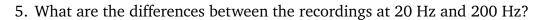
# Week 5 In-Lab

BIOE 320 Systems Physiology Laboratory

# **Setting Up**

### **Changing Sampling Rate**



6. What criteria should be used to establish an appropriate sampling rate?

# **Data Analysis**

## Segment 1

Table 1: Time and beats per minute (BPM) for three cardiac cycles

тарте	11 Time and b	eats per minute (E	1 m) for timee care	nae eyereb	
Measurement	Cycle 1	Cycle 2	Cycle 3	Mean	
$\Delta$ time (s)					
ВРМ					

Table 2: Characteristics of the ECG for cardiac cycle 1

ECG trace	$\Delta$ time (sec)	$\Delta$ amplitude (mV)
P wave		<u> </u>
PR interval		
QRS complex		
T wave		
Q wave to end of T wave (ventricular systole)		
End of T wave to end of P wave (ventricular diastole)		
Peak of P wave to end P wave (ventricular diastole)		

- 3. Is there always one P wave for every QRS complex? If not, what would this signify?
- 4. Compare and contrast the shape (duration and amplitude) of the P and T waves. Give the mechanical and electrical reasons for the differences.

#### Segment 2

Table 3: Time and beats per minute (BPM) while sitting

Table 3. Time and beats per minute (BFW) with sitting					
Measurement	Cycle 1	Cycle 2	Cycle 3	Mean	
$\Delta$ time (s)					
BPM					

2.	Explain the observed heart rate variations in sitting up vs. supine positioning.	De-
	scribe the physiological mechanisms causing these differences.	

### Segment 3

Table 4: Time and beats per minute (BPM) while deep breathing

Measurement	Cycle 1	Cycle 2	Cycle 3	Mean	
Inspiration $\Delta$ time (s)					
BPM					
Expiration $\Delta$ time (s)					
BPM					

2. Are there differences in the cardiac cycle with the respiratory cycle (inspiration vs. expiration)? If so, what is the physiological basis for these differences?

### Segment 4

Table 5: Time and beats per minute (BPM) after exercising

Measurement	Cycle 1	Cycle 2	Cycle 3	Mean
Start of recording $\Delta$ time (s)				
BPM				
End of recording $\Delta$ time (s)				
BPM				

Table 6: Characteristics of the ECG after exercising

Tuble 6. Gharacteribles of the Edd after excreibing				
ECG trace	$\Delta$ time (sec)			
Q wave to end of T wave (ventricular systole)				
End of T wave to end of P wave (ventricular diastole)				
Peak of P wave to end P wave (ventricular diastole)				

2. What changes occurred in the duration of systole and diastole between resting (Table 2) and immediately after exercise? What could account for these changes?