Lilia Sanchez

Laboratory 11-CARDIOVASCULAR MEASUREMENT

October 27, 2023

PURPOSE: DIVER REFLEX USING ECG

PROCEDURE:

Procedure:

1. Fill a large tub with ice cold water.

2. Select one student volunteer and hook him/her up to the computer.

3. Recordings of a Lead II ECG and pulse pressure from a thumb will be obtained with the student at rest for a baseline measurement.

4. Recordings will then be taken with the student holding his/her breath for at least 20 seconds, hopefully for 30 seconds.

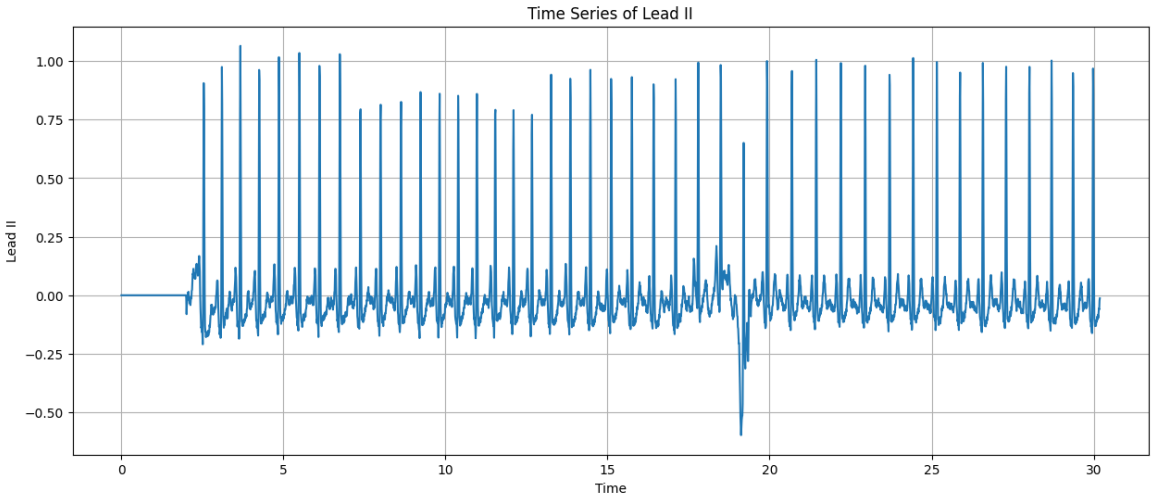
5. The experiment will be repeated with the student holding his/her breath and placing his/her head into a bucket of ice-cold water.

6. Include copies of the results in your lab report.

7. Evaluate the three sets of data in terms of the bradycardia and vasoconstriction. What are the adaptive advantages of these reflexes?

RESULTS:

A) HOLDING BREATH WITHOUT SUBMERSION



B) R WAVES BETWEEN 25 AND 30 SECONDS (PRIOR TO SUBMERSION)

