

# Section on Pediatrics, APTA

## Dosage Considerations: Recommending School-Based Physical Therapy Intervention Under IDEA Resource Manual



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## Introduction

Physical therapists (PTs) may provide services to students in educational settings under the Individuals with Disabilities Education Improvement Act (IDEA) of 2004.<sup>1</sup> IDEA is a federal law requiring the provision of a free and appropriate public education for all children, regardless of disability. Part B of IDEA specifically mandates a free and appropriate education for children ages 3 to 21 who have a disability. Follow this link to the fact sheet on School-Based physical therapy: [Providing Physical Therapy in Schools Under IDEA 2004.](#)<sup>2</sup>

School-based PTs may evaluate students with disabilities to determine the need for services in the educational setting. As a related service to special education, physical therapy services for disabled students may be recommended to the individualized education program (IEP) team if the expertise of a PT is required for students to access the curriculum, if students participate in their educational environment, and if students benefit from their specially designed educational program. School-based PTs may provide services to students in a variety of school settings such as the classroom, lunchroom, playground, gymnasium, or bathroom. Other environments may include work training sites and community settings for postsecondary transitions. In some cases, students who are medically fragile and are unable to attend school may receive physical therapy services as part of a home-based special education program when physical therapy is required to meet educational goals and objectives and/or support the student's access to instruction. IDEA does not specify how the team determines the amount of physical therapy services to include in the IEP. The purpose of this paper is to describe the considerations that should guide the clinical reasoning and decisions of school-based PTs when making dosing recommendations for school-based physical therapy services.

Table 1 provides a summary of definitions for concepts used in this article.

**Table 1. Definitions:**

Term	Definition
<b>Episode of care</b>	The length of time needed to address a specific problem. For a student in the educational setting, it is usually a defined period of time, such as an IEP cycle or semester. <sup>3</sup> The concept of an episode of care reflects the perspective that a student may need to receive services on multiple occasions in school and/or lifetime when changes within the learning environment result in a new challenge. <sup>4</sup>
<b>Frequency</b>	The total number of sessions of intervention that occur over the course of a specified episode of care. <sup>3</sup>
<b>Length of session</b>	The length of time for an individual therapy session.
<b>Dosage</b>	The amount of services described as the combination of frequency, the length of a therapy session, and the length of an episode of care.
<b>Intermittent</b>	A low dosage of physical therapy intervention provided irregularly or when needed over an episode of care. Length of therapy session may vary. For example, 2 to 5x/year for a total of 60 minutes.
<b>Periodic</b>	A lower dosage of physical therapy intervention provided at regularly scheduled intervals for a specified number of minutes over an episode of care. For example, 1 to 2x/quarter for 20 minutes per session.
<b>Frequent</b>	A moderate dosage of physical therapy intervention provided at consistent intervals over an episode of care. For example, weekly or bimonthly sessions lasting less than 45 minutes in length.
<b>Intensive</b>	A highly concentrated dosage of physical therapy intervention provided over an episode of care. For example, weekly sessions lasting 45 minutes or more in length or a frequency of 2x or more/week.
<b>Educational program</b>	Encompasses the goals and objectives determined by the IEP team and the activities required for a student to access and participate in the learning environment. The educational program may include specially designed instruction, related services, supplementary aids and services, and program modifications or supports for school personnel. These factors may be provided to enable the child with a disability to be involved in and make progress in the general education curriculum and to participate in extracurricular and other nonacademic activities.

The challenge of determining the appropriate dosage of physical therapy services has prompted the design of clinical reasoning instruments. These include *Considerations for Educationally Relevant Therapy*,<sup>5</sup> which is widely used by therapists in Florida, *The Determination of Relevant Therapy Tool*,<sup>3</sup> utilized in Maryland, and *The Occupational and Physical Therapy Service Needs Checklist, A Guide to Service Delivery for Ages 3-21*,<sup>6</sup> developed by a work group in Oregon. Further research is needed to validate these clinical reasoning tools for use in deciding the dosage of school-based physical therapy.

## Research

Physical therapy, as a related service provided to a child or on behalf of the child, should be “based on peer-reviewed research to the extent practicable.”<sup>1</sup> As such, the evidence for school-based physical therapy practice is limited, particularly with respect to the delivery of services.

A number of systematic reviews have reported common physical therapy interventions used for school-aged children with disabilities.<sup>7-9</sup> Interventions, however, predominantly target children with cerebral palsy and are conducted in controlled, isolated settings rather than in the context of the child’s natural educational environment. Although positive outcomes are reported for some of these interventions, the variability of protocols and outcome measures do not provide clear or sufficient evidence to determine the most effective dosage of services.<sup>7-10</sup> Other studies show no significant difference in gross motor function or performance as a result of more intensive services than non-intensive services.<sup>11-13</sup>

Physical therapy research has identified several factors used to guide decision making related to service delivery. Palisano and Murr<sup>4</sup> discussed the need for consideration of the child’s readiness for activity/participation, the method of service delivery, and the child’s skill level, while Kaminker, Chiarello, O’Neil, and Gildenberg Dichter<sup>14</sup> identified the student’s present functional level, student/family goals, history of intervention, diagnosis, age, educational setting, and prognosis. Research that suggests predictive indicators associated with a child’s potential for ambulation and mobility,<sup>15-19</sup> gross motor development,<sup>20-24</sup> and self-care<sup>18-19</sup> may guide therapists’ determination of expected outcomes and recommended dosage of services. For “best practice,” school-based PTs must consider the best available evidence and determine whether it can be applied to the individual child in his/her educational environment.

