

CHAPTER 11 Basics of Flexibility

Lesson 1 Influences on Flexibility

What You Will Do

- Identify factors that can positively or negatively influence your flexibility.
- Apply the biomechanically correct use of leverage to lift objects.
- Explain how good posture may contribute to the prevention of lower back problems.



CHAPTER 11 Basics of Flexibility

Lesson 1 Influences on Flexibility

Terms to Know

- flexibility
- range of motion
- elasticity
- posture
- static posture
- dynamic posture



CHAPTER 11 Basics of Flexibility

Lesson 1 Influences on Flexibility

Influences on Flexibility

Flexibility is an important part of health-related fitness.



Term to Know

Flexibility

A joint's ability to move through its full range of motion.

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Lesson 1 Influences on Flexibility

What is Flexibility?

Free and smooth **range of motion (ROM)** is necessary for a healthy functional life.

Different types of joints have different ROM.



Term to Know

Range of motion (ROM)

The degrees of motion allowed around a joint.

CHAPTER 11 Basics of Flexibility

Lesson 1 Influences on Flexibility

Factors Affecting Flexibility

These factors determine your flexibility:

- Heredity
- Gender
- Age
- Body temperature
- Injuries
- Percentage of body fat
- Activity level



CHAPTER 11 Basics of Flexibility

Lesson 1 Influences on Flexibility

Factors Affecting Flexibility

Younger people are usually more flexible than older people, mainly because of a loss of **elasticity** that comes with aging.



Term to Know

Elasticity

The ability of the muscles and connective tissues to stretch and give.

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Lesson 1 Influences on Flexibility

Factors Affecting Flexibility

To prevent muscles and connective tissues from losing elasticity:

- Stretch your muscles regularly.
- Participate in aerobic activities that do not strain your back.
- Participate in resistance-training activities that strengthen abdominal and back muscles.
- Maintain proper body weight.
- Stay active.



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Lesson 1 Influences on Flexibility

Lower-Back Pain

To prevent lower-back pain:

- Maintain flexibility and muscular strength.
- Learn proper lifting techniques.
- Practice correct posture.



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Lesson 1 Influences on Flexibility

Lower-Back Pain

Follow these rules for biomechanically correct lifting:

- Plan ahead and get a partner to help with the lifting.
- Always position your body close to the object.
- Place your feet shoulder width apart to give yourself a solid base of support.
- Bend your knees when possible and tighten your stomach muscles.
- Use your legs to lift most of the load, keeping it close to your body to apply the correct leverage and prevent injury.



CHAPTER 1 Basics of Flexibility

Lesson 1 Influences on Flexibility

Lower-Back Pain

Follow these rules for biomechanically correct lifting:

- If only one hand is necessary to pick up the object, use the other hand to support your body weight.
- When walking with the object, try to keep your knees slightly bent. Point your toes in the direction you want to move and pivot in that direction. Do not twist at the waist.
- Avoid side bending.
- Lift in a slow, controlled fashion.



CHAPTER 11 Basics of Flexibility

Lesson 1 Influences on Flexibility

Lower-Back Pain

Good **posture** habits can reduce stress and strain on your spine and help prevent back injuries.

Good posture helps to distribute the force of gravity through your body.



Term to Know

Posture

The alignment of the body's muscles and skeleton as they provide support for the total body.

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Lesson 1 Influences on Flexibility

Lower-Back Pain

Most poor posture habits relate to **static posture**.

Your body is in a state of static posture when you sit at a computer.



Term to Know

Static posture

The posture your body exhibits while in a resting position.

CHAPTER 11 Basics of Flexibility

Lesson 1 Influences on Flexibility

Lower-Back Pain

Dynamic posture includes how you position your body to perform movements such as pushing, lifting, carrying, twisting, and swinging.



Term to Know

Dynamic posture

The posture your body exhibits while in motion or preparing to move.

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Lesson 1 Influences on Flexibility

Lower-Back Pain

These tips can help prevent lower-back pain:

- When sitting, try to keep your back straight.
- Use a chair that provides built-in lower-back support.
- When you need to stand for a long time, place one foot on a low footstool. Occasionally alternate feet. This will take some of the load off your back.
- When sleeping on your side, place a pillow between your knees.



CHAPTER 11 Basics of Flexibility

Lesson 1 Influences on Flexibility

- 1. Vocabulary** Define *flexibility*.
- 2. Recall** What is the meaning of *ROM*?
- 3. Recall** List and explain two types of posture.

3. Recall

Static and dynamic posture. Static posture is the posture your body exhibits while in a resting position. Dynamic posture is the posture your body exhibits while in motion or preparing to move.

CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

What You Will Do

- Identify sports and activities that promote flexibility.
- Explain why too much flexibility can be unsafe.
- Participate in activities to evaluate your flexibility.

CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Terms to Know

- hyperflexibility
- muscle imbalance
- core stability

CHAPTER 1 1 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Evaluating Your Flexibility

Nearly all physical activities require flexibility.

Flexibility is important for your overall fitness. ▷

CHAPTER 1 1 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Benefits of Flexibility

Benefits of Flexibility

Reduces stiffness and soreness

Reduces risk of back pain

Reduces risk of injury

Improves athletic performance

Improves muscle health

Reduces stress levels ▷

CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Benefits of Flexibility

There are many physical activities that lead to improvements and maintenance of flexibility.

There are also many that do not.

CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Benefits of Flexibility

These sports provide the most flexibility conditioning:

- Ballet
 - Calisthenics
 - Golf
 - Walking
 - Gymnastics
 - Martial Arts
 - Yoga
- ▷

CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Hyperflexibility and Muscle Imbalances

Hyperflexibility can cause injury. It occurs in joints with too much range of motion.



Term to Know

Hyperflexibility

An excessive amount of flexibility.

CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Hyperflexibility and Muscle Imbalances

Hyperflexibility can occur in these situations:

- When a joint has been stretched beyond its normal range of motion.
- When weak muscles surround a joint.
- When there is a hereditary tendency for "loose joints."



CHAPTER 1 1 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Hyperflexibility and Muscle Imbalances

When you strengthen muscles around a joint, you need to be sure to work the two opposing muscle groups involved.

This will help you avoid a **muscle imbalance**.



Term to Know

Muscle imbalance

A condition in which one muscle group becomes too strong in relation to a complementary group.

CHAPTER 1 1 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Hyperflexibility and Muscle Imbalances

Muscle imbalances occur when one or more FITT factors are misapplied in the training of opposing muscle groups.

The underdeveloped muscles risk becoming injured.



CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Hyperflexibility and Muscle Imbalances

One way to prevent and treat hyperflexibility and muscle imbalances is by developing **core stability**.

Increasing core stability involves a combination of strength-training exercises and flexibility training.



Term to Know

Core stability

The stretching and strengthening of muscles around the spine and pelvic muscles.

CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

Hyperflexibility and Muscle Imbalances

The benefits of core stability include:

- Lower risk of injury
- Improved levels of performance fitness
- Improved balance, power, and coordination.



CHAPTER 11 Basics of Flexibility

Lesson 2 Evaluating Your Flexibility

1. Vocabulary What is *hyperflexibility*?

2. Recall Identify two sports that have high ratings for providing flexibility conditioning.

2. Recall

Answers will vary but may include ballet and weight lifting.

CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

What You Will Do

- Apply the physiological principles of overload, specificity, and progression.
- Apply the FITT formula to your flexibility plan.
- Describe types of stretches and what each type accomplishes.



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Terms to Know

- | | |
|------------------------|------------------------------|
| ■ static stretching | ■ reflex-assisted stretching |
| ■ ballistic stretching | ■ passive stretching |
| ■ reflexes | |



CHAPTER 1 1 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Developing Your Flexibility

To develop flexibility, your personal fitness plan needs to include activities and exercises that will maintain or improve your range of motion.



CHAPTER 1 1 Basics of Flexibility

Lesson 3 Developing Your Flexibility

FITT and the Principle of Overload

Improving flexibility means increasing FITT factors to achieve overload.

Never change all four FITT factors at the same time, and don't change any factor too quickly.



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

FITT and the Principle of Overload

Stretch at a minimum **frequency** of three days a week.

It is best to do some stretching daily.



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

FITT and the Principle of Overload

Exercise care in establishing your **intensity** needs.

Your goal should be to reach the point where a muscle or connective tissue is stretched just beyond its normal resting state.

You should feel slight discomfort, but no pain.



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

FITT and the Principle of Overload

The **time** duration of your stretches should begin at 20 to 30 seconds.

As your ROM increases, try to hold each stretch for 30 to 60 seconds, repeating three times per stretch.



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

FITT and the Principle of Overload

To improve the flexibility of a particular joint or body area, you need to apply **specificity**.

That is, do stretches that affect the nerves, muscles, and connective tissues that control movement around a specific joint or body part.



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

FITT and the Principle of Overload

To maintain or improve your overall flexibility levels, do a variety of stretches that influence all of your major body parts.

Also, work the two opposing muscle groups involved to avoid muscle imbalance.



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

FITT and the Principle of Overload

Beginners should **progress** slowly with regard to time and intensity.

It is fine, however, to stretch on a frequent basis.



