

The background features abstract, colorful swirls in shades of green, purple, and blue, interspersed with small yellow triangles. The text is centered over this pattern.

Pediatric Physical Therapy

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Objectives

- Review common medical diagnoses seen in a pediatric physical therapy setting
- Discuss service delivery settings
- Overview of pediatric therapeutic exercise techniques/tips, equipment, and bracing
- Review theories that help guide treatment strategies
- Share some unique and fun treatments used at the Monarch School of New England



It's all about kids and families!

- Working with children really means working with families
- As the physical therapist assistant, you must know what the parent's desires and needs are AS WELL as what the child's desires and needs are



Kids and Families

- Pediatrics covers children ages birth to 21 years
 - Early intervention (0-3y.o)
 - School based (3-21y.o)
 - Outpatient or Inpatient



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Common Medical Diagnoses seen in Pediatric PT



Most Common Diagnosis

- Cerebral Palsy (CP)
- Muscular Dystrophy (MD)
- Spina Bifida
- Down Syndrome
- Developmental Delay
- Seizure Disorders
- Burns
- Torticollis
- Congenital Malformations
- Prematurity
- Cystic Fibrosis
- Sports Injuries
- Traumatic Brain Injury (TBI)
- Autism Spectrum Disorder
- Juvenile Arthritis



Cerebral Palsy

Definition:

- Non-progressive disorder of voluntary movement and/or posture that is caused by damage to the immature brain before, during, or after birth (up to 2 years of age)



Cerebral Palsy

Causes

- Prematurity
- Problems with intrauterine development
- Birth trauma (e.g. lack of oxygen)
- Traumatic brain injury
- Child abuse (e.g. shaken baby syndrome)
- Unknown cause

Associated disabilities

- Developmental delay
- Cognitive impairment
- Medical complications
- Seizures (28%)
- Visual/auditory deficits (42/58%)
- Sensory disorder
- Learning and/or behavioral difficulties (23-56%)



Cerebral Palsy

Types

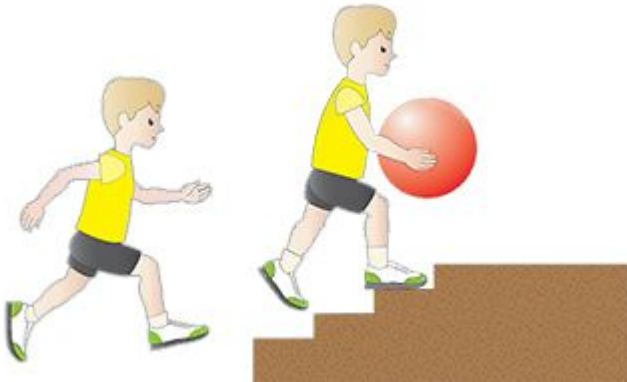
- Spastic: damage to the cortex, pyramidal tract, tone is hypertonic
- Athetoid: damage to basal ganglia, extrapyramidal, tone is fluctuating
- Ataxic: damage to cerebellum, extrapyramidal, balance and coordination are affected
- Mixed: mixture of all, mixed symptoms

Classification (by part of body affected)

- Monoplegia- one limb
- Paraplegia- legs only
- Hemiplegia- one side of body
- Triplegia- three limbs
- Quadriplegia- all four limbs
- Diplegia- primarily both legs, arms may be affected minimally
- Double hemiplegia- arms more than legs

Cerebral Palsy

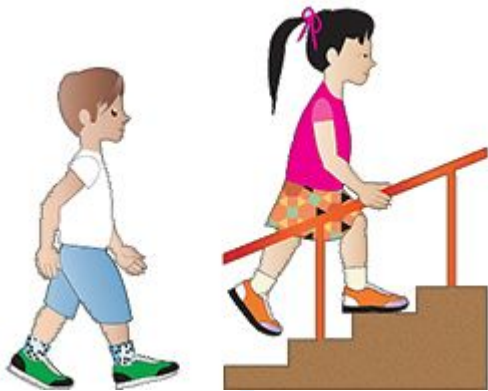
GMFM Level 1



- Can walk indoors and outdoors and climb stairs without using hands for support
- Can perform usual activities such as running and jumping
- Has decreased speed, balance and coordination

Cerebral Palsy

GMFM Level 2

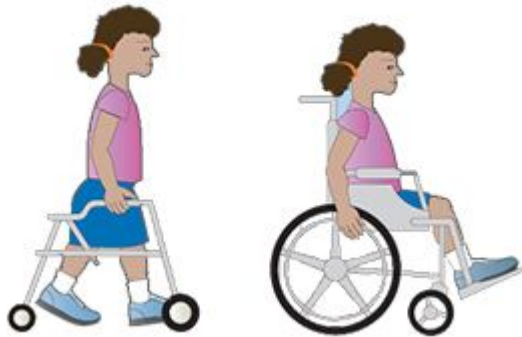


- Has the ability to walk indoors and outdoors, and climb stairs with a railing
- Has difficulty with uneven surfaces, inclines or in crowds
- Has only minimal ability to run or jump

Cerebral Palsy

GMFM Level 3

- Walks with assistive mobility devices indoors and outdoors on level surfaces
- May be able to climb stairs using a railing
- May propel a manual wheelchair (may require assistance for long distances or uneven surfaces)



Cerebral Palsy

GMFM Level 4



- Walking ability is severely limited even with assistive devices
- Uses wheelchairs most of the time and may propel their own power wheelchair
- May participate in standing transfers

