

# Inclusive Practices in Physical Education:

## *Considerations for Students With Dyslexia*

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Students with disabilities often face obstacles as it pertains to learning in schools, whether personal or environmental. In an effort to offer students with disabilities meaningful learning opportunities, many scholars suggest a fully inclusive classroom (Centers for Disease Control and Prevention, 2020). This includes physical education (PE), where full inclusion practices provide an environment in which all students (disabilities or not) feel supported academically and intellectually (Gilbert, 2019). Full inclusion in schools and PE programs demands school reorganization and systematic teacher training, which excludes the division of students with exceptionalities from the general student population. Those school systems that utilize full inclusion strive to establish an integrated system that accommodates the needs of all students (Turnbull et al., 2010; Theoharis & Causton, 2014) and promotes more collaborative methods of learning that acknowledge students' personal experiences and strengths alongside areas that need improvement (Kaplan & Miller, 2007).

Federal law requires that schools provide children with and without disabilities an equal opportunity to participate in all academics, including PE. Legal mandates such as the Individuals with Disabilities Education Act, the Americans with Disabilities Act, and Section 504 of the Rehabilitation Act are federal civil rights laws that prohibit disability discrimination, including in schools (U.S. Department of Education, 2020). In addition, Every Student Succeeds Act necessitates changes in instructional approaches to accommodate students with disabilities. Of note, the Every Student Succeeds Act specifically suggests considerations for dyslexia, which historically has not been covered as thoroughly within these mandates. Unfortunately, dyslexia is common and affects one-fifth of the population in the United States (Shaywitz, 2003). Research shows that dyslexia negatively impacts cognitive (Bavelier et al., 2013), physical (Tore et al., 2016) and social development skills (Ryan, 2004) and is often experienced in conjunction with several other learning disabilities/conditions (Cortiella & Horowitz, 2014). Overall, however, less information on instructional practices specific for students with dyslexia in PE has been published (see Portwood, 2012; Soares & De Marco, 2014).

Given dyslexia's prevalence in the population and the impact it has on students' holistic learning, there is a tremendous need for teacher training about best practices when teaching those with dyslexia in all subjects, including PE. Therefore, the purpose of this article is to utilize current findings on effective instructional strategies when teaching students with dyslexia and how they can be used in PE. Specifically, this article will explain the key concepts of dyslexia and the multisensory approach as remedial training and provide modification strategies that can increase student awareness, confidence and strengths via PE learning opportunities.

**What Is Dyslexia and How Does It Affect Students?** Dyslexia is most frequently described as a language-based learning disability that comes with discrepancy in spelling, word recognition, decoding skills, as well as overall limited phonological awareness (Adlof & Hogan, 2018). Research shows that poor reading skills that result from dyslexia and low self-concept are interconnected (Battle, 2002;

Riddick, 2009); thus, students with dyslexia are at higher risk for lower academic success and general self-concept (McArthur et al., 2016). These theoretical and clinical findings encourage careful consideration when working with students with dyslexia in cognitive development settings.

In addition, supportive evidence reveals that learning disabilities such as dyslexia can negatively impact physical abilities and development, including perceptual motor skills, motion control and coordination (Sherrill & Pyfer, 1985; Soares & De Marco, 2014). Related to the demands of PE, students with dyslexia often have problems with visual processing, spatial awareness, timing and rhythm (Portwood, 2012; Soares & De Marco, 2014). This, in turn, has a direct effect on skills such as catching a ball or simply maintaining orientation for balance (Tore et al., 2016; Willows et al., 1993), for example. Furthermore, Ramus et al. (2003) indicated that part of the discrepancy in motor skill development caused by dyslexia is that it is often compounded by additional comorbid disorders such as attention deficit hyperactivity disorder and dyspraxia. In combination, dyslexia and attention deficit hyperactivity disorder can reduce concentration and engagement, which are necessary to learn and practice; dyspraxia is a neurological disorder that can accompany dyslexia and negatively impacts one's ability to process motor skill movements, thoughts and perceptions. Therefore, it is necessary to recognize and understand that dyslexia may coexist with a multiplicity of other learning issues, leading to physical developmental coordination disorders (Cermak & Larkin, 2002). In other words, although dyslexia is not often referenced as a concern for students in PE, the findings substantiate that relationships exist with physical development and motor learning as well as academic learning.

