☑ CE Article

Bridging the Gap Between Physical Therapy and Orientation and Mobility in Schools: Using a Collaborative Team Approach for Students with Visual Impairments

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Abstract: This article explores transdisciplinary collaboration and role-release strategies that would allow physical therapists and orientation and mobility (O&M) specialists to more effectively support students with visual impairments (that is, those who are blind or have low vision) and additional disabilities with their expanded core curriculum (ECC) goals. Through examining public and specialized school special education documentation for 20 school-aged students, the authors seek to better understand current practice patterns of both O&M and physical therapy professionals who are working with students who are visually impaired with additional disabilities, and suggest ways in which educational team members from both disciplines can work together toward common goals for their students.

Since the 1960s, much has been written about using a collaborative or transdisciplinary model to serve individuals with multiple disabilities (Hutchison, 1978). This model has been identified as a strong foundation for special education programming (American Foundation for the Blind [AFB], 2000; Correa, Fazzi, & Pogrund, 2002; Gense & Gense, 2005; York, Rainforth, & Giangreco, 1990). The *transdisciplinary model* is based on infusing interventions within activities occurring in the natural environment and throughout the child's or student's day (Smith, 1998). Depending upon the child's age, developmental level, and individual learning style, needs and interventions will vary, but this approach of discussing, planning, and implementing interventions that are frequent, consistent, and all-inclusive will not. For school-based services, instructional planning is coordinated through the development of an Individualized Education Program (IEP). Selecting a "single set of priority

goals for each student" (York et al., 1990, p. 75) that are discipline-free and functional insures activities will be practiced frequently during the school day. The team develops these broad-based goals and then decides which related services, if any, are needed to support the goals (Arnold, 2009).

Using this model, team members share knowledge and skills across disciplines (Utley & Rapport, 2000) through role-release strategies. *Role-release* involves the teaching of basic skills, basic instructional duties, or knowledge so that other team members can carry out interventions occurring throughout the student's day (Cmar, Griffin-Shirley, Kelley, & Lawrence, 2015; Lyon & Lyon 1980). Importantly, the specialists do not give up their professional accountability for evaluation, treatment planning, or supervision of the process (Correa et al., 2002; Jeffries, 2009; Mc Ewen, 2009b). They continue to ensure strategies are being followed, challenges are being addressed, and interventions are keeping pace with the student's progress. Regular communication between team members is essential for successful role-release (American Physical Therapy Association, 2010; Fazzi & Naimy, 2010b; Skellenger & Sapp, 2010). This communication includes discussing "how they wish the team's members to interact" (Corn & Lusk, 2010, p. 27), since this type of team dialogue lends itself to better student outcomes.

For visually impaired students with multiple disabilities, using this transdisciplinary model requires a concerted effort from the entire educational team because the team can be quite large. The team includes the student, his or her family members, as well as a combination of a general education classroom teacher; a

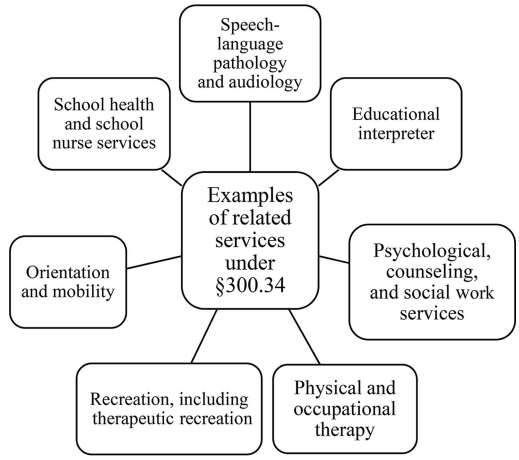

Figure 1. Related services under IDEA.

teacher of students who are visually impaired (Spungin, Ferrell, & Monson (2016); special educators; an orientation and mobility (O&M) specialist (Cmar et al., 2015); paraeducators; related service personnel such as an occupational therapist, a physical therapist, and a speech-language pathologist (Erin, 2004); a psychologist; administration (Correa et al., 2002); and a general physical education teacher or an adapted physical education teacher (Lieberman, Ponchillia, & Ponchillia, 2013). Of utmost importance for these students is including individuals on this team who are knowledgeable and have disability-specific expertise (AFB, 2000).

Under Part B of the Individuals with Disabilities Education Act (IDEA), there are many related service providers (see Figure 1) available to support students who are visually impaired with additional disabilities. Two related service providers that commonly work with these students are physical therapists and O&M specialists. Services from these professionals overlap in many areas (see Box 1) and often converge in the area of developing necessary skills for achieving school-

Common topics concerning both physical therapists and O&M specialists in schools

1. Purposeful movement and play
2. Body image concepts
3. Development of motor skills necessary for mobility, including cane use
4. Ability to make left or right turns for travel and orientation in space
5. Visual motor coordination skills
6. Safe and efficient travel with ambulation skills both inside and outside
7. Physical endurance
8. Environmental organization
9. Contextual cues
10. Problem solving
11. Concept development
12. Tactile responsiveness and sensory integration issues
13. Communication and social emotional strategies
14. Self-help skills and self-advocacy skills
15. Functional vision and hearing

Box 1

based mobility goals. It can be challenging to meet the student's complex physical needs while also developing O&M concepts and skills. With these students, specific collaboration between physical therapy and O&M can optimize student outcomes.

