

The effects of video games on the heart



For: Piedmont Academy

Science Project

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The Effects of Video Games on the Heart

In order to determine the effects of video games on the heart, we must look at several different things. First, we must determine which specific areas we want to investigate. Looking at increased heart rate and blood pressure, we need to determine the average maximum heart rate for the age group being tested. We must determine what factors can cause one's heart rate to increase, and we must look at the current studies in regard to the various social effects of video and other electronic games.

The main way that we increase our heart rate is through exercise, and even then health care professionals recognize the importance of pacing yourself. In order to pace yourself, you must determine your target heart rate.

To do this, you must measure your pulse periodically as you exercise and stay within 50 to 75 percent of your maximum heart rate. A simple rule of thumb is if you can talk and walk at the same time, you are not working too hard. If you can sing and maintain your level of effort, you are probably not working hard

enough. If you get out of breath quickly, you are probably working too hard, especially if you have to stop and catch your breath.

The target heart rate chart is broken down from twenty years of age to seventy years. The target heart rate zone of fifty to seventy-five percent for people of twenty years is 100-150 beats per minute with the average maximum heart rate of 100% at 200 beats per minute.

The second main contributor to increasing your heart rate is through stress. Doctors have determined that the problem with stress is that our body thinks we are still cavemen. There hasn't been time for us to evolve physiologically from the high-threat, short-duration stress situations that primitive man faced to the relatively low-threat, long-duration stresses of modern society.

When your body receives a message that you are under stress, it automatically thinks you are going to do one of two things, fight or run away. The body does not know how to temper its response to deal with the week-long pressure of dooming deadlines or other stresses that we deal with daily. This overkill response, in time, takes a physical toll, especially on the cardiovascular system. When you are under stress, you are not thriving. Your blood pressure is elevated, your blood clotting mechanism is working at full force, your heart is beating faster than normal and your metabolic rate is up. Keep it for hours and you will be exhausted, for years and you are headed for a heart attack. Doctors place stress as the secondary risk factor for heart disease.

Stress and video games often go hand in hand. During the last several decades, video games have emerged as one of the most popular forms of adolescent entertainment. In the United States alone, video game revenues total ten billion dollars annually. On the average, children who have home video games play with them approximately ninety minutes a day.

Some of the trends in game playing are disturbing some observers. A 1993 study asked 357 seventh and eight graders to list their preferences among five categories of video games. The study found that fantasy violence topped the list at thirty-two percent. It also found that boys who play violent games tend to have a lower self-concept in the areas of academic ability, peer acceptance and behavior. The most interesting is the possible link between playing violent video games and subsequent aggressive behavior. Boys aged eight to fourteen are the core audience for video games.

Another study found that a series of three video games played under three increasing levels of stress elicited progressively higher values of blood pressure and heart rate. Both the race and gender of the subjects affected the reactivity. Heavy video game players have a difficult time with the regard to discharging aggression, and have a lower frustration tolerance.

It has been found that hostility is increased when playing highly aggressive video games and mildly aggressive games. Subjects playing the high aggression game were much more anxious than the other subjects.

In one study, the researcher found that not only did the heart rates of the participants increase while playing video games, but also the rates of those merely watching the game increased. The study demonstrated clear

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differences between playing the violent game over a non-violent game. The study also demonstrated strong differences between playing and watching the games in violent versus non-violent games.

Physiological data points to large differences in the intensity of physiological response to violent games over non-violent games. One potential inference that may be drawn is that the violent content is more demanding of the player and therein lies the increased physiological response.

The violent play field is one where the player must always be on guard, any lack of attention will result in the end of a turn. This dynamic of the violent play field insures that the violent games will have greater feedback and interaction with the player. The non-violent games allow time for thought and are not as demanding on the player. This does not present the player with the need of defensive posture all the time.

Other research has suggested that playing video games may affect some children's physical functioning. Effects have ranged from triggering epileptic seizures to causing heart rate and blood pressure changes. Serious adverse physical effects are limited to a small number of players.

A new study suggests that watching the most violent video games may leave children more prone to heart problems later in life. Researchers measured blood chemicals of sixty students, before and after playing violent video games and found that the adrenaline levels increased by as much as nineteen percent. Many doctors agree that this is not good for the heart. Over a period of time, people with these elevated levels may be at a higher risk for high blood pressure later in life. Adrenaline is produced by the body

when one becomes excited, scared, nervous or agitated. High blood pressure, or hypertension, if gone untreated places one at a high risk for the development of a disabling or fatal disease. Unfortunately, hypertension is often overlooked because one may not experience any symptoms, thus its nickname, "the silent killer". Symptoms include consistent blood pressure readings of 140/90 or higher, headache, flush face or a pulsing sensation in the head. The blood pressure is determined by two readings, the top number indicates the systolic blood pressure and the bottom the diastolic pressure. Normal systolic readings are below 140, 140 to 159 indicates borderline hypertension, above 160 is definite systolic hypertension. The diastolic pressure is normal below 85. Borderline hypertension occurs when the reading is 85 to 89. Mild to moderate hypertension ranges from 90 to 114, and severe hypertension is classified at 115 and above. When determining if you have high blood pressure, you should have several readings at various times of the day for several days. If your readings are consistently elevated, then you have confirmed hypertension. Doctors are concerned that children playing violent video games are unknowingly setting themselves up for future heart problems.

In 1983, a study on the effects of video games on children found that they had a more positive effect on children than watching television. More recent research has found connections between children's playing of violent video games and later aggressive behavior.

One point that disturbs researchers is that violent video games often put the player, as the lone man against an evil force. Such games as this, they conclude, does not teach a child to be a team player and offers no sense of

community. This encourages a child to isolate himself, and not interact with fellow peers, in a team type situation.

The dominance of the male figure versus the female figure has triggered many researchers to question the social content of the games and the influence of their attitudes in regard to gender roles.

With some video games causing aggression and aggression being a contributor to stress and stress a contributor to increased heart rate, and high blood pressure, one could arrive at the conclusion that video games can indeed effect your heart rate and lead to future heart problems.

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VIDEO GAMES CAN CAUSE HEART PROBLEMS FOR KIDS

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Does playing video games effect your heart rate?

I believe that playing video games will increase your heart rate.

2. Take and record subject's pulse rate prior to playing the video game.

3. Allow subject to play the video game for five minutes.

4. Take and record the pulse

5. Follow steps 1 - 4 on same subjects on another game

My conclusion, based on test results confirm my hypothesis that playing video games will increase your heart rate.

Bibliography: