

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

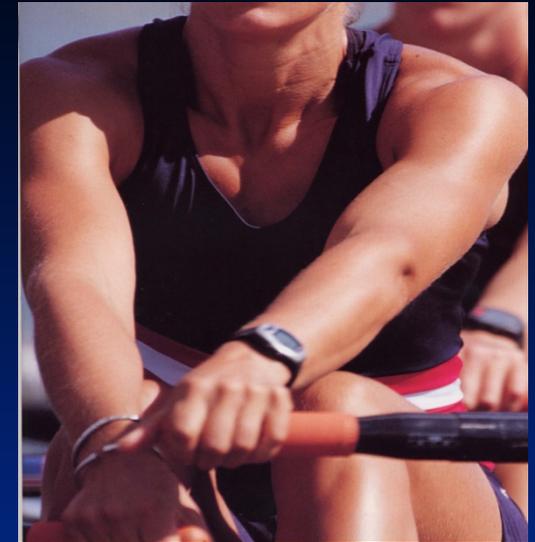
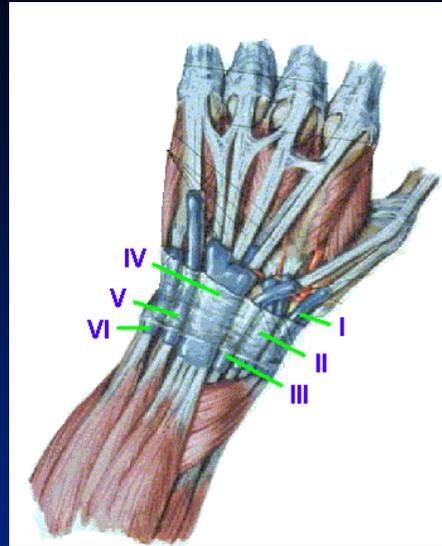
Tomislav Smoljanovic, Ivan Bojanic and Jo Hannafin