## Elements Influencing Decision Making in School-Based Physical Therapy

The following elements influence the clinical reasoning and decision making of PTs working in the educational environment:

- **International Classification of Functioning, Disability and Health**

The International Classification of Functioning, Disability and Health (ICF) provides the school-based PT a framework for clinical reasoning and decision making.<sup>25-26</sup> The ICF is an internationally recognized interdisciplinary model for describing health and health-related conditions and is endorsed by the American Physical Therapy Association (APTA).<sup>25-27</sup> The ICF facilitates assessment of the whole child by intertwining developmental considerations with the other considerations of the ICF model (body structures and function, activities, participation, environmental factors, and personal factors).<sup>28</sup>

- **Evidence-Based Practice (EBP)**

EBP is the integration of clinical expertise and expert opinion, patient values, and the best available research evidence into the decision making process for patient care.<sup>29</sup> For more information on EBP, follow this link to the fact sheet: [Evidenced-Based Practice in Pediatric Physical Therapy](#).<sup>30</sup>

- **The Guide to Physical Therapist Practice**

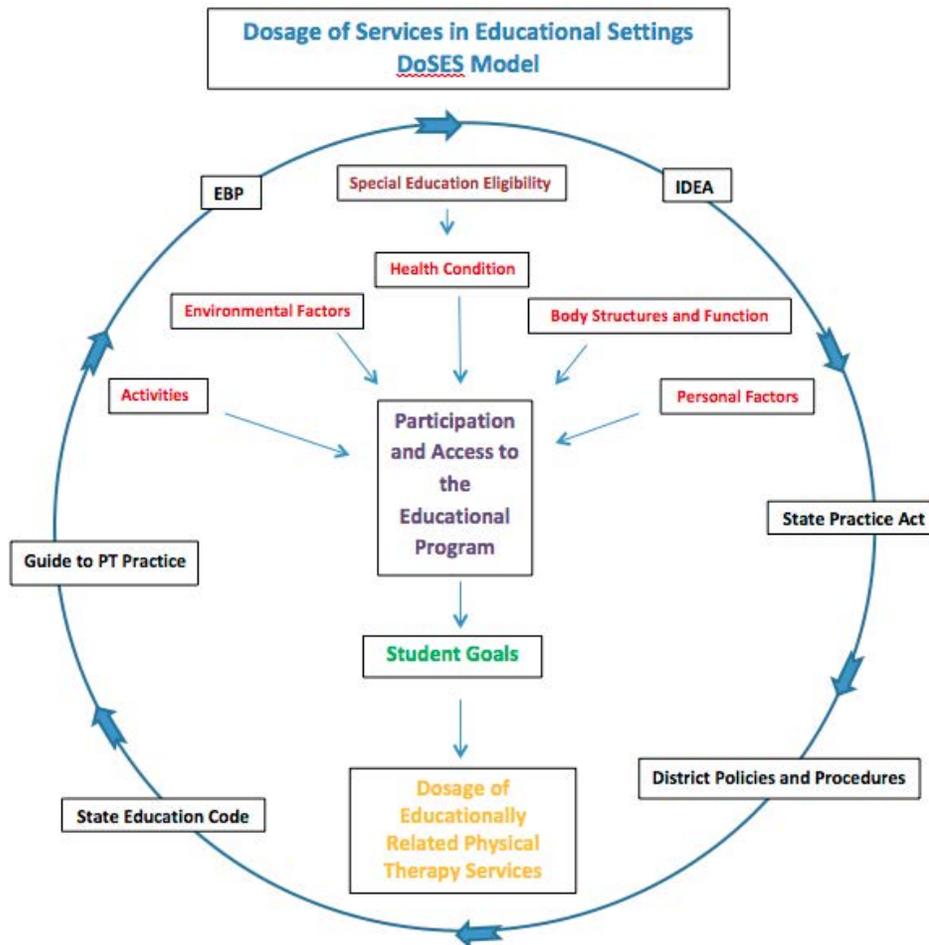
*The Guide to Physical Therapist Practice* was developed by APTA to describe the contents and the processes used in the practice of physical therapy.<sup>31</sup> To fulfill this purpose, the *Guide* provides a framework for the therapist to use when making service-delivery decisions and outlines patient/client management including examination, evaluation, diagnosis, prognosis, plan of care, and intervention. For more information about the *Guide* and its use in pediatric practice, follow this link to the fact sheet: [Using APTA’s Guide to Physical Therapist Practice in Pediatric Physical Therapy](#).<sup>32</sup>

- **IDEA, State Education Code, District Policies and Procedures, State Practice Acts**

School-based PTs must adhere to the requirements of federal law (IDEA), the special education laws of their respective states, and the policies and procedures of the local school district. Regardless of practice setting, PTs must adhere to their state practice acts. Guidelines developed by various state departments of education may be accessed at the following link: [State Guidelines for School-Based PT Practice](#).<sup>33</sup>

## Dosage of Services in the Educational Setting Model (DoSES)

By using the elements described above, a framework of assessment emerges that includes the student's ability to participate in and access the educational program. The DoSES Model is a clinical reasoning model that encompasses all relevant factors (Figure 1). This can be used to guide decisions regarding dosage of therapy services.



**Figure 1. DoSES Model**

### Dosage Considerations for School-Based Physical Therapy Services

If the IEP team determines that a student requires school-based physical therapy to benefit from his or her specially designed education program, the team must determine the dosage of services. The PT makes recommendations based on evidence and the needs of the student. IDEA provides that the IEP team determines the services necessary to implement a student's IEP. This decision requires consideration of a variety of factors and will be unique for every student. When determining frequency, length of sessions, and the length of the episode of care, the following factors need to be considered (See **Appendix A**):

**Participation Restrictions.**<sup>3,4,6</sup> When a student demonstrates restrictions of functional or foundational skills that limit the ability to access and participate within the educational program, the therapist must consider the appropriate method to facilitate participation. Services may include therapeutic intervention, assistive technology, accommodations, modifications, classroom programs, caregiver education, and/or adult assistance.

