Objectives

• Inform the audience of prevalence and rate of childhood obesity and factors impacting this.
• Identify common clinical findings associated with childhood obesity and implications.
• Discuss outcome measures, assessment tools and billing.
• Discuss PTs as stakeholders in health policies, public health agenda and social determinants of health.
• Provide participants with tools, resources and strategies to address impairment findings; including home, local and community options.
• Allow participants to trial, create and discuss interventions options.

Childhood Obesity Facts¹

• Obesity prevalence was 13.9% among 2- to 5-year-olds, 18.4% among 6- to 11-year-olds, and 20.6% among 12- to 19-year-olds. Childhood obesity is also more common among certain populations.

- Hispanics (25.8%) and non-Hispanic blacks (22.0%) had higher obesity prevalence than non-Hispanic whites (14.1%).
- Non-Hispanic Asians (11.0%) had lower obesity prevalence than non-Hispanic blacks and Hispanics.

• The prevalence of obesity decreased with increasing level of education of the household head among children and adolescents aged 2-19 years.

- Obesity prevalence was 18.9% among children and adolescents aged 2-19 years in the lowest income group, 19.9% among those in the middle income group, and 10.9% among those in the highest income group.

• Obesity prevalence was lower in the highest income group among non-Hispanic Asian and Hispanic boys.

• Obesity prevalence was lower in the highest income group among non-Hispanic white, non-Hispanic Asian, and Hispanic girls. Obesity prevalence did not differ by income among non-Hispanic black girls.

Childhood Obesity Facts¹

• Childhood obesity has been linked to various health risk factors for heart disease: high blood pressure, high cholesterol, type II diabetes, sleep apnea, issues of the bone and joints, psychological issues such as depression and poor self-esteem.

Social Determinants of Health (SDoH)²

• Healthy People 2020 defines SDoH as conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.

Health starts where we live, learn, work, play and worship...this also includes physical health.

https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health
Social Determinants of Health (SDoH)

- Safe spaces to play
- Complete streets
- Access
- Transportation
- Food Insecurities
- Economic Instability
- Community Support
- Education
- Health Literacy

Physical Activity Factors

- Perceived influences of the child
- The home
- Out-of-home childcare
- Parent–childcare provider interactions
- Environmental factors
- Safety
- Weather

Population Health

Adopting Population Health Frameworks in Physical Therapist Practice, Research, and Education: The Urgency of Now.

PT and Population Health


Social Ecological Model


Physical Therapy Frameworks in Physical Therapist Practice: The Urgency of Now. Physical Therapy. 2019
Common Clinical Findings

- MSK impairments
- Impairments of balance
- Abnormality of gait – decreased push off, decreased trunk rotation, hip internal rotation and adduction
- Decrease aerobic fitness – reports of SOB with exertion, decreased participation in physical activity/sports, difficulty keeping pace with peers
- Also:
  - GM delay
  - Incoordination
  - Sensory processing concerns
  - SCFE

Lower Extremity Malalignment

- Genu Valgum & Genu Recurvatum
- Pes Planus
- Increased lumbar lordosis

Slipped Capital Femoral Epiphysis

- Debilitating condition involving a non-traumatic displacement of the proximal femoral epiphysis from the metaphysis
- Associated with excess weight and elevated BMI in adolescents.
- Cause of the condition is unknown, but some attribute it to abnormal hip development in obese children which results in abnormal loading through the hip joint

Blount’s Disease

- Varus deformity of the tibia
- Results from an abnormal growth of the proximal tibial physis
- Associated with increase weight and obesity
- Attributed to abnormal loading of the proximal tibial physis

Research: Movement Analysis of Walking

- Hip Adduction
- Knee Abduction (Valgus)
- Rearfoot Inversion
- Out-towing
- Overweight boys collapsed into hip adduction and knee valgus during stance and attempted to compensate with rearfoot inversion
- Redistribution of forces in the medial-lateral direction during walking may increase risk of LE soft tissue and skeletal injury
- Decreased hip extension and knee flexion moment during initial contact and push-off
- Decreased ankle PF moment

Frontal and sagittal plane lower extremity biomechanics during walking in boys who are overweight versus healthy weight
Movement Analysis of Walking - Clinical Implications

A full understanding of their movement characteristics is needed to guide clinicians in prescribing appropriate physical activity programs for this population.

