

Rodeo Athlete: Overview

Background

1. Definition-a professional cowboy is someone who makes a living by doing rodeo
 - Includes cowboys, bull fighters and pick-up crew
 - Must be registered by the PRCA (Professional Rodeo Cowboys Association) to compete
 - Professional Rodeo Cowboys Association
2. General info
 - Athletes often compete in multiple rodeos in multiple states simultaneously
 - Most are not insured
 - Justin Boot Company started Justin Sports medicine Team
 - Athletic trainers- provide most medical care to rodeo athletes
 - Rough stock events
 - Bull riding, bareback, saddle bronc
 - Need to stay on for 8 seconds
 - Scored: 50% for animals performance / 50% for cowboys performance
 - Most common injury is concussion, distant second is shoulder injuries
 - Knee injuries primarily occur when trying to get away from animal [2](#)
 - Significant number of injuries occur in chute while mounting the animal
 - Injury Reports
 - Finished stock events
 - Steer wrestling, calf roping, team roping, barrel racing
 - In high school:
 - Goat tying replaces steer wrestling
 - Break away roping replaces calf roping
 - Timed events-faster time wins
 - Knee injuries are common in steer wrestling, calf roping and goat tying
 - These events involve dismounting horse quickly
 - Posterior cruciate injuries are common
 - Mechanism: dismounts horse and foot lands in a hole
 - Most common in bulldogging (steer wrestling)
 - Concussions common in barrel racing
 - Due to untimely dismounting (falling off) of horse
 - Thumb amputations can occur in team roping as cowboys take their dallies
 - Dallies-after calf is caught, rope is wrapped around saddle horn to secure calf
 - Support teams
 - Flag teams, pick-up teams, bull fighters
 - Bull fighter injuries account for 73.6% of all non-contestant injuries
 - Labor related injuries account for 20.47%
 - Stock contractors account for 30% of remainder of rodeo injuries
 - Ranching events
 - Events include brandings, rodears and gathers
 - Gathers are long rides to gather a herd of cattle
 - Brandings ultimately involve a "hot" brand or "freeze" brand to identify calves and involve cowboys roping calves on horseback

- Most calves get vaccinated as well
- Rodears are when cattle are cornered on ranch and ranch work such as vaccination or treatment of the calf occurs. Usually involves roping the cow horseback
- The cowboy often comes off horse to "doctor" the animal
 - Knee injuries common
 - Rope burns are common
 - Thumb injuries/amputations also occur
- Activity related events also occur
 - Lacerations, burns from branding pot
- Rank of injuries:²⁴
 - 87.5% of severe injuries were due to concussion
 - Most occur bull riding
 - Knee injuries
 - Most common injury site in calf roping, steer wrestling, saddle bronc riding, bullfighters
 - Head and face injuries comprised of 13.7% of non-concussion injuries

Cowboy Psychology

1. Rodeo athletes have unique pain perception and often dissociate pain/injury and continue to compete
 - 80-90% of injuries could be attributed to individual personality traits: extroversion and mental maladjustment
2. Rodeo is also unique- competition between humans and livestock which magnifies potential for injury
3. Precompetitive mood state involves tension, anxiety and vigor
 - May play a role in injury
4. Fatigue plays a role in injury
 - Rodeo athletes compete all year
 - Subject to stresses of traveling to competitions often occurring simultaneously
5. Rodeo culture: forestalling, contending, enduring
 - Forestalling- rodeo athlete often uses rituals, prayer and lucky objects thinking these will help avoid injury
 - Contending- challenge is to overcome adversaries which are identified as the bulls
 - Enduring- continue to compete despite injury
 - Often they feel they have to overcome family hardship and loss of income
6. Participants describe health care professionals as being judgmental and lacking understanding of rodeo culture
7. Participants are often in denial about injuries
8. Compassion and empathy will increase compliance with treatment

Prevention/Protection

1. Equipment

- Spurs with long shanks that are aggressively used will help maintain rider's position
- Leather chaps provide limited protection from lacerations and contusions
- Rib protector, chest protector, or a commercially available flak jacket
- Most desirable bull ropes are braided wider and tighter
- Resist twisting or torsion to help prevent cowboy from getting "hung up"
- Less experienced riders should wear tight-fitting gloves and use light amounts of rosin
- Hockey-style helmets, lacrosse helmets, and face masks-controversial
 - No studies to support/refute use
 - Head and face protection should be encouraged in less experienced rider
- Whether to "take a wrap" is controversial
 - Hand is further secured by cinching an extra section of rope under the hand
 - Strengthens grip
 - Increases risk of getting hung up
 - Prohibited in youth rodeo
- Mouth guards
 - Protect teeth and head
 - Can become a problem in unconscious rider
 - Small mouthpiece can obstruct airway
- Soft cervical collars when riding
- Wrist Taping
 - Typically self administered
 - Modified from other sports
 - Often inadequate support
- Custom-fitted, functional bracing and additional padding
 - Superior to prophylactic taping

