Getting Ready to Get Active

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Presentation Goals

- The effects of aging on our bodies
- The physiological benefits of exercise
- Exercise types and program design
- How to initiate a new exercise program
- How to prevent and treat overuse injuries associated with exercise

Definitions

- **Exercise**
  - Bodily exertion for the sake of restoring the organs functions to a healthy state or keeping them healthy
    - Stedman's Medical Dictionary (25th edition)
- **Cross training**
  - Combining exercises to work various parts of the body
  - Reduces risk of overworking single body part
- **Envelope of function**
  - Each individuals' level of ability and tolerance to exercise
    - Can expand with appropriate training
    - Not infinite

The Effects of Aging

- Muscle size and strength decreases
- Bone mass and density decreases
- Tendons and ligaments become less elastic
- Joint cartilage degenerates
- Balance control deteriorates
- Metabolic rate slows

The Effects of Aging

- **Combine all the effects…**

  - Increased body weight
  - Increased risk for injury/pain/stiffness
  - Increased risk for falls
  - Increased risk for major medical problems
    - High blood pressure
    - High cholesterol
    - Diabetes

Benefits of Exercise

- Improve strength, endurance, and flexibility
  - Muscles, tendons, bones, ligaments and joints
- Reduce risk for injury, pain, stiffness
  - With proper program
- Improve mobility and independence
- Improve balance and posture
  - Reduce risk of falls
- Maintain or reduce body weight

Benefits of Exercise

- Improves heart and lung function
  - Increases metabolic rate
- Reduce medical risks
- Reduce cancer risk (breast and colon)
- Improve psychological well-being
- Improves immune response
- Improves sleep
- Improves chances of living longer

Risks of Exercise

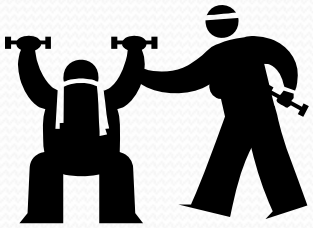
- Injury to joints, muscles, bone etc…
  - Overworking tissues not yet acclimated
  - Typically when starting a new exercise or when attempting to increase exercise program

- General medical concerns
  - Underlying heart, lung, kidney disease
  - Check with regular physician before starting

Exercise

Types of Exercise

- Balanced exercise program
  - Range of motion/flexibility
  - Strengthening
  - Endurance/cardiovascular
- Alternate workout programs
  - Cross training
    - Utilize different muscle groups
    - Avoid repetitive stress on same body regions

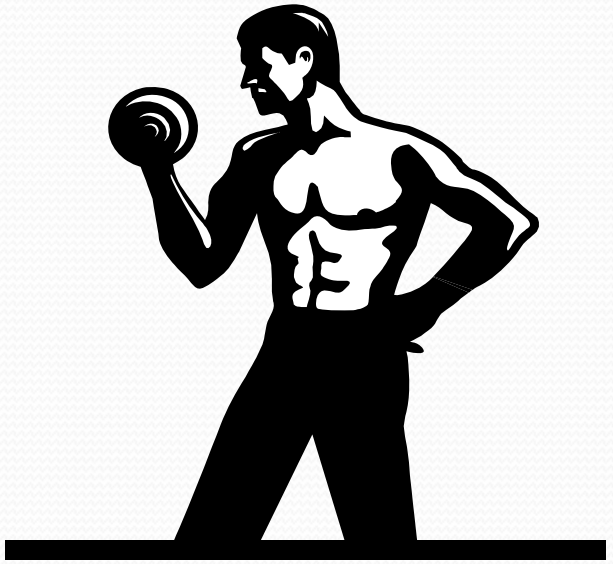


Range of Motion

- Stretching
  - Reduces stiffness and improves flexibility
  - Work within motion joint allows
- Used as warm-up and cool-down exercises
- Examples…
  - Yoga
  - Tai Chi
  - Pilates

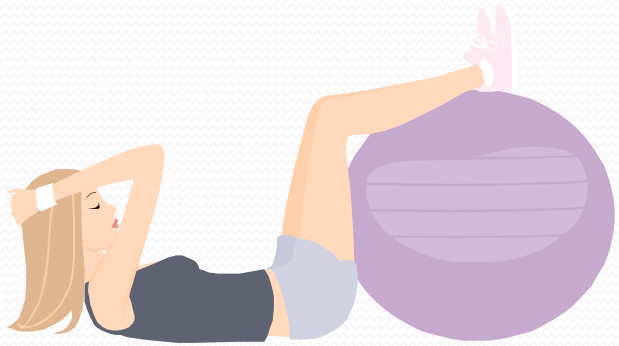
Strengthening

- Maintain or improve muscle strength
  - Power
    - Max rep
  - Endurance
    - Number of reps
- Isometric
  - Tighten muscle without moving joint
- Isotonic
  - Move joint as muscle tightens
- Lower resistance and higher (15-20) repetitions
  - Less risk for injury



