Project Report: "Know Your Body"

Class BIO2312 Lecture/Lab Spring 2020

Name: Annalea Cullen

Sex: male/female: Female

Age: 29

Ethnicity: Caucasian

Height: 5'8"

Weight: 160 lbs

BMI: 24.3

Underlying health conditions: None

Pulse: (provide readings and explain significance):

The three pulse samples I recorded to obtain my resting heart rate were 58, 60 and 60. I was a competitive swimmer from ages 8-18 and have remained physically active throughout adulthood, so I have a relatively low resting heart rate due to fitness conditioning. This means that my ventricular muscles have become stronger, thereby increasing my heart's stroke volume. With a greater stroke volume, the heart is able to maintain an optimal cardiac output while beating fewer times per minute (Marieb & Smith 2019).

Blood Pressure: (provide readings and explain significance):

During our lab experiment, my partner recorded two blood pressure readings for me, both at 100/70. This is considered a healthy blood pressure, as a normal reading is less than 120/80. This means that the pressure my blood is exerting against the walls of my arteries is at an optimal level, which is important because if arterial pressure becomes too high, the ventricles have to work harder to pump blood out of the heart and into the arteries. Over time, this can be

dangerous as the left ventricular muscle gradually enlarges from overwork, thus requiring more oxygen. Additionally, the increase in arterial pressure puts stress on blood vessels throughout the body that can lead to heart attack, stroke or aneurysms (Martini, Nath & Bartholomew 2018).

EKG (provide readings and explain significance):

During our lab we only recorded EKG readings for two students. The reading that I recorded was for Kevin, age 32, weight 141 lbs. The reading showed a heart rate of 52 beats per minute. The PR interval was recorded as 140 ms, the QRS complex was 88 ms, the QT interval was 440/412 ms, the P/QRS/T axis was 60/59/46, the RV5/SV1 amplitude was 2.015/0.460 mV, and the RV+SV1 amplitude was 2.475 mV. The heart rate is within the bradycardia range, but since the patient is an athlete it would not be cause for concern. The EKG reports early repolarization, which is "defined as a slur or notch on the terminal part of the QRS complex with or without ST-segment elevation and is frequently observed in apparently healthy subjects and athletes" (Sharma S., et al., 2017). The reading records the patient's EKG as normal.

Lung Capacity (we did not do the experiment in the class this semester, however you can discuss its significance with health and factors which can lead to disease):

Total lung capacity is a measure of the maximum amount of air the lungs can hold after a maximum inspiratory effort. Tidal volume, the amount of air that is inhaled or exhaled during one respiratory cycle in a resting state, can be measured using a device called a spirometer (Marieb & Smith 2019). The tidal volume can also be used to compute additional respiratory volume measurements, such as minute respiratory volume (volume of air inhaled or exhaled per minute), expiratory reserve volume (volume of air that can be forcibly exhaled after a normal expiration), vital capacity (maximum amount of air that can be expelled from the lungs after a

maximum inhalation) and inspiratory reserve volume (volume of air that can be forcibly inhaled after a normal inspiration) (Marieb & Smith 2019).

These measurements can be important indicators for lung health, including in disease diagnostics and in demonstrating how the efficiency of the respiratory system is affected as people age. For example, as people get older, elastic tissues deteriorate throughout the body, which lowers vital capacity due to decreased lung compliance. Respiratory minute volume can also decrease as a result of this loss of elasticity in combination with lessened flexibility in the costal cartilages. As a result, elderly people often experience more difficulty with exercise performance (Martini, Nath & Bartholomew 2018). Expiratory reserve volume can be used as an indicator for respiratory ailments such as chronic obstructive pulmonary disorder (COPD) and emphysema because these conditions result in decreased elasticity of the lungs. People suffering from these conditions must exert energy to exhale, therefore their expiratory reserve volume would be much lower than that of a healthy individual (Marieb & Smith 2019).

