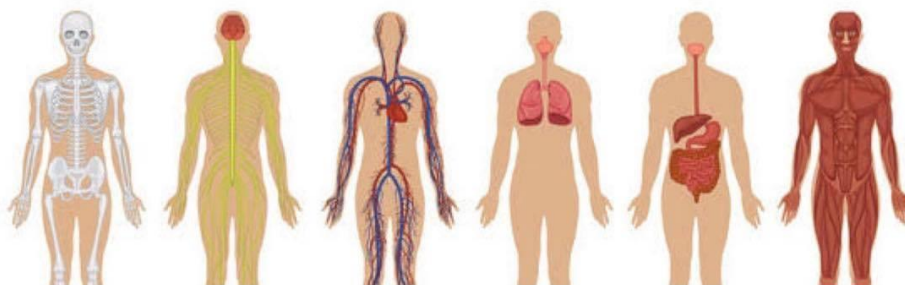


Operational Health and Safety



M. Sheva Zain & Kevin R. Tanjaya

Yr10 CoRE 2016

Ms S. Urbiniak

Contents

1. Introduction. (3 – 5)

- ❖ Purpose.
- ❖ Aim.

2. plan and design. (6 – 8)

- ❖ Investigation set up.
- ❖ Table of variables.
- ❖ Material and variable.
- ❖ Method and procedure.
- ❖ Hypothesis.

3. Conducting. (9 – 14)

- ❖ Table of observation.
- ❖ Flow charts.
- ❖ Diagram of changes and alterations.

4. Processing. (15 – 27)

- ❖ Calculation and table of average.
- ❖ Graphs.
- ❖ Diagram.
- ❖ Discussion of results (conclusion).

5. Evaluation. (28)

6. Bibliography. (28-30)

1.Introduction

The human respiratory system is a series of organs responsible for taking in oxygen and expelling carbon dioxide. The main organs of the respiratory system are lungs, which carry out this exchange of gases as we breathe. Our cells need oxygen to survive. One of the waste products produced by cells is another gas called carbon dioxide. The respiratory system takes up oxygen from the air we breathe and expels the unwanted carbon dioxide. We have a set of lungs. The lungs are located inside the chest area, and its protected by the ribcage. The lungs look and act as giant sponges, they are filled with thousands of tubes, branching smaller and smaller. The smallest components of all are the air sacs, called 'alveoli'. This is where the exchange of oxygen and carbon dioxide takes place. To stay inflated, the lungs rely on a vacuum inside the chest. The diaphragm is a sheet of muscle located underneath the lungs. When we breathe, the diaphragm contracts and relaxes. Air is 'sucked' into the lungs on inhalation and 'pushed' out of the lungs on exhalation. Our body needs to get oxygen from the air into the blood, and we need to remove waste carbon dioxide from the blood into the air. This process is called Gas exchange. The Alveoli are adapted to make gas exchange easier.

Just like the respiratory system, the circulatory system is also made up of a huge network of organ and blood vessel that circulates blood cell and takes away the waste through the body. This system is responsible for the flow of blood, nutrients, oxygen and other gases as well as hormones to Form other cells. The circulatory system Consist 3 independent system working together the heart, lungs, arteries and blood vessels, red blood, white blood cells. Blood circulates through the body, blood is made up of plasma, red blood cell, white blood cell and platelets. Blood carries product such as oxygen, nutrients, hormones, anti-bodies, enzymes and waste products such as Carbon dioxide around the body. The heart is a muscular organ. Located in the chest area, it pumps blood through the network of arteries and vein called the cardiovascular system. The systemic circulation is a major Part of the circulatory system. The network of veins, arteries and blood vessels transports oxygenated (blood + oxygen) from the heart, delivers oxygen and nutrients to the body cells and then returns deoxygenated blood back to the heart. Arteries carries oxygen rich blood from the heart through the body whereas the Veins carries oxygen poor blood back to the heart. Blood always follows the same path through the circulatory system, with blood first traveling to the lungs to get oxygenated and then back to the heart. From there, it goes throughout the body to provide oxygen to the cells, before going back to the heart, and then the lungs again, to replenish the level of oxygen. Blood is essential for good health because the body depends on a steady supply of fuel and oxygen to reach its billions of cells. Without blood, we wouldn't be able keep warm or cool off, we couldn't fight infections, and we couldn't get rid of our own waste products.

Discussing about waste products, The Excretory System is the discharge and removal of waste that has formed within an Organism's body. The Excretory System within the human body is the elimination of waste produced by homeostasis (a Dynamic equilibrium which must be stable and self-regulate its self while adjusting to conditions that are optimal for survival). There are several parts involved with in the process; parts include the sweat glands, the liver, the lungs and the kidney system. Every human possess two kidneys and they contain three sections with in it, these parts are: the renal cortex, the renal medulla and the renal pelvis. The blood goes through the renal arteries and leaves through the renal veins. Ureters then carry the waste products with in the kidney is then transferred to the Urinary bladder for storage or release. The kidney filters water/fluids turning it into Urine, a watery solution that could be poisonous to the body if not removed.

The three system that I mention above can also be affected by factors such as stress. Stress is when ones feeling under pressure that demand too much of yourself physically and psychologically, characteristics from stress differs from person to person. Stress affects us in many ways such as emotionally, the way we think and our behaviour. If left untreated this will leads to the loss of energy and eventually leads to anxiety disorder that can also lead to depression. Stress can also lead to some physical illnesses such as cardiovascular disease. Factors that might cause stress include environment, lifestyle and emotional and personal problems. There are lots of factors that may cause stress in the work force such as excessive hours, conflict with others and the feeling of isolation. Ways to reduce stress are exercise regularly, avoiding conflicts, relaxing, eating well and most of all enjoy life.

Being burnout is the state of emotional, mental and physical exhaustion cause by excessive and prolonged stress. It occurs when you feel overwhelmed, emotionally drained and unable to meet constant dead line these things put you under a lot of pressure that will lead to stress. As the stress continue you will begin to lose interest or motivation that led you to take your responsibilities at the first place. Burnout reduces productivity and makes you feel hopeless and want to give up, there also will be times where you feel down and bored. The early stages of burnout may involve in having continuous bad days where as if the whole world was against you.

A constant exposure of elevated noise has the ability to cause discomfort to an individual and putting him/her in a discomforting state of mind. Elevated work place noise can affect and alter the human system, it can also cause hearing impairment, Hyper Tension, annoyance and sleep distortion. In the work place, constant elevated noise is known to create stress, increase workplace accident rates and can stimulate aggression and anti-social behaviors. The most significant noise environment that can cause these damages are where vehicle and aircraft noise is present, an area where of constant loud music, and especially an industrial environment. These damages start at a noise decibel of 84dB.

