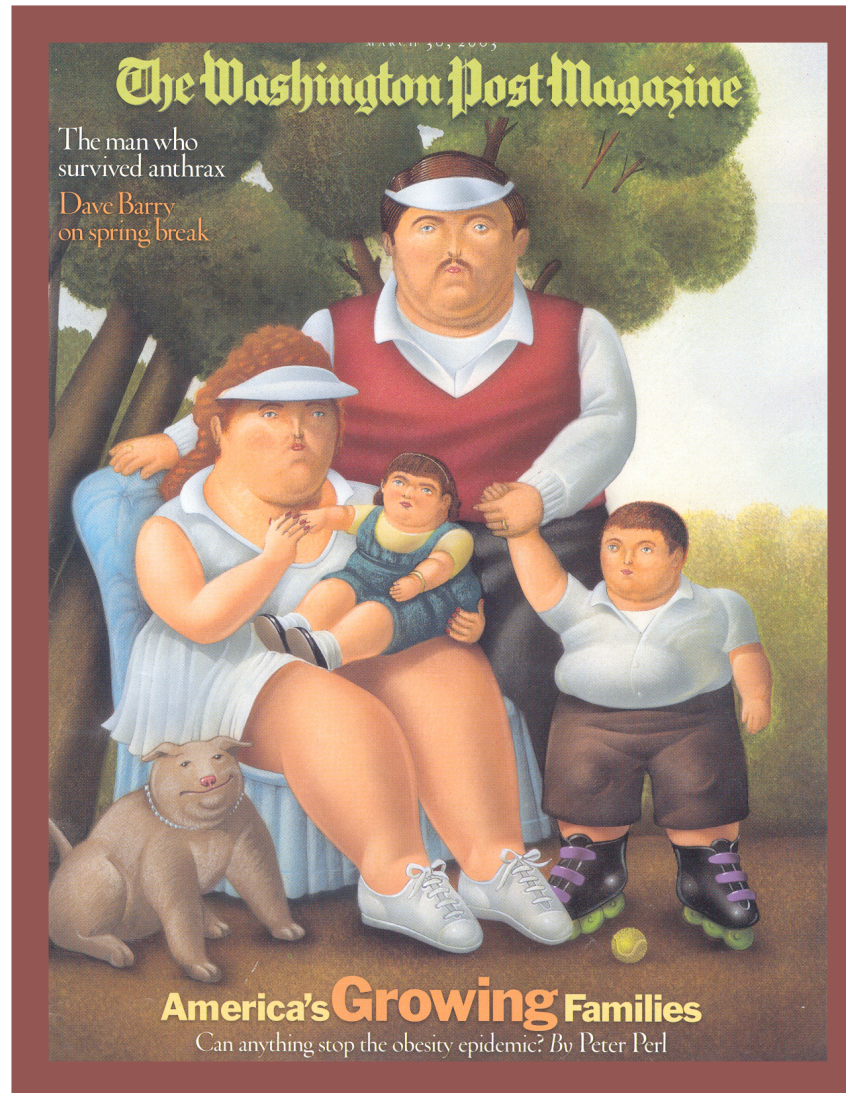


# Body Composition



# **Typical Body Composition**

**Body composition = body's relative amount of fat mass AND fat-free mass (bone, water, connective and organ tissues, teeth)**