**Chronological Age/Readiness for Skill Acquisition.**<sup>4,34,35</sup> The dosage of services must reflect the potential for skill acquisition during a critical period of development and the child's intrinsic desire to participate in the educational program. Students with diagnoses such as cerebral palsy or other developmental disabilities may benefit more from physical therapy services at a young age. Brain research demonstrates that adaptive plasticity mechanisms are enhanced in the developing brain and that early experiences have a greater

impact on functional and structural changes in the brain than are those in older children.<sup>36</sup> Age may also be considered relative to the severity of gross motor impairment using motor development curves described by Rosenbaum et al,<sup>23</sup> specifically for children with cerebral palsy. These curves, developed using the Gross Motor Function Measure (GMFM),<sup>37</sup> describe predicted patterns of motor development based on the age of the child and the severity of the cerebral palsy. Similar curves have been developed for children with Down syndrome.<sup>22</sup> Peer interaction and the desire to be included are strong motivators for some children. A child's readiness to acquire new skills for participation in educational activities not only applies to body structures and function, but also to the child's intrinsic motivation, interest in the activity, family support system, and relevant aspects of the child's physical, social, and attitudinal environment.<sup>4</sup>

**Impact of Therapeutic Intervention.**<sup>5,6,35</sup> The team must consider the impact that physical therapy services will have on improving the student's functional performance within the least restrictive educational environment. The PT utilizes evidence-based practice and considers the student's health condition/medical diagnosis, participation restrictions, personal factors, and gross motor prognosis when determining the effectiveness of interventions and making decisions regarding the student's potential to benefit from physical therapy.

**Support Available at the School.**<sup>3,5,6,34,35</sup> The team must also consider the most qualified individual(s) at the school level to address identified needs and to what extent the expertise of the PT is required. These supports may include: the teacher, special education teacher, educational assistant, adapted or regular physical education teacher, occupational therapist, school nurse, health care assistant, or other providers available at the school. The PT may train these staff members to assist a student in the daily practice of functional skills within the context in which they occur (walking between classes, opening a door, carrying a lunch tray, etc). This may promote skill acquisition and improve participation in the least restrictive educational environment.

**Transitions.**<sup>6,34</sup> Transition to a new program, placement, or environment must be considered when determining dosage of physical therapy services. For students with disabilities, these changes can directly impact the student's access and participation within the new educational program. The student's present level of performance and supports needed within the new program must be addressed to determine the appropriate dosage of physical therapy required to meet the student's needs.

**Expertise and Amount of Clinical Decision Making and Problem Solving Needed From a PT.**<sup>5</sup> As movement specialists, school-based PTs understand the impact of disease and disability on a student's ability to access and participate within the educational setting. When considering dosage, the PT must consider the attributes of the student and the environment, the extent to which the classroom program can be carried out safely by the student and/or carried over by instructional staff, and the amount of clinical expertise and problem solving needed from a PT to address the student's needs.

**Previous Therapy.**<sup>3-5</sup> Dosage considerations must also take into account the extent of and the response to a student's previous physical therapy interventions across settings, including school-based, medical, and early intervention services. A student may have multiple episodes of care over the span of years in the educational setting. A functional plateau in skill acquisition may indicate a need to reduce the dosage of service, while the emergence of a new goal area may indicate the need for an increase. Principles of evidence-based practice will guide and support clinical decision making.

**Health Condition.**<sup>4</sup> Dosage recommendations may reflect the student's medical status and its impact on the student's access and participation in the educational program. The need for physical therapy services may vary over time for a student with ongoing changes in health condition.

**Assistive Technology (AT).**<sup>4,6</sup> AT is any item, piece of equipment, or product that is used to increase, maintain, or improve a student's access and participation within the educational program. The IEP team must consider any AT that could improve functional capabilities and allow for greater participation. Physical therapy dosage recommendations may reflect the need for acquisition, training, and maintenance of a student's AT. For more information on AT, please follow this link to the fact sheet: [Assistive Technology and the Individualized Education Program](#).<sup>38</sup>

## Dosing Options

IDEA does not specify how the recommended physical therapy services should be written in the IEP.<sup>1</sup> The amount of physical therapy services needed to meet the goals in the IEP may be indicated per week, month, year, along with the number of minutes or hours. Intervention may be given directly to the student or provided on behalf of the student when the student's needs require consultation, training, or program planning with school staff. Regardless of the model of delivery, all services are physical therapy intervention if they require the skills of the PT or the physical therapist assistant (PTA). While each state or school district may have specific guidelines to determine how the frequency and duration of service is included in the IEP, the total amount of time needed to address the entirety of the student's needs should be reflected in the recommendation. It is also necessary for the PT to clearly communicate to the team how the services will be delivered. In unique situations (extreme rural settings, island communities, etc), innovative delivery, such as telehealth, may be utilized.

School-based PTs traditionally recommend services provided at regular intervals over the IEP period. However, they may consider alternative dosing recommendations to better meet the needs of the student. Examples of alternative dosing are:

- **Front-loading:** Providing an increased amount of therapy during the initial portion of the episode of care for initial equipment ordering, set-up, and training, with the intent to fade the services once the environmental needs are accomplished. For example, dosage may be written as 30 minutes per week for 3 months, fading to monthly or quarterly sessions.
- **Therapeutic block(s) of time:** Specific periods of time that may be divided over the episode of care and used as indicated by student needs. For example, 4 hours over the school year to address equipment needs.
- **Transitional services for students changing schools or placements.** For example, providing shorter episodes of care, such as 30 minutes per week for 3 months, for a previously independent fifth grade student moving from elementary to middle school who now must deal with classroom changes, lockers, and a larger campus.
- **Short, intensive bursts of therapy for unique needs.** For example, walking across the stage for graduation or participation in the school talent show, with a dosage of 2 times per week for 30 minutes for the month prior to the event.

