Sports Specific Safety

Tennis

Sports Medicine & Athletic Related Trauma
SMART Institute

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Injury Statistics

- **How many injuries?**
  - The rate of tennis injury in the general population is five injuries per 1,000 hours of participation.
  - Lower extremity injuries are the most common (ankle, knee)

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COMMON INJURIES IN TENNIS

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Ankle Sprain

- Inversion Sprains
  - Most common and result in injury to the lateral ligaments
  - Anterior talofibular ligament is injured with inversion, plantar flexion and internal rotation
  - Occasionally the force is great enough for an avulsion fracture to occur off the lateral malleolus

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Proprioception

- Most important
- Most often forgotten
- Works on synergistic muscle action
- Balance boards, coordination and agility exercises
- Most common reason for recurrent injury

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Plantar Fasciitis

- Most common cause of heel pain
- Caused by excessive tension on plantar fascia inserting on calcaneus
- Repetitive microtrauma
- May note heel spur on plain radiographs
- Treatment: Physical therapy, arch support, heel cups, ice, orthotics, injection

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Patellofemoral

- Most common cause of anterior knee pain, especially in female athletes
- Irritation, inflammation of articular surface of the posterior patella as it runs along lateral groove/ femur
- History: Unilateral/Bilateral anterior knee pain, worse with stairs, being seated for long periods of time in flexion (+movie sign)
- Physical exam: no deformity, no effusion, +grind, +trapping

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Rotator Cuff Tendonitis

- Mechanism: Repetitive explosive or overhead motion upper extremity
- Involving Supraspinatus tendon
  - Stage I edema
  - Stage II tendonitis and fibrosis
  - Stage III degeneration, bony changes, rupture

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Rotator Cuff Tendonitis

- Treatment
  - Pain/inflammation control, Ice
  - Make sure no rotator cuff tear
  - Physical therapy
  - Corticosteroid injection
  - Activity modification
  - Surgery
    - **Stabilization**
    - **Decompression**

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Lateral Epicondylitis

- Pain in radial elbow with activity
- History: Progressive discomfort with repetitive activity, especially with wrist extension
- Physical: Tenderness lateral epicondyle, increased pain with resisted wrist extension, + “hand shake”
- Treatment: Physical therapy, ice, wrist splint, forearm strap, iontophoresis, NSAIDS, Injection

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Back Injuries- mechanics

- The serve - greatest stress
  - **Hyperextension and rotation - toss**
  - **Powerful lateral flexion and rotation, then forward flexion - striking ball**
- Forehand/Backhand - mild rotation
- Two-handed backhand

  -Increased trunk rotation

  -especially reaching for wide ball

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Lumbar Strain

- **Repetitive trunk extension/rotation typically loads erector spinae/multifidis**
- **Also abdominal muscles loaded with flexion/rotation**
- **Repetitive activity - muscle exhaustion, ischemia, lactic acid accumulation, reflex muscle spasm and pain**
- **Risk factors: Overuse, shoulder injuries, hamstring injury/inflexibility, poor lumbar flexibility, lower extremity fatigue**

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Lumbar strain

- Treatment
  - **Initial pain control, rest**
  - **Early physical therapy**
    - **Flexibility enhancement**
    - **Strengthening flexors/extensors**
    - **Trunk stabilization**
  - **NSAIDS, Ice, Modalities (Stim, U/S)**
  - **Mechanical modification**
  - **Return to play - functional assessment (days)**

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Lumbar Disc - Herniation

- Maximal stress on disc with extremes of hyperextension and rotation
- Hyperextension increases sheer stress on annulus
- Tear in strong outer annulus leads to bulging of inner nucleus pulposus
- Muscle fatigue - greater stress on ligaments - greater stress on disc
- Familial tendency

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Lumbar Disc Herniation

- Treatment
  - Pain Control
  - Ice
  - Rest
  - Prednisone
  - Physical Therapy
    - Flexibility
    - Flexion/Extension
    - Trunk stabilization

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Back Injury Prevention

- Good general strength and conditioning
- Emphasize flexibility
- Stress proper mechanics
- Vary practice, minimize repetitive maneuvers
- Early recognition of low back pathology
- Aggressive treatment and rehabilitation
- Have a good TEAM DOC, a great THERAPIST/TRAINER!!!

