



Physical Activity Promotion for School- Age Children With Disabilities

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Mr. Ryan's general physical education class meets once every 7 days for 50 minutes. Raul, a student in Mr. Ryan's fourth-grade class, has spastic cerebral palsy. Raul walks independently with a scissors gait (a walking pattern characterized by knees and thighs pressed together and hit or cross each other when walking, often resulting in slow and small steps). Raul has an independent spirit, always willing to try all activities. While in physical education class, he tends to sit at the back of the class for attendance and warm-up. When transitioning within physical education or engaging in stations or games, he is not as fast as his peers, often arriving late or being assigned to go last with a task. Marissa is a student with spina bifida and also is in Mr. Ryan's fourth-grade class. Marissa uses a manual wheelchair for all activities of daily living and for participation in physical education and sports. Marissa is athletic and enjoys sports. She is involved in interscholastic sports through her school district playing wheelchair handball in the fall, wheelchair basketball in the winter, and wheelchair football in the spring. Despite their eagerness for physical education, both Raul and Marissa tend to feel disconnected and somewhat isolated in their physical education class. Although they perceive themselves as capable, they observe few options for themselves in physical education, negatively impacting their motivation and ability to meaningfully engage in physical activity (PA).

Students like Raul and Marissa are often included in the general physical education classroom either as part of their individualized education program (IEP) or general physical education state requirement. Yet teachers often struggle with how to engage students with a disability in PA during physical education. Much is known about the health benefits of engaging in PA for individuals with and without disabilities (2018 Physical Activity Guidelines Advisory Committee, 2018; Jin et al., 2020). Children and adolescents exposed to and who adopt a more physically active lifestyle tend to be more active as adults (Pardo et al., 2013). School physical education programs have been recognized as an important setting to increase PA participation among youth (Institute of Medicine, 2013). According to the Centers for Disease Control and Prevention (CDC), physical education should play an important role in providing a substantial percentage of the current



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national PA recommendation of 60 minutes of daily PA (CDC, 2018). Previous studies, however, revealed that the contribution toward PA from physical education is relatively small (Flohr et al., 2006), with many physical education classes not meeting the CDC recommendation (Weaver et al., 2013).

To adequately promote PA, it is important to understand what PA is and build appropriate content knowledge for promoting PA for children with disabilities. This article aims to present strategies grounded in theoretical frameworks for promoting PA for students with disabilities in inclusive physical education classes. We start with briefly defining PA.

Definition of Physical Activity

PA is often perceived or interchangeably used with *physical fitness* or *exercise*, but they are distinctly different concepts. PA involves students moving, acting, and performing within culturally specific spaces and contexts (Piggin, 2020). Furthermore, "PA is influenced by a unique collection of interests, emotions, ideas, instructions, and relationships" (Piggin, 2020, p. 5). This definition of PA applies to the promotion of PA within the physical education setting for the following reasons: It (a) considers the individual mover over the biomechanical focus of movement of skeletal muscles, (b) includes recognition of the educational environment (cultural space and context), (c) includes the cognitive and affective domains within physical education, and (d) recognizes that when people move, they are influenced by individual interests, the teacher's instructions, and relationships between and within peer groups and the teacher. This definition of PA expands what can account for PA and how PA can be created within physical education.

Theoretical Foundations for Promoting Physical Activity

Self-determination theory and the socioecological model are two theoretical approaches that connect the definition of PA through a focus on individual interests, motivations, and the environment to understand PA behavior in physical education. According to the self-determination theory, individuals should feel that they (a) have autonomy/choices and control over their behaviors when participating in PA, (b) are capable of and experience success completing PA tasks, and (c) are included and cared for (feelings of relatedness) by others to be intrinsically motivated to engage in PA (Deci & Ryan, 2000).

Principles of the socioecological model influence PA behavior and inform strategies for intervention to increase PA engagement through the interrelationships of factors from the individual to the broader environment (Healy et al., 2020; Silveira & Motl, 2019). Individual factors in this model include physical and biological characteristics of children with disabilities as well as psychological and functional characteristics. Micro-level environmental components include the types and variety of physical education equipment and sport rules enforced during physical education classes. Macro-level environmental factors can be divided into three categories: (a) curricular channels at the state, county, or school level (e.g., physical accessibility of the school and public policy within a school district); (b) curricular changes in the content and teaching of physical education (e.g., teacher behavior/choices and social support/climate); and (c) other environmental factors such as parent support. These three categories (individual-, micro-, and macro-level environmental factors) should work together to improve the PA of students with disabilities. For example, a teacher's effectiveness is a function of not only teacher behavior but

