

CHOLESTEROL AND EXERCISE

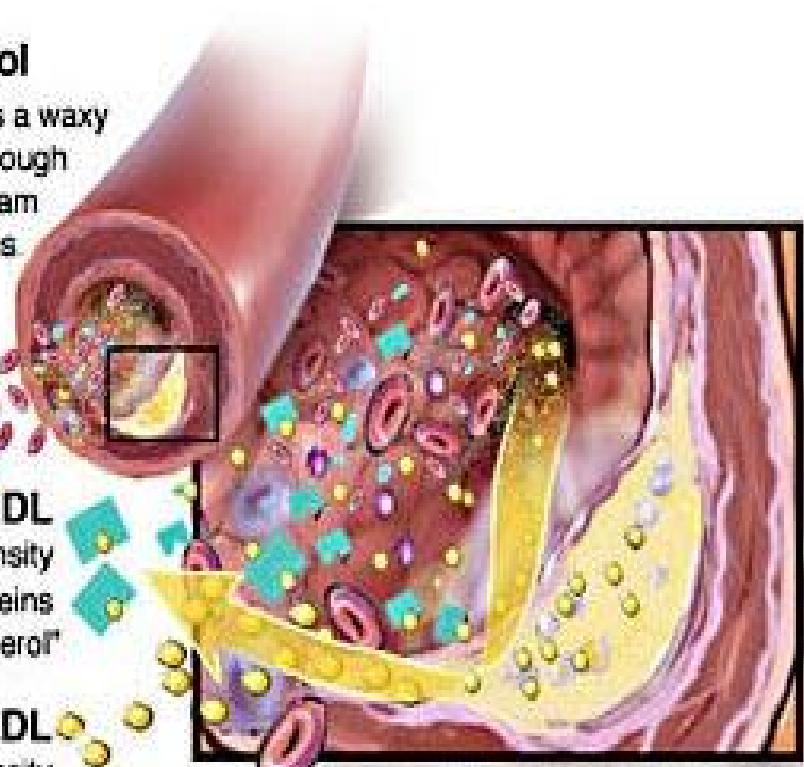
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Cholesterol

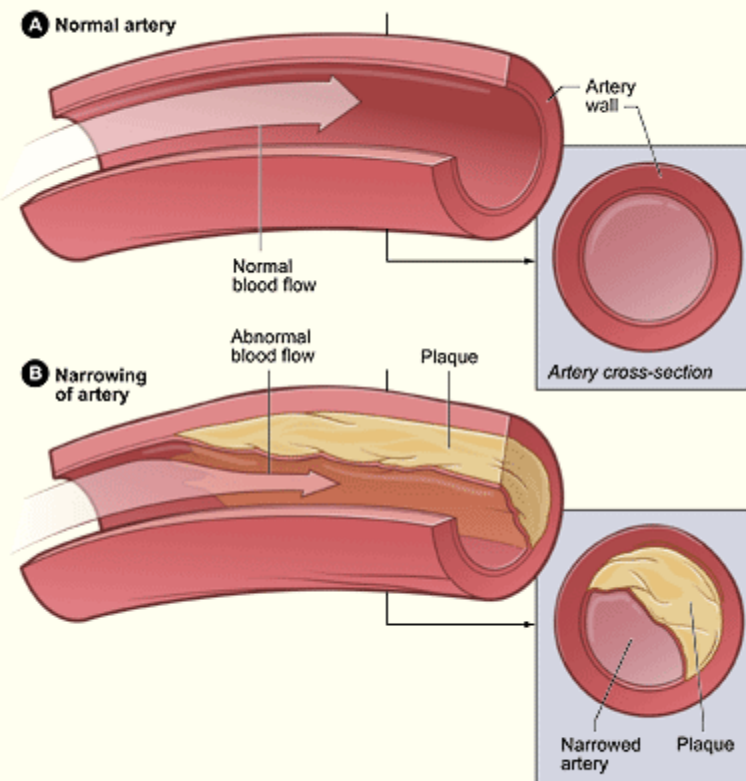
Cholesterol is a waxy fat carried through the bloodstream by lipoproteins.

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.



