Question: How do activities, and meals affect SVT? (Supraventricular Tachycardia)

Will my heart rate rise or lower if i overdo/eat or underdo/eat different things? Citations

Hypothesis: If I overdo, or overeat certain items then I would be more prone to triggering Supraventricular Tachycardia, because this condition is known to be triggered often by things like having too much of one food, or overdoing activities. These factors are also likely to trigger Supraventricular Tachycardia, because of my past experiences.

Variables:

Manipulated: activities, food, drinks, amount of activity
Responding : heart rate, chest pain, sweating, dizziness (symptoms of SVT)
Controlled: the person(me)

Materials:

- **Food (varies on day)**
- **Drinks(varies on day)**
- **Electronic device (phone, computer, etc) to count 15 secs**

Procedure:

I will do things I normally do like going to school, or other activities, and note it down everyday after my research is done. I will note what activities I did such as running, or eating to test if anything I do on a certain day affects my SVT. I will also check my pulse after such activities by using the method done by using your fingers and a stopwatch or timer. This is done by putting your index and pointer finger just under your jawline on your neck to feel a pulse, as you're doing that you count your heartbeat for 15 seconds, and multiply by 4 for an approximate count of your bpm. (switched to using smartwatch too)

Background research

Supraventricular Tachycardia is a type of irregular heartbeat, it is also known as arrhythmia. It affects the upper chambers of the heart, caused by faulty signaling in the heart. This is controlled by electrical impulses, which controls the beating of the heart. It also has three categories:The first one is AVNRT or Atrioventricular nodal reentry tachycardia, this is when the heart beats faster than 100 bpp and stops suddenly. It is due to a change in heart signaling. The second one is AVRT (Atrioventricular reciprocating tachycardia), this is the most common one. In this type, the electrical signal travels down one pathway from the top chamber to the bottom, then goes up the second pathway back to the top. This cycle repeats, causing the tachycardia to continue. The last one is Atrial tachycardia. During an episode the heart beats for more than 100 bpm, then later returns to normal (60-90 bpm). This one in particular is seen to be caused by faulty signaling in the heart. These signals cause the heartbeat to start too early in the heart's upper chambers. This then causes the rapid palpitations, and makes it so the heart is unable to be filled with blood. Unfortunately i have not seen my cardiologist for a few months so i'm not sure which one i have exactly. Supraventricular means above the ventricles. "The ventricles are the two lower chambers of the heart, one on the right and one on the left. The ventricles receive blood from the heart's upper chambers (atria) and pump it to the rest of the body."- Ignite Healthwise, LLC staff , July 31 2024 , Cigna healthcare. "Tachycardia (tak-ih-KAHR-dee-uh) is the medical term for a heart rate over 100 beats a minute. Many types of irregular heart rhythms, called arrhythmias, can cause tachycardia. A fast heart rate isn't always a concern." - Mayo clinic staff, December 15 2023, Mayo clinic. This activity takes place in the heart, with varying characteristics from each type of SVT. I stated the three main ones above, but there are many more. These are: Sinus nodal reentrant tachycardia, Junctional ectopic tachycardia, Nonparoxysmal junctional tachycardia, Premature atrial contractions Accessory pathway tachycardias such as Wolff-Parkinson-White syndrome, Multifocal atrial tachycardia, Atrial fibrillation, Atrial flutter, sinus tachycardia, and paroxysmal supraventricular tachycardia. To describe the function of this disorder, in the heart there's four core parts in the heart where the heart beats. Those four parts are the left and right atrium, and the left and right ventricle. There's also two signals that control the beating, those of which are the SA and AV nodes. "Electrical pulses in the heart are controlled by special groups of cells called nodes. The SA (sinoatrial) node generates an electrical signal that causes the upper heart chambers (atria) to contract. The signal then passes through the AV (atrioventricular) node to the lower heart chambers (ventricles), causing them to contract, or pump. The SA node is considered the pacemaker of the heart. Its electrical signals normally cause the atria of an adult's heart to contract at a rate of about 60 to 100 times a minute." - Healthwise staff, october 24 2023, MyHealthAlberta.ca Though much activity could affect this disorder, there's no particular sport that affects it. Attacks can happen from extra activity or when you overtrain. "A fast run or other hard

