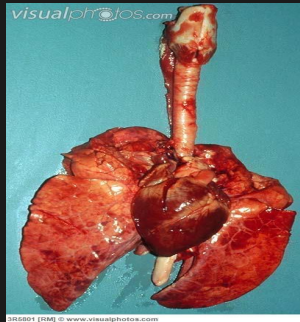
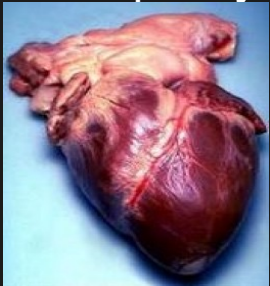


Heart and Lungs

Yuness, Enrique, Chay, Bassam, Dalib and Mohiuddin - Rokeby School

Facts on the Heart and Lungs!

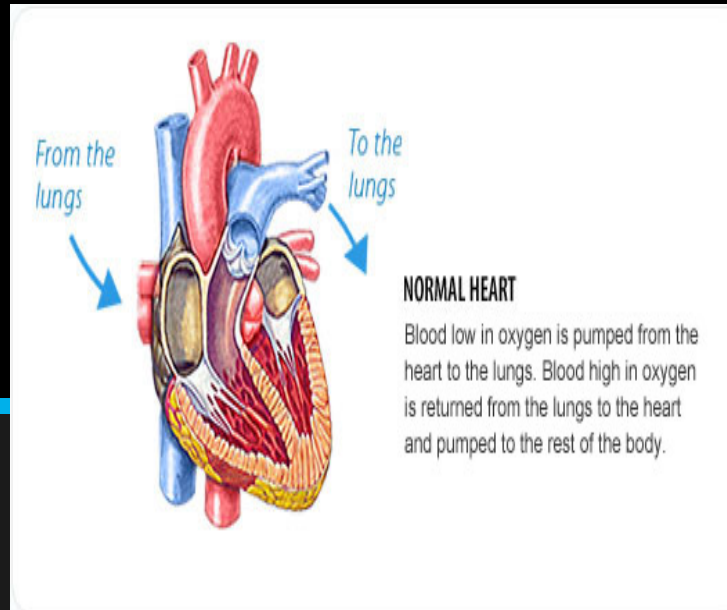
- Your heart can keep beating if it is separated from the body because it has its own electrical impulse. 75 trillion receive blood from the heart.
- Your heart will pump nearly 2.5 million barrels of blood during your live time enough to fill 200 train tank cars.
- Eating dark chocolate every day reduces the risk of heart disease by one third.
- The primary functions of your lungs are to transport oxygen from the air you breathe into your bloodstream while taking away carbon dioxide, which is released into the air when you breathe out.
- Most vertebrate animals (animals with spines) have two lungs.
- Your left and right lungs aren't exactly the same. The lung on the left side of your body is divided into two lobes while the lung on your right side is divided into three. The left lung is also slightly smaller, allowing room for your heart.
- Can you live without one lung? Yes you can, it limits your physical ability but doesn't stop you from living a relatively normal life. Many people around the world live with just one lung.
- People who have a large lung capacity can send oxygen around their body faster. You can increase your lung capacity with regular exercise.



Our Hypothesis was to see if exercise and physical attitude affect your heart rate.



Rokeby School



Walk helps in maintaining health of the lungs and heart

Risks

- In our experiment, there was an element of risk as too much exercise could strain your muscles.
- We also had a person who had a heart condition taking part
- This resulted in us having to make the experiment safer so that he is not deeply affected and to not put his life in danger. In doing so, we had to reduce our exercise distance to 40m.
- As we were inside, we needed to make sure that no one was around as once we began sprinting, we could hurt someone.
- We wore trainers to avoid us slipping

Research/Method

Our experiment was to test whether exercise affected the heart and by how much. Prior to this, we found out that during exercise our hearts pumped more blood which resulted in a higher pulse rate.

First Mohiuddin, Harees, Declan, Chay and Yunes measured their resting pulse and recorded it. This was to ensure that the results afterwards can be compared to the original. This helps us as it created an image or idea of what the pulse should be around. If we didn't do this, our results would be irrelevant as we wouldn't know how much it had changed by.

They each then walked 40m and measured their pulse and recorded it. They did this twice to make sure it's a reliable test and calculated the average. 40 metres was seen as a distance long enough to affect the heart rate but not too long that it wasted time. When we measured our pulse, we did it for 15 seconds and multiplied it by 4. This ensured that we didn't lose count of our pulse.

They jogged the same distance, measured their pulse and recorded it. They did this twice and calculated the average. Once the speed was increased, we thought that our heart rates will increase also. We did it twice to ensure reliability and accurate results. Prior to this, we took a break of 5 minutes to get our heart rate as close as possible to the resting pulse. Afterwards they sprinted 40m, measured their pulse and recorded it. They did this twice and calculated the average. To make this fair by keeping the distance the same this enabled our results to be as valid as possible.

We sprinted as it was the most challenging way of exercising as it acts as a stimulus for our heart rates to increase therefore our pulses increase as well. We recorded our results and created a chart because of it. By doing this, we can compare with other charts to ensure that our experiment was a success and our results to be as accurate as possible.

Variables

Controlled variables

- Our controlled variable is the length we ran, walked and jogged which is 40m.

Independent variable

- The **one** variable we changed was the activity we performed.

