Unit 5 – SPORTS NUTRITION
Body Composition worksheet

Name_______________________________________  Period______

1. What are the 2 main components of body composition?

2. What is included in Lean Body Mass?

3. Name the essential body fat for both males and females.
   Males_______  Females________

4. What are the averages of percent body fat for men and women?
   Men__________  Female__________

5. What is the equation for Body Mass Index?

6. Why is BMI not an effective measurement of body completion and why does this particularly apply to athletes?

7. Define obesity in terms of BMI.

8. Match the following methods of measuring body composition with their definitions.
<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrostatic Weighing</td>
<td>A. The thickness of fat layers are measured at various areas of the body by calipers</td>
</tr>
<tr>
<td>Plethysmography</td>
<td>B. An electrical current is passed through the body and the speed with which it passes is measured</td>
</tr>
<tr>
<td>Skin Fold</td>
<td>C. The subject sits in an airtight container and the air that is displaced by the body is measured</td>
</tr>
<tr>
<td>Bioelectrical Impedance Analysis</td>
<td>D. The subject exhales all air and is weighed under water</td>
</tr>
<tr>
<td>Near Infrared Reactance</td>
<td>E. A light beam is passed into the body which hits bone and then is reflected back</td>
</tr>
</tbody>
</table>

9. List the error range and the sources of error that are common to the following methods of measuring body competition.

Hydrostatic Weighing

Plethysmography

Skin Fold

Bioelectrical Impedance Analysis

Near Infrared Reactance
1. What are the 2 main components of body composition?
   
   Body Fat
   Lean Body Mass

2. What is included in Lean Body Mass?
   
   Muscle, Blood, Organs, Bone

3. Name the essential body fat for both males and females.
   
   Males: 3%
   Females: 12%

4. What are the averages of percent body fat for men and women?
   
   Men: 12-18%
   Female: 22-25%

5. What is the equation for Body Mass Index?
   
   Height (in meters)
   Weight (in kilograms)²

6. Why is BMI not an effective measurement of body composition and why does this particularly apply to athletes?
   
   It uses body weight. Since muscle weighs more than fat it could skew the results giving a healthy person a result of obese. This is common among athletes who have more than average muscle.

7. Define obesity in terms of BMI.
   
   BMI over 30
8. Match the following methods of measuring body composition with their definitions.

Hydrostatic Weighing  D
Plethysmography  C
Skin Fold  A
Bioelectrical Impedance Analysis  B
Near Infrared Reactance  E

9. List the error range and the sources of error that are common to the following methods of measuring body composition.

Hydrostatic Weighing: + or − 2.7%. Error can come from incomplete exhaling of air from the lungs, inaccurate equipment, and technician error

Plethysmography: + or − 2.7 to 3.7%. Error may come from air trapped in the hair or clothing

Skin Fold: + or − 3.5%. Error comes from improperly calibrated calipers and technician error

Bioelectrical Impedance Analysis: +or − 3.5%. Error comes from dehydration, women that are pre-menstrual, undigested food in the stomach, improper positioning of the subject, and the fact that fat is carried in parts of the body that are not included in the test.

Near Infrared Reactance: +or- 3 to 5%. Error comes from the fact that it is only measured at one site, thus not including fat carried elsewhere