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Repetitive Strain Treatment

- Protect
- Rest
- Ice
- Compression
- Elevation
- Therapy
- Medications

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Overuse Injury Etiologies

- Training Errors
- Improper Mechanics/Techniques
- Improper equipment
- Environment
- Anatomic Variants

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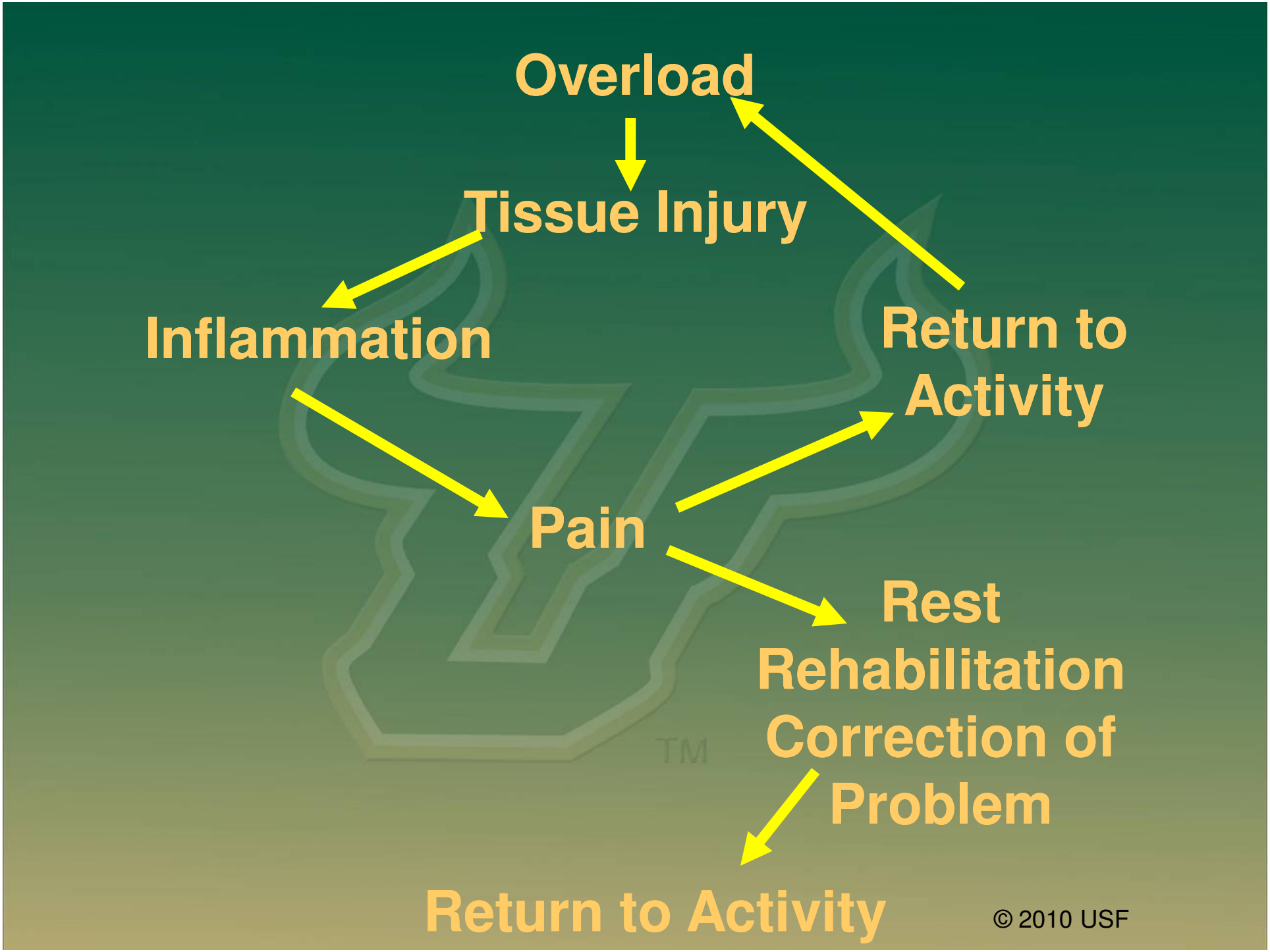
Overload
Tissue Injury
Inflammation
Return to Activity
Pain
Rest
Rehabilitation
Correction of Problem
Return to Activity
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Equipment safety

- Use a racquet suitable for your style of play and physical capabilities. Players, especially those with arm and shoulder injuries, should seek professional advice when selecting a racquet and choosing string tension.

- Use tennis balls appropriate for the playing surface. Avoid using wet or flat/dead balls.

- Check and maintain the playing surface to ensure it is in good condition and free of hazards.