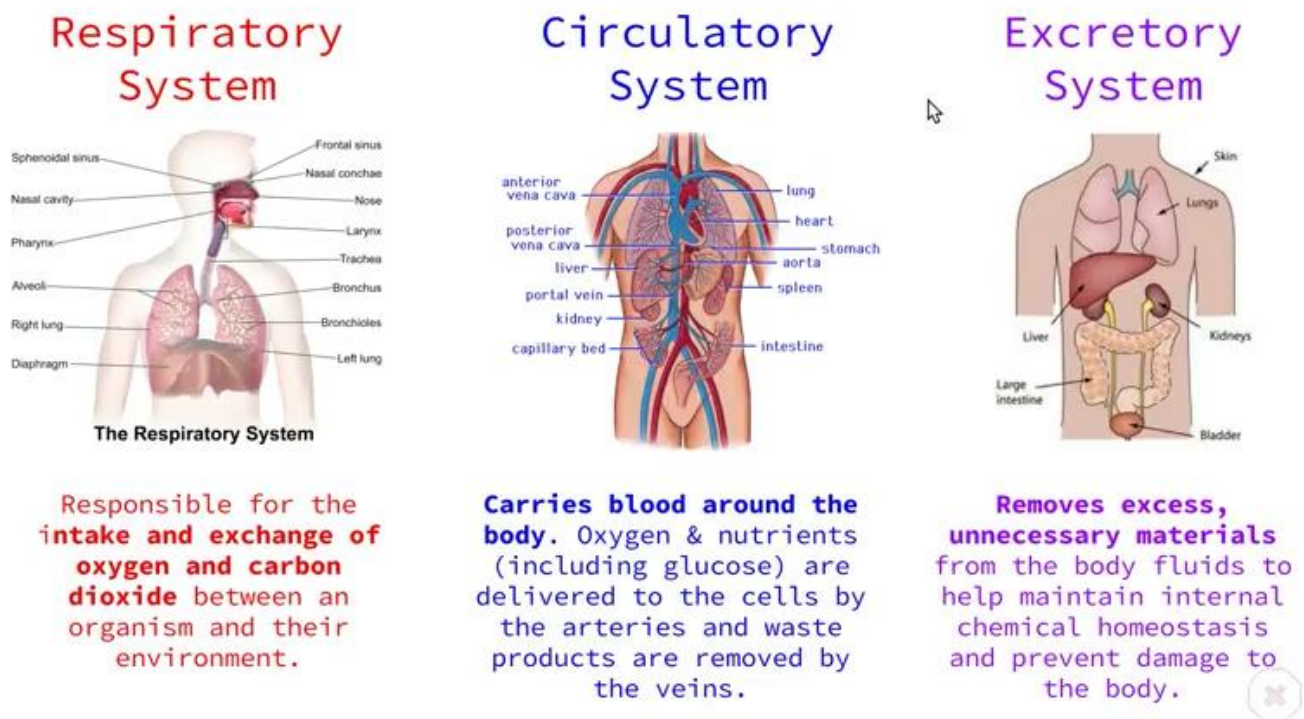


Figure 1.1:

The diagram above shows the parts involved with in each of the system we had just explained

Purpose: our purpose was to compare the work office to an on-site job while looking at the human system and the health and safety of each worker, and it was too also look at various ways some jobs can affect the human body and who seems to be suitable for the different working environment.

Aim: our aim was to look at a factor which can be found in an on-site job comparing it to a work office and to then figure out which working environment each they suit. The factor we used was the loud noises that has a constant presence in the mines.

2. Plan & Design

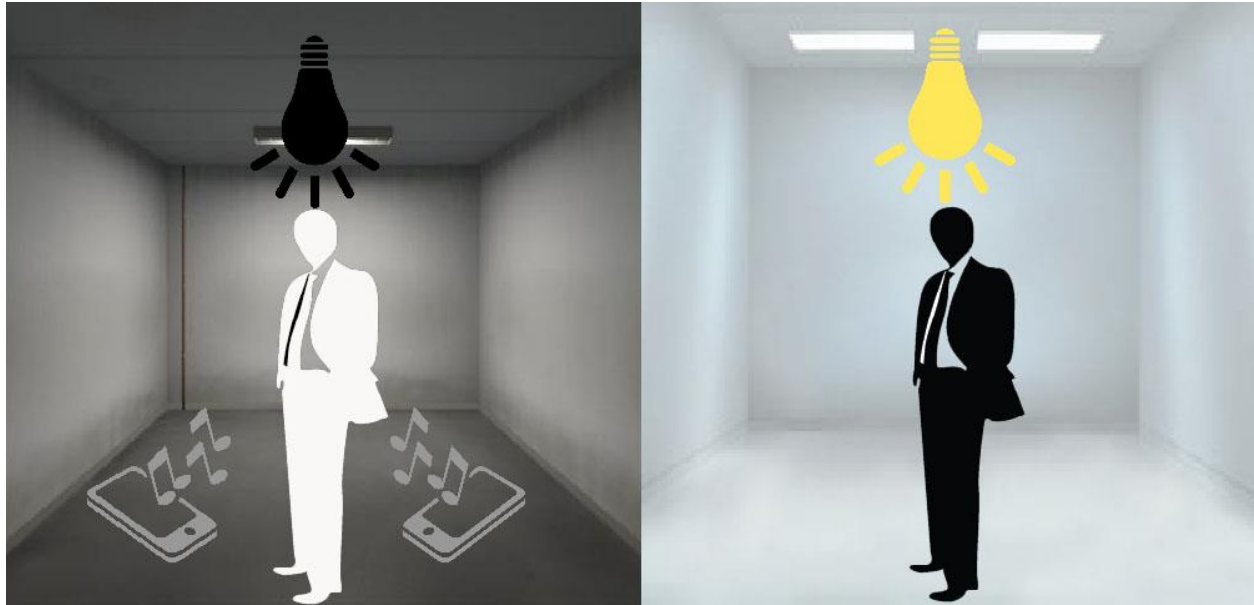


Figure 2.1: this diagram above shows the different conditions that the subject is placed in and the variables that we used and changed with each condition.

Table of Variable	
Constant variables	<ul style="list-style-type: none">- The amount of time that they are placed within the certain environment- The period between each heart beat testing-
Independent variable	<ul style="list-style-type: none">- Different subjects/people- Music that was played
Dependant variable	<ul style="list-style-type: none">- Heart beat per minute- Heart beat rise per minute (look at the difference of numbers between each Heart Beat p/m testing)

Figure 2.2:

The table above shows our table of variable for the investigation

Materials & Equipment's:

- 1x Confined Medium sized room with little to no windows (must also have lighting that can be switched on and off)
- 2x devices (minimal), the device must have a built-in:
 - Timer (e.g. Time)

- Music app (e.g. Spotify)
- Note Taking app (e.g. Evernote)
- 1x Earphones
- 1x Bathroom Scale (to get the subjects weight)
- 1x 2m Measuring tape (to get the subjects height)
- 4x Human Subjects (2 girls, 2 Boys)

Method and Producer:

Mine-site situation:

- step 1: take data regarding the subject/person (e.g. age, height, weight, blood type, ethnicity and they're current physical and mental health). the data is gained by creating a survey and asking each subject to fill it out.
- step 2: grab subject one and sit the subject/person down doing absolutely nothing but breathing for 2 minute (this is to figure out they're resting heartbeat).
- step 3: place index and middle finger on their neck underneath they're jaw and look for the pulse. in a 15 second period count the amount of beat and record it, then times the beat by 4 and you have figured out they're heart beat per minute.
- step4: Tell them to put an Earphone that is connected to device and set music up that on 3.5/4 from being full volume.
- step 5: take them into a dark confined space and start recording they're heart beat (using the previous method) every 2 minute for a total period of 6 minute.
- step 6: redo all the previous steps but with a different subject (person), test them individually and not at the same time.

Office situation:

- step 1: take data regarding the subject/person (e.g. age, height, weight, blood type, ethnicity and they're current physical and mental health). the data is gained by creating a survey and asking each subject to fill it out.
- step 2: grab subject one and sit the subject/person down doing absolutely nothing but breathing for 2 minute (this is to figure out they're resting heartbeat).
- step 3: place index and middle finger on their neck underneath they're jaw and look for the pulse. in a 15 second period count the amount of beat and record it, then times the beat by 4 and you have figured out they're heart beat per minute.
- step 4: take them into a bright and isolated room and start recording they're heart beat (using the previous method) every 2 minute for a total period of 6 minute.
- step 5: redo all the previous steps but with a different subject (person), test them individually and not at the same time.