Some districts use computerized IEP documents. These programs often have limited selections of frequencies and length of session. The physical therapy dosage should be determined by the PT and the IEP team based on the specific needs of the student and not by the limitations of the computerized program.

## Conclusion

In order to provide best practice in educational settings, school-based PTs must use sound clinical reasoning to guide decisions on the dosage of recommended services for their students. The DoSES Model provides a framework to facilitate decision making based on key elements, including the ICF model, evidence-based practice, APTA's *Guide to Physical Therapist Practice*,<sup>31</sup> state physical therapy practice acts, IDEA,<sup>1</sup> and state and local legislation and policies.

Specific factors that must be taken into consideration include: (1) the student's participation restrictions in the educational program, (2) chronological age and readiness for skill acquisition, (3) potential to benefit from therapeutic intervention, (4) previous therapy, and (5) medical status. Further important considerations include the student's transitions to new environments, support available at the school, assistive technology, and the amount of expertise, clinical skills, and problem solving needed of the PT. These key elements and factors must be carefully considered to determine the appropriate dosage of service that will facilitate the student's access and participation in the educational program.

## APPENDIX A: DOSING CONSIDERATIONS

<p><b>Considerations</b></p>	<p><b>Intensive</b> A highly concentrated dosage of physical therapy intervention provided over an episode of care.  Example: Weekly sessions lasting 45 minutes or more or a frequency of 2x or more/week.</p>	<p><b>Frequent</b> A moderate dosage of physical therapy intervention provided at consistent intervals over an episode of care.  Example: Weekly or bimonthly sessions lasting less than 45 minutes.</p>	<p><b>Periodic</b> A lower dosage of physical therapy intervention provided at regularly scheduled intervals for a specified number of minutes over an episode of care.  Example: 1–2x/quarter for 20 minutes per session.</p>	<p><b>Intermittent</b> A low dosage of physical therapy intervention provided irregularly or when needed over an episode of care. Length of therapy session may vary.  Example: 2–5x/yr for a total of 60 minutes</p>
<p><b>Participation restrictions.</b> Student demonstrates restrictions of functional or foundational skills that limit participation within the educational program.</p>	<p>Intensive therapeutic intervention is needed to facilitate participation. Student is highly motivated and desires to participate. Participation in activity is short-term or is time-dependent (ie, walking across the stage for graduation). Consideration should be given to interventions provided to the student outside of those delineated in the IEP.</p>	<p>Regular therapeutic intervention is needed to facilitate ongoing participation in the educational program throughout the episode of care. Student is motivated to participate.</p>	<p>Participation restrictions can be addressed by a physical therapist (PT) through periodic review of accommodations, adapted equipment, classroom programs, or adult assistance.</p>	<p>Participation restrictions are being addressed through established accommodations, adapted equipment, classroom programs, or adult assistance, requiring only intermittent review by a PT.</p>
<p><b>Chronological age/readiness for skill acquisition.</b> The dosage of services must reflect the potential for skill acquisition during a critical period of development and the child's intrinsic desire to participate in the educational program.</p>	<p>Extremely critical period when student is demonstrating emerging skills that require physical therapy intervention for further development. Student's age indicates greater potential for benefit from more intensive frequency, or the student has suffered a recent insult or injury. Intervention is typically decreased as skill is acquired.</p>	<p>Critical period when student is demonstrating emerging skills that require practice and/or repetition for further development. Student may be experiencing a growth spurt and may require physical therapy intervention, or may be approaching a transitional period in his/her education.</p>	<p>Outside of a critical period, but may have periodic challenges identified by student and/or instructional staff, or has a need for specific adaptations requiring a PT's expertise. Based upon student's age, minimal gains are expected from therapeutic intervention.</p>	<p>Not in a critical period, but may have intermittent challenges within the established program requiring a PT to address needs. Based upon student's age, limited gains are expected from therapeutic intervention.</p>
<p><b>Impact of therapeutic intervention.</b> The PT utilizes evidenced-based practice and considers the student's health condition/medical diagnosis, participation restrictions, personal factors, and gross motor prognosis when determining the effectiveness of interventions and making decisions regarding the student's potential to benefit from physical therapy.</p>	<p>Student has potential for rapid progress toward established goals, or has potential for rapid decline or loss of functional skills. Student is highly motivated to gain a skill. This intervention intensity is typically decreased as progress slows or skills achieved.</p>	<p>Student demonstrates motivation and continuous progress toward established goals. Potential for regression or loss of skill could occur with reduction in service.</p>	<p>Student demonstrates a slowed rate of goal attainment and/or shows decline solely due to their disease process. Student participates in the classroom program with use of instructional staff providing daily support with periodic physical therapy.</p>	<p>Student demonstrates limited progress toward goal attainment or is near maximum benefit. Student meets new challenges associated with a change in educational/functional status with assistance from instructional staff and only intermittent physical therapy.</p>