Cerebral Palsy

GMFM Level 5



- Has physical impairments that restrict voluntary control of movement and the ability to maintain head and neck position against gravity
- Is impaired in all areas of motor function
- Cannot sit or stand independently, even with adaptive equipment
- Cannot independently walk, though may be able to use powered mobility

Cerebral Palsy- Impairments of Body Structures

- Abnormal tone
- Hypermobility (loose)
- Hypomobility (tight, contractures)
- Weakness
- Abnormal reflexes
- Sensory deficits
- Cognitive impairment
- Visual/auditory deficits
- Medical complications
- Seizures
- Other

Cerebral Palsy- Functional Limitations

Restrictions in Activities

- Gait
- Transitional movements
- Oral-motor control
- GM and FM skills
- Communication difficulties
- Learning disabilities
- ADL
- Social
- Recreation
- Employment
- other



Cerebral Palsy- Treatment Options

Treatment Options

- PT, OT, ST
- Bracing/orthotics
- Assistive devices
- Adaptive equipment
- Communication devices
- Therapeutic exercise
- Medication
- Surgery
- Special education
- Aquatic therapy
- Botox injections
- Sensory integration therapy



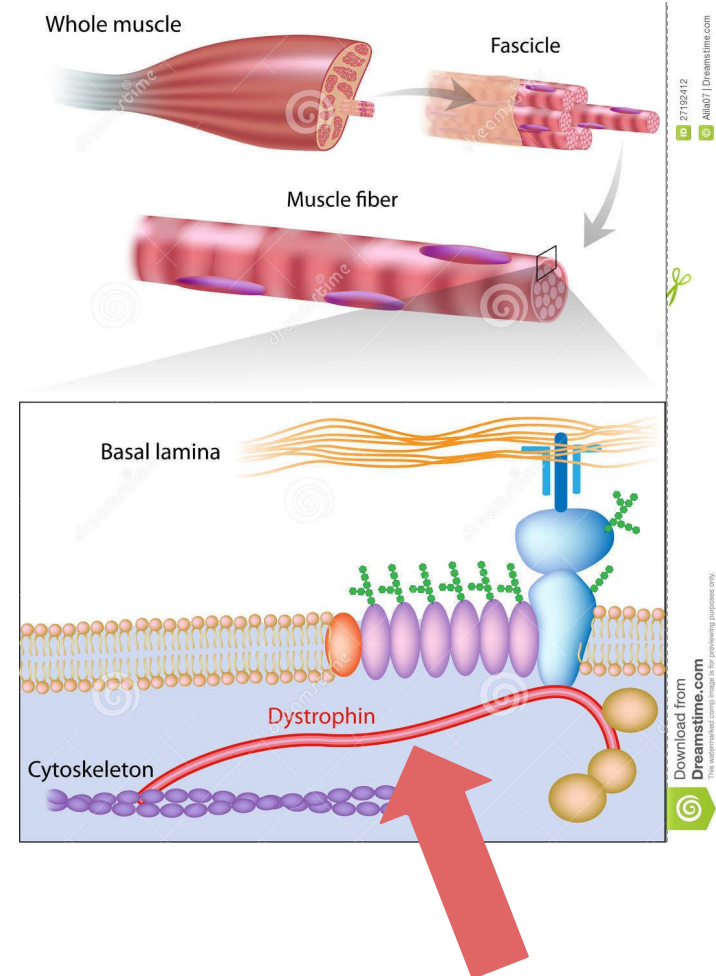


Muscular Dystrophy (MD)

- Definition: neuromuscular disease that cause progressive muscle weakness and loss of function
- Hundreds of forms
 - Duchenne MD is the most common form, occurring about 1 in every 3,500 live male births
 - Duchenne MD is an x-linked inherited disease, involving a mutation of xP21 which involves the coding for the protein *dystrophin*