Hypothesis:

If each individual subject were born and raised through different environment, background, lifestyle, and had gone through different situations in life, then and therefore the results of how different work place affects an individual will vary from person to person.

3. Conducting

Table of results

These here are the results and data of the conducting and experiment that we did.

key:	Description
HB	Hear Beat per minute
HBR p/m	Heart beat rise per minute
p/p	Per Period

Office Conditions (Boys)		
period (min)	name	
	Dylan (HB p/m)	Eshan(HB p/m)
0	76	56
2	68	96
4	88	96
6	96	82
AVG (HB)	82	82.5
Figure 3.1		

Office Conditions (boys)		
HBR p/m	Dylan	Eshan
0-2m	-12	40
2-4m	20	0
4-6m	8	-14
AVG HBR p/p	5.333333333	8.666666667
Figure 3.2		

Figure 3.1: the result of the heart beat test in an office working condition testing for the male subjects.

Figure 3.2: the results of the average heartbeat rise per period in the office working condition for the male subjects.

Mine Sites (Boys)		
period (min)	name	
	Dylan (HB p/m)	Eshan (HB p/m)
0	76	66
2	80	76
4	84	84
6	88	96
AVG (HB)	82	80.5
Figure 3.3		

Mine sites (boys)		
HBR p/m	Dylan	Eshan
0-2m	4	10
2-4m	4	8
4-6m	4	12
AVG HBR p/p	4	10
Figure 3.4		

Figure 3.3: the result of the heart beat test in a mine-site working condition testing for the male subject.

Figure 3.4: the result of the average heartbeat rise per period in the mine-site conditions for the male subject.

Office Conditions (Girls)		
Time(min)	Name	
	Leola (HB p/m)	Lizzy (HB p/m)
0	82	66
2	88	96
4	88	100
6	88	88
AVG HB	86.5	87.5
Figure 3.5		

Office Conditions (girls)		
HB Rise/m	Leola	Lizzy
0-2m	2	30
2-4m	0	4
4-6m	0	-12
AVG HBR p/p	0.666666667	7.333333333
Figure 3.6		

Figure 3.5: the result of the heart beat test in an office working condition testing for the female subjects.

Figure 3.6: the results of the average heartbeat rise per period in the office working condition testing for the female subjects.

Mine Sites (Girls)		
Time(min)	Name	
	Leola (HB p/m)	Lizzy (HB p/m)
0	84	80
2	96	88
4	100	92
6	88	88
AVG HB	92	87
Figure 3.7		

Mine Site (girls)		
HB Rise/m	Leola	Lizzy
0-2m	12	8
2-4m	4	4
4-6m	-12	-4
AVG HBR p/p	1.333333333	2.666666667
Figure 3.8		

Figure 3.7: the result of the heartbeat test in a mine-site working condition testing for the female subject.

Figure 3.8: the results of the average heartbeat rise per period in the mine- site working condition testing for the female subject.

Flowchart

Mine site

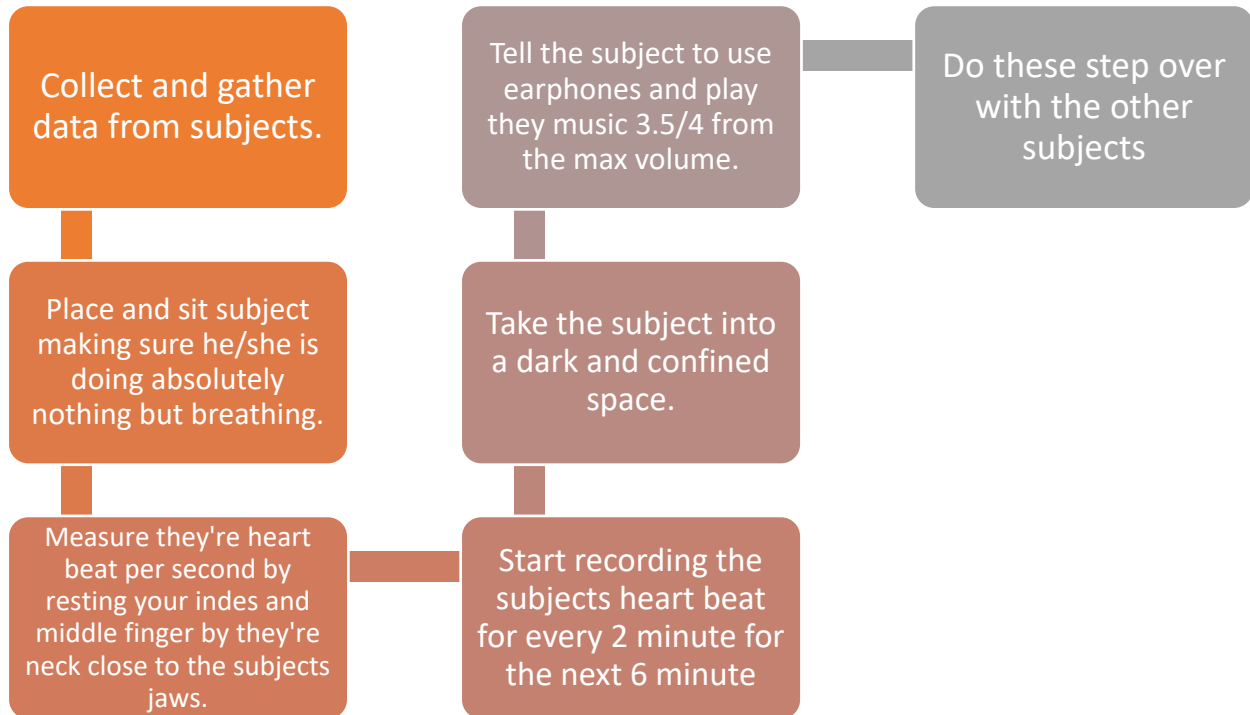


Figure 3.9

This flowchart is to demonstrate the steps and procedures that we followed throughout the mine site experiment the different subjects.

Office

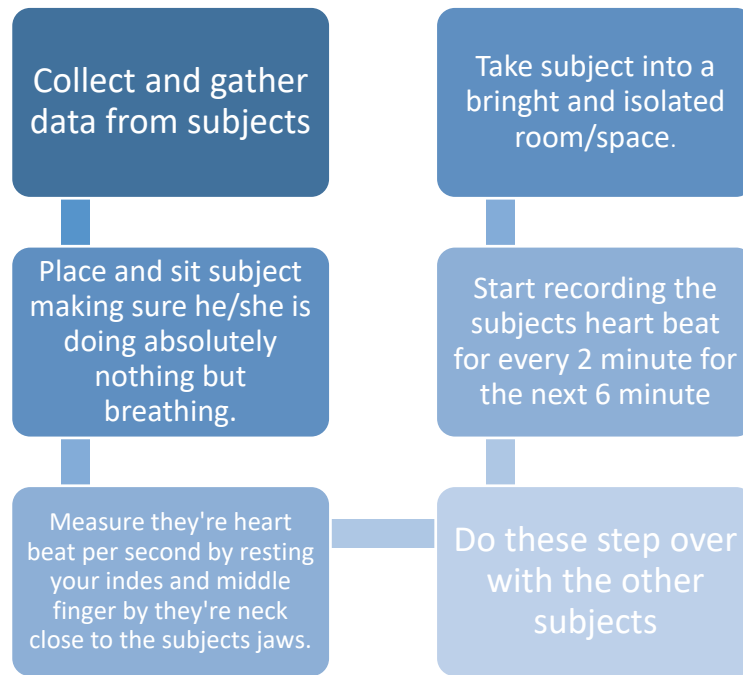


Figure 3.10

This flowchart is to demonstrate the steps and procedure that we followed throughout the office experiment with the different subjects.

