



## BI 121 Lecture 8

- I. Announcements** **Exam I next session; 12 n & 1 pm lab sections go directly to 112 HUE & 130 HUE. All others here (100 WIL)! Review: Sunday, 6 pm here!** Lab notebooks. Q?
- II. Cardiovascular Connections** LS 2012 ch 9, Torstar Books+...
- III. CV Physiology in News** AHA + NHLBI websites. Nic? ACSM, AHA, DHHS Healthy people exercise guidelines!
- IV. CV Pathophysiology & Risk Reduction** LS ch 9, 10 +...
  - A. AMI, CVA, CVD, PVD, TIA, HTN? + surgical treatments
  - B. Atherosclerosis? LS fig 9-27, 9-25, 9-26 pp 266-8
  - C. How to minimize risk of CVDs? Treatment triad:  
Exercise, Diet, Drugs+Surgery
  - D. Food choices  
make a difference?  
What's HAPOC?

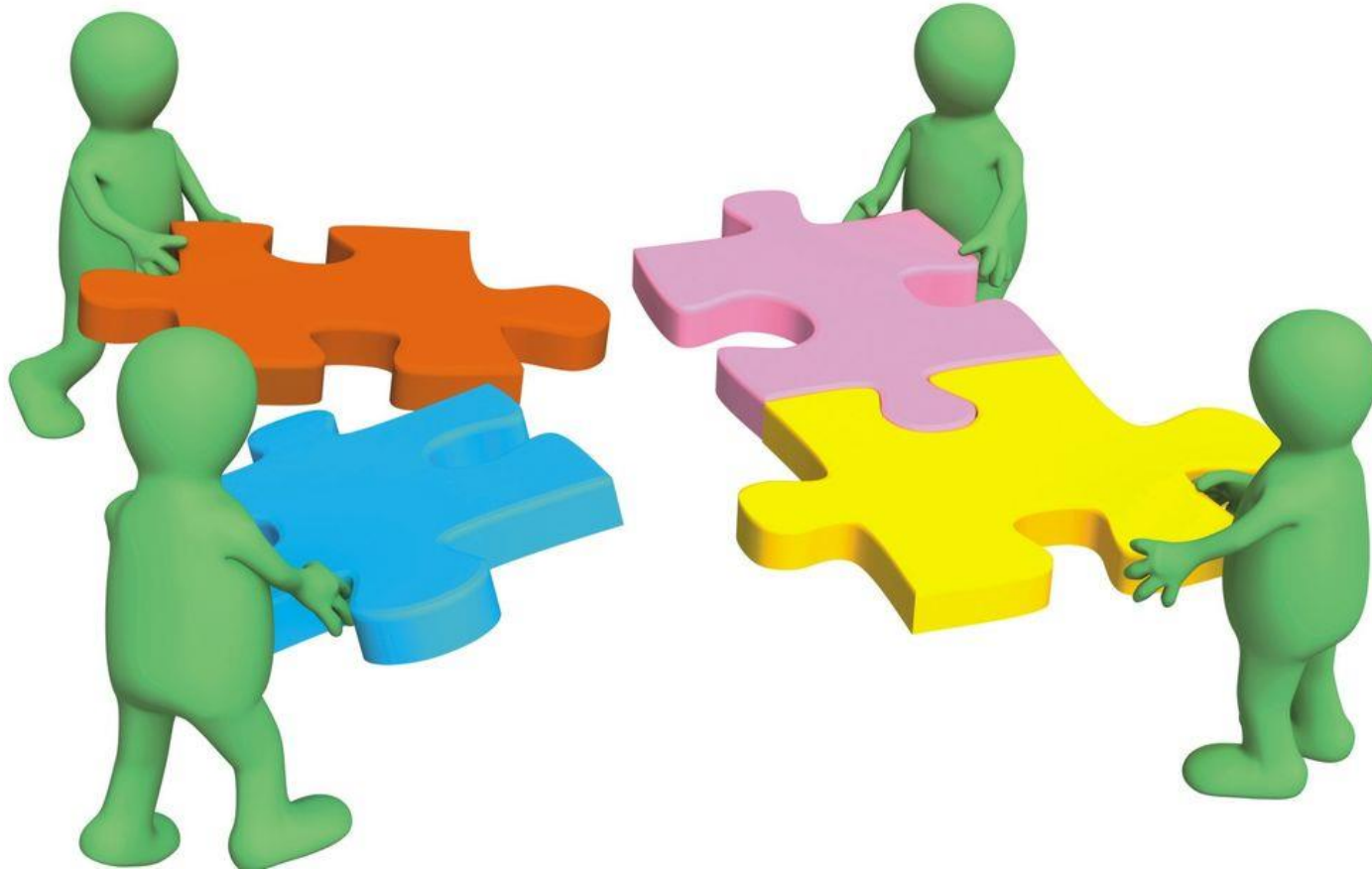


**12 n lab section takes Exam on  
Tuesday in 112 Huestis (HUE)  
1 pm lab section takes Exam on  
Tuesday in 130 Huestis (HUE)  
All others here (100 WIL)!  
All 8:30 start time!**



**Study & blast  
the exam!**

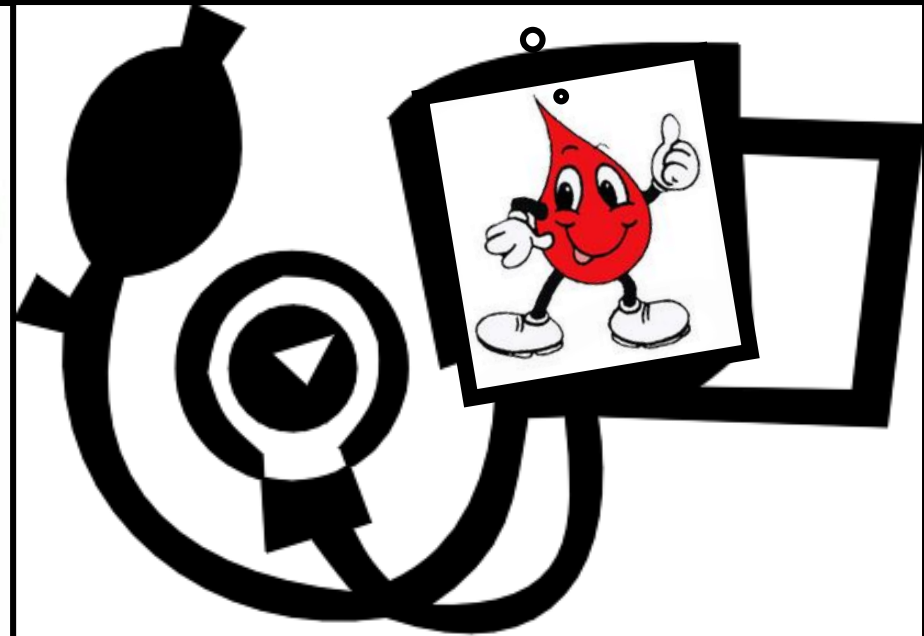
# *Study Groups?*



# *Heart-Blood Pressure Lab Today!*

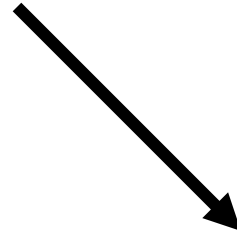
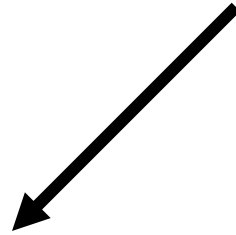
Lub-dup!

I'm cool!





# Cardiac Cycle

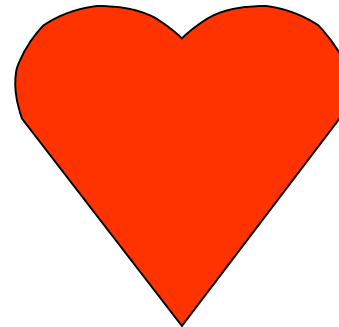
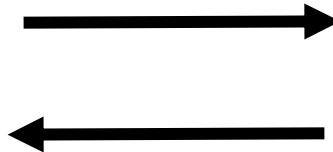
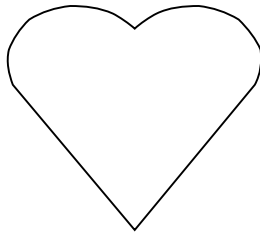


***Systole***

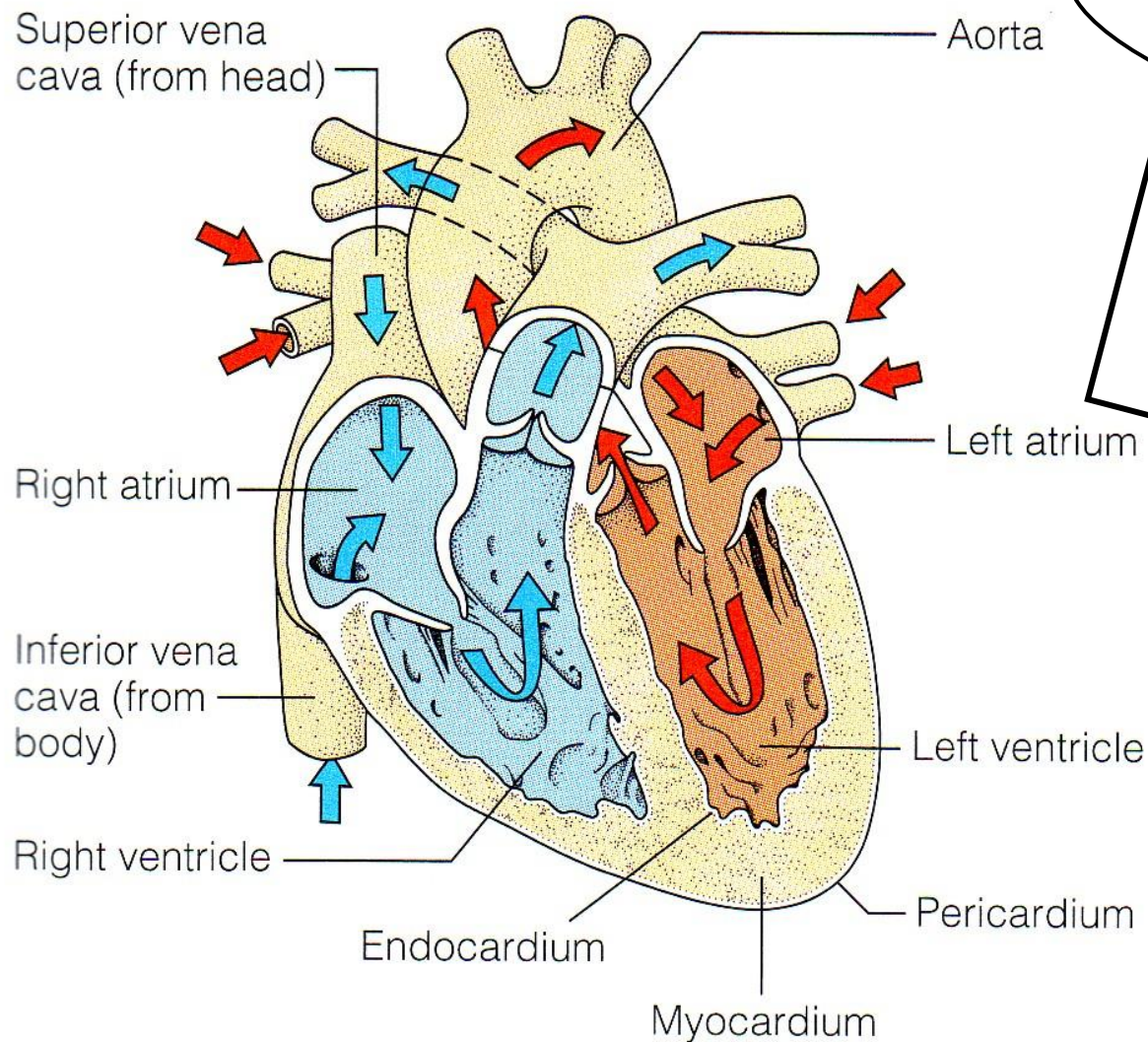
Contract  
& Empty

***Diastole***

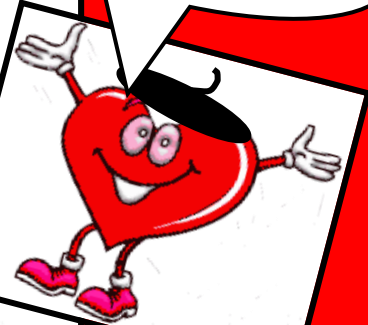
Relax  
& Fill



# Veins → Atria → Ventricles → Arteries

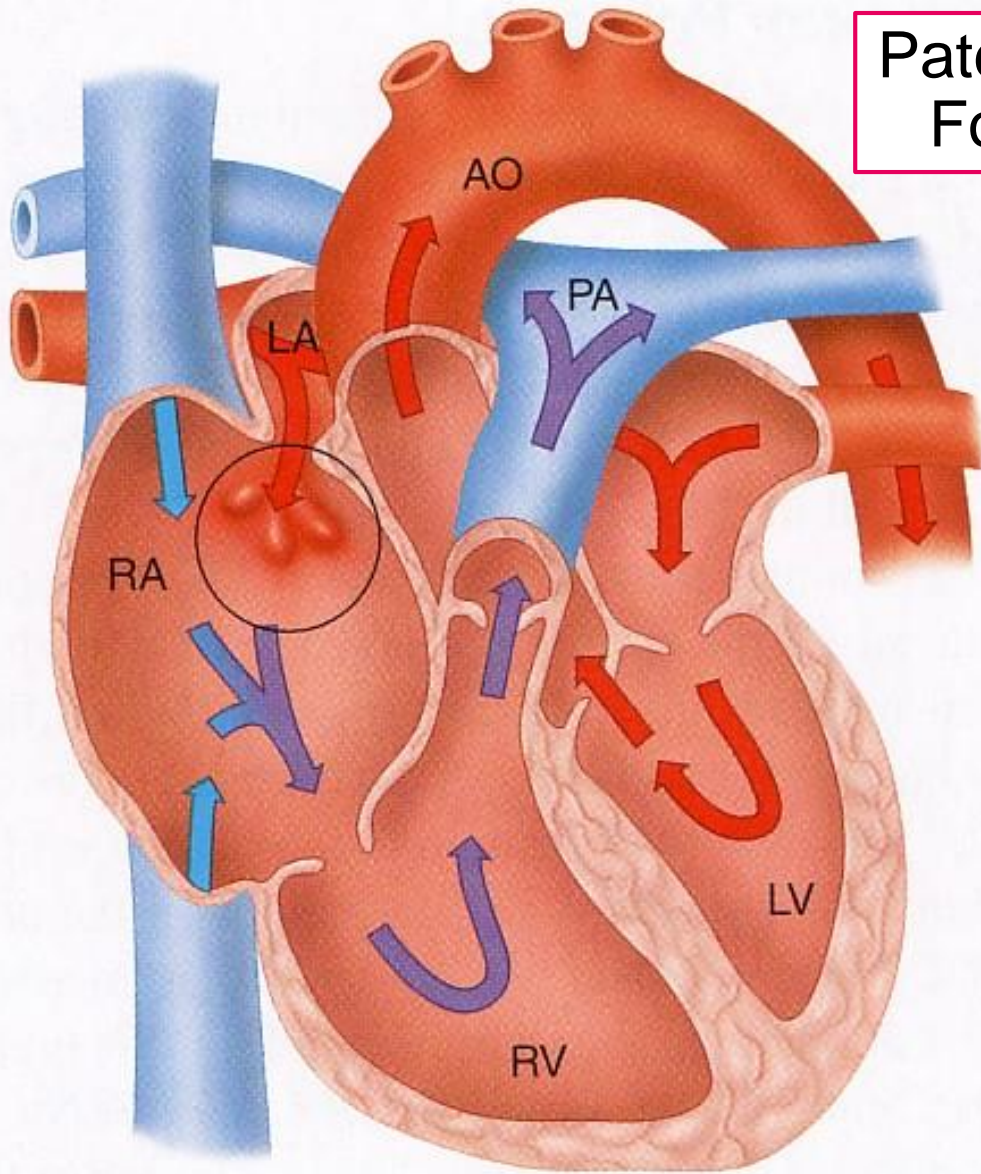


VAVA!