- Comprehensive musculoskeletal examination and gait analysis
- Non-weight bearing and/or low impact physical activities
- Examine muscle strength and intervene with appropriate strengthening exercises, especially those that influence motions in the frontal plane
- Custom foot orthosis to provide added stability during weight-bearing activities and relieve distal muscles from the work of controlling rearfoot and midfoot motions (distal compensations)
- External medial/lateral support (e.g., knee bracing, ankle taping, functional foot orthotics) to prevent lower extremity injuries

Analysis of Lower Extremity Joint Power - Clinical Implications

- Reduced mechanical efficiency
- Greater demand on hip musculature
- Soft tissue around the knee is predisposed to trauma and injury due to the increases in knee joint power
- Increased force to the foot can promote pain in the triceps surae mechanism, including the Achilles tendon

Analysis of Joint Biomechanics - Clinical Implications

- Increased peak joint moments increases the risk of joint loading, skeletal malalignment, and injury in overweight children
- Greater hip flexor and extensor moments – Slipped Capital Femoral Epiphysis
- Increased knee abductor moment – Genu Valgum
- Increased knee adductor moment – Tibia Vara
- Increased joint moments in sagittal and transverse planes – Earlier progression of OA
- Increased internal rotator moments – comprises joint stability (e.g. ACL)
- Compensations at the foot and ankle – greater risk of stress fractures and foot and ankle pain
- Increased joint forces suggest a need for more non-weight bearing activities within exercise prescription

Pain

- Higher prevalence of musculoskeletal pain
  - Most common site: knee
- Higher odds of lower extremity pain
  - Hip, leg, knee, ankle, foot
- Positive association between obesity and LBP (increase in lordosis)

“Obesity is an important factor associated with musculoskeletal pain in children. Relative to the non-obese similar aged counterparts, obese children exhibited significantly higher complaints of pain.” De Sá Pinto p.343

Injuries

- Higher odds of lower extremity injuries (fractures, sprains/strains, dislocations)
- Increased risk of LE fracture (foot, ankle, leg, and knee)
- Increased risk of ankle injuries
- More likely to have LE injuries than nonobese children; Same percentage of UE injuries

Other Clinical Implications

- “Obesity with lower extremity malalignment has been shown to increase the risk of developing knee osteoarthritis in adulthood, though the mechanism of this development is not clear.” (McMillan p. 187)
- “One concern to PTs working with this population is children who are overweight are typically encouraged to increase physical activity, often with minimal guidance as to how to do this safely (i.e., without damaging their joints and soft tissues).” (McMillan p. 187-188)
- “Increased repetitive loading on poorly aligned lower extremities may lead to significant, permanent changes in the musculoskeletal system, and may contribute to the development of chronic pain and musculoskeletal disorders such as osteoarthritis.” (McMillan p. 188)
Activity Limitations and Participation Restrictions

- Pain
- Decreased conditioning
- Decreased high impact weight bearing activities

Clinical Practice

- Single discipline, multidisciplinary, obesity treatment center
- Creative, innovative, practical
- Incorporate and track behavioral, social and environmental factors

NC Childhood Obesity Programs

- Duke Healthy Lifestyles Clinic (Durham)
  - https://pediatrics.duke.edu/divisions/healthy-lifestyles
- Wake Med ENGERGIZE! Program
  - https://www.wakemed.org/childrens-energize-program
- East Carolina University: Pediatric Healthy Weight Research & Treatment Center (Greenville)
  - https://www.ecu.edu/cs-dhs/pedsweightcenter/PatientCare.cfm
- Atrium Health Levine Children’s Healthy Futures Clinic (Kannapolis)
  - https://atriumhealth.org/locations/levine-childrens-healthy-futures-clinic
- Brenner FIT – Wake Forest Baptist Health (Winston-Salem)
  - https://brennerchildrens.org/Pediatric-Obesity/

Healthy Lifestyles in Durham

- A multidisciplinary obesity treatment clinic, offering lifestyle counseling, pharmacotherapy and surgical options for treatment.
- 2 Registered Dieticians
- 3 PTs
- 5 Medical Providers
- 1 Social Worker

Referrals to Healthy Lifestyles

- The Healthy Lifestyles program treats children and teens whose BMI is at or above the 95th percentile for their age.
- Comprehensive team approach to helping children overcome obesity and related health problems.
- Appointments: 919-620-5356
- Any provider or family member can refer. Kim Yancey the program coordinator will obtain referral prior to visit from their primary care practitioner.