exercise might trigger a bout of SVT in some people. Don't stop exercising, though. It's an important way to keep your heart strong. Just be more careful about fitness."-Tips for Living With Supraventricular Tachycardia
Another reason why food can impact my heart rate is because of glucose(sugar) intake. "Hyperinsulinemia and elevated blood glucose levels have both been associated with a higher heart rate."- RESTING HEART RATE AND THE RISK OF DEATH AND CARDIOVASCULAR COMPLICATIONS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS - PMC. Glucose can impact heart rate through blood pressure. Sugar is able to cause high blood pressure or hypertension. This elevates heart rates. Caffeine like coffee tea or matcha can also elevate heart rates by releasing noradrenaline, and norepinephrine. Having SVT encourages your heart to beat faster, due to extra beats in the heart. This is easier to accomplish by drinking caffeine which I don't want to do. Another reason for my more frequent attacks of SVT is dehydration. I often don't drink water and forget to do so (this is unhealthy). " When you are dehydrated, there is less blood travelling around the body. This can lead to low blood pressure, dizziness and fainting. In response, the heart may start beating faster (tachycardia) to help move blood around the body. You may experience this as a racing, pounding heartbeat in your chest, called palpitations."- Dehydration: signs, causes, and tips to drink more water | BHF.
How does SVT work? In SVT, the signal to start your heartbeat doesn't come from the SA node. Instead, it comes from another part of the left or right atrium, or from the AV node. An area outside the SA node begins to fire quickly, causing a rapid heartbeat of over 100 beats per minute. This shortens the time your ventricles have to fill. -Supraventricular Tachycardia | Cedars-Sinai.

Now that I have information on this disorder, is treatment necessary, and what types of treatment are there? For less severe SVT situations there are maneuvers that can get you out of the attack. This includes: Blowing into a bag or straw, coughing hard , doing a handstand(to get blood to your head), the valsalva maneuver, or a carotid artery massage. These maneuvers temporarily stop attacks. For more severe cases you could take medicine prescribed by a doctor like beta-blockers, calcium channel blockers, or adenosine. Another type of treatment you can receive is electrocardioversion. This is done by placing two adhesive pads, and shocking your heart with electricity to remove other electrical activity to restart the heart's function. The last form of treatment is Catheter ablation. This treatment option is done by cutting a slit or sticking a sheath needle where the biggest blood vessel of your body is (the inner thigh), and placing a small catheter inside all the way to your heart. Then they either freeze or burn the area affected. This is the most preferred as most are cured permanently from this. When having an attack they are to last from seconds to hours, to a whole day, or even several days.

Events and Daily log

Monday, october, 21st, 2024

Went to the hospital due to SVT attack, stopped while there but had high heart enzymes. This was due to lack of water and food the day before and high energy. Also had chest pain. (7 hour stay). Method used to stop: unknown.

Tuesday, november, 19, 2024

After snack(coffee crisp): 88
After gym warmup: 116
During gym(ping pong): 97
After lunch(salmon with rice, grapes, strawberries, and jolly rancher): 92
Around the world in science: 156
Resting (walking sitting): 82
After dinner(rice, seaweed, imitation crab, salmon, kewpie mayo): 86

Wednesday, november, 20, 2024

After snack + running up stairs(coffee crisp): 117
After lunch(rice, pork, sunny d, takis): 96
Running: 157
Band: 62
Gym warmup: 123
During gym(ping pong): 114
Resting(walking, sitting): 78
After dinner(instant noodles(mama), pork, eggs, cupcake, rice):102

Thursday, november, 21, 2024

After breakfast(french toast): 82
Gym(ping pong + skipped warmup) : 92
After snack: 76
After lunch: 78
After dinner(pasta, beef, alfredo sauce): 67
Resting: 83
At 5:56: 180 bpm SVT attack (due to lack of water and iron) stopped by doing carotid sinus massage

Friday, november, 22, 2024

Gym warmup (card killer) : 140
Running down stairs @ home: 120
After snack(twix bar): 52
After lunch(kimchi, rice, egg, beef): 60
Resting: 60

Saturday, november, 23, 2024

After breakfast/lunch(buldak noodles. Ice cream with nuts, cinnamon): 88
After dancing: 120

Resting: 64

Sunday, november, 24, 2024

After breakfast(apple fritter with extra cinnamon): 88
After dinner(chicken,pork, fried rice): 84
After dancing:124
Resting:92

Monday, november, 25, 2024

After gym warmup: 140
After snack(gummy snacks): 76
After lunch(chicken,fried rice): 80
After dinner(rice paper, imitation crab, pork, lettuce, peanut butter sauce):68
Resting: 70