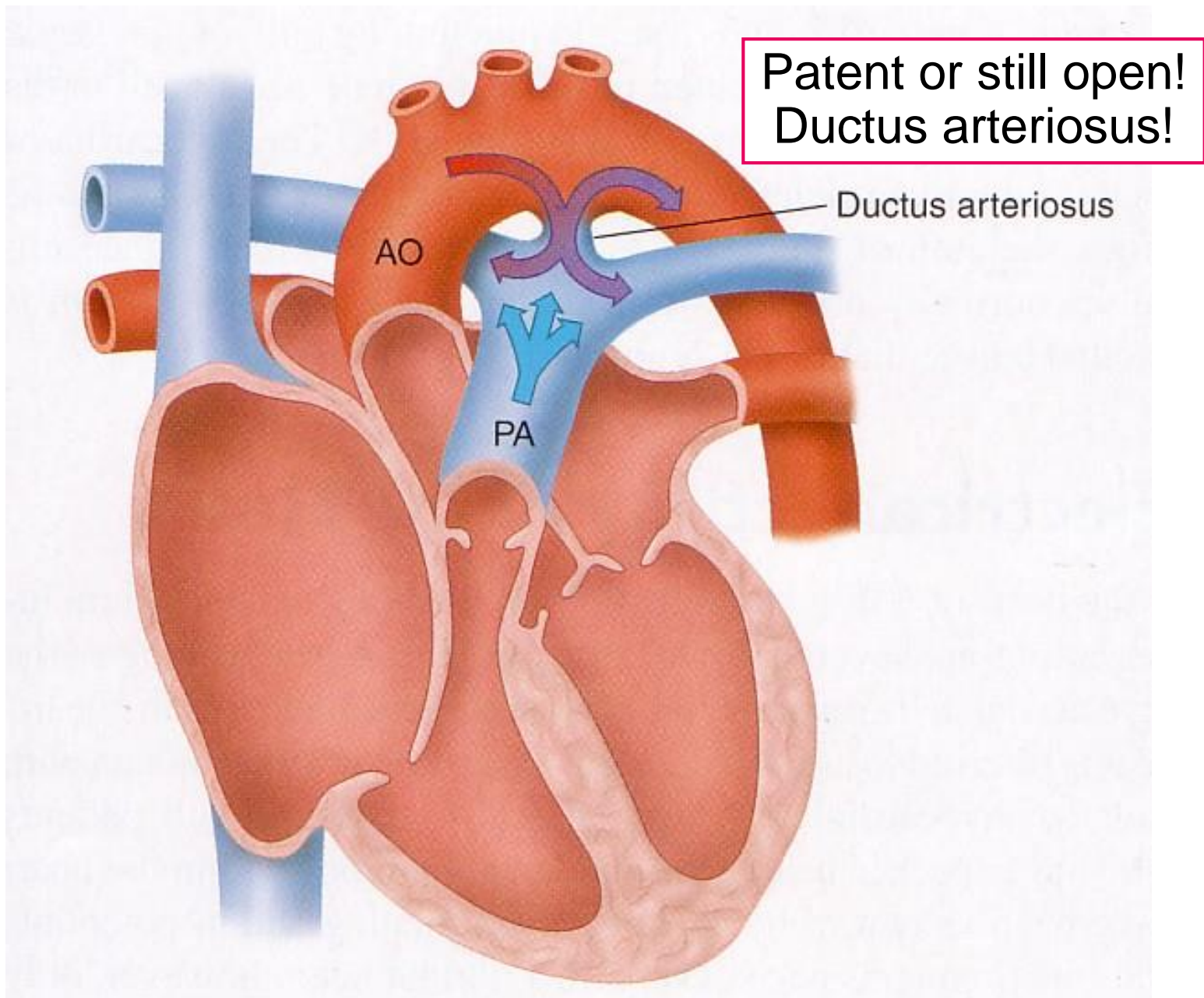
<http://www.nhlbi.nih.gov/health/health-topics/topics/hhw/contraction.html>

Patent or still open!  
Foramen ovale!



Septal defect  
in atria





# ***American Heart Association (AHA) & National Heart, Lung & Blood Institute***

**<http://www.heart.org/>**



**<http://www.nhlbi.nih.gov/health/>**

Department of Health and Human Services · National Institutes of Health

**National Heart Lung and Blood Institute**

People Science Health







**We all have multimillion-dollar bodies!!**

### **Can you believe that's Nicole?**

Hollywood glamour queen Nicole Kidman likes to swim to keep that multimillion-dollar body in shape. But the down-to-earth superstar doesn't need a fancy spa — she does her laps at the local YMCA! Nice goggles, Nic!

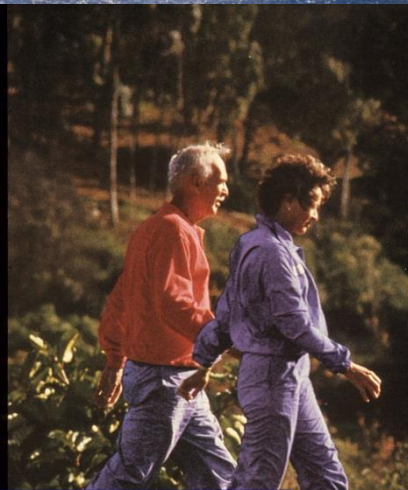
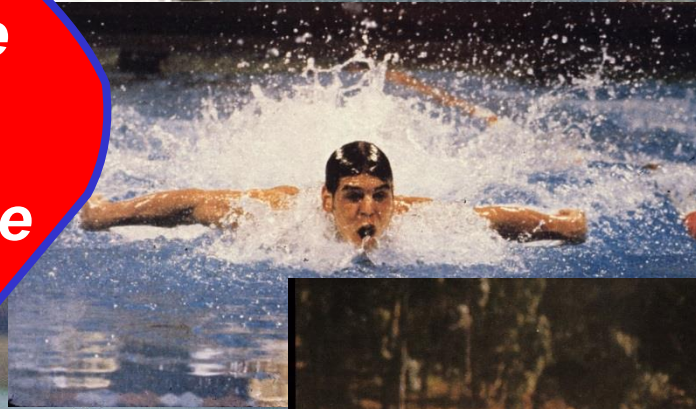




# How much aerobic?



**Continuous exercise**  
**≥ 50% muscle mass**  
**≥ Conversational pace**  
**20-60 min/session**  
**3-5 days/wk**



<http://www.acsm.org/about-acsm/media-room/news-releases/2011/08/01/acsm-issues-new-recommendations-on-quantity-and-quality-of-exercise>





**AMERICAN COLLEGE**  
of **SPORTS MEDICINE**

## **Guidelines: Healthy Adults < 65 yr**



**Do moderately intense aerobic exercise  
30 min/d, 5 d/wk**

**OR**

**Do vigorously intense aerobic exercise  
20 min/d, 3 d/wk**

**AND**

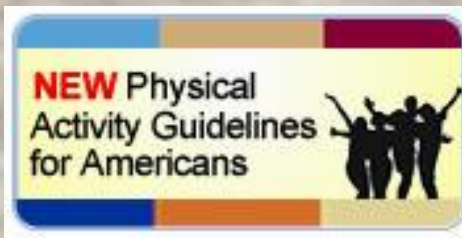
**Do 8-10 strength-training exercises  
8-12 repetitions/each exercise, 2 d/wk**

# How much strength?

- ✓ 2-3 days/wk
- ✓ 8-10 exercises for major muscle groups
- ✓  $\geq 1$  set/exercise
- ✓ 8-12 (most) or 10-15 (frail/ $> 50-60$  yr) repetitions/set



Federal exercise guidelines include strength training for all  
<http://www.health.gov/paguidelines/guidelines/default.aspx>



**Adults: Moderate to Vigorous Exercise  $\geq$  30 min, 5 d/wk**

**Children: Moderate to Vigorous Exercise  $\geq$  60 min, 5 d/wk**

# CVDs

AMI

CVA



TIA

HTN

PVD

# Did you know?

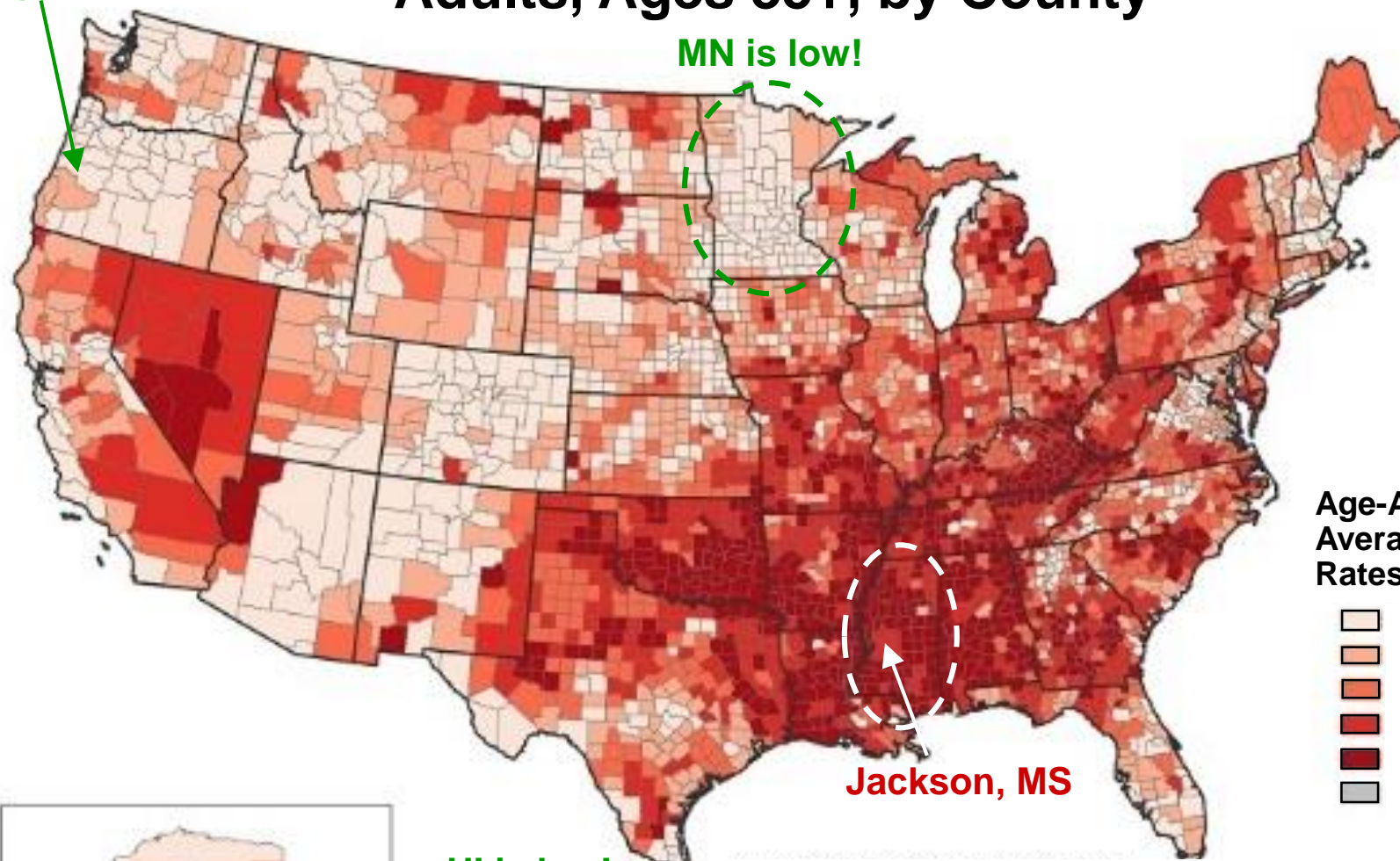
- **Every 40 seconds, someone has a heart attack in the US!**
- **~630,000 Americans die of heart disease each yr – that's 1 in every 4 deaths. Heart disease is the leading cause of death for both men and women.**
- **Heart disease costs the US ~ \$200 billion per yr in health care, medications & lost productivity. By 2035, CVD costs are projected to top \$1 trillion annually.**









# Heart Disease Death Rates, 2011-2013 Adults, Ages 35+, by County

Eugene, OR

MN is low!



Age-Adjusted  
Average Annual  
Rates per 100,000

-  103.6 – 291.0
-  291.1 – 334.6
-  334.7 – 373.9
-  374.0 – 427.5
-  427.6 – 1094.1
-  Insufficient Data

Jackson, MS

Rates are spatially smoothed to enhance the stability of rates in counties with small populations.

Data Source: National Vital Statistics System  
National Center for Health Statistics



HI is low!