Personally, I am not a smoker and currently have no respiratory ailments. Though a few members of my extended family and my brother are smokers, I have no family history of lung disease except for my father, who has mild asthma.

Food Diary (one week of food intake, calorific values, food groups, water etc. Also add the table to your report together with information on the Apps used):

I used the app MyFitnessPal to record a food diary for one week. A table of my food intake for the week, including types of food, calorific values and nutritional information is below. My water intake for the week ranged from between 12 – 15 glasses per day.

April 21, 2020

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Morning Star - Breakfast Sandwich, 1 sandwich	270	39g	8g	10g	25mg	600mg	4g	2g
Lunch								
Farmhouse (Pepperidge Farm) - Wheat Bread, 2 slice (49g}	260	46g	5g	10g	0mg	360mg	8g	8g
Spinach - Baby Spinach, 25 grams	20	3g	0g	2g	0mg	65mg	1g	2g
Hellman's Mayonnaise - Mayonnaise, 1.5 Tbsp (13 g)	135	0g	15g	0g	--mg	135mg	0g	0g
Bumble Bee - Solid White Albacore, 5 oz	60	0g	1g	13g	25mg	140mg	0g	0g
Harmless Coconut Water - Coconut Water, 14 fl oz	110	17g	0g	0g	0mg	40mg	15g	0g
Dinner								
Tito's - Martini Vodka, 4 oz.	260	33g	--g	--g	--mg	--mg	--g	--g
Chicken Tikka Masala - Chicken Tikka Masala, 400 gram	666	70g	28g	30g	0mg	3mg	0g	7g
Snacks								
Cheetos - Cheetos Puffs, 2.76 oz (38.9g)	440	44g	26g	4g	0mg	740mg	4g	1g
TOTAL:	**2,221**	**252g**	**83g**	**69g**	**50mg**	**2,083mg**	**32g**	**20g**

April 22, 2020

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Blueberries, 1 cup	84	21g	0g	1g	0mg	1mg	15g	4g
Chameleon - Cold-Brew, 4 oz.	0	0g	0g	0g	0mg	0mg	0g	0g
Whole Milk, 3.25% fat, 3 tbsp	27	2g	1g	1g	5mg	19mg	2g	0g

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Lunch								
Bumble Bee - Solid White Albacore, 5 oz	60	0g	1g	13g	25mg	140mg	0g	0g
Hellman's Mayonnaise - Mayonnaise, 1.5 Tbsp (13 g)	135	0g	15g	0g	--mg	135mg	0g	0g
Spinach - Baby Spinach, 25 grams	20	3g	0g	2g	0mg	65mg	1g	2g
Farmhouse (Pepperidge Farm) - Wheat Bread, 2 slice (49g}	260	46g	5g	10g	0mg	360mg	8g	8g
Dinner								
Red Stripe - Lager, 33.6 oz	459	42g	--g	--g	--mg	--mg	--g	--g
Kraft - Velveeta Mac and Cheese, 2/3 box	720	98g	24g	26g	40mg	1,740mg	8g	4g
Snacks								
Carrots - Petite Carrots, 3 oz	35	8g	0g	1g	0mg	65mg	5g	2g
Mediterranian Humus - Humus, 100 g	154	16g	9g	5g	--mg	655mg	1g	4g
TOTAL:	**1,954**	**236g**	**55g**	**59g**	**70mg**	**3,180mg**	**40g**	**24g**

April 23, 2020

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Whole Milk, 3.25% fat, 3 tbsp	27	2g	1g	1g	5mg	19mg	2g	0g
Chameleon - Cold-Brew, 4 oz.	0	0g	0g	0g	0mg	0mg	0g	0g
Lunch								
Egg, 2 large	143	1g	10g	13g	372mg	142mg	0g	0g
havarti - Havarti Cheese, 1 oz	110	1g	9g	6g	25mg	210mg	0g	0g