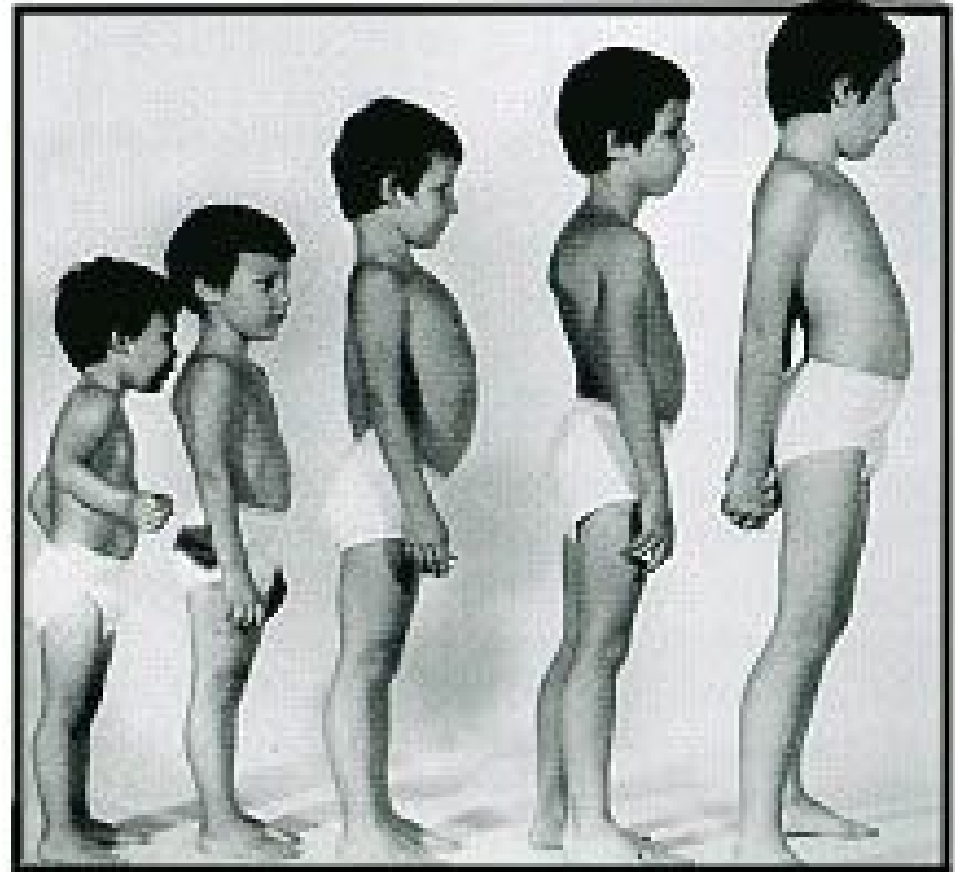
Dystrophin

- Children with DMD have an absence of dystrophin
- Dystrophin is in the sarcolemmal membrane
- The loss of dystrophin causes the fibers to breakdown
 - leads to weakness and loss of function
- Weakness proximal to distal
 - Early weakness in neck flexors and pelvic girdle muscles
 - Distal muscle weakness occurs last, facial muscles are not usually involved



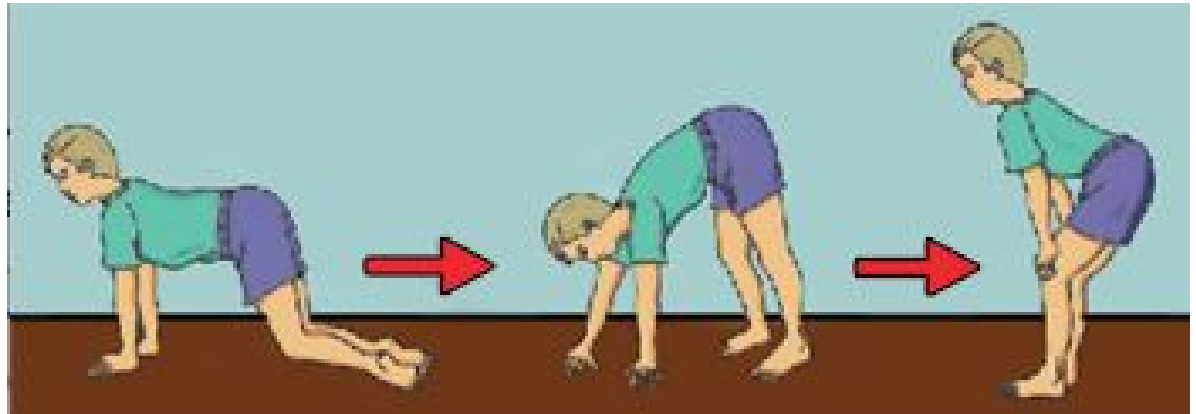
Muscular Dystrophy Changes over time

- Wide base of support
- Lordosis
- Knee hyperextension
- Retracted shoulders
- Ankle plantarflexion
- Iliotibial band contractures
- Hip flexor contractures
- Toe walking
- Frequent falling
- Difficulty climbing stairs



Muscular Dystrophy Characteristics

- Progressive weakness, proximal > distal
- Muscle contractures
- Impaired balance, posture
- Progressive scoliosis
- Presence of “Gower’s Sign”
- Atypical posture
- May have learning disabilities





Muscular Dystrophy Prognosis

- Usually diagnosed at preschool age, often symptoms don't appear until age 5
- Progressive weakness with loss of ambulation around age 12
- Decreased heart and lung function in teenage years due to weakness in respiratory and cardiac muscle
- Decreased GI function (constipation and impaction) due to weakness of smooth muscle
- Expected life span to late teen years and twenties



Muscular Dystrophy

Treatment options

- Maintain strength, endurance, ROM
- Splinting/bracing/contracture management may be key
 - May be candidates for surgical release of tight muscles
- Adaptive devices/equipment to optimize functional mobility
- Respiratory care



Down Syndrome

Defined as...

- A genetic disorder in which chromosome 21 divides incorrectly leading to a third chromosome ("trisomy 21") resulting in mental retardation and medical complications
- Is one of the most common genetic birth defects, occurring in about 1 in 800 births (increased incidence with increased maternal age)
- Over 350,000 individuals with DS in US



Down Syndrome

Common Physical features

- Flat facial profile
- Upward slanted eyes
- Short neck
- Short arms and legs
- Smaller mouth, tongue appears large
- Ears that may fold over
- Flattened nasal bridge
- Hands have deep transverse crease in palm and fingers may be short

Common physical impairments

- Hypotonia
- Loose ligaments and hypermobile joints
- Pes planus (flexible flatfeet)
- Decreased strength and balance
- Patellofemoral disorders
- Atlantoaxial (C1-C2) instability (15 % of the time) which may lead to spinal cord compression

Down Syndrome





Down Syndrome

Cognitive, communication, and learning impairments

- Mental retardation can be mild to severe
- Learning disabilities may be present requiring special education
- Receptive and expressive language may be delayed requiring speech therapy, augmentative communication, and/or sign language

Gross Motor and Mobility Skills

- Gross motor skills are delayed due to low muscle tone, loose ligaments, and decreased strength
- Walking usually occurs around age 2
- Gross motor development continues throughout the lifespan, yet it remains delayed
- Increased incidence of overweight with age may affect fitness level