CENTERS FOR DISEASE  
CONTROL AND PREVENTION

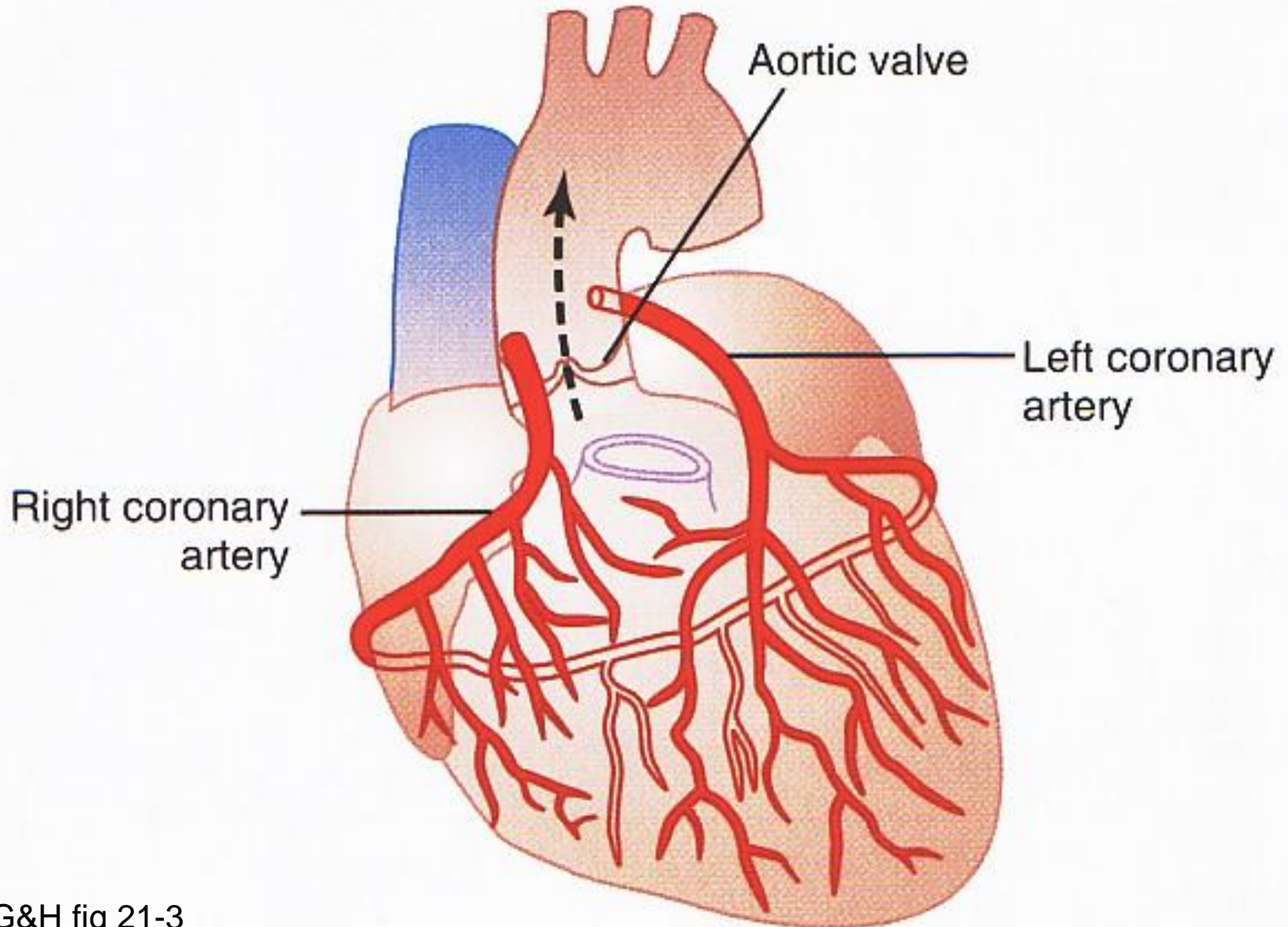
**DISEASED CAROTID ARTERY**



**HEALTHY CAROTID ARTERY**



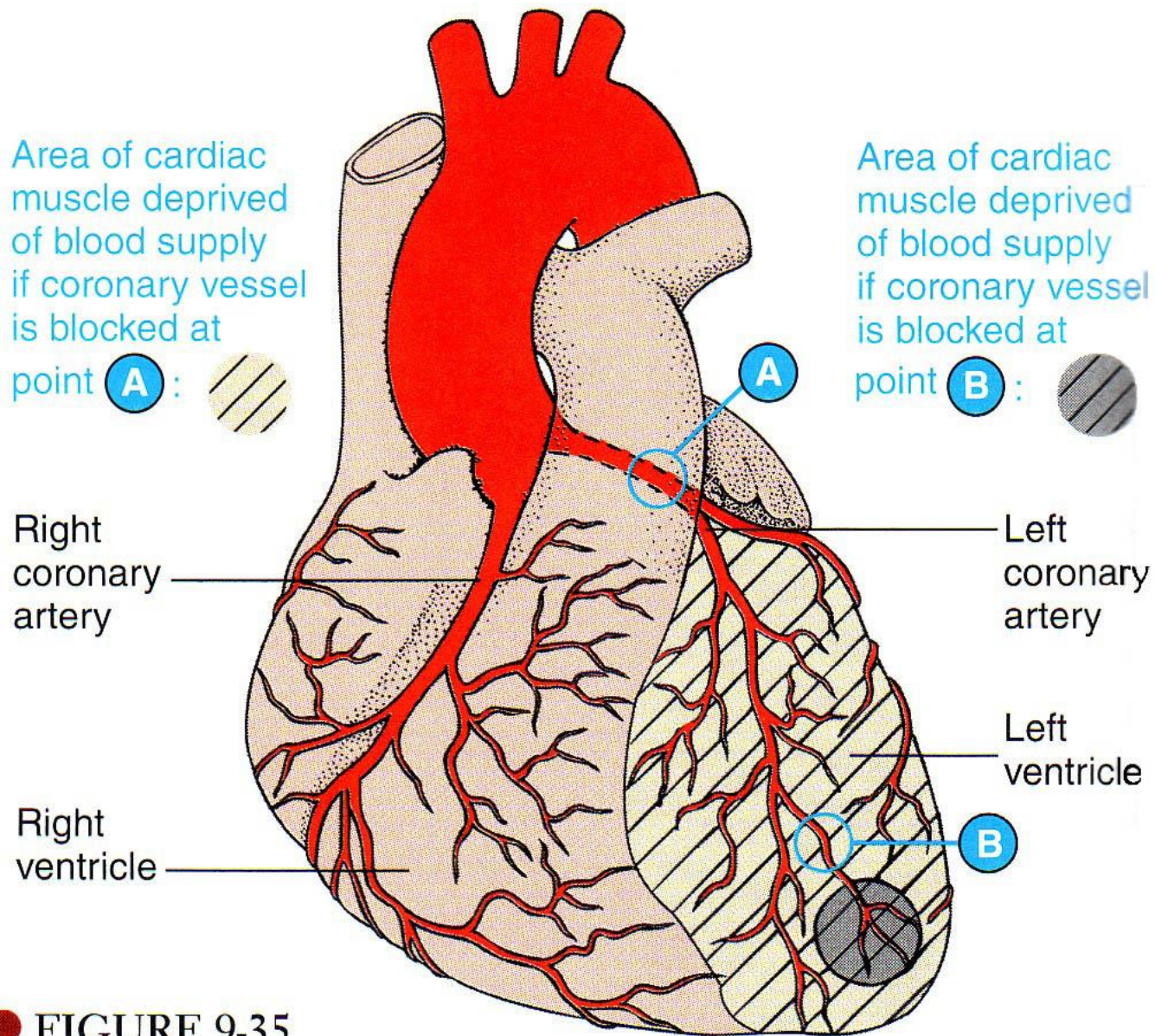
# ***Coronary Circulation ≡ Crowns the Heart!***







