

**PRACTICAL MANUAL**

**HUMAN ANATOMY AND PHYSIOLOGY 1 PHM 10402**

**Bachelor of Pharmacy with Honours [B.Pharm (Hons)]**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Matric No.: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**LIST OF PRACTICALS**

**HUMAN ANATOMY AND PHYSIOLOGY 1 PHM 10402 SEMESTER 1, YEAR 1**

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| **Practical 1** | **Cardiovascular** |
| **Objective** | Exercise 1: To measure blood pressure of volunteers via auscultation  Exercise 2: To observe the changes in blood flow while measuring blood pressure, and see if pulse measurement can be used to replace the stethoscope  Exercise 3: To measure systolic blood pressure in the upper arm  Exercise 4: To measure systolic blood pressure in the forearm  Exercise 5: To measure systolic blood pressure in the leg |
| **Hard- and software** | * A computer system * Chart software, version 5.2 or later * PowerLab * Finger pulse transducer * Stethoscope * Blood pressure cuff * Sphygmomanometer |
| **Procedure (s)** | 1. Open the Microsoft word file ‘Practical 1\_Cardiovascular\_Blood Pressure Protocol’ 2. Run set up and equipment calibration 3. Run Exercise 1: Auscultation of blood pressure 4. Run Exercise 2: Blood pressure and pulse 5. Run Exercise 3: Measuring systolic pressure 6. Run Exercise 4: Measurements from the forearm 7. Run Exercise 5: Measurements from the leg 8. Analyze the data sets in the Analysis section 9. Fill in Data Notebook 10. Answer Study Questions 11. You may discuss your finding in groups |
| **Report** | 1. Complete the Introduction, Results and Conclusion sections of the Practical Report 1. |
| **References** | 1. Physiology Experiments Using PowerLab 2. www.ADInstruments.com (Copyright © 2005 ADInstruments. All rights reserved.) 3. http://www.indiana.edu/~nimsmsf/P215/p215notes/LabManual/Lab10.pdf 4. http://physiology.elte.hu/gyakorlat/jegyzet/Physiology\_Pactical\_(2013).pdf 5. https://courses.cit.cornell.edu/bionb4910/labresources/Intro%20LabChart%208%20for%20Windows%20StuProt2015.pdf 6. https://www.medicine.mcgill.ca/physio/vlab/cardio/auscul.htm |
| **Notes** | Further reading:  1. https://quizlet.com/204396237/2-blood-pressure-post-lab-questions-flash-cards/  2. https://quizlet.com/121873119/workbook-4-blood-pressure-flash-cards/ |

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| **Practical Report 1: Cardiovascular** | |
| **Introduction** | |
| Write a paragraph defining systolic and diastolic blood pressure. Explain why blood pressure is important. Define auscultation. What do you expect to learn from this experiment? Briefly describe the techniques you will use to measure blood pressure in this experiment. | |
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| **Results** | |
| **Exercises 2-5: Measurement of blood pressure**  Fill in the table below with your data from this experiment.   |  |  |  | | --- | --- | --- | | **Measurement location/Conditions** | **Systolic Pressure** | **Diastolic Pressure** | | Resting measurement from upper arm |  |  | | Upper arm (pulse measurement) |  |  | | Forearm (pulse measurement) |  |  | | Leg (sitting) |  |  | | Leg (standing) |  |  | | |
| **Conclusions** | |
| Answer the following questions in complete sentences. | |
| 1) What do the Korotkoff sounds represent? | |
| 2) Explain the events occurring in the heart during:  a. systole  b. diastole | |
| 3) How does your estimate of systolic pressure in the upper arm compare with your results from part 1 of this lab? | |
| 4) Does systolic pressure differ between the forearm and upper arm? | |
| 5) How does your estimate of systolic pressure in the leg compare with that from the upper arm? | |
| 6) What happened to blood pressure in the leg when you were standing up? | |
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| **References** | List your reference (s) |
| **Notes** | To what extent were you satisfied with the practice session?   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Very Dissatisfied** | 1 | 2 | 3 | 4 | 5 | **Very Satisfied** | |  |  |  |  |  |  |  | | What is/are improvement (s) that you can suggest for this experiment? | | | | | | | |