O&M is part of the educational curriculum for students with visual impairments, as well as for students with deafblindness. In 1997, O&M was included as a "related service" as defined by IDEA §300.34(c)(7) (U.S. Department of Education, n.d.). Formal O&M training (see Box 2) is provided by a Certified O&M Specialist. An O&M specialist's sequence of instruction includes: developing foundational concepts of spatial awareness, sensory system development, motor development, and environmental and community awareness to attain systematic orientation and safe movement at school, at home, and in the community (Correa et al., 2002; U.S. Department of Education, n.d.). O&M specialists also teach a variety of techniques to students: trailing techniques, protective techniques, guide instruction (formerly referred to as *human guide* or *sighted guide),* cane instruction, and more. They help the student and the team understand and utilize any remaining vision the student may have (Fazzi and Naimy, 2010a). O&M specialists provide a continuum of services (McMahon, 2014) to educate not only the student and the family, but also the entire school team on specific concepts and skills across the span of each student's school career (Anthony, 1996; Cmar et al., 2015; Fazzi and Naimy, 2010b).

The Individuals with Disabilities Education Act [§300.34(c)(9)] defines *physical therapy* as services provided by a qualified physical therapist (U.S. Department of Education, n.d.). Physical therapists assist students in accessing school

Examples of O&M services in schools

1. Guide technique (formerly known as *human guide* or *sighted guide*)
2. Protective techniques
3. Use of information received from senses (temperature, sound, and the like)
4. Searching skills
5. Independent movement skills
6. Spatial and environmental concepts, plus cardinal directions
7. Cane skills indoors and outdoors or use of a service animal
8. Route travel
9. Street crossings
10. Use of public transportation systems
11. Community experiences and work
12. Understanding and using remaining vision
13. Distance low vision devices
14. Use of devices to aid orientation
15. Understanding pathology

Box 2

environments and benefiting from their educational program (American Physical Therapy Association, 2009). They help students develop an array of motor skills necessary for achieving educational goals developed by the IEP team, including transition goals (American Physical Therapy Association, 2014), and for successful participation in the educational environment, including extracurricular activities (Mc Ewen, 2009a). Examples of skills include improved postural control for better participation in functional classroom activities; increased stamina for transitioning between classes in a timely manner; and enhanced coordination and motor competence for increased safety and participation during playground time. Physical therapists also function as consultants to other team members with regard to the physical management of the student. This may include training staff on the use of adaptive equipment such as braces, standers, walkers, or wheelchairs, or instructing staff in areas such as safe lifting techniques or student positioning needs (American Physical Therapy Association, 2016).

Historically, physical therapists and O&M specialists have not worked closely together. In addition, there is a paucity of literature on this topic. Skellenger and Sapp (2010) outline the team member roles that are effective for serving children with visual impairments; they identify the O&M instructor as the professional to be supportive, facilitative, informative, and prescriptive with all team members. The Council for Exceptional Children also published a position paper on the role of the O&M specialist (Cmar et al., 2015) that supports role-release: "O&M training is maximized by infusing O&M content into school curricula and activities with support and reinforcement by all individuals" (p. 6). This literature establishes the expectation of utilizing collaborative teamwork to support children who are visually impaired and have

additional disabilities. Yet there is no literature describing best practice for collaborating and integrating the complimentary skill sets of physical therapy and O&M specialists in a way that supports the individual professions but also, when appropriate, focuses the student's needs towards common, discipline-free goals.

A retrospective review

To better understand current practice patterns of both O&M and physical therapy professionals who are working with students who are visually impaired with additional disabilities, a retrospective review of special education documentation between the years of 2013 and 2016 was completed. There was no interaction with students. All documents reviewed came from public school districts throughout the state of Arizona as well as from New Mexico and New York. From a list of 37 student records from which identifying information had been removed, 20 records were randomly chosen. The initial list of 37 records comprised students who, when entering the school for the blind, qualified for special education services as students with visual impairments, and in addition had physical therapy notes on their multidisciplinary evaluation team report or current IEP. The student may not have been receiving physical therapy services at the time, but all students had been evaluated by a physical therapist at some point prior to their transfer to the school for the blind. A licensed physical therapist reviewed the O&M and physical therapy sections of the multidisciplinary evaluation team and the IEP to gain information about past evaluations, past services provided, and current services recommended. The first author conferred with a certified O&M specialist for questions regarding O&M documentation. The age of the students in the review ranged from 5 to 16 years.