Numerous methodologies, philosophical theories and education strategies for teaching students with exceptionalities have their presence in educational systems across the country. For example, the idea of neurodiversity provides a new approach to understanding students with disabilities and recognizes the unpredictability in human brain development (Masataka, 2017; Silberman, 2016). Basically, instead of focusing on the differences those with disabilities have compared to the main population, neurodiversity celebrates one's strengths and talents as being individualized (Armstrong, 2017). The paradigm shift is a better approach, but it can be difficult to achieve it in the reality of schools, especially with limited teacher training. However, there is one approach that has empirically shown success called the Orton-Gillingham (OG; Gillingham & Stillman, 2012) approach. This widely accepted methodology emphasizes proactive instructional techniques that target unique disabilities and abilities associated with dyslexia.

**Orton-Gillingham Remedial Training for Students.** The OG approach targets a multisensory, direct and structured system that emphasizes remedial training for potential deficiencies while also imploring beliefs of neurodiversity (Gillingham & Stillman, 2012). In summary, successful OG approach strategies involve effective communication that emphasizes getting students involved through multiple sensory (i.e., auditory, visual and kinesthetic) instructional approaches and targeting individual modification strategies that best align with each student (see Sayeski et al., 2019). Teaching with a multisensory approach provides additional pathways for the learner to receive information and is an essential pillar of the OG approach (Morgan, 2019). Overall, the instructional language (i.e., specific, clear, simple) and diverse communication strategies (i.e., audio, visual, kinesthetic) that teachers use are especially important for students with dyslexia (see Table 1 for key pillars).

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Although the OG approach is targeted for children with speech and language disorders in language education, the strategies and principles can provide benefits for all learners in an inclusive PE environment. For example, a common OG classroom-style teaching technique occurs when students learn a letter or word by seeing it, speaking its name and sounding it out while writing it with their fingers on their desk. Similarly, this can be applied in PE class, where students receive instruction through multiple venues of auditory, visual and kinesthetic communication (teacher speaking, presenting or showing, and asking students to apply) and physically guiding students through application/implementation as well. For instance, when teaching students how to do a serve in tennis, the PE teacher will show the student how to hold the racquet, how to point the racquet back, how to drop the ball, and then how to take a big swing and hit the ball while saying each cue. The teacher will then demonstrate the skill and ask students to repeat physical and verbal cues. Although the instructor provides information, the students' rate of understanding and practice dictates the speed of progression. Research suggests that learner-centered approaches like this improve skill development, game-playing ability and motivation and provide positive affective experiences of learning (Kirk, 2005; Pope, 2005). In addition to taking a multisensory student-centered approach, it is essential to understand that modifications will be needed to meet students where they are and to get them where they need to be.

**OG Approach Modification Strategies for PE.** As within any quality teaching and learning environment, the teacher needs to be thoroughly prepared and organized (with quality lesson planning regarding equipment, facility, progressions, grouping and modifications). In addition, teachers need to be aware of the characteristics of the disabilities their students have. Disabilities that are "hidden" like dyslexia, as opposed to more physical and/or visually recognizable disabilities, can be overlooked in planning and expectations by PE teachers (Gilbert, 2019). Students with dyslexia might require the teacher to formulate class notes into "mind maps," with colors, arrows, pictures and humor, in an effort to improve comprehension and memorization of concepts (Sayeski et al., 2019). For example, when introducing a unit on basketball skills and lead-up games to



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students with dyslexia, the PE teacher should consider not only explaining the simple rules (audio) but also have a board with signs, symbols and pictures of the sport and key concepts (visual) and then have one of the students show the move or skill (kinesthetic) as a demonstration. Teachers should read aloud, point to words, ask students to repeat statements, and revisit concepts in all three ways throughout the lesson (see Table 2 for more examples).

Beyond the multisensory approach, we provide four key areas for PE teachers to target in pursuit of improving the learning environment for students with disabilities (see Table 3 for further description). First, students with dyslexia often have creative ways of thinking, observing and solving problems, and PE teachers must prepare for slight deviations to the linear learning progression they might have had planned. Research indicates that nearly 90% of individuals with dyslexia describe their thinking as looking beyond information to achieve a strategic (big picture) perspective of the subject/problem (Casanova et al., 2010). For that reason, PE teachers should know that students with dyslexia have unique neurological pathways that make it easier for students to understand big-picture ideas and skills. This means that it is likely that