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Types of Stretching and Your Flexibility

Static stretching, when done regularly, is safe and effective at increasing the range of motion of the joints you work.



Term to Know

Static stretching

Doing stretches slowly, smoothly, and in a sustained fashion.

CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Types of Stretching and Your Flexibility

Ballistic stretching is not necessary, or even recommended, for health-related fitness.

It is used primarily to build components of performance, or skill-related fitness.



Term to Know

Ballistic stretching

Quick, up-and-down bobbing movements in which stretches are held very briefly.

CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Types of Stretching and Your Flexibility

An example of a **reflex** is a simple knee jerk.



Term to Know

Reflexes

The automatic responses that your nerves and muscles provide to various movements.

CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Types of Stretching and Your Flexibility

Reflex-assisted stretching allows your joints to move more quickly and with more explosive power.



Term to Know

Reflex-assisted stretching

Stretching movements that challenge the reflexes to adapt.

CHAPTER 1 1 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Types of Stretching and Your Flexibility



Plyometric training is an example of reflex-assisted stretching.



Plyometric training includes bounding and jumping exercises. ▶

CHAPTER 1 1 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Types of Stretching and Your Flexibility

In **passive stretching** exercises, the counterforce offers resistance.

This counterforce may be provided by a partner or an object such as a chair or towel. ▶

Term to Know

Passive stretching

A type of stretch against a counterforce and in which there is little or no movement.

CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

Types of Stretching and Your Flexibility

Here are two examples of passive stretching:



CHAPTER 11 Basics of Flexibility

Lesson 3 Developing Your Flexibility

1. **Recall** How does frequency apply to your flexibility program?

2. **Vocabulary** What is *static stretching*?

2. Vocabulary

Static stretching includes smooth, slow, and sustained stretches.

CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

What You Will Do

- Identify flexibility exercises for the whole body.
- Participate in exercises that develop flexibility.
- Identify exercises that are designed specifically to prevent lower-back pain.
- Describe potentially unsafe flexibility exercises.



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Terms to Know

- adductor muscles



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Flexibility Exercises and Activities

Stretching is an important part of any workout.

It is important to stretch safely, using proper stretching technique, and avoid dangerous stretching practices.



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility

There are many stretches that may be used to improve flexibility.

Choose a variety of stretches and exercises that will work all the major muscles and joints of the body.



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility

Head tilts and turns improve the flexibility of the neck.



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility

These stretches improve the flexibility of the shoulders:

- Shoulder shrugs
- Shoulder and triceps pull
- Shoulder pulls
- Towel stretch



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility



Shoulder Shrugs



Shoulder Pulls



Towel Stretch

CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility

Trunk stretches improve the flexibility of the sides and trunk:



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility

These stretches improve the flexibility of the legs and back:

- Single knee hug
- Lower-leg stretch
- Reverse hurdler stretch
- Modified lotus or adductor stretch
- Quadriceps stretch
- Sit-and-reach stretch ▶

CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility



Lower-Leg Stretch



Reverse Hurdler Stretch



Modified Lotus



Single Knee Hug ▶

CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility

Some leg stretches work the **adductor** muscles.



Term to Know

Adductor muscles

The muscles on the inside of the leg that pull the legs together.

CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Stretches for Flexibility

These stretches prevent lower-back pain:

- Wall slides
- Rear leg raises
- Front leg raises
- Back hyperextension stretch
- Crunches



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Exercises for Prevention of Lower-Back Pain



Wall Slides



Rear Leg Raises



Front Leg Raises



Crunches

CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Hazardous Stretches and Their Modifications

Some stretches that have been practiced for years have been identified by sports-medicine specialists to be high risk.



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Hazardous Stretches and Their Modifications

Hazardous stretches have been linked to a number of sports-related injuries, including:

- Strains
- Sprains
- Excess pressure on the discs of the back
- Overstress of ligaments and muscles



CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

Hazardous Stretches and Their Modifications

Hazardous Stretch	Safe Modified Stretch
Bar stretch	Modified bar stretch
Deep knee bend	Forward lunge
Hurdler stretch	Reverse hurdler stretch
Stretch neck roll	Bent-knee neck stretch
Prone arch	Modified back hyperextension
Toe touch	Sit-and-reach
Yoga plow	Single-leg sit-and-reach
Quadriceps stretch	Modified quadriceps stretch

CHAPTER 11 Basics of Flexibility

Lesson 4 Flexibility Exercises and Activities

1. **Recall** Name two stretches that benefit the shoulders.

2. **Recall** Name two unsafe stretches.

2. Recall

Answers will vary but may include bar stretch, deep knee bend, hurdler stretch, stretch neck roll, prone arch, toe touch, yoga plow, and quadriceps stretch.