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Dancer & Gymnast Injuries
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Pediatric Sports Medicine Clinic

Primary Sport

- Softball
- Cheer/Tumble
- Gymnastics
- Volleyball
- Dance/Drill Team/Ballet
- Baseball/t ball
- Basketball
- Other

Pediatric Sports Medicine Clinic

- 75% do not participate in another sport
- 50% train 5+ days/week
- 70% gymnasts
- 60% dancers

Pediatric Sports Medicine Clinic

- 24% 1-5 hours
- 29% 6-10 hours
- 12% 11-15 hours
- 14% 16-20 hours
- 7% 21-25 hours
- 7% 26-30 hours
- 3% 31-35 hours
- 3% 36+ hours
How many weeks per year do you participate in your sport?

Cheer/Tumble
Dance/Drill Team/Ballet
Gymnastics

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How many years have you participated in this sport?

Cheer/Tumble
Dance/Drill Team/Ballet
Gymnastics

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Dance
Dance
Injuries

- Causes: fatigue, stress, bad luck, faulty technique
- Risk factors: poor strength/flexibility, previous injury, poor nutrition, summer intensive classes
- Most important source of dance injuries:
  - Compensation of insufficient ER of hips
- 3 compensatory mechanisms to mimic better "turn out"
  - Lumbar hyperlordosis to hip flexion
  - Bending knees → ER of lower legs
  - Hyperpronation of feet → abdication of forefoot

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Dance
Injury Epidemiology

- 67-95% of company dancers per year:
- On average: 1.7-6.7 injuries per dancer per contract year
- Overuse injuries: #1
- Most common locations:
  - Foot & ankle
  - Hips, lumbar/thoracic/cervical spine
  - Knee

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Gymnastics
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Gymnastics

- Causes: fatigue, stress, faulty technique, repetition
- Risk factors: poor strength/flexibility, previous injury, poor nutrition, intensive training schedule
- Most important source of injuries: Gymnastics

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Gymnastics

- 2.155 injury incidence per 1000 exposure hours
- 2.859 elite
- 2.820 high-level
- 1.667 intermediate
- 0.687 novice
- Overuse injuries: #1
- Most common locations:
  - Lower Extremity 60.9%
  - Lumbar/thoracic/cervical spine
  - Knee

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Dancers & Gymnasts
General Principles of Treatment

- They know their body best!
- Identity
- Investment
- Relative rest:
  - Cross-training
  - Help them identify what they can do
- Sport-specific recommendations
  - Barre, avoid "au milieu", avoid jumps, pool barre
  - Flat ground vs. tumble track, trampoline, upper body only, low beam
- 'Mental practice':
  - Visualization is cornerstone

Medical Problems

- Eating & nutritional disorders
  - Energy availability
- Menstrual disorders
- Low bone mineral density
- Burnout
- Smoking

Musculoskeletal Injuries - Shoulder

- Shoulder Instability
- SLAP/Labral Tears
- Impingement
Musculoskeletal Injuries - Elbow

- Medial Epicondylitis
- Medial Epicondyle Fracture
- Elbow Dislocation
- Osteochondritis Dissecans
- Ulnar Collateral Ligament Insufficiency
- Radial Head Stress Fracture
- Olecranon Stress Fracture or Impingement

Musculoskeletal Injuries - Wrist/Hand

- Physical Stress Reaction
- Stress Fracture
- Tendonitis
- Distal Radius Fracture

Musculoskeletal Injuries - Back

- LBP
  1. Spondylolysis
  2. ‘Kissing spines’
  3. Scoliosis
  4. Lumbar Facet Sprain
  5. SI Joint Sprain
  6. Discogenic Back Pain
  7. Paraspinal Muscle Spasm
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**Musculoskeletal Injuries - Hip**

- **80% are Sprain/Strains around the hip**
  - **Treatment:**
    - Rest
    - Short Term Protected Weight Bearing
    - May require physical therapy in higher end athletes
  - **Anticipated recovery maybe 2-10 weeks**

**Quadratus Femoris**

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**Musculoskeletal Injuries - Hip**