- 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

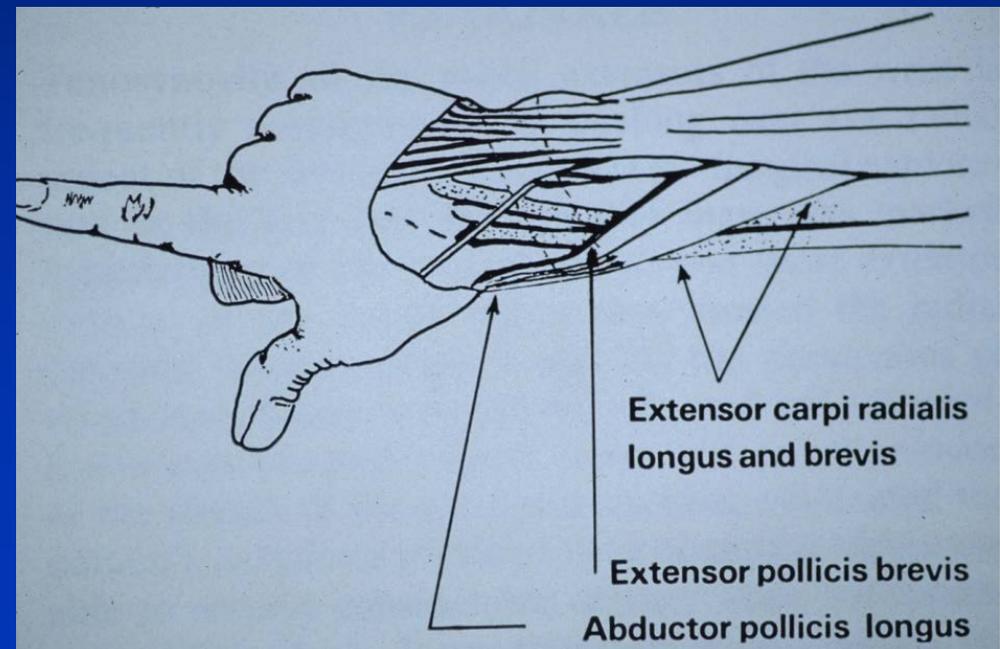
Crossover tendonitis

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



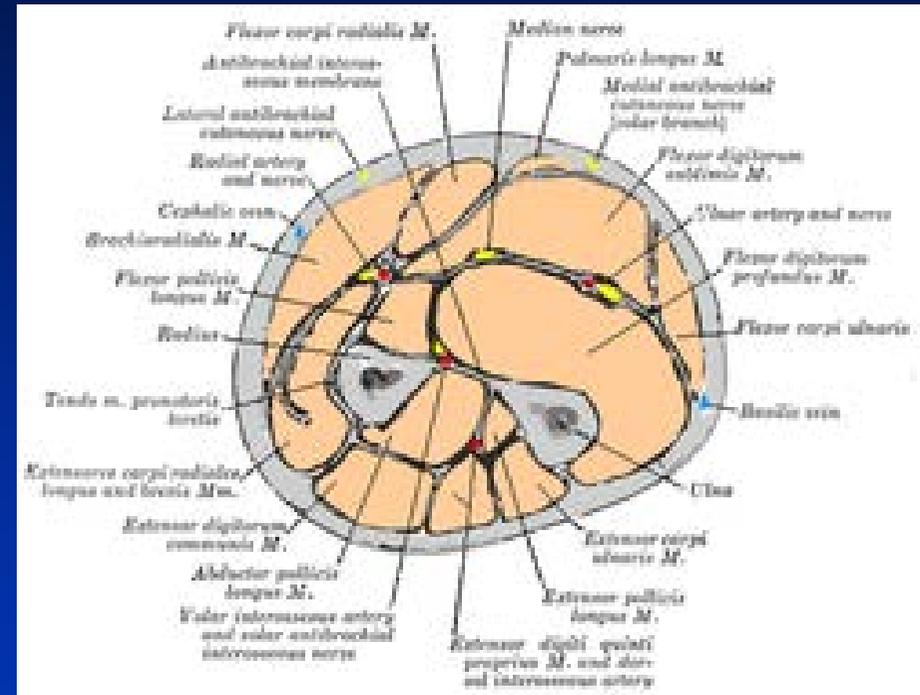
Treatment

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



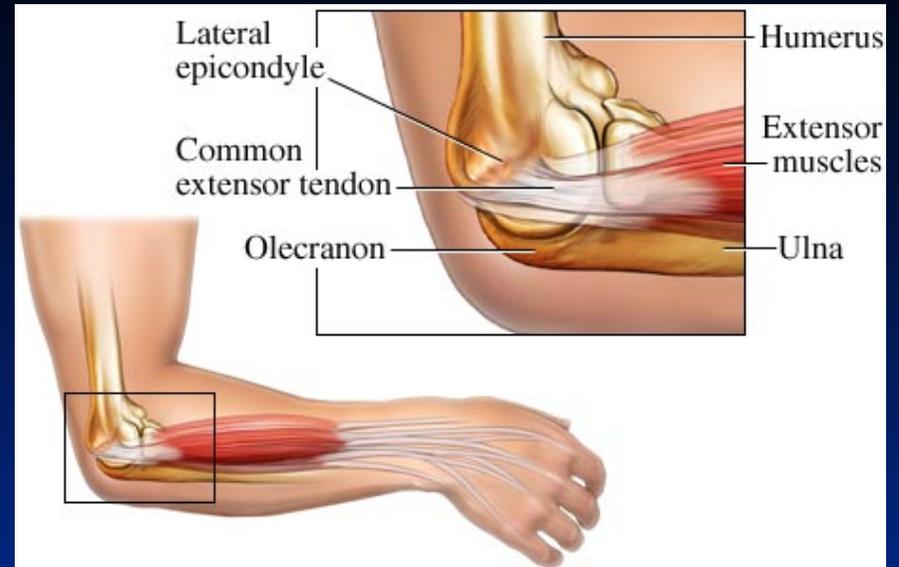
Forearm Compartment Syndrome

- 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

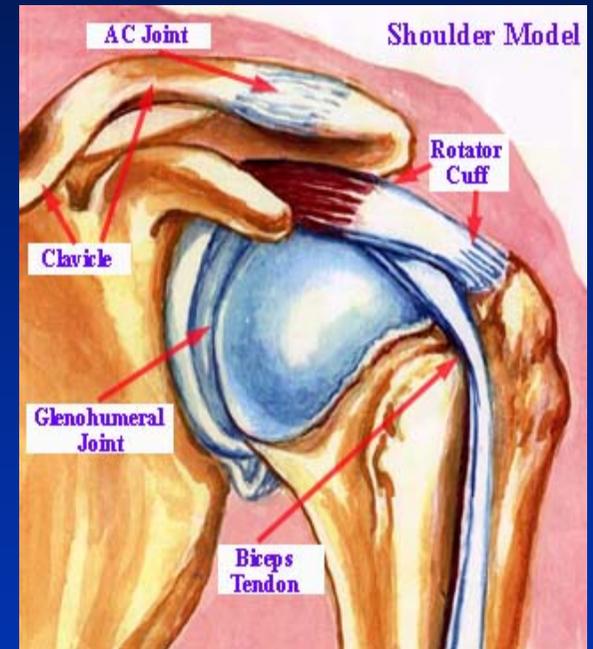
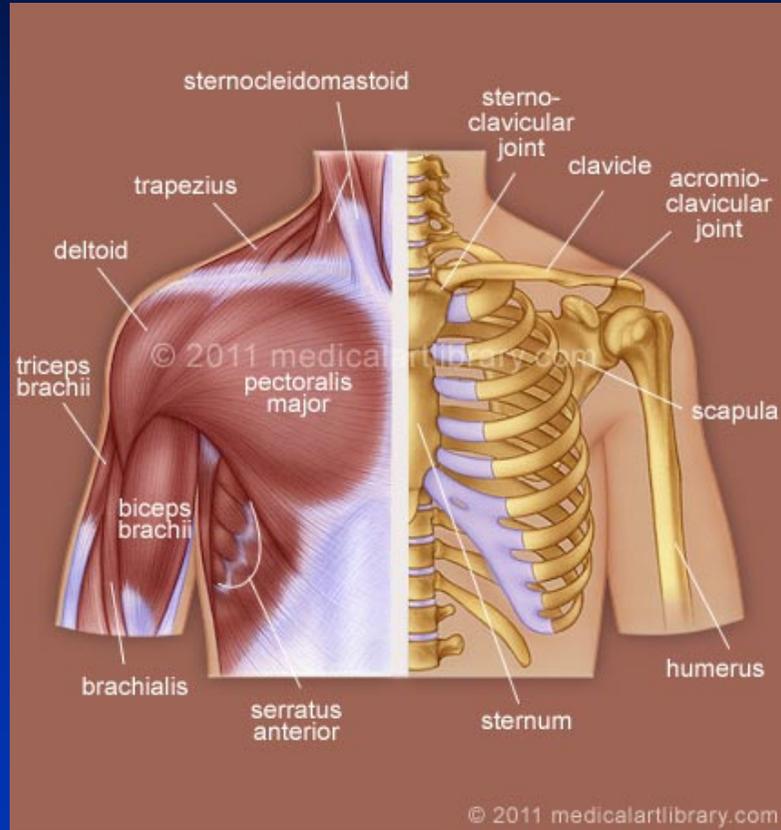
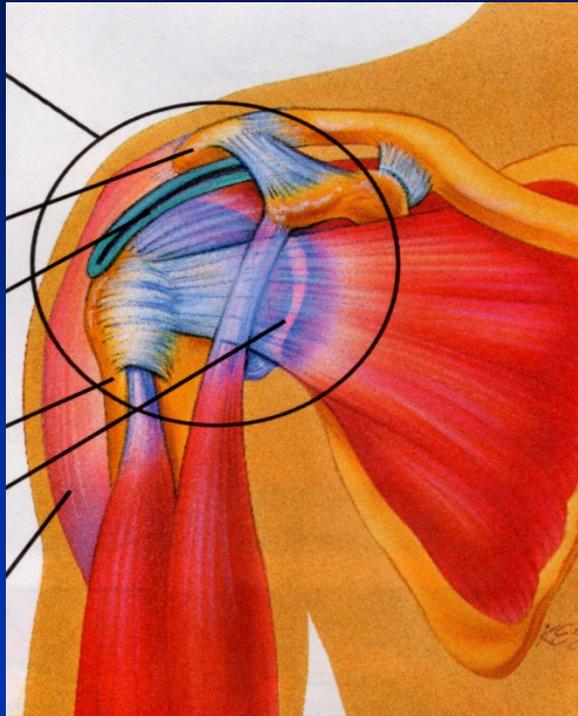