<b>Considerations</b>	<b>Intensive</b> A highly concentrated dosage of physical therapy intervention provided over an episode of care.  Example: Weekly sessions lasting 45 minutes or more or a frequency of 2x or more/week.	<b>Frequent</b> A moderate dosage of physical therapy intervention provided at consistent intervals over an episode of care.  Example: Weekly or bimonthly sessions lasting less than 45 minutes.	<b>Periodic</b> A lower dosage of physical therapy intervention provided at regularly scheduled intervals for a specified number of minutes over an episode of care.  Example: 1–2x/quarter for 20 minutes per session.	<b>Intermittent</b> A low dosage of physical therapy intervention provided irregularly or when needed over an episode of care. Length of therapy session may vary.  Example: 2–5x/yr for a total of 60 minutes
<b>Support available at the school.<sup>a</sup></b> Considers the expertise/competency of other school-based providers who may support the student's participation in the educational program.	The student and/or staff require extensive support of the PT to assist the student's participation in the educational setting and progression toward goals. The expertise/competency in a specific area of need or the availability of other school-based providers to meet the needs is limited.  This intervention intensity is typically decreased as progress slows, skills are achieved, or student/staff demonstrate competency.	Student requires regular support of the PT within classroom setting where support service staff is being trained to assist the student's participation and progression toward goals.  Other school staff is available and can contribute to meeting the specific area of need.	Level of support within the classroom or educational setting is adequate to maintain student's skills, meet new challenges, and allow participation in the curriculum. Ongoing supervision by the PT at regular intervals is still needed to address factors that may restrict the student's ability to make steady progress toward goals.  Periodic review of required accommodations or modifications continues to be necessary.	Student is able to participate in the educational program with use of support services of available instructional staff, providers, or specialized programs. The student is able to meet challenges with physical therapy at irregular intervals within the episode of care.  Monitored observations of student's participation may be needed on occasional basis to address modifications.
<b>Transitions.</b> Considers student's transition to and present level of performance in a new program, placement, or environment, as well as available supports.	Student requires the PT to assist with acquisition of significant additional skills for access and participation related to the transition. For example, student is moving to a different campus/environment where challenging routines and barriers are encountered.  May be a short-term intensive need.	Student requires physical therapy for the refinement or expansion of skills related to the transition. For example, the student needs increased endurance to keep pace with peers in the new environment.	Student's level of support within the new program/environment is adequate to maintain skills, meet new challenges, and allow for participation, with ongoing supervision from the PT regarding equipment, accommodations, or modifications.	Student's level of support within the new program/environment is adequate to allow participation, with intermittent services of physical therapy to review equipment, accommodations, or modifications.
<b>Expertise and amount of clinical decision making and problem solving needed from a PT.<sup>a</sup></b> PTs are movement specialists who assist in optimizing movement for participation within the educational program.	Requires the clinical skills and problem solving of a PT for a significant part of the classroom program. Limited exercises/activities can be safely performed by student and/or implemented by instructional staff.	Requires the clinical skills and problem solving of a PT. Some part of classroom program can be safely performed by student and/or implemented by instructional staff.	Requires the clinical skills and problem solving of a PT to periodically reassess student status and update classroom program. Classroom program can be safely performed by student and/or implemented by instructional staff.	Classroom program can be safely performed by student and/or implemented by instructional staff. Clinical skills and problem solving of a PT needed for specific challenges identified by the instructional staff, student, or IEP team.

<b>Considerations</b>	<b>Intensive</b> A highly concentrated dosage of physical therapy intervention provided over an episode of care.  Example: Weekly sessions lasting 45 minutes or more or a frequency of 2x or more/week.	<b>Frequent</b> A moderate dosage of physical therapy intervention provided at consistent intervals over an episode of care.  Example: Weekly or bimonthly sessions lasting less than 45 minutes.	<b>Periodic</b> A lower dosage of physical therapy intervention provided at regularly scheduled intervals for a specified number of minutes over an episode of care.  Example: 1–2x/quarter for 20 minutes per session.	<b>Intermittent</b> A low dosage of physical therapy intervention provided irregularly or when needed over an episode of care. Length of therapy session may vary.  Example: 2–5x/yr for a total of 60 minutes
<b>Previous therapy intervention.</b> Uses the principles of evidence-based practice and considers the extent of and response to previous physical therapy interventions, including school-based, medical, and early intervention services.	Student continues to make significant progress with physical therapy interventions.  A new episode of care or new goal area has been identified, with student showing excellent potential for improvement with intervention.  A student has not had previous therapy intervention but shows excellent potential for improvement with intervention.	Student has made steady progress with physical therapy interventions.  A new episode of care or a new goal area has been identified and the student shows good potential for improvement with intervention.  A student has had limited or no previous therapy intervention but shows good potential for improvement with intervention.	Student has reached a plateau in skill acquisition. May need periodic examination for signs of readiness for new skill acquisition or regression of skills.	Student has not made progress despite physical therapy interventions. May need intermittent examination for signs of regression or equipment management.
<b>Health condition.</b> A student who experiences a change in medical status may require modifications to school-based physical therapy services.  Consideration should be given to interventions provided to the student outside of those delineated in the IEP.	A student with a significant change in health condition may initially require intensive physical therapy to address altered mobility and positioning needs, training of school staff, and acquisition/fitting of adaptive equipment.	A student with moderate or ongoing changes in health condition that impact functional abilities may require frequent physical therapy for skill acquisition, training of school staff, and monitoring adaptive equipment.	A student with stable or gradual changes in health condition may require periodic physical therapy to monitor functional abilities, adaptive equipment needs, and training of school staff.	A student with stable health condition or whose needs are appropriately managed by either the student or school staff may require intermittent physical therapy to monitor adaptive equipment and changes in educational needs.
<b>Assistive technology (AT).</b> AT is any item, piece of equipment, or product that is used to increase, maintain, or improve a student's participation within and access to the educational program.  Intensity of physical therapy services decreases as student/staff proficiency with AT increases.	Student requires intensive physical therapy for determination of complex AT needs, including acquisition, fitting, customization, and training with new adaptive equipment.  Staff requires extensive training with complex devices to ensure safe participation of the student in the classroom.	Student requires frequent physical therapy for determination of AT needs, including acquisition, fitting, and training with new adaptive equipment.  Staff requires training with unfamiliar devices to ensure safe participation of the student in the classroom.	Student and/or staff use AT appropriately or needs are low tech and require minimal training. Periodic physical therapy is needed to monitor changes, safety, and maintenance.	Student and/or staff use all AT appropriately. Student or staff monitors fit, safety, and maintenance of equipment. Intermittent physical therapy is needed to monitor whether current equipment continues to meet student's needs.