2. Technique

- Rough stock riding schools
- Rodeo-specific strength and conditioning program
 - Done as part of daily practice regimens
 - Address medical conditions that may affect competition:
 - Muscle imbalance
 - Conditioning
 - Anatomic malalignment
- Six-direction isometric strengthening of forearm (flexion, extension, radial and ulnar deviation, supination, pronation)
 - Use a single hand to provide resistance
 - Slowly increase tension against stabilizing hand over 10 seconds
 - Exercises should be done three times in each direction once or twice a day
- Core and neck stability muscle conditioning programs
 - Improve ability to land on one's feet or control timing of dismount
 - Avoid dismounting on fences or when the animal is stopped

- Chute Routine
 - Well-rehearsed chute routine in all rough stock events
 - Carefully kneeling onto the back of the animal announces the presence of the rider, while keeping the rider in a position to quickly exit if necessary
 - Position fellow competitor near top of chute to pull cowboy to safety if there is trouble in chute

Concussion/ Head and Facial Bone Fracture/Lacerations

See also Head Trauma

See also Sports Related Concussion

See also Skull Fracture

See also Scalp Lacerations

See also Facial Trauma

1. Background
 - 55.8% of rodeo injuries²⁴
2. Pathophysiology
 - Bareback
 - Violent whiplash
 - Falls
 - Stepped on by animal
 - Rammed into wall or chute
3. Prevention
 - See Background: Protection

Shoulder Fracture/Dislocation/Chronic Pain

See also Shoulder Injuries

See also Shoulder Tendonitis

See also Rotator Cuff Tear (Sports)

1. Background
 - 7.34% of rodeo injuries²⁴
2. Mechanisms of injury
 - Bareback bronc riders injure shoulders, hands and elbows (in that order), usually due to tremendous stresses on riding arm
 - Repetitive stress forces
 - Rotator cuff tendonitis:
 - Ropers: repetitive motion
 - Can become acute enough to prevent accurate release of the loop when competing
3. Diagnostics
 - See Shoulder Exam (Sports)

Chest/Rib Fracture/Lung Contusion

See also Chest Trauma

See also Pneumothorax

See also Hemothorax

1. Background
 - 5.89% of rodeo injuries²⁴
 - Chest trauma usually involves more than one organ system

2. Mechanism of injury
 - Concurrent blunt and penetrating chest trauma
3. Diagnostics
 - Physical exam
 - Chest and upper extremity injuries often associated
 - Crepitus may be present
 - May manifest as immediate shock, pain, unstable vital signs
 - Pain is usually well localized but may be referred to abdomen, neck, shoulder, or arms
 - Shortness of breath
 - Dyspnea and tachypnea may be due to anxiety or pain
 - Rib tenderness
4. Prevention
 - Crawl rather than run/walk away from animal to avoid multiple blows

Ankle Fracture

See also Ankle Injuries

1. Background
 - 6.33% of rodeo injuries²⁴
2. Mechanism of injury
 - Inversion of ankle due to uneven arena surfaces
 - Repetitive stress forces, flexion, extension
3. Diagnostics
 - See also Ankle Exam
4. Prevention
 - Saddle Bronc Riders should avoid lace up boots
 - Offer another mechanism for getting hung up

Tibia/ Fibula Fracture

See also Tibia Fractures

See also Tibial Plateau Fracture (Ortho)

1. Background
 - 5.07% of rodeo injuries²⁴
2. Mechanism of injury
 - Animal pinning the cowboy's leg against chute wall

Wrist Fracture/Dislocation/Chronic pain

See also Wrist Injuries

1. Background
 - 4.02% of rodeo injuries²⁴
2. Mechanisms of injury
 - Most common: falling on outstretched arm
 - Repetitive stress forces, flexion, extension