Tuesday, november, 26, 2024

After breakfast(chicken, rice): 60
After snack(reeses, hersheys): 96
After gym warm up: 144
After lunch(rice paper, imitation crab, pork, lettuce, peanut butter sauce):78
After dinner(hot dog, pancake):92
Resting:56

Wednesday, november, 27, 2024

After breakfast(grapes): 60
After snack(kit kat):84
After lunch(bacon, chicken, tomato pizza): 72
After Gym warmup: 160
After gym(ping pong): 76
After dinner(carbonara pasta, madeline, apple fritter, matcha cupcake):78
Resting: 75

Thursday, november, 28, 2024

After gym warmup: 180
After gym(ping pong)+ SVT attack 200
After snack(granola bar)+ SVT attack: 200
After lunch(sushi): 110
After dinner(thai green curry with pork): 70
Resting: 96
SVT attack from 9:53- 11:52 from caffeine, lack of water, and over exercise from caffeine energy

Friday, november, 29, 2024

After breakfast(boiled eggs and tamarind sauce): 60
After lunch(congee with chicken pork, and a boiled egg): 74
Resting:60

Saturday, november, 30, 2024

After lunch(peperoni, canadian, and hawaiian pizza): 72
After dinner(sushi, hotpot): 85
After waiting for movie: 110
Resting: 100

Sunday, december, 1st, 2024

After brunch(eggs, shrimp, rice): 60
After dinner(vietnamese pancake): 82
After walking outside: 104
Resting:86

Monday,december, 2nd, 2024

After breakfast(orange juice and medicine): 58 (ended up puking)
After gym warmup: 96
After snack(apple fritter, peach granola bar)+ running up stairs: 115
After lunch(green curry): 64
After dinner(salmon, coconut bun , japanese cheesecake, milk): 90
Resting: 68

Tuesday, december, 3rd, 2024

After breakfast(pigs in a blanket): 78
After snack (red bean bun): 70
After gym warmup: 120
After band rehearsal: 118
After lunch(seaweed, and pork floss bun): 88
After dinner(Fish, rice, mac and cheese, jacket potato, milk, mochi): 86
Resting: 92

Wednesday, december, 4th, 2024

After snack(red bean bun):88
After lunch(ham, and mayo sandwich, orange):60
After gym warmup:98
Resting: 92

Thursday, december, 5th, 2024

After lunch(egg, rice,japanese cheesecake):68
After gym warmup:100
After dinner (tom yum instant noodles, shrimp, duck):110
During concert: 120
Resting: 103

Friday, december, 6th, 2024

After breakfast(coconut bun, and milk): 70
After snack(red bean bun and yakult): 108
After lunch(chicken soup, duck): 78

Resting: 73

Sunday, december, 8th, 2024

After Brunch(pork, black rice, tapioca dessert): 98
After walking at mall: 100
After dinner(kimchi fried rice, with egg): 82
Resting: 79

Monday, december, 9th, 2024

After breakfast(pancake, soy milk): 58
After gym warmup: 100
After snack(cake with pork fluff, and orange juice)+ running up stairs: 115
After dinner(soup dumpling, cinnamon cake, milk, orange juice): 77
Resting: 77

Tuesday, december, 10th, 2024

After gym warmup: 120
After lunch(orange, yakult, seaweed and pork fluff bread): 87
Resting: 80

Wednesday, december, 11th, 2024

After breakfast(soup dumpling): 98
After snack(kitkat, reeses pieces, chips ahoy cookie): 100
After lunch(soup dumplings, yakult, hot cheetos): 60
After gym warmup(over exercise): 180
After dinner(soup with tofu, pork, and eggs): 87
Resting: 102

Thursday,december,12,2024

After breakfast(potato): 75
After gym warmup: 150
After snack(cookie, orange juice): 87
After lunch(fried rice with shrimp): 93
After dinner(ramen with pork, and egg, meat): 67
Resting: 72

Friday, december, 13, 2024

After breakfast(dragon fruit,mini pigs in a blanket): 60
After gym warmup: 130
After snack(chocolate cookie, gummies): 115
After lunch(pork soup and rice): 67
After dinner(pork soup): 77
Resting: 71

Saturday,december, 14, 2024

After brunch(chicken soup, noodles): 65
After lunch(chicken soup with rice): 58

After dinner(steamed egg with rice): 78
Resting: 74

Sunday, december, 15, 2024

After brunch(croissant): 70
After snack(sticky rice with custard): 98
Resting: 92

