

# SOFT TISSUE INJURIES

SHRIKANT IYENGAR

CLINICAL DIRECTOR

PROHEALTH ASIA

# SOFT TISSUEs

- Soft tissue injuries are common injury in sport.
- Refers to tissues that connect, support, or surround structures/ organs.
- Includes:
- Muscles, Tendons, Ligaments, Fascia, nerves, fibrous tissues, fat, blood vessels and synovial membranes.

# SOFT TISSUES

- Muscle- Fibers that shorten and lengthen, to produce movement of a joint. Muscles are attached to bone by tendons.
- Tendon- are tough bands of slightly elastic connective tissue, that connects muscle to bone.
- Ligaments- Ligaments are strong bands of inelastic connective tissue that connects bone to bone

# RISK FACTORS

- Soft tissue injury generally involves one or more of the structures, via:
  - Sprain, strain or Direct blows (contusions)
- The biggest risk factor is a history of previous injury.
- Players returning from injuries require extra care.

# PREVENTION

- Warming up, stretching and cooling down.
- Ensure readiness, by adequate training.
- Include appropriate speed work, in training.
- Include appropriate stretching/ strengthening.
- Graded increase in intensity and duration.
- Maintain high CVS fitness/ muscle endurance
- Allow adequate recovery time.
- Wear appropriate foot wear

# PREVENTION

- Wearing protective equipment
- Ensuring playing surface and sporting environment is safe and clear
- Adequate hydration before, during and after play.
- Avoid to push through the injury.

# TYPES OF SOFT TISSUE INJURY

- Acute injury:
- Recent history of the injury, usually due to a known and (rarely) unknown incidents.
- Usually due to one particular reason/ incident of injury.
- With (rarely) presence of any previous injury.

# ACUTE INJURIES

- Muscle cramps: Exercise- associated muscle cramps (EAMC).
- Typically happens during extreme exertion.
- More common during games, than in training.
- Studies suggests, genetic component to cramp
- Direct consequence of muscle fatigue
- Typically involves two joint muscles; calf



# MUSCLE CRAMPS

- Treatment:
- Stretching the involved muscles.
- Ensure similar intensity of training, as in the match.
- Remain calm, and less anxious/ tensed.
- Remain well hydrated/ fuelled.
- Good nutrition prior to training.

# DELAYED ONSET OF MUSCLE SORENESS (DOMS)

- Used to describe muscle pain felt, after training.
- Typically presents after 12 hours and peaks at 24-48 hours after training.
- Usually associated with eccentric exercises/ unaccustomed exercises. (increase CK)
- Can last up to 5 days.

# DOMS

- Treatment:
- Education about the symptoms.
- Foam rolling, active movements.
- Hydrotherapy.
- Stretching.
- Cold bath/ contrast bath.
- Simple analgesia, if required.

# BRUISE (contusion, cork)

- Bruises are caused by direct force applied to the body, being kicked or making contact.
- It results in compression and bleeding into the soft tissues (hematoma)
- May present with swelling and/ or discoloration

# SPRAIN

- Sprains are caused, when joint is forced beyond its normal range of motion.
- May results in overstretching/ tearing of the ligament.
- Swelling, loss of power/ or ability to bear weight, possible discoloration.
- Bruising and/ or sudden onset of pain.

# STRAIN

- Strains are caused by muscles overstretching/ contracting, too quickly.
- May result in partial or complete tear of muscle and/ or tendon fibers.
- Swelling, possible discoloration and bruising.

# TREATMENT

- P- Protection.
- O- Optimal.
- L- Loading.
- I- Ice.
- C- Compression.
- E- Elevation.
- The aim is to reduce the bleeding and damage within the joint.

# TREATMENT

- NO
- H- Heat
- A- Alcohol
- R- Running
- M- Massage
- This regime is used for ligament sprains, muscle strains, muscle bruises.



# OVERUSE INJURIES

- Overuse injuries can occur as a result of repetitive friction, pulling, twisting or compression.
- There is a prolonged period of niggles and pain.
- Usually does not co-relates with one episode of injury.
- Related to bio-mechanical reasons (usually)

# REHABILITATION AND RETRUN TO PLAY

- One could expect full recovery from most soft tissue injuries in one to six weeks.
- The length of time depends upon age, general health and severity of injury.
- In significant injuries, a plaster cast/ splint is needed.
- At times surgical repair may also be a possible requirements.

# ANTERIOR CRUCIATE LIGAMENT INJURIES

- ACL Injuries: Most significant injury.
- Occurs most commonly in female athletes.
- Can be a career threatening injury.
- May require imaging, reconstructive surgery, intensive physiotherapy and ongoing monitoring to prevent any re- occurrence.
- Takes long time to return back to sport.
- Altered neuro- muscular control/ proprioception can help identify, susceptibility.

# RISK FACTORS FOR ACL

- Hamstrings/ quadriceps ratio: Needs to be optimal.
- Landing strategy: Minimal hip/ knee flexion and/ or hip adduction/ internal rotation, increases the load.
- Balance/ proprioception: limited neuromuscular control, are at more risk

# RISK FACTORS FOR ACL

- Santa Monica: Prevent injury and enhance performance (PEP); focuses on proper landing, cutting, decelerating.
- Emphasises landing softly, on the ball of foot.
- Engaging knee and hip flexion on landing, with lateral cutting manoeuvres.
- Avoiding excessive knee abduction/ valgus position on landing/ squatting.
- Increased hamstrings, gluteal and outer hip strength.
- Resulted in significant reduction in ACL injuries (74-88%); 6-8 weeks to be effective.

# FIFA 11+

- Injury prevention program, specific to prevent football injuries.
- Program takes 20 mins/ 2 times/ week.
- No specific equipment is needed.
- Consist of 15 exercises, divided into three separate components; running 8 mins; strength, plyometric and balance 10 mins; running exercise 2 mins: high speed, change of direction running.
- 3 levels of each exercise- level 1, 2 and 3.

# TENDON INJURIES

- Mainly produced by the forces of compressions, friction, traction.
- Insidious onset of well- localised pain
- Initial stage, gets better with warm- up, feels good during exercises
- Gets painful after exercise
- With time and progression, gets worse.
- Athlete complains of morning pain/ stiffness.

# REACTIVE TENDINOPATHY

- Refers to term of acute over load.
- Causing thickening of tendon and pain.
- More common in young athlete
- Sudden increase in the overlaod



# TENDON DISREPAIR

- INVOLVES WORSENING OF ACUTE STAGE
- Break down of tendon matrix
- Longer history of symptoms
- More chronic and difficult to manage.

# DEGENERATIVE TENDONPATHY

- Presents after a prolonged period of time.
- More common in older athletes
- Can be seen in recreational athletes
- Neovascularity and hypoechoic area seen in ultrasound
- Likely best treated with eccentric strengthening.

# TREATMENT.

- Isometrics:
- Often painful initially, gets better with loading.
- Must be done in large quantity- 90- 180 reps
- Must be continued to athlete for a period of 3 months.

# TREATMNET

- Eccentric training
- Most effective, widely used treatment.
- Well established benefits in younger athletes.
- Needs to be done progressively.