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Exercise 6: Cardiovascular Physiology: Activity 3: Examining the Effect of Temperature on Heart Rate Lab Report

Pre-lab Quiz Results

You scored 100% by answering 4 out of 4 questions correctly.

1. Organisms that usually maintain the same internal body temperature in spite of environmental temperature changes are
You correctly answered: c. homeothermic.
2. The general name for the process that maintains the internal body temperature in humans is
You correctly answered: a. homeostasis.
3. The electrolytes in a Ringer's solution are required to
You correctly answered: b. provide for autorhythmicity.
4. An internal body temperature that is above the normal range is
You correctly answered: b. hyperthermic.

Experiment Results

Predict Question:

Predict Question 1: What effect will decreasing the temperature of the Ringer's solution have on the heart rate of the frog?

Your answer : b. decrease in heart rate

Predict Question 2: What effect will increasing the temperature of the Ringer's solution have on the heart rate of the frog?

Your answer : c. increase in heart rate

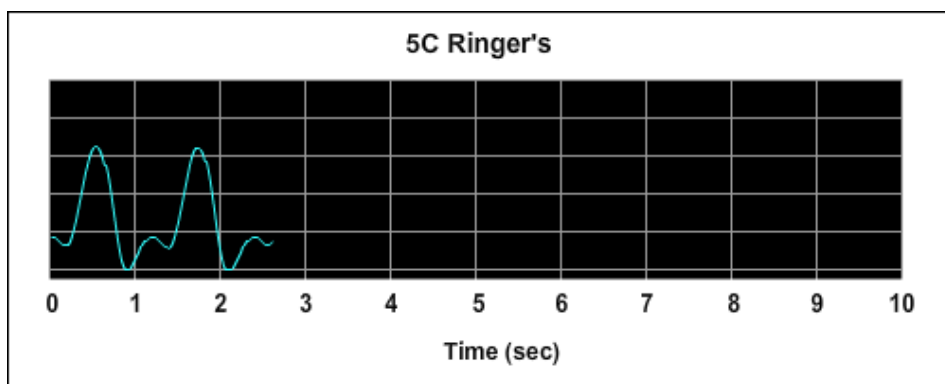
Stop & Think Questions:

What effect do you think a fever of 104°F would have on heart rate?

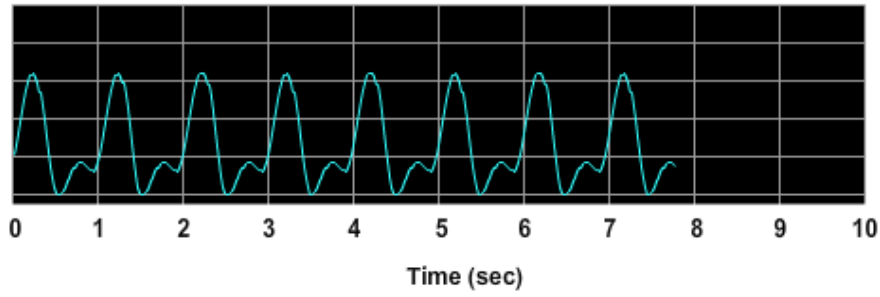
You correctly answered: c. increase in heart rate

Experiment Data:

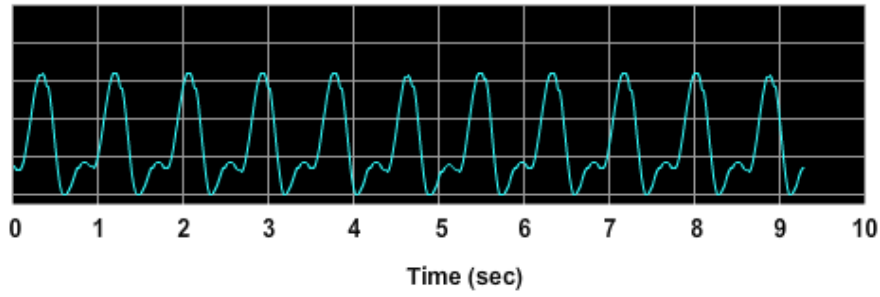
Solution	Heart Rate
23°C Ringer's	62
5°C Ringer's	52
32°C Ringer's	73



23C Ringer's



32C Ringer's



Post-lab Quiz Results

You scored 100% by answering 4 out of 4 questions correctly.

1. In the 5°C Ringer's solution, the frog heart

You correctly answered: c. beat slower than baseline.

2. In the 32°C Ringer's solution, the frog heart

You correctly answered: b. beat faster than baseline.

3. If the human heart were experiencing hypothermia, what do you think would be the effect on heart rate?

You correctly answered: c. a decrease in heart rate

4. Without the Ringer's solution

You correctly answered: d. spontaneous cardiac action potentials would not occur.

Review Sheet Results

1. Explain the effect that decreasing the temperature had on the frog heart. How do you think the human heart would respond? How well did the results compare with your prediction?

Your answer:

The colder temperature the heart rate is slower. A frog is a poikilothermic animal (has no internal homeostatic regulating mechanism) and its body temperature will change depending on external environment. Humans are homeothermic (has internal homeostatic regulating mechanism) and maintains an internal temperature of 35.8-38.2 degrees C even when the external environment changes. I was correct in my prediction that the heart rate of the frog would decrease.

2. Describe why Ringer's solution is required to maintain heart contractions.

Your answer:

The Ringer Solution also know as Ringer's irrigation consist of essential electrolytes (calcium, choloride, sodium, potassium, and magnesium) in a physiological solution and is required to keep the isolated, intact heart viable.

3. Explain the effect that increasing the temperature had on the frog heart. How do you think the human heart would respond? How well did the results compare with your prediction?

Your answer:

The hotter the temperature, the higher the heart rate. The human heart rate would increase but may not be able to maintain homeostasis during extreme external temperature condition. I was correct in my prediction that the frogs heart rate would increase.