Changes and alteration

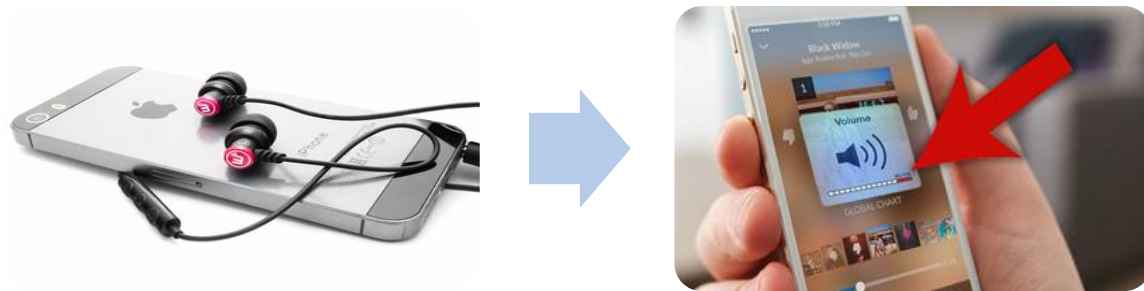


Figure 3.11

Changes and alteration:

During this investigation, we had some major changes that we had done. We had to use 2 different devices with different music instead of the earphone that we tried at the beginning of the experiment, to replicate a mine site situation where the noise effects the surrounding area and not directly to a specific singular target, it was also to create a loud and disruptive noises that is just like at a mine site.

4. Processing

Calculations

Formula used:

- Heart Beat Rise: the difference between the following period and the period that had occurred before. (E.g $P2 - P1 = \text{difference/heartbeat rise}$).
- Heart Beat Average: the sum of all the heart beat divided by the number of heart beat results gained. (E.g $(P1+P2+P3+P4)/4 = \text{HBA}$)
- Heart Beat per minute: the number of heart beat felt in 15 seconds, then times by 4. (E.g $20 \times 4 = 80 = \text{heart beat per/m}$).

Office Conditions (Boys)		
period (min)	name	
	Dylan (HB p/m)	Eshan (HB p/m)
0	$19 \times 4 = 76$	$14 \times 4 = 56$
2	$17 \times 4 = 68$	$24 \times 4 = 96$
4	$22 \times 4 = 88$	$24 \times 4 = 96$
6	$24 \times 4 = 96$	$20 \times 4 = 80$
AVG (HB)	$(76+68+88+96)/4 = 82$	$(56+96+96+80)/4 = 82$

Figure 4.1

Office Conditions (boys)		
HBR p/m	Dylan	Eshan
0-2m	$68 - 76 = -12$	$96 - 56 = 40$
2-4m	$88 - 68 = 20$	$96 - 96 = 0$
4-6m	$96 - 88 = 8$	$80 - 96 = -14$
AVG HBR p/p	$(-12 + 20 + 8)/3 = 5.3$	$(40 + 0 + 14)/3 = 8.67$

Figure 4.2

Figure 4.1: the calculation we had done on the raw data for the office condition for the male subjects to find the average heart beat.

Figure 4.2: the calculation of Heart Beat Rise for the office conditions for the male subjects.

Mine Sites (Boys)		
	name	
period (min)	Dylan (HB p/m)	Eshan (HB p/m)
0	$19 \times 4 = 76$	$17 \times 4 = 68$
2	$20 \times 4 = 80$	$19 \times 4 = 76$
4	$21 \times 4 = 84$	$21 \times 4 = 84$
6	$24 \times 4 = 88$	$24 \times 4 = 96$
AVG (HB)	$(76+80+84+88)/4 = 82$	$(68+76+84+96)/4 = 81$

Figure 4.3

Mine sites (boys)		
HBR p/m	Dylan	Eshan
0-2m	$80 - 76 = 4$	$19 - 17 = 10$
2-4m	$84 - 80 = 4$	$21 - 19 = 8$
4-6m	$88 - 84 = 4$	$24 - 21 = 12$
AVG HBR p/p	$(4 + 4 + 4)/3 = 4$	$(10 + 8 + 12)/3 = 10$

Figure 4.4

Figure 4.3: the calculation we had done on the raw data for the mine-site condition for the male subjects to find the average heart beat.

Figure 4.4: the calculation of Heart Beat Rise for the mine-site conditions for the male subjects.

Office Conditions (Girls)		
	Name	
Period(min)	Leola (HB p/m)	Lizzy (HB p/m)
0	$20 \times 4 = 80$	$17 \times 4 = 68$
2	$22 \times 4 = 88$	$24 \times 4 = 96$
4	$22 \times 4 = 88$	$25 \times 4 = 100$
6	$22 \times 4 = 88$	$22 \times 4 = 88$
AVG HB	$(80 + 88 + 88 + 88)/4 = 86$	$(68 + 96 + 100 + 88)/4 = 88$

Figure 4.5

Office Conditions (girls)		
HB Rise/m	Leola	Lizzy
0-2m	$88 - 80 = 8$	$96 - 68 = 28$
2-4m	$88 - 88 = 0$	$100 - 96 = 4$
4-6m	$88 - 88 = 0$	$88 - 100 = -12$
AVG HBR p/p	$(8 + 0 + 0)/3 = 2.67$	$(28 + 4 + -12)/3 = 6.67$

Figure 4.6

Figure 4.5: the calculation we had done on the raw data for the office condition for the female subjects to find the average heart beat.

Figure 4.6: the calculation of Heart Beat Rise for the office conditions for the female subjects.

Mine Sites (Girls)		
Period(min)	Name	
	Leola (HB p/m)	Lizzy (HB p/m)
0	$21 \times 4 = 84$	$20 \times 4 = 80$
2	$24 \times 4 = 96$	$22 \times 4 = 88$
4	$25 \times 4 = 100$	$23 \times 4 = 92$
6	$22 \times 4 = 88$	$22 \times 4 = 88$
AVG HB	$(84 + 96 + 100 + 88)/4 = 92$	$(80 + 88 + 92 + 88)/4 = 87$
Figure 4.7		

Mine Site (girls)		
HB Rise/m	Leola	Lizzy
0-2m	$96 - 84 = 12$	$88 - 80 = 8$
2-4m	$100 - 96 = 4$	$92 - 88 = 4$
4-6m	$88 - 100 = -12$	$88 - 92 = -4$
AVG HBR p/p	$(12 + 4 + -12)/3 = 1.3$	$(8 + 4 + -4)/3 = 2.67$
Figure 4.8		

Figure 4.7: the calculation we had done on the raw data for the mine-site condition for the female subjects to find the average heart beat.

Figure 4.8: the calculation of Heart Beat Rise for the mine-site conditions for the female subjects.

