

Care of the Extreme Recreational Athlete

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Objectives

- Review current popular workout programs amongst the athletic population
- Review typical injuries encountered by athletes participating in these programs
- Review treatment options for these injuries



Extreme Conditioning Programs

- High volume, aggressive training workouts
 - Variety of high-intensity exercises
 - Timed, max number of reps
 - Short rest intervals
- Focus on functional movements
 - Favorite of military combatants
- Includes High Intensity Interval Training (HIIT) programs
- Studied in 2010 with “Consensus Paper on Extreme Conditioning Programs in Military Personnel”
 - Composed by Consortium for Health and Military Personnel (CHAMP) and ACSM



Extreme Conditioning Programs

- Who's doing it?
 - Military
 - Special forces
 - First Responders
 - Weekend Warriors
 - Current/former athletes
 - Mom and grandmom



Popular Programs

- CrossFit
- P90X
- Insanity
- Gym Jones
- PT Pyramid



CrossFit*

- Workout regimen designed to develop a broad, general and inclusive fitness
 - Developed by Coach Greg Glassman
 - Designed to prepare trainees for any physical contingency
 - Constantly varied functional mvts
 - Performed at relatively high intensities



Crossfit

- CrossFit Community
 - Workouts done in groups
 - 5,500 affiliated gyms
 - 35,000 accredited trainers
 - CrossFit Journal
 - CrossFit Games
- Talking CrossFit
 - Affiliate-official CrossFit affiliate
 - AFAP-as fast as possible
 - AMRAP-as many reps as possible
 - Box-gym
 - WOD-workout of the day
 - SWOD-strength workout of the day



P90X

- Home workout program designed around muscle confusion
 - Created by personal trainer Tony Horton
 - Designed to avoid fitness plateaus
- 12 workout DVDs
 - Minimal equipment required
 - 90day calendar



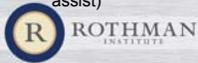
INSANITY

- Home program based on interval training
 - 10 workout DVDs
 - 60 day calendar
 - No equipment required



Exercises

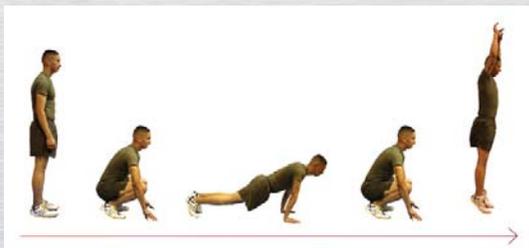
- Air Squat
- Back Squat
- Ball Slams
- Barbell Snatch
- Bar Muscle-up
- Box Jump
- Burpee
- Clean & Jerk
- Dip
- Double Unders
- Dumbbell Snatch
- Front Squat
- Handstand Push-up
- Handstand (self assist)
- Hang Clean
- Hang Power Clean
- Hang Power Snatch
- Hang Snatch
- Jerk
- Kettlebell
- Knees to Elbows
- Muscle-up
- Overhead Squat
- Power Clean
- Power Snatch
- Pressing Snatch
- Balance
- Pull-up
- Push Jerk
- Push Press
- Push-up
- Ring Dips
- Shoulder Press
- Snatch
- Thruster
- Wall Ball
- Walking lunges
- Weighted Pullup



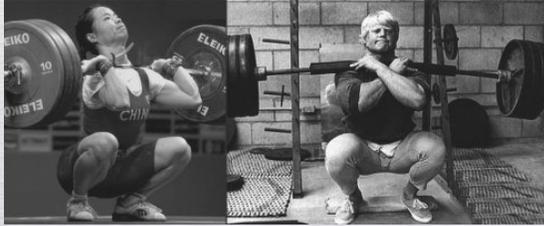
Air Squat



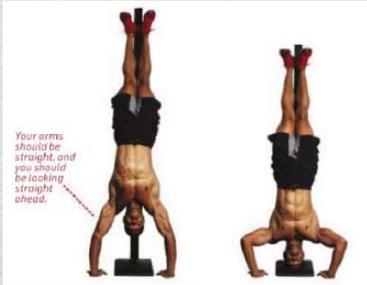
Burpee



Front Squat



Handstand Pushup



Hang Clean



Jerk



Kettlebell Swing



Overhead Squat



Push Press



Snatch



Thruster



Wall Ball

Wall Ball Progression

CrossFit 7.14

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INJURIES

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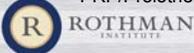
Shoulder

- Rotator cuff tendonitis
 - Caused by microtrauma secondary to overuse
 - particularly overhead lifts
 - Result of impingement of rotator cuff on coracoacromial arch
 - Often associated with proximal biceps tendonitis
 - High volume push ups

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Shoulder

- Rotator cuff tendonitis
 - c/o pain, weakness and loss of motion
 - Difficulty reaching behind and overhead
 - Painful laying on affected side
 - Physical Exam
 - Treatment
 - **Rest**
 - NSAIDs, PT, Corticosteroid inj
 - Surgery for complete tears
 - PRP/Prolotherapy



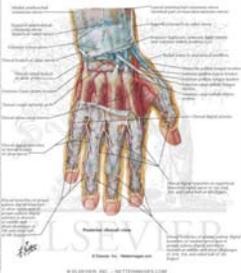
Shoulder

- Osteolysis of the distal clavicle
 - Caused by overuse, particularly common in weightlifters
 - Primary complaint is superior shoulder pain
 - Pushups/bench press
 - Crossover test (+) on exam
 - X-ray, bone scan, MRI
 - Treat with activity modifications and NSAIDS
 - Distal clavicle excision



