



## **Circus Injuries**

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### **Ankle Sprain**

An ankle sprain is caused by twisting or rolling the ankle in a way that is uncontrolled or outside of the joint's normal motion. This results in a stretch or tear of the ligaments that support the ankle joint. The pain is usually at the lateral ankle and is worse with use.

Who is affected: Acrobats of all levels. Sprained ankles occur with imperfect landings (over or under rotating, twisting, falling) or with unexpectedly stepping off the edge of a mat for any artist.

### **Achilles Tendinopathy**

This irritation of the achilles tendon, due to repetitive high loads through the tendon as with running, jumping and landing. Pain is generally felt along the tendon anywhere from the insertion at the heel to further up on the tendon. It can be described as stiffness and soreness or pain especially with first steps and can present with or without swelling.

Who is affected: Acrobats. The level of repetitive load is high with landing from skills when training and performing. Acrobats who are either increasing their training or performing at a high level are most at risk.

### **Patellar Tendinopathy**

Patellar tendinopathy is caused by high repetitive loads on the knee extensor muscles. Pain is generally localized at the anterior knee inferior to the patella.

Who is affected: Acrobats. The level of repetitive load is high with landing from skills when training and performing. Acrobats who are either increasing their training or performing at a high level are most at risk.

### **Proximal Hamstring Tendinopathy or Strain**

A proximal hamstring strain occurs when there is an overload of force at the hamstring near its insertion at the ischial tuberosity. This can lead to a stretch or tear of the muscle or tendon. The pain is usually deep and localized at the ischial tuberosity. It is worse with end range motion and use.

Who is affected: Beginning to intermediate level acrobats and aerialists are most affected as they are learning to control and gain strength in their end range of motion.

### **Femoroacetabular Impingement**

Premature contact of the head of the femur with the acetabulum with motion. This may be due to certain variations of the morphology at the hip joint and/or due to impaired movement

patterns. Pain is generally deep in the groin and the patient may present with clicking or locking sensation at the joint.

Who is affected: Aerialists of all levels.

### **Facet Osteoarthritis/Hypertrophy**

Common “wear and tear” at the lumbar facet joints.

Who is affected: experienced and professional artists, in all types of acrobats including aerial. Common clinical course will progress but can be managed with appropriate load management and periodization, avoiding aggressive training and performing peaks, and rehab. Depending on the type of acrobat, (ie, porters) they may be able to rely on some amount of stiffness and stability created from bony structures. Jumping acrobats (teeterboard, trampoline, tumblers/fast-track) can overload the bony structures of their spine upon landing due to ground reaction forces and stabilizing their entire body.

### **Pelvic/SIJ**

Pelvic and SIJ will have acute flares from poor landings due to the many unstable surfaces acrobats land on (crash mats, trampoline, nets).

### **Adductors Injuries (strains)**

Tend to be acute adductor and pelvic dysfunction due to localized trauma when utilizing an apparatus. Acute groin/adductor injuries are common in Chinese Poles acrobats from an acute soft tissue injury such as a contusion to strains from poor execution of a trick.

### **Cervical Injuries/1st rib**

Specific to porters and bases from weight bearing on shoulders. Not necessarily related to muscular imbalance or strength, but common mechanisms would include poor partnering skills (ie, training with a new flyer) or an abrupt increase in the amount of loading and repetitions on the porter (training new skills). Often associated with thoracic outlet syndrome in chronic cases.

### **Rotator Cuff Tendinopathy**

Rotator cuff injuries occur due to excessive loads on these muscles due to intrinsic and extrinsic factors. Pain generally is associated with rotation and elevation of the humerus.

Who is affected: Aerialists of all levels. With aerialists hanging from their arms they are loading their shoulders and rotator cuff muscles in an extreme end range. This seems to make both chronic and acute rotator cuff injuries common in this population.

### **Medial Epicondyle Tendinopathy**

This is a tendinopathy that occurs with the overload of the common flexor tendon. Pain is usually present at the insertion of the tendon at the medial epicondyle.

Who is affected: Beginning Aerialists and those returning from a break in training. “Over-gripping” on a vertical apparatus due to fear or undertraining is one probably cause in aerialists.

## Circus Injury Citation List

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