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ENERGY BALANCE EQUATION (Textbook pages 358–362)

1 Key Terms and Definitions

Define the key terms below in your own words.

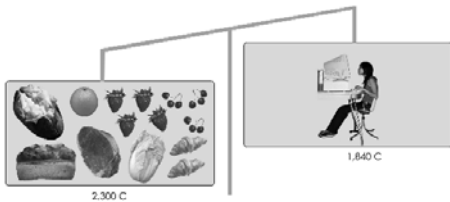
Key Term	Definition
basal metabolic rate (BMR)	
energy balance	
energy balance equation	

2 Finding a Healthy Balance

The simple energy balance equation tells us a lot about why we gain, lose, or maintain weight. Complete the following statements regarding *energy input*, *energy output*, and *weight status*.



In a weight balance situation, energy input _____ energy output.



In a weight gain situation, _____ exceeds _____.



In a weight loss situation, _____ exceeds _____.



③ Calculate Your Basal Metabolic Rate

Calculate your basal metabolic rate (BMR) using one of the following simple formulas:

For women: $\text{BMR} = 655 + (9.6 \times \text{weight in kg}) + (1.8 \times \text{height in cm}) - (4.7 \times \text{age in years})$

For men: $\text{BMR} = 66 + (13.7 \times \text{weight in kg}) + (5 \times \text{height in cm}) - (6.8 \times \text{age in years})$

My BMR: _____

Now that you know your BMR, explain what it is and discuss the influence of exercise on BMR. How does it affect the energy balance equation?

Once you know your BMR, you can also calculate your daily energy needs based on your activity level using the **Harris-Benedict equation**. To determine your total daily energy needs, multiply your BMR by the appropriate activity factor, as follows:

If you are sedentary (little or no exercise): BMR x **1.2**

If you are lightly active (light exercise/sports 1 to 3 days/week): BMR x **1.375**

If you are moderately active (moderate exercise/sports 3 to 5 days/week): BMR x **1.55**

If you are very active (hard exercise/sports 6 to 7 days a week): BMR x **1.725**

If you are extra active (very hard exercise/sports and physical job or training for sport competition): BMR x **1.9**

My total daily energy needs: _____

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BODY COMPOSITION (Textbook pages 362–367)**1 Key Terms and Definitions**

Define the key terms below in your own words.

Key Term	Definition
bioelectrical impedance analysis (BIA)	
Bod Pod	
body composition	
body mass index (BMI)	
dual energy x-ray absorptiometry (DEXA)	
ectomorph	
endomorph	
essential fat (EF)	
hydrostatic weighing	
lean body mass (LBM)	



mesomorph	
percent body fat	
skinfold calipers	
storage fat (SF)	
total body fat (TBF)	
total body mass (TBM)	





2 Determine Your BMI

Calculate your body mass index (BMI) using one of the following two formulas:

$$\text{BMI} = \text{weight (kg)} / \text{height (m)}^2$$

$$\text{BMI} = [\text{weight (lb)} \times 703] / \text{height (inches)}^2$$

My BMI is: _____

You can also use a nomogram (see next page) to determine your BMI. First, find and mark your body weight (kg or lb) on the scale to the left and your height (cm or inches) on the scale to the right. Then simply place a straight edge connecting the two values. Your BMI (metric units) is read where the line intersects the scale in the center. The degree of risk associated with your BMI is also indicated to the left or right of the scale.

My BMI (from the nomogram) is: _____

My degree of health risk (from the nomogram) is: _____

Weight Status	Men	Women
Underweight	< 20.7	< 19.1
Acceptable weight	20.7 – 27.8	19.1 – 27.3
Overweight	27.8	27.3
Severely overweight	31.1	32.3
Morbid obesity	45.4	44.8

Once you have obtained your BMI, its relationship to desirable body mass indexes can also be determined by referring to the table to the left.

My weight status based on my BMI is: _____

Taking your results into account, describe one of the problems with the BMI.

