Physical Therapy Module

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Introduction

What is a Physical Therapist?

Physical therapists (PTs) are health care professionals who diagnose and treat individuals of all ages, from newborns to the very oldest, who have medical problems or other health-related conditions that limit their abilities to move and perform functional activities in their daily lives.

PTs examine each individual and develop a plan using treatment techniques to promote the ability to move, reduce pain, restore function, and prevent disability.

Education and Training

All PTs must receive a graduate degree from an accredited physical therapist program before taking the national licensure examination that allows them to practice. The majority of programs offer the doctor of physical therapy (DPT) degree.
After graduation, candidates must pass a state-administered national exam. Other requirements for physical therapy practice vary from state to state according to physical therapy practice acts or state regulations.

Work Settings

Physical therapists work in a variety of settings to meet the needs of their patients:

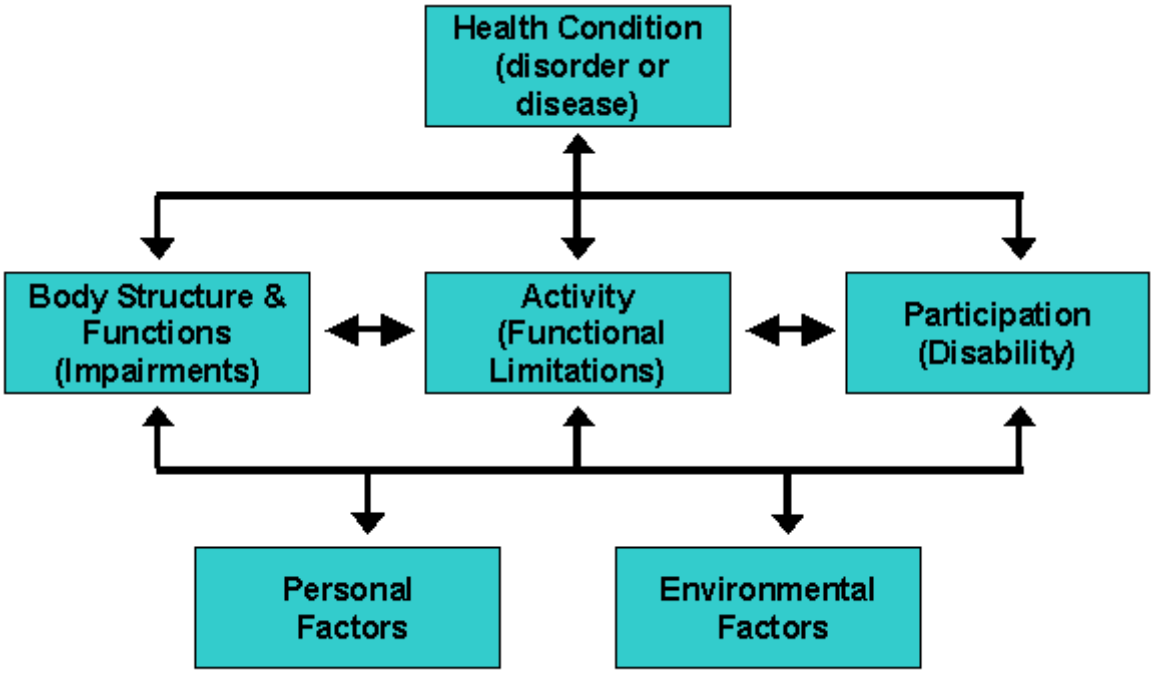
- Outpatient clinics or offices
- Hospitals
- Inpatient rehabilitation facilities
- Skilled nursing, extended care, or subacute facilities
- Home based therapy
- Education or research centers
- Schools
- Hospices
- Industrial, workplace, or other occupational environments
- Fitness centers and sports training facilities

Scope of Practice

- Physical Therapists:
- Practice in collaboration with the client and a variety of professionals
- Provide prevention services (e.g. screening, timely diagnosis) that promote health, wellness and fitness
- Provide consultative and educational services, and engage in research to promote evidence based practice
- Direct physical therapy services and supervise support personnel such as physical therapy assistants (PTAs)

Framework for Practice

One framework for PT practice is the International Classification of Functioning (ICF).