**Essential fat = crucial for normal body functioning.**

**3-5 % of total body weight in males**

**8-12% of total body weight in females**

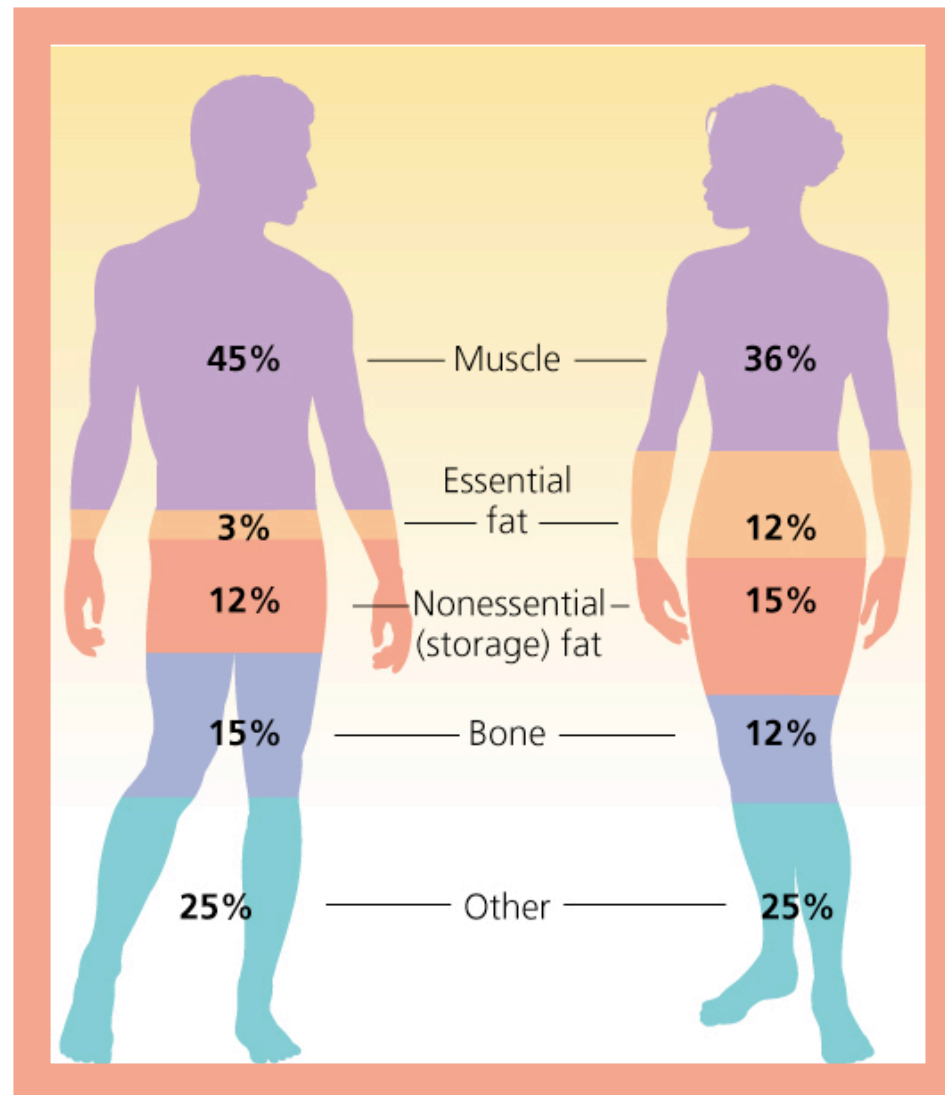
**Nonessential fat = adipose tissue**

# **Typical Body Composition**

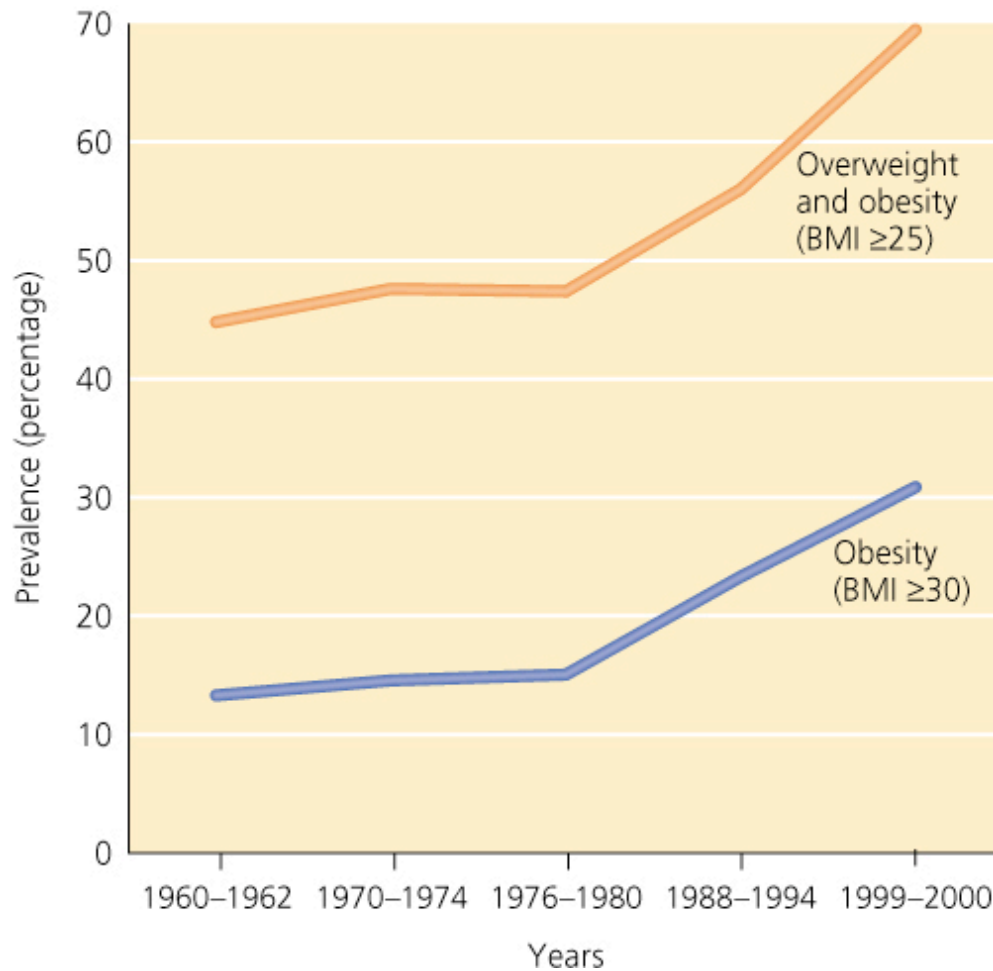
**The most important consideration in evaluating body weight and composition is the proportion of total body weight that is fat (percent body fat).**