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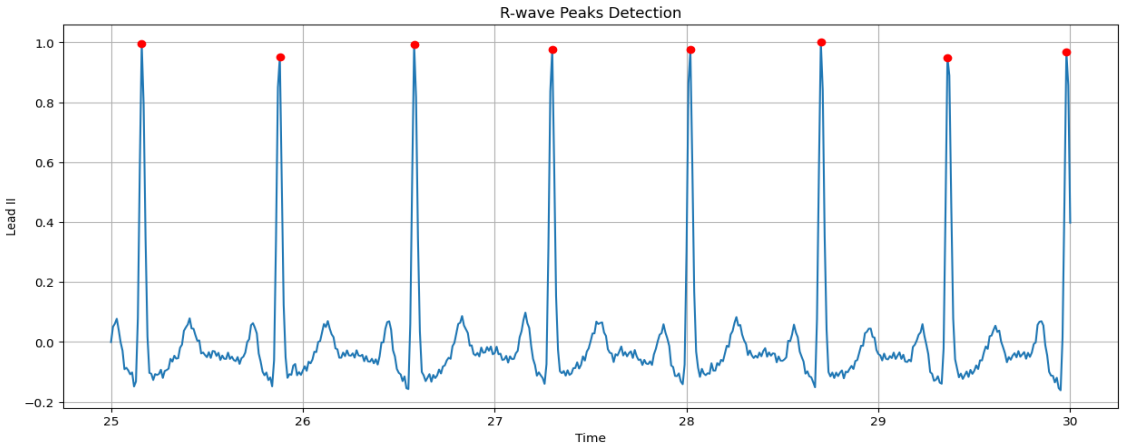
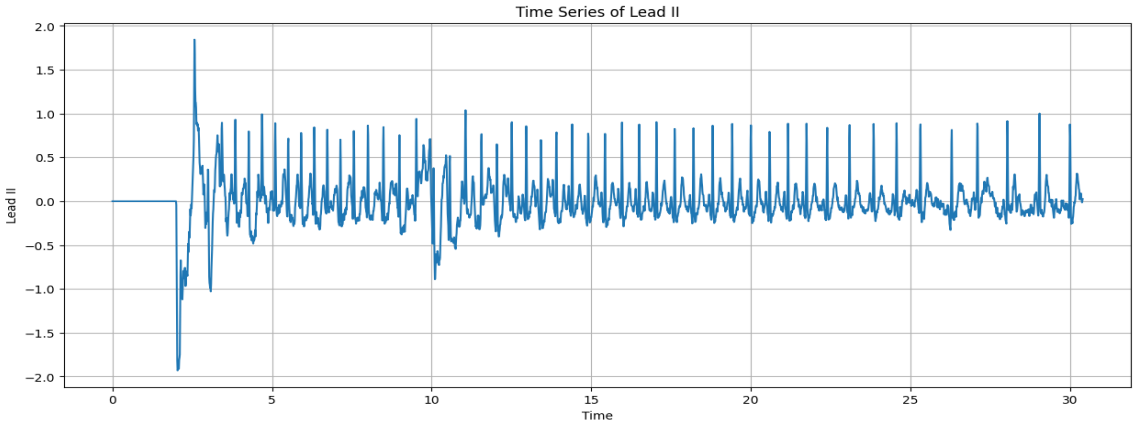
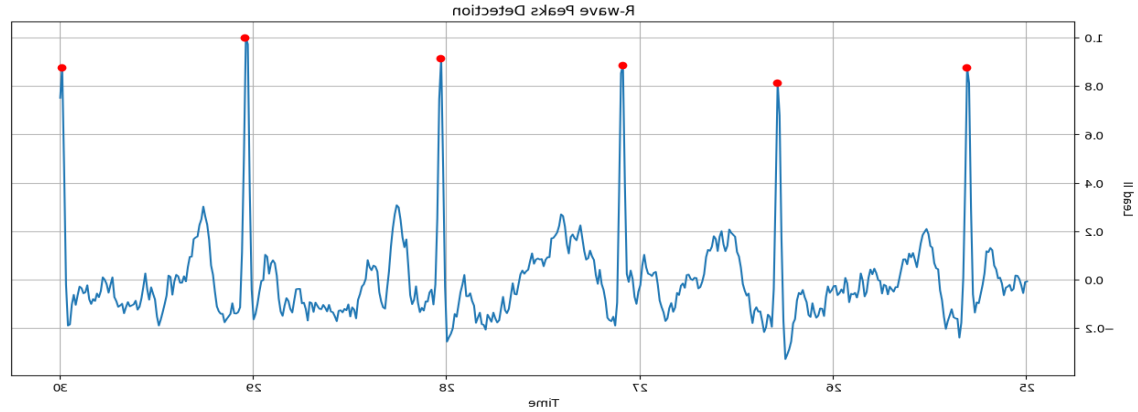


C) FACE SUBMERGED IN ICY WATER



D) R WAVES BETWEEN 25 AND 30 SECONDS (AFTER SUBMERSION)



