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CONSUMER & FAMILY SCIENCES

CFS-738-W

Healthy Body Image

Healthy Exercises for Every Body

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EXPERT REVIEWED

There are three companion pieces to this publication:

- **CFS-735-W, Healthy Body Image:**
  Being an Advocate for Your Child or Grandchild
  www.ces.purdue.edu/extmedia/CFS/CFS-735-W.pdf
  This 15-page publication contains four main sections: 1) understanding weight-related concerns; 2) role modeling a healthy body image; 3) providing a healthy environment; and 4) recognizing signs of a possible eating disorder.
- **CFS-736-W, Healthy Body Image:**
  A Lesson Plan for Middle School Students
  www.ces.purdue.edu/extmedia/CFS/CFS-736-W.pdf
  This 17-page publication provides background information, a lesson plan outline, plus four activities and handouts to teach groups of young teenagers that society often places an unhealthy emphasis on an idealized body image. It teaches that eating nutritious foods and being physically active are the keys to good health.
- **CFS-737-W, Healthy Body Image:**
  A Lesson Plan for High School Students
  www.ces.purdue.edu/extmedia/CFS/CFS-737-W.pdf
  This 17-page publication provides background information, a lesson plan outline, plus four activities and handouts to teach groups of older teenagers that society often places an unhealthy emphasis on an idealized body image. It teaches that eating nutritious foods and being physically active are the keys to good health.

The main sections of this publication are:

Pre-Exercise Program Clearance

It has become a standard of exercise programs to include a statement (for liability reasons) suggesting that no one should start an exercise program without first consulting their health care provider. Although this approach may be ideal, it isn't always practical and in some cases may discourage people from starting an exercise program.

The American College of Sports Medicine publication *ACSM's Guidelines for Exercise Testing and Prescription, Seventh Edition* (2006) recommends that people in certain circumstances should have a physical examination by their physician before starting a self-guided exercise program. Presumably, persons who do not have any of the listed conditions may start exercise without prior clearance as long as they start slowly and progress gradually. The ACSM and the American Heart Association recommend a consultation with your health care provider before starting exercise if:

- You have been diagnosed with any heart-related condition; have undergone a heart-related procedure, such as cardiac catheterization or coronary artery angioplasty; have had cardiovascular surgery; or take heart-related medications or other prescription drugs.
- You have been diagnosed with another health-related condition such as, but not limited to, diabetes, asthma, or other lung disease; your activities are limited by musculoskeletal problems; you are pregnant.

- You experience symptoms, especially with exertion, such as chest discomfort, unreasonable shortness of breath, dizziness, fainting, blackouts, or a burning sensation or cramping in your legs.
- You have ***two or more of the following risk factors:***
  - You're male over age 45 or female over age 55 (or have had a hysterectomy or are postmenopausal).
  - You smoke or have just quit smoking within the past six months.
  - Your blood pressure is greater than 140/90 mm Hg.
  - You don't know your blood pressure.
  - Your total cholesterol is more than 200 mg/dL.
  - You don't know your cholesterol level.
  - You have a male blood relative who had a heart attack or heart surgery before age 55 or a female blood relative who had a heart attack or heart surgery before age 65.
  - You are physically inactive (less than 30 minutes per day, three days per week).
  - You are 20 pounds or more overweight.

An alternative approach to pre-exercise clearance is to use the Physical Activity Readiness Questionnaire that was developed by the Canadian Society for Exercise Physiology. It is available at www.csep.ca/communities/c574/files/hidden/pdfs/par-q.pdf.

Selected reference

American College of Sports Medicine (2006). ACSM's *Guidelines for Exercise Testing and Prescription*, 7th edition. Philadelphia: Lippincott, Williams and Wilkins.

Cardiorespiratory Exercise: General Guidelines

I. Cardiorespiratory fitness is the cornerstone of health-related physical fitness.

A. Cardiorespiratory fitness is associated with:

1. A reduced risk of cardiovascular and other diseases.
2. Enhanced weight management.
3. Increased efficiency of the heart and lungs.
4. More endurance and less fatigue in activities of daily living.

B. Cardiorespiratory exercise must be done at least three days a week to maintain or improve cardiorespiratory fitness.

II. What are the components of an appropriate cardiorespiratory exercise program? (Use the acronym "FITT").

A. Frequency (F) = number of days per week.

1. Four or more days per week of moderate-intensity exercise.
2. Three or more days per week of vigorous-intensity exercise.