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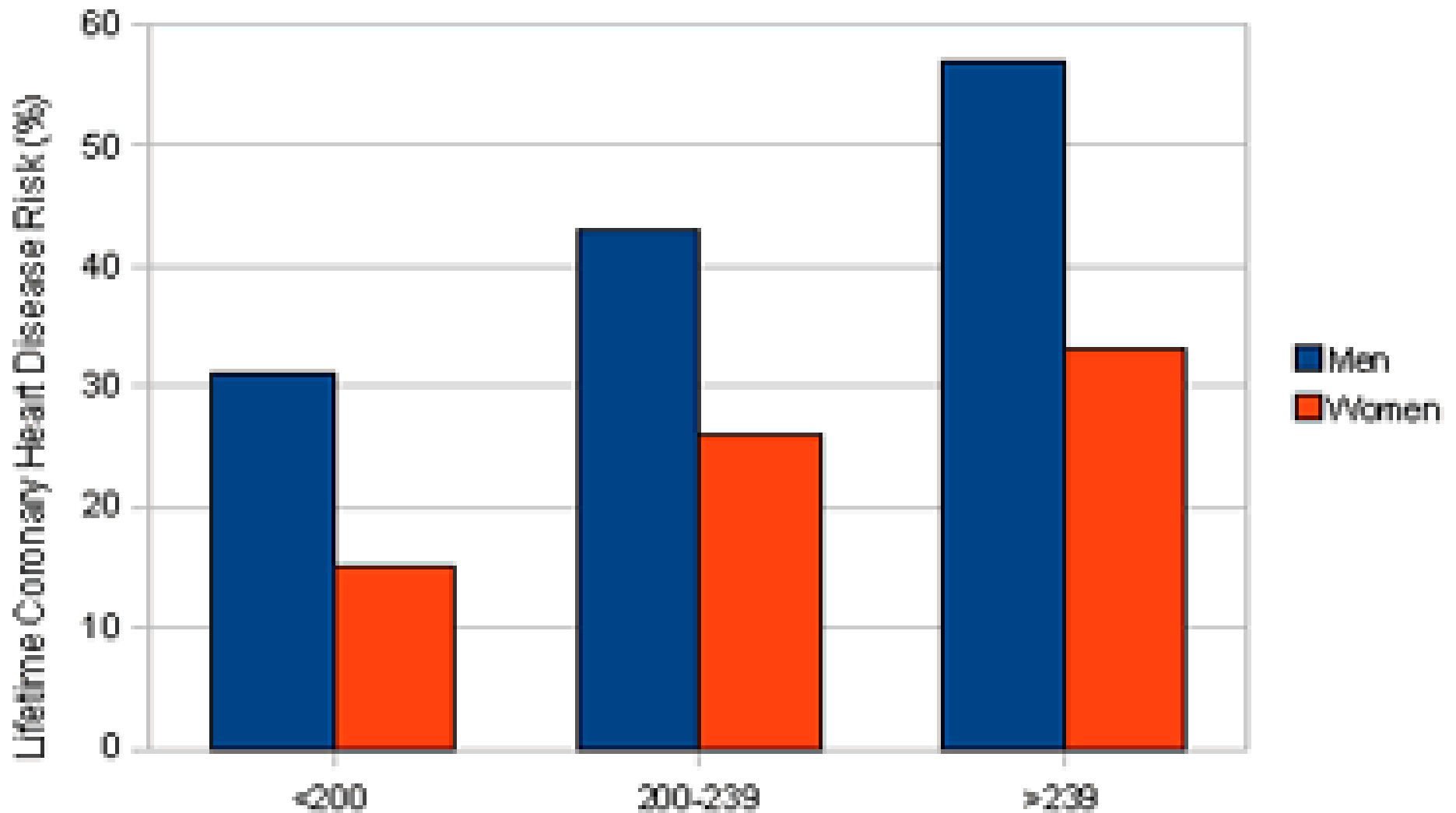
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Objectives

- 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



Metabolic Syndrome

Characteristics and Adult Treatment Panel (ATP) III Criteria

Impaired glucose tolerance	Fasting glucose \geq 110 mg/dL
High blood pressure	\geq 130/85 mm Hg
Elevated Triglycerides (TGs)	\geq 150 mg/dL
Low High-Density Lipoproteins (HDL)	< 40 mg/dL for men < 50 mg/dL for women
Central obesity	Waist > 40 inches for men Waist > 35 inches for women

Meigs JB. *BMJ*. 2003;327:61-62.

Executive Summary of ATP III. *JAMA*. 2001;285:2486-2497.





DNA

Your genes partly influence how your body makes and handles cholesterol

ADAM.



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Reducing intake of saturated fats and cholesterol is a primary step in reducing cholesterol levels

 ADAM.