Of the 20 educational documents reviewed, seven contained physical therapy assessment information but the physical therapists did not recommend services. In five of these seven documents, the physical therapist indicated that O&M was meeting the student's needs and thus it was not necessary to add physical therapy services. In the remaining two documents, a physical therapist documented that one student was already accessing the environment and benefitting from their education without physical therapy support, and the physical therapist in the other case said that school-based physical therapy was not indicated as the delays were secondary to blindness.

There were four documents that included O&M evaluations, but O&M specialists were not actively working with these students. The O&M specialists in two of these cases stated that the students were not ready to begin O&M; one was receiving physical therapy for use of a walker and the other for wheelchair endurance training and participation in physical education. The third document stated that no educational needs were noted in O&M at the time and that the student would be reassessed when she was older and beginning community travel. The fourth stated that the student exhibited behaviors that indicated he was not ready for O&M or the use of a cane, and that the specialist would attempt to reassess him during the next school year. Last, there was one additional student record without any O&M documentation. In the present level of performance sec-

tion, a physical therapist mentioned that "orientation training was needed due to blindness," but an O&M instructor was never listed as part of the IEP team.

The remaining seven documents reviewed had both physical therapy and O&M services listed on the IEP. In only one of these seven documents did physical therapists and O&M specialists share goals. The following five case studies are examples of the documents reviewed. The examples are each paraphrased, but the word choice, content, and flow of information has been kept as true as possible while protecting each student's identity.

Case description 1 (no physical therapy recommended)

JJ, a 14-year-old boy born at 27 weeks gestation, developed retinopathy of prematurity stage 5, leaving him without vision. He was also diagnosed with a mild intellectual disability at the age of 9 years.

Public school physical therapy documentation

The physical therapist's report indicated: JJ's muscle strength and joint range of motion is within normal limits for functional tasks. He is able to go up the stairs to the second floor reciprocally with the use of one railing and his cane. He uses a step-to gait coming down the steps. He is able to walk for long distances. He can squat and jump up with his hands on a support surface. He can reach a standing position from the floor. When asked to complete complex tasks, JJ needs guidance. JJ's issues are due to lack of experience.

Physical therapy goals. JJ does not demonstrate a need for physical therapy services because his mobility problems are related to his O&M skills due to his blindness but not motoric needs supported by physical therapy.

Public school O&M documentation

JJ needs training in basic cane skills. He is having trouble maintaining a proper grip on his cane. His coordination for cane use is impaired. He needs supervision and assistance in ascending and descending stairs, since he needs rail support for safety.

O&M goals. JJ will improve his positional awareness in space as he explores his physical environment by reaching out in a variety of directions (front, back, above, below, to the right, to the left). He will explore the "rock wall" for 10 sessions. He will explore the playground equipment for 10 sessions. He will explore the cafeteria for five sessions. He will explore a classroom for five sessions.

Case description 2 (discipline-specific physical therapy and O&M goals)

SZ is a 6-year-old girl with bilateral retinal detachment with some residual light perception in her left eye. Magnetic resonance imaging revealed microcephaly, resulting in an additional diagnosis of severe global developmental delay. Her history is positive for bilateral club foot deformity requiring surgical intervention and casting on both feet at the age of 12 months and then again at the age of 2.5 years. She wears bilateral supramalleolar orthotics.

Public school physical therapy documentation

SZ is able to climb on therapy equipment with minimal assistance. She can squat in play. She is using steps with supervision and support from a handrail or someone holding one hand. She enjoys the swing.

She is unable to jump. She is able to propel herself forward on a scooter board while lying in the prone position. She can direct herself towards a target with sound. Physical therapy is recommended for 60 minutes per month in the therapy room and an additional 100 minutes per month in her self-contained classroom.

Physical therapy goals. SZ will improve her functional mobility skills as evidenced by full participation in a motor activity with minimal assist only. She will perform 50% of an activity with minimal assistance.

Public school O&M documentation

SZ needs assistance with ascending and descending stairs; holding and using her mobility device to detect objects for safe travel; learning to locate and store her travel device; demonstrating proper cane technique with her mobility device; and demonstrating effective skills with a guide, trailing, and protective hand techniques for safe, independent travel in class and on campus.

O&M goals. SZ will safely climb the stairs of the playground equipment while using her mobility device in three of four trials.

Case description 3 (discipline-specific physical therapy and O&M goals)

CJ is a 6.5-year-old girl born prematurely at 26 weeks gestation. She was diagnosed with retinopathy of prematurity, glaucoma, and retinal detachment. She is legally blind and has a speech delay.

Public school physical therapy documentation

CJ has low muscle tone; her primitive reflexes are not fully integrated; and her symmetrical tonic neck reflex is still present. She has calcaneal valgus at the hind foot bilaterally. She walks using a white cane with supervision or using bumpers for protection. She walks up steps using a reciprocal pattern, with a railing on the right and the cane in her left hand. She needs cueing for correct hand placement on the railing. Her muscle strength is good. She moves through half-kneeling to standing from the floor. She can stand on one foot momentarily and walks sideways across a balance beam. She cannot maintain two-point quadruped on hands and knees. She jumps forward 10 inches. She jumps down an eight-inch step. She hops with a hand held for support. CJ runs using a fast walk. Her ability to catch a beach ball with verbal cueing is inconsistent. She throws a tennis ball four feet. Physical therapy is recommended for 30 minutes three times per week.