B. Intensity (I) = how strenuous the exercise is.

1. May be based on percent of maximal heart rate.
   - Estimated maximal heart rate is 220 minus your age.
   - Moderate-intensity exercise is 64% to 76% of maximal heart rate.
   - Vigorous-intensity exercise is 77% to 93% of maximal heart rate.
2. May be based on Rating of Perceived Exertion (RPE) level.
   - Using the 6-to-20 RPE scale designed by Borg (see scale on next page)
   - Moderate-intensity exercise translates to a 12 or 13 RPE.
   - Vigorous-intensity exercise translates to a 14 to 16 RPE.

C. Time (T) = number of minutes of cardiorespiratory exercise per day.

1. Accumulate* 30 to 60 minutes of moderate-intensity exercise per day.
2. Accumulate* 20 to 60 minutes of vigorous-intensity exercise per day.

*Exercise must be accumulated in at least 10-minute exercise bouts.

D. Type (T) = the mode of exercise that is done.

1. All cardiorespiratory exercise involves:
   - Using the large muscles of the body repeatedly over an extended time.
   - Examples include walking, running, cycling, and swimming.

III. All cardiorespiratory exercise should include warm-up and cool-down periods.

A. Warm-up: A brief period (approximately three minutes) of slower activity.

B. Cool-down: A period of at least three minutes of lower-intensity exercise.

C. Either warm-up or cool-down may include stretching exercises.

Selected references

American College of Sports Medicine (2006). *ACSM's Guidelines for Exercise Testing and Prescription*, 7th edition. Philadelphia: Lippincott, Williams and Wilkins.

American College of Sports Medicine (2006). *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, 5th edition. Philadelphia: Lippincott, Williams & Wilkins.

Borg, G. (1998). *Borg's Perceived Exertion and Pain Scales*. Champaign, Ill.: Human Kinetics.

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Personal Cardiorespiratory Exercise Plan

(F)(I)(T)(T) = FREQUENCY, INTENSITY, TIME, TYPE OF EXERCISE

(F) **Frequency** — Number of days per week: _____

(I) **Intensity** — How hard will you work? Measure by one of the two methods below.

Method 1: Heart rate (for moderate intensity exercise)

Calculate your maximal heart rate (**MHR**) by subtracting your age from 220 = _____ beats per minute

Calculate the **low end** of moderate-intensity exercise heart rate range by multiplying your MHR by 0.64 *(for vigorous exercise use 0.77)* = _____ beats/min.

Calculate the **high end** of moderate-intensity exercise heart rate range by multiplying your MHR by 0.76 *(for vigorous exercise use 0.93)* = _____ beats/min.

Set a target range for your heart rate during exercise: _____ (low end) beats/min. to _____ (high end) beats/min.

Method 2: Rate of Perceived Exertion (RPE)

Moderate-intensity exercise translates to a 12 or 13 RPE. *Vigorous-intensity* exercise translates to a 14 to 16 RPE.

Set your target RPE number to reach during exercise: _____

(T) **Time** — Number of minutes per session: _____ to _____

(T) **Type** — What you'll do to exercise: _____

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Ratings of Perceived Exertion

6	
7	**Very, very light**
8	
9	**Very light** (easily walking at a comfortable pace)
10	
11	**Fairly light**
12	
13	**Somewhat hard** (can carry on a conversation)
14	
15	**Hard** (conversation is difficult)
16	
17	**Very hard** (very strenuous, conversation is not possible)
18	
19	**Very, very hard** (you can not continue for long at this pace)
20	

Source: Borg, G. (1998). Borg's Perceived Exertion and Pain Scales. Champaign, Ill: Human Kinetics.

Flexibility and Range of Motion Exercises: General Guidelines

I. Regular performance of flexibility (stretching) exercises helps maintain health by:

A. Helping preserve (or improve) range of motion (ROM) in various joints.

B. Helping reduce muscular stiffness in performance of activities of daily living.

C. Helping prevent muscle soreness related to muscle tightness.

II. What are the key performance principles for flexibility and ROM exercises?

A. All ROM exercises should be performed slowly and deliberately.

B. Stretching should be preceded by a warm-up to increase muscle temperature.

C. Static stretching is recommended.

1. Static stretching involves moving slowly into a stretched position (producing a stretch, without causing pain), holding the stretched position for 15 to 30 seconds, and then returning slowly to the relaxed position.
2. Two to four repetitions of each stretch are recommended.
3. Normal breathing should be maintained while stretching.

D. Stretching should be done at least two days per week, but may be performed daily.

E. Stretching should be aimed at major muscle/tendon groups (see illustrations of recommended exercises starting on page 15).

F. "High risk" stretches should be avoided (see illustrations at the back of this publication).

III. Combinations of strength and flexibility can help prevent common discomforts.

(Example: A decreased risk of low back pain is associated with abdominal muscle strength and hamstring muscle flexibility.)