Strengthening

- **Core exercises (stabilization)**
  - Consists of…
    - Back, abdominal, hip, and thigh regions
  - Will improve exercise performance
  - Will reduce incidence of injury
  - Should be part of a balanced exercise program



Endurance

- Improve cardiac and pulmonary efficiency
- Improve aerobic capacity of muscle
- Most effective for weight reduction
- Find balance between high impact and low or non-impact activity
  - High and medium impact
    - Running and jumping
  - Low and non-impact
    - Walking, elliptical trainer, stair stepper
    - Biking and swimming
    - Cross country skiing

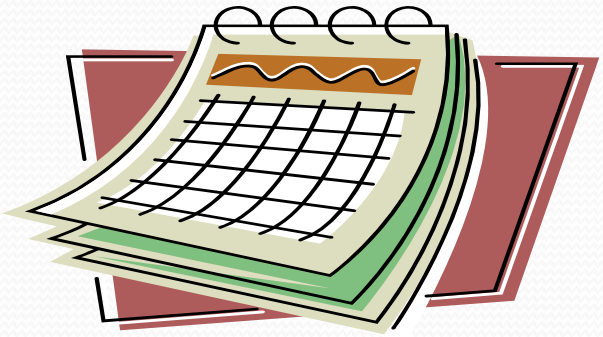
Getting Started

- Often the toughest part of exercising
- Check with regular physician to determine safe level of exertion
- Set reasonable goals
- Make it fun!

Getting Started

- Choose exercises that can be done year round
- Start slow
  - Allow body to get accustomed to the activity
  - Flexibility exercises very important when starting
- Establish a schedule
  - Comfortable time of day
- Wear comfortable clothing and supportive shoes
  - Walking or running shoe
    - Arch support
  - Breathable, layered clothing

How Often?



- Initial goal
  - 30 minutes of balanced exercise
  - 5 days per week
- Break into more than one daily session if necessary
- Build up duration and frequency of exercise gradually
  - Goal
    - 5 days per week
    - Balanced program
      - 30 minutes of endurance exercise per each session
- Consider using daily chart to track time exercising

Nutrition

- Balanced diet
  - Carbohydrates
    - 2/3 of daily caloric intake
    - Fruits, vegetables, whole grains
  - Protein
    - 1/3 of daily food intake
      - Protein-rich foods
    - Building block for muscle
    - Protein-rich snack
      - After muscle damaging workout
        - Heavy weight-training
        - Long endurance event
  - Fat
    - 20-30% of daily calories
    - Part of all cell membranes
    - Essential fatty acids
      - Omega-3

Hydration

- Appropriate hydration essential for optimal performance
  - 2% body fluid loss impairs performance
  - >2% can impair cardiac and mental function
- Fluid intake guidelines
  - Pre-workout
    - 16-20 oz. 2 hours before
    - 10 oz. 20 minutes before
  - During workout
    - 4 oz. per every 15 minutes
  - Post-workout
    - 24 oz. per every pound of body weight lost

Exercising Tips

- Before exercise
  - Warm up
    - Range of motion and light strengthening exercises for ~15 minutes prior to starting endurance exercise
    - Start at slow pace and gradually increase pace
  - Apply heat to area you will be exercising

Exercising Tips

- During exercise
  - Exercise at comfortable pace
    - Should be able to speak
  - Breath regularly
    - Don't hold breath
  - Keep well hydrated

Exercising Tips

- During exercises
  - **Warning signs**
    - Chest tightness or pain
    - Severe shortness of breath
    - Feeling lightheaded or nauseated
    - Sharp joint or muscle pain
  - Cease exercising
    - Contact your physician

Exercising Tips

- After exercise
  - Cool down
    - 5-10 minutes
    - Allow heart rate to slow down and muscles to relax
    - Slower pace of exercise activity
    - Gentle stretching
    - Apply ice to areas exercised (15-20 minutes)