<sup>a</sup>PTs need to consult respective state physical therapy practice acts and regulations to ensure therapeutic programs are within the scope of practice and that delegated activities to unlicensed persons is permitted.

Adapted from:

Bailes A, Reder R, Burch C. Development of guidelines for determining frequency of therapy services in a pediatric medical setting. *Pediatr Phys Ther.* 2008;20(2), 194-198. doi: 10.1097/PEP.0b013e3181728a7b

## Appendix B: Case Studies

The case studies below illustrate the considerations and decision-making process used by one school-based PT to determine the student's recommended dosage. *Decisions for dosage require the IEP team to consider a variety of factors and will be unique for every student. The provided case studies should not be considered recommended guidance, merely one example.*

### Case Study #1

**Student:** Sam

**Age:** 4-year-old

**Grade:** Prekindergarten

**Medical Diagnosis:** Global developmental delay

**Special Education Eligibility Classification:** Multiple disabilities (cognitive impairments, physical impairments, language impairments)

**PT's Diagnosis:** Impaired neuromotor development

#### Prior Physical Therapy Services:

<p><b>Early intervention:</b></p> <ul style="list-style-type: none"> <li>Unknown if the family accessed early intervention services. No records were submitted for review</li> </ul>
<p><b>Preschool (3-years-old):</b></p> <ul style="list-style-type: none"> <li>Entered preschool classroom in the middle of the school year on his third birthday</li> <li>1x/week for 30 minutes physical therapy intervention for functional mobility (including creeping, pulling to stand, and ambulation with bilateral hands held) over 2.5 months</li> <li>Dosage increased to 3x/week for 30 minutes over 1 month for intensive ambulation training</li> <li>When Sam was unable to make progress with assisted gait trainer or walker use following intensive period of intervention, dosage returned to 1x/week for 30 minutes over 1 year</li> </ul>

#### Present Level of Performance - Preschool (4-years-old):

<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>Ambulates independently with a wide base of support for 20-foot intervals before reaching for support</li> <li>Able to stop and start ambulation without loss of balance</li> <li>Not yet assuming standing without support, but pulls to stand</li> <li>Lowers to the floor with control and without support</li> </ul>
<p><b>Environmental factors:</b></p> <ul style="list-style-type: none"> <li>In self-contained preschool classroom most of the school day, with toys and furnishings that allow frequent opportunities to pull to stand and transition short distances between support surfaces</li> <li>Low pupil-to-adult ratio. Teacher and assistants have demonstrated understanding of importance of encouraging exploration of learning environment</li> </ul>
<p><b>Body structures and function:</b></p> <ul style="list-style-type: none"> <li>Hypotonic throughout body</li> <li>Wide base of support with upper extremities held in high-guard position</li> <li>Switched from solid ankle ankle-foot orthoses (AFOs) to supra-malleolar orthoses (SMOs) with good results and improved balance reactions</li> </ul>
<p><b>Personal factors:</b></p> <ul style="list-style-type: none"> <li>Poor attention to task</li> <li>Cognitive delays</li> <li>Nonverbal</li> <li>Unable to follow verbal instructions</li> </ul>

**Participation and access to educational program:**

- In self-contained preschool classroom, including breakfast and lunch
- Participates in adapted aquatics program and adapted physical education (PE) program
- Rides special education school bus with lift

**IEP Goals:**

- Student will independently transition from classroom chair to standing at a table during educational activities daily during 80% of the opportunities in 4/5 days
- During circle time, the student will independently transition from the floor to the chair during 80% of the opportunities
- Student will walk 50 feet with supervision to access the gym and the restroom 5 days per week for 3 consecutive weeks

**Considerations:**

- **Expertise and amount of clinical decision making and problem solving needed from a PT:** needs time to practice/master newly acquired skills, but does not need as much skilled intervention from the PT (periodic)
- **Support available at the school:** special education staff offer Sam multiple opportunities to practice ambulation skills throughout the learning environment (periodic)
- **Chronological age/readiness for skill acquisition:** Ambulation is primary means of mobility, although gait pattern remains immature. Unable to follow verbal instructions, which limits ability to build higher-level gross motor skills (periodic)

**Recommended Dosage of Services:**

- Physical therapy 2x/month for 15 minutes (periodic) from August until March (end of IEP) to monitor equipment and indications of readiness for skill acquisition

## Case Study #2

**Student:** Brian

**Age:** 11-year-old

**Grade:** 6 (new to middle school)

**Medical Diagnosis:** Diplegic cerebral palsy – GMFCS level III

**Special Education Eligibility Classification:** Orthopedic impairment; specific learning disability

**PT's Diagnosis:** Impaired neuromotor development

### Prior Physical Therapy Services:

#### Preschool and kindergarten:

- Physical therapy service 4x/month for 60 minutes for gait and transfer training throughout school environment, playground access, recreational mobility, consultation, and/or training for special education staff

#### Elementary:

- Direct service 4x/month for 45 minutes for gait and transfer training throughout school environment, playground access, recreational mobility, consultation, and/or training for special education staff in positioning, transfer, and mobility challenges that they have identified in Brian's daily school routine