- In dancers, hip rotation should be measured in prone
- 10% all dance injuries
- Common source of dance injuries
  - Risk factors: limited ER or asymmetrical
  - Tx for most hip complaints: relative rest, limit turn-out, less "high legs," strengthening
  - Sx/injxns rarely needed
  1. **Piriformis syndrome**
    - Common in dancers w/ limited turn-out
    - Usually stress related, syndrome is compressed by piriformis
    - Sx: pain worse w/ prolonged sitting, stairs, standing
    - R/O radicular syndrome
    - Tx: conservative, specific stretches

**Musculoskeletal Injuries - Hip**

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**Musculoskeletal Injuries - Hip**

2) **Snapping Hip Syndrome**

  - **Internal:** Ileopsoas
    - Audible/Groin Pain
    - Dancer/Tumblers
    - Tx: Hip Flexor Stretching
  - **External:** Iliotibial Band
    - Popping with walking
    - Described as hip pops in and out
    - Visualize
    - Tx: IT Band Stretching
Musculoskeletal Injuries - Hip

3.) Sartorius enthesopathy/apophysitis
- Due to overuse of Sartorius m., important hip flexor in turned-out position
- + pain w/ lifting leg in turned-out position, lifting in neutral or turned-in is pain free
- TTP at ASIS

4.) Femoral-acetabular impingement (FAI)
5.) Labral tears
- Pain w/ FADIR
- Intra-articular bupivacaine injxn & MRI arthrography for dx
- Arthroscopic labral sx in dancers - still experimental
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Musculoskeletal Injuries - Knee

- 25% all dance injuries
- Most injuries due to turned out position
  1.) Patellofemoral pain syndrome
      - Screwing your knees, due to compensation for insufficient turnout at tips.
      - Can also cause patellar chondropathy, medial meniscus tears, lateral patellar dislocations.
  2.) Patellar tendonitis

Musculoskeletal Injuries - Knee

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Musculoskeletal Injuries - Ankle

- Most common- 27% of all injuries
- Due to extreme ROM's - dorsi/plantarflexion
  1.) Achilles tendonitis
      - Ribbon friction
      - Character shoes

Musculoskeletal Injuries - Ankle

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Musculoskeletal Injuries - Ankle

2.) Anterior Impingement
   - Aggravated by plies
   - Cavus feet: repeated landing from jumps → microtrauma → osteophyte formation
   - Often associated with osteophyte formation at front of distal tibia & or nose of talus
   - Tx: simple heel raise during dance or anterior arthroscopic clean out

3.) Posterior Impingement 'Dancer's heel'
   - Most common dancer's injury w/ or w/ out 'Dancer's tendinitis'
   - Soft tissue or bony impingement at back of ankle
   - Causes: inflamed posterior capsule behind talus, os trigonum, enlarged posterior attachment
     - Lat view of foot in releve preferable
   - Tx: cortisone for soft tissue impingement, resection for bony...
Musculoskeletal Injuries - Ankle

• FHL tendonitis "Dancer’s tendonitis"
  - Usually occurs in pointe dancers
  - Can coincide w/ PAI
  - Tendovaginitis of the FHL tendon at posterior medial ankle
  - FHL muscle belly stuck at entrance of its tendon sheath
  - Posterior-medial ankle pain w/ plie
  - Tx: If no resolve w/ conservative therapy → tendon sheath release

Musculoskeletal Injuries - Ankle

4.) Ankle sprains
5.) Peroneal tendonitis, subluxation, dislocation
6.) Tarsal tunnel syndrome
7.) Sinus tarsi syndrome
Ideal dancer’s feet would be...square shaped with equal length 1st & 2nd MT’s!

- Pez planus, unequal metatarsal length = risk factors for metatarsalgia, stress fx’s of 2nd MT, hammer toes

1.) Hallux valgus
   - Don’t operate!!!
2.) Lisfranc joint injuries
3.) Navicular stress fx’s
4.) Cuboid subluxation

Musculoskeletal Injuries - Foot

5.) Spiral fx of shaft of 5th met ‘Dancer’s fracture’
   - Inversion injury while on pointe
   - Tx: cast shoe

6.) Metatarsal shaft stress fx’s
   - Usually 2nd-4th mets, common in longest toes

7.) Sesamoiditis/sesamoid fx’s
   - Usually in big toes
   - Pain under head of 1st met
   - Px: long, uncertain, unsatisfactory

8.) Subtalar coalition
References


Thank You