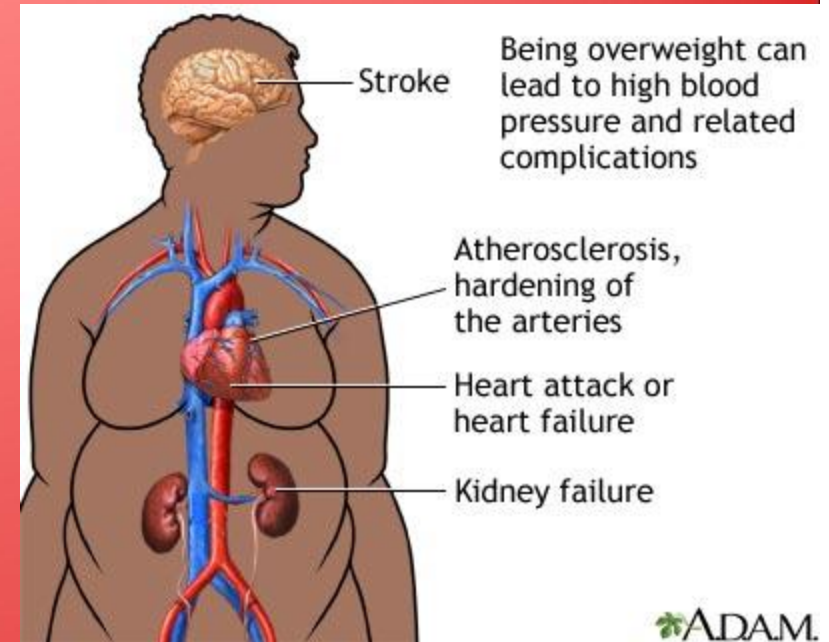
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Being overweight puts you at higher risk for many significant health problems, such

as:

Body Fat Rating	Men*	Women*
Risky (high body fat)	>30%	>40%
Excess Fat	21-30%	31-40%
Moderately Lean	13-20%	23-30%
Lean	9-12%	19-22%
Ultra Lean	5-8%	15-18%
Risky (low body fat)	<5%	<15%



- 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

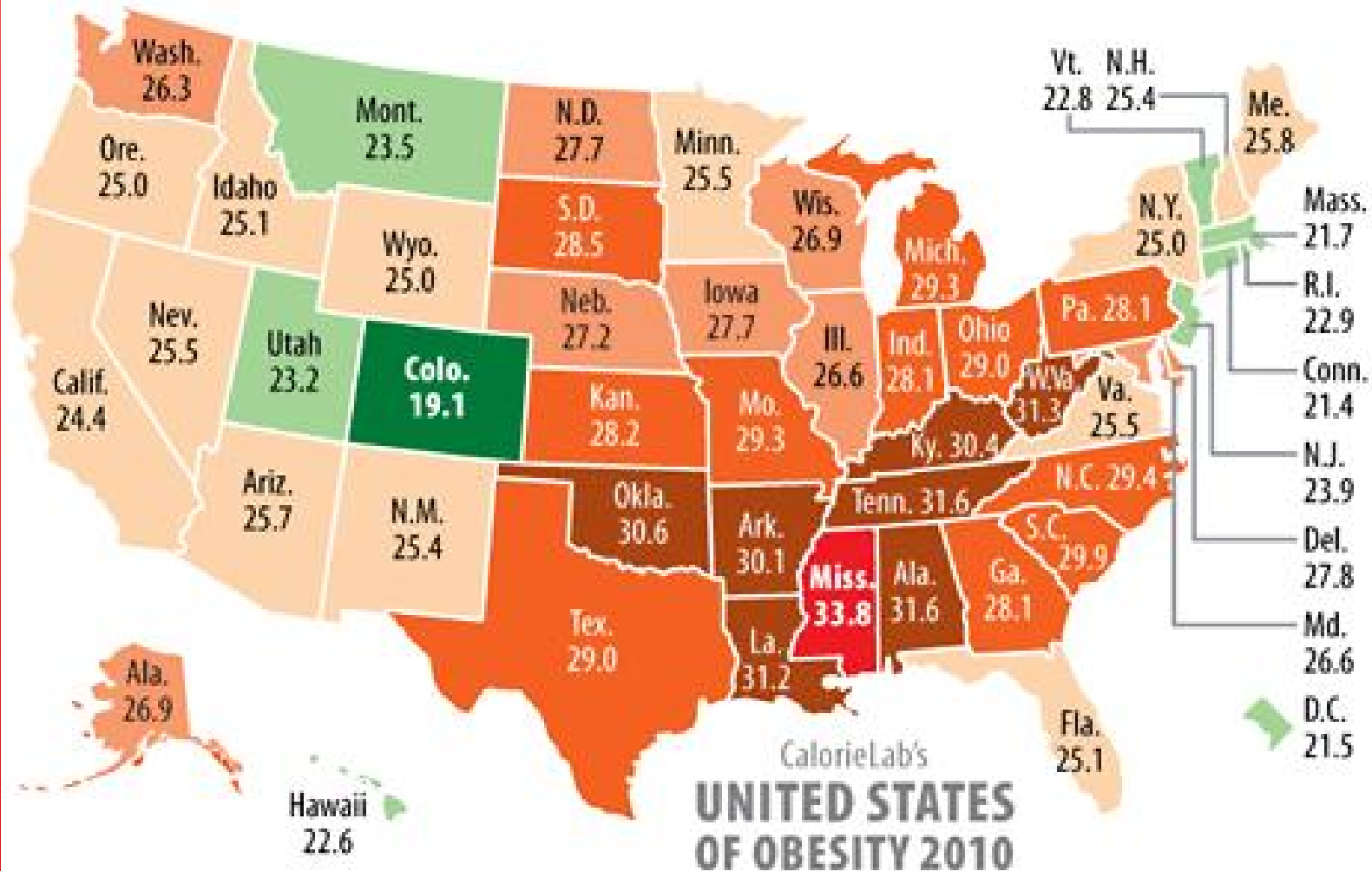
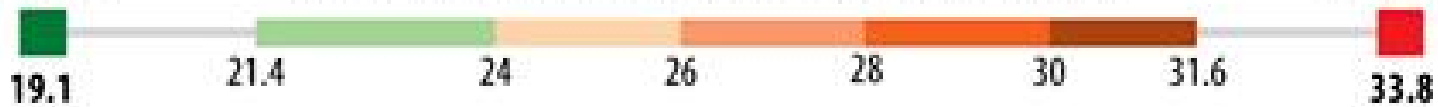