E) HOLDING BREATH WITH SUBMERSION

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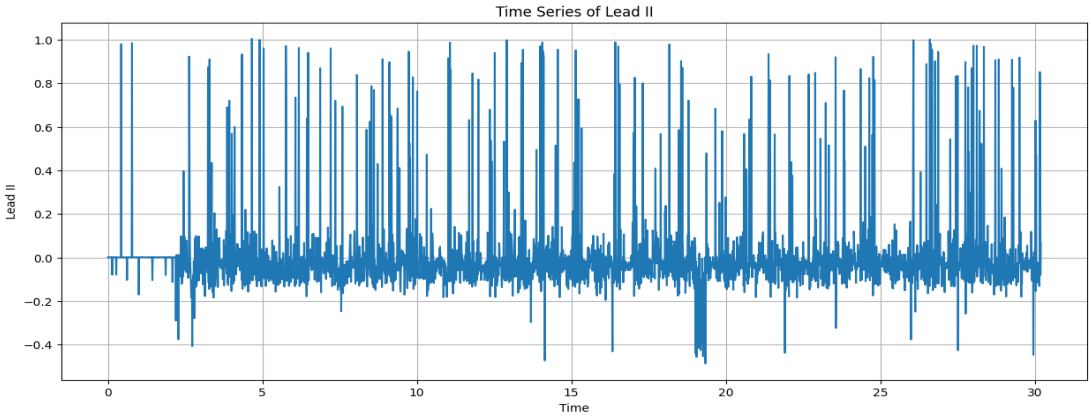
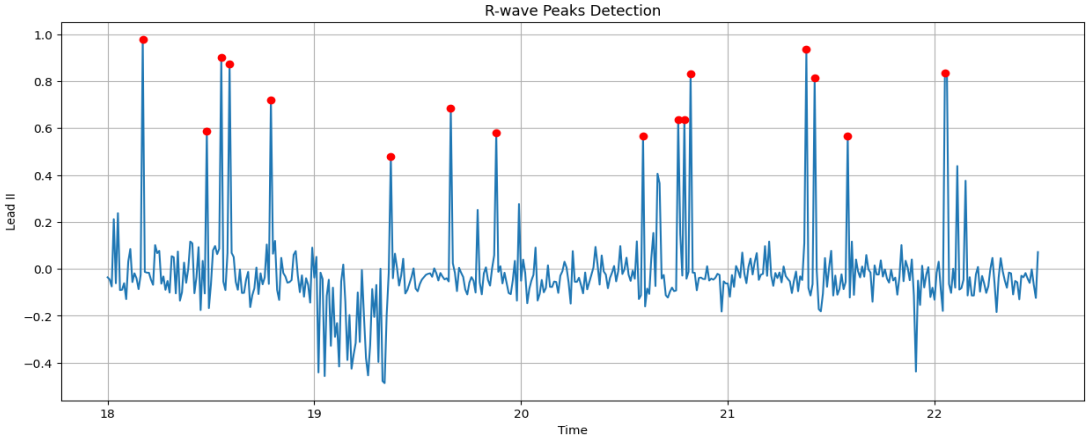
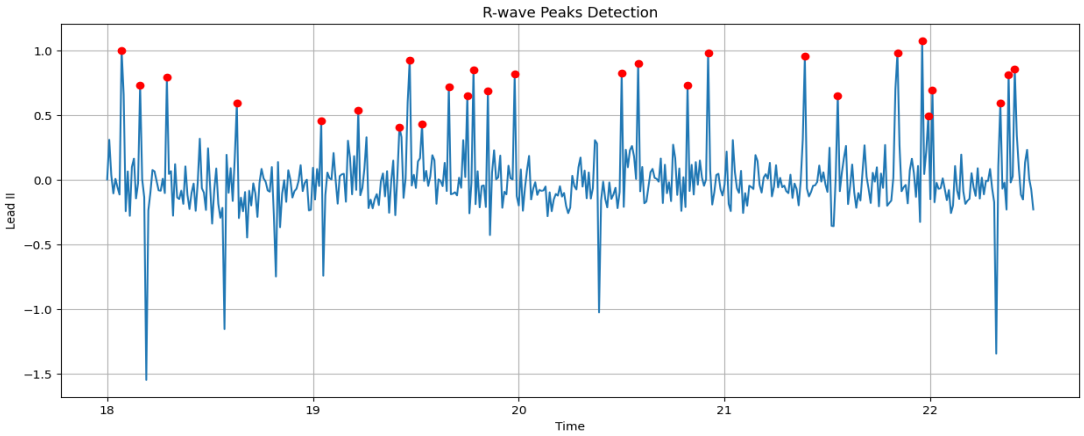