Figure 1 Disability sport resources

Online Resources
Adaptedsports.org
Blazesports.org
Moveunitedsport.org
Specialolympics.org/health/fitness/fit-5
Brockport physical fitness test (BPFT) (www.pyfp.org)
Books
Davis, R. W. Inclusion through sports: A guide to enhancing sport experiences. Human Kinetics
Lieberman, L., & Houston Wilson. Strategies for inclusion: Physical Education for Everyone (3 rd Ed). Human Kinetics
Kasser, S. L., & Lytle, R. K. Inclusive physical activity: Promoting health for a lifetime (2 nd Ed). Human Kinetics

(a) selection of curriculum content and instructional models; (b) grouping practices to facilitate relatedness, skill development, and participation; (c) approaches to increase choice and encourage decision-making.

also the interaction with other individual and environmental factors based on the socioecological model (Jin & Yun, 2013).

Strategies for Increasing Physical Activity in Physical Education

Drawing on the self-determination theory and socioecological model, the following strategies will address ways in which teachers can purposefully, intentionally, and positively influence PA engagement of students with disabilities in physical education. These include (a) selection of curriculum content and instructional models; (b) grouping practices to facilitate relatedness, skill development, and participation; (c) approaches to increase choice and encourage decision-making; and (d) use of goal setting and self-evaluation.

Selection of Curriculum Content and Instructional Models

School districts and/or state departments of education often set policies that outline

student learning outcomes for physical education and identify specific activities/sports to achieve these outcomes. These policies were intended to ensure a standardized curriculum and were perceived to yield outcomes that all students could achieve. These policies, however, may fail to maximize PA participation of students with a disability, causing limited opportunities in activities that may not be relevant to students with a disability in terms of PA. Attention to culturally relevant activities to the disability community may be one way to address the interests of students with a disability in physical education.

Disability sports are sports played by persons with a disability. They may be based on existing able-bodied sports (e.g., wheelchair basketball, sitting volleyball) or sports specifically designed for those with a disability with no able-bodied sports equivalent (e.g., goalball for persons with a visual impairment). The presentation of disability sports content within a general physical education class as a sport for everyone rather than a sport for the

students with a disability in the respective class shifts the focus to sport for and by all students (Davis et al., 2012). The infusion of disability sports curriculum into general physical education may ensure students with a disability's need for autonomy (choice in activities), the chance to improve their skills or acquire new skills (competence), and time to interact with friends (relatedness) while maintaining alignment with state physical education standards and learning outcomes.

To facilitate inclusion of disability sports into general physical education, first, acquire knowledge of disability sports; the sport's respective skills, rules, and strategies; and how these may be alike or different from sports for persons without a disability (see Figure 1). With this level of familiarity, teachers can examine the instructional time available in the curriculum to decide whether to include disability sport as a whole unit (e.g., boccia) or as part of a unit (e.g., underhand roll/throw). Teachers could use available sport coaching manuals even if these manuals were not specifically designed for students with the same disabilities as may be in one's class. For example, although the Special Olympics coaching guides were designed for students with an intellectual disability, teachers can use them with students with physical disabilities to determine the most appropriate sequence of instructional tasks to present. The following steps are recommended for the successful implementation of disability sport in general physical education:

Figure 2 Sample bocchia checklist for peer partner interaction and support

Bocchia Criteria	Independent				Partial physical assistance				Full physical assistance			
	Trial				Trials				Trials			
	1	2	3	4	1	2	3	4	1	2	3	4
Faces target												
Reaches arm back												
Steps with opposition or adjusts chair so arm swings freely												
Has height on throw, throw does not decelerate too rapidly												

In one or two sentences answer the following questions about your partner
 What did your partner do well today?
 What does your partner need to work on?
 What should your partner do to improve?

- Identify initial grouping practices, instructional model, and lesson activities.
- Develop assessments such as gameplay analysis rubrics, peer checklists, ticket out the door, or online cognitive gamification assessments such as Kahoot or Quizlet to assess knowledge of technique, cues, rules, and strategies.
- Implement the lesson as planned, making modifications throughout as needed (Davis et al., 2012).

For Raul and Marissa, Mr. Ryan used bocchia as a unit in place of a traditional bowling unit to teach the skills of underhand rolling, throwing to a target, and teamwork. In so doing, Raul and Marissa were able to demonstrate their competence in these skills with increased participation with their peers without disabilities.

The utilization of instructional models such as sport education, cooperative learning, or peer teaching can increase PA participation of both students with and without a disability. Within a given model, students with a disability can engage in tasks and are assigned responsibilities to achieve the group's goals. For example, the peer teaching model promotes PA participation and student's self-determination through well-designed opportunities to increase peer

interaction and social responsibility toward learning.