C-Spine Fracture/Chronic neck pain

See also Cervical Spine Trauma

1. Background
 - 5% of rodeo injuries²⁴
 - May result in permanent disability and quadriplegia

2. Mechanisms of injury

- Impact with flexion
- Hyperflexion, hyperextension, rotation injuries
- Bareback:
 - Chronic neck pain and radiculopathy produced by whiplash effect of a properly executed bareback ride

3. Physical exam

- Test range of motion
- Palpation for spinous tenderness
- Complete neurovascular examination of upper extremities

Ulna/radius Fracture/Forearm injuries

See also Arm Injuries

See also Wrist Injuries

See also Forearm Fracture (Peds)

See also Radius Fractures

See also Ulna Fractures

1. Background

- 1.75% of rodeo injuries²⁴

2. Mechanisms of injury

- Bareback bronc riding
 - Pain along lateral surface of mid-shaft of the ulna: stress reaction from using arm as a lever against rider's thigh during riding
- Bareback rigging can produce acute and chronic injury to ulnar collateral ligament of thumb
- Eccentric loading of forearm muscles also contributes to pain in arm of bull and bareback riders

Elbow Dislocation

See also Elbow Exam

See also Elbow Injuries

1. Background

- 4.43% of rodeo injuries²⁴

2. Mechanisms of injury

- During riding:
 - Repetitive, high velocity compression and traction forces
 - Axial overload force transmitted up the arm
 - Acute deceleration
- During dismount:
 - Hung up on animal
 - Increases torque forces on hand/wrist
 - Hyperextension of elbow
- After dismount:
 - Falling on hyperextended arm
 - Increases valgus stress
 - Hitting metal gates/railings levers ulna from trochlea
- Bull riding
 - Supinated fixed grip
 - Prone body position

- Upper extremity
 - Continual isometric contraction
 - Limited ROM
 - Acceleration and centripetal forces on arm
 - Bareback bronc riding
 - Elbow injuries
 - 5th most common injury for bareback bronc event
 - Semi-pronated fixed grip
 - Supine body position
 - Improper forearm riding position causes ulnar hammering-type action against pelvis
 - Leads to ulnar hypertrophy
 - Acceleration and eccentric forces on arm
 - Thrown/dismount on off-side of animal-caught in rigging
 - Long-term complications:
 - Degenerative joint disease
 - Chondral loose bodies
 - Ulnar hypertrophy
 - Carpal fractures
 - Joint impingement
 - Myositis ossificans
 - Heterotopic calcification
 - Neurovascular dysfunction
 - Traction spurs in medial epicondyle and olecranon
 - Recurrent instability
 - Chronic joint laxity
3. Diagnostic testing
- Imaging in collegiate rodeo athletes
 - 60% of all radiographic changes in upper extremity involve medial epicondyle or olecranon in both riding and free arms
4. Prevention
- No proven prophylactic interventions

Foot Fractures

See also Foot Exam

See also Foot Injuries

1. Background
 - 1.46% of rodeo injuries²⁴
2. Mechanisms of injury:
 - Rough stock events
 - Animal may step on rider
 - Finished stock events
 - Dragging injury-foot hung up in stirrup
3. Prevention
 - Steel-toed cowboy boots decrease damage from being stepped on
 - Built-up heel reduces foot from being hung up in stirrup
 - Proper boots may prevent up to 12% of horse-related injuries

Abdominal Blunt Trauma

See also Blunt Abdominal Wall Trauma

See also Abdominal Trauma

See also Abdominal Pain

1. Background

- 1.84% of rodeo injuries²⁴

2. Mechanism of injury

- Most common-stepped on by an animal

3. Diagnostics

- Physical exam
- Abdominal and upper extremity injuries are often associated

Humerus Fracture

See also Humerus Fractures

See also Arm Exam

See also Arm Injuries

1. Background

- 1.03% of rodeo injuries

Scapula Fracture

See also Scapula Fracture

See also Shoulder Injuries

See also Shoulder Exam

1. Background

- 0.49% of rodeo injuries²⁴

2. Mechanisms of injury

- Low-energy impacts causing shoulder dislocation
 - Fracture scapula/glenoid rim
- High-energy impacts
 - Fracture neck/body of scapula
- Direct blow to scapula
 - Comminuted fracture
- Traction force
 - Avulsion fractures of coracoid and acromion
- Traction force more likely when rider is caught up in rigging and dragged by animal

Lumbar Fracture

See also Back Trauma

See also Back, Physical Examination

See also Back Sprain

See also Back Pain

1. Background

- 0.67% of rodeo injuries²⁴
- More common in rough stock events
 - Bareback/saddle bronc riding