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Farmhouse (Pepperidge Farm) - Wheat Bread, 2 slice (49g}	260	46g	5g	10g	0mg	360mg	8g	8g
Dinner								
Wine: - Sauvignon Blanc, 1125 ml	900	3g	--g	1g	--mg	--mg	3g	--g
Nongshim - Shin Black Ramen, 1 package	560	86g	18g	14g	0mg	1,840mg	4g	4g
Snacks								
Green Mountain Gringo - Salsa, 8 tablespoons	60	8g	0g	0g	0mg	360mg	4g	4g
Tostitos - Tostitos - Restaurant Style, 36 chips	780	102g	36g	12g	0mg	630mg	0g	9g
TOTAL:	**2,840**	**249g**	**79g**	**57g**	**402mg**	**3,561mg**	**21g**	**25g**

April 24, 2020

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Chameleon - Cold-Brew, 4 oz.	0	0g	0g	0g	0mg	0mg	0g	0g
Whole Milk, 3.25% fat, 3 tbsp	27	2g	1g	1g	5mg	19mg	2g	0g
Banana, 1 medium	105	27g	0g	1g	0mg	1mg	14g	3g
Lunch								
Spinach - Baby Spinach, 25 grams	20	3g	0g	2g	0mg	65mg	1g	2g
Hellman's Mayonnaise - Mayonnaise, 1.5 Tbsp (13 g)	135	0g	15g	0g	--mg	135mg	0g	0g
Bumble Bee - Solid White Albacore, 5 oz	60	0g	1g	13g	25mg	140mg	0g	0g
Farmhouse (Pepperidge Farm) - Wheat Bread, 2 slice (49g}	260	46g	5g	10g	0mg	360mg	8g	8g
Dinner								

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Asian salad - Salad, 1 cup	160	13g	12g	3g	0mg	330mg	6g	3g
Angus Cheeseburger - Cheeseburger, 1 sandwich	600	45g	32g	31g	100mg	980mg	3g	2g
Snacks								
Arabic Pita Bread - Pita Bread, 1 Pita	140	29g	0g	5g	0mg	330mg	0g	1g
Mediterranian Humus - Humus, 100 g	154	16g	9g	5g	--mg	655mg	1g	4g
TOTAL:	**1,661**	**181g**	**75g**	**71g**	**130mg**	**3,015mg**	**35g**	**23g**

April 25, 2020

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Banana, 1 medium	105	27g	0g	1g	0mg	1mg	14g	3g
Whole Milk, 3.25% fat, 3 tbsp	27	2g	1g	1g	5mg	19mg	2g	0g
Chameleon - Cold-Brew, 4 oz.	0	0g	0g	0g	0mg	0mg	0g	0g
Lunch								
Farmhouse (Pepperidge Farm) - Wheat Bread, 2 slice (49g}	260	46g	5g	10g	0mg	360mg	8g	8g
havarti - Havarti Cheese, 1 oz	110	1g	9g	6g	25mg	210mg	0g	0g
Egg, 2 large	143	1g	10g	13g	372mg	142mg	0g	0g
Dinner								
dole - Chopped Salad, 1 cup	150	6g	13g	4g	10mg	390mg	3g	3g
Bolognese Sauce - Bolognese Homemade, 175 g	297	5g	19g	24g	38mg	100mg	4g	1g
Pasta - Cooked Pasta, 1 cup cooked	221	43g	1g	8g	0mg	1mg	1g	3g

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Snacks								
Act 11 Microwave Popcorn Butter - Popcorn, 4.5 cup	130	19g	6g	3g	--mg	280mg	--g	3g
TOTAL:	**1,443**	**150g**	**64g**	**70g**	**450mg**	**1,503mg**	**32g**	**21g**