### Present Level of Performance: Middle School:

#### Activities:

- Uses reverse wheeled walker as primary means of mobility within the classroom and for distances less than 100 feet
- Self-propels manual wheelchair over level surfaces, but is slower than peers; manual wheelchair pushed by caregivers over uneven surfaces
- Sits independently on the floor for long periods with rounded back and arm propping
- Sits in adapted desk in every classroom
- Transfers walker to/from wheelchair or classroom chair with distant supervision
- Ascends and descends short flight of stairs (up to 6 steps) holding a railing and a caregiver's hand with minimal assistance
- Unable to assume or maintain standing without support
- Independently manages elastic waist clothing in restroom; requires walker for standing support at toilet/urinal and close supervision for balance

#### Environmental factors:

- Brian is new to the middle school, so special education staff do not know him well
- Classroom desk adaptations include: elongated desktop to accommodate laptop computer, height-adjustable desktop and foot rest to accommodate student's shorter stature, right armrest and full length backrest (seat bottom to shoulder) for additional support
- Middle school building is much larger than elementary building, with greater distances between classrooms and media center, gymnasium, specialty classrooms, and lunch room
- Uses elevator to access art classroom (requires evacuation plan)

#### Body structures and function:

- Hypertonic lower extremities; mild flexion hypertonicity in right upper extremity
- Mild knee flexion contractures
- Wears hinged AFOs bilaterally

#### Personal factors:

- Strong social skills
- Enjoys athletics – active and competitive family
- Receives episodic outpatient physical therapy, typically occurring post-surgery and during summer

**Participation and access to educational program:**

- Spends entire school day in general education – removed only for adapted PE and occasional closed environment/task-specific physical therapy services
- Joins same-aged peers in lunchroom with distant supervision by special education staff
- Receives adapted PE weekly for pre-teaching and adaptations to support participation in general PE class; participates in PE using manual wheelchair, walker, or mobile stander for mobility with minimal caregiver assistance for skill and safety
- Rides bus with wheelchair lift to school; parents transport from school due to extracurricular schedules of Brian and his siblings
- Has been manager of parks and recreation youth soccer and baseball teams; wants to become manager of middle school athletic teams; recently joined middle school wrestling team with support of personal care assistant

**IEP Goals:**

- Brian will transfer between his walker and adapted classroom desk independently 90% of opportunities
- Brian will use his reverse wheeled walker for independent mobility between classrooms (50–100 feet) for 5 out of 6 class periods
- Brian will stand for toileting with support from his reverse wheeled walker when wearing easy access clothing with only distant supervision for safety 75% of occasions

**Considerations:**

- **Assistive technology:** Initial set-up/fit adapted equipment and environmental modifications (such as adapted chairs and toilet railings); power-assist wheelchair trial through medically-based provider (frequent to periodic)
- **Participation limitations & expertise needed from PT:** Need to problem solve Brian’s mobility challenges throughout new school environment at the beginning of the school year; collaborate with adapted PE staff regarding Brian’s strengths and needs; facilitate/support role as middle school’s athletic team manager and wrestling team participant. As school year progresses, PT will continue collaboration with special education staff, adapted PE staff, and coach regarding any mobility, positioning, and participation challenges identified in Brian’s daily school routine (frequent to periodic)
- **Transitions & support available at school:** Initial need to train middle school special education staff in daily self care (including bathroom), transfers, walker and wheelchair use due to transition to new school setting and staff. By mid-year, special education staff will be more comfortable and efficient with Brian’s daily school routine (frequent to periodic)
- **Impact of therapeutic intervention:** Mobility throughout school environment will be established by mid-year; ambulation skills have plateaued (periodic)

**Recommended Dosage of Services:**

- Physical therapy 4x/month for 30 minutes (frequent) during September, October, November
- Physical therapy 2x/month for 30 minutes (periodic) December to June

### Case Study #3

**Student:** Adam

**Age:** 16-year-old

**Grade:** 10 (sophomore)

**Medical Diagnosis:** Cerebral Palsy – GMFCS Level IV

**Special Education Eligibility Classification:** Multiple Disabilities (cognitively, physically impaired, language impaired)

**PT's Diagnosis:** Impaired Neuromotor Development

#### Prior Physical Therapy Services:

<p><b>Preschool and kindergarten:</b></p> <ul style="list-style-type: none"> <li>○ 6x/month for 45 minutes physical therapy intervention for gait and transfer training throughout school environment, playground access and recreational mobility, and consultation with special education staff</li> </ul>
<p><b>Elementary:</b></p> <ul style="list-style-type: none"> <li>○ 6x/month for 45 minutes physical therapy intervention for gait and transfer training and consultation and/or training for special education staff</li> </ul>
<p><b>Middle school:</b></p> <ul style="list-style-type: none"> <li>○ Mobility skills reached plateau</li> <li>○ Special education staff efficient with daily self care, stander, gait trainer, and adapted tricycle during Adam's daily school routine</li> <li>○ Physical therapy 20x/year for 30 minutes                             <ul style="list-style-type: none"> <li>◆ Frequency higher in September and October to fit/set up adapted equipment, determine student's functional mobility skills and challenges for new school year, and consult and train special education staff for positioning and mobility challenges that they have identified for Adam's daily school routine</li> <li>◆ Frequency lower mid-to-late year as staff becomes comfortable and efficient with Adam's daily school routine</li> <li>◆ Frequency higher with growth spurts, surgeries, need for new adapted equipment, change in school/classroom environment, or new staff</li> </ul> </li> </ul>