Within a bocchia unit using the peer teaching model, Raul and Marissa are partnered with a classmate without a disability. In their respective groups, Raul and Marissa assume the role of teacher and student. As a peer teacher, they instruct their partner without a disability on skill technique and cues and complete a skill performance checklist providing written feedback of their partner's strengths and areas for improvement (see Figure 2). As a student, they are taught by a peer who learns how to modify the cues and task if necessary, affording Marissa and Raul the opportunity to demonstrate their personal bocchia skills and receive written performance feedback from their peer partner.

Grouping Practices

Many strategies have been espoused to group students quickly and efficiently to minimize off-task time and maximize PA engagement. The focus of this section is not on how to form groups but on the benefits of using small groups with mastery-focused tasks to increase PA of students with a disability. Students with a disability need time to form relationships with their classmates. Prolonged interaction with peers in a mastery-focused task has been shown to lead to improvements in motor skills, enjoyment, motivation, and increased PA engagement (Causgrove Dunn & Zimmer, 2020; Hutzler, 2020).

Grouping to Increase Relatedness and Peer Support.

Physical education teachers should create and assess peer-to-peer activity opportunities for students to interact with classmates, help students feel closer and more connected, develop mutual respect, and positively encourage PA (Kim et al., 2015; Pan et al., 2011). Providing physical support such as physical prompting or physical guidance by peers with appropriately modified equipment or encouragement can positively affect one's sense of belonging (Goodwin & Watkinson, 2000). A peer partner checklist (see Figure 2) in which students observe, record another peer's performance in the psychomotor domain, and provide written feedback of strengths and recommendations for improvement is one way teachers can create an environment that fosters feelings of relatedness, reduces feelings of social isolation, and encourages PA engagement (McDavid et al., 2014). By assigning students responsibilities in the assessment process, students can increase their interaction with students with disabilities and be more responsible for their behavior toward others. Also, respecting the difference in the skill level of all students in the class, the peer checklist acknowledges that students both with and without a disability may need different levels of prompting and assistance to get the idea of the movement pattern, further enabling for differentiated instruction and respect for individual differences among peers.

Figure 3. Affective domain exit slip

List 3 positive comments you provided your partner or teammates today			
Overall, rate the level of respect you showed your partner/teammates today			
Did you enjoy learning and playing the sport of Boccia			
Short answer: How did participating with a partner or small group help you be engaged in PA			
Short answer: What will you do or say next class to increase PA participation of your partner/teammates?			

Providing physical support when needed can promote the relatedness of students with disabilities. Before doing this, discuss with students with a disability what kind of support they feel is needed. *For instance, Raul and Marissa may or may not need someone to physically assist them with the movement of rolling or tossing a boccia ball or picking up balls once the game is over. If they request support, that becomes the responsibility of the small group within which they are a member. This will help Raul and Marissa to engage more independently in PA, and their peers can learn how to socially interact with a peer with a disability.*

Grouping to Support Skillful Participation and Motor Skill Acquisition. The formation of small groups with mastery-oriented goals can reduce the number of students engaged in a task at a given time and increase PA. Larger groups and performance-oriented games/sports with 11 versus 11 or even 6 versus 6 can lead to lower PA levels, especially among those with a disability in the class who may not be able to engage in the game at the same speed or travel the same distance in the specified time

frame. Students with a disability will benefit from smaller groups with a focus on task mastery and skill improvement (e.g., personal goal) instead of a performance mastery focus (e.g., win-lose competition or finishing first). The smaller group and mastery-focused practice allows students with a disability to engage more frequently with the task, developing their skill competence and interacting more meaningfully and positively with their classmates for a sense of belonging. The small group strategy could be applied in more than just stations for skill practice but in a round-robin tournament-style play or the context of individual or class-wide peer tutoring programs (Weaver et al., 2013). *An exit slip (see Figure 3) can be distributed at the end of the class to quickly assess and challenge students to reflect on (a) their interpersonal communications, (b) their level of respect for their peers, and (c) their overall enjoyment of the class. This type of intentional and focused reflection by all students in the class, inclusive of Raul and Marissa, ensures everyone has opportunities to engage in meaningful PA during physical education.*

Choice and Decision-Making

Choice typically refers to picking from two or more predetermined options. *Decision-making* is broader and more complex and involves a process of determining options, weighing the pros and cons associated with different outcomes, and selecting an option (Wehmeyer et al., 2010). Through an array of choices within a well-organized environment, students can explore how they will process a given task (Collier, 2011). Students can (a) make decisions about which instant activities they want to engage in first; (b) choose a different size, material, colors, length, widths, or weights of equipment; (c) determine rules for games/sports; (d) identify willing peer partners with whom to engage in an activity; and (e) identify the degree of support provided by peers or paraprofessionals. Teachers of students with disabilities may tend to want to overprotect students by making decisions for students with disabilities; conversely, an overwhelming number of choices or the uncertainty of making decisions can lead to increased anxiety, confuse students, and

