The Master’s / Aging Athlete
Margot Putukian, MD., FACSM
ACSM Team Physician Course, Part II
Feb 6-10, 2013, Miami, Florida

Objectives
At the end of this presentation, participants should be able to

1) Identify select issues for the master’s / aging athletes
2) Understand differences in the aging athlete regarding cardiopulmonary function, muscle strength and balance
3) Understand differences in the aging athlete regarding specific musculoskeletal injuries

Definition
Defining the “Master’s Athlete” / Aging Athlete; different age groups have been used for different sports in terms of Master’s competitions. For purposes of this presentation; masters = >50 years old

Physiological changes with aging
- Changes in cardiopulmonary function; cardiac output, blood pressure, VO2 max, Vital Capacity
- Changes in musculoskeletal function / body composition; strength, endurance, balance, cartilage & tendon structure, bone mass, flexibility, fat free mass
- Changes in metabolic function; metabolic rate, glucose tolerance, lipids, insulin sensitivity
- Changes that occur as a result of chronic disease; (osteoarthritis, hypertension, coronary artery disease, osteopenia/osteoporosis, obesity) as well as the medications use by older athletes

Exercise may mitigate some of these changes that occur with age

Strength Changes with aging
- Muscle mass declines with age; after age 35 1.25% per year with accelerated decline in strength after age 70
- Muscle power lost at greater rate than muscle endurance
- Additional factors in muscle aging; genetic, hormonal, nutritional, activity level
- Changes occur similarly in men & women

Resistance training exercise may mitigate some age related changes in muscle strength
Cardiovascular changes with aging

- Cardiovascular conditions for consideration in the aging athlete include coronary artery disease (CAD), hypertension, valvular heart disease, cardiomyopathies, and arrhythmias.
- Vigorous physical exertion can trigger myocardial infarction (MI) or sudden cardiac death (SCD) in those with underlying cardiovascular disease.
- Regular exercise, both aerobic and strength training, may decrease the risk of fatal and non-fatal MI, hypertension and CAD.
- It is difficult to predict the risk of SCD that occurs with vigorous physical exertion, but it does increase as age increases.
- Overall, the benefits of engaging in regular exercise far outweigh the risks.
- Exercise EKG testing may be indicated for the master’s / aging athlete, and some restrictions in activity and/or sports participation may need to be considered in masters athletes that have cardiovascular conditions.

The Sports Physical in the Master’s / Aging Athlete

- Emphasizes cardiovascular, musculoskeletal & neurologic systems.
- Complete medical history & review of systems, identify medication use, exercise related medical issues (heat/cold illness, vision, nutrition), other safety issues.
- Identify individuals at risk for cardiovascular complications with exercise, including occult disease (utility of exercise EKG testing).
- Identify individuals at risk for musculoskeletal injury and make exercise recommendations.
- Identify contraindications to exercise and or exercise testing.

Select Musculoskeletal Issues

Osteoarthritis

- Degeneration of articular cartilage including loss of thickness, attempts at repair and remodeling, sclerosis of subchondral bone, osteophyte formation.
- Contributing factors; age, obesity, prior history of trauma, specific sporting activities, gender, congenital abnormalities or malalignment, previous injury, muscle weakness/imbalance.
- Pain and swelling are typical symptoms.
- Differential diagnosis should include intra-abdominal/pelvic pathology, nerve entrapments, other musculoskeletal issues.
• Treatment often geared towards weight reduction, symptom relief and appropriate
  sport/activity selections

Tendon ruptures/tendinopathies; Achilles, biceps, rotator cuff, elbow
• Increase with increasing age
• Fluoroquinolone use increases risk for tendon ruptures
• Mechanism; often sudden eccentric load during either acceleration or deceleration, or sudden
  fall (RC) for ruptures/tears, overuse for tendinopathies
• Presentation may be delayed, treatment options vary depending on degree of tear / extent of
  tendinosis

Lumbar Spinal Stenosis
• Narrowing can be central, lateral and/or neuroforaminal
• Pain from either direct compression of nerve root and/or blood flow disruption
• Contributing factors; age, degenerative changes (disk, facet, ligament) or disk herniation,
  spondylololisthesis, synovial cyst, epidural lipomatosis
• Typical symptoms; pain from back/buttocks into lower extremity with walking, relieved by
  sitting or forward bending. Can also occur as a result of prolonged standing, as well as
  numbness, tingling, fatigue and weakness
• Treatment options vary; not all require surgery

References
1. American Academy of Family Physicians, American Academy of Pediatrics, American College of Sports
   Medicine, American Medical Society for Sports Medicine, American Orthopaedic Society for Sports
   Medicine, and American Osteopathic Academy of Sports Medicine: Preparticipation Physical Evaluation,


17. Haaland, DA, Sabljic, TF, Baribeau, DA, Mukovozov, IM, Hart LE