Down Syndrome

Physical Therapy

- PT from birth through adulthood
- ESS, School, outpatient
- **Therapy focus: strengthening, balance, gross and fine motor skills, mobility**
- Orthotics (evidence is mixed concerning their value)
- Parent education

Prognosis and Outcomes

- Life expectancy is 55 years
- Education and work training available, allowing great opportunity for productivity: many go on to college, have jobs, and live independently
- Incidence of Alzheimer's Disease is 25% in adults over age 32



Seizure Disorders

Seizure: uncontrolled electrical activity in the brain which may produce physical or other symptoms

Epilepsy: a neurologic disorder marked by recurrent seizure episodes due to abnormal electrical activity in the brain

Seizure Causes:

- Birth trauma
- Congenital conditions
- Brain tumor
- Degenerative brain disorders
- Poisoning
- Fever or infection
- Stroke
- Medication
- Emotional stress
- Change in blood sugar



Seizure Disorders

Types

- **Focal seizures:** abnormal electrical activity involving one or more areas in *one hemisphere* of the brain
 - May often experience an aura (involving senses of hearing, vision, or smell prior to seizure)
 - Simple or complex
 - May see behaviors such as gagging, lip smacking, spinning, screaming, crying, laughing
- **Generalized seizures:** involve *both hemispheres* of the brain
 - Absence seizures: child usually presents as staring and may not recall the seizure
 - Generally don't last longer than 30 seconds
 - Atonic seizures: sudden loss of muscle tone, may cause drop attacks
 - Tonic seizures: sudden stiffening of parts of entire body
 - Generalized tonic-clonic seizure: also known as grand mal seizure



Seizure Disorders

Symptoms

- Jerking movements in the extremities
- Stiffening of the body
- Loss of consciousness
- Breathing impairments
- Loss of bowel or bladder control
- Falling suddenly for no apparent reason
- Extreme sleepiness and irritability when waking up in the morning
- Head nodding
- Periods of rapid eye blinking and staring

Seizure Disorder

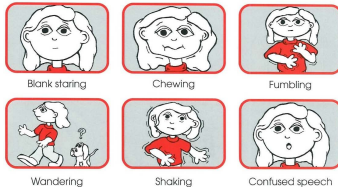
What can you do to help?

- Note time seizure started, how long it lasts, what type of movements you saw
- Move chairs, tables, objects out of the way for safety
- If child is standing, gently ease to floor
- Stay with child until seizure is over

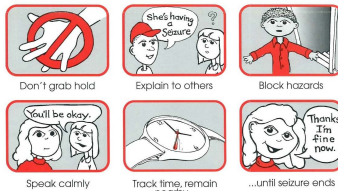
First Aid for Seizures

(Complex partial, psychomotor, temporal lobe)

1. Recognize common symptoms

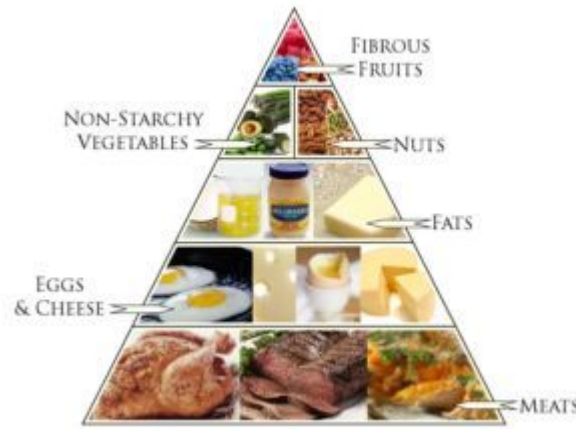


2. Follow first aid steps



Treatment

- Anti-seizure medication
- Ketogenic diet
 - <http://www.epilepsy.com/learn/treating-seizures-and-epilepsy/dietary-therapies/ketogenic-diet>
- Vagal nerve stimulator



Seizure Disorder

Vagal Nerve Stimulator

(VNS): pacemaker implanted below the skin inferior to the clavicle

- Delivers small pulses of electrical stimulation to the vagus nerve
 - Acts like a “pacemaker of the brain”
- Holding the magnet to the VNS delivers a burst of stimulation



Autism Spectrum Disorder (ASD)

What is ASD?

- General term for a group of complex disorders of early brain development
- Characterized by difficulties in social interaction, verbal and nonverbal communication and repetitive behaviors
- Autistic disorder....child disintegrative disorder....pervasive developmental disorder-not otherwise specified (PDD-NOS)...Asperger = **ASD** (DSM-5)



Autism Spectrum Disorder

DSM-5

- Persistent deficits in social communication and social interaction across multiple contexts
- Restricted, repetitive patterns of behavior, interests, or activities
- Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life)
- Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning
- These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay



Autism Spectrum Disorder

Prevalence

- 1 in 68 children and 1 in 42 boys
 - boys nearly 5x more likely than girls
- 3rd most common developmental disability in US
 - fastest growing serious developmental disability in the U.S.
- Costs a family \$60,000 a year on average



Autism Spectrum Disorder

Cause

- Unknown, but have identified genetic mutations which may directly result in ASD in few cases
- Most cases likely due to genetic predisposition combined with environmental factors (e.g., maternal age, oxygen deprivation around birth, maternal folic acid intake, etc.)