Selected references

American College of Sports Medicine (2006). ACSM's *Guidelines for Exercise Testing and Prescription*, 7th edition. Philadelphia: Lippincott, Williams and Wilkins.

American College of Sports Medicine (2005). ACSM's *Health-Related Physical Fitness Assessment Manual*. Philadelphia: Lippincott, Williams and Wilkins.

Recommended Flexibility and Range of Motion Exercises

General instructions

- Perform flexibility (stretching) exercises statically (move slowly to stretched position, hold, return slowly).
- Hold in the stretched position 15 to 30 seconds.
- Perform two to four repetitions of each stretching exercise.
- Maintain normal breathing during stretching (do not hold your breath).
- Range of motion (ROM) exercises should be performed slowly and deliberately according to the instructions provided with the following exercises.

***CAUTION:** Exercises that involve either bending forward at the waist or trunk rotation are not recommended for individuals with osteoporosis.*

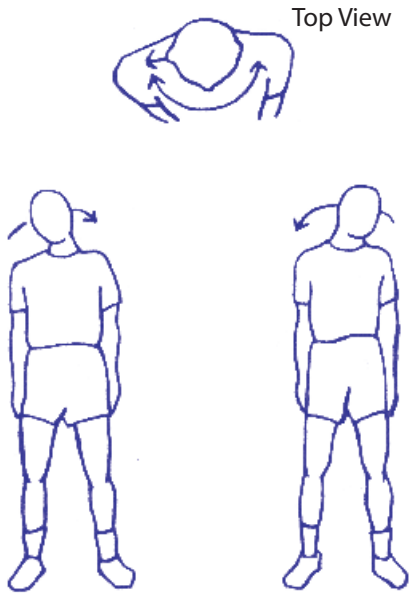
1. Three-Way Neck Rolls (ROM)

A. Slowly roll your head to one side, then toward the front of your body, then slowly to the other side.

B. Repeat, moving your head through the same motions, but in the opposite direction.

C. Repeat five times in each direction.

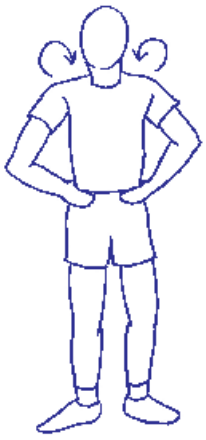
CAUTION: *Avoid moving the head toward the back of the body (hyperextension of the neck).*



2. Shoulder Shrugs (ROM)

A. Starting with hands on your hips, slowly roll your shoulders in circles, moving toward the front of your body. Repeat 10 times.

B. From the same starting position, reverse the shoulder circles and perform 10 repetitions rolling your shoulders toward the back of your body.

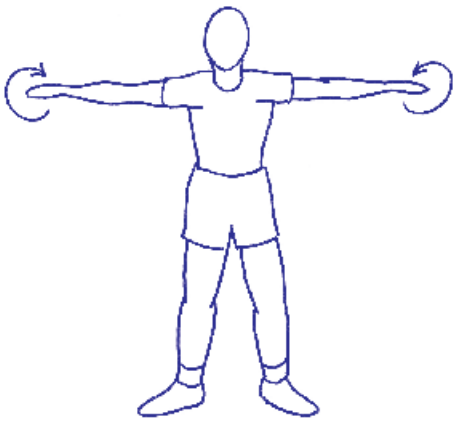


3. Arm Circles (ROM)

A. With your arms straight out to the side, slowly rotate your arms in circles toward the front of your body. Repeat 10 times.

B. From the same starting position, perform 10 repetitions rotating your arms toward the back of your body.

CAUTION: *Avoid raising the arms beyond shoulder height (parallel to the floor) when performing this exercise.*



4. Low Back Stretch (flexibility)

A. Sit either in a straight chair or on the floor in a cross-legged position (as illustrated).

B. Slowly lean forward until you feel a comfortable stretch. Hold 15 to 30 seconds.

C. Release and repeat two to four times.

5. Groin Stretch (flexibility)

A. Sit on the floor with the soles of your feet together.

B. Place hands on your ankles.

C. Pull heels toward your body while pushing knees down toward the floor.

D. Repeat two to four times, holding for 15 to 30 seconds on each repetition.

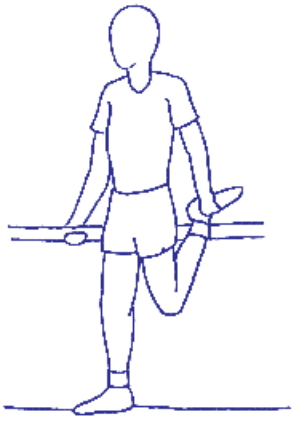
6. Trunk Rotation (flexibility)