Hand Hygiene

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

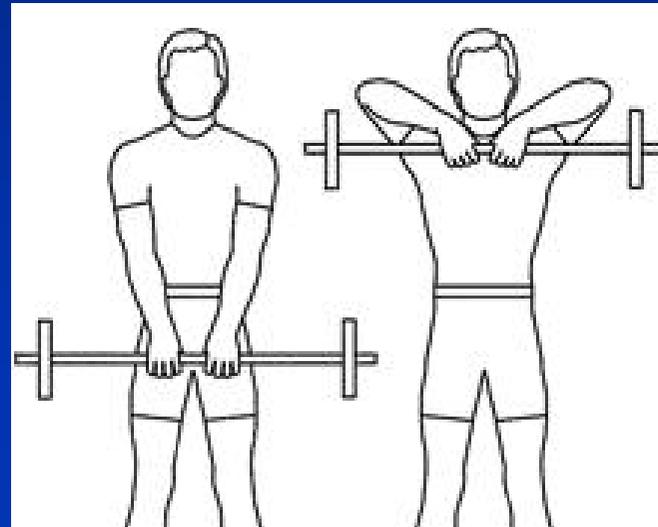
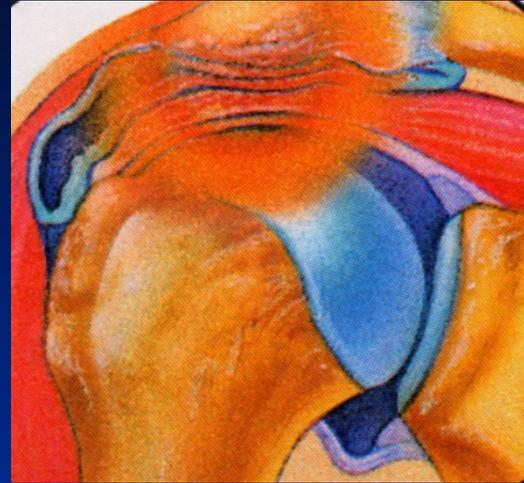


Shoulder Anatomy



Impingement Syndrome

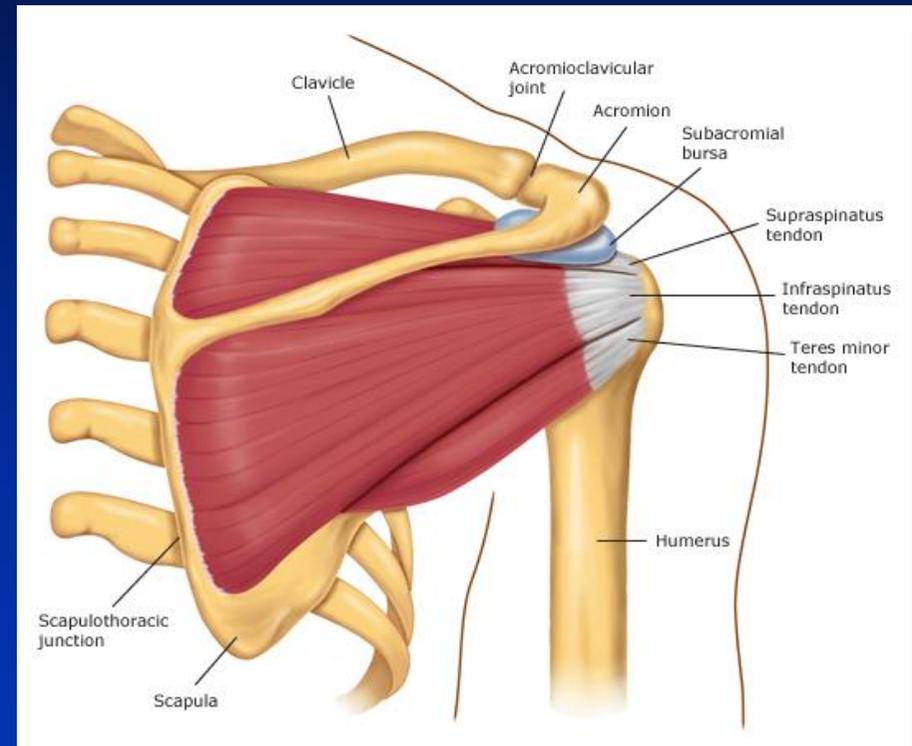
- acute trauma
- mechanical injury
- repetitive overload
 - poor scapular mechanics
 - poor core control
 - shoulder laxity or undiagnosed instability
 - over-reaching at catch
 - lunge at catch