PT Assessment: History

- **Past/Present:** parental/child concerns, past PT, past orthopedic needs, pain
- **Home:** after school? After school care, afterschool babysitter, parents – different homes, safe place to play, indoors, outdoors
- **School:** year in school and how much Physical activity is incorporated into the day, location, recess (what do they do during recess), PE (when and what activities)
- **Weekend** – home vs relative houses, active vs in-home play – video games, phone play, TV/online videos, and playing outside with siblings/relatives
- **Extracurricular:** teams, instrument, hobbies, interests, community activities
Evaluation, Tests and Measures

- **Flexibility**: focus on lumbar spine, hip flexors (modified Thomas test), gastrocs and hamstrings (modified sit and reach, popliteal angle)
- **Balance**
- **Speed and Agility**
- **Strength**
- **Postural Assessment**: standing – frontal and lateral
- **Gait**: 50 feet, up and down hallway
- **4 and under: neurodevelopmental evaluation transitions, gait, ball skills, coordination, posture, gait, stairs, hopping, jumping**

Outcome Measures

- **Bruininks-Oseretsky Test of Motor Proficiency, 2nd Edition (BOT-2); ages 4-21**
  - Subtests Administered:
    - Balance (9 items)
    - Speed and Agility (5 items)
    - Strength (5 items)
    - Descriptive Categories: well below average, below average, average, above average
- **3 Minute Step Test (<300 lbs.)**
  - HR/O2 sat at baseline, 3, 4 and 5 minutes
- **Six Minute Walk Test (6 MWT)**

Fit Score

- **Fit Score 1** - low scores or concerns on more than 3 of the following: musculoskeletal system, strength, cardiovascular conditioning, balance, GM skills, or risk of injury – recommend referral to outpatient PT as well as physical activity education and counseling. Follow-up with PT in Healthy Lifestyles within 4 months for fitness test re-assessment.
- **Fit Score 2** - low scores or concerns on 2-3 of the following: musculoskeletal system, strength, balance, cardiovascular conditioning, GM skills, or risk of injury - recommend follow-up with Healthy Lifestyles PT within 1-2 months as well as physical activity education and counseling.
- **Fit Score 3** - low scores or concerns on 1-2 of the following: musculoskeletal system, strength, balance, cardiovascular conditioning, GM skills, or risk of injury - recommend follow-up with Healthy Lifestyles PT within 2 months as well as physical activity education and counseling.
- **Fit Score 4** - good overall scores on all fitness scores - recommend physical activity education/counseling as needed – No follow-up with PT in Healthy Lifestyles needed at this time.

Clinical Practice-Management

- **Billing**
  - Evaluation
  - Re-evaluation for subsequent visits for Fit Score of 3
  - MC auth for 3-4 visits over 6 months for Fit Score of 2
  - Outpatient PT for Fit Score of 1 – MC auth to be determined by Outpatient PT

MSK INTERVENTIONS AND COMMUNITY RESOURCES

**Interventions for Pes Planus**

**Asymptomatic**

- Encourage young children to go without shoe wear part of the day.
- Chose and wear shoes or sneakers with a good arch support.
- Perform gastroc stretches and foot intrinsic & gastroc strengthening.
- Teens – avoid wearing high heels
- Use of an over the counter orthotic (ie. Spenco, Super Feet), full length, as per recommendations by the health care provider.

Interventions for Pes Planus
Symptomatic

• Symptoms: pain, fatigue, decreased balance, gait impairment

• Referral to ortho MD: if chronic pain OR deformity, ie. rigid flat feet

• Exercises: Gastroc stretches & foot intrinsic and gastroc strengthening

• If insurance does cover orthotics:
  o Medicaid or private insurance – coordinate with your local orthotist; ie. Hanger Orthotics

• If insurance does not cover orthotics:
  o Suggest an over the counter or Cascade orthotics
    - Medicaid or private insurance

If insurance does cover orthotics:
- Hanger Clinic Prosthetics & Orthotics
  3901 N. Roxboro St., Suite 112
  Durham, NC 27704
  (ph.) 984.219.7542

- PTs send referral and prescription information to Hanger
  o Measuring appointments/pick up appointments – made through Hanger

- Hanger Home Page
  o http://www.hanger.com/Pages/default.aspx
  - http://www.hangerclinic.com/locations/Pages
  - 26 locations in North Carolina
  - 4 locations in Durham

Device Examples
Cascade Fast Fit Orthotic Products

- Hot Dog
  Minimum Support

- PattiBob
  Moderate Support

- Chipmunk
  Maximum Support

Hersco Custom Foot Orthotics

- Additional material lay-up styles available.
  Style determined by the practitioner.