Dependent variable

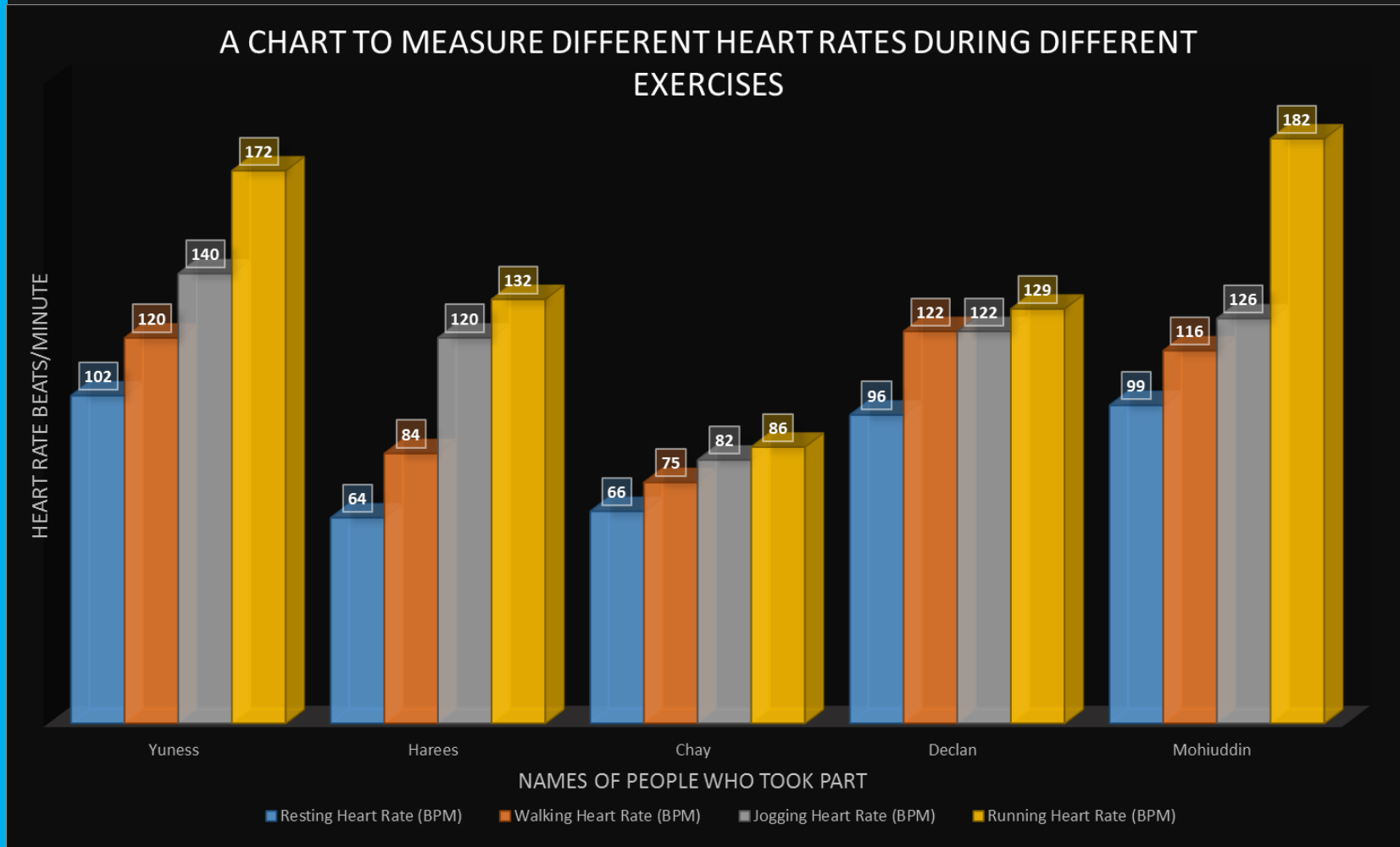
- The variable we measured was our heart rate at the end of each exercise

Results

	Resting Heart Rate (BPM)	Walking Heart Rate (BPM)	Jogging Heart Rate (BPM)	Running Heart Rate (BPM)
Yuness	102	120	140	172
Harees	64	84	120	132
Chay	66	75	82	86
Declan	96	122	122	129
Mohiuddin	99	116	126	182

Data/Observations

The data show that our hypothesis was correct; our less active student ended the experiment with a higher heart rate than the more active ones. Our more active student began with a heart rate of 64 beats/minute and ended with 132 beats/minute where as the less active student began with 102 beats/minute – a whole 38 beats higher!



Conclusion

- After we gathered all the results (as shown in the graph/chart), we realised that our results proved our hypothesis correct. Our hypothesis was the more intense the exercise the heart rate will increase. This is evident by our results when we sprinted to our results when we jogged/walked plus when we measured the resting pulse. To contrast our results, we used a healthy person and an unhealthy person in our experiment this showed that the healthy person had a lower heart rate than the unhealthy person, and his results concluded that he was fitter than the rest.



Evaluation

- The strengths in our experiment - it was easy to do all 3 levels of exercise and the exercise distance was only 40m. We measure this by using a measuring tape. It was also easy to identify the persons who would do the exercises as we had a student who suffers from a heart condition, some who do some exercise and some who do not do much regular exercise.
- The weakness in the experiment was measuring our pulse rate accurately as it was sometimes difficult to locate our pulse and also concentrate on counting the pulse
- To make our results more accurate we should've used a pulse oximetry. Counting our pulse rate manually can hinder the precision of our results as we may lose count of our beats as well as misjudging it. To make sure we didn't lose count what we did was that we recorded our pulse for 15 seconds then multiplied it by 4.
- We could extend this experiment by using a large number of students for the exercises, use different age groups and if we were to be in a mixed school perhaps test boys and girls to explore if different levels of exercise affect their pulse rate differently. We could also investigate the effect of exercise on our breathing rate.