Monday, december, 16, 2024

After breakfast(seaweed and pork fluff bun): 62
After gym warmup: 105
After snack(m&ms, madeline): 112
After lunch(chilli, sweet potato): 98
After dinner(costco hot dog): 87
Resting: 85

Tuesday, december, 17, 2024

After breakfast(strawberries, and croissant): 77
After snack(granola bar, madeline): 104
After gym warmup: 166
After gym(handball): 114
After lunch(seaweed and pork fluff bread): 107
After dinner(chicken, rice, coconut sauce): 67
After more dinner(soy sauce eggs, rice, fish): 82
Resting: 86

Wednesday, december, 18, 2024

After snack(coffee crisp, mango orange juice): 92
After lunch(pork and rice): 59
After gym warmup: 135
After dinner(tom yum instant noodles, pork, eggs): 87
Resting: 54

Thursday, december, 19, 2024

After breakfast(strawberry): 57
After gym warmup: 112
Running up stairs: 127
After lunch(waffle, cupcake): 89
After potluck(samosa, paneer pakora, cupcake, soda,cake,cookie): 111
Resting: 64

Friday,december, 20, 2024

After snack(coffee crisp, m&m, orange mango juice): 115
After lunch(buldak noodles, cheese stick): 89
After dinner(buldak noodles, cheese stick): 69
Resting: 79

Saturday, december, 21, 2024

After brunch(pork rice soup): 77
After dinner(ramen with pork, and eggs): 100
After snack(cinnamon cake, milk): 112
Resting:83

Sunday, december, 22, 2024

After lunch(hotpot with beef pork, sweet potato, noodles, spinach): 73
Resting: 89

Monday, december, 23, 2024

After brunch(waffles): 71
After snack(soy milk, bread, marshmallows): 105
After dinner(pad see ew, pork, cupcake, milk): 120
Resting: 105

Tuesday, december, 24, 2024

After lunch(sushi): 75
After dinner(fish soup, cheesecake, cookies, fried chicken): 102
Resting: 65

Wednesday, december, 25,2024

After brunch(cookies, soy milk): 61
After dinner(dumplings, cake, thai dessert, fried chicken): 90
Resting: 72

Thursday, december, 26, 2024

After lunch(pasta): 88
After dinner(fried eggs, rice): 72
Resting:81

Sunday december, 29, 2024

After breakfast(chicken and sticky rice): 71
After lunch(sticky and beef jerky): 83
After dinner(instant noodles): 87
After swimming: 55
Resting: 61

Monday, december, 30, 2024

After breakfast(soup dumplings): 89
After swimming: 53
After lunch(chips, gummies, chips, fruits, instant noodles): 76
After swimming: 51
After dinner(hotpot, pizza): 97
Resting: 77

Tuesday, december, 31, 2024

After lunch(bacon cheese bread): 67
After dinner(pho noodle soup, rice paper rolls): 87
Resting: 78

Wednesday, january 1, 2025

After breakfast(cheese, toast): 69
After dinner(dumplings, strawberries, chocolate): 83
Resting: 88

Friday, january, 3, 2025

After breakfast(dumplings, bao bun): 79
After lunch(soup dumplings): 82
After dinner(buldak noodles): 73
Resting: 77

Saturday, january, 4, 2025

After breakfast(juice, bacon): 70
After lunch(chicken tenders, fries): 81
After skiing: 108
After dinner(soup, pork,eggs): 76
Resting: 77

Sunday, january, 5, 2025

After breakfast(chinese donut): 64
After brunch(beef jerky, sticky rice, coconut milk dessert, egg tart): 91
After dinner(sausage, rice, egg): 100
Resting: 87

Monday, january, 6, 2025

After breakfast(eggs): 65
After gym warmup: 123
After snack(soy milk, smarties): 94
After lunch(fried rice, banana, kit kat): 81
After dinner(ramen, hot milk): 77
Resting:74

Tuesday, january, 7, 2025

After breakfast(eggs): 81
After snack(soy milk, coffee crisp): 108
After lunch(ham and mayo sandwich, chinese doughnuts): 87
After dinner(chicken, rice): 73
Resting: 80

Wednesday, january, 8, 2025

After breakfast(croissant):81
After snack + run up stairs(orange juice, dehydrated mango): 123
After lunch(tempura, chocolate): 108