Hanger - Other Foot Orthotic Devices

- Silpos Heel Cup
- Adjust-a-lift Heel Wedge
- Gel Bunion Spacer/Toe Separator
- Carbon Morton’s Extension Plate
- Carbon Footplate (Full)

Physical Therapy and Childhood Obesity

Physical Therapist
Practice Community Resources Education Research Policy
Children and Youth (Age 6 – 17 years)
Impairments  Activity  Participation

Indoor/Outdoor/Lifestyle Activities

Aerobic: Most of the 60 minutes or more per day should be either moderate- or vigorous-intensity aerobic physical activity and should include vigorous-intensity physical activity on at least 3 days a week.

Muscle-strengthening: As part of their 60 minutes or more of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days a week.

Bone-strengthening: As part of their 60 minutes or more of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days a week.

Physical Activity Apps: Age 12 and Under

GoNoodle

- Choose from 100+ interactive dance videos, yoga exercises, and mindfulness activities
- Enjoy the safe, kid-friendly app used in 4 out of 5 US elementary schools

Habitz

- Parents select from pre-set healthy goals for their kids (e.g. physical activity, eat whole grain, etc.)
- Kids earn rewards as they complete goals
- Enjoy kid-friendly animations during high-intensity interval exercises

NFL Play 60

- Choose an avatar from your favorite NFL team
- Earn points for playing games such as Tag or Red Light Green Light
- Redeem points to buy gear for your PLAY 60 avatar

Indoor options for young children

- Inclined plane
- Chair
- Balancing
- Wall squat
- Jumping (forwards/backwards/l laterally)
- Playing games (4 square, tag)

Super Stretch Kids

- Learn yoga and practice deep breathing with Super Stretch and his friends
- Enjoy lively animation, video examples, music, and more

Sworkit Kids

- Create custom workouts for strength, agility, and flexibility
- Strengthen your body through high-intensity interval training
- Directives provided in Spanish and English

7-Minute Workout for Kids

- Develop strength, stability, and balance through 7-minute full-body workouts
- Master proper form with the help of exercise descriptions and animations
- Enjoy the physical benefits of high-intensity interval training

YouTube Channel Resources:
Bull City Fit, Moe Jones (HIIT), Cosmic Kids Yoga, 20 Online (Variety), GoNoodle (Variety), Debbie Doo Kids (Dance), The Learning Station (Dance Song), Just Dance Kids, MovetoLearnMS (classroom), Bull City Fit, BASHO & FRIENDS (Dance, Spanish)

Level 7 – 8: Vigorous effort

Aerobic: Most of the 60 minutes or more per day should be either moderate- or vigorous-intensity aerobic physical activity and should include vigorous-intensity physical activity on at least 3 days a week.

Level 6: Moderate effort

Pictorial Children’s Effort Rating Scale (PCERT)

Good for use: 6-17 years of age

Common Therapeutic Exercises

Muscle Strengthening Options - at least 3 days a week
- Shoulder (Postural Muscular) -电阻 training, cross training, video training, classroom training
- Hip flexors + Quads - resistance training, video training, classroom training
- Lower back - resistance training, video training, classroom training
- Gastrocs - half-knee, foot/Toe Intrinsics
- Hip flexors - resistance training, video training, classroom training

Physical Activity Apps: Age 12 +
All apps are FREE to use with optional in-app purchases

**JEFIT Workout**
- Create custom workouts tailored to your goals, or choose from a community-based exercise library
- Read detailed exercise instructions and tips to ensure proper form
- Stay motivated by connecting with friends and the JEFIT community

**The Johnson & Johnson Official 7 Minute Workout**
- Choose from 72 exercises with video tutorials
- Select workout routines varying in intensity and duration
- Create custom workouts based on your fitness and motivation level

**Just Dance Now**
- Dance to your favorite songs and create your own dance party playlists
- Explore a music library filled with 400+ popular tunes
- Enjoy new songs and exclusive content added every month

**Physical Activity Apps: Age 12 +**
All apps are FREE to use with optional in-app purchases

- Nike Training Club
- RunKeeper
- Sweatcoin
- The Walk: Fitness Tracker Game
- Zombies, Run!

