The Mathematics of Fitness

Select a square to view a topic.

- Goal Body Weight Calculations
- Heart Rate Calculations
- Macronutrient Calculations
- Metabolic Calculations
- Final Quiz

Overview

This section will review metabolic calculations including:

- Resting Metabolic Rate,
- Metabolic Equivalents (MET's),
- MET-Minutes,
- Oxygen Consumption, and
- Caloric Expenditure During Exercise.

Overview

This section will review biometric calculations including:

- Body Mass Index
- Waist-to-Hip Ratio
- Goal Body Weight

Goal Body Weight Calculations

A 40-year-old female client currently weighs 170 lbs. and has 32% body fat. She would like to decrease her body fat to 26% over the next six months.

What is her goal body weight?

170 lbs. x .32 = 54.4 pounds of fat weight
170 lbs. - 54.4 = 115.6 pounds of lean body weight
115.6 ÷.74 (goal % LBW) = **156 lbs. (goal weight)**

Note: The goal % of lean body weight is found by taking the *goal percent of body fat* subtracted from 1, where 1 represents "100%" of the client's body weight.
1 - .26 = .74

Karvonen Formula

Rather than maximum heart rate, the Karvonen* Formula utilizes the heart rate reserve to determine the desired exercise intensity. The heart rate reserve (HRR) is found by subtracting the resting heart rate from the HRmax. Next, the HRR is multiplied by the desired training intensity. Finally, the resting heart rate is added back in to this number to establish the target heart rate.

*Karvonen, M.J., Kentala, E., & Mustala, O. (1957). The effects of training on heart rate; a longitudinal study. In *Annales Medicinae Experimentalis et Biologiae Fenniae*; 35(3): 30-315.

Interpreting a Food Label

1 gram carbohydrate = 4 calories

Then the carbohydrates…

31 grams of carbs
x 4 kcal/gram
= 124 kcals from carbs
÷ 250 total kcals
= 49% kcal from carbs

Using the number of carbohydrate grams per serving, calculate the number of carbohydrate calories and then the % of total calories coming from carbohydrates.