Figure 4. Personal goal setting and choice recording instant activity log

Activity	Activity explanation	Date		Date		Date		Physical fitness component
		Goal	Best	Goal	Best	Goal	Best	
Push ups (on toes, on knees, seated in a chair or against a wall)	Students can choose to do a traditional push up, do a push up from their knees, do sitting pushups from a chair with or without armrests, or do a wall push up. Students with or without disabilities can choose from any one of these ideas, alternating as they desire							
Lunges (same leg or alternating)	Students can choose to sit and using their arms press palms down to the ground, out to the side, alternating up above the head, alternating in front							
Pull-up (on bar, partner pull up from sitting position on floor, in chairs)	Students can do a traditional pull-up on a pull-up bar or sitting on a floor or on a chair facing each other, clasping wrist pull each other up at the same time.							
Jumping jacks	Students can choose to sit, with arms out to side palms up, bring hands into knees and tap knees with down in the single count, double count, crossing over to tap opposite knees, mambo between legs single and double count repeating routine							
Windmills	Standing or sitting, arms outstretched to the side, touch hand to the opposite foot. Students can also choose to sit, cross arms, so hands are on opposite shoulders and turn the upper body to the right and left as far as possible							
Elbows to knees	Standing arms outstretched to the side, bring the knee up and touch with the opposite elbow. Sitting knees remain fixed rotating upper body							
Bicep curls/ reverse curls	Students can choose to use a weight, do traditional bicep curls front and side, alternating arm curls in front, to the side, or rotate hands to a pronated position, and flex and extend wrists.							
Jogging on the spot	Students can jog on the spot or choose to sit and pump arms back and forth to march in place, backward, alternating forward and back, and arm circles low and at the side in both directions							

delay time to practice a task. Teachers should help students through direct instruction or through peer teaching learn how to weigh the consequences of each choice and evaluate which alternative would be best for them (Wehmeyer et al., 2010). For instance, upon entering the gym, Raul and Marissa can pick an instant activity log (see **Figure 4**) in which they can choose from a variety of activities, choose how they want to complete the activity, and record their performance. The log explains what alternative motions count for each activity to accommodate the distinct needs of all students, not just Raul

and Marissa. A cognitive element to the activity log can include listing the physical fitness component most closely associated with the activity and helping assess students' understanding in the cognitive domain.

Goal Setting and Self-Evaluation

Teaching students with and without a disability to set and attain PA goals (see **Figure 4**) is fundamental to developing self-determination and increasing PA levels in physical education (Johnson et al., 2014). Physical educators can teach

students how to define SMART goals (specific, measurable, achievable, relevant, and time-based goals) and develop objectives or tasks collaboratively with students to achieve their goals. This skill is particularly important for students with a disability for whom goals are set by teachers and parents through the IEP process, often in the absence of the student's input. As a member of the IEP team, students with a disability, when appropriate, can be encouraged to contribute to the development of their IEP goals in



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alignment with the goals of their inclusive physical education curriculum (Elder et al., 2018).

Along with involving students in goal setting, having students with disabilities self-evaluate their performance can promote PA. This self-evaluation of one's strengths and abilities includes teaching students to track their progress toward their goals and evaluate the gap between their current ability and desired outcome (Wehmeyer et al., 2010). Providing students with self-assessment tasks and setting and adjusting their future goals will allow them to choose their own goals and competence to achieve their future goals through a self-evaluation process. **Figure 4** allows students like Paul and Marissa to set their own goals based on the choice of how to complete a particular task, record their best performance, and track changes across time. In so doing, students can see how the decisions they make for how to complete an activity impacts their goal achievement. In addition, using video recording with criteria in **Figure 2** will allow Raul and Marissa to evaluate their skill performance to assess strengths and identify areas for improvement on their own.

Conclusion

Positive experiences in physical education can enhance student motivation for PA. Meaningful changes grounded in theoretical frameworks are necessary to understand and increase PA participation of students with a disability. Choosing activities designed for students with a disability and unique and novel to students without a disability and fostering peer-supporting environments using instructional models, group formation, choices, independent decision-making, and goal setting and self-evaluation can have a positive impact on student's self-perception of autonomy, competence, and relatedness in physical education. These specific strategies may enhance motor skill competence, improve student's self-determination, and lead to positive PA outcomes.

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