April 26, 2020

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Chameleon - Cold-Brew, 4 oz.	0	0g	0g	0g	0mg	0mg	0g	0g
Whole Milk, 3.25% fat, 3 tbsp	27	2g	1g	1g	5mg	19mg	2g	0g
Banana, 1 medium	105	27g	0g	1g	0mg	1mg	14g	3g
Lunch								
Bumble Bee - Solid White Albacore, 5 oz	60	0g	1g	13g	25mg	140mg	0g	0g
Farmhouse (Pepperidge Farm) - Wheat Bread, 2 slice (49g}	260	46g	5g	10g	0mg	360mg	8g	8g
Hellman's Mayonnaise - Mayonnaise, 1.5 Tbsp (13 g)	135	0g	15g	0g	--mg	135mg	0g	0g
Dinner								
Digiorno - Rising Crust Pepperoni, 1 pizza 130 grams	1,856	228g	72g	84g	150mg	4,551mg	36g	12g
Snacks								
Cheetos - Cheetos Puffs, 2.76 oz (38.9g)	440	44g	26g	4g	0mg	740mg	4g	1g
TOTAL:	**2,883**	**347g**	**120g**	**113g**	**180mg**	**5,946mg**	**64g**	**24g**

April 27, 2020

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Banana, 1 medium	105	27g	0g	1g	0mg	1mg	14g	3g
Whole Milk, 3.25% fat, 3 tbsp	27	2g	1g	1g	5mg	19mg	2g	0g
Chameleon - Cold-Brew, 4 oz.	0	0g	0g	0g	0mg	0mg	0g	0g
Lunch								
Hellman's Mayonnaise - Mayonnaise, 1.5 Tbsp (13 g)	135	0g	15g	0g	--mg	135mg	0g	0g
Farmhouse (Pepperidge Farm) - Wheat Bread, 2 slice (49g}	260	46g	5g	10g	0mg	360mg	8g	8g
Bumble Bee - Solid White Albacore, 5 oz	60	0g	1g	13g	25mg	140mg	0g	0g
Dinner								
Red Stripe - Lager, 22.4 oz	306	28g	--g	--g	--mg	--mg	--g	--g
Kidney beans - Beans, 0.5 cup	55	10g	0g	4g	0mg	5mg	1g	4g
Tops - 90 Second Rice, 1 cup	160	30g	3g	4g	0mg	520mg	--g	--g
Mission - 10 Inch Flour Tortilla, 1.5 Tortilla (10 Inch)	210	37g	4g	5g	0mg	570mg	2g	2g
Safeway - 80% Lean Ground Beef, 4 ounces	290	0g	22g	20g	75mg	50mg	0g	0g
Kraft - Shredded Cheese - Mexican, 0.25 cup	100	1g	8g	6g	25mg	180mg	0g	0g
Snacks								
Cheetos - Cheetos Puffs, 2.76 oz (38.9g)	440	44g	26g	4g	0mg	740mg	4g	1g
TOTAL:	**2,148**	**225g**	**85g**	**68g**	**130mg**	**2,720mg**	**31g**	**18g**

Sleep Record (one week of sleep record and its interpretation and Apps used):

I used the app Sleep Cycle to record my sleep for a week. The first night was recorded as 70% sleep quality, with 9 hours 33 minutes in bed and 8 hours 56 minutes asleep. The second night was recorded as 75% sleep quality, with 9 hours 55 minutes in bed and 9 hours 13 minutes asleep. The third night was recorded as 70% sleep quality, with 8 hours 50 minutes in bed and 8 hours 22 minutes asleep. The fourth night was recorded as 80% sleep quality, with 9 hours 35 minutes in bed and 8 hours 56 minutes asleep. The fifth night was recorded as 83% sleep quality, with 9 hours 46 minutes in bed and 8 hours 50 minutes asleep. The sixth night was recorded as 80% sleep quality, with 10 hours 5 minutes in bed and 9 hours 10 minutes asleep. The final night was recorded as 76% sleep quality, with 9 hours 28 minutes in bed and 8 hours 34 minutes asleep.

