Name:_____

PEP 476: EKG Changes during Exercise

PURPOSE:
To examine the normal EKG changes associated with exercise.

METHODS:
A student volunteer will perform a cycle exercise stress test. Termination criteria will be the standard ACLS relative termination criteria, subject request, or when he reaches 85% of his age-predicted maximal heart rate. A 12-lead EKG will monitor cardiac electrical activity during seated rest, during hyperventilation, during exercise, and during recovery from exercise. An EKG strip will be obtained at each time interval.

ANALYSES:
Enter the subject's age
Enter the subject's gender

Inspect each EKG strip for rhythm, rate, P wave (amplitude), PR interval, QRS interval, ST segment changes, Q-T interval, T wave (amplitude and shape). There will be a lot of noise in the tracings, so use the best lead for the calculations.

Make a table similar to the one below to enter data:

	Rhythm (R/IR)	Rate	P wave ampl	PR int	QRS int	QRS ampl	ST seg	Q-T int	T wave ampl
Rest									
Hyperventilation									
Ex Stage 1									
Stage3									
Last stage									
3rd min recovery									

Interpretation and Comments:

Name:_____

QUESTIONS/DISCUSSION:

1. Quickly examine the EKG strip. Do you see any gross (abnormal) changes in rhythm or waveform? What do you see?

2. Assume you see something really usual in leads I, III, and AVf. Which region of the heart do you think is involved? (septum, anterior, lateral, inferior)?

3. Examine the PR interval. Did it change during hyperventilation, exercise and recovery? Are these changes normal? What would a prolonged PR interval indicate?

4. Examine the QRS interval. Did it change during hyperventilation, exercise, and recovery? Are these changes normal? What would a prolonged QRS interval indicate?

5. Did the QRS amplitude change between end of exercise and recovery? Is this normal?

6. Examine the T waves. Did the shape change during exercise and recovery? What would tall or peaked T waves, T wave inversion, or T-wave alterans indicate?

7. Do you see ST segment depression or elevation? Are the changes within normal limits? What would ST segment depression or elevation indicate?

8. Were U waves present during the test? What could they indicate?

9. Were the QT intervals normal when corrected for heart rate? (see table in notes or Huff pg 23). Did the QT interval shorten or lengthen during exercise? Why is it a concern if the QT interval lengthens during exercise?

10. Was there a sinus arrhythmia? If so, did it get worse or better during hyperventilation or exercise? Which part of the sympathetic nervous system (symp/parasymp) is believed to cause sinus arrhythmia?

11. Did you notice any abnormal rhythms or beats? Can you identify what they are from what you learned last year in EKG class? Should we have stopped the exercise test?

12. Overall, from what you've learned so far about normal EKG changes during exercise, would you interpret the results from this subject as a positive (abnormal) stress test?