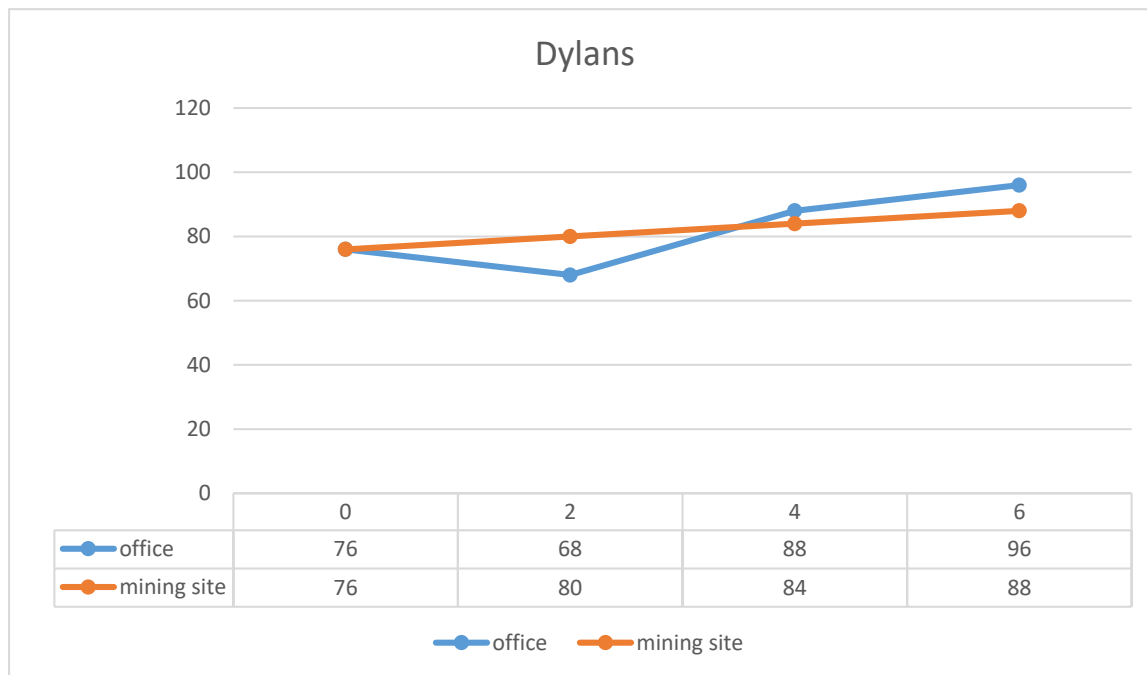


Figure 4.9

The figure above shows the graph of Dylan's testing result within the Office and Mine-site. We found that Dylan has a steady increase in heart beat rate within the mining site environment where as the results of his office environment testing shows that he had a sudden drop/relieve of heart beat which had then spiked up resulting with a higher heart beat compared to the final testing of the mining site environment.

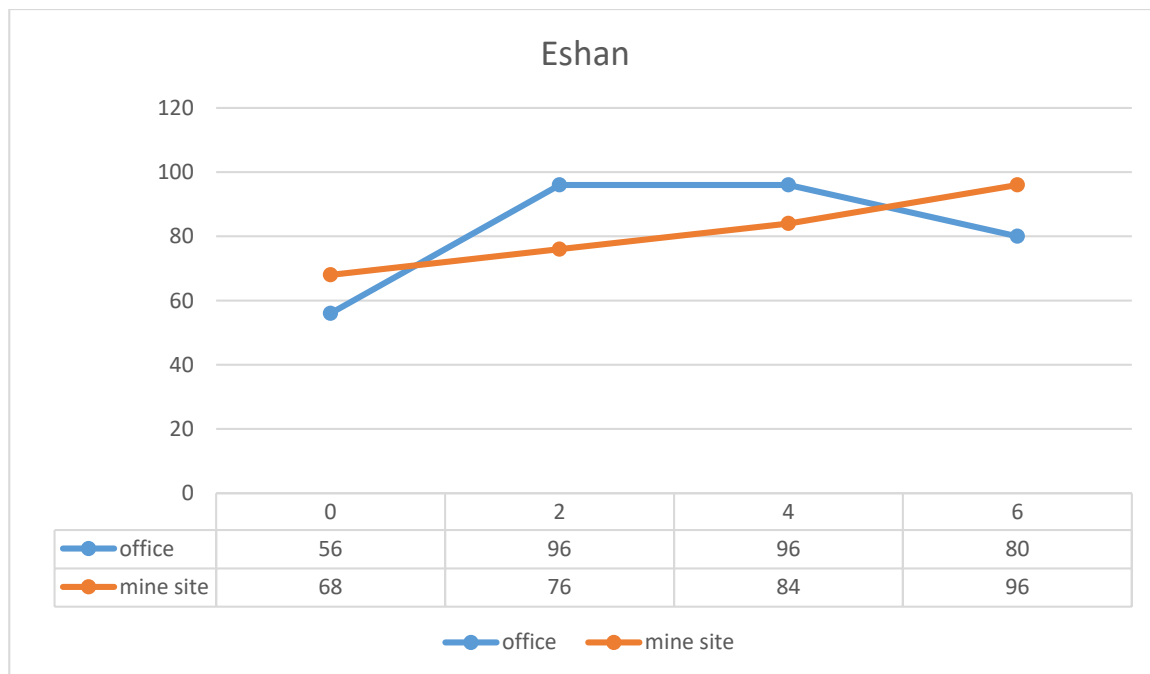
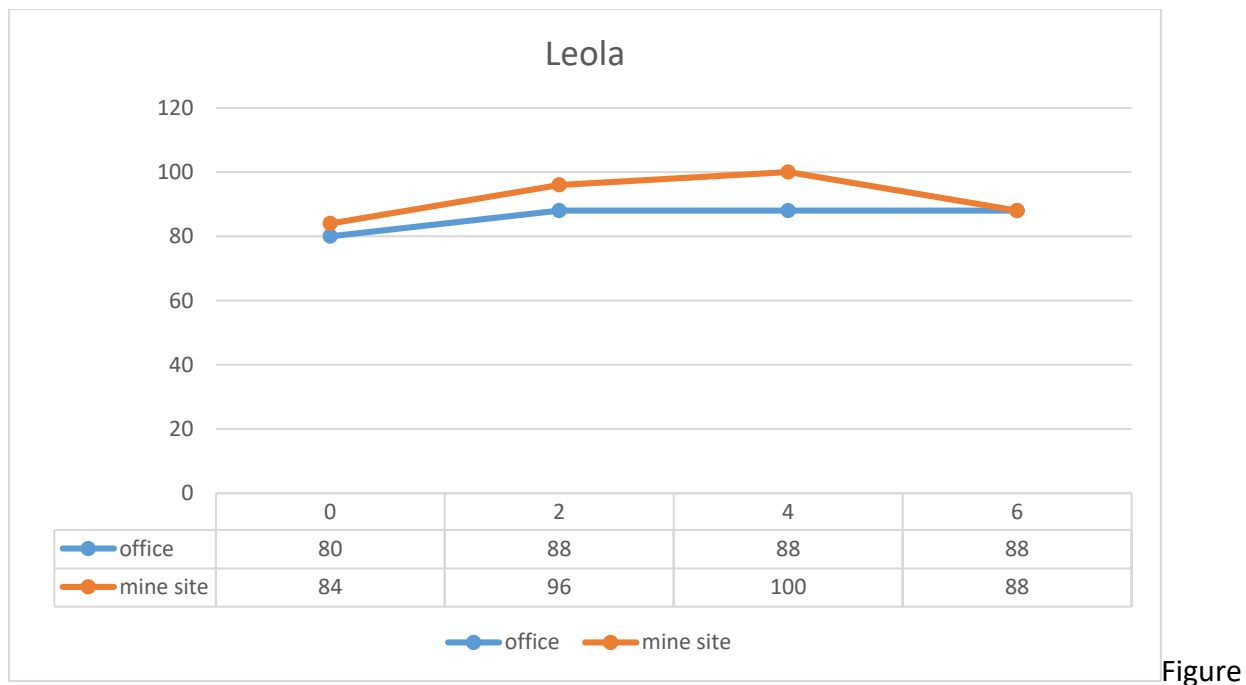


Figure 4.10

The figure above shows the graph results of Ehsan's testing within the Office and Mine site environment. Eshan too had a steady increase of heart beat rate in the mining site environment but it had slowly increased in speed after the third period. Ehan testing result in the office environment shows that he had a sudden spike after the first period but had then steadily drop.