Treatment and Prevention of Impingement Syndrome

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



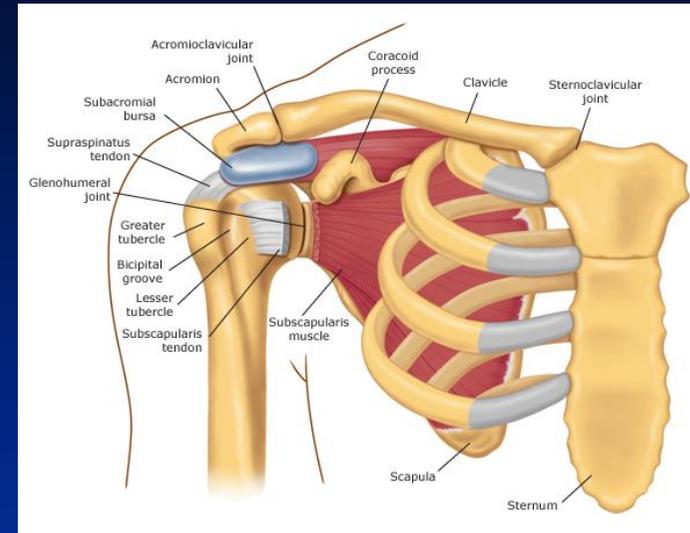
Shoulder Instability: Treatment

- 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



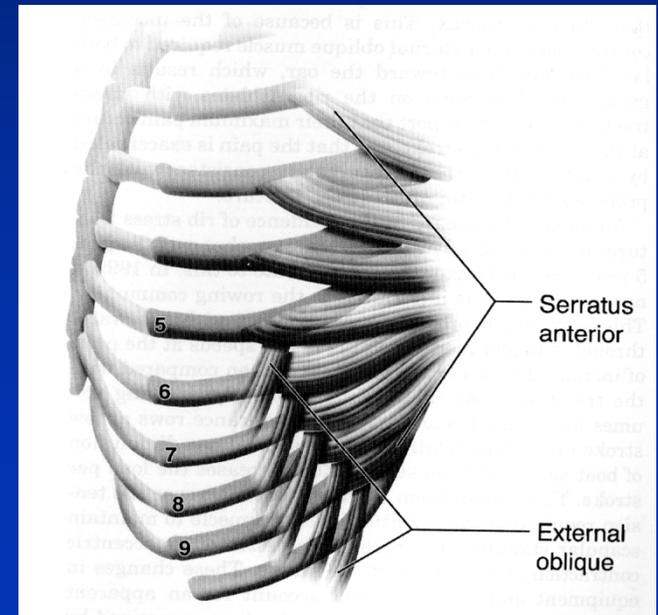
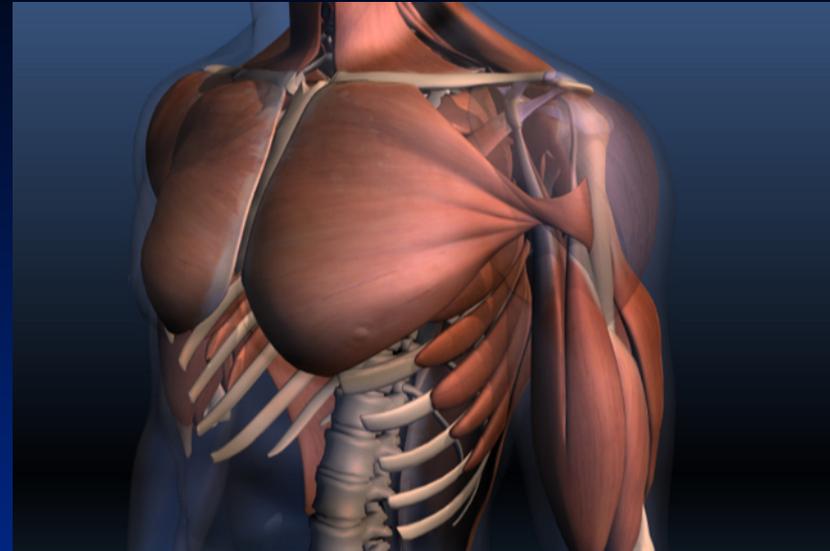
Costochondritis