**Physical Activity Apps: Age 12 +**
All apps are FREE to use with optional in-app purchases
- **JEFIT Workout**
- **The Johnson & Johnson Official 7 Minute Workout**
- **Just Dance Now**
- **Nike Training Club**
- **RunKeeper**
- **Sweatcoin**
- **The Walk: Fitness Tracker Game**
- **Zombies, Run!**

Community options for increasing physical activity

- **Activity/Grade**: Middle School and High School
- **Aerobic**: Most of the 60 minutes or more per day should be moderate- to vigorous-intensity aerobic physical activity and should include vigorous-intensity physical activity on at least 3 days a week.
- **Bone strengthening**: As part of their 60 minutes or more of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days a week.
- **Muscle strengthening**: As part of their 60 minutes or more of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days a week.

**Physical Activity Apps: Age 12 +**
All apps are FREE to use with optional in-app purchases

- **The Walk: Fitness Tracker Game**
- **Zombies, Run!**

**YouTube Channel Resources:**
- Bull City Fit, Yoga with Adriene, Blogilates (POP Pilates), Leslie Sansone’s Walk at Home, GROOV3Dance, The Fitness Marshall (dance), HASfit (full body), jessicasmithtv (full body), Ana Mojica Fitness (full body; Spanish)

**Community options for increasing physical activity**

When creating handouts:
- Activity/Grade
- Location
- Hours
- Website
- Contact information for other languages/handouts in other languages
- Financial Assistance/scholarships
- Specialized Recreation and Inclusion Services
- And anything unique: indoor tracks, outside/inside pools, seasonal

Current catalog/guides of local Parks and Recreation

Keep data base of local activity options

**Health Literacy**
- When making handouts - 40- 50% white space, use photos, 12 point font

https://www.ymca.net/
https://www.planetfitness.com/gyms/
https://health.gov/healthliteracyonline/display/section
https://www.hep2go.com
https://https://www.jeffit.com
https://https://www.dprplaymore.org/200/Play
**Active Recreation through Community HealthCare Engagement Study (ARCHES)**

**Cumberland**
Coordinator: Cher Thewes  
Phone: (910) 483-7534  
Fax: (910) 483-2157  
Email: fayfit@betterhealthcc.org

**Durham**
Coordinator: Emily Alexander  
Phone: (919) 620-5373  
Email: emily.alexander9@duke.edu

**Montgomery**
Coordinator: Meagan Trivellin  
Phone: (910) 715-1376  
Email: MTrivellin@firsthealth.org

**Rowan**
Coordinator: Alyssa Smith  
Phone: (704) 216-8858  
Email: alyssa.smith@healthyrowan.org

**Wake**
Only accepting Wake ENERGIZE! Patients  
Phone: (919) 350-6550

**Wayne**
Coordinator: Yvette Williams  
Phone: Email: YWilliams@goldsboronc.gov

**Forsyth Winston-Salem Recreation & Parks**

**Mecklenburg Mecklenburg County Parks & Recreation**

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### Program Details

<table>
<thead>
<tr>
<th>Site Name/County</th>
<th>ARCHES Program Details</th>
<th>Frequency</th>
</tr>
</thead>
</table>
| Bull City Fit Teens (Durham)  
Ages 11-18 | Connector: Duke  
Clinic: Lincoln, Lincon, healthy lifestyles  
Community: Durham Parks & Recreation/BDH Recreation Center | 4 hrs./wk. |
| Marches (Montgomery)  
Ages 5-18 | Connector: First Health  
Clinic: Sandhills Pediatrics, Montgomery County Health Department, School Health Centers, North Moore Family Practice, MCM Pediatrics, Richmond Pediatrics, Dodge Pediatrics  
Community: Biscoe Community Center | 3 hrs./wk. |
| Energize (Wake)  
Ages 5-18 | Connector: Wake  
Clinic: Goldsboro Parks & Recreation  
Community: Goldsboro Parks & Recreation | 3 hrs./wk. |
| Fayetteville Fit (Cumberland)  
Ages 5-18 | Connector: Better Health  
Clinic: Cape Fear Pediatric Endocrinology, KingFirst Pediatrics, Cresscross Pediatrics, Fayetteville Children’s Clinic  
Community: Yanceyville Parks & Recreation | 4 hrs./wk. |
| Adventurer-Kids (Rowan)  
Ages 5-18 | Connector: Healthy Haven  
Clinic: Saluda Pediatrics  
Community: Saluda Parks and Recreation, YMCA | 4 hrs./wk. |
| Marches (Richmond)  
Ages 5-18 | Connector: First Health  
Clinic: Richmond Pediatrics, MCM Pediatrics  
Community: Pinehurst Parks and Recreation, Rockingham Parks & Recreation | 2 hrs./wk. |
| Marches (Moore)  
Ages 5-18 | Connector: First Health  
Clinic: Sandhills Pediatrics, North Moore Family Practice  
Community: Southern Pines Parks & Recreation, Aberdeen Parks & Recreation, Pinehurst Parks & Recreation | 3 hrs./wk. |