#### Present Level of Performance: Grade 10:

<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>○ Uses manual wheelchair pushed by caregivers as primary method; self-propels manual wheelchair within classroom</li> <li>○ W-sits independently on the floor; sits in adapted chair with lateral supports and armrests in classroom</li> <li>○ Transfers wheelchair to gait trainer or classroom chair with caregiver set-up and minimal assistance</li> <li>○ Ambulates using gait trainer with pelvic support, forearm prompts, AFOs, and minimal caregiver assistance</li> <li>○ Propels adapted tricycle in hallways and on sidewalks with backrest, seat and chest belts, foot straps, and minimal assistance of caregivers for initiation and steering</li> <li>○ Inability to assume or maintain standing without support</li> <li>○ Nonverbal, infrequent echolalic utterances</li> </ul>
<p><b>Environmental factors:</b></p> <ul style="list-style-type: none"> <li>○ Special education staff knows Adam well; they manage his daily self-care, wheelchair propulsion, transfers, and use of stander, gait trainer, and tricycle, requiring infrequent equipment adjustments and/or consultation from related services</li> <li>○ Uses elevator to access work skills classroom (requires evacuation plan)</li> <li>○ Inconsistent, limited success with augmentative communication</li> </ul>

**Body structures and function:**

- Hypertonic lower extremities
- Hip and knee flexion contractures
- Decreased endurance

**Personal factors:**

- Poor attention to task
- Cognitive delays
- Inconsistently follows one-step directives

**Participation and access to educational program:**

- Spends majority of school day in special education and work skills classrooms
- Joins peers in lunchroom with special education staff set-up and supervision
- Participates in adapted PE with special education staff assistance and activity adaptations such as an adapted tricycle
- Uses stander daily during music class to improve breath support and peer interaction
- Rides bus with wheelchair lift

**IEP Goals:**

- Adam will independently propel his wheelchair 100 yards between independent living and lunchroom classrooms on 4 out of 5 school days
- Adam will transfer between his wheelchair (or walker) and handicap accessible toilet with standby assistance for safety on 90% of occasions
- Adam will walk 400 feet with his assistive device and supervision from his classroom to the media center with fewer than 3 rest periods on 8 out of 10 consecutive school days

**Considerations:**

- **Impact of therapeutic intervention:** Mobility skills plateaued (intermittent)
- **Support available at school:** High school's special education staff is efficient with daily self-care, use of stander, walker, and adapted tricycle during student's daily school routine (intermittent)
- **Assistive technology:** Frequency higher in September and October to fit/set up adapted equipment and train special education staff (frequent)

**Recommended Dosage of Services:**

- Physical therapy 10x/year for a total of 300 minutes (intermittent) for adaptive equipment monitoring and staff consultation

## Case Study # 4

**Student:** Olivia

**Age:** 18-year-old

**Grade:** 12 (senior)

**Medical Diagnosis:** Spina Bifida

**Special Education Eligibility Classification:** Orthopedic Impairment (OI)

**PT's Diagnosis:** Impaired Neuromotor Development

### Prior Physical Therapy Services:

<p><b>Preschool:</b></p> <ul style="list-style-type: none"> <li>Received weekly (30 min/week) physical therapy for the first year of preschool to assist her in transitioning to the school-based program, as all previous services were provided in-home</li> <li>Decreased to monthly services (30 min/month) once she achieved independent mobility</li> </ul>
<p><b>Elementary:</b></p> <ul style="list-style-type: none"> <li>Used a walker and braces for mobility in preschool and elementary with periodic services (120 minutes/year as needed) from the school PT</li> </ul>
<p><b>Middle school/high school:</b></p> <ul style="list-style-type: none"> <li>Services were increased to 30 minutes per week at the transition to middle school as walking distances between classes increased and a manual wheelchair was introduced for improved independence with campus access</li> <li>Received quarterly services in grades 7–11 to monitor equipment needs related to access</li> <li>In addition to school-based therapy, Olivia was followed by PTs at the local Children's Hospital Spina Bifida Clinic</li> </ul>

### Present Levels of Performance:

<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>Independently uses manual wheelchair as primary mean of school mobility and for classroom seating</li> <li>Uses elevator to access classrooms on second floor</li> </ul>
<p><b>Environmental factors:</b></p> <ul style="list-style-type: none"> <li>Able to access current high school environment independently with current adaptations, but will be transitioning to a local college and living in the dorm next school year</li> <li>Has evacuation chair available on the second floor for emergencies</li> </ul>
<p><b>Body structures and function:</b></p> <ul style="list-style-type: none"> <li>Decreased sensation and motor function below L3</li> <li>Wears pre-tibial AFOs for foot positioning and stability during ambulation</li> <li>Uses a catheter due to neurogenic bladder</li> </ul>
<p><b>Personal factors:</b></p> <ul style="list-style-type: none"> <li>Motivated to continue independent access once in college</li> <li>Has supportive family</li> <li>Receives transition services through local education agency to assist her in preparing for graduation and the transition to college</li> <li>Participates in general education curriculum with successful completion of 4 advanced placement (AP) classes</li> </ul>
<p><b>Participation and access to educational program:</b></p> <ul style="list-style-type: none"> <li>Independently accesses current high school campus and participates in general education curriculum with accommodations including wheelchair and adapted self-care equipment in the bathroom for catheter use</li> </ul>

**IEP Goals:**

- Olivia will walk independently up and down at least 8 stairs and across the auditorium stage (25 feet) in order to participate in the graduation ceremony with her classmates.

**Considerations:**

- **Transition:** Olivia is preparing to transition from a high school to a college program and has new goals related to this transition (frequent)
- **Chronological age/readiness for skill acquisition:** Olivia is motivated to gain the skills required to independently access her new college campus and to walk down the aisle with her graduating class (periodic)
- **Expertise of PT:** The expertise of a PT is needed on a short-term basis to address Olivia's current needs (periodic)

**Recommended Dosage of Services:**

- 1–5 times/month for a total of 2 hours per month for the remainder of the student's senior year to increase mobility skills for participation in the graduation ceremony
- PT will also make 2–3 college campus visits with Olivia and her family to assist in preparation for the upcoming transition to college and dorm access.

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