A. Starting either on the floor (as illustrated) or in a straight chair, move into the stretched position.

B. Repeat in both directions, two to four times each.

C. Hold each stretch 15 to 30 seconds.

7. Quadricep (thigh muscle) Stretch (flexibility)



A. Quadricep muscles may be stretched from either a standing or lying position (see illustrations).

B. If you use the standing position, you should hold onto a dance bar, chair back, or other sturdy item.

C. Perform the stretch, as illustrated, hold for 15 to 30 seconds. Repeat two to four times on each leg.

8. Figure-4 Hurdler's (hamstring muscle) Stretch (flexibility)

A. The Figure-4 Hurdler's Stretch is recommended instead of the traditional Hurdler's Stretch.

B. The stretched position should be held for 15 to 30 seconds and repeated two to four times on each leg.

9. Hip Stretch (flexibility)

A. Lie on your back with legs flat, arms at sides, and head on the floor.

B. Bring one leg up, using your arms to bring the thigh toward the stomach and chest.

C. Hold stretched position for 15 to 30 seconds.

D. Repeat two to four times on each leg.

Concentrate on not holding your breath while performing this exercise.

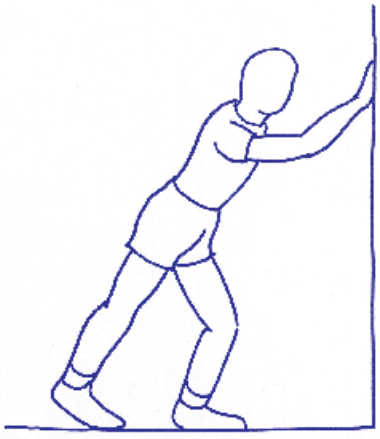
10. Heel Cord Stretch (flexibility)

A. Extend one leg behind you and bend the other slightly while maintaining both feet flat on the floor and toes pointed straight ahead.

B. Outstretch both arms with hands on a wall, tree, or other sturdy object.

C. Lean forward into the wall or object.

D. Hold stretch 15 to 30 seconds. Repeat two to four times on each leg.



Concentrate on not pushing the wall or holding your breath while performing this exercise.

Resistance Exercise: General Guidelines

I. Muscular fitness (muscular strength and endurance) is an essential part of a health-related physical fitness program.

A. Increased muscular strength and endurance are associated with:

1. Greater ease (less strain) in performing activities of daily living.
2. Greater size and strength of muscles and connective tissues.
3. Reduced likelihood of muscle and joint injuries.

B. For best results, resistance exercises should be performed two or three days per week with at least one rest day between exercise days.

II. What are the components of an appropriate resistance training program?

A. Frequency = the number of days per week of exercise.

1. A minimum of two days per week is recommended for progress in strength development.
2. Three days per week on alternate days is recommended for improving or increasing muscle tone, muscular strength, endurance, and muscle mass.

B. Duration = the number of minutes per resistance training session.

1. Thirty minutes is the recommended total time period.
2. Sessions longer than 60 minutes are associated with higher dropout rates.

C. Number = Recommended number of exercises.

1. Eight to 10 different exercises are recommended.
2. Exercises should target all major muscle groups of the body.

D. Sets = a group of repetitions that are performed consecutively.

1. At least one set of repetitions of each exercise is recommended.
2. Up to three sets of repetitions of each exercise may be done with rest between sets.

E. Repetitions = the number of times each movement is repeated.

1. For general fitness, eight to 12 repetitions per set are recommended.
2. Exercises should be performed slowly, using recommended technique.

F. Progression = rate at which additional resistance should be added.

1. To improve, muscles must be challenged or progressively overloaded.
2. During the first two weeks of a resistance training program, emphasis should be on good technique with manageable amounts of resistance.
3. In week three, resistance may be added to challenge muscles for eight repetitions. Progression should be made to performance of 12 repetitions (for one to three sets) on two consecutive workout days – then add more resistance.

G. Appropriate breathing = exhale during the portion of the exercise involving the greatest amount of muscular exertion.

H. Mode of exercise = type of exercises.

1. Resistance exercises may been performed using resistance machines, free weights, some sort of elastic resistance, or through the use of callisthenic exercises (i.e., push-ups, sit-ups, abdominal curls, etc.)
2. Any combination of the above may also be used.

III. **All resistance training exercise should include a warm-up and cool-down period.**

A. Warm-up: Warm-up the muscles with some fast walking or jogging.

B. Perform a few, low-resistance exercises to get the feel for the exercise.

C. Cool-down: A period of at least three minutes of lower-intensity exercise.

D. Stretching may be included as either a warm-up or cool-down exercise.

IV. **All exercise should be performed pain-free.**

Selected references

American College of Sports Medicine (2006). ACSM's *Guidelines for Exercise Testing and Prescription*, 7th edition. Philadelphia: Lippincott, Williams and Wilkins.