Diagnosis

- Average age of diagnosis is 4-5 years BUT a reliable diagnosis can be made at 18-24 months and researchers are working to lower this age even further



Autism Spectrum Disorder

10 Early Warning Signs (6-12 months)

1. Rarely smiles when approached by caregivers
2. Rarely tries to imitate sounds and movements others make, such as smiling and laughing, during simple social exchanges
3. Delayed or infrequent babbling
4. Does not respond to his or her name with increasing consistency from 6-12 months
5. Does not gesture to communicate by 10 months
6. Poor eye contact
7. Seeks your attention infrequently
8. Repeatedly stiffens arms, hands, legs or displays unusual body movements such as rotating the hands on the wrists, uncommon postures or other repetitive behaviors
9. Does not reach up toward you when you reach to pick him or her up
10. Delays in motor development, including delayed rolling over, pushing up and crawling

Autism Spectrum Disorder

Common Physical Impairments

- Impaired motor coordination
- Impaired postural control
- Impaired motor planning
- Motor delays





Autism Spectrum Disorder

Intervention Considerations

- Applied Behavior Analysis (ABA)
- Early Intervention Programs
- Task Specific Practice
- Physical Activity can improve academic performance and reduce unwanted behaviors
- Promote fine and gross motor skills
- Schedules, visual charts. PECS
- Family education

Autism Spectrum Disorder





Autism Spectrum Disorder

Additional Resources

- Statewide Autism Resources <http://www.autismspeaks.org/family-services/resource-guide>
- Assessment
<http://www.autismspeaks.org/what-autism/diagnosis/screen-your-child>
- Early Intervention <http://www.autismspeaks.org/about-us/press-releases/early-intervention-toddlers-autism-highly-effective-study-finds>
- PECS
<http://www.nationalautismresources.com/picture-exchange-communication-system.html>
- Links to Autism Workshops
https://www.google.com/search?q=%E2%80%A2+http%3A%2F%2Fwww.cornellpsychiatry.org%2Feducation%2Fautism.html&rlz=1C1CHFX_enUS602US602&oq=%E2%80%A2+http%3A%2F%2Fwww.cornellpsychiatry.org%2Feducation%2Fautism.html&aqs=chrome..69i57.1120j0j4&sourceid=chrome&es_sm=93&ie=UTF-8

Additional Pediatric Diagnoses

- Genetic disorders
 - Dubowitz Syndrome
 - Tuberous Sclerosis
 - Angelman Syndrome
 - Ehlers-Danlos Syndrome
 - Jacobsen Syndrome
 - Dravet Syndrome
 - Spinal Muscular Atrophy
- Brain injury
 - Holoprosencephaly
- Acquired
 - Mitochondrial Disorder (acquired or genetic)
 - Plagiocephaly



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Physical Therapy in a Pediatric Setting

Pediatric Physical Therapy



- Frequent evaluation and program revision
- Exercise: ROM and stretching
- Splinting/bracing
- Exercise: Maintain strength and endurance, but do not over work
- Functional mobility
- Use of assistive devices/adaptive equipment as needed
- Respiratory care
- Post-op care (spinal surgery)
- Family and school consultation

Natural Environment

- PT should occur when possible in the child's natural environment
 - * Home
 - * School
 - * Daycare





Service Delivery Settings

- NICU/PICU
- Hospital
- Outpatient clinic
- Early Intervention (home-based)
- School district (preschool to high school)
- Rehab center
- Other



Early Intervention (ESS)

Early Supports and Services (ESS)

- Early identification, examination, evaluation, and intervention services for children birth to three years old (IDEA part C)
- Home based, family focused services
- IFSP (Individualized family support plan)
- Developmental focus



Early Intervention (ESS)

Eligibility

- Each state determines its own eligibility requirements
- *NH requires* either:
 1. A 33 % delay and/or atypical development in at least one area (gross motor, fine motor, communication, social, self-help, cognition)
 2. An “established condition”
 3. At least 5 “risk” factors”



School District

Purpose of PT service

- “To ensure that all children with disabilities have available to them a free appropriate public education that emphasizes special education and related services designed to meet their unique needs and prepare them for independent living”



School District

- Individualized Education Plan (IEP)
- PT as a “related service”, adjunct to special education program (no independent service from SPED)
- Goals and objectives in plan updated yearly, must have educational relevance
- Direct, indirect, or consultative services



Development

- There are some general milestones that are seen in *MOST* typically developing infants
- Yet, individual differences exist and are “OK”
- Knowing “typical development” can help you recognize what may be “atypical development”.
- Development usually occurs in a cephalo-caudal pattern (head to toe)
- Gross motor develops quicker than fine motor
- Control gained proximal-distal
- Movements move from being reflexive/spontaneous to controlled and functional

Moving through the Developmental Sequence

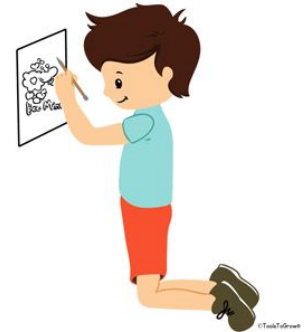
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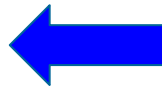
4-POINT
QUADRUPED



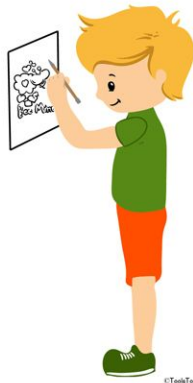
TALL
KNEEL



ONE-HALF
KNEEL



STANDING

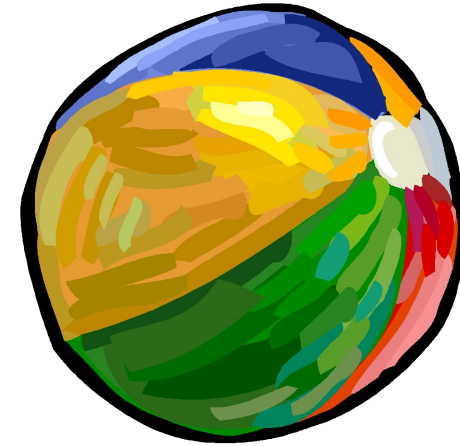


How can we facilitate this?

