

INJURY PREVENTION

Coaches Clinic: August 1, 2018

Hurt vs injured

Hurt means there is a sensation of physical or mental pain

Injured: to cause or do harm, such as a tear, severe sprain or fracture

Open vs closed chain strengthening

Concentric vs Eccentric strengthening

Stretching

Become more flexible

Prevent injuries when exercising

Perform better when playing a sport

Lessen pain in a specific area

After warm up (increase muscle temperature)

Agility drills $\frac{1}{2}$ to $\frac{3}{4}$ speed

Static vs Dynamic stretching

Dynamic: a stretch used to prime a muscle for activity or sport by using momentum to take it throughout its full range of motion.

Static: a stretch to lengthen a stiff muscle by taking it passively to its end range for a prolonged period of time.

Dynamic Stretching exercises before activity

Knee to chest walk, high kick walk, Lunge and reach, lunge with rotation, Scorpion, butt kickers, wind mills

Static stretch

Optimal stretch time 30 seconds

Major muscle groups

Hamstrings, piriformis, quads, gluts, calf, back, chest, shoulders

Common In Season injuries

1. Achilles tendinitis
 - a. Gastrocnemius and Soleus make up the Achilles
 - b. Tightness and overuse is normal cause of injury
 - c. Quick treatments
 - i. Proper shoe wear
 - ii. Heel lift
 - iii. Stretch in 2 positions
 1. Knee straight
 2. Knee bent
 - iv. Ice/heat
2. Foot pain
 - a. Poor shoe wear
 - i. Football cleats and tennis shoes, (no support)
 - b. Poor arch
 - i. Taping
 1. Low dye
 2. Kinesio
 - ii. Arch supports
 1. Correct size
 2. Full length vs half insole
 - c. Stress fractures
 - i. Overuse injury (may start with stress reaction)
 - ii. Pain starts gradually and increases with time
 - iii. Pain may go away with rest
 - iv. Treatment
 1. Modify activity and boot as needed
 2. Keep stress reaction to progressing to fracture
 3. Support foot and make sure of supportive shoe wear
3. Ankle Pain
 - a. Sprains
 - i. Grade I: Ligament stretched
 1. Minimal swelling, no discoloration, short lived pain
 - ii. Grade II: Partial tear of the ligament
 1. swelling, discoloration, mostly outer ankle, more significant pain, difficulty walking.
 - iii. Grade III: Complete tear of the ligament
 1. Severe swelling inner and outer ankle- rapid onset and discoloration inner and outer ankle, significant difficulty walking or unable to walk
 - iv. Treatment (RICE)
 1. Immobilize with boot if needed
 2. Tape vs brace

3. Range of motion (ROM)
4. Exercise

Ankle pain (continued)

- b. Referred pain from the ankle joint
 - i. Younger kids, Some High School kids
 - ii. Proper shoe wear/size
 - c. Shin Splints
 - i. Check arches in foot.
 - ii. Check shoes for adequate support and proper fit.
 - iii. Check gastroc/soleus range of motion.
 - iv. Check strength in entire leg.
 - v. Generally occurs from overuse and not being ready for the season.
 - vi. Treatment
 1. Tape arch
 2. Ice and anti-inflammatory
 3. Modify activity
 - d. Tight Gastroc and Soleus (Achilles Tendon)
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4. Knee Pain
 - a. Sprain (same grades as ankle)
 - i. Medial Collateral ligament (MCL)
 1. Injured with blow to outside of knee
 2. Will heal with time
 3. Brace to play
 - ii. Lateral Collateral ligament (LCL)
 1. Injured with blow to inside of knee
 - iii. Posterior cruciate Ligament (PCL)
 1. Injured with blow to front of tibia
 2. Can mistake an ACL injury
 3. Not commonly torn
 - iv. Anterior Cruciate Ligament (ACL)
 1. Injured with blow to outside of knee and or rotational force (pivot injury)
 - a. Pain and swelling
 - b. Walk/run with knee bent
 - c. Feelings of instability
 - v. Treatment
 1. Ice/anti-inflammatories
 2. Rest
 3. Restore ROM

4. Immobilize if needed
 5. Brace for return to sport
 6. Refer to medical
- b. Meniscal tear
 - i. Injured with forceful rotation activities
 - ii. Poor blood supply, so difficult to heal
 - iii. Feelings of instability and giving way
 - iv. Treatment
 1. Refer to medical
 - c. Patellar Tendinitis
 - i. Pain below the Patella (knee cap)
 - ii. Pain with running, jumping, squatting
 - iii. Poor flexibility
 - iv. Treatment
 1. Ice/anti-inflammatory
 2. stretching
 3. Proper muscle balance
 4. Jumping and squatting technique
 5. Hip and core strength
 6. Modify activity
 - d. Chondromalacia
 - i. Pain under the knee cap because of poor patellar tracking
 - ii. More prevalent in girls than boys
 - iii. Muscle imbalance of quads
 - iv. Poor core and lower extremity strength
 - v. Poor flexibility
 - vi. Treatment
 1. Stretching
 2. Ice/anti-inflammatories
 3. Strengthening of quads, hip and core
 4. Modify activity
5. Hamstring strain
 - a. Quick forceful stretch
 - b. Muscle imbalance between quads and hams (at least 70 to 80% but great at 100%)
 - c. Activities without stretching
 - d. Severely tight hamstrings
 - e. More prevalent in boys than girls
 - f. Treatment
 - i. Ice initially (first 48 hours)
 - ii. Rest and activity modification, slow return to dynamic activity