Injury Prevention

- "**An ounce of prevention is worth a pound of cure.**"
  - Ben Franklin

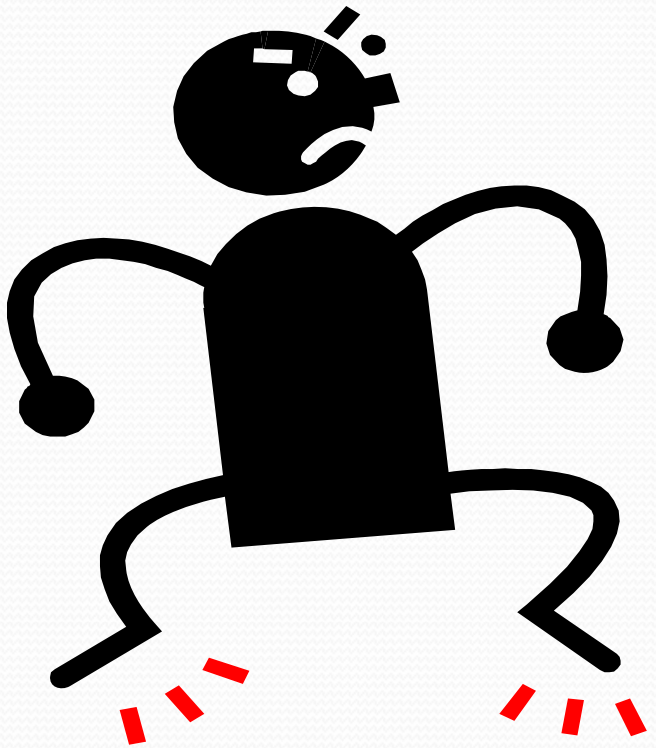
- Many injuries associated with daily fitness can be avoided
- Proper planning of fitness program and progression
  - Consulting with regular physician
  - Working with a fitness trainer

Injury Prevention

- Majority of injuries due to overuse
- Build up of microscopic trauma to tissue
  - Tissue breakdown exceeds tissue healing
- Designing programs that do not exceed this balance will reduce injury risk
  - Cross training program
  - Work within envelope of function
- Be aware of climate as well as clothing

Common Overuse Injuries

- **Foot and ankle**
  - Plantar fasciitis
    - Pain bottom of heel/arch
  - Achilles tendonitis
    - Pain back of heel or lower calf
- **Knee/lower leg**
  - Patella tendonitis
    - Pain at edge of patella
  - Shin splints
    - Pain mid and lower shin



Common Overuse Injuries

- **Hip**
  - Trochanteric bursitis
    - Pain outer hip and buttock
- **Back**
  - Myofascial strain
    - Pain along spinal column

Common Overuse Injuries

- **Shoulder**
  - Bursitis/tendonitis
    - Pain front/side of shoulder
    - Worse when reaching
- **Elbow**
  - Tendonitis
    - Tennis elbow
      - Pain outer elbow
- **Wrist/hand**
  - Tendonitis

Common Overuse Injuries

- **Stress fractures**
  - Any weight bearing joint
  - Women > men
    - Lower bone density with age
    - Female triad (Teens and 20s)
      - Stress fracture
      - Abnormal menses
        - Due to high level of exercise
      - Eating disorder or poor caloric intake
  - Runners
  - Poor calcium and vitamin D intake as teens/adults
  - Symptoms
    - Pain and swelling
    - Often warm to touch

Common Overuse Injuries

- **Stress fractures**
  - Important to distinguish from soft tissue injury
  - Can lead to complete fracture if neglected
  - Treatment
    - Reduce stress to injured bone
    - Typically heal without surgery
      - Consider surgery if stress fracture of hip
    - Optimize calcium and vitamin D intake
      - 1200 mg calcium and 1000 IU vitamin D daily
    - May take 8-12 weeks to heal

Injury Treatment

- In general…
  - Cessation of activity causing pain
  - Ice to affected area
  - Oral anti-inflammatory/analgesic use
  - Continue exercises that do not create symptoms
  - Self-assess and correct for any causative abnormality
    - Biomechanics
    - Exercise program/progression
    - Athletic equipment
  - Gradual resumption of activity when symptom free and causative factors corrected
    - May take several weeks

Injury Treatment

- Seek medical care if…
  - New onset joint swelling
  - Unable to bear weight
  - Mechanical catching of joint
  - Symptoms persist or progress despite rest and activity modification

Injury Treatment

- **Physician assessment**
  - Evaluate for significant tissue injury
    - Cartilage, muscle, tendon tears
    - Fractures
    - Aggravation of degenerative joint arthritis
  - Look for abnormalities in…
    - Biomechanics
    - Exercise program/progression
    - Athletic equipment
  - Treat any underlying structural abnormality
    - Nonsurgical treatment most common
  - Coordinate appropriate rehabilitation

Injury Treatment

- **Physical therapy**
  - Reduce inflammation
  - Assess abnormalities in joint/muscle function
    - Kinetic chain
      - Forces transmitted from ground through body and back to the ground
  - Corrective exercises
    - Restore balance of muscle forces/flexibility
  - Balance limb
    - Length
      - Heel lift
    - Corrective shoe orthotics
      - Neutral foot arch

Resources

- Local fitness trainers
  - YMCA, Wellness Center, Planet Fitness, etc…
- The Internet…
  - Arthritis Foundation
    - www.arthritis.com
  - Multiple running, cycling, cross-training sites
- Medical professionals
  - Physicians
  - Physical therapists

Questions?

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