Earle, R.W. & Baechle, T. R. (Eds.) (2004). NSCA's *Essentials of Personal Training*. Champaign, Ill.: Human Kinetics.

Recommended Resistance Exercises

General instructions

- Resistance exercises may utilize weights, your own body weight (i.e., push-ups, pull-ups, etc.), or other forms of resistance.
- All resistance exercises should be performed using recommended techniques while maintaining good form (i.e., not jerking as exercises become more difficult).
- Eight to 10 different exercises utilizing the major muscle groups of the body are recommended.
- One to three sets of between three and 20 repetitions are recommended. For general fitness, eight to 12 repetitions per set is recommended.
- Each repetition should be performed slowly (three seconds in each direction) and in a controlled manner.
- The recommended breathing pattern is to exhale during the portion of each exercise that requires the greatest force production. Avoid holding your breath.
- Starting with large muscle group exercises and moving to smaller muscle group exercises is recommended (note order in the listing of exercises below). Alternating upper and lower extremity exercises, whenever possible, is recommended.
- A brief warm-up is recommended.
- Resistance training is recommended two or three days per week on alternate days.

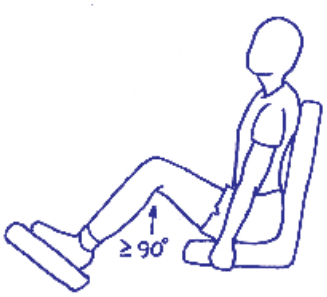
1. Leg Press (alternative: Half Squat – if a squat rack and spotters are available)

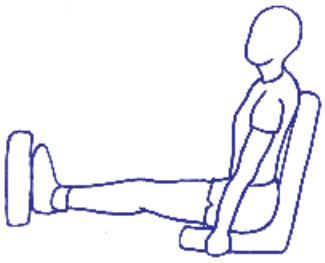
A. Seated on a leg press machine, starting with your knees bent no more than 90 degrees, push against foot pedals while extending both legs.

B. Exhale while extending your legs.

C. In extended position, maintain a slight bend in the knees (do not fully extend or lock knees).

D. Slowly return (approximately three seconds) to starting position. Repeat.





CAUTION: If half squats are substituted using barbells, squat only to a 90-degree bend at the knee. Half squats should be done only if proper equipment and spotters are available.

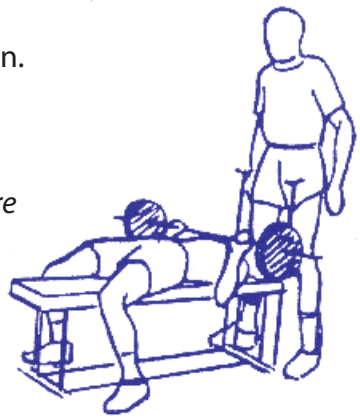
2. Bench Press (push-ups may serve as a lower-intensity alternative)

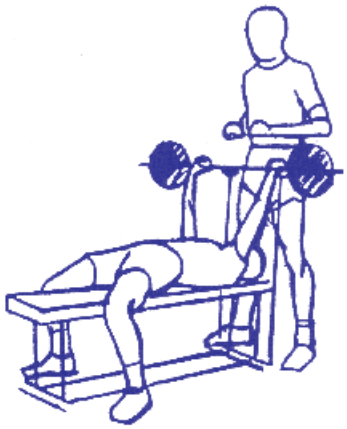
A. Lie in a supine position (as illustrated) with your hands on the bar or machine handles at shoulder width, or slightly wider, and your feet flat on the floor.

B. Press weight straight up, exhaling during the upstroke.

C. Slowly return to the starting position. Repeat.

CAUTION: If free weights are used, be sure to have a spotter.



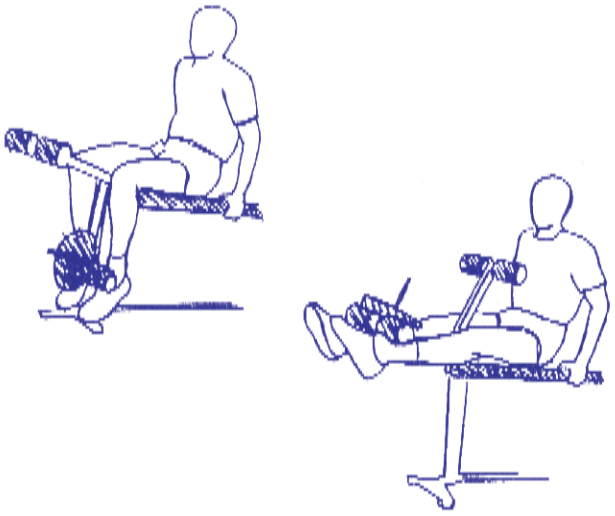


3. Knee Extension

A. Sit with your upper body erect, hands supporting the body on the bench, eyes facing straight ahead, the bar in front of your ankles.