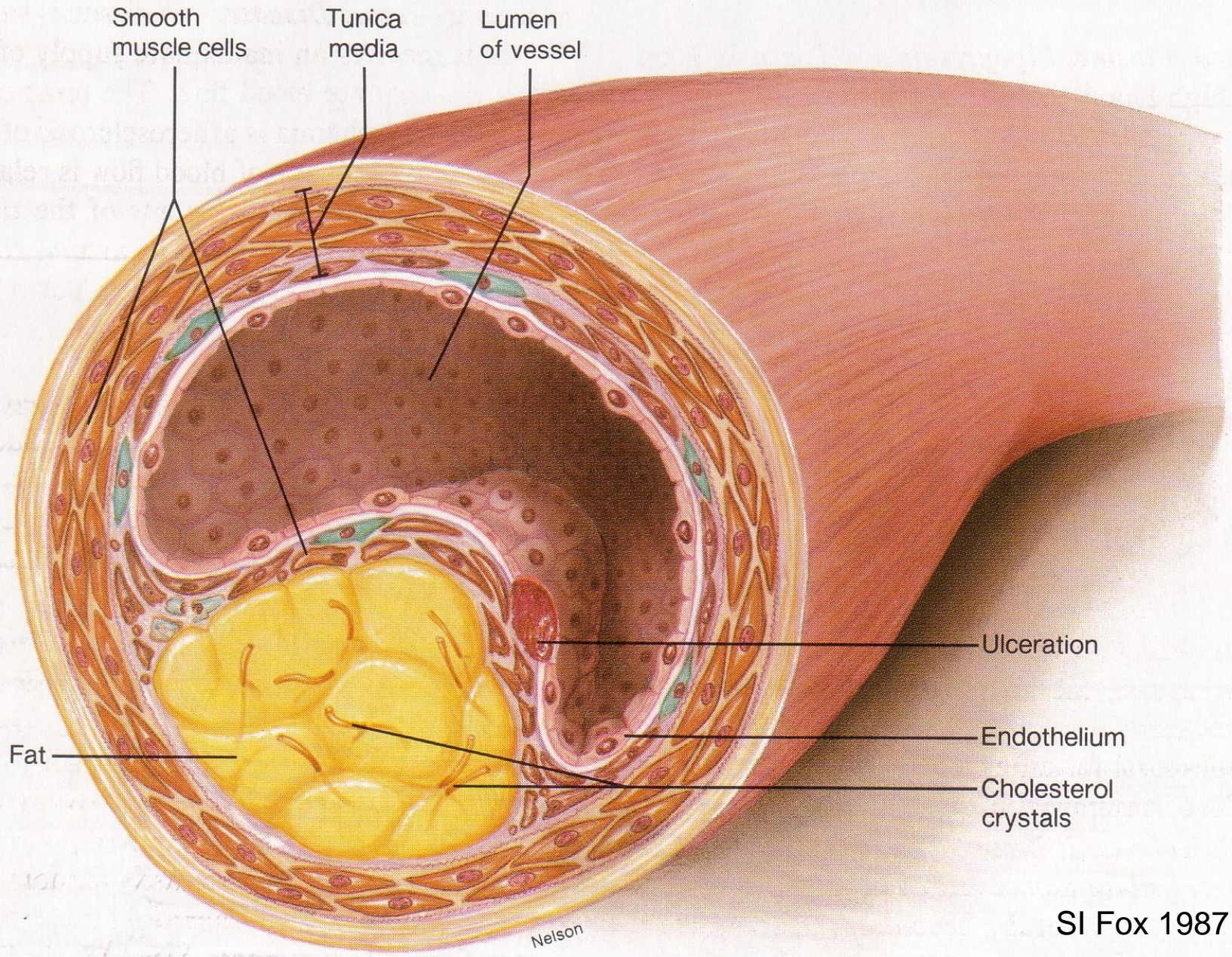




**●** FIGURE 9-35

Extent of myocardial damage as a function of the size of the occluded vessel



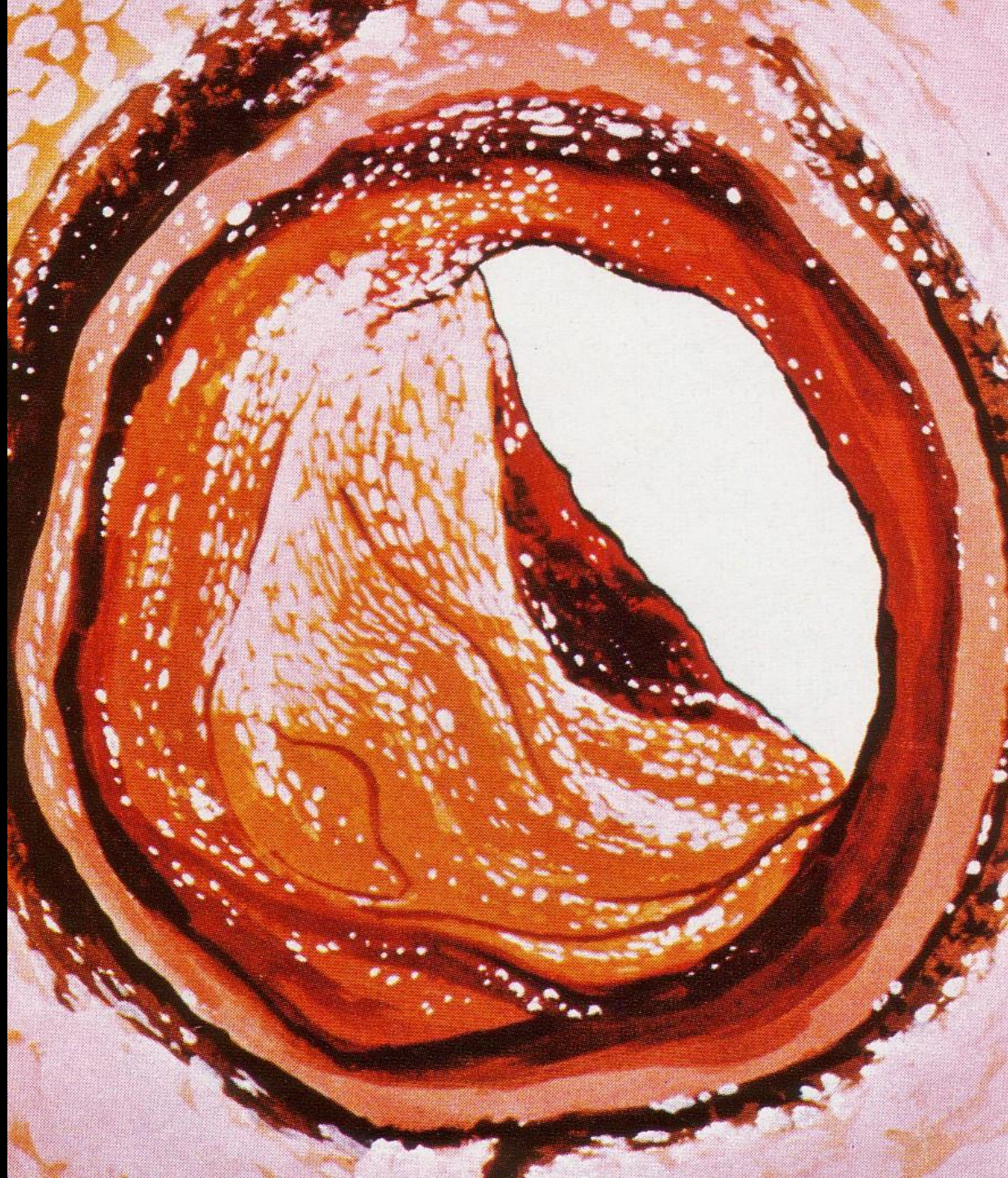




100 yr ♀

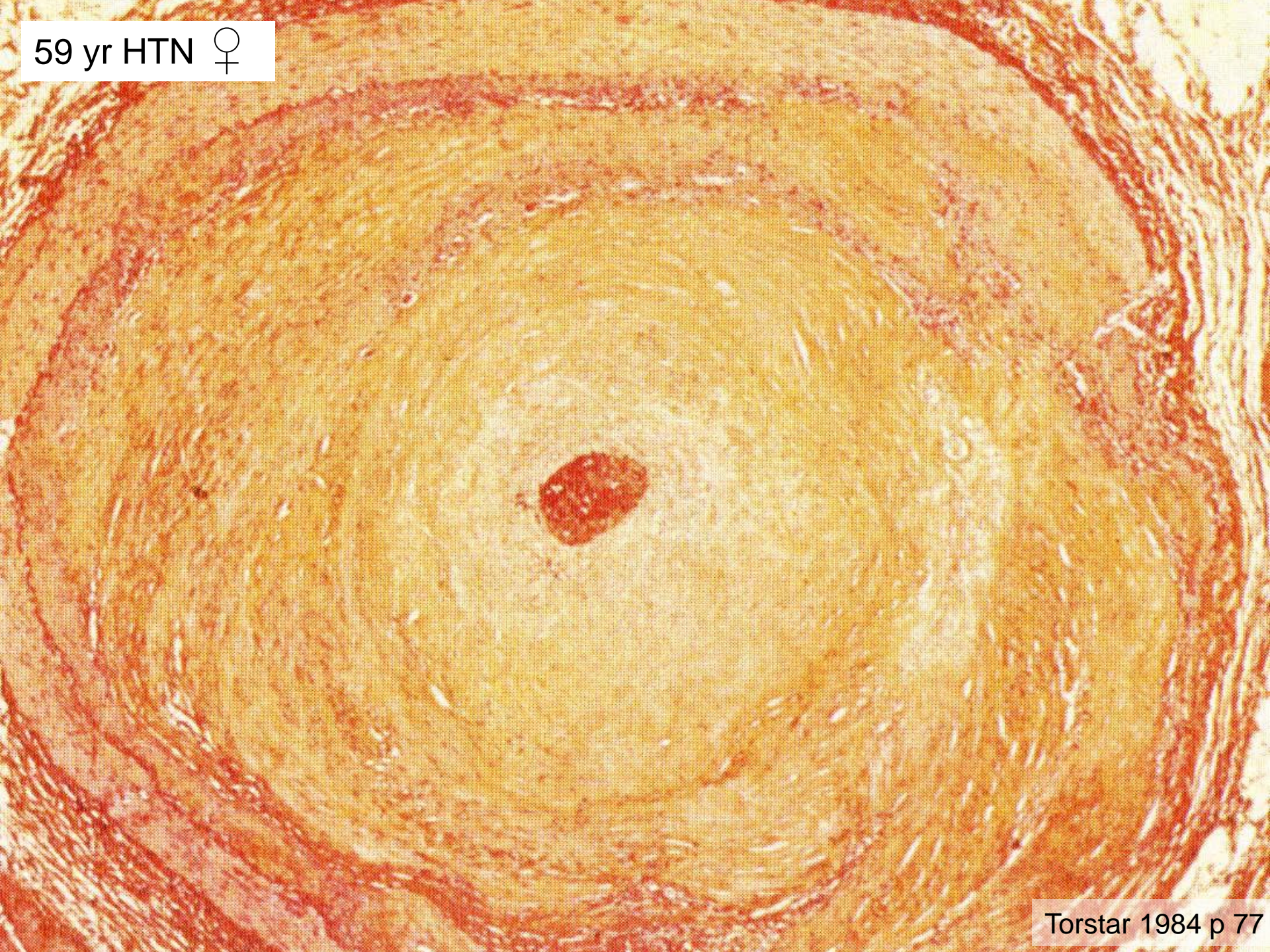








59 yr HTN ♀



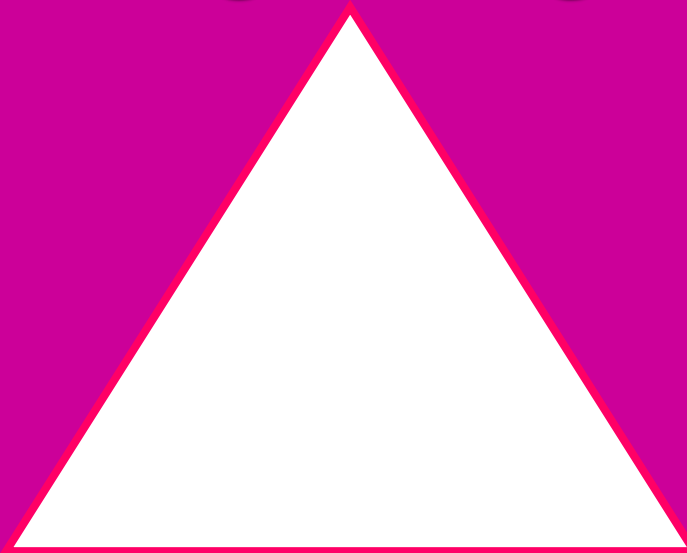


# *Treatment Triad*

NB: Last blasted resort!!

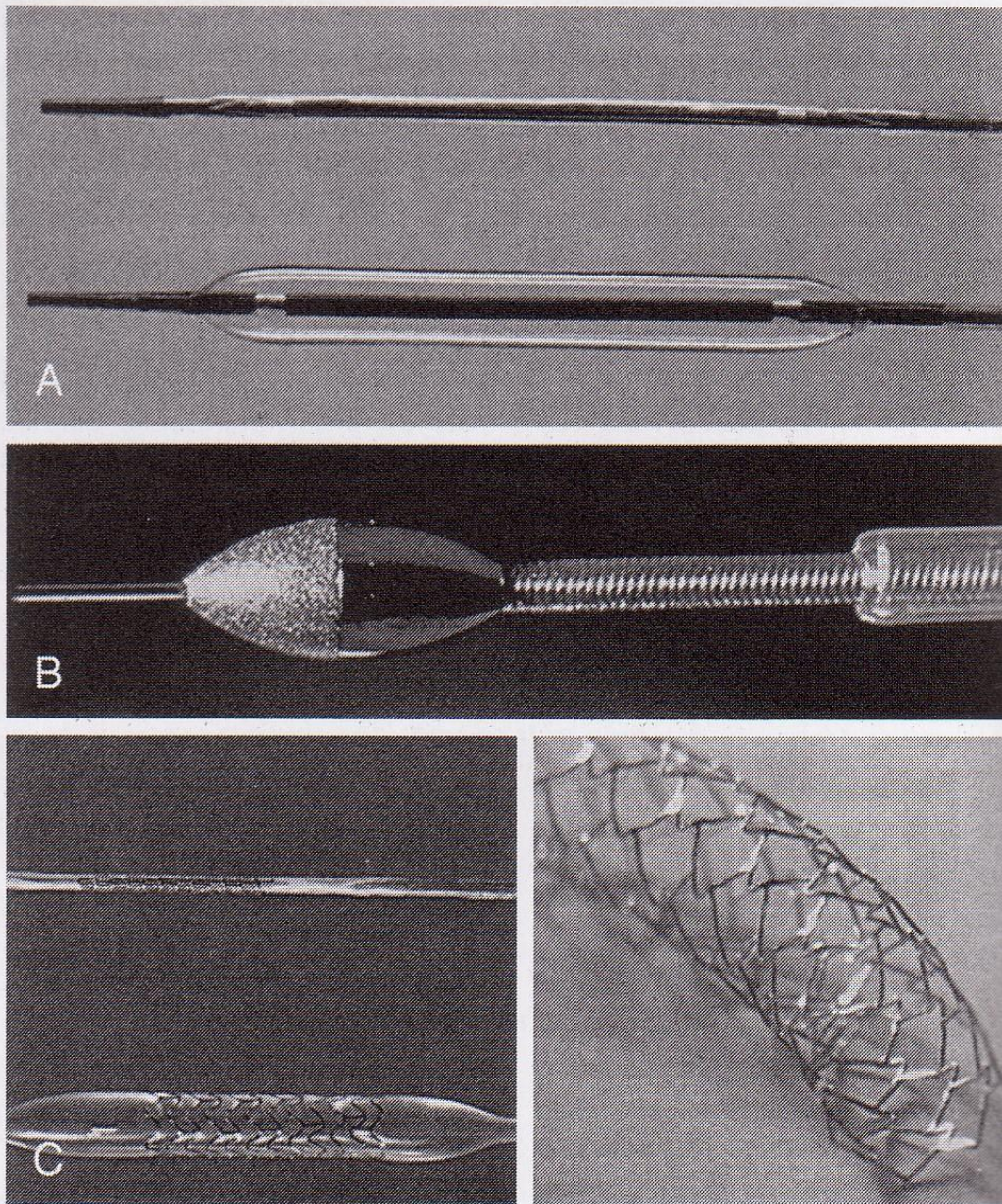


*Drugs/Surgery*



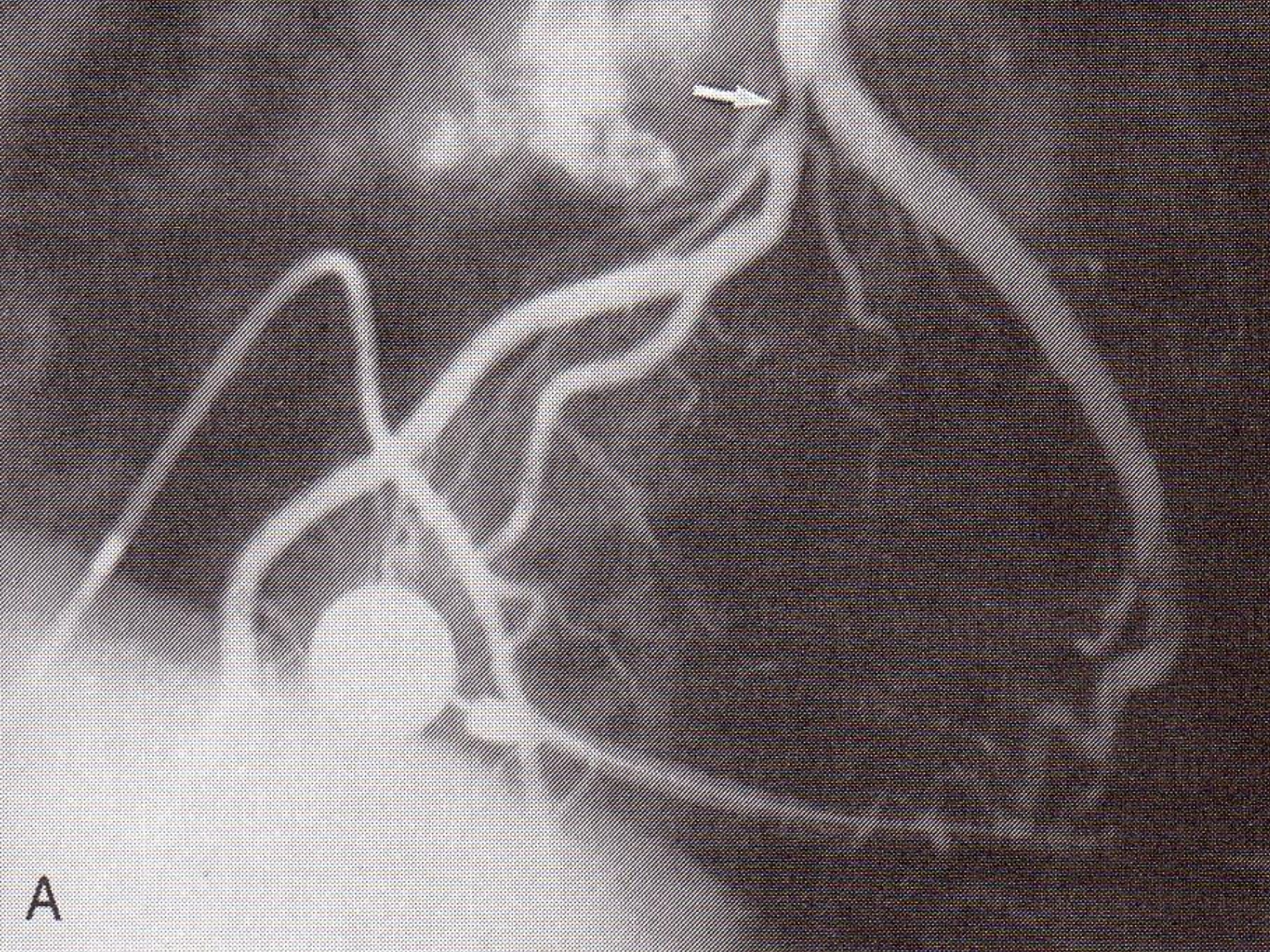
*Exercise*

*Dietary  
Modification*



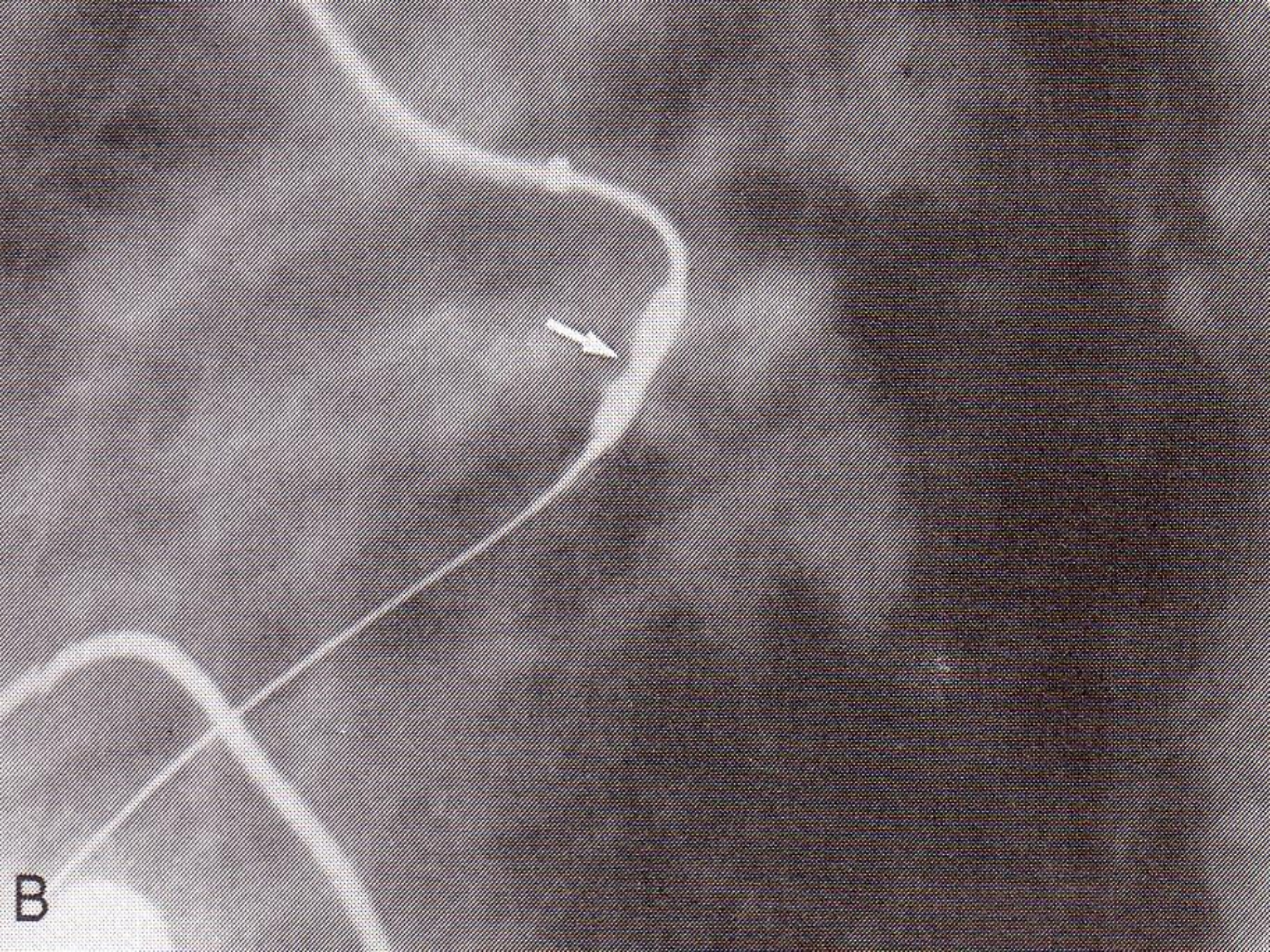
**FIGURE 37-1** Devices for percutaneous transluminal coronary interventions. **A**, Coronary balloon. **B**, Rotational atherectomy burr (Rotablator). **C**, Coronary stent.