Source: www.who.int/classifications/icf/site/beginners/bg.pdf

PTs provide services to clients who have impairments (e.g. decreased strength, limited range of motion), functional limitations (e.g. difficulty walking or dressing), or disabilities (inability to work or participate in school), resulting from a change in health status (injury, disease, or other causes). Outcomes and participation are also impacted by Environmental and Personal Factors (e.g. culture, social support, transportation, finances).

History of Physical Therapy

1881 The Sargent School, the first school of modern physical education/physical therapy opens in Boston.

1894 First US polio epidemic in Rutland, Vermont, with 123 children infected, 50 becoming disabled, and 10 resulting in death.

1914 RW Lovett creates the "Vermont Plan" to treat the state's polio epidemic. His assistant Wilhelmie Wright, trains assistants in her system of "manual muscle testing, "a method for evaluating muscle function.

1917 When the U.S. declares war on Germany, the Division of Special Hospitals and Physical Reconstruction is created within the Army Medical Department.

Source: Healing the Generations www.apta.org

Source: Healing the Generations www.apta.org


Source: Healing the Generations www.apta.org

1920 Organizational meeting for American Women's Physiotherapeutic Association held in New York. Mary McMillan elected first President by ballot.

1942 Public Law 828 recognizes women PTs as wartime members of the Army Medical Department, with "relative" rank of 2nd Lieutenant.

1946 American Physiotherapy Association changes its name to the American Physical Therapy Association (APTA).


Source: www.niaid.nih.gov/dmid/polio

1956 Salk vaccine for polio is introduced in massive vaccination program. PTs play a crucial role in field testing the vaccine prior to mass distribution, and in continued treatment of children afflicted with polio.


Source: www.apta.org

1967 The APTA creates policy to approve the training of Physical Therapist Assistants (PTAs).

2007 Currently 111 of the physical therapy programs in the US are entry level doctorate programs.

The Future of Physical Therapy

The American Physical Therapy Association (APTA) is a national professional organization representing more than 66,000 members. Its goal is to foster advancements in physical therapy practice, research, and education.

APTA Vision for Physical Therapy 2020

By 2020, physical therapy will be provided by physical therapists who are doctors of physical therapy, recognized by consumers and other health care professionals as the practitioners of choice to whom consumers have direct access for the diagnosis of, interventions for, and prevention of impairments, functional limitations, and disabilities related to movement, function, and health.

http://www.apta.org/Vision/

Pediatric Physical Therapy

Pediatric Physical Therapists:

- Help children reach their maximum potential for functional independence through examination, evaluation, promotion of health and wellness, and implementation of a wide variety of interventions and supports.
- Support children from infancy through adolescence and collaborate with their families and other medical, educational, developmental, and rehabilitation specialists.
- Promote the participation of children in daily activities and routines in the home, school, and community.
- Educate and support to help with key transitions from early childhood to school and into adult life. They also work to support the needs of the family, including parents, siblings and other caregivers the child may have.

Pediatric PT Profiles

Kathleen Washington, PhD, PT
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Responsibilities: Dr. Washington coordinates the leadership curriculum and training activities in the physical therapy department. Her clinical activities include interdisciplinary assessments in the Child Development Clinic and the High Risk Infant Follow-Up Clinic, as well as mentoring fellows in these clinics. Dr. Washington is a Clinical Associate Professor in the Department of Rehabilitation Medicine, and teaches doctoral level students in the Division of Physical Therapy. Her research interests include early identification of neuromotor abnormality, the development of postural control, and validity of standardized motor assessments.

Jan Bragg, MA, PT
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Responsibilities: Jan Bragg assesses the motor skills of infants who come to the High Risk Infant Follow-Up Clinic (HRIF clinic) and also mentors fellows in this clinic. She is the liaison between the HRIF clinic and the Neonatal Intensive Care Unit of the University of Washington Medical Center.

Marcia Williams, PhD, MPH, PT
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Responsibilities: Dr. Marcia Williams supervises physical therapy fellows and teaches in the Infant Assessment Program.