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| **Practical 2** | **Respiration** |
| **Objective** | Exercise 1: To investigate the characteristics of normal respiration and ability to hold breath after inspiration and expiration  Exercise 2: To investigate the effect of hyperventilation on the respiratory pattern and the length of time the breath can be held  Exercise 3: To investigate the effect of rebreathing on respiratory patterns  Exercise 4: To study variations in heart rate during breathing |
| **Hard- and software** | * A computer system * Chart software * PowerLab * Respiratory belt transducer * Finger pulse transducer * Medium-sized paper bag |
| **Procedure (s)** | 1. Open the Microsoft word file ‘Practical 2\_Respiration\_Breathing Protocol’ 2. Run set up and equipment calibration 3. Run Exercise 1: Normal respiration 4. Run Exercise 2: Hyperventilation 5. Run Exercise 3: The effect of rebreathing 6. Run Exercise 4: Breathing and heart rate 7. Analyze the data sets in the Analysis section 8. Fill in Data Notebook 9. Answer Study Questions 10. You may discuss your finding in groups |
| **Report** | 1. Complete the Introduction, Results and Conclusion sections of the Practical Report 2. |
| **References** | 1. Physiology Experiments Using PowerLab 2. www.ADInstruments.com (Copyright © 2005 ADInstruments. All rights reserved.) 3. http://www.indiana.edu/~nimsmsf/P215/p215notes/LabManual/Lab11.pdf 4. http://physiology.elte.hu/gyakorlat/jegyzet/Physiology\_Pactical\_(2013).pdf 5. https://courses.cit.cornell.edu/bionb4910/labresources/Intro%20LabChart%208%20for%20Windows%20StuProt2015.pdf 6. https://www.medicine.mcgill.ca/physio/vlab/Other\_exps/resp/vlabmenuresp.htm |
| **Notes** | Further reading:   1. https://quizlet.com/204211480/respiation-lab-final-flash-cards/ 2. https://quizlet.com/80701324/2012ahs-laboratory-3-respiratory-physiology-flash-cards/ |

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| **Practical Report 2: Respiration** | |
| **Introduction** | |
| Write a paragraph describing why animals must breathe to stay alive. Describe the mammalian lung anatomy. What do you expect to learn from this experiment? Briefly describe the methods you will use to study breathing in this lab exercise. | |
|  | |
| **Results** | |
| **Exercise 1: Normal respiration**  Place a copy of the Zoom window in the space below showing normal respiration. | |
| **Exercise 2: Hyperventilation**  Place a copy of the Zoom window in the space below showing your data for hyperventilation. | |
| **Exercise 3: The effect of rebreathing**  Place a copy of the Zoom window in the space below showing your data for the rebreathing exercise. | |
| **Exercise 4: Breathing and heart rate**  Place a copy of the Zoom window in the space below showing heart rate when you held your breath. | |
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| **Conclusions** | |
| Answer the following questions in complete sentences. | |
| 1) How did your respiratory pattern change after you held your breath? Why do you suppose this is? | |
| 2) Were you able to hold your breath longer or shorter than normal after hyperventilation? | |
| 3) How did your data for rebreathing differ from normal breathing? What is the mechanism for this result? | |
| 4) What happened to your heart rate when you held your breath? | |
| 5) Briefly describe how the vagus nerve affects heart rate. | |
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| **References** | List your reference (s) |
| **Notes** | To what extent were you satisfied with the practice session?   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Very Dissatisfied** | 1 | 2 | 3 | 4 | 5 | **Very Satisfied** | |  |  |  |  |  |  |  | | What is/are improvement (s) that you can suggest for this experiment? | | | | | | | |