HEART SOUNDS

- *Cardiac valve functions*
- *Relationship between electrical and mechanical events of the cardiac cycle*

DATA REPORT

Student’s Name: __________________________________________
Lab Section: ______________________________________________
Date: ____________________________________________________

Subject Profile

Name:________________________________________ Height: ________ Gender: Male / Female
Age:________________________________________ Weight:________

**Note:** This Data Report assumes that all lesson recordings were performed, which may not be the case for your lab. Please disregard any references to excluded recordings.

I. **Data and Calculations**

A. **Heart Sound Measurements**

Complete Table 17.1 with “Seated, at rest” and “After exercise” data and complete the required calculations.

<table>
<thead>
<tr>
<th>Selected area</th>
<th>Measurement</th>
<th>Seated, at rest</th>
<th>After exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At Rest</td>
<td>Inhalation</td>
<td>Exhalation</td>
</tr>
<tr>
<td>R-wave to next R-wave</td>
<td>1</td>
<td>BPM</td>
<td></td>
</tr>
<tr>
<td>R-wave to 1st heart sound</td>
<td>1</td>
<td>Delta T</td>
<td></td>
</tr>
<tr>
<td>R-wave to 2nd heart sound</td>
<td>1</td>
<td>Delta T</td>
<td></td>
</tr>
<tr>
<td>1st to 2nd heart sound</td>
<td>1</td>
<td>Delta T</td>
<td></td>
</tr>
<tr>
<td>2nd sound to next 1st sound</td>
<td>1</td>
<td>Delta T</td>
<td></td>
</tr>
<tr>
<td>1st heart sound interval</td>
<td>1</td>
<td>F-P</td>
<td></td>
</tr>
<tr>
<td>2nd heart sound interval</td>
<td>1</td>
<td>F-P</td>
<td></td>
</tr>
</tbody>
</table>

B. **Description of Heart Sounds**

**Note:** You may copy and paste descriptions from the Lesson 17 journal below.

Describe the sounds of each of the following heart valves in terms of intensity (loudness,) pitch (frequency) and duration (length). Begin with the aortic valve and compare others to it. This is a subjective description.

Aortic ________________________________

Pulmonic ________________________________

Tricuspid ________________________________

Mitral ________________________________
II. Questions

1. Relative to the electrical and mechanical events of the cardiac cycle, what do each of the measurements in Table 17.1 represent?

   BPM: 

   Delta T: R-wave to 1st sound ________________________________
   R-wave to 2nd sound ________________________________
   1st to 2nd ________________________________
   2nd sound to next 1st sound ________________________________

   P-P: 1st sound ________________________________
   2nd sound ________________________________

2. Note whether the measured values in Table 17.1 increased, decreased or did not change from the resting value when heart rate increased.

   **Table 17.2**

<table>
<thead>
<tr>
<th>Measured Value</th>
<th>Increased</th>
<th>Decreased</th>
<th>No Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delta T</td>
<td>R-wave to 1st sound</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R-wave to 2nd sound</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1st to 2nd</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2nd sound to next 1st sound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-P</td>
<td>1st sound</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2nd sound</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Explain why each of these would change.

   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. Briefly describe the cause of the turbulence associated with each of the four heart sounds:

   1st sound ______________________________________________________
   2nd sound ______________________________________________________
   3rd sound ______________________________________________________
   4th sound ______________________________________________________

5. Which of the four heart sounds is loudest? Give a reason.

   __________________________________________________________
6. Does ventricular ejection occur during ventricular depolarization or during ventricular repolarization? Refer to your experimental record before you answer, and explain your answer.

7. Which cardiac valves close during ventricular systole? Which cardiac valves close during ventricular diastole?
   Systole: __________________________
   Diastole: __________________________

8. Define “systolic murmur” and give one example of a cause.
   __________________________

9. Define “diastolic murmur” and give one example of a cause.
   __________________________

10. Define “cardiac cycle.”
    __________________________

11. Briefly characterize the relationship between the electrical events and the mechanical events of the cardiac cycle.
    __________________________
III. OPTIONAL Active Learning Portion

A. **Hypothesis**

B. **Materials**

C. **Method**

D. **Set Up**

E. **Experimental Results**

End of Lesson 17 Data Report