Physical Therapy Assessment

Physical Therapists use standardized tests to measure a child's progress and/or to compare their motor development to other peers their age. Some frequently used tests include:

- **Alberta Infant Motor Scale** (Piper & Darrah, 1994)
  An observational tool used to discriminate typical from atypical motor function in infants 0-18 months of age
- **Bayley Scales of Infant and Toddler Development**, 3rd edition (Bayley, 2005)
  A standardized tool designed to identify children with developmental delays and to provide information for intervention planning in children 1-42 months of age. Includes Cognitive, Language, Motor, Social-Emotional, and Adaptive Behavior Scales.
- **Peabody Developmental Motor Scales** - Revised (Fewell & Folio, 2000)
  A standardized assessment of fine and gross motor abilities in children birth to 6 years of age.
- **Bruininks-Oseretsky Test of Motor Proficiency**, 2nd edition (Bruininks, 2005)
  A standardized test assessing gross and fine motor skills in children 4-21 years of age. Gross Motor Function Measure (Russell, Rosenbaum, et al, 1993) An observational measure of change in gross motor function over time for children birth to 5 years of age.

Clinical Observations Range of motion testing

PTs commonly include the following clinical observations:

- Muscle Tone
- Observational Gait Analysis
- Strength
- Coordination
- Range of Motion
- Play observation
- Balance
- Self Care (e.g. eating and dressing)

Principles of Intervention

Pediatric physical therapy is based on the same principles used by PTs who work with adults, however, it can look very different!

Therapy can take many forms including:

- Strengthening
- Developmental Activities
- Motor Learning
- Movement and Mobility
- Orthotics and prosthetics
- Use of assistive technology
- Cardiopulmonary endurance
- Equipment design, fabrication, and fitting
- Tone management
- Balance and Coordination
- Referral/Screening/Assessment
- Burn and Wound Care
- Recreation, play, and leisure
- Adaptation of daily care activities
- Safety and prevention programs

Characteristics that are more unique to pediatric PT include:

Play based therapy

Pediatric PTs work to make therapy fun! Treatment outcomes are often disguised within the context of games, and with the use of motivating songs and toys.

Family Centered Care

When working with children it is vital to remember that the child's primary caregiver is the true "expert" when it comes to that child.

Outcomes are generated in collaboration with the child's family, and can often include goals to support the family in their care for the child.

Interdisciplinary Care

PTs interact and practice in collaboration with a variety of professionals. These collaborations can be with physicians, nurses, educators, social workers, speech therapists, occupational therapists, dieticians, and any other personnel working with the patient/client.

When should you refer a child for Physical Therapy?

Referral is appropriate when a child:

- Is not meeting their developmental milestones
- Has persistent primitive reflexes such as the asymmetrical tonic neck reflex
- Demonstrates atypical muscle tone (e.g. stiff or "floppy"), decreased range of motion and/or weakness
- Demonstrates marked asymmetry during movement
- Is struggling to access and participate in their environment, or is struggling to keep up with peers
- Is clumsy, or uncoordinated
- Has sustained an injury or trauma
- Has a congenital disorder like spina bifida, or muscular dystrophy
- Would benefit from adaptive equipment for daily routines like walking and feeding

A high level of caregiver concern also warrants referral.

Outcomes

Throughout a patient's episode of care, the physical therapist works with the client, family and interdisciplinary team to generate objective, measurable goals for intervention.

The PT measures the outcome of therapy based on how the therapy impacts the client's:

- Underlying condition or diagnosis
- Impairments (e.g. strength, range of motion…)
- Functional limitations (e.g. difficulty with sitting, walking, throwing)
- Disability (e.g. ability to participate in social routines, like play and school)

Intervention Strategies and Outcomes

Occupational therapists provide services using one or more of the following models:

- Direct service to the child and family
- Consultation with the family, educational team, and/or other service providers
- Monitoring of performance and progress

In each of these intervention models occupational therapists consider the following outcomes:

Case Studies

Cole

Corrected Age: 4 months, 9 days

History:	Cole was born at 33 weeks gestation, when his mother went into preterm labor. At birth he weighed 1434 grams, and his Apgar scores were 3 at 1 minute, and 7 at 5 minutes. He stayed in the NICU for 3 weeks, before being discharged home.
Parent Report:	His parents report that Cole has been healthy since coming home, and describe him as an "outgoing flirt." He is eating well, vocalizes frequently and trying to roll over. They have no specific concerns, but want to make sure he is on track with his development.
Assessment:	Cole was evaluated at the High Risk Infant Follow-up Clinic, at the Center on Human Development and Disability. Testing was completed by a PT, and assessed Cole's fine and gross motor skills, his early play skills and language. An assessment of the quality of movements was also completed.
Tests used:	Movement Assessment of Infants Bayley Scales of Infant and Toddler Development, 3rd ed.
Outcome:	Cole is performing skills similar to other children 4 months of age. His primitive reflexes are integrating well, his muscle tone is normal, and he is beginning to develop some beginning balance responses. He will return for a re-evaluation in 6 months.

Oliver

Age: 35 months

Diagnosis:	Oliver suffered a stroke while in utero. At six months of age his parents noticed that he would not reach for toys with his right hand. He was diagnosed with cerebral palsy and right hemiplegia.
Family Goals:	Oliver's parents would like for him to jump, run and ride a tricycle.
Intervention:	Oliver receives weekly physical therapy sessions. He also works with an occupational therapist, and participates in a toddler preschool program at his early intervention center. An orthotist fabricated braces to correct the alignment of his feet, and splints to help him use his right hand. When he turns three, he will transition to the school district where he will receive ongoing therapy, while participating in a community preschool.

Note: Videos were taken at different stages of Oliver's therapy

Ava
22 months

Diagnosis:	Ava does not have a specific diagnosis, but does have global developmental delays. At birth, her left upper extremity was dislocated. Her mother reports that she is hesitant to use the left arm during play, and is resistant to bearing weight through that side.
Family Goals:	Ava's parents would like for her to walk independently, feed herself, and use her left arm more.
Intervention:	Ava receives weekly physical therapy sessions. She also works with an educator and speech and language pathologist. Ava is being followed by neurodevelopment clinic, and is scheduled to be seen by brachial plexus clinic. PT is currently focusing on teaching Ava to walk with a posterior walker, and on improving crawling to increase the weight bearing through her left hand. Therapy also helps coach Ava's family about how to get Ava to use her left hand more, for example by positioning toys, and themselves on Ava's left side.
Outcomes:	Ava began receiving therapy three months ago. She is now able to walk 50 feet independently, without an assistive device, and is crawling on level surfaces. She is able to point at pictures in a book using her left hand.

Julie
31 months

Diagnosis:	Julie has a diagnosis of Down Syndrome. She requires supplemental oxygen, and has a feeding tube.
Family Goals:	Julie's parents would like to see Julie reach her maximum potential.
Intervention:	Julie receives weekly physical therapy sessions. She also works with an occupational therapist for feeding challenges, and participates in a playgroup program at her early intervention center. She works with an educator and a speech therapist. She wears bilateral ankle foot braces to correct the alignment of her feet. PT is currently working on strengthening Julie's body to help her stand without hyperextending at her knees, and to work towards independent crawling and ambulation. Julie enjoys music, bubbles, and musical shakers. Since beginning therapy when she was as infant her mother reports that she now has hope that Julie will walk some day.

Resources

For more information about the profession of physical therapy please refer to the following:

- www.apta.org
- www.pediatricapta.org

The following resources were used to create this module:

- Guide to Physical Therapy Practice, 2nd ed. Alexandria, VA: APTA, 1997.
- www.apta.org
- www.pediatricapta.org
- Campbell, SK, Vander Linden DW, Palisano RJ (2006). Physical Therapy for Children, 3nd ed. Philadelphia: WB Saunders.
- Murphy, Wendy (1995). Healing the Generations: A History of Physical Therapy and the American Physical Therapy Association. Lyme, CT: Greenwich Publishing Group.
- World Health Organization, International Classification of Function www3.who.int/icf/icftemplate.cfm

Credits and Acknowledgements

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We would like to thank the children and families featured in the module for sharing their time and stories with us.

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