**Height and weight charts are no longer used.**

# Typical Body Composition



# Prevalence of Overweight and Obesity



# **Prevalence of Overweight and Obesity**

**Overweight = total body weight above a recommended range for good health.**

**Obesity = severely overweight and fat – characterized by excessive accumulation of body fat.**

# Creeping Obesity

**The primary factors associated with increase in body fat with age is a progressive decrease in the metabolism. Basal metabolic rate is highly dependent on the amount of Lean Body Mass an individual has. With age a BMR. Exercise is one way of maintaining LBM and keeping BMR elevated.**

# **Creeping Obesity**

**Physical Activity is also known to decrease with age. This decrease is another reason for creeping obesity.**

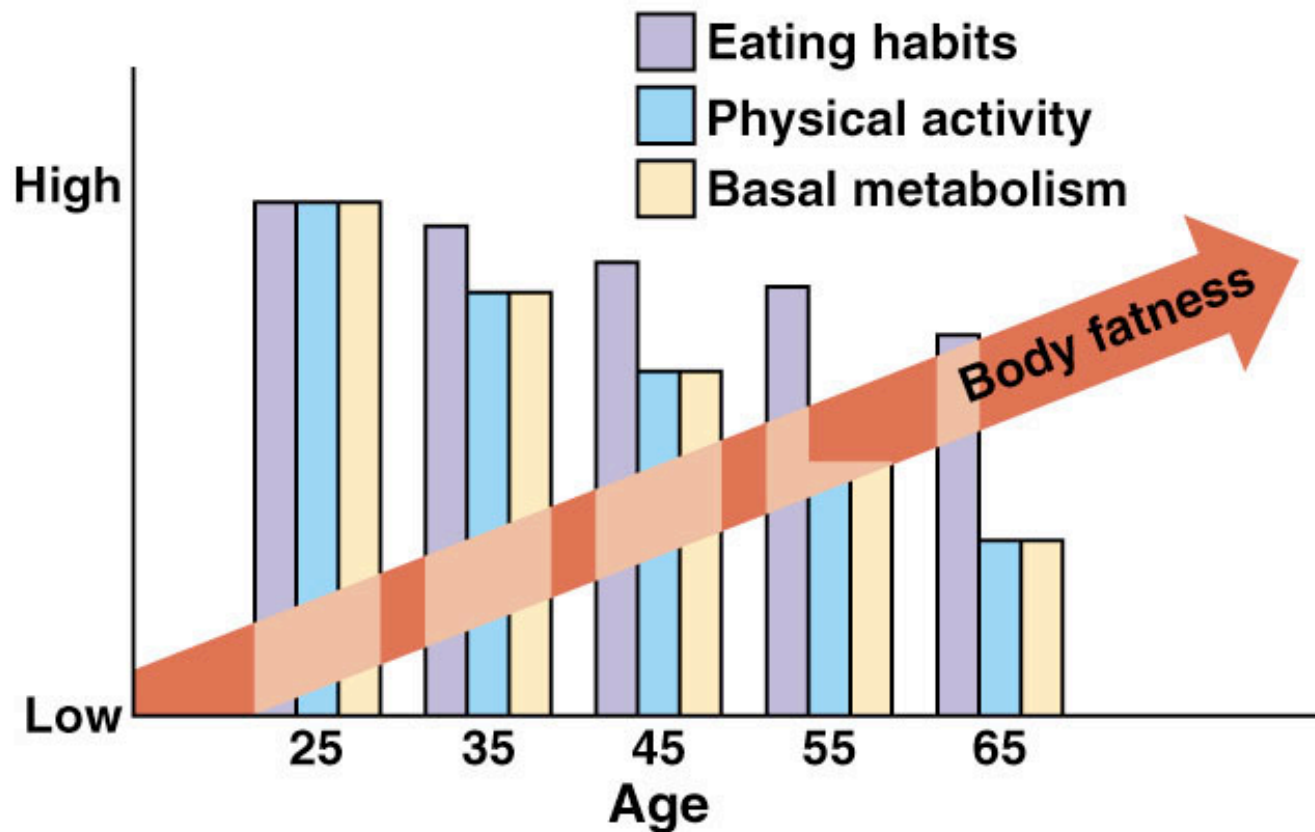
**To maintain body weight it is necessary for people to either maintain a habit of regular exercise or to progressively decrease their caloric intake as they get older.**