- Change the surface
- Tactile cues
- Perturbations
- Help with weight shifting
- Add support
- Make it functional and meaningful!



Where ever you are, make it fun!



- Children (all ages) will be more motivated to participate in physical therapy if you make it fun!

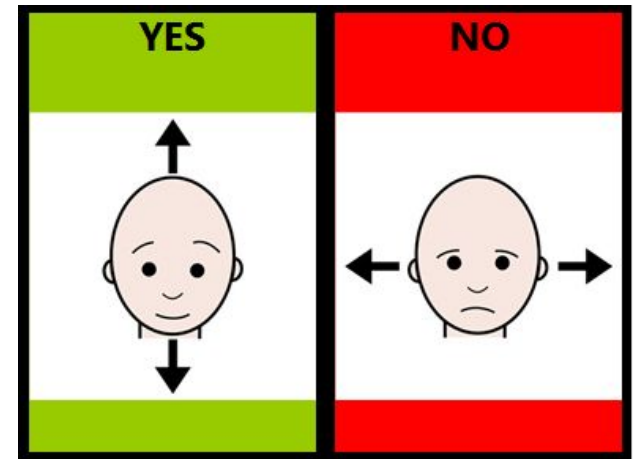


Treatment Tips

- Practice and repetition
- Demonstrate
- Be actively involved (participate in the activity, don't sit back and watch)
- Be at child's level, practice safe guarding
- Use peers or family members when possible
- Guided Movement (hands on, progressing to hands off)
- Use Music

Communication Tips

- Be age appropriate
- Yes/no questions versus open ended questions
- Use clear and concise instruction
- Choose quiet/closed environments when introducing a new skill
- "This first, then ____"
- Give positive feedback!



Therapeutic Exercise

- Think out of the box when thinking about exercising with kids: choose activities that require strength and flexibility to work on strength and flexibility!





Therapeutic Exercise

- Strengthening
- Any functional and/or play activities that require moving, lifting, carrying, pushing, pulling, or using force
- Theraband, weighted balls, playdough, resistive toys (pop-beads, leggos, etc.)
- Flexibility
- Any functional and/or play activities that make you reach, bend, stretch, move your body in different positions
- Range of motion exercises
- Yoga for kids
- Swings
- Obstacle courses





Equipment

- Many children we work with will need adaptive equipment due to their diagnosis and impairments
- Equipment is needed to provide good positioning, safety, and/or mobility

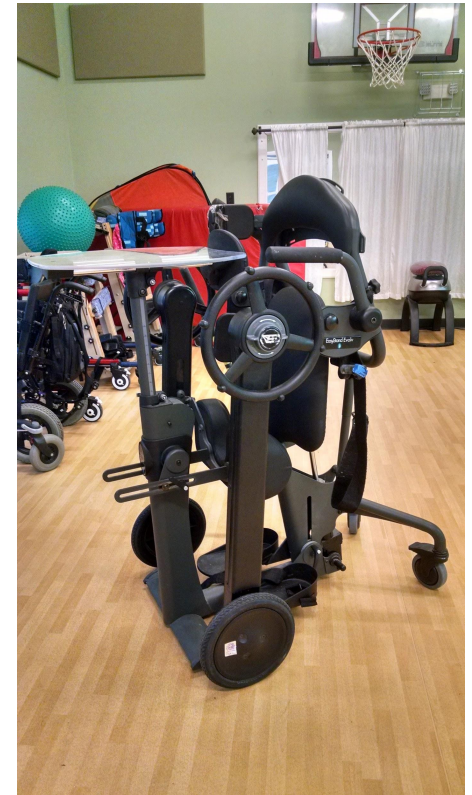
Equipment

- Equipment examples: wheelchair, adaptive stroller, adaptive chair, posterior walker



Equipment

- Equipment examples: gait trainer, standard stander, mobile sit to stand stander



Recreational Adaptive Equipment

- Adaptive bikes, sit ski, adaptive canoeing



Equipment

And sometimes we find creative solutions!





Local Equipment Resources

- REQ: Manchester, NH
 - <http://www.reqinc.com/>
- Black Bear Medical: Portland and Bangor, ME
 - <http://www.blackbearmedical.com/>



Bracing

- Some children also require bracing in order to optimize their gait, posture, and functional mobility
- Many customizable options based on child's needs

Bracing

- Bracing examples: Ankle foot orthosis (AFO), Knee ankle foot orthosis(KAFO), Thoracolumbosacral orthosis (TLSO), hand bracing/ splinting



Theories to Guide Treatment

- Neurodevelopmental Theory
- Motor Program Theory
- Dynamic Systems Theory



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Neurodevelopmental Theory

- Observation and analysis of normal development to compare or contrast problems of dysfunction
- The person being treated must be an active participant and be interactive with the therapist
- Treatment involves a sensorimotor process and includes hands-on facilitation or inhibition
- Dual focus of attaining functional independence with quality of movement