Leanest State
Colorado

Percentage of Obese Adult Population

(3-year average from 2007-09 CDC Behavioral Risk Factor Surveillance System data)

Fattest State
Mississippi



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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

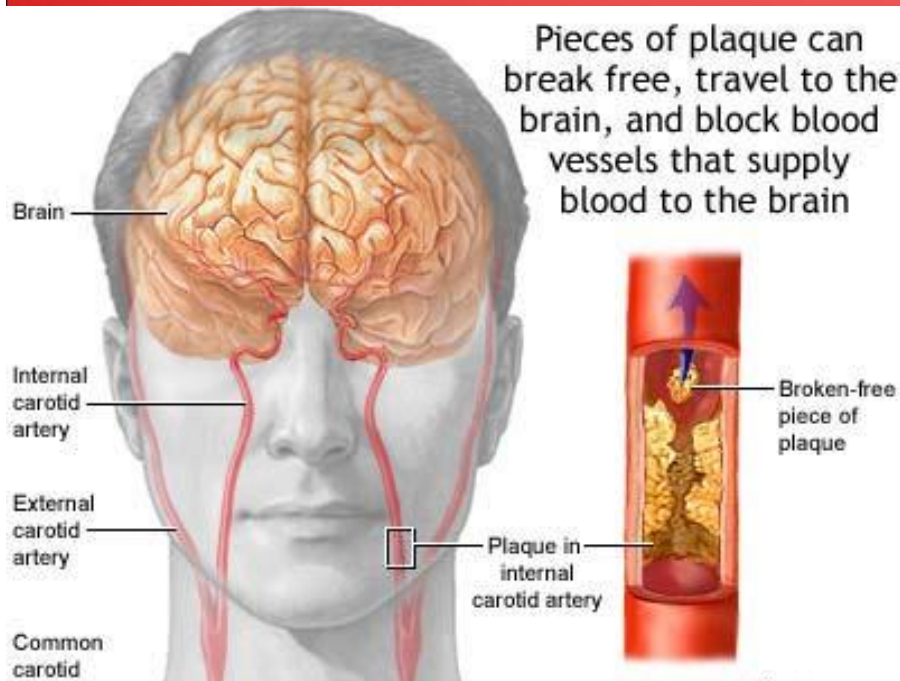
Good Cholesterol (HDL)
High Density Lipoprotein
(mg / dL)