Physical therapy goals. CJ will improve her balance, core muscle strength, and positional awareness in space as she explores a balance beam and the playground equipment by reaching out in a variety of directions (front, back, above, below).

Public school O&M documentation

CJ follows one-two step directions but has difficulty following the natural context cues for the classroom. She understands basic quantitative concepts and basic positional body concepts. She has poor self-sequencing skills. She does not respond to narrow-passage techniques without prompts and does not maintain correct arm and body positioning without prompts. She is able to detect when her guide steps off the curb or a step and can walk up and down steps using a rail with the guide. She cannot use a reciprocal stepping pattern up or down the steps

using the guide technique. She is able to use tactile discrimination for mapping. She is beginning to use echolocation appropriately. She is easily distracted from mobility tasks and needs redirection. She understands directions of left and right. She is inconsistent with executing indoor routes to specific familiar locations without prompting. CJ demonstrates poor cane skills when walking on flat surfaces and on steps. She needs help maintaining the proper cane sweep at a one-to-one ratio with her foot stepping. After five minutes of travel using proper cane technique, she is fatigued. CJ needs to develop spatial awareness, body coordination, and balance activities for improved functional skills and participation at school. She also needs direct experience with concepts in her environment, their function and purpose.

O&M goals. CJ will increase an awareness of body concepts and laterality (sides of her body) for travel and orientation by achieving the benchmarks below. She will consistently sweep her cane in front of her at a rate that matches her footsteps equal to one step per one sweep without staff or teacher intervention for a period of 10 minutes over five consecutive trials.

Case description 4 (no O&M services)

TM is an 11-year-old boy with a complex medical history. He was diagnosed with global developmental delay, cerebral palsy, cortical vision impairment, and corneal ulcers. A functional vision evaluation was completed and found that TM's distance viewing was compromised and he could not consistently see shapes at five feet away.

Public school physical therapy documentation

TM walks with a gait trainer and 50% adult assistance for navigation of 150 feet. He also uses a stander in the classroom. He participates in physical education activities with moderate adult assistance. He climbs on the playground with adult guidance and minimal assistance on the steps, using the rail for support. TM can transition from wheelchair mobility to walking in the school environment but "needs orientation training due to blindness."

Physical therapy goals. TM will walk with a front-wheeled walker and 50% adult assistance for navigation for at least 350 feet in three out of three trials over a period of a month.

Public school O&M documentation

The public school O&M documentation file did not have any documentation from an O&M specialist, nor were O&M services listed on any of TM's IEPs.

Case description 5 (combined physical therapy and O&M goals)

TY is a 13-year-old boy with stage 5 retinopathy of prematurity with bilateral retinal detachment. Reattachment was not successful. He has hemiplegia.

Public school physical therapy documentation

TY walks with a long cane. He walks 300 feet or more with 25% assistance for balance, especially needed on uneven surfaces, curbs, and ramps. He has poor strength in both legs, left more than right, making stair climbing difficult. He needs adult assistance plus a railing for ascending and descending five steps. Leisure and recreation are limited for TY. He reports

that he likes to walk outside at home but he is afraid he will fall and hurt himself.

Physical therapy goals. Physical therapy services are direct for 75 minutes per month. The physical therapy goals are in collaboration with O&M.

Public school O&M documentation

TY is working on outdoor travel skills, cane techniques, sidewalk travel, walking up and down curbs with his cane, crossing streets, and maintaining orientation. O&M specialists provide direct services for 180 minutes per month.

O&M goals. TY will be able to identify two sounds outdoors to help him maintain orientation on 9 out of 10 trials as observed by the O&M instructor. In addition to this goal, there are two team goals supported by the physical therapist, the teacher, and the O&M specialist: TY will use appropriate long cane technique to correct from a veer when crossing the street in two of three attempts as observed by his instructor; and given two possible techniques for crossing large, open spaces on campus, TY will successfully cross an open space without getting turned around in 8 of 10 occasions as observed by the instructor.

The team approach

Case study 1

Working toward a more collaborative approach, using case study 1, the IEP team at the school for the blind identified recreation and leisure skills and O&M as two areas of the expanded core curriculum (ECC) in which JJ needed support (see Boxes 3 and 4). In addition to what was originally reported by the school district, the team found that JJ had trouble motor-planning novel activities (that is, he lacked the ability to think of an idea, plan out its action, and then execute the task). He was also found to be easily confused by directional tasks. If given a sequence of five steps for a task or activity, he could accurately recall all the steps but could not initiate and complete the task or activity without support. JJ exhibited fair dynamic balance and decreased coordination with gross motor activities. He lacked many life experiences: he could not swim, had never walked on a treadmill, and had never ridden a bicycle or played recreational games such as beep baseball or adapted bowling. The physical therapist, the paraeducator, and the physical education teacher were identified as supports for JJ to work on the necessary skills to improve his participation in recreation and leisure activities and physical education.