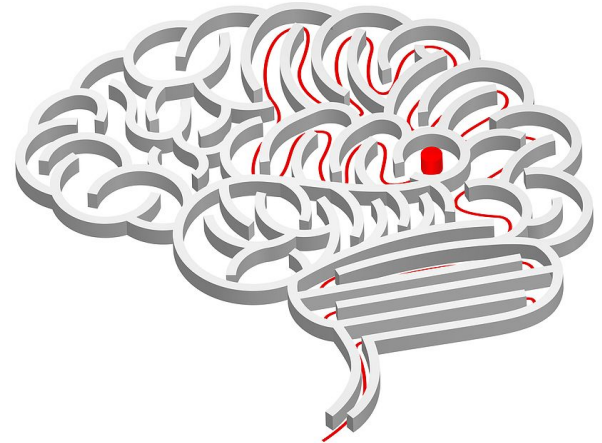


NDT example

- Child has difficulty moving from sit to stand
- Guide the child through the movement with hands on pelvis or trunk (key point) so they “feel/experience”, helping less and less each time
- Have a motivating toy they want to reach so they actively participate in the “functional” movement
- Focus on weight shifts required in the transition
- Assure “typical movement pattern” (quality of movement is key)

Motor Program Theory

- Memory-based construct for controlling coordinated movement
- Centralized mechanism for motor control in which we store more generalized motor programs for certain types of movement



Dynamic Systems Theory

- Framework to understand change;
Goal of treatment is to achieve change
- Consider all relevant subsystems and personal/environmental factors as both causes & potential treatment options



Which is the best theory?

- Awareness of principles from each theory





Monarch School *of New England*

“We are a day school that serves children ages 5 – 21, with significant physical, medical, developmental, behavioral and emotional disabilities.”

- YMCA gym program
- Hippotherapy
- Aquatic therapy
- Classroom treatments
- Adaptive ski
- Treadmill training (TAAP)
- LiteGait

[Monarch School of New England- Learn more about us!](#)

[Monarch School of New England Videos](#)

YMCA Gym Program

- Obesity rates 38% higher than children without disabilities
- Give tools to promote independent exercise
- Cardio, strengthening, community involvement



Hippotherapy

Definition: “the purposeful manipulation of equine movement to engage sensory, neuromotor, and cognitive systems to achieve functional outcomes” -American Hippotherapy Association

Assists with treatment goals:

- Gross motor control
- Balance
- Core strengthening
- Trunk control
- Range of motion
- Posture
- Chest PT





Aquatic Therapy

Definition: "the evidence-based and skilled practice of physical therapy in an aquatic environment" - APTA

What does the water provide?

- Buoyancy
- Resistance
- Hydrostatic pressure
- Temperature (warm/cold)





Classroom Treatments

Goals: functional treatments to optimize the student's access to their environment

- Posture
- Sitting/standing on different surfaces to challenge balance/endurance
- Push into what the student is working on
 - Art, music, gardening, woodworking, vision group, gym, ADLs

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Staff Education and Carryover Programs

- Stretching/exercise programs
- Standing Schedules
- Body mechanics
- Equipment use
- Skin checks

We take pics of PT stretching students for staff carryover.





Carry over sheet

Monarch School of New England: 2015-2016 School Year / Related Services Carryover Goals

Student Name: Alec

Physical Therapy: (Erica Mann)

1. Alec will use his stander/gait trainer 60 minutes/day. Stander 3-5 x/wk and gait trainer 2x/wk.
2. Check skin integrity daily (AFO's and TLSO).
3. Encourage stand-pivot transfer with staff that has been trained by PT.
4. Alec is to be encouraged to push from armrest with sit to stand transfer. Ensure that his feet are secure on the ground prior to starting.

Occupational Therapy: (Isaac Hutchinson)

1. Encourage Alec to reach in a variety of planes (e.g. out to his side, above his head) to touch objects or give a "high 5."
2. Alec should wear his hand splints most of the day, given a break at lunch and/or during messy activities. He should wear his index finger extenders when he is using his communication device. When staff help him remove or put on his splints, Alec can be encouraged to relax his muscle tone by asking him to straighten his elbows. When removed, Alec's hand splints will always be strapped in the same manner as if he were wearing them.

Adaptive Ski

Definition: Adaptive skiing uses special adapted equipment to allow people with a wide range of disabilities to take to the snow and experience the freedom of snow sports in the least restrictive manner possible.

- mono-ski, bi-ski, 3-track, 4-track
- Ski Hoop
- Ski Walker
- Ski Walker







Treadmill Training (TAAPs)

Treadmill for Students with Autism and Apraxia Protocol

Goal: decrease performance gap between typical children and children with special needs

- Uses gross motor system to increase social learning opportunities
- Using the treadmill to approximate the developmental gross motor milestones increases visual processing skills with automaticity, which is the typical developmental method.
- During TAAP performance, children also gain fitness, balance reactions, and visual guidance during sports activities to aggressively promote recess and PE play which is the most important method of social interaction in the young child's educational life
- TAAPs

LiteGait

Definition: a gait training device that simultaneously controls weight bearing, posture, and balance over a treadmill or over ground. It creates an ideal environment for treating patients with a wide range of impairments and functional levels

- controlled reduction of weight bearing
- reduce injury to staff/patient
- increased efficiency
- facilitate proper gait
- work on symmetry/weight shifting
- control weight bearing and posture
- train coordination without balance concerns
- manually assist limb placement
- Etc.

- Lite Gait

- Lite Gait Hallway



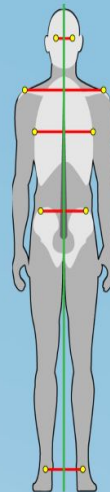
Helpful Apps

- PostureScreen
- Cuda Sign
- Genius Scan
- Goni App
- Gait App



Good posture is simple and eloquent by design in form and function. The body is designed to have the head, rib cage, and pelvis perfectly balanced upon one another in both the front and side views. If the posture is deviated from normal, then the spine is also deviated from the normal healthy position. Unfortunately, abnormal posture has been associated with the development and progression of many spinal conditions and injuries including: increased muscle activity and disc injury, scoliosis, work lifting injuries, sports injuries, back pain, neck pain, headaches, carpal tunnel symptoms, shoulder and ankle injuries as well as many other conditions. Additionally, postural abnormalities in adolescent years have been recognized as one of the sources of pain syndromes and early arthritis in adulthood. Therefore, posture should be checked and corrected in children before more serious problems can occur.

