Announcements
Lab notebook due today! Lab 4 HR & BP. Thursday, Lab 5 Blood Chemistry. Read 2x pp 5-1 thru 5-6. Q?

Overview of Labs
HR & BP. Cycle. Blood chem lab review

Cardiovascular Connections
LS 2012 ch 9
A. Normal vs abnormal blood flow!
B. Heart's electrical highway + Pacemaker activity
   LS fig 9-7 p 235, tab 9-1 p 236, fig 9-8 p 237

CV Physiology in the News
Randy Foye, NBA player with Situs Inversus? 1:10,000! NHLBI & AHA websites
Nicole Kidman & exercise? ACSM, AHA, CDC guidelines

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?
WOW!  SUPER

~ TOP 5 - 10 ~

EXCELLENT!!

~ TOP 15 ~

GREAT EFFORT

~ TOP 20 - 25 ~
Heart-Blood Pressure Lab Today!

Lub-dup!

I'm cool!
Cardiac Cycle

Systole
Contract & Empty

Diastole
Relax & Fill
Blood Chemistry on Thursday!
No food, drink or gum in lab!

Thanks sincerely!
PREPARATION

1. WASH & DRY

2. ALCOHOL

3.
OBTAIN μSAMPLE

BLOOD GLUCOSE

BLOOD TYPING
BLOOD GLUCOSE

READ & RECORD!!
BLOOD TYPING

ADD ANTISERA

MIX W/TOOTHPICKS

READ & RECORD!!
CLEAN-UP!

1. FOLD DIAPER

2. BLOOD PRODUCTS

3. REWASH!!
Veins → Atria → Ventricles → Arteries

Superior vena cava (from head)

Right atrium

Inferior vena cava (from body)

Right ventricle

Endocardium

Pericardium

Myocardium

Left atrium

Left ventricle

Aorta

http://www.nhlbi.nih.gov/health/health-topics/topics/hhw/contraction.html
Patent or still open!

SI Fox 2009 fig 13.17 p 420
(Automatically) Shock the Heart then it Contracts!
EKG/ECG Origin

SA node

AV node

Torstar Books 1984
Heart's Electrical Highway!
(a) Normal pacemaker activity: Whole train will go 70 mph (heart rate set by SA node, the fastest autorhythmic tissue).

(b) Takeover of pacemaker activity by AV node when the SA node is nonfunctional: Train will go 50 mph (the next fastest autorhythmic tissue, the AV node, will set the heart rate).

(c) Takeover of ventricular rate by the slower ventricular autorhythmic tissue in complete heart block: First part of train will go 70 mph; last part will go 30 mph (atria will be driven by SA node; ventricles will assume own, much slower rhythm).
Normal (A) vs Situs Inversus (B): 1:10,000 live births!

Randy Foye, NBA Player & Situs Inversus!

http://www.pbs.org/program/nine-months-that-made-you/
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!
Continuous exercise

≥ 50% muscle mass

≥ Conversational pace

20-60 min/session

3-5 days/wk

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
- ≥ 1 set/exercise
- 8-12 (most) or 10-15 (frail/> 50-60 yr) repetitions/set
Federal exercise guidelines include strength training for all


**Adults**: Moderate to Vigorous Exercise

≥ 30 min, 5 d/wk

**Children**: Moderate to Vigorous Exercise

≥ 60 min, 5 d/wk
Questions + Discussion
Did you know?

- Every year ~785,000 Americans have a first heart attack. Another 470,000 who've had ≥ 1 have another attack.

- In 2008, > 616,000 people died of heart disease. Heart disease caused almost 25% of deaths in the US.

- In 2010, coronary heart disease US costs ~$108.9 billion including health care, medications & lost productivity.

*SOURCE: Heart Disease Facts, Centers for Disease Control, 2012*
Heart Disease Death Rates, 2000-2006
Adults Ages 35+, by County

AK low, too!

MN is lowest!

Jackson, MS

Eugene, OR

http://www.cdc.gov/heartDisease/statistics.htm
Coronary Circulation ≡ Crowns the Heart!
Area of cardiac muscle deprived of blood supply if coronary vessel is blocked at point A:

Right coronary artery

Right ventricle

Area of cardiac muscle deprived of blood supply if coronary vessel is blocked at point B:

Left coronary artery

Left ventricle

**FIGURE 9-35**

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

L Sherwood 2004 p 336
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.
CABG
Tobacco-free Campus

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

September 1, 2012

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

UO's Josh Buehler

U.S. Surgeon General
Regina Benjamin
An LDL to HDL ratio **greater than** 5 to 1 in men or 4.5 to 1 in women

**Increased risk of heart disease**
Apple type of obesity predisposed to CVD!

Pear type of fat pattern...

implies lower disease risk!

Eat more apples...

to help prevent the apple type of obesity!
Pick an abundance of whole grains, legumes, nuts, vegetables & fruits!
Healthy Oils to Minimize Atherosclerosis

HAPOC?
Olive Oil Loves Olive Oil & has some heartfelt advise for Popeye!!
Yes for the spinach! — but get rid of the pipe!!
Fish Oil Intakes & Cardiovascular Death Rates

Cardiovascular Deaths per 100,000 Population

- Ireland: 0.09%
- USA: 0.13%
- France: 0.14%
- Japan: 0.37%

S&W 2011
fig 5-12 p 167
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