A mobility goal was also discussed at JJ's IEP meeting. The physical therapist; the occupational therapist; the classroom teacher, who was also a teacher of visually impaired students; and the O&M specialist agreed that motor planning a simple route to his place of work on campus was functional and a necessary part of his daily routine. This route included climbing steps to get into his building. Occu-

Core curriculum

1. English language arts and other languages
2. Mathematics
3. Science
4. Health, physical education
5. Fine arts
6. Social studies
7. Economics, business education
8. Vocational education
9. History

Box 3

Expanded core curriculum (ECC)

The ECC has nine content areas (see Figure 2) (AFB, n.d.). These areas are not replacements for the general education or core curriculum (see Box 3), which all students are expected to master prior to graduation. The ECC comprises special skill sets that students with visual impairments, including those with additional disabilities, have the right to learn. These students are expected to have mastered both the general education curriculum and the ECC upon high school graduation (AFB, 2014). Using the ECC is not mandatory in all states but students "have a fundamental right to an expanded core curriculum" (Iowa Department of Education, 2007, p. 13). This extra set of skills ensures that students with visual impairments are provided with an appropriate foundation for life skills. Often, students with visual impairments learn concepts incompletely or in a distorted way. They are not afforded the same opportunity of incidental learning as sighted individuals. They need the extra help and learning experiences to ensure success at school, in the community, and with post-graduate goals, for successful transition to independent living (Gannon, 2007). Orientation and mobility specialists are typically more familiar than physical therapists with using the ECC. When working with students with visual impairments, physical therapists should familiarize themselves with the ECC content areas and assess the applicable skill areas when determining whether he or she can assist students in meeting their Individualized Education Program goals.

Box 4

pational therapy and O&M assisted JJ in creating a tactile map for orientation. They used Wikki Stix (manipulatable strips of yarn covered in stiff wax) to design his route and identify landmarks.

Compensatory academic skills, including communication modes	Orientation and mobility	Sensory-efficiency skills
Self-determination	Use of assistive technology	Social-interaction skills
Career education	Recreation and leisure skills	Independent living skills

Figure 2. Expanded core curriculum (AFB, n.d.).

The occupational therapist and his teacher taught JJ to use both hands to correctly read his map and improve his orientation. This was necessary because he was a tactile learner and he responded best when he had concrete information at his fingertips. The physical therapy worked—not only on the route but also on stair climbing. The O&M specialist worked on his completing the route successfully as well as training the team on proper cane techniques for JJ. Together, the team created a functional and meaningful goal that ensured practice of this skill throughout his day to successfully meet his IEP goal.

Case study 2

In case study 2, the IEP team agreed that the school district's O&M playground goal was functional and that it was an activity that SZ could practice within her

normal daily schedule. This was an ideal goal for the O&M instructor, the physical therapist, and the paraeducator. The original goal was that SZ would safely climb the stairs of the playground equipment while using her mobility device in three of four trials. The O&M specialist did not want SZ using her cane on the playground equipment but felt that instructing her to ascend and descend the campus steps using her long cane on the way to the playground was appropriate. Physical therapy focused on improving her balance, postural control, and motor coordination on the playground and on the campus steps. O&M focused on SZ's route to the playground and orientation on the playground, specifically on finding her way to the playground structure from the playground cane rack. The paraeducator supervised the student on the playground and was instructed in techniques to support her on the route to the playground as well as on the playground itself. Together, these providers achieved the functional goal of travel to and access on the playground in a coordinated, functional manner. Her original physical therapy goal was discontinued. The physical therapist did not add a separate discipline-specific goal, since the prerequisite skills necessary for functional participation on the stairs and the playground were part of this goal's benchmarks. On the IEP, the physical therapist was identified as a provider supporting this team goal.

The challenges

Although using a collaborative approach enhances practice, coordinates teaching, and aligns expectations, the challenges associated with using this model cannot be discounted. A lack of support individually, interpersonally, or organizationally (Hernandez, 2013) makes it difficult to successfully implement this approach. In addition, the added time commitments and time constraints created by this approach can severely limit its use (Sileo, 2011). A majority of O&M specialists serving school-aged students work on an itinerant basis, which limits their time and flexibility (Fazzi & Naimy, 2010b). In a survey of school-based physical therapists, Thomason and Wilmarth (2015) found a high prevalence of isolated, direct physical therapy services still being provided by the physical therapists. Teacher acceptance and therapists' workloads were cited in this study as the main barriers to using a more integrated service delivery model.