- 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



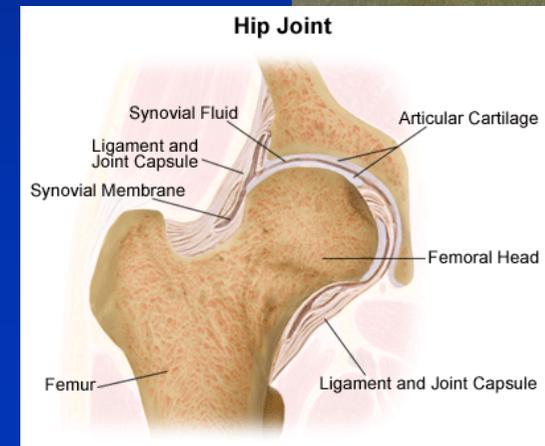
Treatment of Rib Stress Fractures

- 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

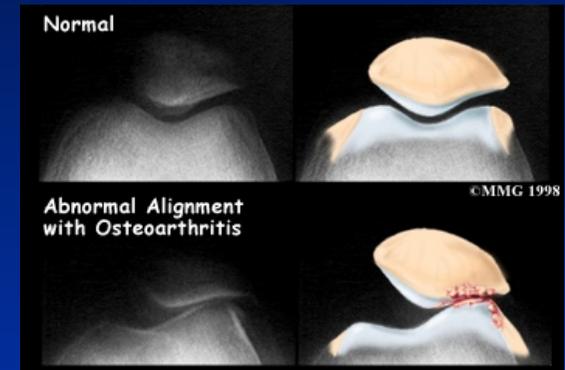
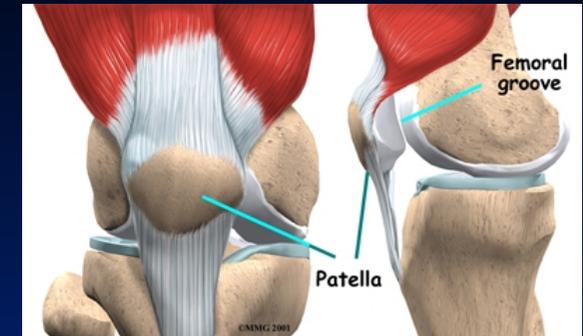
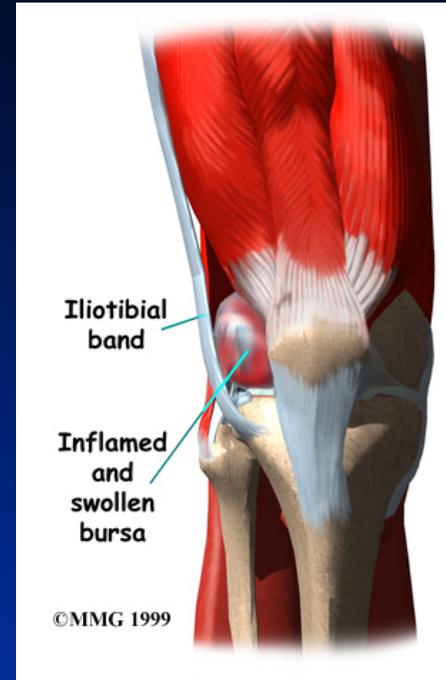
- hip flexor tendonitis
 - “snapping hip”
 - related to inadequate flexibility of anterior hip musculature
 - common during rapid growth spurt
 - training errors on ergometer > water
- FAI (femoral-acetabular impingement)
 - abnormal anatomy of hip joint
 - cartilage injury and labral tears



Knee Pain

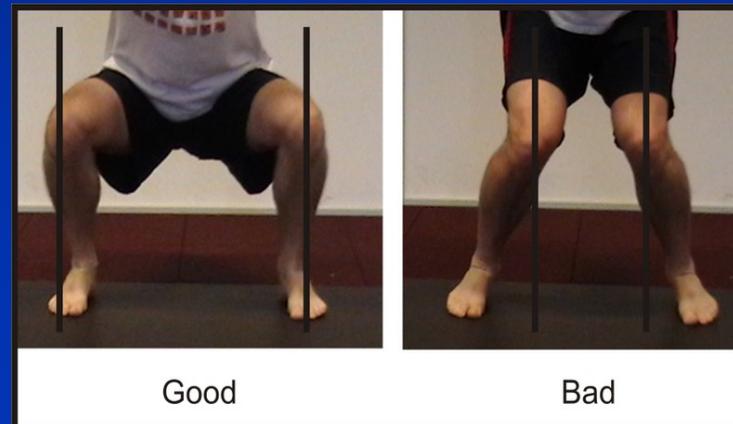
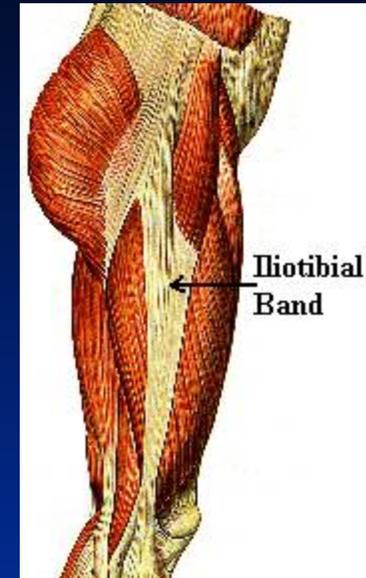
Can result from:

- 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

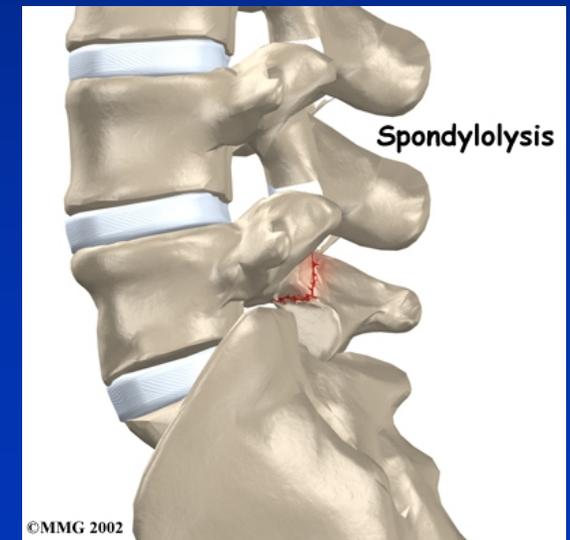
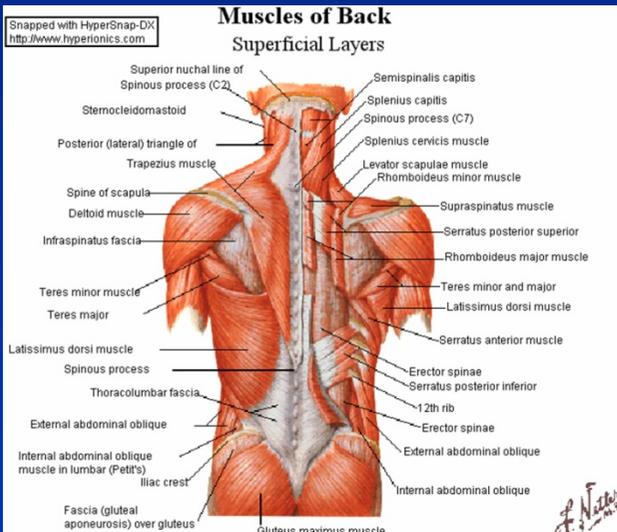
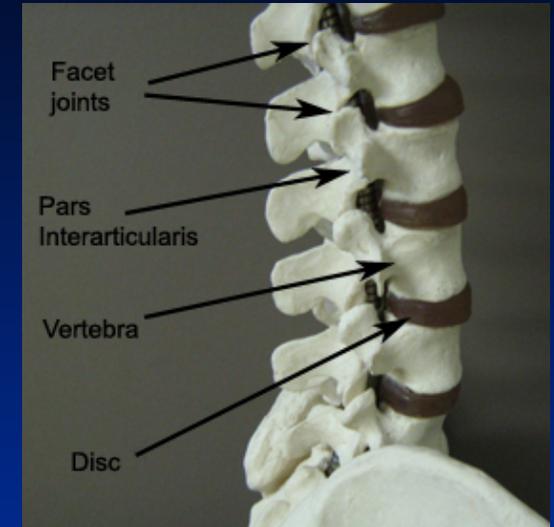
- improve hip and knee flexibility and strength
- monitor for the presence of a "painful arc" with repetitive bending
- avoid over compression
- modify foot position in boat and on erg
- monitor mechanics if running for cross-training
- develop platform of strong core prior to free weight strength training



Low Back Pain



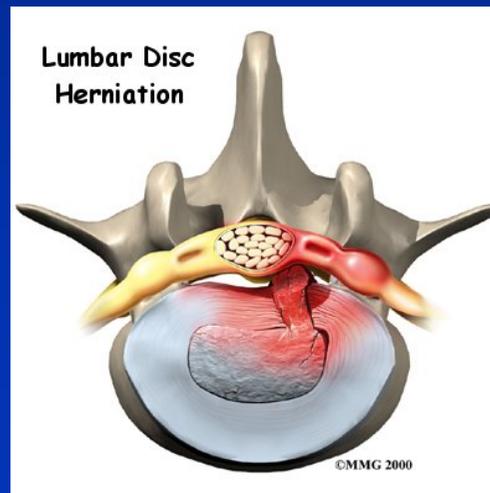
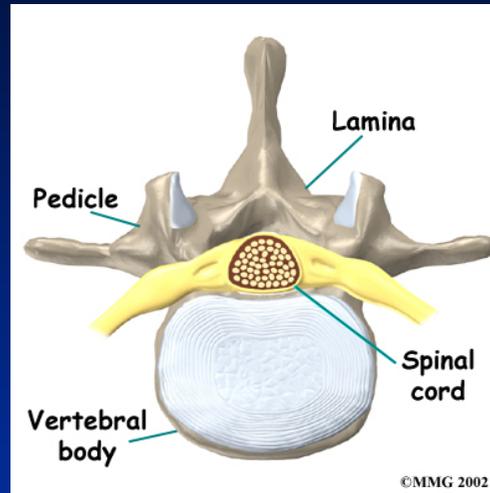
- muscle strain
- lumbar disc disease
 - disc bulge or tear
 - disc herniation
 - sciatica
- stress fracture
 - spondylolysis
 - spondylolisthesis