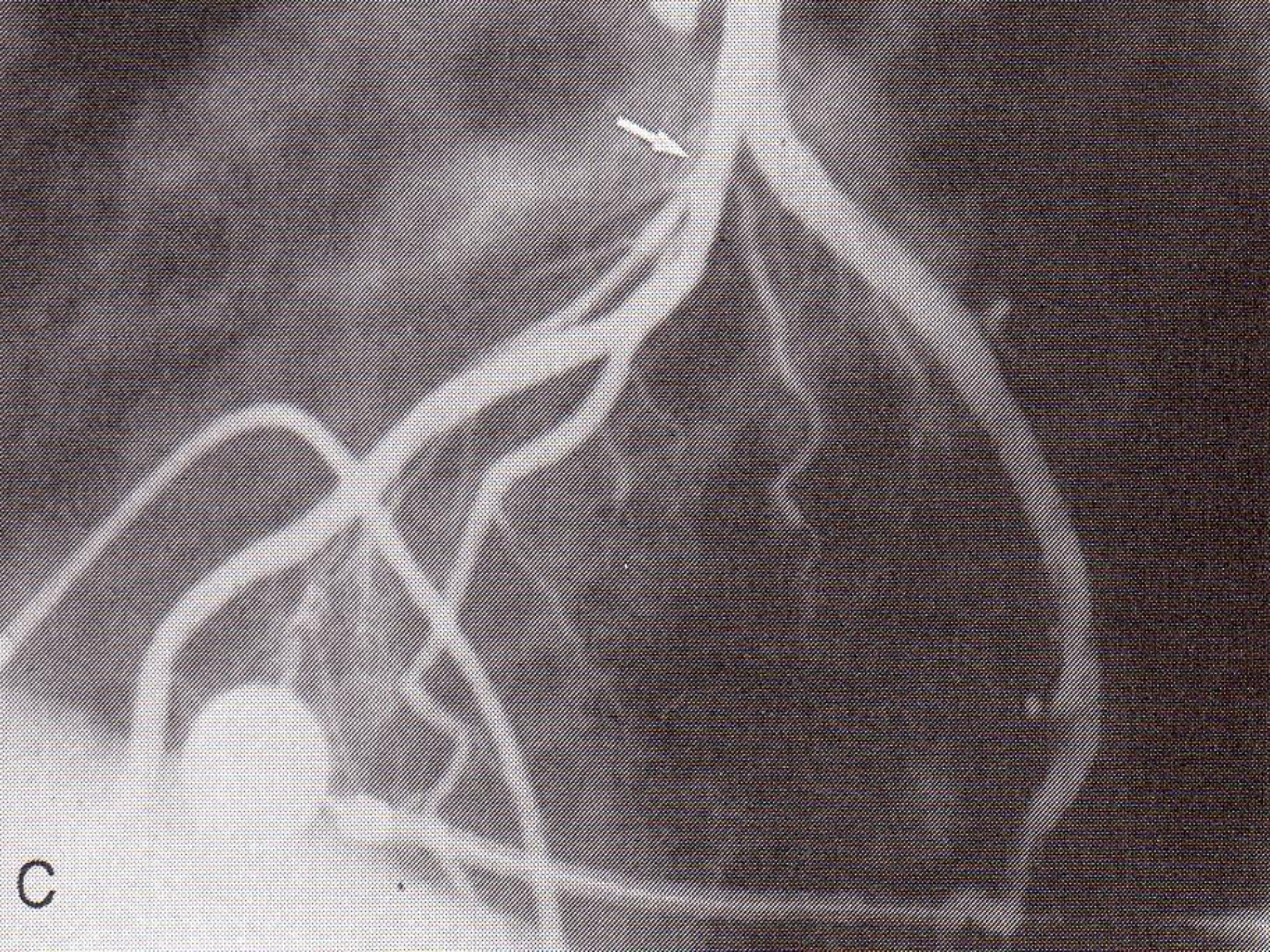
A





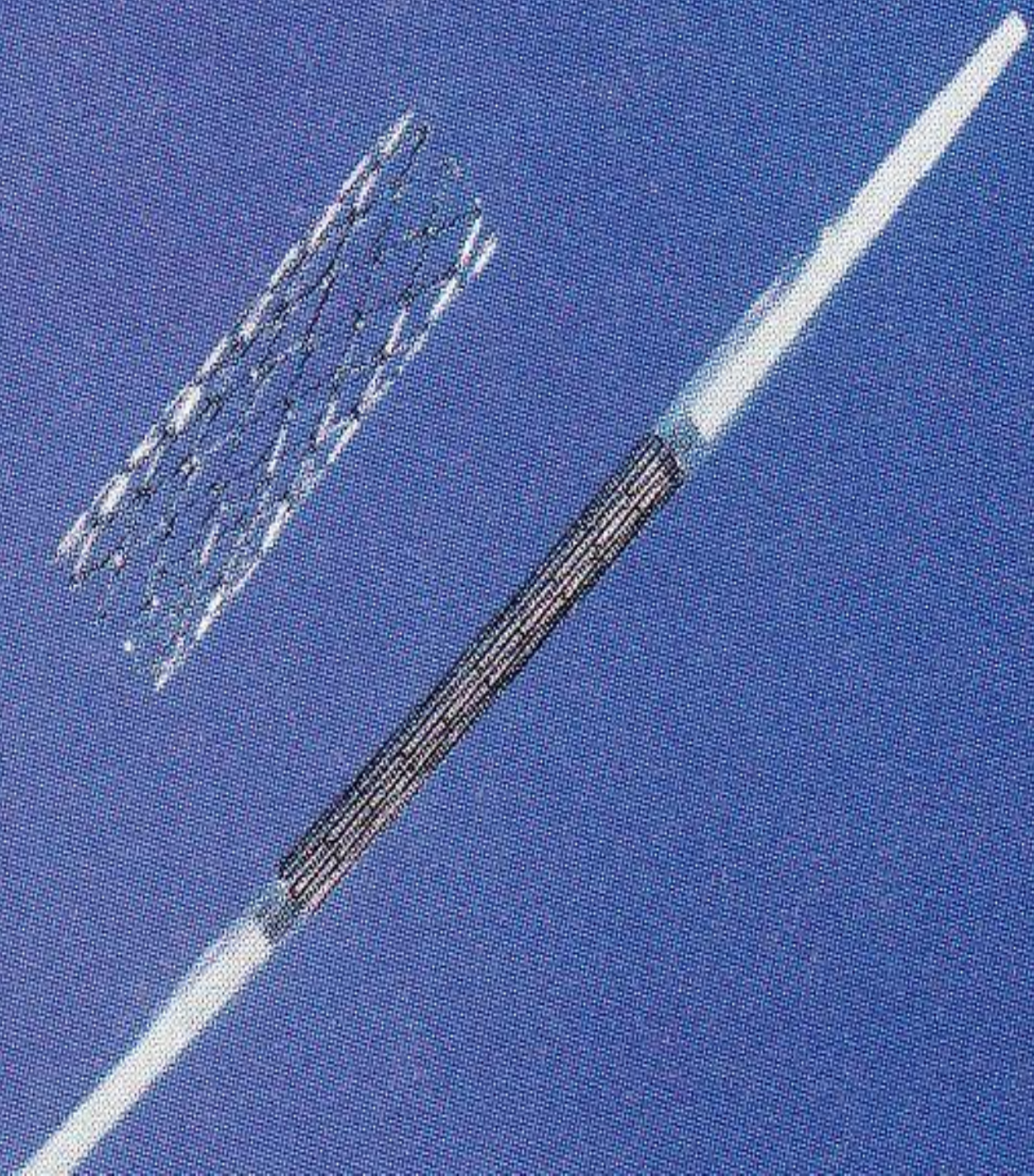
B





C







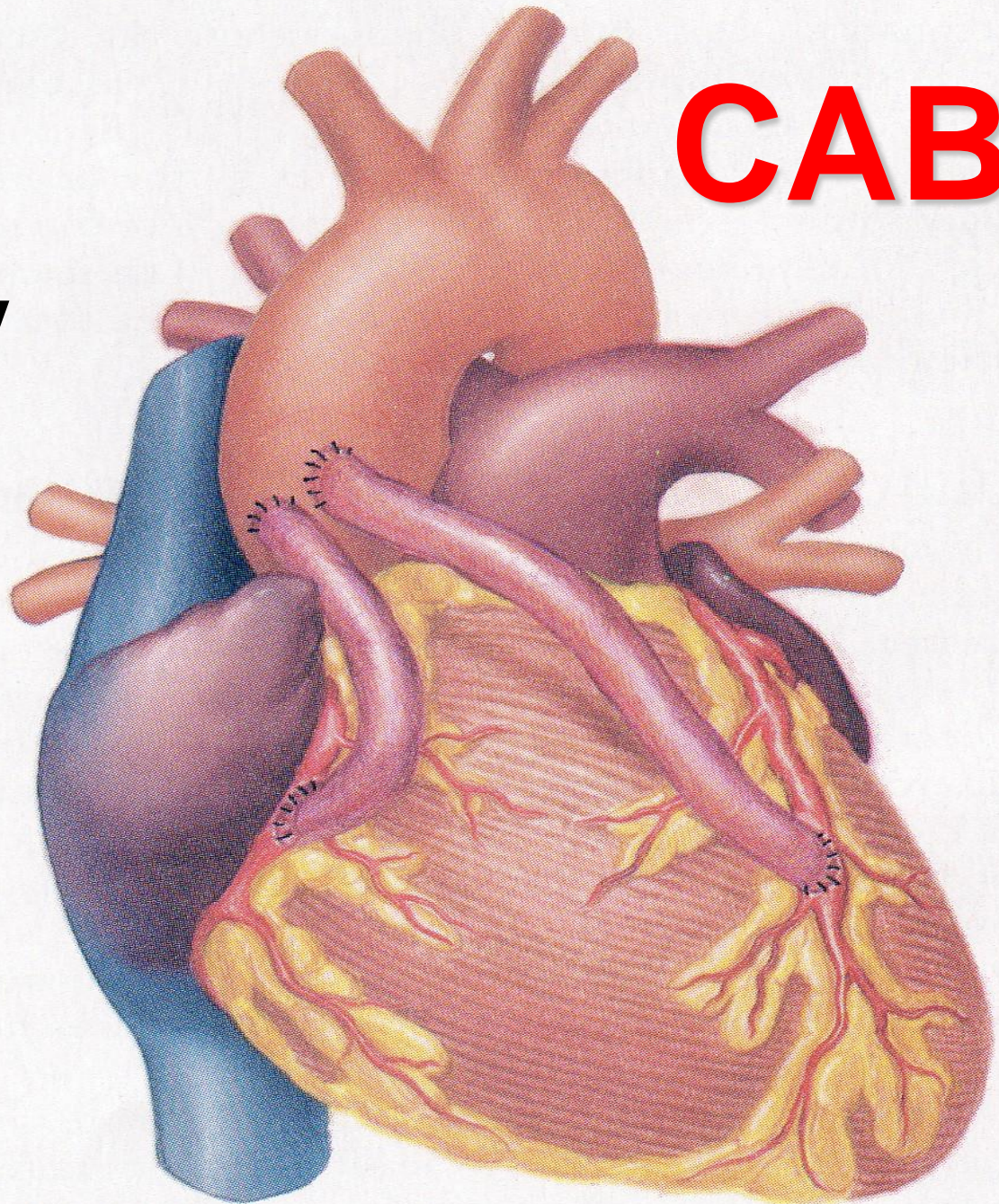
# CABG

**C**oronary

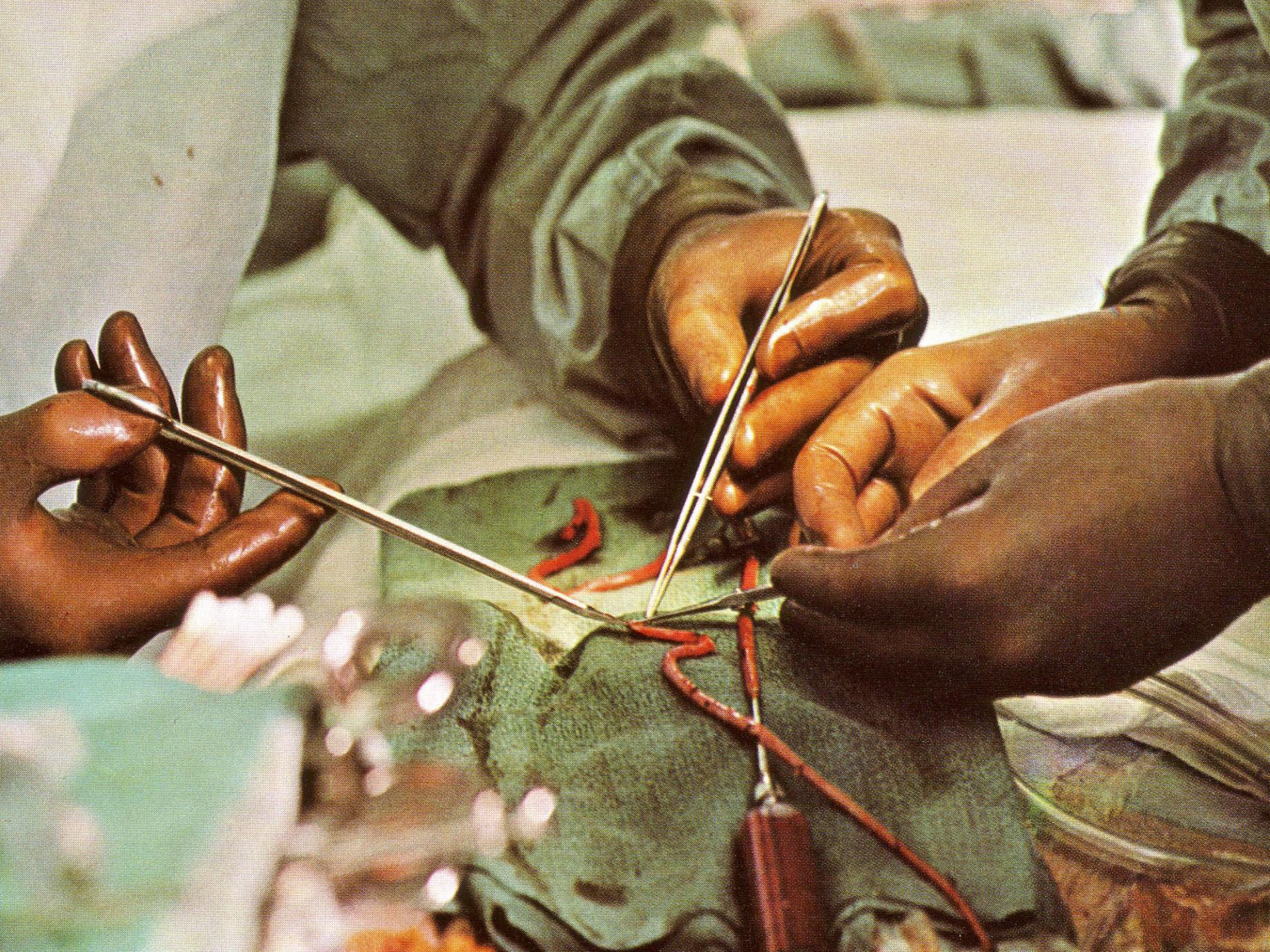
**A**rtery

**B**y-pass

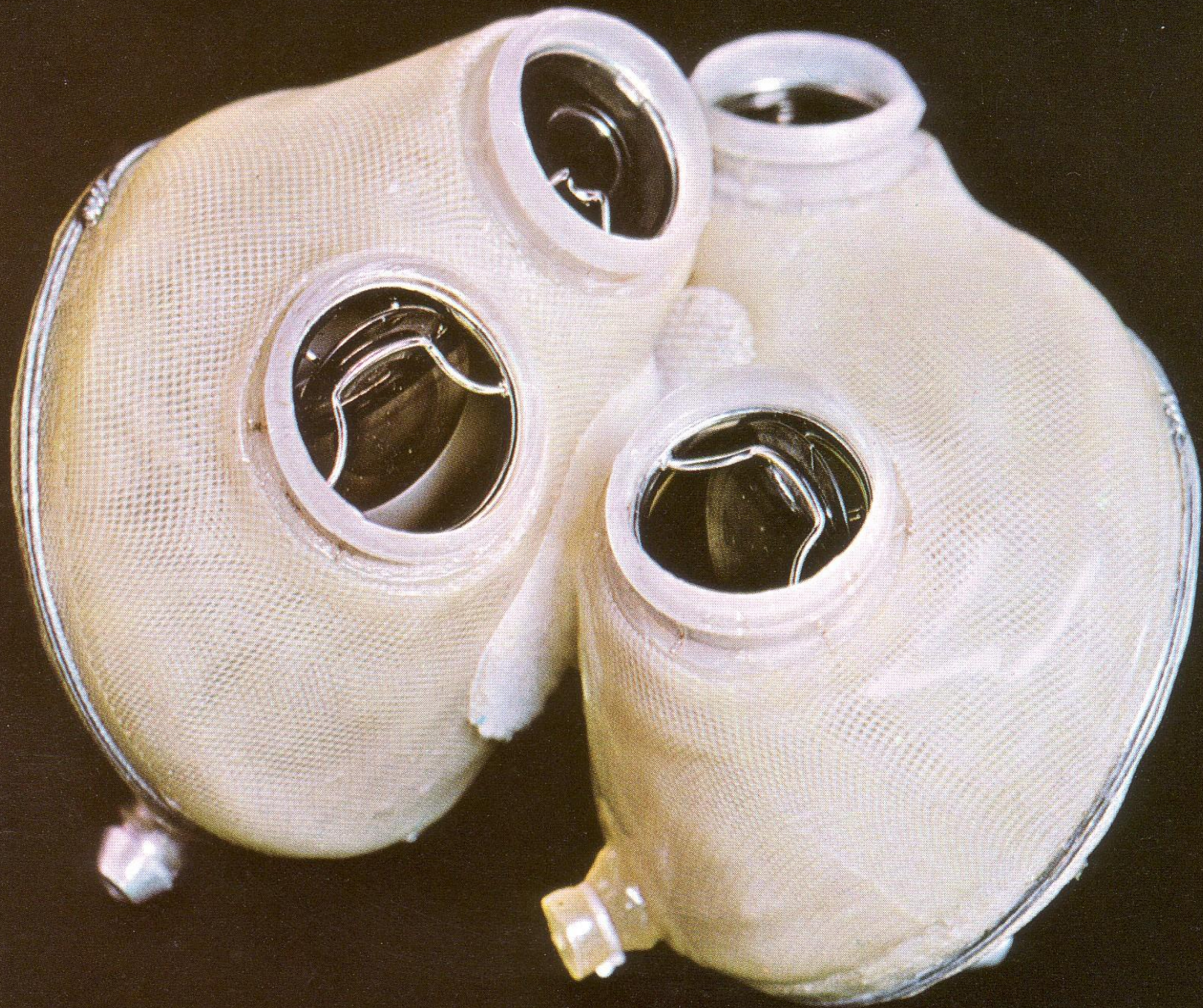
**G**raft



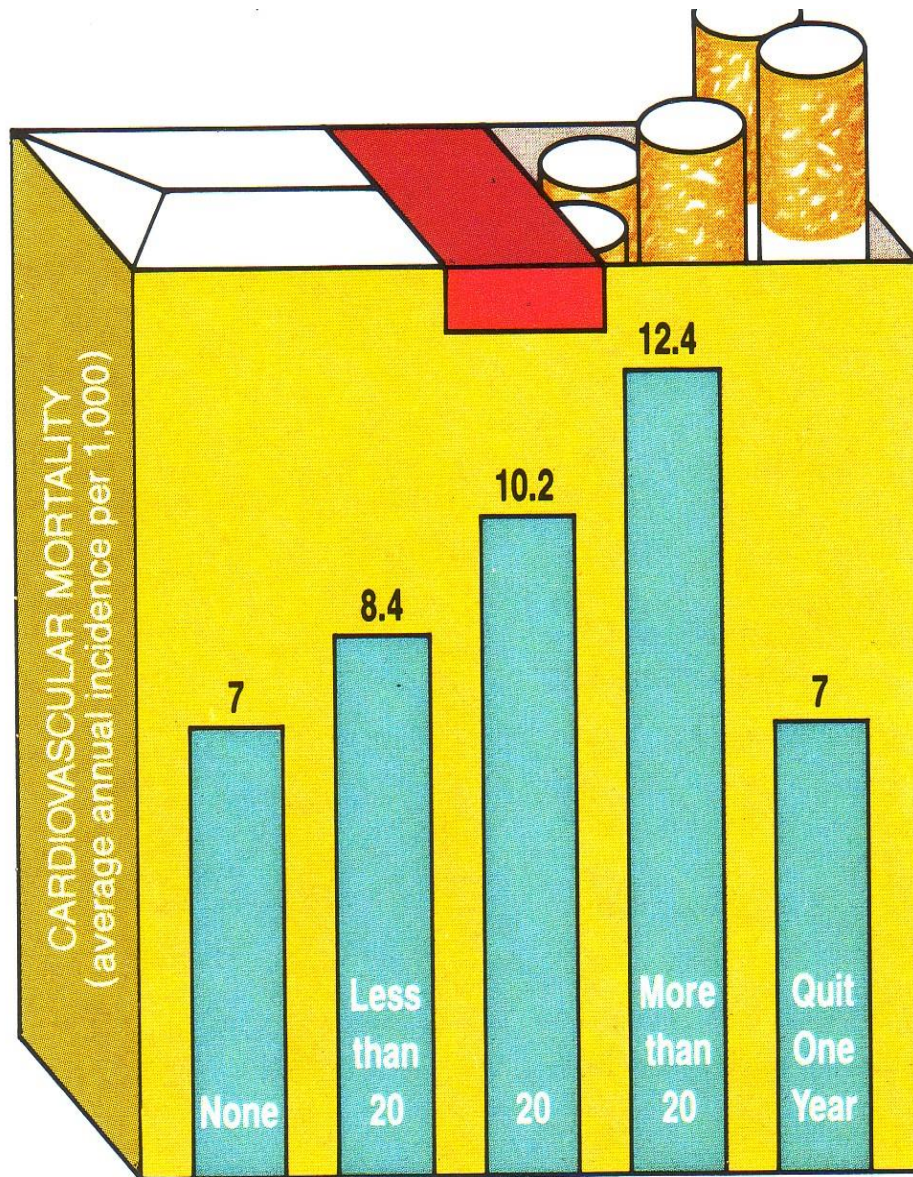












CIGARETTES SMOKED PER DAY

# Tobacco-free Campus

For better health,  
smoking and use of  
tobacco products are  
prohibited everywhere  
on our property.



UO's Josh Buehler

U.S. Surgeon General  
Regina Benjamin