Professionals' attitudes towards sharing skills and knowledge is another common barrier to using a collaborative approach. Team members have to want to work together and learn from one another for this arrangement to be successful, since it is not merely a matter of coordinating efforts, having a team meeting, or "agreeing to have *different* goals for each discipline" (Giangreco, Prelock, Reid, Dennis, & Edelman, 2000, p. 365). This approach requires working together in a collaborative manner to accomplish a goal that is not achievable separately (Bauer, Iyer, Boon, & Fore, 2010). Although this approach is supported by both the physical therapy and O&M professions (American Physical Therapy Association, 2004; Cmar et al., 2015; Correa et al., 2002; Jeffries, 2009; Mackenstadt, 2008), providers do not always feel comfortable with sharing their knowledge. Professionals are socialized to protect their disciplines. This model of sharing

can be threatening for individuals who feel they need to maintain their traditional roles (Giangreco et al., 2000). However, providers should feel assured that O&M is not providing physical therapy services or providing the student with instruction that would require the skill of a physical therapist. Similarly, the physical therapist is not providing O&M instruction that requires the skill of an O&M specialist. The two disciplines develop a coordinated plan that supports instruction to the student in an integrated way.

A lack of communication between team members is another obstacle to collaboration (American Physical Therapy Association, 2010). Giangreco (2000) makes the point that when "autocratic decisions concerning support services are made by related service providers in isolation without consideration of the interrelationships among the services provided by team members" (p. 231), the outcome can be counterproductive if not detrimental to the student's learning. This speaks directly to both physical therapy and O&M providers. There is often a natural "interrelationship" between these providers, since both disciplines are focused on improving the student's mobility at school. Communication is necessary among members of these two disciplines in order to minimize unnecessary overlap, prevent conflicting recommendations (Giangreco et al., 2000), and "insure that intervention is consistent across all factors to increase the probability that the child will be successful" (Skellenger & Sapp, 2010 p. 174).

Last, insufficient training for staff limits an individual's ability to collaborate (Bruder & Dunst, 2005), simply because the person does not know how to effectively carry out this approach. In all but one case reviewed for this study, the physical therapy and O&M providers developed different, discipline-specific IEP goals. Using the International Classification of Function, Disability and Health (World Health Organization, 2017) framework, the providers for each case reviewed wrote one of three levels of goals: impairment, activity, or participation. Impairment-level goals address problems in the body's structure or function (Centers for Medicare & Medicaid Services, n.d.). For example, one of the physical therapy goals stated, "RT's knee quadriceps strength will improve to four out of five by the end of the IEP period." An impairment-level goal such as this one on the IEP is not appropriate, and it is seemingly unrelated to the child's functional school routine. This goal could have been a prerequisite goal for the student's activity-level goal written by the O&M specialist, which stated, "RT will ascend and descend five steps, properly positioning his cane for each step. He will do this successfully, with only one verbal reminder, for three out of three trials over a three-month period." If there are prerequisite skills that the student needs to master in order to achieve functional mobility tasks, communication between the physical therapist and the O&M specialist is essential to ensure both understand how their involvement and their goals will jointly support the progression of the student. In this example, collaboration between the physical therapy and O&M providers should have resulted in the development of a participation-level goal supported by both services. Improving the student's strength or stamina for safe stair climbing might be necessary and can be

addressed within the functional goal of stair climbing itself. Quadriceps strengthening should not have been a separate and distinct impairment-level goal written by the physical therapist. In this case, the IEP goal could have read, "RT will ascend and descend five campus steps supervised, using proper cane technique, when traveling to and from the library with his class for three consecutive weeks, as reported by his classroom teacher." This annual goal is meaningful because the student travels to the library twice a week with his class. The goal can be worked on by his entire team, and the physical therapist and O&M instructor can be identified on the IEP as the professionals responsible for assisting with this goal. Specialists can easily break down the goal into short-term benchmarks and work on the underlying impairments that affect the student's performance and participation. Most importantly, the goal is participation based, it is relevant to the student's day, and it moves the student forward in his level of independence and participation at school.

Limitations and conclusion

Both physical therapy and O&M specialists are part of a child's educational team, since both professionals work to build early-learning concepts to facilitate normal development and ultimately independent movement and travel (Correa et al., 2002; Fazzi & Naimy, 2010b; Skellenger & Sapp, 2010). This study is a glimpse into the practices of O&M and physical therapy professionals who work with students with visual impairments and multiple disabilities in a school setting. Because it includes only 20 students, this study cannot be generalized to other districts or states, since there may be other factors affecting their ability to work collaboratively with one another. Being that this was a retrospective document review, it is also difficult to know the extent of actual collaboration that occurred between each educational team member. However, the majority of the documentation reviewed was specific to the various disciplines and did not address the student's school or classroom routine, other providers supporting similar issues, or collaboration that may have occurred. In addition, in all but one case the goals were consistently identified as belonging to only one discipline.

Despite the limitations with this study, the review does raise three important points: whenever possible, IEP goals need to be written as team-based goals; IEP goals need to relate to functional activities that can be practiced frequently and are imbedded in the student's daily routine; and physical therapy and O&M specialists who work with students with visual impairments and additional disabilities need education on how to work collaboratively with one another in common areas of service. Historically, one discipline has specialized in working with students with visual impairments and the other has specialized in working with students with motor impairments. Moving forward, students with multiple disabilities including visual impairments deserve service coordination that makes learning functional and focused on the student's daily routine. It is time that O&M and physical therapy professionals identify common ground and utilize one another's strengths to make a greater difference for this special population of students that both professions serve.

