

Nutrition Study

Please do not write on this handout!

NOTE: You are required to set up appropriate data tables. You must show all calculations with correct units for FULL CREDIT!

PART A: Dietary Evaluation

1. Estimate how many total kcalories you might consume in a 48 hour period. (record in Table 1)

* You will be asked to keep an accurate list of the names, and amounts of all the foods you have eaten for a specific **48 hour period of time**. This information will then be analyzed using computer software in the lab. * Some example information you will need to collect: What kind of foods, and how many servings eaten (read food labels).

(you will use computer software to determine actual total Kcalories consumed)

* Record this information in **Table 1**. (be sure to include your original 2-day log)

* Record your **estimated total Kcalories consumption** in **Table 1**.

* Determine and record your **actual total Kcalories consumption** in **Table 1**. (use software)

PART B: Expenditure Of Kcalories

2. Estimate your total energy expenditure for the same 48 hours in Part A (record in your Table 2)

* You will also need to keep an accurate log of all the activities you have participated in and the length of time during the **same 48 hour period** as in **PART A**.

* Record your **estimated total Kcalories expended** in **Table 2**.

Note: the Kcalories used up are expressed as negative numbers.

* Determine and record your **actual total Kcalories expended** in **Table 2**. (use formula in energy expenditure Handout)

*Be sure to include your original 2-day activity log)

* Determine and record the **actual net loss or gain of Kcalories** for 48 hrs. in **Table 3**.

PART C: Measuring Body Fat (calculations are in pounds of fat)

Materials: fat calipers, **% Body Fat handout** with standards

Procedure:

Preparation of accurate measurement:

1. Allow yourself considerable practice using the caliper. Take measurements one at a time at the various sites in rotational order. Repeat the measurements at each site. How consistent are your measurements at each site?

2. Be careful to use the appropriate anatomical landmarks to locate the precise sites for measurement. **(see handouts of skin fold sites)**

3. All measurements should be done at the same time of day.

4. Subject must be standing.

5. All measurements are taken on the right side of the body and directly on the skin, not through the clothes.

6. Take 1 measurements of each of the 7 skin-fold sites.

(See % Body Fat handout for skin-fold sites)

7. Record millimeter values in your **Table 4**.

8. Repeat steps 1-7 two more times.

9. Determine an average thickness for each skin-fold test area. ** Take an average of the two closest readings.

10. Calculate body density(BD) and % Body Fat using the following formulas:

$$\text{Men Body Density(BD)} = 1.112000 - 0.00043499(A) + 0.00000055(A)^2 - 0.00028826(B)$$

$$\text{Women Body Density(BD)} = 1.0970 - 0.00046971(A) + 0.00000056(A)^2 - 0.00012828(B)$$

NOTE:

A = sum of seven skin-folds

B = age in years (use 19 yrs. old)

$$\% \text{ Body Fat} = (495/\text{BD}) - 450$$

Body Density(BD) _____

% Body Fat _____

11. Compare your % body fat to **Health Fitness Standards in Table 5 in % Body Fat handout.** (Table 5 also identifies the Health Fitness and Physical Fitness category [see apteryx] for individuals who wish to do moderate to vigorous physical activity without undue fatigue on the body)

PART D: Determining Your Recommended Weight (calculations are in pounds)

* Before you can determine your recommended weight, you must select the desired health or high physical fitness fat percentage for your age or gender. You must make this decision based on your current % fat and personal health/fitness objectives. (See Table 5 in % Body Fat handout)

Procedure: (see example problem on next page)

1. To determine your pounds of body weight in fat (FW), multiply body weight (BW) by your current percent fat (%F) expressed in decimal form:

$$\text{FW} = \text{BW} \times \%F$$

2. Determine lean body weight (LBW) by subtracting the weight in fat (FW) from your body weight (BW):

$$\text{LBW} = \text{BW} - \text{FW}$$

3. Select your desired body fat percentage (DFP) based on the standards in **Table 5 in % Body Fat handout.**

4. Compute recommended body weight (RBW) using the following formula:

$$\text{RBW} = \text{LBW} / (1.0 - \text{DFP})$$

5. Record answer in **your Data Table 5 of your study.**

SEE SAMPLE PROBLEM ON NEXT PAGE!