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Field/Playing Area Safety

- Lightning
  - Flash to Bang or 30-30 Rule
    - If there is 30 seconds or less between the time that you see lightening and hear thunder then seek shelter immediately.
    - Wait at least 30 minutes after the last thunder is heard before resuming play. If you see further thunderstorm clouds building, you should wait at least another 30 minutes.
  - Seek shelter in an enclosed vehicle, restroom, or other nearby building. Golf carts, trees, or other "shaded" locations are not safe.

- Sun
  - Don't forget sunscreen.

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Heat Illness

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Prevention of Heat Illnesses (NCAA)

- Allow for 7-10 days to acclimatize
  - 80% acclimatization
- 2 months for full acclimatization

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General Information

- White → Reflects 30% of the heat
- Dark → Reflects 18% of the heat
  (skin or clothing)
- Male: Lower % body fat
- Female: Higher % body fat
  - Core temperature must get higher before sweating occurs

- Core temperature: for every one degree of increased core temperature – there is an increase in heart rate (about 10 beats/1 degree)

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General Information
Body Temperature

- Sweat increases
- Blood is pushed towards the skin
- Respiration increases
- Desire for food decreases
- Desire for fluids increases
- Desire for salt increases
- Muscle contraction decreases (willingness)

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Heat Illnesses - Causes

- Dehydration
  - 60+ % of total body water
  - Sugar in the stomach prevents rehydration
  - Observe until urination occurs (key)
- Electrolyte Imbalance
  - Depletion occurs over a period of 2-5 days
  - Ion-chemical charge

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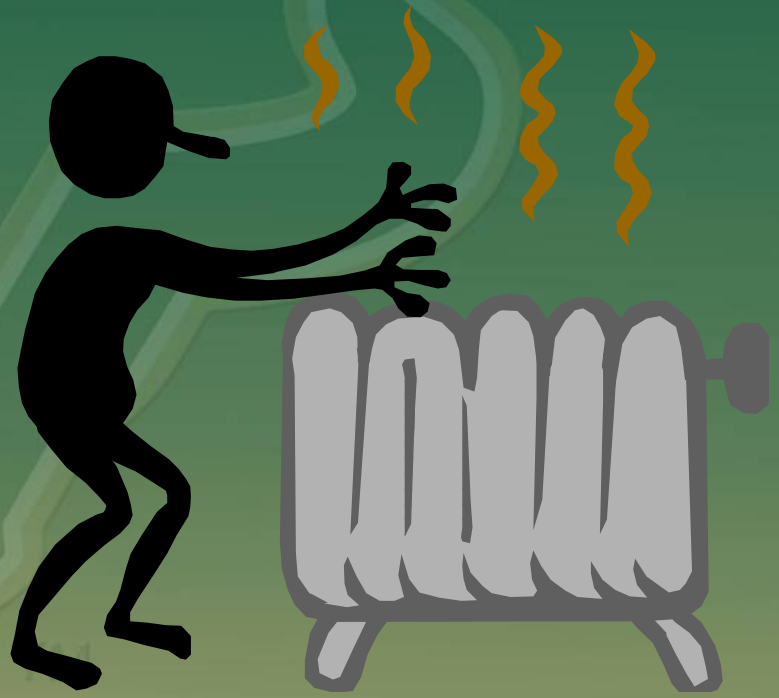
Types of Heat Illnesses

- Heat rash
- Heat syncope
- Heat cramps
- Heat exhaustion
- Heatstroke



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Fluid Replacement

- Before exercise: drink 17-20 oz. 2-3 hrs prior.
- 17-20 oz 10-20 min. prior to exercise.
- During exercise: 7-10 oz. every 10-20 min.
- After exercise: within 2 hrs, drink enough to replace weight loss from exercise.

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Supplements

- Stimulants
  - Xenadrine
  - Metabolife
  - Rip Fuel
  - Sudafed, Ephedra, Mao Young
- Creatine
  - Steroids
  - Nandrolone, DHEA
  - Diuretics
  - Caffeine
    - Energy Drinks
    - Tablets

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MRSA

Methicillin-resistant Staphylococcus aureus

The Silent Killer

Ways to combat MRSA:

- Keep hands clean
- Shower immediately after exercise
- Keep cuts and scrapes covered
- Wear clean exercise clothes
- Don't share razors or other personal items
- Notify the athletic trainer of any unusual sores

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If you remember nothing else….

- Repetitive strain injuries are very common
- Several types – Tendinitis, Tendinosis, Tenosynovitis
- Thorough History, and physical exam
- P.R.I.C.E.- T.M.
- A great therapist can make all the difference

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