Stimulated diving and heart rate

1.) If the peripheral blood vessels were constricted without making any other further adjustments in the cardiovascular system then the blood vessels could potentially burst due to the built up pressure and no further decrease in heart rate. The vessels would be smaller due to the constriction but the heart would continue to pump the blood with the same or greater force. The dive response prevents this from happening because it lowers the heart rate so that a lesser quantity of blood is pumped out through the constricted arteries.

2.) Order of animals based on how well developed the dive response should be, with reasoning:

1.)Tadpole-should not have an exaggerated diving response because it has gills and lives in an aquatic environment until adulthood, in which the gills turn to lungs.

2.)Frog-the frogs diving response should be small, because even though it does not have gills, it can still absorb oxygen in water through its skin. Many frogs also spend long periods of time in water, such as hibernation.

3.)Northern Freshwater Turtle-even though the turtle is a terrestrial animal, it spends very long periods of time in the water

4.)Alligator-alligators are large and require a lot of oxygen, therefore their diving response should be greater then the previous animals even though they live in water or near it.

5.)Muskrat- is a semi aquatic animal, and dives in search of food such as crayfish mollusk, fish and small turtles.

6.)Humans: are completely terrestrial, and have are of large size, which would require a large amount of oxygen consumption.