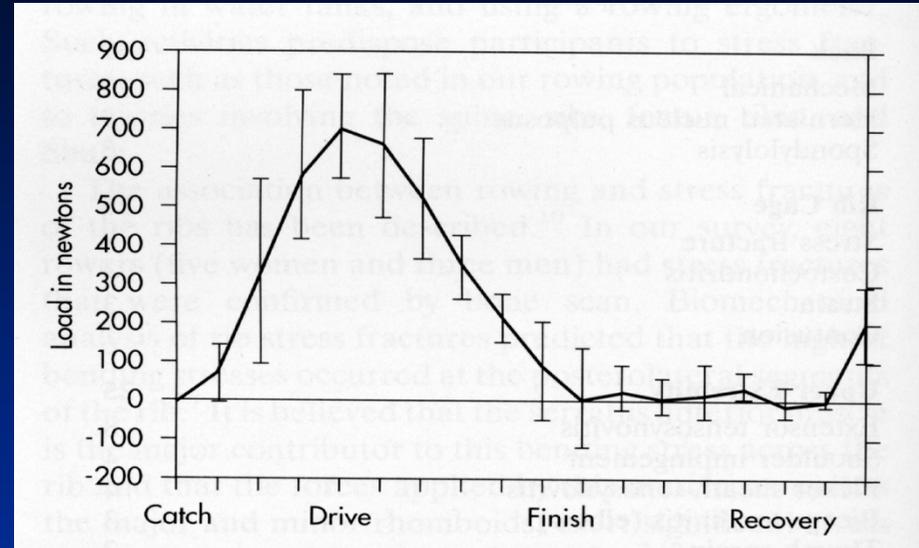
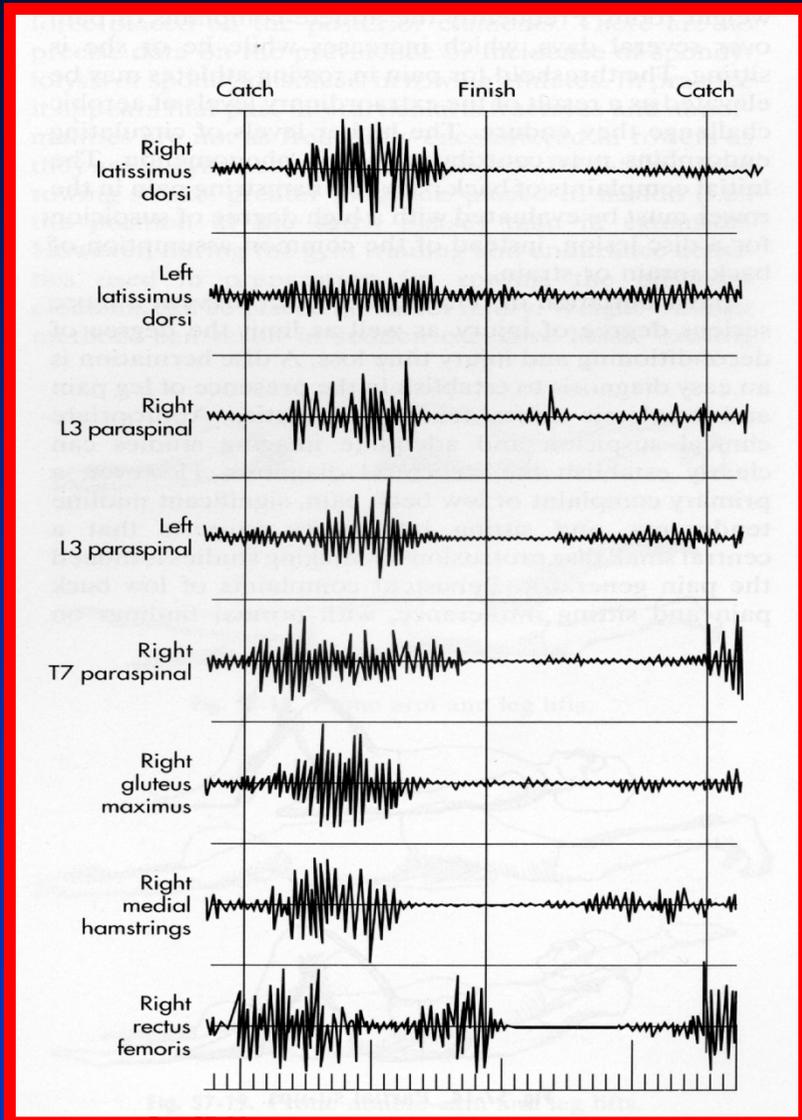
Lumbar Disc Disease