# SMOKE AND TOBACCO-FREE UNIVERSITY



**September 1, 2012**

For a healthier community and cleaner  
environment, the University of Oregon  
will be smoke and tobacco free



**Ready to Quit Tobacco?**

Visit [tobaccofree.uoregon.edu](http://tobaccofree.uoregon.edu) for free and low cost resources



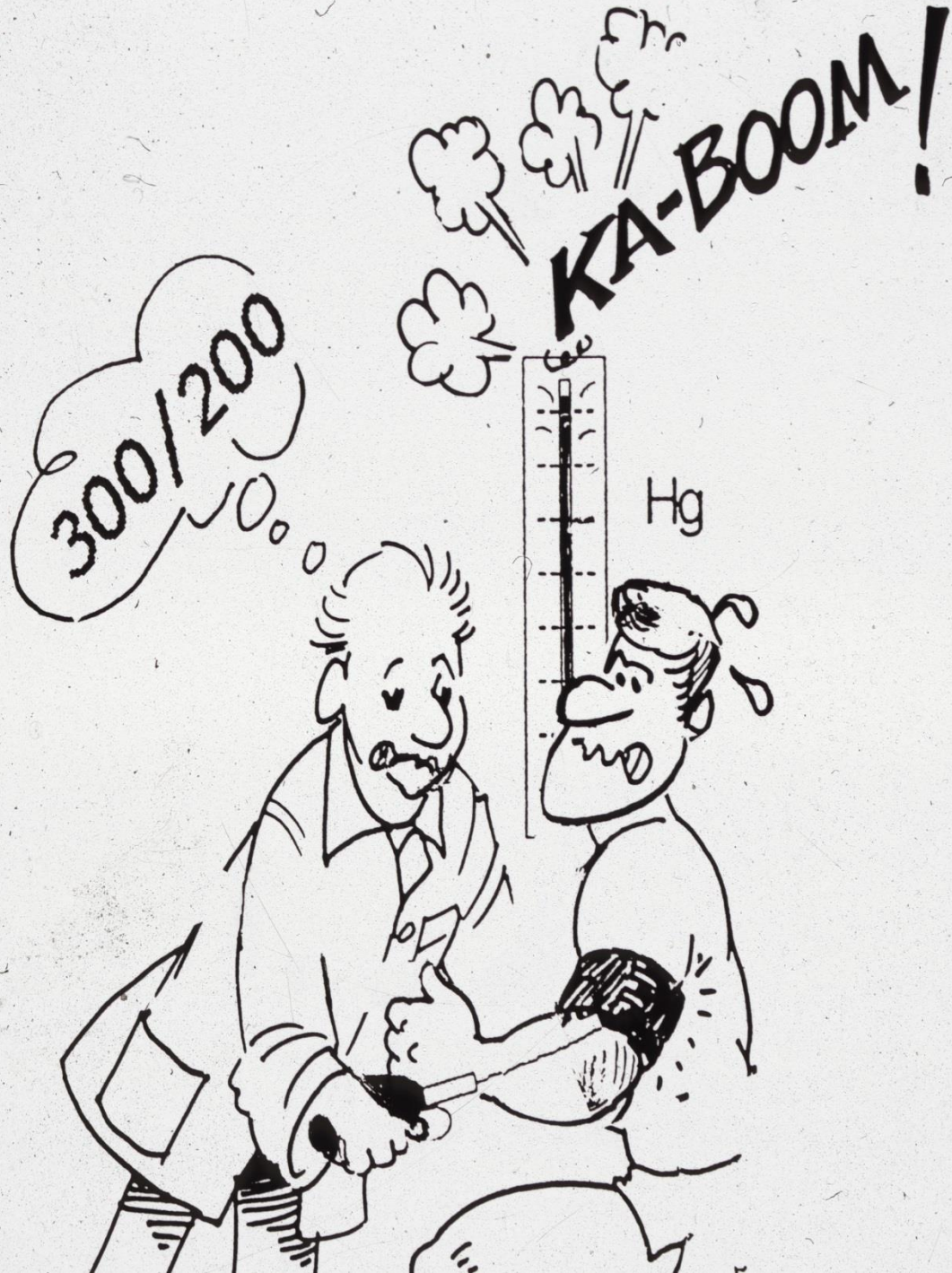
UNIVERSITY OF OREGON

[tobaccofree.uoregon.edu](http://tobaccofree.uoregon.edu)

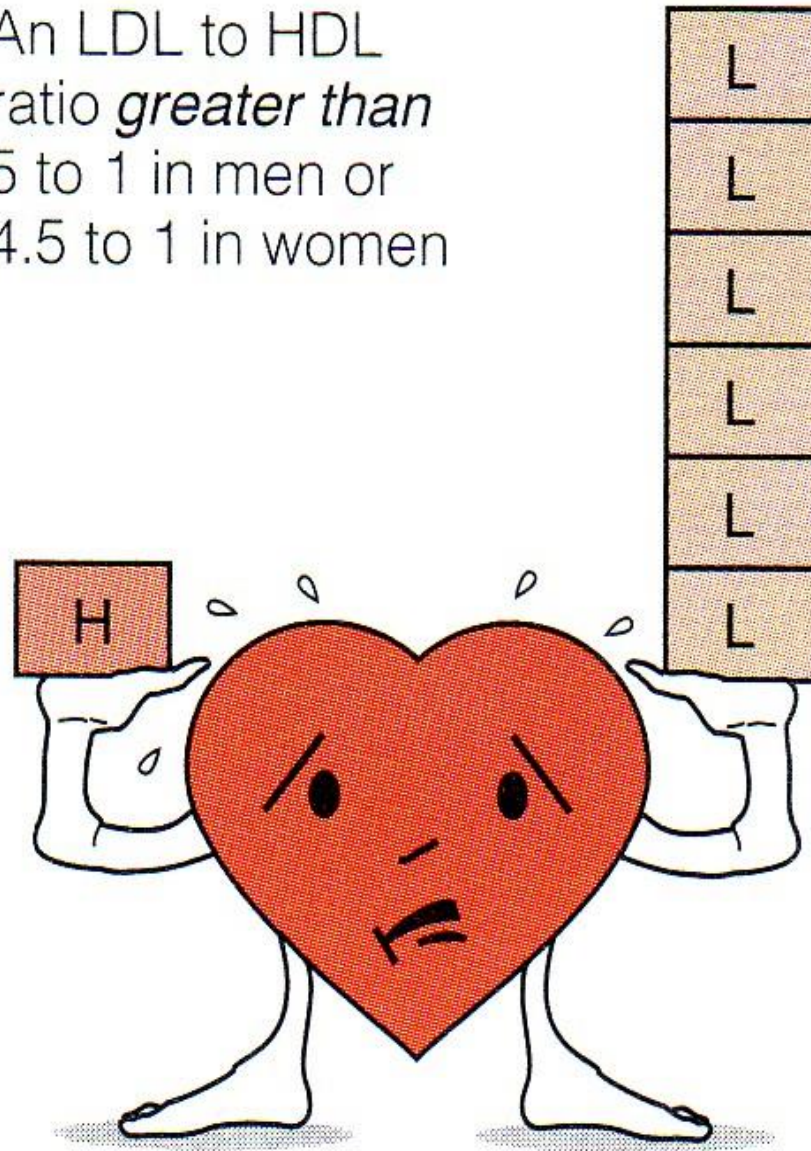


For a healthier community and cleaner  
environment, the University of Oregon  
is smoke and tobacco-free.



