The Effect of Various Activities on the Blood Pressure of Year 7 & 8 students

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Summary

We conducted this experiment to see how different activities affected Blood Pressure. 16 students thought of various activities (see table), that would challenge our bodies, in different ways, either by raising or reducing blood pressure. The Blood Pressure research showed that activities seen as academic, such as writing, raised blood pressure, and activities that were "physical", such as origami, reduced blood pressure. This project taught us how to avoid stressful, blood pressure raising activities, and thus help us to improve our mental and physical wellbeing in the long term.

Research aims

-to find out how the blood pressure is affected by different activities.

-develop our communication and teamwork skills

-to increase our knowledge of what blood pressure is

Background Information

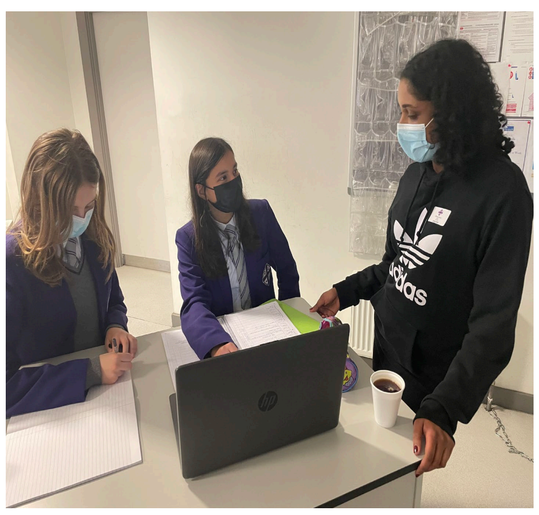
Our aim was to find the effect of various activities on the blood pressure of year 7 and 8 students. Blood pressure is created by the force of blood, pushing against the blood vessels walls (arteries), as it is pumped by the heart. Many factors can contribute to these changes, including physical activity, emotion, body position, diet (especially salt and alcohol intake), and sleep deprivation. When the heart squeezes and pushes blood into the vessels, blood pressure goes up. High blood pressure (hypertension) is when the long-term force of the blood against your artery walls is high enough, that it may eventually cause health problems, such as heart disease. Hypertension is a serious medical condition and can increase the risk of heart, brain, and kidney damage. Blood Pressure comes down when the heart relaxes, so low blood pressure is the opposite, where the force against your arteries is low, (hypotension) and can cause dizziness and fainting. In severe cases, low blood pressure can be life-threatening. Blood pressure has two parts, which is Systolic and Diastolic. Our project helped us to find activities that would lower blood pressure and hence help us to maintain good health in the long term.

Students using wrist Blood Pressure Monitors

Experimental method

Equipment: 16 x wrist blood pressure monitors, identical writing script for writing task, grids of dots, pencils, paper for squares game, identical reading scripts (Goldilocks and the 3 Bears), for reading activity, paper (for origami, writing, drawing), inside space (for walking on the spot), computer to access Dhar Mann videos (Emotive Video on YouTube), riddle tests (problems to solve), and irritating sounds.

Method: Securely wrap the blood monitor around the wrist (not over clothing). One has to make sure, that for basal blood pressure, that they sit quietly on a chair with their legs flat on the floor, as maintaining a correct sitting posture and correct application of the cuff, are the keys of getting accurate blood pressure readings. Each activity lasts 5 minutes.
Find the blood pressure before the activity (basal blood pressure), during the activity (around 2.5 minutes in), and after the activity (end of the 5 minute activity).



Students working with Srishti

Students carrying out experiments with Srishti

Results

	Rise		Fall	
Activites	During	After	During	After
Walking	9			9
Riddle Test	10			9
Squares Game	7	6		
Emotive Video	8	8		
Origami	8			10
Drawing	10			12
Irritating sounds	12			10
Reading		8	8	
Writing	11			14

Results Table
Containing all data for n=16. Both rises and fall in blood pressure are recorded here, for during and after the activity

Analysis & Evaluation

In this experiment, the majority of our data did meet our expectations. For instance, the squares game, irritating sounds and writing a paragraph, increased our blood pressure during the activities. We may have found these tasks more stressful, which leads to an increase in adrenalin release, which then leads to a faster heart rate, and therefore a raised blood pressure. Walking also produced the expected results, as we saw 9 student's blood pressure rise, as well as the emotive video, where 8 students' blood pressure had increased. However, some of our data did not turn out as expected. Seemingly relaxing activities, such as origami and drawing, caused a rise in blood pressure during the activity, however in both cases a fall in blood pressure was seen after the activities. Certain activities such as reading, saw half the students' blood pressure decrease. This would explain why certain people find reading calming.
We were happy with our method, but a couple of things could be improved upon. The most obvious improvement would be to repeat the experiments to get mean results. Another thing would be to get the several students, who missed some sessions, to complete their experiments. The completed data would make the results more reliable.

Overall Conclusion

In our hypothesis we stated that the riddle test would increase blood pressure the most, as it tests your brain which can make you stressed, and we thought that origami would decrease our blood pressure, as it is a calming activity and therefore seems to reduce your stress. However, our results showed that the activity that raised our blood pressure the most, was the irritating sounds, and the activity that decreased our blood pressure the most was when we finished writing a paragraph. Activities like the irritating sounds, increased the blood pressure more, because our bodies release adrenaline in a stressful situation, which causes our hearts to beat faster and squeeze the arteries and veins, making our blood pressure increase. Knowing this information, can help us make informed choices to carry out activities that help reduce our blood pressure, and hence improve our health, so that we can reduce the risk of stress, and prevent heart attacks and strokes in the long term. Reducing stress is also good for our mental wellbeing.

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