CHOLESTEROL AND EXERCISE

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Cholesterol

Cholesterol is a waxy fat carried through the bloodstream by lipoproteins.

HDL
High-density lipoproteins
"Good cholesterol"

LDL
Low-density lipoproteins
"Bad cholesterol"

"Good" cholesterol (HDL) is stable and carries "bad" cholesterol (LDL) away from the arteries. "Bad" cholesterol (LDL) sticks to artery walls and contributes to plaque build-up.

Diagram showing normal and narrowed arteries, with labels for artery wall, normal blood flow, abnormal blood flow, plaque, narrowed artery, and artery cross-section.
Objectives

• Briefly review benefits of regular exercise

• Discuss basic elements of a comprehensive exercise/physical activity program

• Discuss how to start exercising safely.

• Examine electronic/online educational tools to help reduce cardiovascular and metabolic disease (s) risks
Total Cholesterol Levels And Lifetime Risk Of Coronary Heart Disease

<table>
<thead>
<tr>
<th>Cholesterol Level</th>
<th>Lifetime Coronary Heart Disease Risk (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;200</td>
<td>30 (Men) 25 (Women)</td>
</tr>
<tr>
<td>200-239</td>
<td>40 (Men) 35 (Women)</td>
</tr>
<tr>
<td>&gt;239</td>
<td>50 (Men) 45 (Women)</td>
</tr>
</tbody>
</table>

- Men
- Women
## Metabolic Syndrome

**Characteristics and Adult Treatment Panel (ATP) III Criteria**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impaired glucose tolerance</td>
<td>Fasting glucose $\geq 110$ mg/dL</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>$\geq 130/85$ mm Hg</td>
</tr>
<tr>
<td>Elevated Triglycerides (TGs)</td>
<td>$\geq 150$ mg/dL</td>
</tr>
<tr>
<td>Low High-Density Lipoproteins (HDL)</td>
<td>$&lt; 40$ mg/dL for men&lt;br&gt;$&lt; 50$ mg/dL for women</td>
</tr>
<tr>
<td>Central obesity</td>
<td>Waist $&gt; 40$ inches for men&lt;br&gt;Waist $&gt; 35$ inches for women</td>
</tr>
</tbody>
</table>

Your genes partly influence how your body makes and handles cholesterol.
Reducing intake of saturated fats and cholesterol is a primary step in reducing cholesterol levels.
Being overweight puts you at higher risk for many significant health problems, such as:

- Type 2 diabetes
- Heart disease
- High cholesterol
- Sleep apnea
- Varicose veins
- Breast, endometrial, prostate, and colon cancers
- Arthritis
- Gallbladder disease
- Rashes and other skin abnormalities (such as warts)
- High blood pressure

<table>
<thead>
<tr>
<th>Body Fat Rating</th>
<th>Men*</th>
<th>Women*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risky (high body fat)</td>
<td>&gt;30%</td>
<td>&gt;40%</td>
</tr>
<tr>
<td>Excess Fat</td>
<td>21-30%</td>
<td>31-40%</td>
</tr>
<tr>
<td>Moderately Lean</td>
<td>13-20%</td>
<td>23-30%</td>
</tr>
<tr>
<td>Lean</td>
<td>9-12%</td>
<td>19-22%</td>
</tr>
<tr>
<td>Ultra Lean</td>
<td>5-8%</td>
<td>15-18%</td>
</tr>
<tr>
<td>Risky (low body fat)</td>
<td>&lt;5%</td>
<td>&lt;15%</td>
</tr>
</tbody>
</table>
TOTAL BLOOD CHOLESTEROL

Bad Cholesterol (LDL)
Low Density Lipoprotein
(mg / dL)

- < 100 optimal
- 100 - 129 above optimal
- 130 - 159 high risk
- > 160 very high risk

LDL delivers Cholesterol to the body

Good Cholesterol (HDL)
High Density Lipoprotein
(mg / dL)

- > 60 protective vs heart disease
- < 50 for female high risk
- < 40 for male high risk