Risk factors

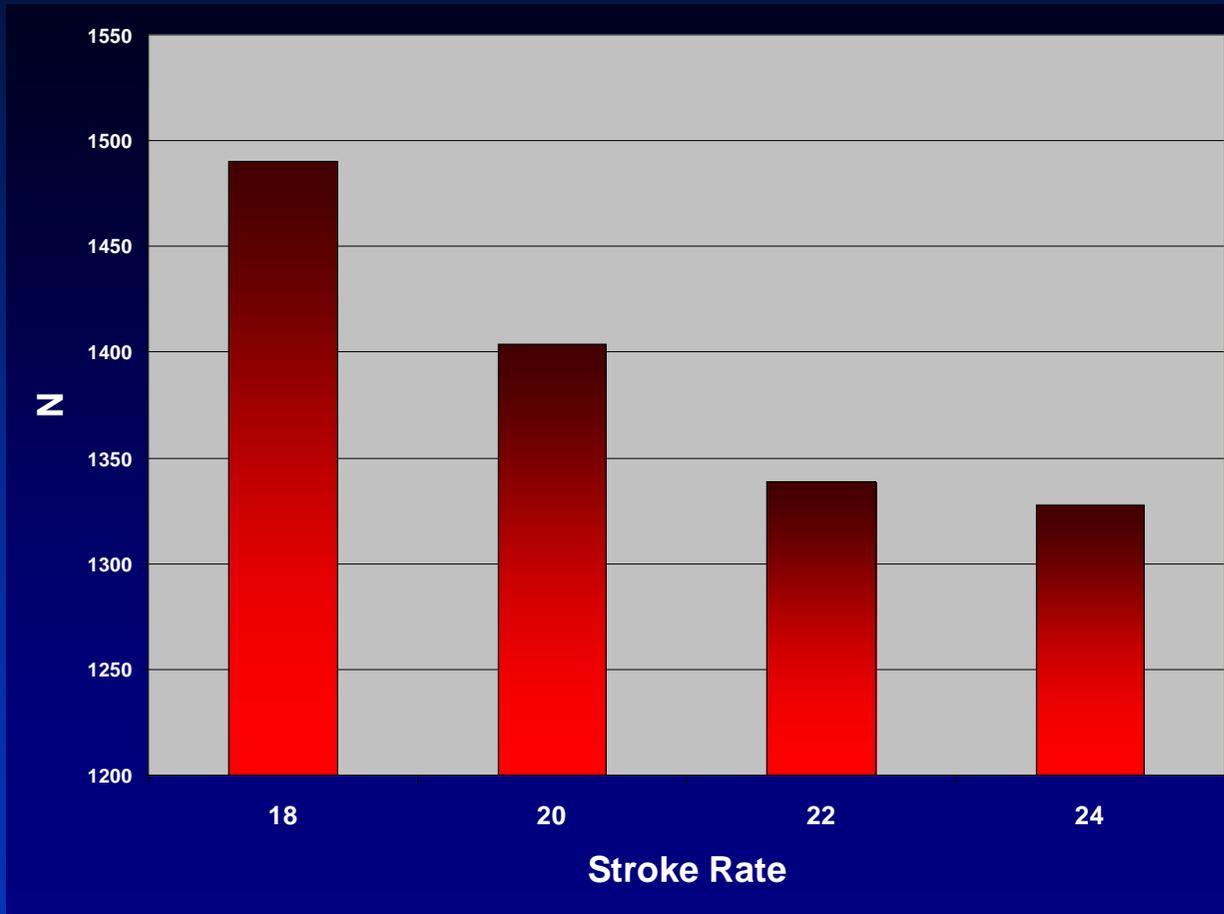
- poor core control
- tight hamstrings
- excessive time on erg at low stroke rate and high load
- poor form on Olympic style lifting
- high loads on lower lumbar discs during rowing stroke



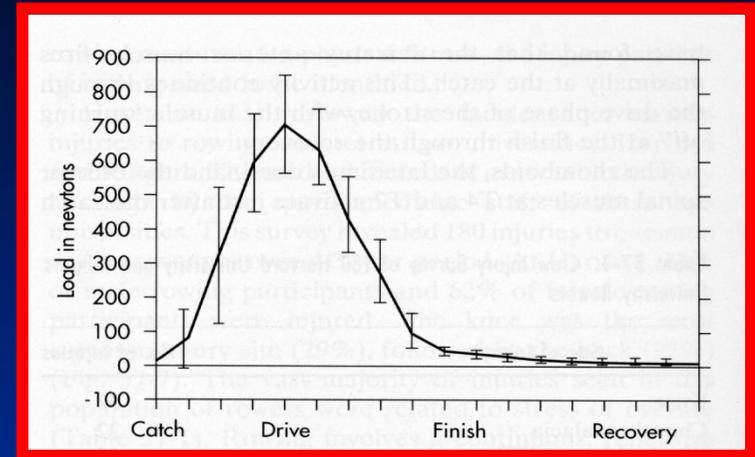
Muscle Activity and Spine Load



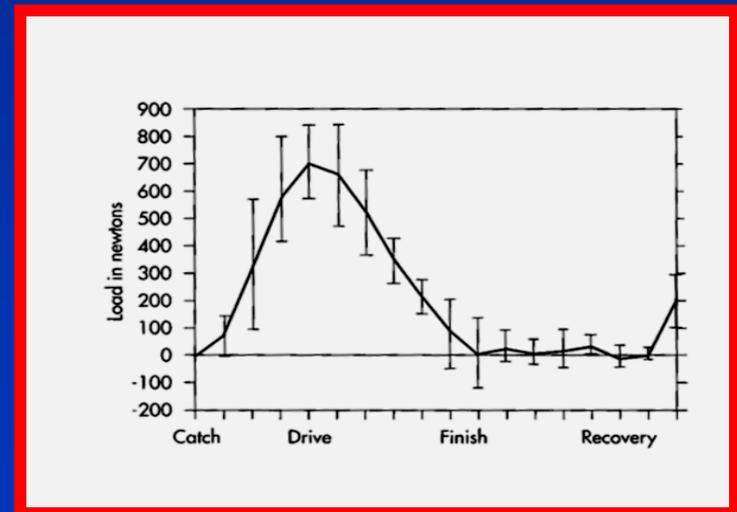
Peak Resistance:



Load at the Oar

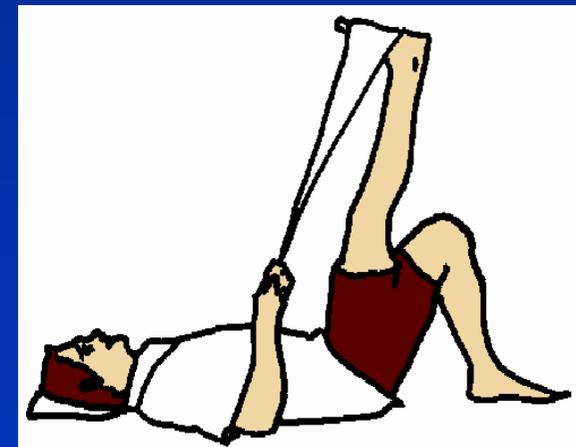


Shear Load at L4



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!



THANK YOU!!!