Wrist

- Sprain/Strain
 - Repetitive loading in extension
 - Pushups, front squats, cleans
 - Complain of pain with extension and gripping/lifting
 - Treat with bracing and rest

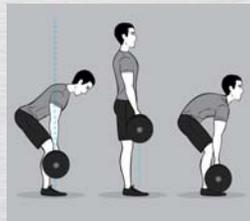
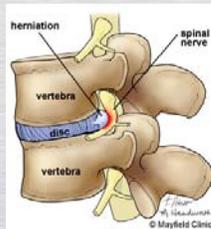


Lumbar

- Sprain/Strain vs Radiculopathy
 - Caused by fatigue and poor form
 - Performing heavy lifts late in workouts
 - Repetitive ab exercises
 - Complain of focal pain vs leg pain/numb/ting
 - Stork test
 - Treat with rest, NSAIDs, core strengthening
 - Epidural for radicular symptoms



Lumbar

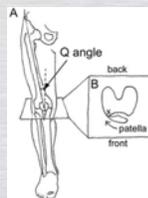


Dead lift, Cleans, Snatch



Knee

- Patellafemoral pain
 - Generalized anterior knee pain
 - Predisposing factors
 - Quad strength imbalance
 - Patella malalignment
 - Increased Q-angle
 - Flat feet
 - Repetitive loading of the joint
 - Squatting, plyometrics, running



Knee

- Patellafemoral Pain
 - Pain with sitting and descending stairs
 - May complain of snapping/popping
 - Tenderness on exam
 - Pain with patella compression
 - Treatment
 - **REST**
 - Functional rehabilitation
 - Correct underlying abnormalities
 - Bracing



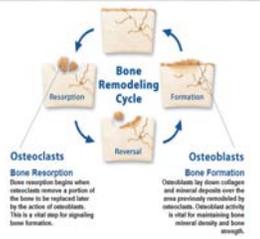

Knee

- Patella Tendinitis
 - Aka Jumper's Knee-inflammation of patella tendon
 - Secondary to repetitive jumping activities
 - Primary complaint is pain with activity
 - More severe cases will have pain at rest
 - Treatments
 - **REST**
 - PT-eccentrics, Ionto-/phonophoresis, modalities
 - PRP/Prolotherapy for refractory cases



Stress Injuries

- Overuse injuries along a spectrum ranging from microfracture to complete structural failure
 - Failure of osteoblasts to heal periosteal resorption caused by osteoclast activity due to stress induced activities
 - Tibia most common site




Stress Injuries

- Primary complaint is insidious onset of pain with activity
 - More severe injuries present with pain at rest
- Exam
 - Point tenderness
 - May even feel callus
 - Tuning fork test
 - Stork Test
- Radiographs
 - Xrays usually negative early
 - Bone Scan
 - MRI/CT



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Stress Injuries

- Treatment
 - **REST**
 - Pain control- ? Use of NSAIDs
 - Bone Stimulator for chronic fx's
 - Maintain fitness with no/low impact activities
 - Pool/elliptical
 - Begin when pain free at rest
 - Gradual return to impact activity

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Medical Conditions

- 21 y/o WM presents with c/o B/L bicep pain x 2days
 - Started after heavy arm workout with bodybuilder friend
 - Exam demonstrated mild-mod bicep ttp
 - No neurovasc changes
 - Returned to office 4 days later with increased pain and swelling right arm, mild erythema around elbow
 - Sever TTP on exam, no neurovasc changes
 - Doppler U/S negative
 - Started on Abx for suspected cellulitis
 - Called office next day complaining of tingling in R hand → sent to ER
 - ER called to d/c pt, requested CK level → 7,000

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Medical Concerns

- Exertional Rhabdomyolysis
 - Breakdown of skeletal muscle secondary to prolonged, heavy, repetitious exercise
 - “Too much, too fast, too soon, too novel”
 - Present with severe pain and swelling
 - Dark brown urine
 - Significantly decreased performance
 - Predisposing factors
 - Heat, humidity, dehydration
 - Poor physical conditioning
 - Altitude, sickle cell trait, hereditary defects of ATP synthesis



Medical Conditions

- Exertional Rhabdomyolysis
 - History
 - Iowa football 2011
 - US Marines- 1960s
 - 3 college wrestling deaths 1997
 - Prisoners
 - Police and firefighting training
 - Multiple accounts in CrossFit



Medical Concerns

- Exertional Rhabdomyolysis
 - Often subclinical, maybe some dark urine
 - Diagnosed with elevated CK levels
 - Normal<200, acute cases up to 10,000
 - Treat with aggressive hydration
 - Monitor electrolytes
 - Severe cases may require alkalinizing urine
 - Complications
 - Renal failure
 - Acute Compartment Syndrome
 - Electrolyte abnormalities

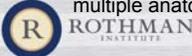


SUMMARY



Positive Characteristics

- Variety of exercises
 - Resistance training
 - Running intervals
 - Bodyweight exercises
- High intensity metabolic conditioning
 - Improved fitness
 - Decreased body fat
- Focus on core strength
- Incorporates “functional movements”
 - Variety of multijoint and total body movements in multiple anatomical planes



Negative Characteristics

- Limited rest intervals
 - Early fatigue
 - Increased oxidative stress
 - Greater perceived effort → loss of form
- Overuse/Overreaching/Overtraining



Recomendations

- Proper medical clearance
- Acclimatization
 - Gradual introduction and progression of advanced exercises, duration and intensity
- Supplemental conditioning programs during acclimatization period based on individual's goals, experience and needs
- Include rest periods between sets and days of exercise
 - Planned periodization and variation
- Monitor for injuries or overtraining
 - Include periodic evals to track progress



References

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