HDL removes Cholesterol from the bloodstream

Pieces of plaque can break free, travel to the brain, and block blood vessels that supply blood to the brain.
Exercise Raises The Good And Lowers The Bad As Far As Cholesterol Is Concerned

Continuous exercise contributes to the brain’s release of endorphins

Endorphins reduce the intensity of pain sensed by the brain

Aerobic exercise builds endurance by keeping the heart pumping for an extended period of time

Exercising 30 minutes a day can help you lose weight, which can lower blood pressure

Resistance training builds strength of muscles, bones, and surrounding soft tissue; burns fat; and may lower cholesterol
Basic Guidelines For Healthy Adults Under Age 65

• **Basic recommendations from ACSM and AHA:**
  
  • Do moderately intense cardio 30 minutes a day, five days a week
  
  *Or*
  
  • Do vigorously intense cardio 20 minutes a day, 3 days a week
  
  *And*
  
  • Do eight to 10 strength-training exercises, eight to 12 repetitions of each exercise twice a week.
  
  • Moderate-intensity physical activity means working hard enough to raise your heart rate and break a sweat, yet still being able to carry on a conversation. It should be noted that to lose weight or maintain weight loss, 60 to 90 minutes of physical activity may be necessary. The 30-minute recommendation is for the average healthy adult to maintain health and reduce the risk for chronic disease.
  
  • Use the links below to learn more about the guidelines and to make physical activity a regular part of your life.
  
Tips for meeting the guidelines

• **Do it in short bouts.** Research shows that moderate-intensity physical activity can be accumulated throughout the day in 10-minute bouts, which can be just as effective as exercising for 30 minutes straight. This can be useful when trying to fit physical activity into a busy schedule.

• **Mix it up.** Combinations of moderate- and vigorous-intensity physical activity can be used to meet the guidelines. For example, you can walk briskly for 30 minutes twice per week and jog at a higher intensity on two other days.

• **Set your schedule.** Maybe it’s easier for you to walk during your lunch hour, or perhaps hitting the pavement right after dinner is best for you. The key is to set aside specific days and times for exercise, making it just as much a regular part of your schedule as everything else.

• **The gym isn’t a necessity.** It doesn’t take an expensive gym membership to get the daily recommended amount of physical activity. A pair of athletic shoes and a little motivation are all you need to live a more active, healthier life.

• **Make it a family affair.** Take your spouse, your children, or a friend with you during exercise to add some fun to your routine. This is also a good way to encourage your kids to be physically active and get them committed early to a lifetime of health.

http://www.acsm.org/AM/Template.cfm?Section=Home_Page&TEMPLATE=/CM/HTMLDisplay.cfm&CONTENTID=7764
Starting an exercise program

• Strive to meet the basic physical activity recommendations: 30 minutes of moderate-intensity physical activity at least five days per week, or vigorous-intensity activity at least three days per week, and strength training at least twice per week.

• Choose activities you enjoy, such as swimming, biking, or playing basketball with friends to get your daily physical activity. If you need variety of activities to stay motivated, combine a few that appeal to you.

• Physical activity can be accumulated through a variety of activities, not just running. Walking is a great way to do moderate-intensity physical activity. This issue of ACSM’s Fit Society Page® Newsletter contains an article on walking for health, as well as other features on getting active.

• Watch these videos, courtesy of ACSM's Exercise is Medicine™ program, to learn about types of exercise, strength training, flexibility and more.

• These Current Comments and brochures may also be helpful in designing your own activity program, gathering ideas for ways to accumulate physical activity, or learning about exercise and health:

http://www.acsm.org/AM/Template.cfm?Section=Home_Page&TEMPLATE=/CM/HTMLDisplay.cfm&CONTENTID=7764
Exercise Guidelines for Older Adults

• **Start, and get help if you need it.** The general recommendation is that older adults should meet or exceed 30 minutes of moderate physical activity on most days of the week; however, it is also recognized that goals below this threshold may be necessary for older adults who have physical impairments or functional limitations.