- iii. Heat with stretching of hamstrings and hip, start with static and increase to dynamic stretching
 - iv. Strengthen and balance hamstring to quad ratio

- 6. Quadricep strain
 - a. Forceful stress/stretch
 - b. Lack of warm up prior to activity
 - c. Muscle imbalance, quads to hamstrings
 - d. Lack of flexibility
 - e. Treatment
 - i. Ice and activity modification
 - ii. Heat with stretching
 - iii. Strengthening quad / hamstring ratio

- 7. Hip pointer (boys) / Iliac crest pain (girls)
 - a. Bruise Iliac crest (hip bone) (football)
 - b. Bruises muscle and possibly tears fibers of abdominal and hip.
 - c. Girl runners more than boys (shin splint of pelvis)
 - d. Quite painful and debilitating.
 - e. Aggravated with turning, twisting, laughing, coughing and sometimes going to the bathroom.
 - f. Treatment
 - i. Ice and activity modification
 - ii. Stretching
 - iii. Core strengthening
 - iv. Pad area as needed

- 8. Low back strain
 - a. Commonly occurs from a direct blow or abrupt twisting or bending motion
 - b. Volleyball extension with hitting and serving
 - c. Poor hamstring length
 - d. Poor core strengthening technique
 - e. Strained low back should begin to subside in 2-3 days.
 - f. Treatment
 - i. Treat symptoms with heat ice
 - ii. Modify activity and check form
 - iii. Stretching
 - iv. Core and hip strengthening
 - v. If pain persists more than 3 days without subsiding seek medical attention

- 9. Shoulder pain
 - a. The tendons of the rotator cuff (RTC) are compressed under the coracoacromial arch, resulting in mechanical wear, stress and friction.
 - b. Most common RTC muscle impinged is the supraspinatus

- c. Causes; falling on out stretched arm, scapular weakness
- d. Pain increases with shoulder abduction (out to side) greater than 90 degrees

Shoulder pain (continued)

- e. Treatment
 - i. Control of pain and swelling (ice and anti-inflammatory)
 - ii. Stretching increases blood flow
 - iii. Strengthening of the serratus anterior, upper middle and lower traps, levator scapulae & rhomboid muscles
 - iv. Avoid abduction and flexion greater than 80*-90*
 - v. Modification not elimination of movement

10. Separated shoulder (AC separation)

- a. Land on the tip of the shoulder
- b. May see a elevated clavicle
- c. Painful and difficulty raising arm above the head
- d. 3 different Grades
- e. Treatment
 - i. Ice and activity modification
 - ii. ROM and gentle stretching
 - iii. Brace as needed
 - iv. Strengthen rotator cuff and scapula

11. Shoulder subluxation/dislocation

- a. Subluxation; humerus pops out then back in immediately
- b. Dislocation; humerus pops out and stays out
- c. Subluxation can help with strengthening and bracing
- d. Dislocation; refer to medical provider

12. Stinger (brachial plexus injury)

- a. Can be serious
- b. Make sure full strength before return
- c. Multiple in a year, need to see physician

Assessment of Injuries

- Make athlete move the body part (AROM) before you move it (PROM)
- Palpate the injured site for pain. Look for depth of pain. Palpate lightly the begin going deeper.

- Deeper the pain may indicate greater severity of injury. Can also indicate what structure is involved
- Pain should get better with time. If pain does not subside then refer to medical professional.
- Treat pain with ice for the first 48 hours. Then can use heat.
- Ice following exercise bout if needed.

Exercises to train athletes

- Single leg balance
- Knee straight and knee bent
- Single leg squat
- Single leg heel raises
- Walking lunges
- Resisted band training
- Forward, backward and defensive slides
- Jumping exercises
- Double leg hopping straight
- Single leg hopping straight, Single leg for distance
- Double leg over imaginary line
- Single leg over imaginary line
- Single leg holds
- Double leg bounding
- Double leg hop and hold Abdominal
- Plyometric crunches
- Trunk rotation with weighted balls

Injury prevention

- Bracing/Taping
- Proper tennis shoes (high tops)
- Skills training
- Balance training
- Cutting, pivoting, turning
- Jump training and landing techniques
- Sport specific drills and techniques

Exercise prescription for return to sport

- **Start with open chain exercises (feet off the floor) first and progress to closed chain exercise (feet on floor).**
- Progress exercise slowly. IE: athlete should be able to stand on one leg before you make them jump.
- Always error on the side of conservative.
- Feel free to contact me at any time with questions or comments. (467-3800 or 590-2838, Friday afternoons golf course.)

