

Name: Answers
Quiz

Dr. Reichler's Bio 301 Fall 2005 pre-exam#4

1. Why would someone who has been confined to a bed for an extended period of time be in danger of breaking a bone soon after returning to being ambulatory?

Bones respond to use by increasing or decreasing their structure. Disuse leads to a decrease in bone material thereby elevating the risk of a break.

2. Why are two neuron signals necessary for movement?

Since bones can only contract, there are two muscles required for a range of motion. To accomplish movement an excitatory signal is sent to one muscle causing contraction, and an inhibitory signal is sent to the other muscle inhibiting contraction.

3. After death calcium leaks into muscle cells. Would muscles become rigid or flexible? Why?

Rigid. The presence of calcium would move tropomyosin out of the way allowing myosin and actin to come into contact, but the lack of ATP will not allow contraction, it will simply lock the muscles in place.

4. Why is good blood flow critical for muscle contraction?

ATP is needed for muscle contraction, and oxygen must be delivered to the muscle cells for continued ATP production via cellular respiration.

5. In Yellowstone NP, why do wolves kill more prey than grizzly bears?

Wolves hunt in packs that can kill larger prey, while grizzlies live alone and that limits their ability to hunt.

6. What limits the number of wolves that can survive in Yellowstone NP?

Probably space. Each pack needs a certain territory, and as wolf numbers increase, pack fights for territory break out sometimes leading to the death of wolves.

7. What two other species have benefited from the re-introduction of wolves to Yellowstone NP?

Any two of: Grizzly bears, coyotes, and ravens have been able to feed on wolf-killed prey. Cottonwoods, willows, and other vegetation has benefited from wolf-induced changes in herbivore behavior that have kept herbivores from denuding riparian areas. Fish and other aquatic animals have benefited from the increased riparian vegetation.

8. What evidence suggests that wolves are affecting elk behavior?

While elk numbers have decreased overall since the re-introduction of wolves, herbivory in low-risk, shallow riparian zones has not changed. But herbivory in high-risk, deep riparian zones has decreased. It seems that elk are avoiding high-risk areas due to the risk of being attacked by wolves.