**Table 1.  
Pillars of OG Method**

Multisensory	Structured	Direct	Cumulative-Sequential	Flexible
<p>This method uses all of the learning methods: seeing, hearing, feeling, as well, as different types/models of motion.</p> <p>The teacher also models how the student, by using these multiple pathways, can engage in multisensory learning that results in greater ease and success in learning.</p>	<p>The teacher presents information in an ordered way that indicates the relationship between the material taught and past material taught.</p> <p>Curricular content unfolds in a linguistically logical way to facilitate student learning and progress.</p>	<p>The teacher presentations employ lesson formats that ensure that the student approaches the learning experience understanding what is to be learned, why it is to be learned, and how it is to be learned.</p>	<p>Step by step, learners move from the simple well-learned material to more complex material.</p> <p>Learners move from one step to the next as they master each level of language skills.</p>	<p>Flexibility in task progressions, particularly in terms of extending and refinement tasks</p> <p>Providing options and ensuring that demands and changes are limited in complexity (i.e., adding rules, changing groups, moving to the next task, etc.)</p> <p>Teachers have greater levels of flexibility when conducting hand movement activities</p>

**Table 2.**  
**Examples of Proving Multisensory Instruction to Students in PE With Dyslexia**

	Audio	Visual	Kinesthetic
<b>Classroom example:</b> Student learns to write and correctly spell the word “double”	<b>Teacher will:</b> Read aloud the word “double” from the note card. The student verbally repeats the word.	<b>Teacher will:</b> Show (point to) the word “double.” Say each letter. Repeat the word. The student observes and repeats.	<b>Teacher will:</b> Using two fingers (fingertips), write the word “double” on the desk. The student observes and then performs.
<b>PE class example (physical):</b> Jump rope	<b>Teacher will:</b> Verbally explain how to use the jump rope. The student listens, observes and repeats.	<b>Teacher will:</b> Show/point to the jump rope (handles and length of the rope, how the student should jump, feet together, speed, etc.). The student listens, observes and describes.	<b>Teacher will:</b> Use the jump rope (does a pretend jump). The student listens, observes and performs.
<b>PE class example (cognitive):</b> Catch a ball	<b>Teacher will:</b> Verbally explain how to catch a ball and explain the skill cues for catching: “Track”: Track the ball with your eyes all the way into your hands. “Extend”: Extend arms toward the ball. “Open”: Open palms of the hand to the ball as the ball hits hands to make it a soft catch. “Close”: Close/connect palms of hands. If the ball is coming over the belly button, keep thumbs together. If the ball is coming under belly button, keep pinkies together. “Quick feet”: Move your feet quickly to get into position to catch the ball. The student listens, observes and repeats.	<b>Teacher will:</b> Visually show the ball and show the cues (track, extend, open, close, quick feet). The student listens, observes and ask questions.	<b>Teacher will:</b> Perform the throw–catch move, using the cues (track, extend, open, close, quick feet). The student listens, observes and performs. If unsuccessful, the PE teacher encourages the student to self-reflect and make the necessary adjustments.

they will progress on details much slower and, at times, teachers need to weigh which details are actually needed. In addition, it is very important not to force students to move on if they have not mastered some of the refinements and extensions of a skill or task, because this may cause overload for these students. Clearly, this can have a major impact in performing tasks, accomplishing goals, or completing assignments as externally determined by the teacher’s goals. Consequently, preparation, pre-planning and organization are cornerstones of inclusive teaching and supporting the needs of dyslexic students. Effective teachers must also be prepared for flexibility in task progressions for these students, particularly in terms of extending and refinement tasks (Graham et al., 2016). This includes providing options for equipment selection and ensuring that organizational demands and changes are limited in their complexity (i.e., adding rules, changing groups, moving to next task, etc.).

Secondly, PE teachers need to take special time to build relationships with their students with dyslexia and connect with them. Like many students, although exacerbated for students experiencing dyslexia, trust in the instructor is a key for quality development and achievement. Being comfortable with the teacher is the first step for (a) building trust, (b) creating teacher awareness of students’ strengths, and (c) promoting an environment that focuses on what students can do and building confidence. For instance, creating a routine “check-in time” with students, using positive talk and encouragement, would allow the PE teacher to understand and connect with that student. Though research indicates that neurological origins of dyslexia are caused by biological factors (Sayeski et al., 2019), emotional aspects of uncertainty and overload resulting from dyslexia are extremely important. For instance, students with dyslexia often experience emotional distress during early educational reading instruction (Riddick, 2009). Student frustration and feeling