B. Extend your legs, straightening knees while exhaling. Slowly return to starting position. Repeat.

The resistance used for this exercise should be no more than 1.5 times that used on the Knee Curls (No. 5, below).

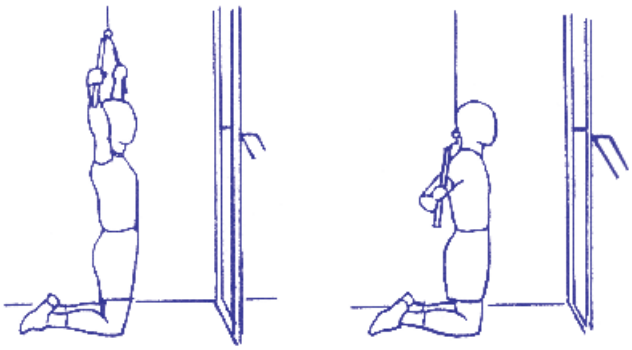


4. Lat Pull-Downs (pull-ups may be substituted for this exercise)

A. This exercise requires a special piece of equipment (a high pulley) on which the force may be exerted downward.

B. Start in an upright position on your knees (or seated on a stool) facing straight ahead with upper body erect.

C. Pull straight down until bar is even with the back of the neck (exhale during this portion of the exercise). Slowly return to the starting position. Repeat.



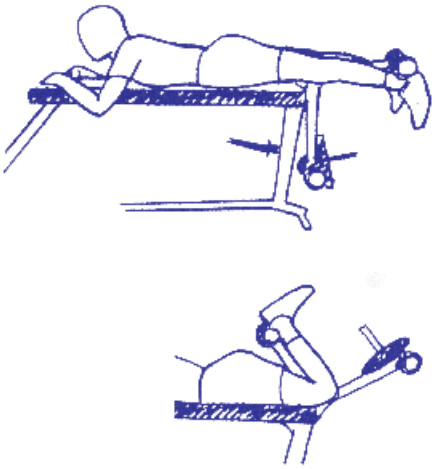
5. Knee (flexion) Curls

A. Lie on your stomach (in a prone position) on the bench with knees extended slightly past the bench pad and bar on the back of your ankles.

B. Bend knees, bringing heels forward toward the buttocks (exhale during this portion of the exercise). Slowly return to the starting position. Repeat.

C. Maintain a smooth, controlled motion while performing this exercise.

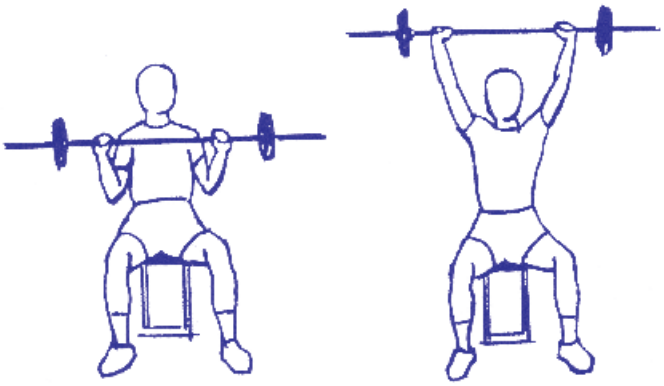
Resistance on this exercise should be no less than 2/3 of that used for the Knee Extension (No. 3, above).



6. Overhead Press

A. Start in a standing (or seated position), with back straight, head up facing straight ahead, and your hands on the bar or machine handles slightly farther apart than the width of your shoulders.

B. Press bar straight up overhead while maintaining starting body position. Exhale during upstroke. Return to slowly to starting position. Repeat.



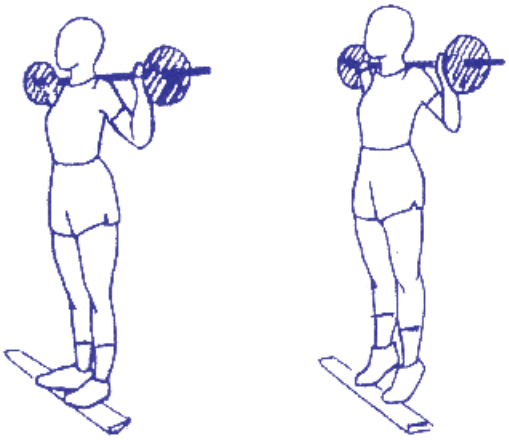
CAUTION: Do not look up at the bar or arch your lower back when performing this exercise.