Hip Fracture

See also Hip Fractures

See also Hip Exam

See also Hip Dislocation

1. Background
 - 0.55% of rodeo injuries²⁴

Femur Fracture

See also Femur Fracture, General

See also Femur Fracture, Proximal

1. Background
 - 0.85% of rodeo injuries²⁴
2. Pathophysiology
 - Bull riding
 - Groin strains common

Thumb Amputation

See also Amputation of Digits

See also Hand Exam

See also Hand Injuries

See also Jersey Finger

See also Gamekeeper's Thumb

See also Urban Cowboy

See also Cowboy Psychology

1. Background
 - Thumb amputations: 0.12% of rodeo injuries²⁴
 - Injuries to the hand or digits: 4.62% of rodeo injuries²⁴
 - 5th most common site of injury for calf roping contestants
 - Most common site:
 - Thumb of dominant hand
 - Higher injury rates among inexperienced contestants
 - American Family Physician: Fingertip Injuries
 - <http://www.aafp.org/afp/20010515/1961.html>
 - American Family Physician: Acute Finger Injuries: Part I Tendons and Ligaments
 - <http://www.aafp.org/afp/20060301/810.html>
2. Pathophysiology
 - Mechanisms of injury in Team Roping
 - During roping
 - Energy of a moving steer is transferred via rope to digit
 - Coil of rope catches thumb of dominant hand
 - Rein entrapment
 - Dallying
 - Wrapping rope around saddle horn after steer is roped

- Dallying usually performed with thumb fully extended
 - "Thumb up" position
 - Rope loops around thumb rather than saddle horn
 - Dallying "thumb down"
 - Increased risk of injury
 - Digits caught between coil of rope and horn of saddle
 - Digits exposed to shearing and crushing forces
 - Worsens prognosis for replantation
 - During dismount
 - Sudden pull on rope
 - Digits are caught between coil of rope and horn of saddle
 - Areas of damage
 - Complete or incomplete amputation
 - Extensive soft tissue damage compared to guillotine injuries
 - Tendons most resilient to injury
 - Arteries least resilient to injury
 - Concurrent fractures may occur
3. Therapeutics
- Acute treatment
 - Rodeo athletes may decide not to have their amputated thumb replanted
 - Roping can be performed as well or better without a thumb
4. See also Cowboy Psychology
5. Long-term care/complications
- Decreased pinch strength
 - Decreased two-point touch discrimination
 - Decreased ROM
 - Cold intolerance
 - Flexion contractures
 - Non-union of fractures
6. Prevention
- Gloves are ineffective in preventing digit amputation in rodeo athletes^{27,35}

Knee Ligaments

See also Knee Exam

See also Knee Injuries

1. Background

- 2.79% of rodeo injuries²⁴
- Most common injury for saddle bronc riding, steer wrestling, calf roping, bullfighters (rodeo clowns)
- Second most common injury for bull riding
- Third most common injury for bareback bronc riding
- Equally common between inexperienced and experienced competitors
- Equal number of injuries to PCL and ACL

2. Mechanisms of injury

- Running
- Planting feet

- Bull riding
 - Rope wraps around ankle during dismount
 - Whip-like effect at knee
 - Steer wrestling/Calf roping
 - Fast dismount with legs fully extended

Gastrocnemius Rupture

1. Background

- 0.06% of rodeo injuries²⁴

See also Lower Extremity Exam

See also Lower Extremity Injuries

See also Musculoskeletal Disorders

Urban Cowboy Syndrome

See also Amputation of Digits

See also Hand Exam

See also Hand Injuries

See also Jersey Finger

See also Gamekeeper's Thumb

See also Thumb Amputation

See also Cowboy Psychology

1. Background

- Urban Cowboy Syndrome:
 - Riding a mechanical bull
 - Consuming alcohol
 - Orthopedic injury (usually hand)
 - Most research done in 1980s
 - Soft tissue injuries also common

2. Pathophysiology

- Mechanisms of injury to hand
 - Hitting mechanical bull
 - Gyration of bull
 - Wrist and forearm pronate in attempt to keep rider away from metal horn
 - If unsuccessful, body hits hand-damages thumb
- Patterns of injury
 - Bull riders' thumb
 - Radial collateral ligament sprain
 - Radial oblique fracture
 - Radial marginal fracture of the proximal phalanx
 - Gamekeeper's Thumb

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