Sample problem: A 35-year old female weighs 170 lbs. and is 32% fat. What would her recommended body weight (RBW) be at 24%?

| | |
|---------------------|---------------------------|
| Gender: | female |
| Age: | 35 |
| Body Weight: | 170 lbs. |
| % F | 32% (.32 in decimal form) |

Step 1: $FW = BW \times \% F$
 $FW = 170 \times .32 = 54$

Step 2: $LBW = BW - FW$
 $LBW = 170 - 54 = 116$

Step 3: DFP: 24% Or .24

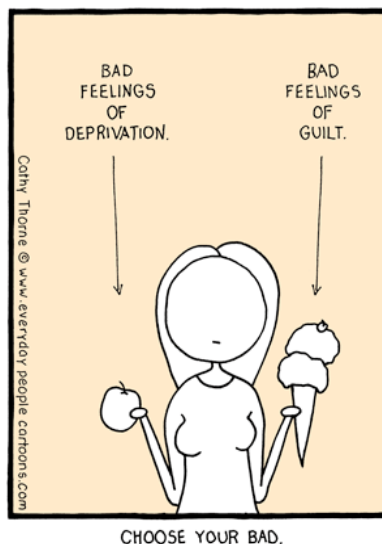
Step 4: $RBW = LBW$ divided by $(1.0 - DFP)$
 $RBW = 116$ divided by $(1.0 - .24)$
 $RBW = 116$ divided by $(.76) = 152.6$

RBW AT 24% FAT WOULD BE 152.6 lbs

Table 5: Actual % Body fat (skin fold method) _____
Actual % Body fat (electronic hand held device) _____
Desired % Body fat _____
Recommend Body Wt. _____
Actual Body Wt. _____
Body Mass Index (BMI) value _____

ANALYSIS: NOTE: You must include computer print-outs of:

- 1) Nutritional analysis for each day
 - 2) The 2-day average (this must be averaged by hand directly on the print-outs),
- AND the original 2-day Food and Activity Logs



Questions: Complete sentences for FULL CREDIT!

Dietary Analysis:

1. Discussion of RDA from the 2-day average:
 - A) Which nutrient(s) (except fat & sodium), did you receive less than 80% of the RDA?
 - B) Which nutrient(s) did you get more than 100% of the RDA?
 - * Comment on the above questions. For example, what food(s) should you include to raise your percent, or what food(s) you ate that made percentages high? Be specific.
 - C) What % of your total kcalories is from fats, proteins & carbohydrates?
 - * Compare the percentages in your diet to the US RDA. Comment.
 - D) What is the total intake of dietary fiber?
 - * Compare this value to the US RDA of 20-30 grams / day. Comment.
 - E) What was the total sodium intake?
 - * Compare to the RDA of 1100 to 2400 mg / day? Comment.
 - F) What was the total cholesterol intake.
 - * Compare to the RDA of < 300 mg / day? Comment.
2. What is the difference between the total kcals taken in and used up? (use +/-)
 - * If figures are very different, what is the reason(s). How many pounds would you theoretically lose or gain in 48 hours if figures are correct?
3. Compare the **estimated** kilocaloric intake to the **actual** kilocaloric intake. Comment on any difference between the two values.
4. Compare the **estimated** energy expenditure to the **actual** energy expenditure. Comment on any difference between the two values.
5. What dietary changes could you make to correct or improve your dietary profile? Be specific.
6. Based upon Parts A and B of this activity, suggest two ways that a person may decrease his/her body fat. Be specific.
7. Give some possible sources of error in your dietary analysis. Be specific to your data.

% Body Fat Analysis:

1. What is your **actual** % body fat?
2. What is your **desired** % body fat?
3. How many pounds of adipose tissue will you have to lose or gain in order to achieve your **desired** % body fat?
4. What is your BMI value, and how does your value compare with the National BMI chart?
5. Compare your % body fat to National Health Fitness Standards. If any, what behavioral changes could be made in order to meet the moderate to good standard? Be specific.
6. An average body fat value for all males is 16%. For all females, the average value is 24%. What might be a physiological advantage for females to be higher?
7. Give some possible sources of error in determining % body fat. Be specific to your data.