References

American Foundation for the Blind. (n.d.). *The expanded core curriculum for blind and visually impaired children and youths.* Retrieved from http://www.afb.org/info/programs-and-services/professional-development/education/expanded-core-curriculum/the-expanded-core-curriculum/12345

American Foundation for the Blind. (2000). *Educating students with visual impairments for inclusion in society: A paper on the inclusion of students with visual impairments.* Josephine L. Taylor Leadership Institute, Education Work Group. Retrieved from http://www.afb.org/info/teachers/inclusive-education/35

American Foundation for the Blind. (2014). *What is core curriculum?* Retrieved from development/teachers/expanded-core-curriculum/1234

American Physical Therapy Association. (2004). *Guide to physical therapist practice.* Alexandria, VA: Author.

American Physical Therapy Association. (2009). *Fact sheet: Providing physical therapy services under IDEA 2004.* Retrieved from http://pediatricapta.org/pdfs/IDEA%20Schools.pdf

American Physical Therapy Association. (2010). *Team-based service delivery approaches in pediatric practice.* Retrieved from https://pediatricapta.org/includes/fact-sheets/pdfs/Service%20Delivery.pdf

American Physical Therapy Association. (2014). *Physical therapy for educational benefit*. Retrieved from https://pediatricapta.org/includes/fact-sheets/pdfs/15%20PT%20for%20Educational%20Benefit.pdf

American Physical Therapy Association. (2016). *Physical therapy in school settings.* Retrieved from http://www.apta.org/uploadedFiles/APTAorg/Advocacy/Federal/Legislative_Issues/IDEA_ESEA/PhysicalTherapyintheSchoolSystem.pdf#search&eq;%22pt in school setting%22

Anthony, T. L. (1996). TDPB evaluation and the young child who is deafblind: Assessing O&M skills. *Proceedings of the International Mobility Conference 8*, Trondheim, Norway.

Arnold, S. (2009). Individual education programs (IEP). In I. R. McEwen (Ed.), *Providing physical therapy services under Parts B & C of the Individuals with Disabilities Education Act (IDEA)* (pp. 77–87). Alexandria, VA: Section on Pediatrics, American Physical Therapy Association.

Bauer, K. L., Iyer, S. N., Boon, R. T., & Fore, C. (2010). 20 ways for classroom teachers to collaborate with speech-language pathologists. *Intervention in School and Clinic*, *45*(5), 3333–3337.

Bruder, M. B., & Dunst, C. J. (2005). Personnel preparation in recommended early intervention practices: Degree of emphasis across disciplines. *Topics in Early Childhood Special Education*, *25*(1), 25–33.

Centers for Medicare & Medicaid Services. (n.d.). *PT, OT, and SLP services and the international classification of functioning, disability, and health (ICF).* Retrieved from https://www.cms.gov/Medicare/Billing/TherapyServices/Downloads/Mapping_Therapy_Goals_ICF.pdf

Cmar, J. L., Griffin-Shirley, N., Kelley, P., & Lawrence, B. (2015). *The role of the orientation and mobility specialist in public schools*. Position paper of the Division on Visual Impairments and Deafblindness, Council for Exceptional Children. Arlington, VA: Council for Exceptional Children.

Corn, A. L., & Lusk, K. E. (2010). Perspectives on low vision. In A. L. Corn & J. N. Erin (Eds.), *Foundations of low vision: Clinical and functional perspectives* (2nd ed., pp. 3–34). New York, NY: AFB Press.

Correa, V. I., Fazzi, D. L., & Pogrund, R. L. (2002). Mobility focus: Developing early skills for orientation and mobility. In R. L. Pogrund & D. L. Fazzi (Eds.), *Early focus: Working with young blind and visually impaired children and their families* (2nd ed., pp. 405–441). New York, NY: AFB Press.

Erin, J. N. (2004). Where do I begin? In S. J. Spungin (Ed.), *When you have a visually impaired student with multiple disabilities in your classroom: A guide for teachers* (pp. 1–20). New York, NY: AFB Press.

Fazzi, D. L., & Naimy, B. J. (2010a). Orientation and mobility services for children

and youths with low vision. In W. R. Wiener, R. L. Welsh, & B. B. Blasch (Eds.), *Foundations of orientation and mobility: Volume II, instructional strategies and practical applications* (3rd ed., pp. 655–726). New York, NY: AFB Press.

Fazzi, D. L., & Naimy, B. J. (2010b). Teaching orientation and mobility to school-age children. In W. R. Wiener, R. L. Welsh, & B. B. Blasch (Eds.), *Foundations of orientation and mobility: Volume II, instructional strategies and practical applications* (3rd ed., pp. 208–262). New York, NY: AFB Press.