# Creeping Obesity

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## Obesity

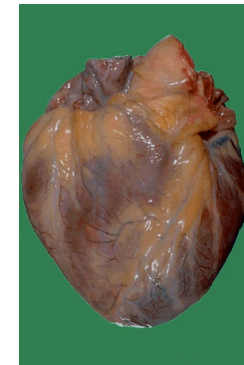


**Physical activity decreases and leads to a decrease in metabolic rate.**

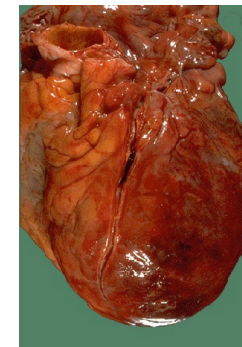
**If energy expenditure drops more than energy intake, weight gain will occur.**

# Health Risks Associated with Being Fat

- Coronary heart disease
- Hypertension
- Hypercholesterolemia
- Cancer
- Diabetes

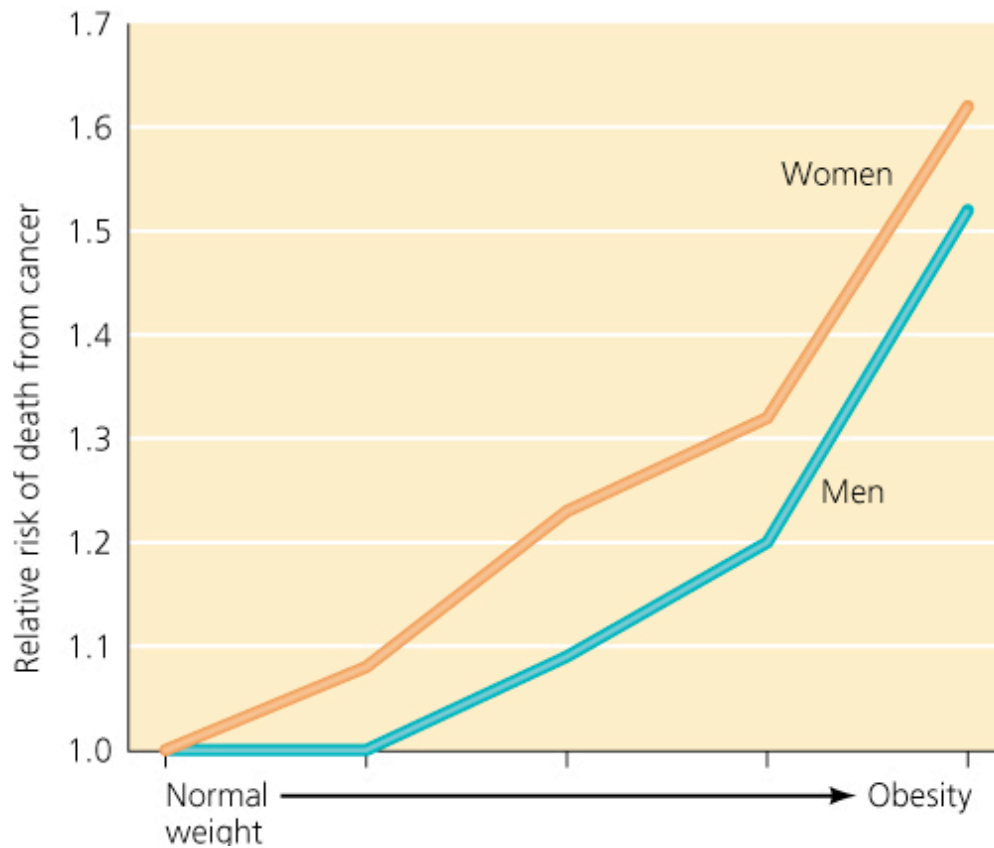


healthy heart

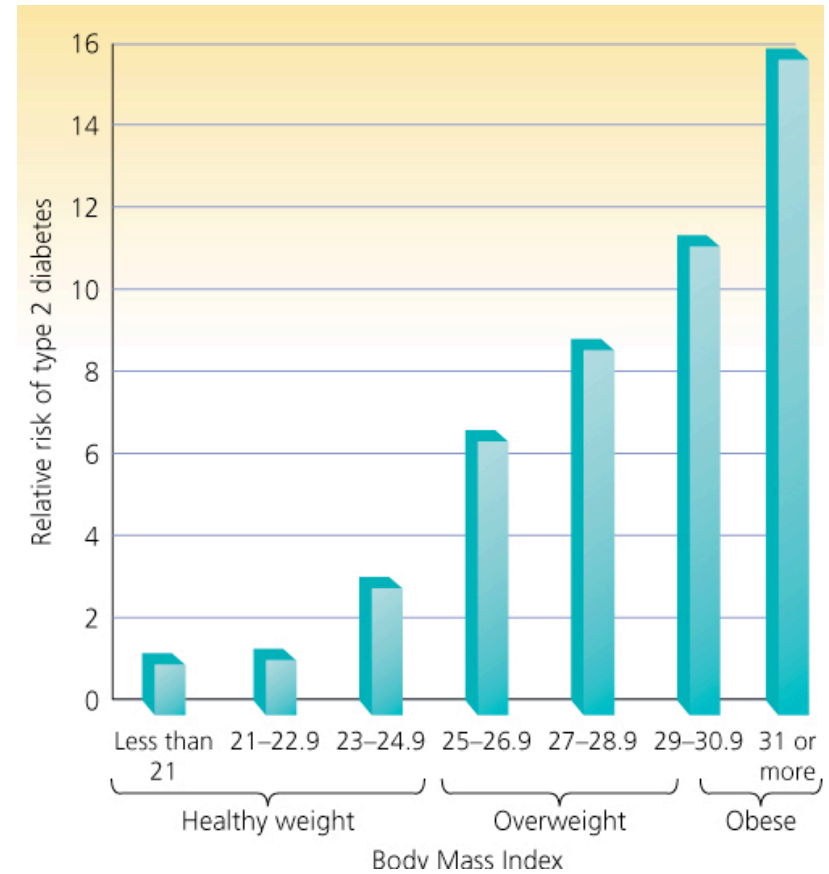


diseased heart

## Body Composition and Cancer Mortality



## BMI and Risk of Type II Diabetes




# Body Fat Distribution and Chronic Disease

Location of fat is important to health

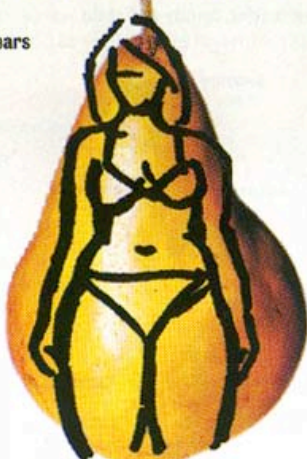
**Out of Shape: The Fruit Test**

Scientists now divide fat people into two groups, according to body shape: apples and pears. Men tend to be apples, women pears, mostly because of hormonal differences. Women may fret more about their size, but apple fat poses the greater risk to health.

**Apples**



**Pears**



Apple-shaped people carry much of their fat above the waist. This fat is hyperactive: it breaks down and enters the bloodstream readily, which may lead to clogged arteries, high blood pressure and other problems.

Pear-shaped people carry much of their fat on hips and thighs. Some researchers call this "good fat" because it's associated with high levels of HDL, the "good" cholesterol. Others say there is no such thing as good fat.