4.11

The Figure above shows the graph results of Leola's testing within the Office and Mine-site environment. Leola's heart beat in both testing had steady increase and had ended with the same heart beat rate. However, Leola heart beat in the mine site had a slightly larger rise compared to the office but had then soon declined resulting in the same heart beat rate for the last period. Leola had a stable heart beat after the first period at the office environment.

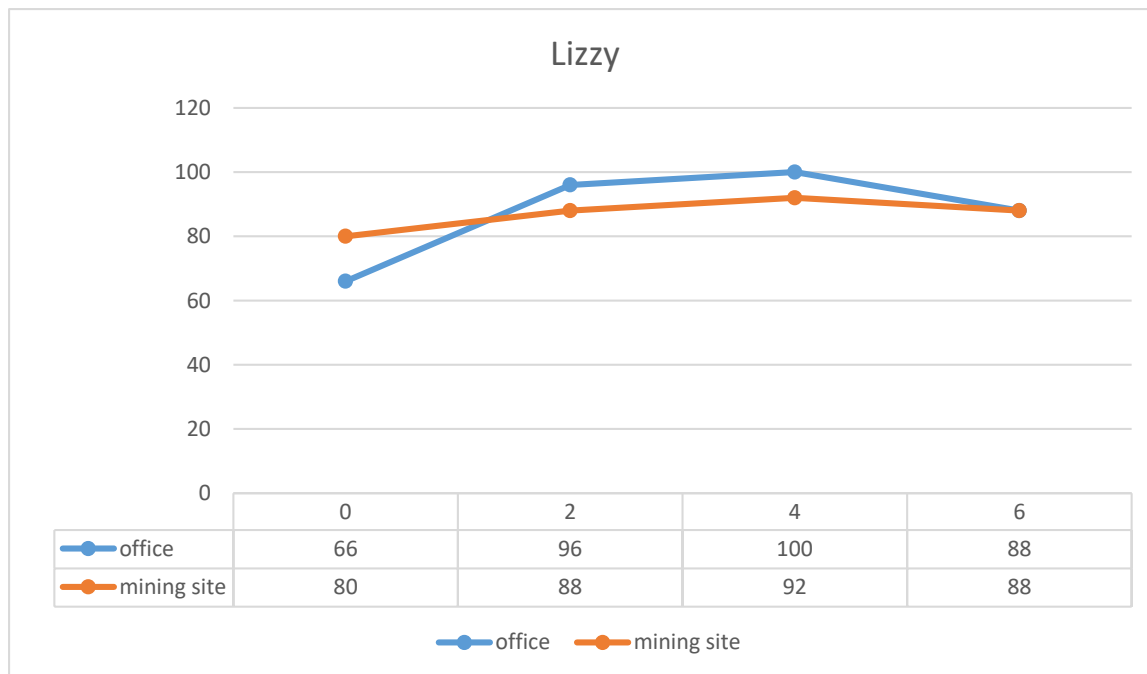


Figure 4.11

The Figure above shows the graph results of Lizzy's testing within the Office and Mine-site environment. Lizzy testing result has shown that in both environment she had ended with the same heartbeat rate in the final/last period. We can also see a huge spike of heart beat rise in the office environment but had then slowly declined.

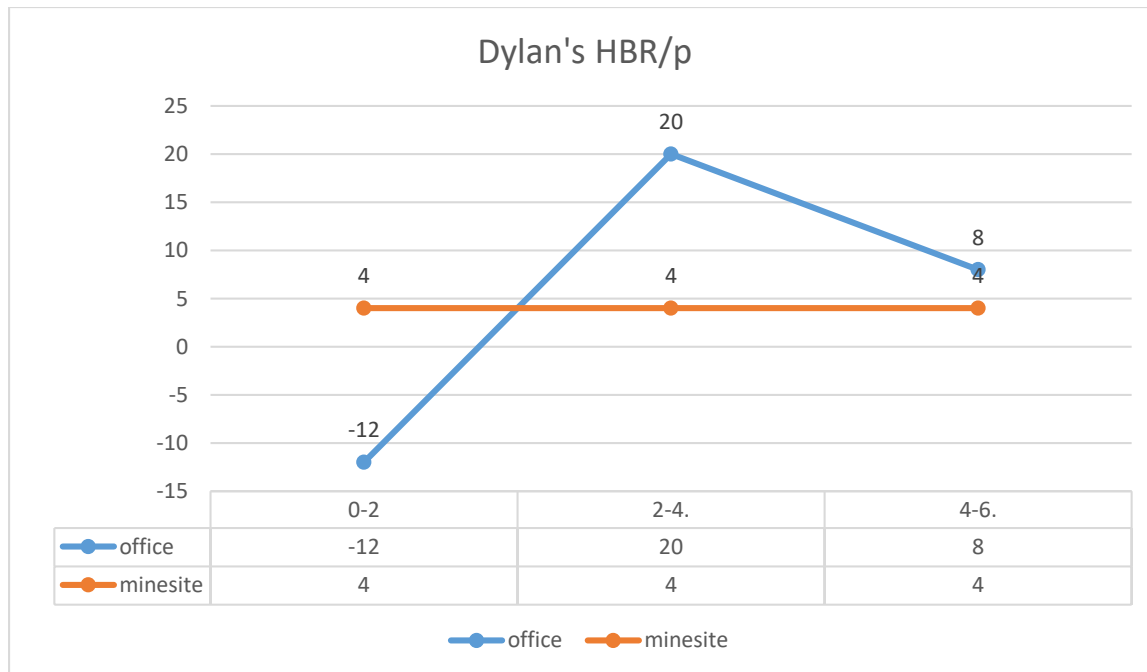


Figure 4.13

The Figure above shows Dylan’s heart beat change between each testing period. With this result, we found out that Dylan’s heartbeat rate throughout the mine site environment was a constant rise of 4. Where as in the office condition his first heart beat suddenly dropped by 12 and then had suddenly spiked up resulting to a sudden increase of 20 heart beat change between his first and second period.

