Flexibility Activity

Flexibility is an important but often neglected part of an exercise program.

The importance of flexibility for health and well-being becomes more important with age.
Benefits of Flexibility

- Decreased risk of back pain
- Decreased risk of injury
- Improved athletic performance
Definitions

**Range of Motion (ROM)** – Full motion of a joint. Extensibility of ligaments, the surrounding muscles and the tendons that connect the muscles

**Ligament** – Connects bones

**Tendons** – Connects muscles to bones

**Hypermobility** – Joint looseness

**Laxity** – Motion of a joint outside normal plane
Terminology

- **Agonist Muscles** – The muscle group being stretched

- **Antagonist Muscles** – Muscle group on the opposite side of the limb from the muscle group being stretched (biceps is antagonist of triceps)
Flexibility and Back Pain

Short and tight muscles cause poor posture which leads to back pain.

Figure 16.3
Unbalanced muscular development may cause poor posture or back problems.
Flexibility and Back Pain

- Long and strong muscles keep the body in good alignment and reduce risk of back pain.
Facts about Flexibility

- Flexibility is joint specific
- Flexibility is enhanced if body is warm
Influence of Age on Flexibility

- **FLEXIBILITY** vs. **AGE (years)**
- **PHYSICAL ACTIVITY** vs. **AGE (years)**

Graph showing how flexibility decreases with age, with physical activity having a potential moderating effect.
Common Movements

- Flexion
- Extension
- Abduction
- Adduction
- Rotation
Types of Stretching

- Static
- Ballistic
Static Stretching

- Stretch slowly until tension
- Hold stretch for 10 - 30 sec.
- Relax the muscle
- Increase stretch a bit more (developmental stretch)
Ballistic Stretching

Muscles are stretch by the force of momentum – bouncing, jerking
Golgi Tendon Organs (GTOs)

- **Proprioceptors** - located in the tendons

- **GTOs** are activated when the tendon attached to an active muscle is **stretched**
  - As tension in the muscle ↑ the discharge of GTOs ↑
  - Provides a protective mechanism for excessive tension

- When heavy load is placed on the muscle, reflexive inhibition by the GTOs cause the muscle to relax
Maintaining stretch for 10-30 seconds will allow the stretch reflex to subside and permit gains.
Methods of Stretching

Active Stretching / Active Assistance

An assist to stretch from an active contraction of the opposing antagonist muscle.

An example: Calf stretch – the muscles of the shin are contracted to assist in the stretch of the muscles of the calf.

See page 148 for examples.
Methods of Stretching

Passive Stretching / Passive Assistance

Stretch imposed on a muscle with the assistance of a force other than the opposing muscle

Example: A partner, another body part or gravity aids you in stretching

See page 148 for examples
Proprioceptive Neuromuscular Facilitation (PNF)

- Combines (active and passive) methods
- Most effective method for improving flexibility
- Promotes increase in strength
- See page 148 for examples
PNF Stretching Technique
(C.R.A.C. Method)

- Contract agonist isometrically
- Relax muscle for a few seconds
- Contract the antagonist for 15 seconds
- Relax
FIT Formula
(Static Stretching)

F  3 - 7 times per week
I  10% beyond normal length of muscle
T  10-60 seconds
Areas Needing Stretching

- Hamstrings
- Inner thigh
- Calf
- Hip flexors
- Lower back
- Chest / shoulders
**Stretching Precautions**

- Don't force stretch to the point of pain
- Choose safe exercises
- Avoid overstretching weak muscles
- Use good technique
Hamstring Stretches

BAD

Standing Toe Touch

BAD

Bar Stretch

GOOD

Back Saver Hamstring Stretch
Shin and Quadriceps Stretches

BAD

GOOD

GOOD

Standing Stretch

Shin Stretch

Quad Stretch