

**Activity 3.2.4: PLTW Nutrition – Client Report for Hans Spielman**

**Client Name:** Hans Spielman

**Health History (including any specific health goals):**

Hans Spielman is a 22-year-old college senior who has not worried much about his weight in the past four years. He has never been involved in sports and he rarely exercises. He would prefer to walk from his campus apartment to class, but he is often running so late, he just takes his car. Hans spends countless hours a day in the library or in his apartment at his computer. He reports snacking constantly, although many times he does reach for fruit or nuts. Hans is allergic to seafood. He will cook most nights of the week, but he sticks mainly to pasta, hamburgers, and frozen pizza. He does not have time to prepare side dishes or vegetables.

Hans has a strong family history of cardiovascular disease. His father died of a stroke at age 39 and his maternal grandmother has battled high blood pressure for years. His mother runs marathons and is in perfect health. His uncle just found out that his routine colonoscopy revealed some cancerous polyps. There is no family history of diabetes.

Recent lab work revealed that Hans' LDL cholesterol is 162 and his HDL cholesterol is 39. His triglycerides are 180. His average resting blood pressure was 130/80.

Hans is bothered by his classification as obese and wants to make a change. He would like to lose at least 50lbs. He needs help to design a healthy strategy for getting his health back on track.

**Height:** 5' 11"

**Weight:** 274lbs

**BMI:**

- Calculate Hans' BMI based on his height and weight and describe the implications of this number.

$$BMI = \frac{kg}{m^2}$$

.454 kg per lb  
2.54 cm per inch

$$247 * .454 = 124.396$$

$$\frac{124.396}{(1.8034)^2} = 38.249$$

$$71 in * 2.54 = 180.34$$

**Activity Level: BMR and TDEE (Output):**

Hans only walks to campus about once or twice a week. He used to play basketball with his friends on weekends, but now he becomes too winded to keep up.

- Compute Hans' BMR.

$$2,649.167 = 66.5 + (13.74 * 124.396) + (5.003 * 180.34) - (6.75 * 22)$$

- Discuss the activity factor used in the Harris-Benedict Equation and calculate TDEE.

Very little exercise;

$$2,649.167 * 1.2 = 3,179$$

**Food Intake (Input):**

Hans completed a food diary for one week. Analysis of his food choices revealed the following results:

Average calories consumed per day	3780
Average fat consumed per day	90g
Average saturated fat consumed per day	60g
Average carbohydrates consumed per day	455g
Average protein consumed per day	40g
Average sodium consumed per day	3,520mg

Hans reports eating 1-2 servings of fruits or vegetables per day. Hans does not drink coffee, but he drinks about 4-5 sodas per day. He goes out drinking with his friends about twice a week and usually drinks a six pack of beer.

Hans eats on campus every day for lunch. Most days he skips breakfast, so lunch is normally a big meal. He is not a picky eater and he likes trying new foods, he just does not have time.

**Calorie Deficit or Surplus (Compare Inputs and Outputs):**

- Compare calories consumed versus calories expended.

4425 Surplus calories

- Describe what will happen to Hans' weight over the next month if he continues the same eating patterns. Show your work.

Calories gained  
 $4425 = 132,250$  he will gain a lot of lbs  
from the extra  
calories

**Overall Assessment:**

- Discuss overall implications of BMI and any energy imbalance on overall health.
- Analyze food choices
  - Is the client getting enough of each of the designated food groups?

Too much sodium, fat carbs to lose weight

- How does consumption of fats, carbohydrates, proteins and sodium compare to recommended values?

eating way too much, almost double

- Propose ways to bring the energy input and output in line with Hans' health goals. Describe final recommendations to improve Hans' overall health and meet his fitness goals. How should Hans alter his eating habits and his activity? Link your recommendations to his personal health history and his family history.

needs to exercise more and eat less

Part IV: Getting Help

John finally agreed to go in for simple testing. The report from his ABI testing is found below:

**ABI WORKSHEET**

**Right Arm:**  
Systolic Pressure: 142 mmHg

**Left Arm:**  
Systolic Pressure: 138 mmHg

**Right Ankle:**  
Systolic Pressure  
Posterior Tibial (PT): 058 mmHg  
Dorsalis Pedis (DP): 060 mmHg

**Left Ankle:**  
Systolic Pressure  
Posterior Tibial (PT): 129 mmHg  
Dorsalis Pedis (DP): 120 mmHg

**Ankle-Brachial Index Interpretation**

Above 0.90 = Normal  
 0.71 - 0.90 = Mild Obstruction  
 0.41 - 0.70 = Moderate Obstruction  
 0.00 - 0.40 = Severe Obstruction

**Right ABI equals Ratio of:**  

$$\frac{\text{Higher of the Right Ankle Pressures (PT or DP)} \quad 60 \text{ mmHg}}{\text{Higher Arm Pressure (Right or Left)} \quad 142 \text{ mmHg}} = 0.42^*$$

**Left ABI equals Ratio of:**  

$$\frac{\text{Higher of the Left Ankle Pressures (PT or DP)} \quad 129 \text{ mmHg}}{\text{Higher Arm Pressure (Right or Left)} \quad 142 \text{ mmHg}} = 0.91^*$$

\*The lower of these numbers is the patient's overall ABI  
 Overall ABI (lower ABI) = .42

25. Compute John Jones' ABI.
26. Copy the chart of normal and abnormal ABI values into your laboratory journal.
27. Work with your partner to analyze your findings, discuss treatment and answer the following:
  - o What do the values for ABI imply about John's legs?
  - o What is most likely occurring inside John's leg to cause this increase in peripheral pressures? How does this relate to smoking?
  - o What is arteriosclerosis? What is the difference between arteriosclerosis and atherosclerosis?
  - o How can atherosclerosis be linked to PAD?
  - o What other tests can be performed to confirm this diagnosis?