• **Functional health** is an important benefit of physical activity for older adults. Physical activity contributes to the ease of doing everyday activities, such as gardening, walking or cleaning the house.

• **Strength training** is extremely important. Strength training is important for all adults, but especially so for older adults, as it prevents loss of muscle mass and bone, and is beneficial for functional health.

• **If you can exceed the minimum recommendations**, do it! The minimum recommendations are just that: the *minimum* needed to maintain health and see fitness benefits. If you can exceed the minimum, you can improve your personal fitness, improve management of an existing disease or condition, and reduce your risk for health conditions and mortality.

• **Flexibility** is also important. Each day you perform aerobic or strength-training activities, take an extra 10 minutes to stretch the major muscle and tendon groups, with 10-30 seconds for each stretch. Repeat each stretch three to four times. Flexibility training will promote the ease of performing everyday activities.

Electronic and Online Tools and Resources

MEDLINEPLUS.GOV ONLINE MAGAZINE
HTTP://NNLM.GOV/TRAINING/RESOURCES/MPTRI.PDF

MEDLINEPLUS.GOV A SERVICE OF THE NATIONAL LIBRARY OF MEDICINE OF THE NATIONAL INSTITUTES OF HEALTH
HTTP://WWW.MEDLINEPLUS.GOV

AMERICAN COLLEGE OF SPORTS MEDICINE: FREE EXERCISE AND HEALTH BROCHURES SERIES: AVAILABLE AT:
HTTP://WWW.ACSM.ORG/CONTENT/NAVIGATIONMENU/NEWS/OTHERMEDIA/BROCHURES/HEALTH_AND_FITNESS_.HTM

AMERICAN COLLEGE OF SPORTS MEDICINE: “EXERCISE IS MEDICINE” EXERCISE PROGRAM KIT FOR THE PUBLIC AVAILABLE AT:
HTTP://EXERCISEISMEDICINE.ORG/DOCUMENTS/PUBLICACTIONGUIDELQ.PDF
Online Tips & Tools

• U.S. Department of Health and Human Services. Health Finder
  http://www.healthfinder.gov/

• Cholesterol U.S. Department of Health and Human Services

• American College of Sports Medicine: ACSM’s Fit Society Page (Newsletter)
  Available at:
  http://www.acsm.org/AM/Template.cfm?Section=ACSM_Fit_Society_Page

• American College of Sports Medicine: “Exercise Is Medicine” Exercise Program
  Kit for the public Available at:

• National Heart Blood and Lung Institutes. NHLBI. High Blood Cholesterol: What
  You Need to Know
Free Exercise Educational Videos

Keys to Exercise Video Series

Click on the thumbnails below to view Exercise Is Medicine's™ "Keys to Exercise" Video Series. Aerobic Exercise Types
Aerobic Exercise Intensity
Aerobic Exercise Frequency & Duration
Strength Training
Stretching
Exercise & Your Health

Available at http://www.myexerciseplan.com/assessment/
Example of Over 25 Free Exercise and Health Brochures (ACSM)
Your Prescription for Health Series

For more information, visit www.exerciseismedicine.org or e-mail eim@acsm.org.
ACSM’s Action Plan Series

Take control of your heart health, and feel better than you ever thought possible!

This comprehensive guide contains proven programs to bring cholesterol levels under control as quickly and effectively as possible. Readers will learn what type of exercise is best and how frequent and intense workouts should be. They will also find out which cholesterol medicine might be better for them or how they may be able to change their lifestyle to reduce or even eliminate medications completely. (ISBN 0-7360-5440-5)
ACSM BOOKS AND MULTIMEDIA

ACSM Action Plan for Health Series

Action Plan for Diabetes
Your guide to controlling blood sugar
Darryl E. Barnes, MD

Action Plan for Osteoporosis
Your guide to stronger, healthier bones
Kerri Winters-Stone, PhD

Action Plan for Arthritis
Your guide to pain-free movement
A. Lynn Millar

Action Plan for High Blood Pressure
Your guide to managing exercise and medication to relieve hypertension
Jon Divine, MD
Thank You