> 60 protective
vs heart disease

< 50 high risk
for female

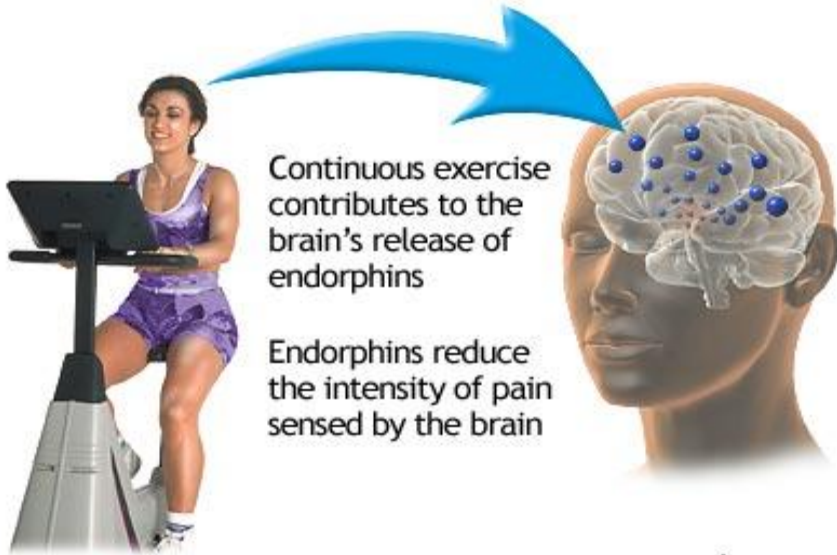
< 40 high risk
for male

HDL removes Cholesterol
from the bloodstream



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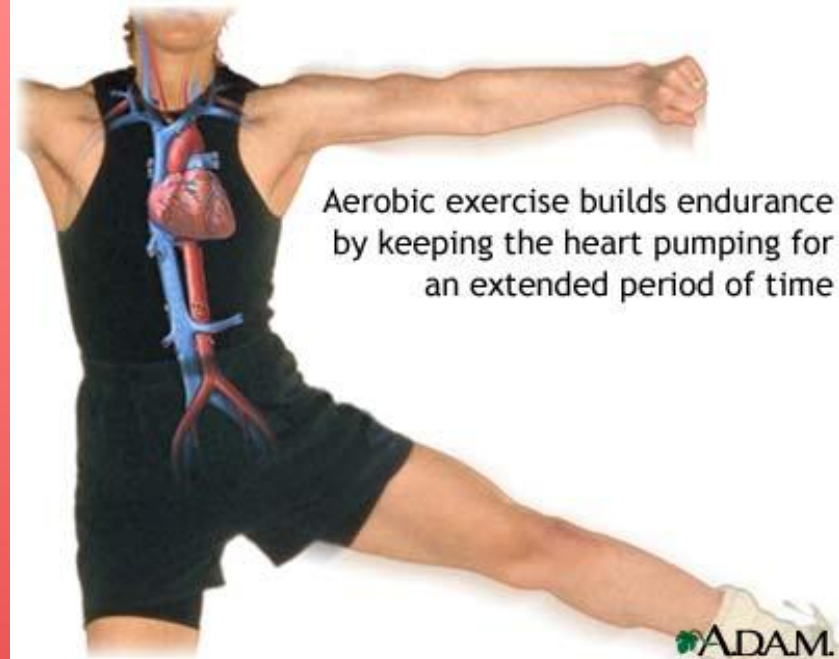
Exercise Raises The Good And Lowers The Bad As Far As Cholesterol Is Concerned



Continuous exercise contributes to the brain's release of endorphins

Endorphins reduce the intensity of pain sensed by the brain

ADAM.



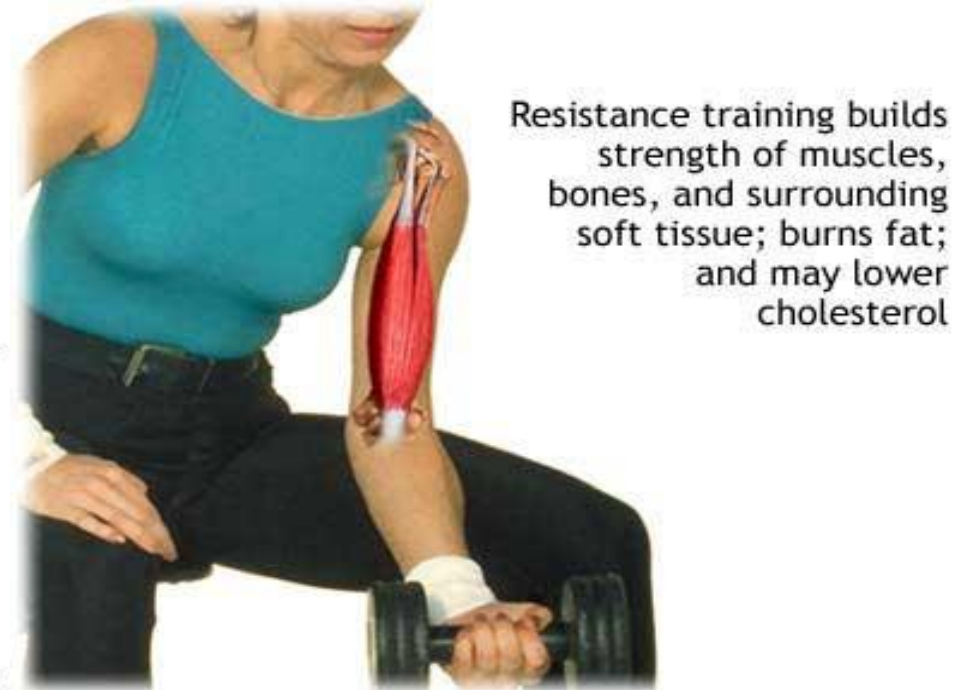
Aerobic exercise builds endurance by keeping the heart pumping for an extended period of time