F) R WAVES BETWEEN 18 AND 22.5 SECONDS



G) HR WAVES BETWEEN 18 AND 22.5 SECONDS



H) DATA FROM FACE SUBMERGED IN ICY WATER

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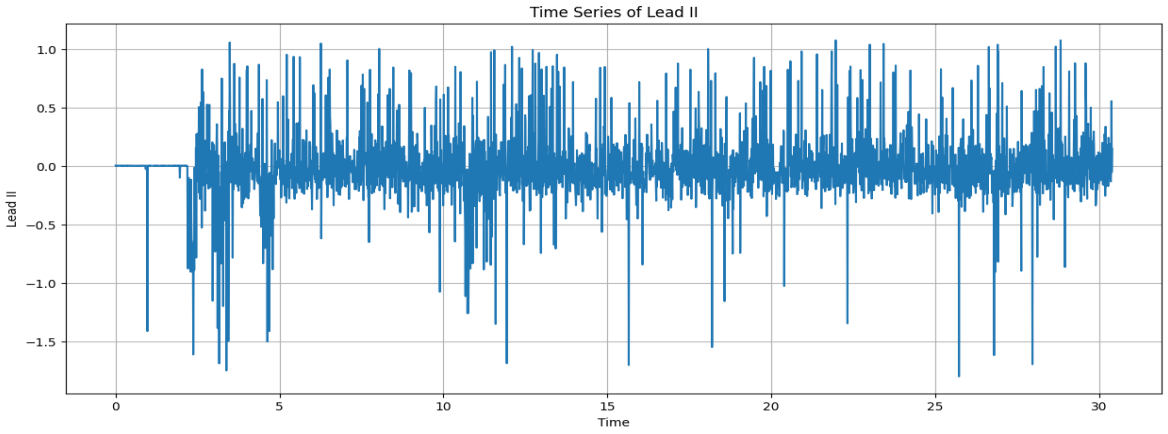
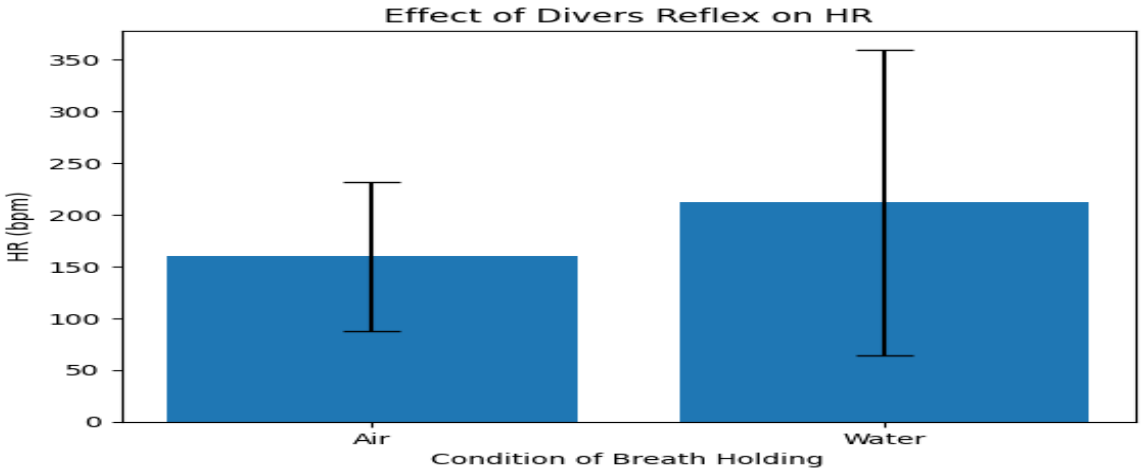


I) DATA FROM COMBINATION OF HEART RATE AND HOLDING BREATH



DISCUSSION:

IN REVIEW OF THE DIVER RESPONSE RESULTS, WHILE THE PARTICIPANT HOLDS HIS BREATH, PRIOR TO SUBMERSION, THE HEART RATE REFLECTS A CONSISTENT SINUS RHYTHM THROUGHOUT THE 30 SECONDS, WHICH IS CONSIDERED TO BE THE BASELINE FOR THIS EXPERIMENT. UPON THE SUBJECTS FACE BEING SUBMERGED INTO THE ICY WATER, THE HEART RATE BECOME BRADYCARDIC RATHER QUICKLY BY 10-30%, AT THE POINT IN

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WHICH THE FACE MAKES CONTACT WITH THE COLD WATER, THEN CAUSING VASOCONSTRICTION.

CONCLUSION:

THE EFFECTS OF THE DIVER RELFEX PRESENTS SUBJECT TO BECOME BRADYCARDIC AT SUBMERSION AND THE BODY THEN RESPONDS WITH PERIPHERAL VASOCONSTRICTION TO THE BODIES EXTREMITIES, TO MINIMIZE HEAT LOSS. THIS REDUCTION OF BLOOD FLOW HELPS CONSERVE HEAT AND MAINTAIN CORE BODY TEMPERATURE. VASOCONSTRICTION IS WHAT CONCLUSIVELY ALLOWS THE SUBJECT TO MAINTAIN A LONGER TIME UNDERWATER.