After gym warmup: 126
After dinner(chicken pasta): 92
Resting: 89

Thursday, january, 9, 2025

After breakfast(dehydrated mango, hot water): 64
After snack(orange juice): 92
After lunch(rice, eel): 86
After dinner(chicken noodle soup):73
Resting: 67

Friday, january, 10, 2025

After breakfast(fried egg, paratha): 75
After snack(dehydrated mango, orange juice): 81
After lunch(peking duck, chicken nuggets): 73
After dinner(duck, rice): 86
Resting: 80

Saturday, january, 11, 2025

After breakfast(ham and cheese sandwich): 90
After lunch:(duck, pasta): 73
Resting: 78

Sunday, january, 12, 2025

After breakfast(egg, sausage, waffle): 77
After lunch(egg sausage, waffle): 89
After dancing: 124
After dinner(gochujang pasta): 90
Resting: 84

Monday, january, 13, 2025

After breakfast(grapes, toast): 94
After warmup: 152
After snack(dehydrated mango, juice): 105
After lunch(cupcake, duck, rice): 58
After dinner(pork, rice): 75
Resting: 70

Tuesday, january, 14, 2025

After breakfast(boiled egg): 84
After warmup: 126
After snack(orange juice, pocky, dehydrated mango): 103
After lunch(grapes, takis, gingerbread cookie, rice, pork): 58
After dinner(mochi donut, chicken , rice): 96
Resting: 90

Wednesday, january, 15, 2025

After breakfast(curry, rice): 79
After snack(pocky, yakult): 107
After warmup : 158
After lunch(curry, rice, donut): 97
After dinner(curry, rice, salad roll): 76
Resting: 68

Thursday, january, 16, 2025

After breakfast(pork, rice): 73
After warmup: 125
After snack(juice): 103
After lunch(salad rolls, cake pop): 94
After dinner(pork, egg, rice): 81
Resting: 78

Friday, january, 17, 2024

After breakfast(english muffin, egg): 91
After warmup: 134
After snack(dehydrated mango, apple juice): 104
After lunch(curry, rice): 87
After dinner(pork, soup): 92
Resting: 95

Saturday, january, 18, 2024

After breakfast(pork, soup): 67
After lunch(pork, egg, soup, kimchi, rice): 78
After dinner(pork, soup, kimchi soup): 59
Resting: 65

Sunday, january, 19, 2024

After lunch(fried chicken): 55
After dinner(curry, udon, potato, carrot, beef): 78
After cake: 108
Resting: 73

Monday, january, 20, 2024

After breakfast(steamed bun): 78
After warmup: 116
After snack(apple juice): 105
After lunch(steamed bun, takis, granola, sweet potato): 114
After dinner(ramen): 81
Resting: 85

Tuesday, january, 21, 2025

After breakfast(soy milk): 69
After snack(red bean bun, apple juice): 106
After gym warmup: 171

After lunch(chicken soup, rice): 72
After dinner(chicken soup, udon noodles):74
Resting: 71

Wednesday, january, 22, 2025

After breakfast(grapes): 78
After snack(coconut bun, apple juice): 67
After lunch(seaweed and pork bun): 81
After gym warmup: 163
After dinner(pork, rice, sweet potato dessert): 103
Resting: 88

Thursday, january, 23, 2025

After breakfast(fried rice, pork): 59
After gym warmup: 155
After snack(rice crackers): 65
After lunch(pork, and cake): 85
After dinner(udon noodles): 73
Resting: 76

Friday, january, 24, 2025

After snack(juice): 108
After lunch(udon noodles): 87
After dinner(cheese fries, steak): 67
Resting: 65

Saturday, january, 25, 2025

After lunch(apple crumble, peanut sesame udon, steak): 56
After dinner(hotpot): 73
Resting: 72

Sunday, january, 26, 2025

After breakfast(eggs): 86
After skiing: 167
After lunch(fish balls, fries): 76
After dinner(hotpot, barbeque, sushi): 98
Resting: 94

Monday, january, 27, 2025

After gym warmup: 155
During band: 51
After snack(orange juice, onigiri): 106
After lunch(sushi): 72
After dinner(fried chicken): 75
Resting: 69

Tuesday, january, 28, 2025

After snack(fruit juice): 98
After warmup: 134
After lunch(fried chicken, steak): 71
After dinner(fish, rice, coconut dessert): 85
Resting: 81

Wednesday, january, 29, 2025

After snack(juice): 102
After lunch (sandwich, beef, sticky rice): 80
During doctors appointment: 80
After dinner(sandwich, plum): 79
Resting: 76