ADAM.



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

ADAM.



Resistance training builds strength of muscles, bones, and surrounding soft tissue; burns fat; and may lower cholesterol

ADAM.



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



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.

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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:

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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.
- Accessed from the American College of Sports Medicine at:
http://www.acsm.org/AM/Template.cfm?Section=Home_Page&TEMPLATE=/CM/HTMLDisplay.cfm&CONTENTID=7764



AskTheTrainer.com

RPE Chart

Rate of Perceived Exertion

10	Max Effort Activity Feels almost impossible to keep going Completely out of breathe, unable to talk
9	Very Hard Activity Very difficult to maintain exercise intensity Can barely breath & speak a single word
7-8	Vigorous Activity On the verge of becoming uncomfortable Short of breath, can speak a sentence
4-6	Moderate Activity Feels like you can exercise for hours Breathing heavily, can hold short conversation
2-3	Light Activity Feels like you can maintain for hours Easy to breathe & carry a conversation
1	Very Light Activity Anything other than sleeping Watching TV, riding in a car, etc.

RPE Scale

6	
7	Very, Very Light
8	
9	Very Light
10	
11	Fairly Light
12	
13	Somewhat Hard
14	
15	Hard
16	
17	Very Hard
18	
19	Very, Very Hard
20	



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Electronic and Online Tools and Resources

MEDLINEPLUS.GOV ONLINE MAGAZINE

[HTTP://NNLM.GOV/TRAINING/RESOURCES/MPTRI.PDF](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](http://www.medlineplus.gov)

**AMERICAN COLLEGE OF SPORTS MEDICINE: FREE EXERCISE AND HEALTH
BROCHURES SERIES: AVAILALABLE AT:**

**[HTTP://WWW.ACSM.ORG/CONTENT/NAVIGATIONMENU/NEWS/OTHERME
DIA/BROCHURES/HEALTH AND FITNESS .HTM](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/PUBLICACTIONGUIDEL
O.PDF](http://exerciseismedicine.org/documents/publicactionguide10.pdf)**



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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
<http://www.healthfinder.gov/scripts/SearchContext.asp?topic=168>
- 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](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 :
<http://exerciseismedicine.org/documents/PublicActionGuideLO.pdf>
- National Heart Blood and Lung Institutes. NHLBI. High Blood Cholesterol: What
You Need to Know
<http://www.nhlbi.nih.gov/health/public/heart/chol/wyntk.htm>