7. Heel Raises

A. Start with your body erect, eyes straight ahead, toes on a 1-inch-high board.

B. Hold weight behind your neck with arms extended at your sides.

C. Lift the heels and continue to a position supported only by the balls of your feet, exhaling as you lift your heels. Return slowly to starting position. Repeat.

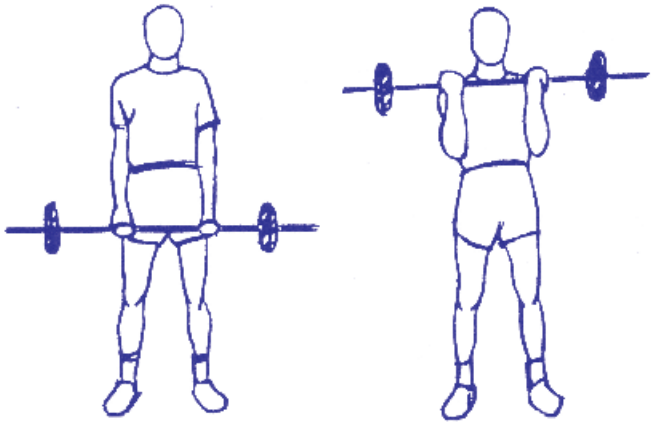


8. Arm Curls

A. Start holding the bar with an underhand grip (palms up), hands and feet approximately shoulder-width apart.

B. Maintaining a straight body position with your elbows remaining stationary, bend your arms at the elbow and bring the bar up to your throat, while exhaling.

C. Slowly return to the starting position and repeat.

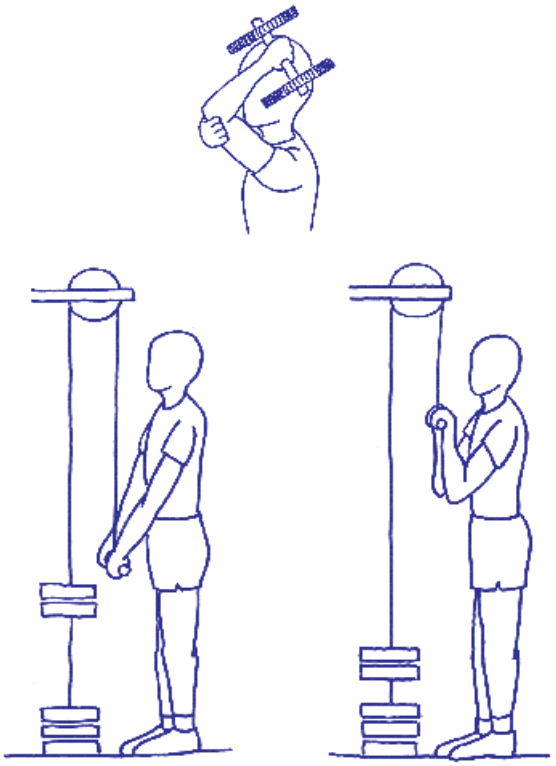


9. Elbow Extensions (using a high pulley or dumbbell)

A. If you are using a dumbbell, this exercise should be done one arm at a time. If a high pulley is available, you should exercise both arms at the same time.

B. With dumbbell: Start with dumbbell beside the ear, as illustrated. Slowly extend elbow while bracing lifting arm with opposite hand. Slowly return and repeat.

C. With high pulley: Start with elbows at sides, hands on bar with an overhand grip and bar at approximately chin level. Slowly extend the elbows downward while maintaining position of elbows at your side and keeping wrists rigid. Slowly return and repeat.