**Table 3.**  
**Four Key Practical Strategies for Teachers to Use in PE for Those With Dyslexia**

Orton-Gillingham Approach	How Does This Address Dyslexia?	Example in PE
<p><b>1. Multisensory:</b> Applies all of the learning methods: seeing, hearing, feeling and awareness of motion, brought together by the thinking brain. The educator uses multisensory teaching to deliver a lesson in the most understandable way to the student.</p> <p>In this case, the OG approach provides instructional units that are action driven with auditory, visual and kinesthetic components reinforcing each other.</p>	<p>The OG approach starts with the individual sounds and then uses these sounds to build words. This “word-building method” also builds a close association or link between what the student sees in print (visual), what the student hears (auditory) and what the student feels as he or she makes the sounds of the letters and writes (kinesthetic-large muscle movements and tactile sensations in the mouth and on the fingertips). Similarly, this technique in PE would ensure that students master skills that build on one another, though how students master specific skills is extremely flexible. Accordingly, PE teachers need to be trained to adapt their instruction to each student. Encouraging students to master PE skills in an individualized way allows them an opportunity to have an essential role in their learning.</p>	<p>PE teachers should emphasize games and activities that will allow students with dyslexia to use their multidimensional thinking and perception. PE teachers must prepare for slight deviations to the linear learning progression they might have had planned. This includes providing options for equipment selection and ensuring that organizational demands and changes are limited in their complexity (i.e., adding rules, changing groups, moving to next task, etc.). In other words, teachers should be open to their students’ multisensory learning styles that are particularly suited to sporting activities. For example, typical class sessions should consider having at least three to four rotating and alternating tasks and activities that students could progress to or revisit at their own pace.</p>
<p><b>2. Direct:</b> The teacher must build trust with the student to increase the student’s comfort</p>	<p>Educators should be aware of the cognitive and emotional problems caused by dyslexia. At the same time, educators must be prepared to generate strategies that will help students with dyslexia develop and grow academically, socially and personally. A positive relationship between the teacher and student with dyslexia will help build trust, enthusiasm and motivation. Being comfortable with the teacher is the first step in building trust, creating teacher awareness of students’ strengths, and promoting an environment that focuses on what students can do and building confidence.</p>	<p>Creating a routine “check-in time” with students, using positive talk and encouragement, would allow the PE teacher to understand and connect with that student. In other words, PE teachers must know their students’ energy, strengths and weaknesses and likes or dislikes to promote reasonable learning growth goals and to maintain student emotional stability.</p>
<p><b>3. Structured:</b> Teachers must understand that students have individual needs and dyslexic students learn and understand at a different pace than others.</p>	<p>Teachers’ instructional language must be specific, clear and simple. Diverse communication strategies (i.e., audio, visual, kinesthetic) that teachers use are always critically important, especially for students with dyslexia.</p>	<p>PE teachers should avoid assumptions that their students with dyslexia will easily understand social prompts or signals, other people’s body language, or personal space essential in social relations. Research shows that a full and diverse demonstration must be included, critical cues should be repeated, and an individualized check for understanding for those with dyslexia before each task may be warranted (Graham et al., 2016). For example, the PE teacher should consider not only explaining the simple rules (audio) but also have a board with signs, symbols and pictures of the sport and key concepts (visual) and have one of the students show the move or skill (kinesthetic) as a demonstration.</p>
<p><b>4. Providing individual differentiation:</b> The teacher must consider lessons with multiple layers and challenges; allow the learner to self-motivate with options.</p>	<p>PE teachers need to provide instructional approaches and target individual modification strategies that best align with each student. Each student with dyslexia has a different way of learning. It is the student’s rate of understanding and practice that dictates the speed of progression. Research suggests that learner-centered approaches like this improve skill development, game-playing ability and motivation and provide positive affective experiences of learning.</p>	<p>PE teachers should include positive peer talk time to raise students’ confidence via their peers, celebrating small wins and triumphs while concentrating less on remedying their mistakes and always finding positive task modifications when practicing and playing with other students. The important thing to balance is the relationship between challenge and success for these students to avoid overwhelming them. Challenging their minds as well as their bodies can take place through incorporation of multiple modified activities or games.</p>

overwhelmed are often linked to students' perceptions of being "less than." In an education setting, this likely results from instructional strategies that do not align with their learning style and/or from viewing their peers being rewarded and surpassing them in their skills (Ryan, 2004).

