with ASD and the peer tutor, it may be possible for the children to score one another’s performance on the assessment and switch roles between tutor and tutee (Lieberman & Houston-Wilson, 2009). Similarly, it is recommended for children to be assessed in very small groups (two to three children at a time). This can be very beneficial, particularly if the groups consist of children familiar to the child with ASD.

It is common for children with ASD to have “peer buddies.” Peer buddies are typically developing peers who model appropriate behaviors to children with ASD and compassionately guide and help them to engage in contextually appropriate activities (Ward & Ayvazo, 2006). A peer buddy can help mitigate any feelings of test anxiety that children with ASD may feel, as they will have a companion during the assessment. In the high-stakes testing

![Figure 3.](image)

A “peer buddy” works closely with a child with ASD as he prepares to perform a standing long jump.
may be a wonderful option to serve as a peer buddy, but they may also know exactly how to elicit behavioral problems from the children with ASD. Additionally, if the individual selected to be a peer buddy is not usually a part of the regular activity, the child with ASD could perceive that individual’s presence as a disruptive change in routine.

Likewise, carefully selecting who will be present for the assessment is also important. It is ideal if an assessment can be conducted in a familiar environment with familiar personnel; however, sometimes it may not be possible. Therefore, if the assessment is to be conducted by a person with whom the child is unfamiliar, a brief period of time should be allotted for the child to grow accustomed to this person’s presence. Changes in routine (e.g., unannounced visitors or special events) can be upsetting to a child with ASD, but a brief familiarization period during which the child can take a moment to organize their thoughts and adjust to the visitor may help.

Testing Equipment

Physical educators should use testing equipment that has been included in standardized assessment tests. Practitioners should not replace or modify any equipment that will lead to invalid or unreliable results. If the educational curriculum dictates that certain assessments should be used to determine levels of motor performance, then the physical educator would be wise to utilize such tools. If the child is unable to perform the tasks using the equipment specified in the standardized assessment but can perform the task using different equipment, this should be noted in the assessment report. For example, a child with ASD may have tactile sensitivities and be unable to dribble a basketball due to its textured surface. This same child may be able to dribble a ball of similar size with a smoother surface. The equipment substitution should be documented in the performance reports to help others interpret the data. Additionally, if visual supports are used during the assessment, a copy of the visual images should be provided in the assessment reports as well.

Summary

Although physical educators cannot control the abilities or behaviors of the children with ASD enrolled in their classes, they can control their own actions and the motor-assessment environment in which their students perform. Physical educators can control what they ask the children to do, how they ask them to do it, and the physical environment in which that motor-skill performance is assessed. The greatest gift a physical educator can give his or her students is a high-quality educational setting in which each child is pushed to learn new things. Without proper assessment children may be placed in educational settings and activities that are inappropriate for their motor abilities (Breslin & Rudisill, 2011). Thus it is very important that the fundamental motor skills of children with ASD are assessed properly.

Children with ASD may not respond to some testing protocols because they have difficulty extracting meaning (Berkeley et al., 2001; Staples & Reid, 2010). This causes some children with ASD to be evaluated as being unable to perform a motor skill when, in actuality, they can, as long as the instructions are delivered in a meaningful and comprehensible way in a safe environment. For this reason it is imperative that professionals working with children with ASD use the guidelines and strategies provided in this article when conducting a motor assessment (see Table 1). Physical educators are encouraged to apply appropriate verbal instructions along with visual supports, advise children to wear appropriate

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<th>Area</th>
<th>Guidelines and Strategies</th>
<th>Resources</th>
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<td>Visual Supports</td>
<td>Provide visual supports to depict the fundamental motor skills.</td>
<td>Boardmaker, MrsRiley.com, visuals.autism.net</td>
</tr>
<tr>
<td>Language</td>
<td>Use “pithy,” 2–3-word commands to explain skills.</td>
<td>Breslin, Robinson, &amp; Rudisill (2013)</td>
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<tr>
<td>Attire</td>
<td>Avoid wearing novel attire on assessment day, and consider conducting the assessment on an alternative day if the child is inappropriately dressed for activity.</td>
<td>Horvat, Block, &amp; Kelly (2007)</td>
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<td>Environment</td>
<td>Test in an enclosed space, and remove as many distractions as possible from the testing environment.</td>
<td>Davis &amp; Stiegler (2005)</td>
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<td>Supporting Personnel</td>
<td>Use support personnel, including paraeducators or trained peer tutors or “peer buddies.”</td>
<td>Lieberman &amp; Houston-Wilson (2009), Lieberman &amp; Mulawka (2007)</td>
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<tr>
<td>Testing Equipment</td>
<td>If the testing equipment seems distracting or if a child is highly tactile sensitive, try using a same-size object with a different color or texture.</td>
<td>Consult with a certified adapted physical educator (CAPE)</td>
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attire, provide a paraeducator or a peer tutor during assessment, limit distractions in the testing environment, and/or use the required equipment so that the results of their motor assessment are as accurate and as reliable as possible.

References