Normal



Your Posture from Front



Your Posture Viewed from the Front

Head is not shifted significantly left or right.
Head is tilted 12.8° left.

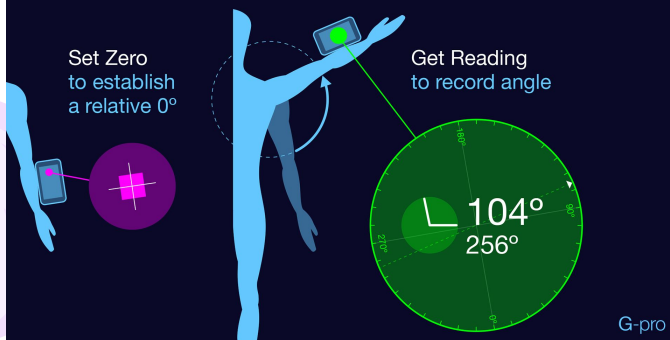
Shoulders are shifted 0.46" right. Shoulders are tilted 3.8° left.

Ribcage is shifted 0.45" left.

Hips are shifted 0.42" left. Hips are tilted 3.7° left.

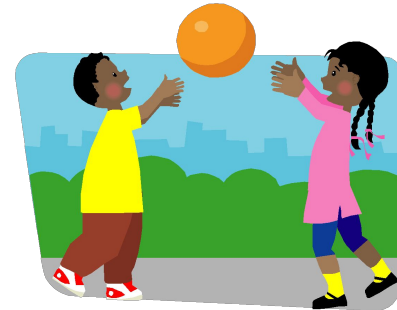
Any measurable deviation from normal posture causes weakening of the spine as well as increased stress on the nervous system which can adversely affect overall health.

Measure ROM in 2 steps



G-pro

Conclusions



- Pediatric Physical Therapy is fun and rewarding, but is a specialty that takes time to become skilled and comfortable.

Find a mentor or advanced training and join the team of professionals making a difference in the lives of children and families!

A decorative graphic on the left side of the slide featuring a green balloon at the top, a blue balloon in the middle, and a purple balloon at the bottom, all with yellow streamers and triangular flags.

For more information...

- <http://www.pediatricapta.org>
- www.cdc.gov/ncbddd/autism/actearly
- www.bam.gov
- www.nichcy.org
- www.bornlearning.org
- www.familyvillage.wisc.edu
- www.aap.org
- www.pathwaysawareness.org

The background features several large, stylized, overlapping swirls in light green, light blue, and light purple. Scattered throughout the background are numerous small, yellow, starburst-like shapes, some of which are larger and more prominent than others. The overall aesthetic is bright, cheerful, and celebratory.

Developmental Milestones



Developmental Milestones

Gross motor: *The following skills are gained in the following order in the first year of life:*

- Head lifting and holding still
- On belly- pushing up on forearms and lifting head
- On belly- pushing up on straight arms and lifting head
- On back- kicking and lifting feet
- On back hands and head to midline
- Rolling belly to back
- Rolling back to belly
- Crawling forward on belly
- Sitting
- Getting into/out of sitting
- Getting into all 4's
- Creeping forward on all 4's
- Pulling to stand at low furniture
- Cruising along furniture (sidestepping)
- Standing alone
- Walking unsupported

Gross Motor Milestones

- Head control: 1-3 months
- Rolls: 2-5 months
- Sits: 6-7 months
- Creeps all 4's: 8 months
- Pulls to stands and cruises: 9-11 months
- Walks 12-14 months
- Jumps and kicks ball: 2 years
- Rides trike: 3 years
- Hop one foot: 3-4 years
- Gallops: 4 years
- Runs: 4-5 years
- Skips: 5-6 years
- Rides 2 wheel bike: 5-6 years





Developmental Milestones

Fine motor: The following skills are gained in the following order in the first year of life.

- Able to see at close ranges (face to face)
- Turning eyes/head to follow moving objects
- Hands tightly fisted
- Hands beginning to relax and arms moving randomly
- Able to hold a small rattle if it is placed there
- Reaching towards objects bilaterally (both arms at the same time)
- Gross fist grasp
- Able to randomly drop objects
- Move refined grasp- beginning to use fingers (pincer grasp)
- Able to release objects voluntarily
- Reaching unilaterally (one hand)
- Transferring objects hand to hand
- Banging two objects together
- Putting objects into a container
- Taking objects out of a container
- Attempts to scribble

Fine Motor Milestones



- Gross grasp and release: 8-10 months
- Pincer grasp: 12 months
- Simple shape sorter: 18 months
- Draws simple strokes: 2 years
- Stack 3-5 blocks: 18-24 months
- Throws and catches ball: 2-4 years
- Strings beads: 2-3 years
- Small puzzles: 3-4 years
- Scissors: 4-6 years
- Writes name: 5-6 years



Developmental Milestones

Speech and Language

- Makes non-speech sounds: 1-3 months
- Babbles 3-8 months
- First few words 11-13 months
- Simple phrases 15-24 months
- Follows simple commands: 2-3 years
- Simple sentences 2 years
- Simple conversations 3-4 years