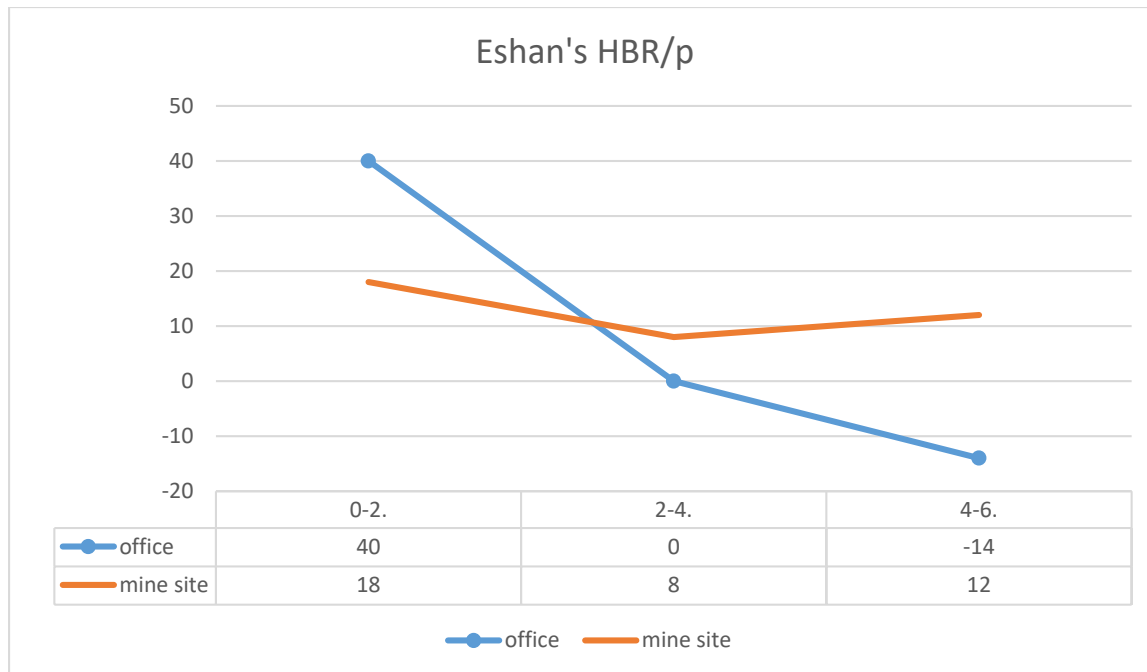


Figure 4.14

The figure above shows Eshan's Heart Beat Change between each testing period. We can see in this result that Eshan's heart beat rate had a sudden spike of heart beat rate of 40 between his resting heartbeat and his first period of testing, but it had then declined dramatically. Whereas his mine site result was much more stable.

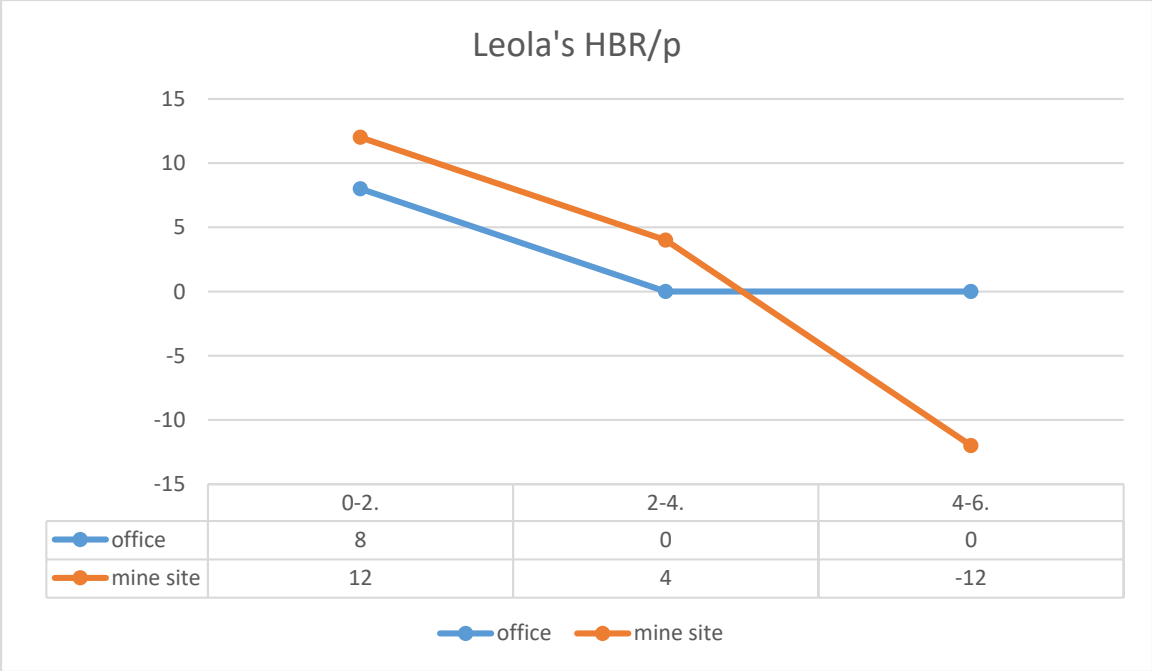


Figure 4.15

The figure above shows Leola’s Heart Beat Change between each testing period. This result shows us that in the mine site situation Leola’s heart beat change rate had slowly declined then dramatically dropped. While her heart beat change rate on the office environment declined then became stable with no change at all.

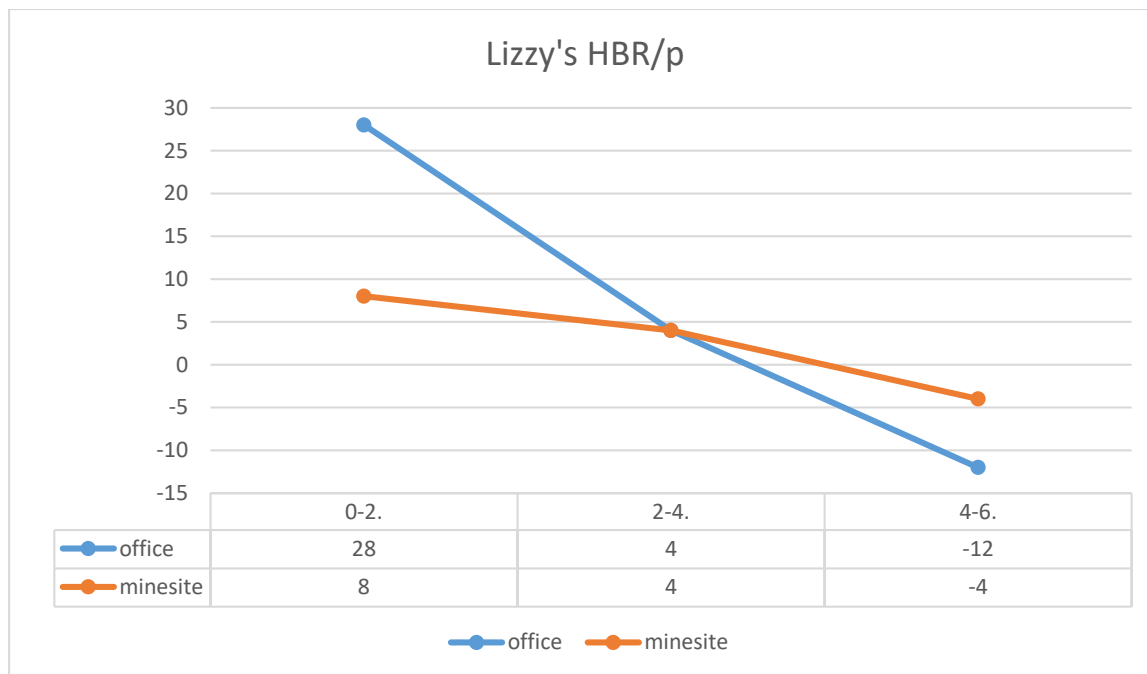


Figure 4.14

The figure above shows Lizzy's Heart Beat Change between each testing period. This result shows that Lizzy had a spike in heart beat rate from her starting period to her first testing period but had then dramatically declined soon after that. Whereas the result for her mine site environment, her heart beat change rate had slowly declined throughout the whole testing period.



Figure 4.15

This diagram/ picture represents the known facts that people tends to get distracted or feel uncomfortable when within a loud volume/noise area.

Our results show that noise effects vary from person to person. Two of our subjects had a higher heart beat average when they are placed in a loud and noisy environment. Whereas the other two seemed to be able to adapt/cope with the loud and noisy environment this may be due to they're individual background and lifestyle such as they're preference In music (loud rock) which may not have caused such a shocking effect to the individual.

