COMMON ROWING INJURIES
Prevention and Treatment

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Rowing Injuries

The majority of rowing related injuries are secondary to overuse/overload, and poor mechanics associated with rowing, ergometer training, running and strength training.

Common sites include
- wrist and hand
- forearm
- shoulder
- rib
- hip
- knee
- back
Traumatic and Overuse Injuries Among International Elite Junior Rowers
Tomislav Smoljanovic, Ivan Bojanic and Jo Hannafin

- Injury data collected from 398 junior rowers at WC, 2007
- 73% reported overuse injury
  - male rate 0.9 injuries per 1000 training sessions
  - female rate 2.36 injuries per 1000 sessions
  - low back > knee > wrist
- 28% reported traumatic or acute onset of injury with 41% of injuries to low back during water or erg training
  - Risk factors included
    - changing side
    - fewer years of experience
    - greater than 7 training sessions/week
Wrist

Crossover tendonitis
- repetitive feathering
- sweep to sculling
- large handle size
- “too-tight” grip

Treatment
- change in mechanics
  - smaller handle
  - thumb on top (erg)
  - change sides
- rest and ice massage
- anti-inflammatory medication
- physical therapy modalities
- local injection
Forearm Compartment Syndrome

- TIGHT forearms
  - pain, swelling
  - symptoms relieved with cessation of rowing

- most commonly related to technique
  - “death grip” on the handle
  - feathering hand

- may require surgical release if not responsive to change in technique
Epicondylitis

- localized to epicondyle of elbow
- lateral pain
  - increases with feathering
  - at catch and release
- medial pain
  - increased with premature elbow flexion
- prevention and treatment
  - strengthening of forearm muscles
  - avoid excessive fatigue
  - light grip
  - Ice after exercise
  - tennis elbow strap during rowing
Hand Hygiene

- blister care
- thin calluses
- designated oars
- clean handles
- concerns:
  - transmission of infection
  - blood borne diseases
  - MRSA
Shoulder Anatomy
Impingement Syndrome

- acute trauma
- mechanical injury
- repetitive overload
  - poor scapular mechanics
  - poor core control
  - shoulder laxity or undiagnosed instability
- over-reaching at catch
- lunge at catch
Treatment

- NSAID
- “relative rest”
- physical therapy
  - rotator cuff strengthening
  - scapular strengthening
  - core stabilization
- subacromial cortisone injection
Prevention

- strengthening of rotator cuff, scapular stabilizers and core
  - external rotation
  - bench pulls
  - seated row

- proper mechanics on erg and in boat
  - avoid overreaching at the catch
  - stable upright posture

- rapid control of posterior shoulder musculature at the catch, early drive, and finish
Shoulder Instability: Treatment

- rotator cuff strengthening
- surgical stabilization
- technical advice
  - avoid over-reaching at the catch
  - avoid shooting the slide
- change sides
  - make sure that the outside shoulder is stable
  - inside arm will compensate
Costochondritis

- inflammation of the rib-cartilage articulation
- insidious onset
- may be associated with clicking
- variable symptoms
- treatment
  - modalities
  - stretching
  - local injections
Rib Stress Fractures

- occur during periods of intense training
- “steady state” training
  - low stroke rate
  - high load per stroke
  - fall and winter
  - long rows and erg pieces
- transition to race pace training
- “intercostal strains are uncommon!
- stress fractures are often misdiagnosed
  - achy rib pain
  - pain with cough or sneeze
  - increased pain at catch or finish
Rib Stress Fractures

- symptoms
  - ill defined thoracic discomfort
  - insidious onset
  - progresses to sharp pain
  - exacerbated by
    - coughing, deep breathing
    - changing position
  - localized discomfort on the affected rib
  - + chest wall squeeze test
Treatment of Rib Stress Fractures

- MODIFY activities
- rest from rowing until minimal pain
- early diagnosis results in earlier return to rowing
- cross training as tolerated to maintain aerobic fitness
  - avoid impact loading
  - bike > elliptical > running
- progression to return to rowing
  - erg with low resistance and high stroke rate
  - progress to increased time on erg with attention to good technique
  - large boat rowing with clamshell or change in button to decrease load
Anterior Hip/Thigh Pain

Can result from anatomy or training

- hip flexor tendonitis
  - “snapping hip”
  - related to inadequate flexibility of anterior hip musculature
  - common during rapid growth spurt
  - training errors on ergometer > water

- FAI (femoral-acetabular impingement)
  - abnormal anatomy of hip joint
  - cartilage injury and labral tears
Knee Pain

Can result from:

- anatomy
  - patellar maltracking
- training errors
- inadequate strength
  - core stability
  - hip and thigh musculature
- poor flexibility
  - quadriceps
  - iliotibial band
  - hip flexors
  - hamstrings
Prevention and Treatment of Knee Pain

- improve hip and knee flexibility and strength
- monitor for the presence of a "painful arc" with repetitive bending
- avoid over compression
- modify foot position in boat and on erg
- monitor mechanics if running for cross-training
- develop platform of strong core prior to free weight strength training
Low Back Pain

- muscle strain
- lumbar disc disease
  - disc bulge or tear
  - disc herniation
  - sciatica
- stress fracture
  - spondylolysis
  - spondylolisthesis
Lumbar Disc Disease

Risk factors

• poor core control
• tight hamstrings
• excessive time on erg at low stroke rate and high load
• poor form on Olympic style lifting
• high loads on lower lumbar discs during rowing stroke
Muscle Activity and Spine Load

- Right latissimus dorsi
- Left latissimus dorsi
- Right L3 paraspinal
- Left L3 paraspinal
- Right T7 paraspinal
- Right gluteus maximus
- Right medial hamstrings
- Right rectus femoris

Graph showing load in newtons over different stages (Catch, Drive, Finish, Recovery).

Image of rowers in action.
Peak Resistance:

- Load at the Oar
- Shear Load at L4
Prevention of Low Back Pain

- core stability
- hamstring flexibility
- good technique
- adequate warm-up
- appropriate rigging
- monitor ergometer load
  - drag setting
  - length of erg pieces
- early evaluation if back pain develops
Ergometer

- stroke rate
- length of piece
- drag settings
- no need for “HEAVY” resistance settings during steady state pieces
- entering the piece
  - avoid beginning from a dead stop
- know drag factor of the specific erg which can be affected by:
  - damper or fan setting
  - dirt (alters the drag factor)
Rowing Injuries

• monitor your teams injury record
• assess the injury patterns, and correlate with your training schedule
• younger athletes may be more prone to certain injuries during times of rapid growth
• teach athletes to differentiate between pain associated with training and pain associated with injury
• longevity in sport is the goal!