Thursday, january, 30, 2025

After breakfast(eggs, strawberry): 56
After gym warmup:165
After snack(juice, chocolate): 105
During science lab: 168
After lunch(eggs, rice, longan): 87
After dinner(battered fish): 92
Resting: 66

Friday, january, 31, 2025

After breakfast(steamed egg): 65
After lunch(chips, juice,): 107
After hot springs: 53
After dinner(french onion soup, salmon, lemon tart, beef short ribs): 98
Resting: 95

Abstract: **My purpose with this project is to further my understanding of my health condition, SVT or Supraventricular Tachycardia, and the effects it can have on me and others. SVT is a condition where the heart beats rapidly due to problems like stress, over exercise, and or drinking caffeine. Though the condition is common it can lead to more serious problems like heart failure, fainting, and even cardiac arrest. For my project , I wanted to test if overeating or over exercising could be a factor of SVT. I monitored my meals, and physical activities almost every day to find data. I also documented days where I experienced SVT attacks, After looking over data, I noticed patterns from when I over ate, and over exercised triggered SVT. This taught me that certain foods, and activities are a factor in my condition. To conclude the project helped my understanding of my condition better, and how to treat it.**

Questions:

What is Supraventricular Tachycardia?
What are the types of Supraventricular Tachycardia?
What does Supraventricular Tachycardia mean?
Where does Supraventricular Tachycardia occur?
Why does Supraventricular Tachycardia happen?
When does Supraventricular Tachycardia happen?
What is a normal heart rate?
How does exercise affect Supraventricular Tachycardia ?
How does food affect Supraventricular Tachycardia ?
How do emotions affect Supraventricular Tachycardia?
What treatment can you receive for Supraventricular Tachycardia ?
How does dehydration cause Supraventricular Tachycardia?
How does the heart work, and how does Supraventricular Tachycardia change it?

Observation: **For my experiment I looked for many factors. This included sugar, and caffeine intake, physical activity, hydration, consumption, heart rate, and SVT triggers. Throughout my experiment, I noticed a pattern in when I consumed caffeine, or sugar led to an increase in my heart rate. For example, after snacking on Coffee Crisp, Kit Kat, and drinking juice, my heart rate consistently elevated. At certain times, which include caffeine intake, my heart rate exceeds 100 bpm, and on November 28th, I experienced an SVT attack after the consumption of caffeine. This suggests that caffeine, and sugar may overstimulate my heart, and increase risks to an irregular heart rate. Physical activities also played a major role in my heart rhythm. Gym warm ups, running, and dancing created significant increases, some of which cause my heart rate to exceed 150 bpm. On November28, and December 11, my heart rate rose to 180 bpm , and triggered an SVT episode. However, during less effort activities like walking, my heart rate remained stable. This shows that intense physical activity is a potential SVT trigger. Hydration amounts appeared to be the greatest factor on my heart rate, and SVT frequency. On the days where I drank less water, I recorded higher resting heart rates, and was more prone to SVTattacks. This was seen on October 21st, and November 21st,dehydration was a major factor leading to my SVT attacks. When I was properly hydrated, my heart rate was stable at resting heart rates of 54-95 bpm, the average. This communicates that maintaining proper hydration is essential for maintaining my SVT symptoms. Varieties of food showed effects on my heart in various ways: meals of high carbs like rice, bread, and pasta often kept my heart stable, while food of higher sugar, or processed foods lead to an increase in my heart rate. For example after meals like sushi, pork rice, and soup dumplings my heart rate stayed relatively low, but after consuming sugary desserts, and processed snacks, my heart rate increased often. This emphasizes that over-eating heavy meals could lead to a slower recovery for my heart rate after activity, highlighting that portion control, and balanced nutrition are key factors in heart health. By analyzing my data, I noticed common factors that contributed to my SVT attacks. Overexertion, consumption of caffeine, dehydration, and excessive sugar intake were the most frequent triggers. On multiple occasions I experienced SVT attacks, after gym warm ups, consuming coffee related products, or failing to drink enough water. To note my most severe SVT attacks: November 28th, October 21st, and November 21st followed a combination of these factors. This embraces the importance of monitoring my diet, hydration, and activity levels. In conclusion my observations showed that caffeine, sugar, dehydration, and intense physical activity significantly impacted my heart rate, often triggering SVT attacks. By staying hydrated, moderating exercise, and avoiding excessive caffeine and sugar, I can better manage my condition and reduce the risk of future attacks**