Discussion of data:

The average heartbeat of the male subject in both condition did not have a major change; however, we see a spike on one of the male subject (Eshan) and when he was placed within the mine site environment he had an average heart beat rise of 12.67 per period that is nearly double the average of the boy's heart beat rise per period. This mean that Eshan may have been placed in an environment that he is not used to which cause him to be uncomfortable and had abnormal heart beat rating. This also tells us that Eshan may require time to be able to adapt to the new environment at a mine-site, but this means that he is more suitable to work at an office condition where it is much less noisy.

While Dylan the other male subject had the same heartbeat average and nearly the same heartbeat rise per period throughout both environment. This tells us that Dylan has been exposed and is use to a loud and noisy environment. This also tells us that Dylan's is suitable to work in the mine-site without getting distracted and needs less time to adapt to the new environment.

The female subjects had a more varied range of average heart beat result. One of the female subject (Leola) had a major spike of up and downs with her heart beat rise per period in the mine site conditions. This may conclude that Leola felt that she was in an uncomfortable position being within a loud and noisy environment, however it soon declined after 4-minute have past which we saw a -12 hear beat rise compared to the previous heartbeat per minute. This also conclude that Leola had slowly adapted to the new environment. Compared to her office environment results which was more steady and seemed as if she felt calmer and more comfortable, there has been a significant amount of difference in her heartbeat average and the spike of her heart beat rating between the two environments. Leola seemed to be more suitable in working at calm and low noise working environment such as the work office, but she could also easily adapt to a foreign working environment.

While Lizzy the other female subject had a higher heart beat average and a more varied spike range in her heartbeat rise per period. She seemed as if she is uncomfortable in a low noise working environment such as the office. However, her heart beat average and her heart beat rise were more stable/ constant when she was placed within a loud and noisy environment such as the mine-site. This may be due to her own personal preference of lifestyle. This conclude that Lizzy was more comfortable being present in the loud and noisy environment, which mean she is more suitable in working in a loud and noisy working environment such as the mine site.

Our hypothesis at the beginning of the investigation seemed to be correct in a way that each person and they're life style had an impact to their own uniqueness and individuality which cause them to have a preference over which environment they are more comfortable being in.

5. Evaluation

During this Investigation, we had learned how a person's individuality, ethnicity and/or the situation and environment they are or were present on, could affect the person's way of reacting to certain situations, as they may have already been present and used to that environment or that environment may have been foreign to them which give them a sense of alert. Sign of increased alert could be seen from factors such as the increase of Heart Beat.

After we had done the testing and gathered all the data we needed. Kevin and I tried to scare each of the subjects, as it was a dark room we started telling the subjects a scary story regarding the animal skulls that was in the box in the dungeon and how in Indonesia it was a representation of an evil spirit. It was quite a interesting experience as it also allowed me to see an individual's thoughts, thinking. And beliefs. Some seemed to have shown a reaction of nervousness, which I could see by their body posture and how they kept staring at the statue.

I would like to see improvement of my partner's and i's report writing skill during future investigations. What we are lacking is the lack of attention to detail and detailed information writing. Even though we had started the investigation early this time it took us some time to get everything together. Next time we will try to write our report on word online or google doc as we cud have multiple people working on it at once rather than having pieces and have trouble putting the pieces of report together or that the pieces wouldn't join up as we want it to.

Changes that could improve this investigation would be to test the subject for a longer amount of period and that research of different work situation for a comparison variable should be done more thorough. For instance, we should have measured the noise decibel when we were testing the subject in a mine-site environment and to get the noise to a decibel as close as 84dB.

6. Bibliography

- Circulatory system - Better Health Channel. 2016. Circulatory system - Better Health Channel. [ONLINE] Available at: <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/circulatory-system>. [Accessed 06 November 2016].
- Live Science. 2016. Circulatory System: Facts, Function & Diseases. [ONLINE] Available at: <http://www.livescience.com/22486-circulatory-system.html>. [Accessed 06 November 2016].
- Heart and Circulatory System. 2016. Heart and Circulatory System. [ONLINE] Available at: <http://kidshealth.org/en/parents/heart.html>. [Accessed 06 November 2016].
- Wikipedia. 2016. Circulatory system - Wikipedia. [ONLINE] Available at: https://en.wikipedia.org/wiki/Circulatory_system. [Accessed 06 November 2016].
- Live Science. 2016. Respiratory System: Facts, Function and Diseases. [ONLINE] Available at: <http://www.livescience.com/22616-respiratory-system.html>. [Accessed 06 November 2016].
- Respiratory system - Better Health Channel. 2016. Respiratory system - Better Health Channel. [ONLINE] Available at: <https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/respiratory-system>. [Accessed 06 November 2016].
- myVMC. 2016. Respiratory System | myVMC. [ONLINE] Available at: <http://www.myvmc.com/anatomy/respiratory-system/>. [Accessed 06 November 2016]
- ScienceDaily. 2016. Excretory system. [ONLINE] Available at: https://www.sciencedaily.com/terms/excretory_system.htm. [Accessed 06 November 2016].
- Wikipedia. 2016. Excretory system - Wikipedia. [ONLINE] Available at: https://en.wikipedia.org/wiki/Excretory_system. [Accessed 06 November 2016]
- Andrew Rader Studios. 2016. Biology4Kids.com: Animal Systems: Excretory System. [ONLINE] Available at: http://www.biology4kids.com/files/systems_excretory.html. [Accessed 06 November 2016]
- Loud Noise and Sound - Hearing Loss, Damage & Tinnitus. 2016. Loud Noise and Sound - Hearing Loss, Damage & Tinnitus. [ONLINE] Available at: <http://www.advanced-noise-solutions.co.uk/noise-effects/>. [Accessed 06 November 2016].
- Wikipedia. 2016. Health effects from noise - Wikipedia. [ONLINE] Available at: https://en.wikipedia.org/wiki/Health_effects_from_noise. [Accessed 06 November 2016].
- Noise-Induced Hearing Loss | NIDCD. 2016. Noise-Induced Hearing Loss | NIDCD. [ONLINE] Available at: <https://www.nidcd.nih.gov/health/noise-induced-hearing-loss>. [Accessed 06 November 2016].
- Add to My References
- Stress - Better Health Channel. 2016. Stress - Better Health Channel. [ONLINE] Available at: <https://www.betterhealth.vic.gov.au/health/healthyliving/stress>. [Accessed 06 November 2016].
- Stress Symptoms, Signs, and Causes: Recognizing the Harmful Effects of Stress and What You Can Do About It. 2016. Stress Symptoms, Signs, and Causes: Recognizing the Harmful Effects of Stress and What You Can Do About It. [ONLINE] Available at: <http://www.helpguide.org/articles/stress/stress-symptoms-causes-and-effects.htm>. [Accessed 06 November 2016].
- Psychology Today. 2016. The Tell Tale Signs of Burnout ... Do You Have Them? | Psychology Today. [ONLINE] Available at: <https://www.psychologytoday.com/blog/high-octane-women/201311/the-tell-tale-signs-burnout-do-you-have-them>. [Accessed 06 November 2016].
- Burnout Prevention and Recovery: Signs, Symptoms, and Coping Strategies for Mental Exhaustion . 2016. Burnout Prevention and Recovery: Signs, Symptoms, and Coping Strategies for Mental Exhaustion

. [ONLINE] Available at: <http://www.helpguide.org/articles/stress/preventing-burnout.htm>. [Accessed 06 November 2016].

- Wikipedia. 2016. Occupational burnout - Wikipedia. [ONLINE] Available at: https://en.wikipedia.org/wiki/Occupational_burnout. [Accessed 06 November 2016].