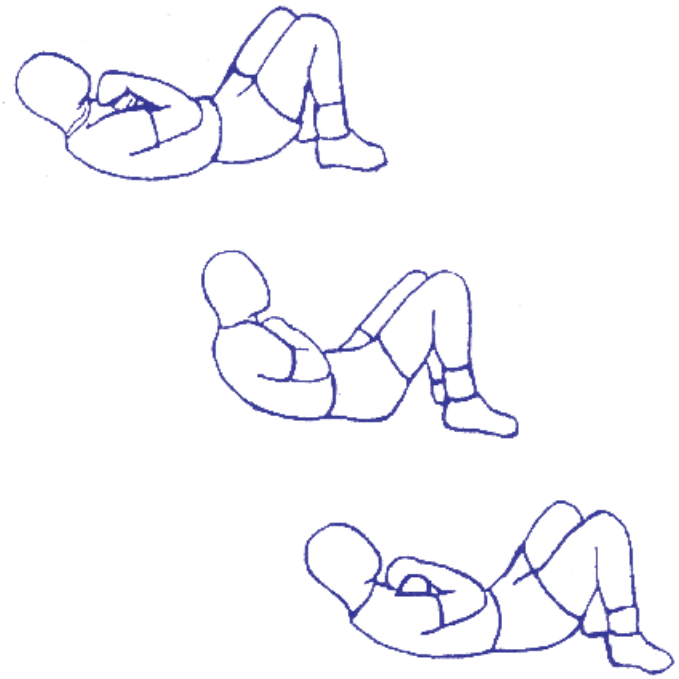
10. Abdominal Curls

A. Lie on your back with knees bent and feet flat on the floor.

B. Fold your arms across your chest or your abdomen (do not place hands behind head).

C. Slowly curl your head and neck up toward your chest and lift your head and shoulder blades off the floor.

D. In a steady motion, slowly lower your head and shoulders back to the starting position. Repeat.



Exercises (and Motions) to Avoid

General guidelines

- A number of exercises or movements have been identified as not recommended because they may either cause injury or leave people more susceptible to injury.
- Most of the questionable exercises or movements place a person's joints in an extreme or otherwise compromised position.
- Generally speaking, any position that causes an individual pain should be avoided.
- Older individuals and persons with known medical conditions or symptoms should discuss their planned exercise program with their physician before starting. Persons with specific conditions, such as advanced osteoporosis, should clearly avoid some movements due to risk of injury.
- What follows is a non-exhaustive list of exercises and movements that are not recommended.

1. Hyperextension (backward movement) of the Neck

A. Movement of the neck should be restricted to side-to-side or forward movement of the head.

B. Exercises involving backward movement of the head (as in looking up toward the sky or ceiling) should be avoided.

2. Hyperextension of the Low Back (in prone position)

Back extension from the prone position (illustrated) is not recommended.

3. Straight Leg Toe Touches

A. Exercises involving this motion should be avoided, whether from a standing or seated position (including sit-ups with straight legs).

B. Exercises involving this motion combined with lifting may be particularly harmful.

4. Double (bilateral) Leg Lifts

This motion is not recommended because of the potential strain of the lower back.

5. The Plow

This position, a progression from straight leg lifts, is also not recommended.

6. Single Leg Stretches (with full knee extension)

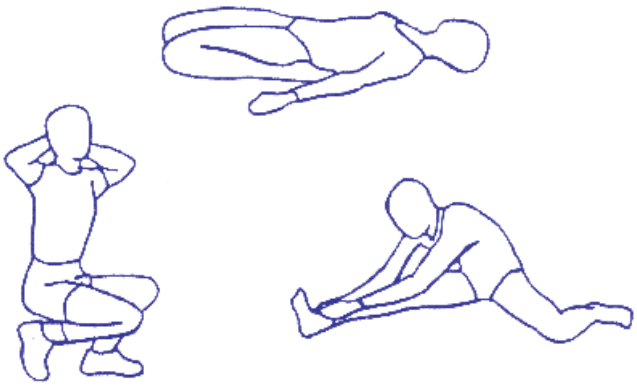
Stretches that involve standing on one leg while lifting the other leg up and placing it on a high object with the knee extended are not recommended.

7. Exercises That Place the Knee in a Position of Extreme Flexion

A. These exercises are ordinarily stretching or resistance exercises.

B. These exercises are particularly risky when significant resistance or force is applied to the knee while it is in this position.

C. Several exercises involving this position are illustrated.



Recommended Lifting Techniques

Injuries to the lower back are quite common and often lead to missed time from work, school, sports, and other activities of daily living. Attention to proper lifting techniques greatly reduces a person's chances of suffering a lower back injury. The following principles of proper lifting should be followed whenever you are lifting.

1. **Never attempt to lift an object that is too heavy.**
   a) Get someone to help you with especially heavy or awkward objects.
   b) Know your realistic limits.

2. **Avoid twisting your body while lifting or carrying an object.**
   While lifting, maintain the normal (inward) curve in the low back. The easiest way to accomplish this is to extend the back slightly, allowing the buttocks to stick out. Practicing this will reduce the chances of an injury to the lower back.
   a) Turn your body as a unit when carrying heavy objects.
   b) Turn your feet in the direction you intend to go, before you start walking.

3. **Move your body close to the object you intend to pick up.**

4. **Use proper lifting technique.**
   a) Maintain the normal (inward) curve of the low back.
   b) Bend at the hips or knees.
   c) Lift with the legs.
   d) Avoid holding your breath while lifting.

5. **Never bend at the hips (with the knees straight) and attempt to lift a heavy object.**
   A good example of this is attempting to lift a heavy object out of the trunk of a car.

INCORRECT starting position

CORRECT starting position

(Maintain normal curve in the lower back)

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New 10/07