Therefore, PE teachers need to be very observant to the fact that students with dyslexia could potentially be very sensitive, which more than likely will be based on their success or failure in their classrooms. Students with dyslexia may experience emotional highs and lows in the learning environment as they potentially make a great amount of effort to be successful but feel limited in accomplishments, particularly when compared to others. Accordingly, PE teachers must know their students' energy, strengths and weaknesses, and likes or dislikes, to promote reasonable learning growth goals and to maintain student emotional stability. Modifying tasks for the entire class, as opposed to only students with dyslexia, to help with things like reading materials, identifying sequences, and reaching personalized levels of success on each task is warranted. Having this in mind, planning and implementing a PE lesson might be much less complicated for all students and definitely more suitable and productive for those with dyslexia.

Third, when working with students with dyslexia, PE teachers must be patient. Teachers can experience frustration with students with dyslexia regarding their inability to meet certain physical and social expectations often associated with traditional PE structure. For example, many students with dyslexia will have difficulty understanding social prompts or signals, other people's body language, or personal space essential in social relations. Assuming that the student with dyslexia will always understand the PE teacher's instruction and expectations could be detrimental; therefore, attention must be given to conveying a message in a way that student with dyslexia will understand. Thus, a full and diverse demonstration must be included, critical cues should be repeated, and an individualized check for understanding for those with dyslexia before each task may be warranted (Graham et al., 2016). Other suggestions include positive peer talk time to raise students' confidence via their peers, celebrating small wins and triumphs while concentrating less on remedying their mistakes, and always finding positive task negotiations/modifications when practicing and playing with other students. Such approaches will undoubtedly enhancing the development of greater self-esteem and lead to positive learning outcomes.

Lastly, every PE class must include multiple activities not only to maintain student interest but to achieve the wide range of state/national standards. Progressive and dynamic educational units and lessons are keys to challenging all students, including those with disabilities. The important thing to balance is the relationships between challenge and success for these students to avoid overwhelming them. Challenging their minds as well as their bodies can occur through the incorporation of multiple modified activities or games. Such multi-element teaching will allow students with dyslexia to stay focused and active and to accomplish learning goals. Typical class sessions should have at least three to four rotating and alternating tasks and activities that students could progress to or revisit at their own pace. This kind of organization will empower students with dyslexia to maintain their responsiveness, attention and motivation. In all probability, application of a typical solution or answer to the task most certainly will not take place. Students with dyslexia are very creative and imaginative, and their solution, explanation, or response to the problem/task can likely deviate from intended standard (Adolf et al., 2018; Ramus et al., 2003).



Although not a central focus of this article, the assessment of students with dyslexia also needs consideration. We endorse the recommendations provided by Smail and MacDonald (2015) and Roth (2020) for considerations in adapting and helping students reach learning outcomes. One example is balancing the weight of each learning domain within each educational unit, providing students with dyslexia an opportunity to earn the most credit in things they are highly capable of (Roth, 2020). In addition, alternative assessment such as oral exams for the cognitive domain as opposed to long writing assessments could be provided. As suggested by Smail and MacDonald (2015), learners with dyslexia still need a progressive approach to learning, but that progression may take a different path or have a different end goal that helps student thrive, as opposed to trying to survive. In either sense, the teacher needs to plan for deliberate goals in all three learning domains but demonstrate a fair amount of flexibility and knowledge of their student to adapt a meaningful and insightful assessment routine (for more examples, see Roth, 2020; Smail & MacDonald, 2015).

## Conclusion

There is a tremendous need for teacher training that focuses on educating students with dyslexia given its prevalence in the population and its impact on cognitive, physical and social development, and PE is no exception. Most important, educational systems throughout the country must ensure that PE teachers are qualified, skilled and empowered to support students with dyslexia adequately. Although dyslexia is generally thought of in terms of reading comprehension issues, the disability has clear ramifications for physical development as well. Fully inclusive practices, like the OG approach, target strengths and improvement as opposed to what students cannot do. PE teachers should consider using modified instructional strategies that offer variety and challenge with an emphasis on increasing student awareness of their strengths to build confidence. Being knowledgeable of the impact of dyslexia on student learning, planning accordingly with equipment and facility, and preparing proper class progressions, grouping and modifications might lead to better outcomes and achievements. Also, PE teachers might consider building greater trust and acceptance with these students using a "check-in time." PE teachers must be ready to exercise great creativity, flexibility and patience when working with students with dyslexia. Traditional PE structures might not work, and students with dyslexia might not be able to meet certain physical and

social expectations. Therefore, PE teachers must be ready to reconceptualize goals and strategies for instruction that provide several opportunities for success and expression of one's exceptionality.

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