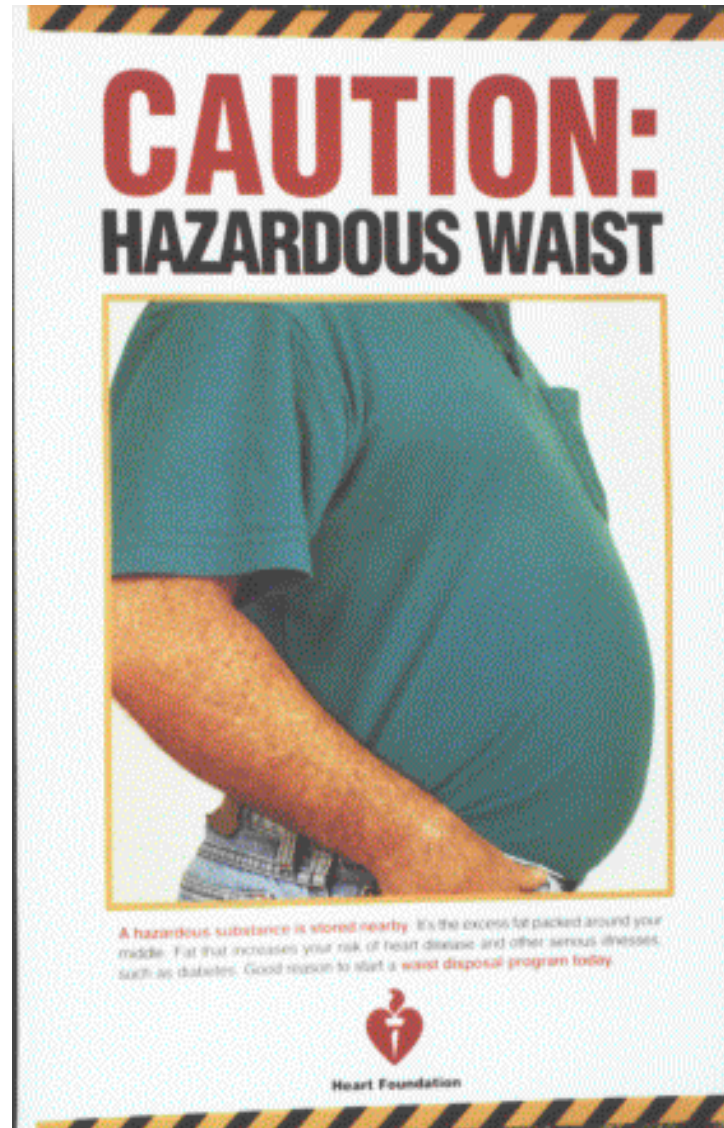


An LDL to HDL  
ratio *greater than*  
5 to 1 in men or  
4.5 to 1 in women




Increased risk of  
heart disease

Those with *apple type* of obesity predisposed to CVD!



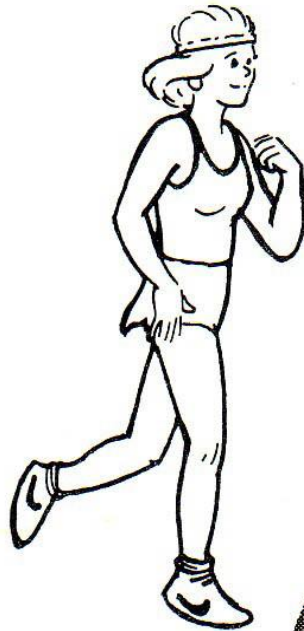
**CAUTION:  
HAZARDOUS WAIST**

A hazardous substance is stored nearby. It's the excess fat packed around your middle. Fat that increases your risk of heart disease and other serious illnesses, such as diabetes. Good reason to start a **wast disposal program today.**



Heart Foundation





**Cardiorespiratory  
Endurance**



**Muscular  
Strength/Endurance**



**HEALTH-RELATED  
FITNESS**



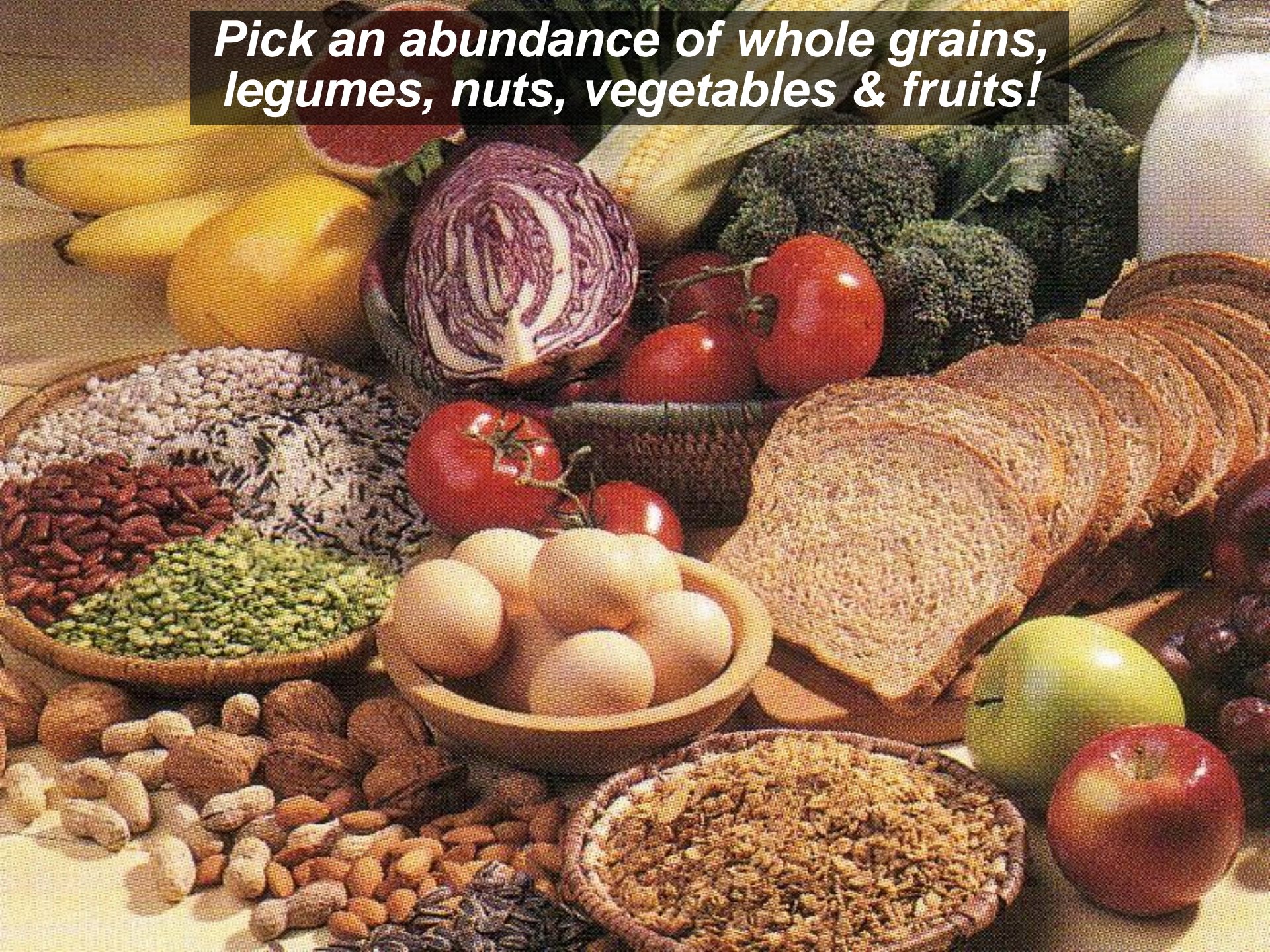
**Flexibility**



**Neuromuscular Relaxation**

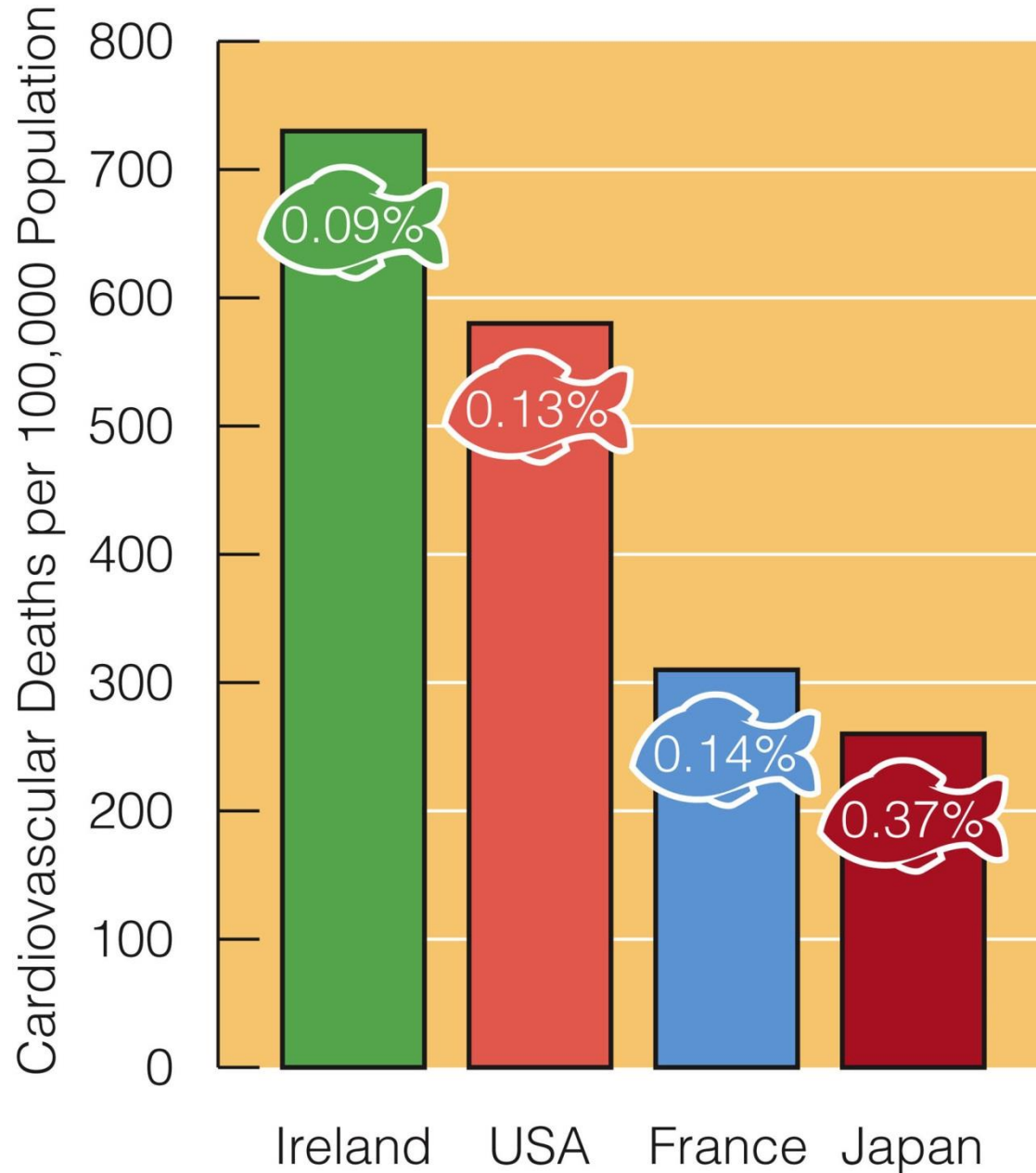


***Pick an abundance of whole grains, legumes, nuts, vegetables & fruits!***





# Fish Oil Intakes & Cardiovascular Death Rates





# Healthy Oils to Minimize Atherosclerosis HAPOC?

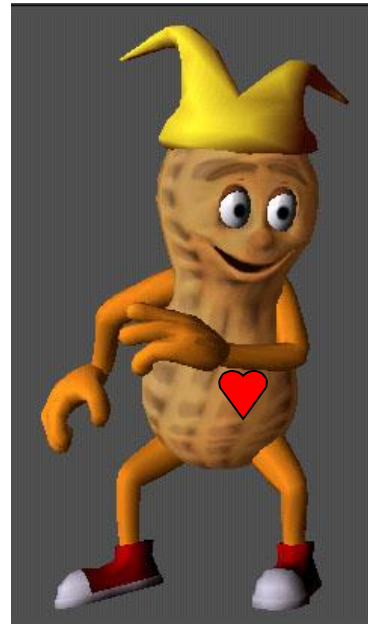
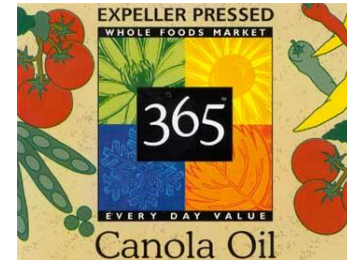
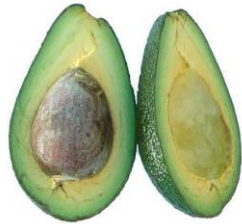
# H

# A

# P

# O

# C





# *Olive Oil Loves Olive Oil & has some heartfelt advise for Popeye!!*

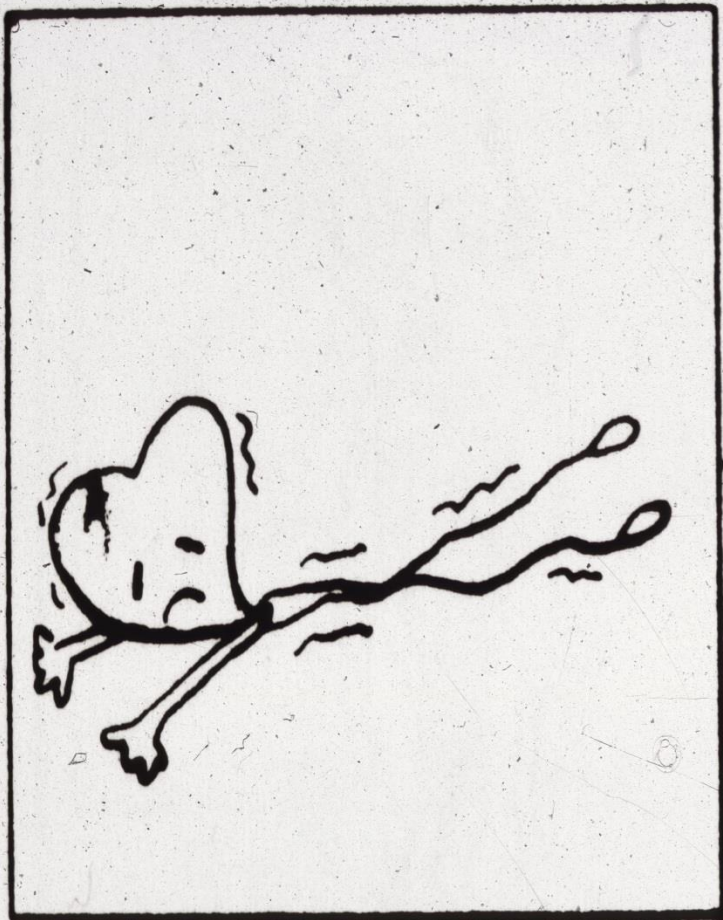




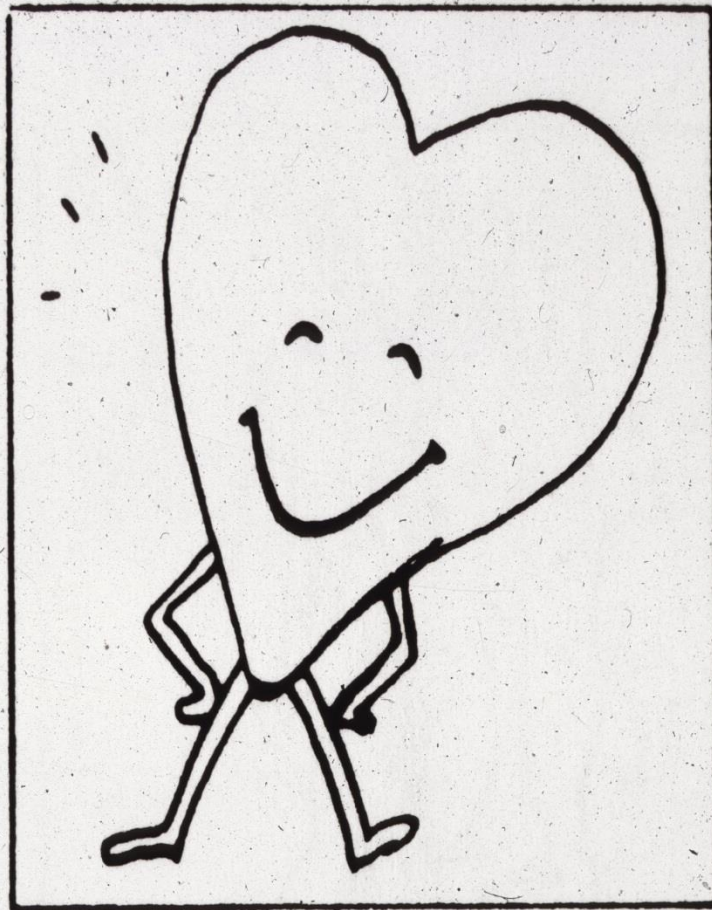
Yes for the  
spinach! — but get  
rid of the pipe!!







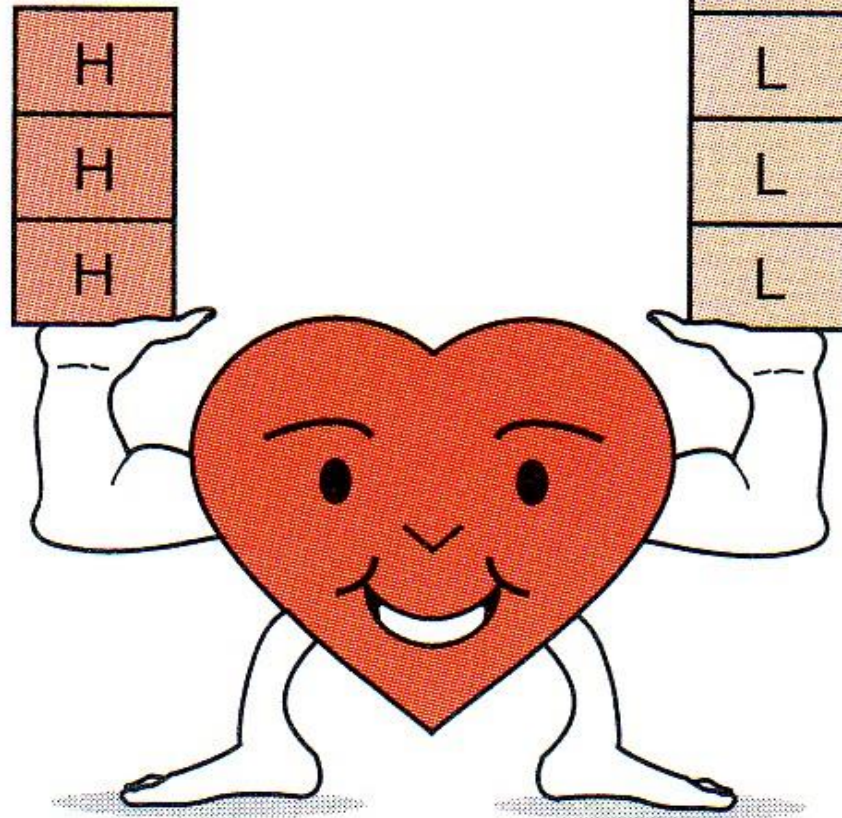
**Before**



**After**



An LDL to HDL  
ratio of *less than*  
5 to 1 in men or  
4.5 to 1 in women

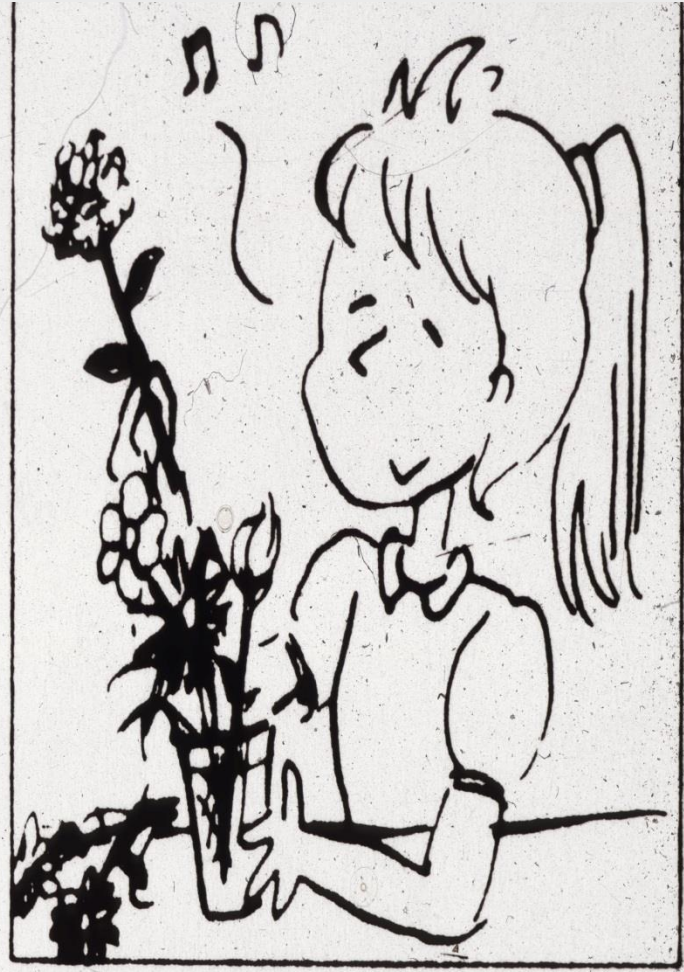


Reduced risk of  
heart disease



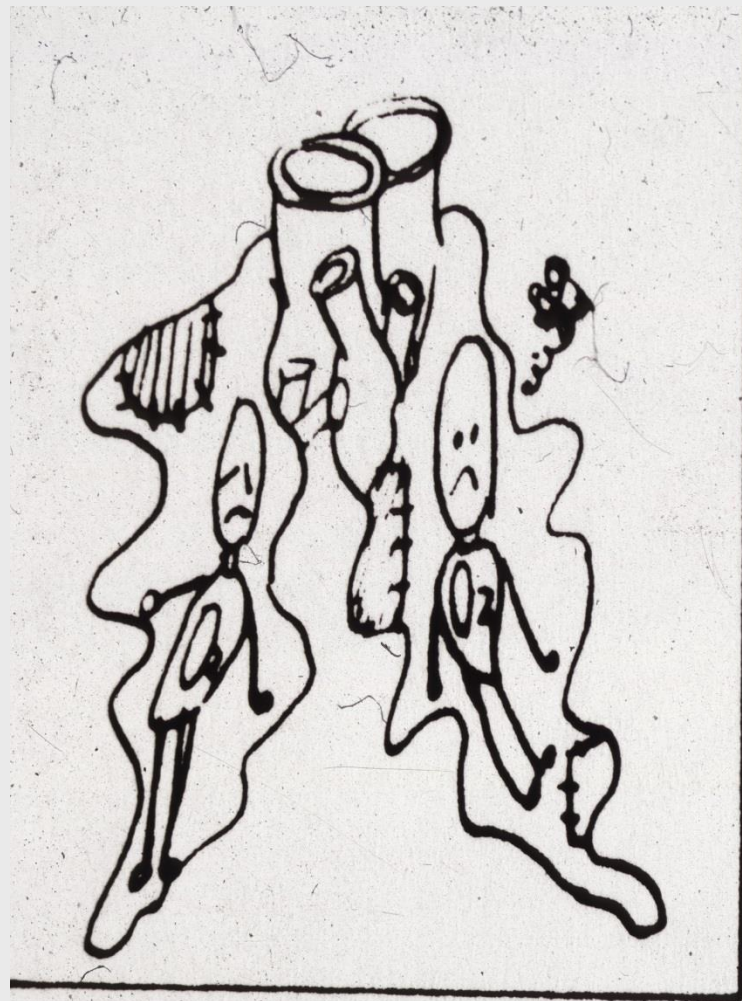


Before

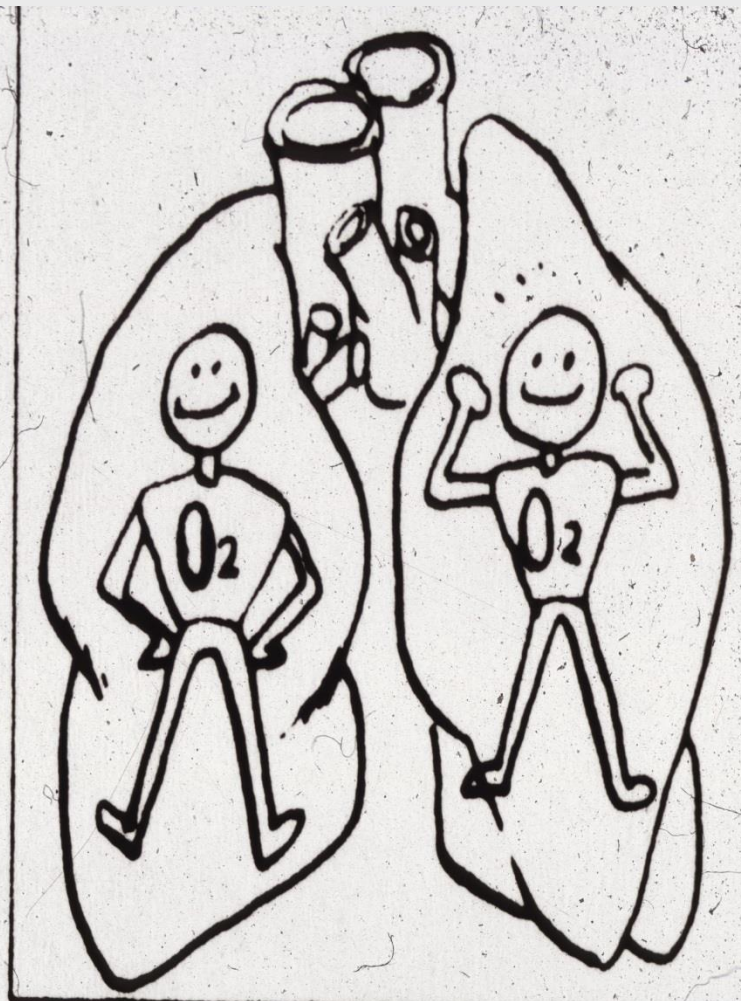


After





**Before**



**After**



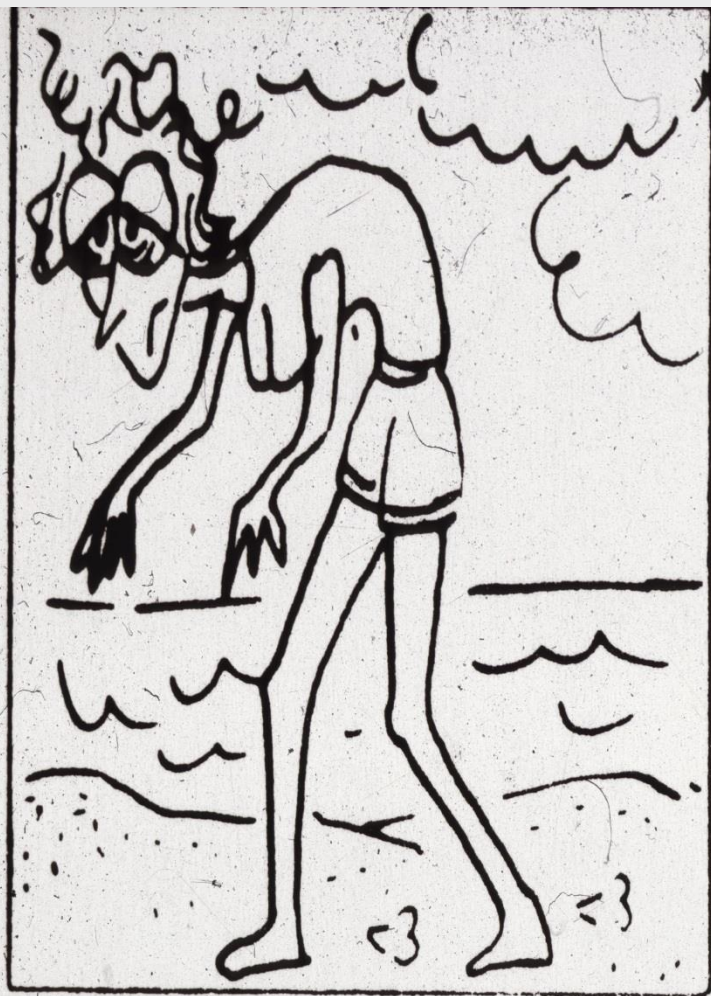


Before

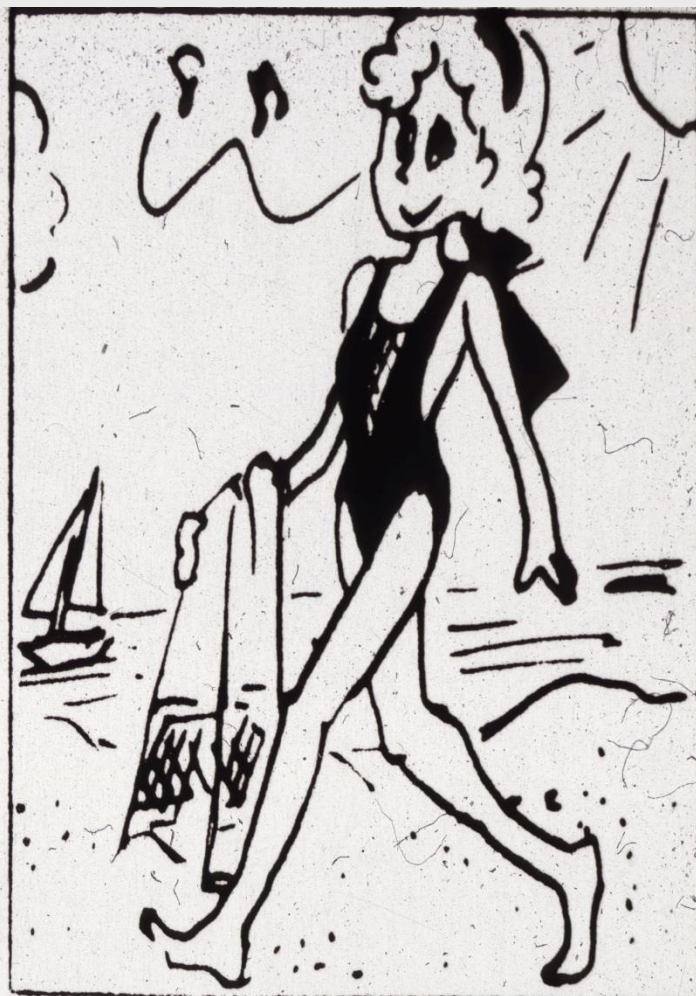


After





**Before**



**After**