**How to find out if you are an apple or a pear:** Measure your waist and hips. Divide your waist measurement by your hip measurement. This is your waist to hip ratio. Check below to determine your health risk:

Health risk for men			Health risk for women		
LOW RISK (PEARS)	MODERATE RISK	HIGH RISK (APPLES)	LOW RISK (PEARS)	MODERATE RISK	HIGH RISK (APPLES)
<.80	.85	.90	<.70	.75	.80
.95	1.00*		.85	.90*	

Waist-to-hip ratio

# **Body Fat Distribution and Chronic Disease**

**Abdominal body fat poses greater health risks than fat stored in other areas because this fat is more adaptable and has greater access to the circulation.**

**Males store more fat centrally and have increased health risks associated with body fatness.**

# What can excess body fat do to a person's health and wellness?



# **What can excess body fat do to a person's health and wellness?**

**Excess body fat decreases the ability to perform physical activities.**

**Unrealistic expectations about body composition can hurt self-image.**

**Skin problems**

**Sleeping problems.**

# Problems Associated with Very Low Levels of Body Fat

- Reproductive, circulatory, and immune system disorders
- Too little body fat =
  - Less than 10–12% for women
  - Less than 5% for men

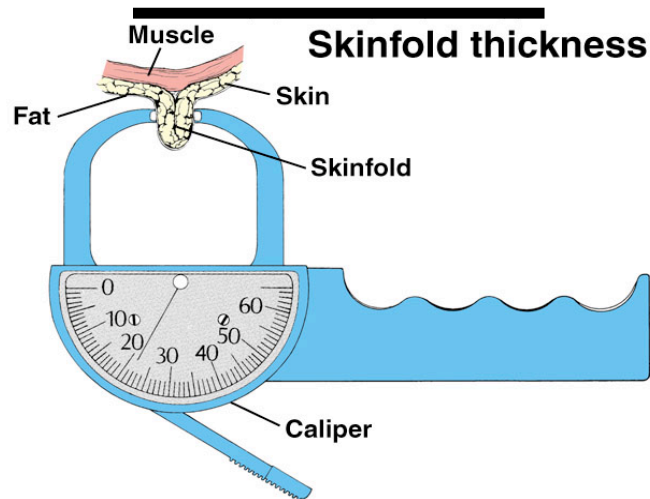
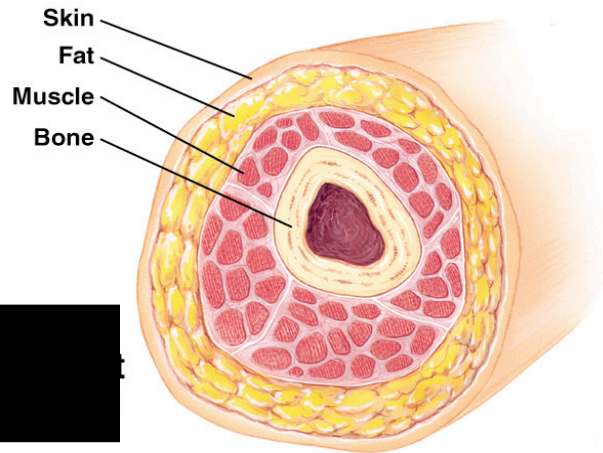


# Body Composition Assessment



# Skinfold Measurements

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# **Skinfold Measurements**

**Skinfold measurement: Measurement are used in equations that link the thickness of skinfolds to percent body fat calculations made from more precise experments.**

**This technique is called skinfold because a fold of skin is picked up and measured. Underneath the skin the body stores subcutaneous fat so when the skin is lifted the fat layer can be measured.**

# Skinfold Measurements

**Body fat is stored in people in different places and the measurement of fat in one place is not always an accurate measurement of total body fat. Also, the thickness must be converted into a meaningful measure.**

# Underwater Weighing



# Underwater Weighing

**Underwater weighting: An individual is submerged and weighted under water. Percentage of fat and fat-free weight are calculated from body density.**

# Bod Pod



# **Bod Pod**

**The Bod Pod: The amount of air displaced by a person in a small chamber is measured by computerized sensors.**



# DEXA



# **DEXA**

**DEXA: Based on imaging of body tissues. Cross sectional area measures calculated at different levels of the body.**

**This is the MOST accurate way for estimating body composition.**



