

Session: PE-37

Arthritis, Back Pain, Knee Pain, Foot Pain..... in Kids??

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While most people sail through their childhood and adolescent years with only a few minor injuries, some people experience pain that is severe enough to limit participation in regular activity, including Phys Ed class.

The response to pain may be to reduce or stop all activity, including Phys Ed class, but this is no longer an acceptable option. We know that **58% of Canadian children are inactive, 30% are overweight and 10% are obese**. The long-term impact of physical inactivity during childhood is significant. The increased risk of cancer, cardiovascular disease, diabetes, and osteoporosis associated with childhood inactivity is well documented. Activity must be promoted and encouraged to reverse this trend.

In the Physiotherapy Department at Children's Hospital, we see patients referred for treatment of pain who are overweight, inactive and surprisingly weak. They dislike Phys Ed because "it is too hard" and feel that it makes them more sore. They are not all athletically gifted, so feel even more discouraged and unmotivated to participate in skill-based activities. All too often, they have a doctor's note excusing them from **all** Phys Ed participation. We also see the other extreme: highly motivated athletes who experience pain from overuse, rapid growth or poor technique. And there is a third group who have chronic medical conditions that impact ability to participate; they require careful attention to prevent long-term problems.

This session will give an overview of painful conditions which can affect children and adolescents. Many of the conditions are related to growth and have a predictable pattern, and the pain can be prevented or reduced by proper prevention and management. Symptoms that indicate a more serious condition will also be outlined and are included in this handout. In all cases, modifications may be required to the Phys Ed program to allow participation without aggravating the symptoms. These modifications will be discussed.

Take home message:

- **Childhood inactivity is a concern.**
- **Childhood obesity is becoming more prevalent.**
- **Physiotherapists and Physical Educators have a responsibility to reverse these trends.**
- **By working together, Physiotherapists and Physical Educators can overcome barriers to participation in regular physical activity.**

Painful Conditions affecting school-aged children: a guide for Physical Educators

I. Juvenile Chronic Arthritis (JCA): also called Juvenile Rheumatoid Arthritis (JRA)

Symptoms: swelling, pain and stiffness involving joints.

Several sub-types:

- **Pauciarticular Arthritis or Oligoarthritis:** affects 4 or fewer joints, often the knees or ankles, sometimes elbows. Good response to medication, and has a good prognosis.
- **Poly-articular arthritis:** affects multiple joints, including the small joints of the hands and feet, the upper spine and the temporomandibular joints, as well as the larger joints. Requires aggressive drug therapy, sometimes including weekly injections. Can lead to permanent joint damage.
- **Psoriatic arthritis:** associated with a family history of psoriasis; often affects the joints of the fingers.
- **Juvenile Ankylosing Spondylitis (JAS) or Seronegative Enthesitis Arthritis (SEA):** very painful inflammation of the ligaments and tendons where they attach to bones, especially at heels and knees. Difficult to diagnose! May be mistaken for growing pains!

	Pauciarticular	Polyarticular	Psoriatic	JAS/SEA
Age at onset	<10 years	1-3 year AND 15-16 years		Early adolescence
Gender	Boys > girls	Girls>boys	Girls>boys	Boys>girls
Joints affected	Knees, ankles (elbows)	Any! Small joints of hand and feet Neck and TMJ	fingers	Heels, knees, hips

Implications for Phys Ed.

- Morning stiffness
- Good days and bad days re joint pain and energy levels
- Joints may be sore with impact- e.g. running on swollen knees, ball handling if fingers are affected

Suggestions:

- Schedule phys ed later in day, not first period
- Allow time for warm-ups to reduce stiffness
- Touch base with student each class: what kind of day is it?
- Change activity to protect sore joints
- Exercise bike vs. running?

II. Heel Pain:

Known as Sever's disease, severe pain at the back of the heel can occur when the growing center (apophysis) at the back of the calcaneus is repeatedly stressed. Peak age of onset is around 10 years. Heel pain is often associated with spring soccer season and the switch from runners to soccer shoes which do not have as much lift in the heel. The flat shoes, plus running on soft ground, place extra stretching forces on the Achilles tendon, which in turn stretches the cartilaginous growing center.

Implications for Phys Ed:

- stiff and sore on rising in morning
- stiff and sore after sitting
- pain aggravated by running and jumping;

Suggestions:

- do calf stretches before **AND AFTER** any running activities
- ?ice after activity?

III. Knee Pain:

Pain in and around the knees is the second most common reason for referral to physiotherapy at Children's Hospital. There are several causes. Knee pain can be temporary if it is managed well, but can become a chronic problem. It can affect inactive kids as well as athletes, and is frequently the cause of drop-out from organized sports and non-participation in Phys Ed.