Analysis:

My data reflected that caffeine, sugar, dehydration, and intense physical activity significantly increased my heart rate, with some cases leading to SVT attacks. Days where I was properly hydrated, and had blanched meals resulted in stable heart rates, while excessive sugar intake, and overexertion led to heart rates over 150 bpm. The most noticeable trend was that high intense activity, along with dehydration or caffeine intake, often triggered high heart rates, and SVT attacks. On days where I consumed sugary foods, or caffeine, my heart rate rose, Supporting the idea that such substances overstimulate my heart. Caffeine , and sugar are known stimulants that increase adrenaline, leading to a faster heart rate. Exercise naturally raises heart rate, but overexertion can put an excessive strain on the cardiovascular system especially among individuals that experience arrhythmias. Dehydration reduces blood which could explain why I experience more SVT attacks prior to low water intake. The combination of these factors likely created the perfect conditions for my heart rate to exceed normal levels, causing irregular beats. One limitation of my experiment was relying on self-measured heart rate data, which may not have been perfectly precise. External factors like stress or sleep quality might have also influenced my heart rate but were not directly measured. A more controlled study using medical-grade monitors could provide even more reliable data. Conclusion: The data supports my hypothesis that excessive sugar, caffeine, dehydration, and overexertion contribute to heart rate spikes and SVT episodes. This analysis highlights the importance of maintaining hydration, moderating exercise, and avoiding stimulants to help regulate my heart rate and prevent SVT attacks. Future research could explore how other factors, such as sleep or stress, influence my heart rate and SVT occurrences.

Conclusion:

The data collected from my experiment supports my hypothesis that excessive sugar, caffeine, dehydration, and overexertion contribute to an increased heart rate, and SVT attacks. Through daily monitoring of my meals, physical activity, hydration levels, and heart rate, I observed consistent patterns linking these factors to heart rate spikes. Caffeine, and sugar intake were major contributors to elevated heart rates, with multiple occasions of SVT attacks occurring after consuming products like Coffee Crisp, and juice. Physical activity also played a significant role, as intense exercise, particularly gym warm ups, running, and dancing, often led to heart rates exceeding 150 bpm, sometimes triggering SVT attacks. Besides the listed triggers, Dehydration was a key factor. Lower water intake created higher resting heart rates, and an increased risk of SVT attacks. Balanced meals, especially food rich in carbohydrates, and proteins appeared to stabilize my heart rate, while highly processed, and sugary foods often resulted in an irregular heart rate. One limitation of my study was the reliance on self measured heart rate data, which may not be quite precise . Factors such as stress, and sleep were not measured, though they also impact heart rate. A more controlled study using medical grade monitors, and tracking additional variables like sleep could provide more accurate insights. In conclusion, my observation indicates that moderating caffeine, and sugar intake, staying properly hydrated, and balancing physical activity, are essential for meaning my SVT symptoms. Future research could explore the effects of stress, and sleep on SVT to further refine strategies for managing this condition.

<u>Application</u>: The insights from my experiment provide a clear path for managing my SVT more effectively. By identifying caffeine, sugar, dehydration, and overexertion as key triggers, I can make lifestyle adjustments to reduce the risk of heart rate spikes and SVT attacks. One of the most immediate steps I can take is improving my hydration habits. Since my data showed that dehydration contributed to multiple SVT attacks, I will make an effort to drink more water throughout the day to keep my heart rate stable. To include, I will be more mindful of my diet by limiting caffeine and processed sugars, which I found over stimulates my heart. Choosing meals that are balanced with proteins, healthy carbohydrates, and less sugar will help maintain a steady heart rate. I will also focus on portion control to avoid the effects of overeating, which seemed to slow my heart rate recovery after physical activity. For exercise, I now understand that while staying active is important, overexertion can be dangerous for my heart. I can modify my workout routine by incorporating lower-intensity activities and monitoring my heart rate more closely during exercise to avoid exceeding safe limits. Using a smartwatch to track my heart rate trends will also help me recognize early warning signs and prevent SVT episodes before they escalate. By applying these findings to my daily routine, I can better manage my SVT symptoms and reduce the frequency of attacks. Over time, tracking my progress and making small adjustments will help me develop a healthier lifestyle that supports my heart health while allowing me to stay active and enjoy the foods I love in moderation.