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

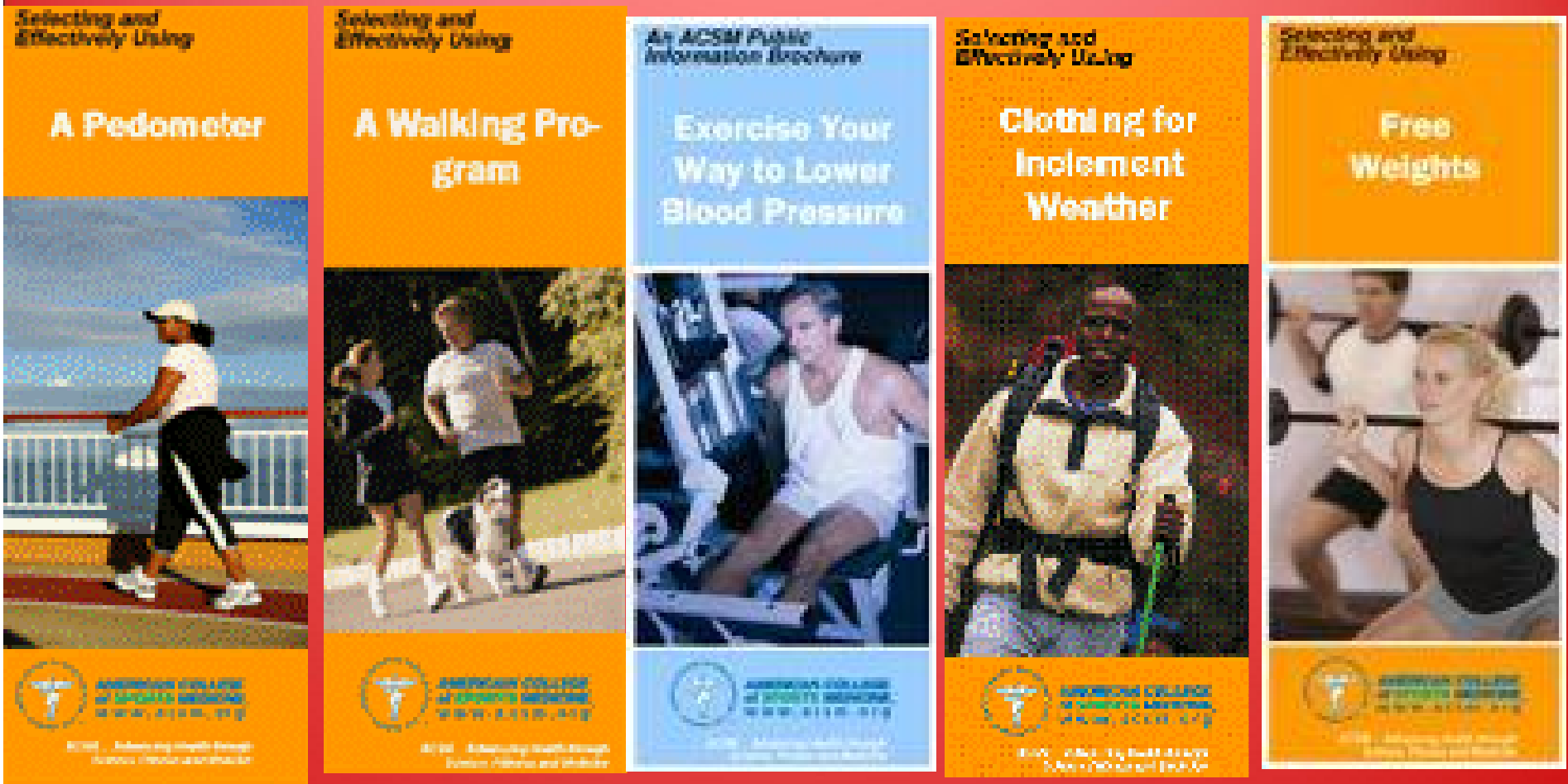
Available at <http://www.myexerciseplan.com/assessment/>



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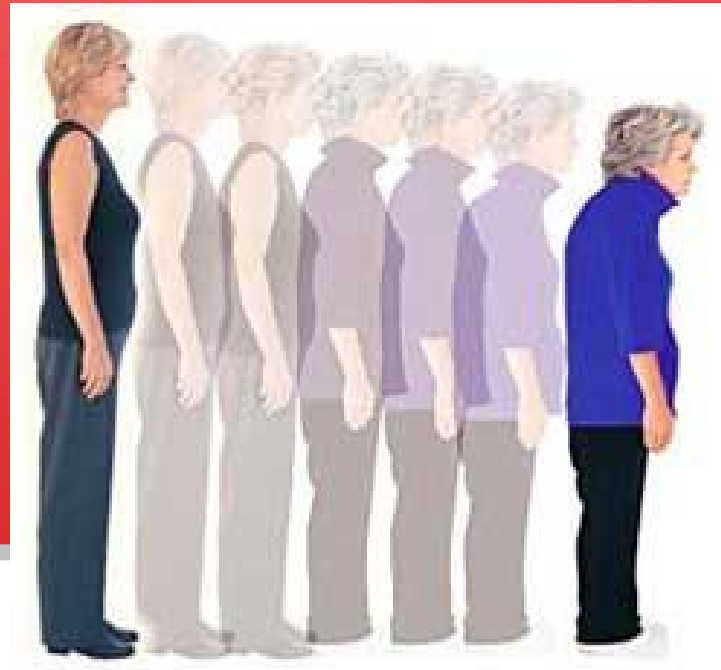
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Example of Over 25 Free Exercise and Health Brochures (ACSM)