Gannon, C. (2007). *Tip sheet #2: The expanded core curriculum*. Retrieved from http://www.nercve.umb.edu/nhpd/index.php?page&eq;tip2_ECC

Gense, M. H., & Gense, D. J. (2005). Autism spectrum disorders and visual impairment: Meeting students' learning needs. New York, NY: AFB Press.

Giangreco, M. F. (2000). Related services research for students with low-incidence disabilities: Implications for speech-language pathologists in inclusive classrooms. *Language, Speech, and Hearing Services in Schools*, *31*, 230–239.

Giangreco, M. F., Prelock, P., Reid, R., Dennis, R., & Edelman, S. (2000). Roles of related services personnel in inclusive schools. In R. Villa & J. Thousand (Eds.), *Restructuring for caring and effective education: Piecing the puzzle together* (2nd ed., pp. 360–388). Baltimore, MD: Paul H. Brookes.

Hernandez, S. J. (2013). Collaboration in special education: Its history, evolution, and critical factors necessary for successful implementation. *US-China Education Review*, *3*(6), 480–498. Retrieved from https://pdfs.semanticscholar.org/b348/c25d6455f8137f13f943d49b28aec0d7cb61.pdf

Hutchison, D. (1978). The transdisciplinary approach. In J. B. Curry (Ed.), *Mental retardation: Nursing approaches to care* (pp. 65–74). St. Louis, MO: Mosby.

Iowa Department of Education. (2007). *Iowa expanded core curriculum (ECC) resource guide*. Retrieved from http://www.iowabraille.k12.ia.us/pages/uploaded_files/ECCResGuide%2007.pdf

Jeffries, L. (2009). Individualized family service plans (IFSPs). In I. R. McEwen (Ed.), *Providing physical therapy services under Parts B & C of the Individuals with Disabilities Education Act (IDEA)* (pp. 67–75). Alexandria, VA: Section on Pediatrics, American Physical Therapy Association.

Lieberman, L. J., Ponchillia, P. E., & Ponchillia, S. V. (2013). *Physical education and sports for people with visual impairments and deafblindness: Foundations of instruction*. New York, NY: AFB Press.

Lyon, S., & Lyon G. (1980). Team functioning and staff development: A role-release approach to providing integrated educational services for severely handicapped students. *Journal of the Association for the Severely Handicapped, 5*(3), 250–263.

Mackenstadt, D. (2008). A good orientation and mobility program in the public schools. *Future Reflections*, *27*(2). Retrieved from https://nfb.org/images/nfb/publications/fr/fr27/2/fr270210.htm

McEwen, I. R. (2009a). Deciding who should receive physical therapy services under IDEA. In I. R. McEwen (Ed.), *Providing physical therapy services under Parts B & C of the Individuals with Disabilities Education Act (IDEA)* (pp. 37–48). Alexandria, VA: Section on Pediatrics, American Physical Therapy Association.

McEwen, I. R. (2009b). Intervention in the schools. In I. R. McEwen (Ed.), *Providing physical therapy services under Parts B & C of the Individuals with Disabilities Education Act (IDEA)* (pp. 107–114). Alexandria, VA: Section on Pediatrics, American Physical Therapy Association.

McMahon, E. (2014). The role of specialized schools for students with visual impairments in the continuum of placement options: The right help, at the right time, in the right place. *Journal of Visual Impairment & Blindness*, *108*(6), 449–459.

Sileo, J. M. (2011). Co-teaching: Getting to know your partner. *Teaching Exceptional Children*, *43*(5), 32–39.

Skellenger, A. C., & Sapp, W. K. (2010). Teaching orientation and mobility for the

early childhood years. In W. R. Wiener, R. L. Welsh, & B. B. Blasch (Eds.), *Foundations of orientation and mobility: Volume II, instructional strategies and practical applications* (3rd ed.), (pp. 163-207). New York, NY: AFB Press.

Smith, M. (1998). Joseph's coat: People teaming in transdisciplinary ways. *SEE/HEAR, 3*(2).

Spungin, S. J., Ferrell, K. A., & Monson, M. (2016). *The role and function of the teacher of students with visual impairments*. Position paper of the Division on Visual Impairments, Council for Exceptional Children. Arlington, VA: Council for Exceptional Children.

Thomason, H. K., & Wilmarth, M. A. (2015). Provision of school-based physical therapy services: A survey of current practice patterns. *Pediatric Physical Therapy*, *27,* 161–169.

U. S. Department of Education. (n.d.). *Building the legacy: IDEA 2004*. Retrieved from http://idea-b.ed.gov/explore/home.html

Utley, B., & Rapport, M. J. (2000). Exploring role release in the multidisciplinary team. *Physical Disabilities: Education and Related Services, 18*(2), 89–119.

World Health Organization. (2017). *International classification of function, disability and health (ICF).* Retrieved from http://www.who.int/classifications/icf/en

York, J., Rainforth, B., & Giangreco, M. F. (1990). Transdisciplinary teamwork and integrated therapy: Clarifying the misconceptions. *Pediatric Physical Therapy*, *2*(2), 73–79. Retrieved from http://www.who.int/classifications/icf/en

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