Based on this sample, my average sleep quality was 76% and the average amount of time I spent asleep was 8 hours 52 minutes. As the recommended amount of sleep for adults is 7-9 hours, my average nightly sleeping time would be considered healthy (*How Much Sleep Do We Really Need?* 2020). Comparing my sleep results to my food diary, it also appears that there is a slight correlation between nights where I consumed alcohol and diminished sleep quality, which aligns with the fact that alcohol consumption can negatively affect sleep quality.

Family History (document any health issues in your family, age of onset, life span etc.):

Of my immediate family, both of my parents are alive, as well as one of my brothers. My second brother passed away last summer from suicide, about two weeks before his 27th birthday. He had struggled with mental health issues including depression, anxiety and schizoaffective disorder since his teenage years, and also suffered a psychotic break the summer prior to his death, which significantly worsened his condition thereafter. He was otherwise in great physical health and exercised regularly. My surviving brother and my father also struggle with

depression. My mother was diagnosed with breast cancer two years ago at age 57 but is now in remission. My father had a heart attack last year at age 60 due to a blocked coronary artery. He had a stent inserted to improve blood flow and has drastically changed his diet to cut out all foods that are not heart healthy; he has not had any further incidents.

I have a large extended family, with eight aunts and three uncles, as well as fourteen cousins. One of my aunts has bipolar disorder as well as osteochondritis dissecans, another aunt is obese and several struggle with anxiety and depression. My maternal grandmother also had breast cancer (around age 80) but had a double mastectomy and has since been in complete remission. My maternal grandfather passed away at age 68 from congestive heart failure. Prior to his death, he was living with diabetes and had also undergone a quadruple bypass surgery. Both of my paternal grandparents are still alive and mostly healthy aside from worsening arthritis and joint issues in their knees and hips.

Aside from pervasive mental health issues, my family is generally healthy and tend to live well into their 80s and even 90s. Many of my relatives are lifelong athletes, helping them to remain very active and mobile as older adults.

Conclusion/Take home message (based on all data collected how do you see yourself 10/20 years from now and what you should do to ensure you have a healthy life when you get older):

Based on the health information I have collected about myself and factoring in my family history, I believe that in 10-20 years I will continue to be a healthy and active individual. I have maintained a relatively stable weight and resting pulse rate since high school, which I can attribute to continued regular exercise over the years, as well as a relatively balanced diet. My mother was also a competitive swimmer in her youth and to this day is still a highly active

individual, competing in at least one or two triathlons or distance races annually. According to a study published in the *Journal of Exercise Rehabilitation*, when women reach middle age, "the amount of muscles they have is reduced, and their basal metabolic rate is decreased because of hormone imbalance and lack of exercise" (Lee & Oh 2015). My mother and all five of her sisters were competitive swimmers in their youth, but only my mother and two of her sisters have maintained a heavily active and fitness-focused lifestyle throughout their adulthood. Comparing their current physiologies to their now less-active sisters, there is a clear difference in weight, blood pressure, resting pulse rate and mental health between the two groups. As such, I predict that if I continue to emulate my mother's lifestyle, I should continue to maintain optimal measures of heart health and body weight over the course of the next 10-20 years.

Although both my maternal grandmother and my mother had breast cancer, both women developed the cancer after the age of 45. According to the Centers for Disease Control and Prevention (CDC), an individual is at a heightened risk of breast cancer if she has "close relatives who were diagnosed with breast cancer before the age of 45 or ovarian cancer at any age" (CDC 2019). I still plan on monitoring for any changes in this department regularly, both through self-checks and regular doctor check-ups, but am hopeful that my family history in this department will not necessarily be a determinant for my future breast health.

Given that there is some family history of heart disease between my father and my maternal grandfather, I am even further committed to maintaining my current health and fitness regimen. My grandfather suffered from worsening depression throughout his adulthood, which contributed to a very unhealthy and sedentary lifestyle. My father, while not unhealthy in his diet, has not exercised regularly throughout his adult life either. Noting these common factors

between them, I believe that if I maintain my current health and fitness regimen, I should hopefully be able to avoid any kind of heart disease in the coming years.

Works Cited

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