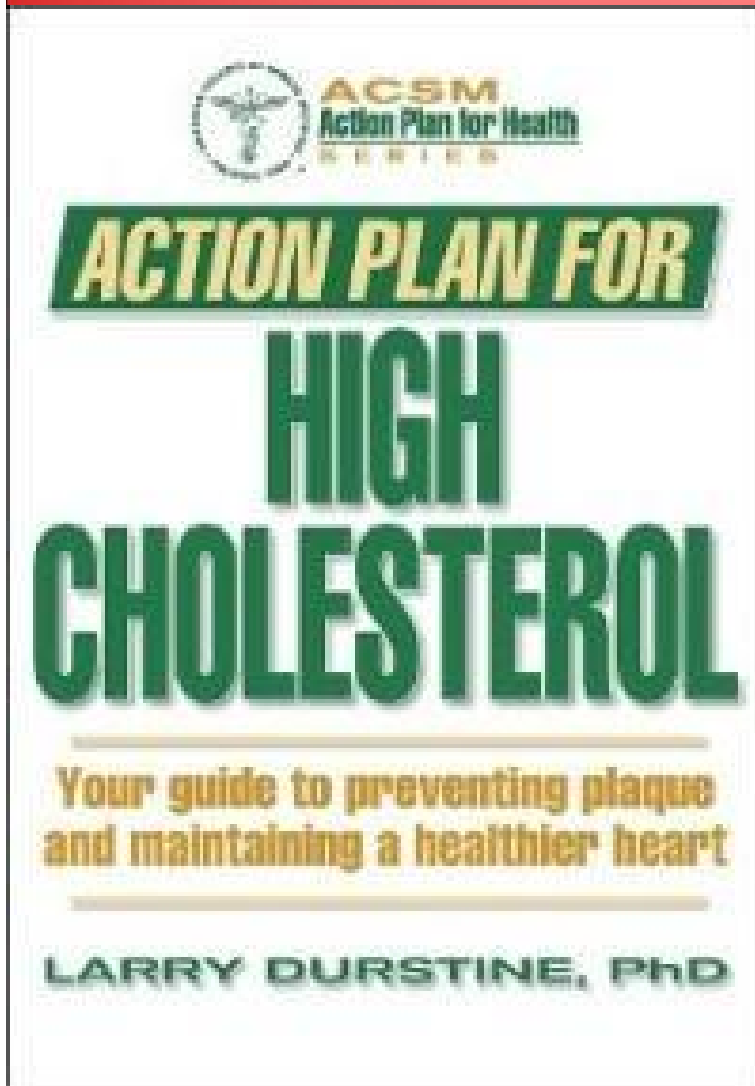
Your Prescription for Health Series

For more information, visit www.exerciseismedicine.org or e-mail eim@acsm.org.



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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)



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ACSM BOOKS AND MULTIMEDIA



**ACTION PLAN FOR
OSTEOPOROSIS**

Your guide to
stronger, healthier bones

KERRI WINTERS-STONE, PhD



**ACTION PLAN FOR
DIABETES**

Your guide to
controlling blood sugar

DARRYL E. BARNES, MD



**ACTION PLAN FOR
ARTHRITIS**

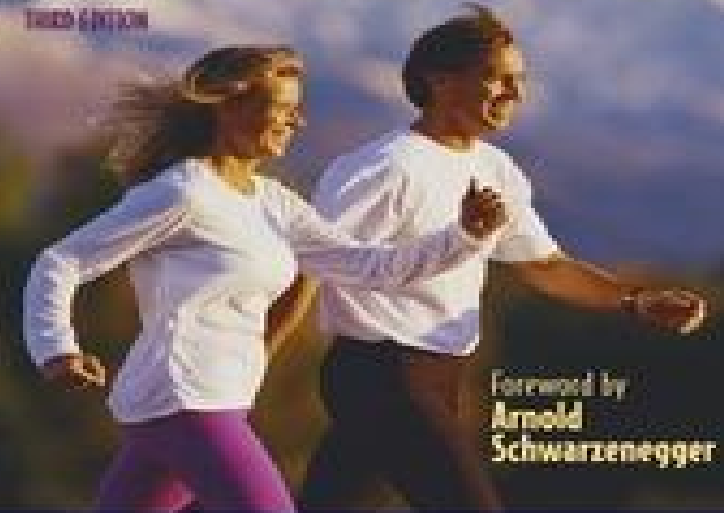
Your guide to
pain-free movement

A. LYNN MILLAR



**ACSM
FITNESS BOOK**

A proven step-by-step program from the experts
THIRD EDITION



Foreword by
Arnold
Schwarzenegger

AMERICAN COLLEGE OF SPORTS MEDICINE



**ACTION PLAN FOR
HIGH BLOOD
PRESSURE**

Your guide to managing exercise and
medication to relieve hypertension

JON DIVINE, MD



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Thank You



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