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**Physical Therapy and Childhood Obesity**

- **Practice**
- **Community Resources**
- **Education**
- **Research**
- **Policy**

**Social Ecological Model**

- **Local, state, federal policies, and regulations regarding healthy behaviors**
- **Social networking norms, social networks, and health beliefs**
- **Families, peers, social behaviors, and associations**
- **Cognitive Behavioral Strategies**
- **Grant Writing**
- **Pro Bono Clinics**
Where to Start?

- APTAs Council on Prevention, Health Promotion, and Wellness
- CDC
- KU Community Tool Box

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Physical Therapy and Childhood Obesity

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Research

A 12-week Interdisciplinary Intervention Program for Children who are Obese

James W. Farris, PT, PhD,1* Laura Taylor, BS,2 Megan Williamson, RN, BSN, MS,2 and Chris Robinson, PT, MPT4

* Author information • Copyright and License information • Disclaimer
Research

- Value Based Care
- Lifespan Management
- SDoH on Outcomes
- Community/Clinic Collaborations
- Health Disparities/Inequities
- Quality Improvement
- Population Specific PT

Funding

- Government
  - NC DoT
- Professional
  - APTA
  - HPA Catalyst
- Insurance Companies
  - BCBS
- Hospitals
- Corporations
  - Grantgopher.com
  - Getfunding.com
  - Ruralhealthinfo.org
  - Grants.gov
  - PT Examples:
    - Mama, LLC
    - Move Together
    - Well Batavia

Policy

- PT
  - Reimbursement
  - Access
  - PT Mode of Delivery
  - NCPTA
  - APTA
- Barriers/Facilitators
  - Physical Activity
  - SDoH
- Other Health Care Professional
  - American Academy of Pediatrics
  - Local Governing Board
    - City Council
    - Parks and Recreation
    - Planning Board
    - School Boards
    - PTA/PTOs
    - School Improvement Teams

Case Study

THANK YOU!
Policy Resources

- NC Healthy People 2020: https://www.cdc.gov/healthyweight/assessing/healthy_people_2020_techreport.html
- APTA council on Prevention, Health Promotion and Wellness: https://www.apta.org/FederalIssues/PublicPolicyPriorities/

Resources for PTs and Families

- United Cerebral Palsy Alliance https://www.ucpa.org/
- Special Olympics https://www.specialolympics.org/
- Health Information (parents, teens and kids) https://pediatrics.aappublications.org/content/120/Supplement_4/S254
- Girls on the Run (grades 3-5: Heart & Sole 6-8) https://www.girlsonthe.run/
- Running (Running tips) https://www.choospt.com/PatientResources/VideoLibrary/detail/running-tips
- Training for walking a 5 K https://www.halliday.com/training/programs/5k-training-walkers/5k
- CDC: specific guidelines for physical activity (PTs & Parents) https://www.cdc.gov/healthychildren/physicalactivity/actsheets.htm
- CDC: Virtual Healthy Schools (PTs) https://www.cdc.gov/healthychildren/vhs/index.html#!scene/1
- 3 Key Elements to Successfully Training Children with Autism https://choosept.com/PatientResources/VideoLibrary/detail/running

Academy of Pediatric Physical Therapy Resources

- Academy of Pediatric Physical Therapy: Fitness for Young Children (5 age 5) https://www.apta.org/Includes/FactSheets/pdfs/19%20Pediatric%20Therapy%20Care%20Practice%20Guidelines
- Academy of Pediatric Physical Therapy: Developmental Coordination Disorder https://www.apta.org/Includes/FactSheets/pdfs/20%20Pediatric%20Therapy%20Care%20Practice%20Guidelines

References

References