- **Patellofemoral pain:** Pain is felt under or around the knee cap. This condition is much more common in girls, but does affect boys as well. The onset of symptoms is usually associated with the period of rapid growth at puberty, which produces a period of relative muscle tightness and weakness. This changes the muscular balance around the kneecap, causing abnormal pressures and irritation of the structures. It is sometimes erroneously called Chondromalacia.
- **Osgood Schlatter's disease:** Pain develops over the tibial tubercle (the 'bump' below the kneecap where the quadriceps tendon attaches). Related to jumping sports such as volleyball and basketball, the pull of the tendon causes irritation of the growth center of the tibial tubercle. This can be quite painful, and limit walking, running and jumping. Affect boys more often than girls.
- **Jumpers' knee:** Patellar tendonitis or inflammation of the tendon between the patella and the tibial tubercle.
- **Sinding-Larsen-Johansson disease:** Like Osgood-Schlatter's, but the pain is felt at the bottom tip of the kneecap.

Implications for Phys Ed:

- Pain is aggravated by running, jumping, squatting, climbing stairs and kneeling
- Pain is also worse after prolonged sitting
- The student may require a knee brace or taping
- The student may be reluctant to participate in running activities, especially fitness testing!

Suggestions:

- Good warm-up before activity is essential.
 - stretch hamstrings,
 - stretch quads
 - stretch calf muscles
- Stretch PRIOR to running
- Pay attention to effective stretching technique
- Pay attention to good alignment for volleyball, weight training.
- Substitute walking for running?
- Substitute exercise bike for running?
- Have ice available at end of class?

IV. Hip Pain: Some conditions that affect the hip in children can lead to permanent damage. It is important that they be recognized early and treated appropriately. The earliest indication of a hip problem may be **limping after activity**. There may be discomfort in the groin or the thigh, and this pain is often mistaken for a groin pull. The Phys. Ed teacher may be the first adult to notice the limp.

	Transient synovitis	Legg-Perthes' disease	Slipped Capital Femoral Epiphysis
Typical age	Boys, 5-7	5-10, can be up to 12	10-15
Symptoms	Limp, unable to walk	Limp, decreased hip range of motion Pain in groin, thigh or knee	Acute: severe hip pain Chronic: limp for several weeks. Leg is externally rotated
Treatment	Rest; should see doctor to rule out more serious condition	Sometimes use a brace; Physiotherapy; Better outcome if onset is early	Requires surgery!

Implications for Phys Ed.

- Pain is increased with activity
- All conditions are more common in boys who tend to play hard!
- The student may have a doctor's note excusing him/her from Phys Ed., but they continue to be ++ active on the playground. This can be very confusing for school personnel. The student may need help limiting his own activity.

Suggestions:

- Check with the student at beginning and end of class re amount of pain and limitation
- Try to minimize running activities

V. Back Pain:

Back pain in middle-school and high-school aged students is quite common, but is not usually severe enough that they seek medical attention. There are several causes, some of them more serious than others. **Back pain in children under age 10, and back pain at night** or that does NOT respond to rest is usually an indication of something serious, and the student should be seen by a doctor. Back pain is the most common reason for referral to the Physiotherapists at Children's Hospital.

- **Muscle strain and postural kyphosis:** Poor sitting posture, prolonged sitting (especially at a computer) and back packs used incorrectly are all common causes of back pain in the growing students. This type of pain is bothersome but not serious. It is often associated with rapid growth, insufficient sleep, and sudden changes in activity. This is usually an achy tired feeling across the upper back or between the shoulder blades. Sometimes the lower back is affected. This pain goes away with rest but may return with activity.

Implications for Phys Ed: encourage activity! Strengthening for core muscles, and a wide variety of movements and activities will help decrease symptoms. If symptoms persist, encourage medical attention.

- **Spondylolysis, posterior element overuse syndrome:** This is a stress fracture of the arch of one or more vertebrae, usually at the lowest lumbar level. It is highly correlated with activities that require repetitive flexion and extension of the spine: gymnastics, ballet, swimming (butterfly), as well as hockey and football (linemen). Symptoms are low back pain, aggravated by extension of the spine.

Implications for Phys Ed: The student must avoid anything that involves backward bending to allow the fracture to heal. This may include overhead throwing, body contact sports, and overhead weight-lifting. Some students may need to wear a brace: depending on the type of brace, collisions may cause injury to other players.

Suggestions: It is likely that the student will be seeing a physiotherapist or a specialist. The student may have a home exercise program that can be substituted for class activities.

VI. Resources on the web:

There are a number of web sites that discuss conditions and injuries that can affect the growing musculoskeletal system. Many are designed for parents and teen-agers, and could be used as part of health education classes. These are some of our favourites:

www.orthoseek.com

<http://www.pediatric-orthopedics.com/home.html>

http://kidshealth.org/parent/firstaid_safe/outdoor/sports_safety.html