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)
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
Proprioception

• Most important
• Most often forgotten
• Works on synergistic muscle action
• Balance boards, coordination and agility exercises
• Most common reason for recurrent injury
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
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/multifidus.
- 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 shear 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
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.
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.
Heat Illness
Prevention of Heat Illnesses (NCAA)

• Allow for 7-10 days to acclimatize
  – 80% acclimatization

• 2 months for full acclimatization
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)
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)
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
Types of Heat Illnesses

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