How Do Activities and Meals Affect Supraventricular Tachycardia?

My goal with this project was to further understand my health condition, Supraventricular Tachycardia (SVT), and how food and exercise affect it. SVT causes a rapid heartbeat and can be triggered by stress, over-exercising, and caffeine. While it's common, it can lead to serious issues like fainting or even cardiac arrest. I wanted to test if overeating or over-exercising could trigger SVT. To do this, I tracked my meals, physical activity, and SVT attacks. My data showed that eating too much, intense exercise, caffeine, sugar, and dehydration all played a role in my condition. Days when I overate or exercised too hard often led to SVT episodes. I was diagnosed with SVT in January 2024 at a children's hospital. At first, I thought I was having anxiety attacks since I struggled with mental health. Learning about SVT changed my lifestyle. I had to avoid caffeine, limit sugar, limit spice, and be cautious with exercise. When I first started experiencing episodes from August 2022 to December 2023, I had monthly SVT attacks, but after studying my condition, I started 2025 with none. To collect data, I recorded my daily activities, noting what I ate and how I exercised. I also measured my heart rate using both a smartwatch and the pulse-checking method we learned last month in science. Observations: SVT episodes were more frequent on days with excessive sugar, caffeine, dehydration, or intense exercise. Eating balanced meals with carbohydrates and proteins helped maintain a stable heart rate.
High-intensity activities, such as running or gym warm-ups, often pushed heart rates beyond 150 bpm, increasing the risk of an episode. Dehydration contributed to a higher resting heart rate, making SVT more likely. Self-measured heart rate tracking provided useful insights but had limitations in accuracy. My research confirmed my hypothesis: excessive sugar, caffeine, dehydration, and intense activity led to higher heart rates and SVT attacks. For example, eating Coffee Crisp or drinking juice often causes my heart rate to rise. Running, gym warm-ups, and dancing sometimes pushed my heart rate past 150 bpm, triggering episodes. Dehydration also increased my risk by raising my resting heart rate. On the other hand, balanced meals with carbs and proteins helped keep my heart rate stable. One limitation of my study was that I relied on self-measured heart rate data, which may not be entirely accurate. I also didn't track stress or sleep, even though they likely affect SVT. A future study with medical-grade monitors and more variables would provide better results. Managing SVT requires careful attention to diet, hydration, and exercise intensity. My research confirmed that excessive sugar, caffeine, dehydration, and intense physical activity increased my heart rate and triggered episodes. In contrast, balanced meals and proper hydration helped stabilize my heart rate. While my findings align with common SVT management strategies, tracking additional factors like stress and sleep in future research could provide deeper insights. A study using medical-grade monitors would also improve accuracy and lead to better strategies for managing SVT effectively.

My project is about my heart condition SVT (Supraventricular Tachycardia). This is a disorder where my heart can beat erratically, because of food, activities I engage in, and my emotions(stress,anxiety,etc).

Sources of error:

Following my data collection, quite a few factors manipulated the accuracy of my results. One error in my project was my self measured heart data. In my project I used a pulse checking method, and a smartwatch which may not be as accurate as medical grade monitors. The way I count, time my stopwatch and the smartwatch sensors could lead to slight errors within the project. A second factor would be other manipulators of heart rate. Our heart rates can rise or lower due to many circumstances including: physical activity, emotions, food, drugs/stimulants, temperature, body position, medicine, relaxation, and sleep. Two of the listed were accounted for in my project. Hower from lack of sleep, or a lot of stress my heart rate can rise or lower, which was not recorded in my project. Due to this the effects of food and physical activity may not be direct effects on my heart. To add on the amount of physical activity was not recorded, just my heart rate. This makes it hard to determine if my heart rate was because of food, dehydration, or exertion. While I did record the food eaten by myself, I didn't measure nutritional value. The lack in nutritional data meant that imbalance in nutritional ingredients could impact my heart in a way opposed to my knowledge. In addition, though hydration was identified as a key factor, the exact intake of water was not recorded. This made it difficult to determine the relation between hydration and SVT. Lastly, because of myself being both the subject and data collector, there could be unintentional bias in how I record symptoms, and how I recognise my symptoms. Understanding how certain factors acted toward my heart could subconsciously affect the interpretation of my symptoms. To improve accuracy in a future project project I could: use medical grade monitors, track additional variables, consistent physical activity, and do this study for longer to have more data. By acknowledging, and addressing my sources or errors, I can improve my accuracy and authenticity for future projects.

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