**CASE STUDY**

One of the main themes throughout our textbook is **Homeostasis**. It is a very important concept in the study of anatomy and physiology.

The case study will allow us an opportunity to meld our lecture and lab studies with this tenet of anatomy and physiology. The case study is a useful tool which will help broaden our knowledge and appreciation of a complex topic. Our case study is “The 2000-meter Row: A Case in Homeostasis” by Nathan Strong of the New Hampshire Technical Institute.

The case study will account for 5% of your lecture grade. It is to be completed in it’s entirely by the end of the semester, at which time we will have a large-group discussion about what we all took away from the study.

We will touch base at various check-points during the semester in order to allow you an opportunity to share your progress with the class.

The criteria by which you will be graded to earn the 5% are as follows:

1. **Develop a** **Glossary** of these twenty terms as they relate to anatomy, physiology, or homeostasis.

Nitrogenous wastes Meter Pain Light-headed

Burning muscles Hydrated Respiratory rate Energy

Body System Breathing Celsius Muscles

Response Sweating Fahrenheit Heart rate

Hemoglobin Trance Shoulder blades Body temperature

1. Provide a good **Explanation** **of Homeostasis**. (Provide a good definition. An illustration is also required with a caption that is accurate. Detail the elements necessary for homeostasis to occur. Relate some of the body’s mechanisms for controlling this phenomenon).
2. Using the data from the story, **Set Up a Table or Chart** that chronicles the major physiology check-points of the race. This might provide a more visual representation of what happened during and after the race.
3. **Answer the Case Study Questions**.

At the Start

1. What is responsible for raising Jim’s heart and respiratory rate and stimulating sweating just before the face?
2. Why is the sympathetic division of the autonomic nervous system active just before the race?

One Minute In

1. Rowing full speed is putting new demands on Jim’s body. What are these new demands and how does the body respond to them?
2. Why do Jim’s muscles feel like they are burning?

At the Halfway Mark

1. Since the end of the first minute, Jim has decreased the demands his muscles are making. How has he done this? And why has he done this?

At the Finish

1. What changes have occurred to his blood chemistry since the start of the race? Think about glucose levels, pH, lactate levels, creatinine levels, and temperature.

Back At the Dock

1. What changes have occurred in the last 10 minutes to allow Jim’s heart and respiratory rates to come down?
2. Why is Jim four pounds lighter than at the start of the race?
3. **Write a Summary** of the events of the race with what you have learned about Homeostasis. The Summary should be at least one page in length.

The Case Study is due on **May 11, 2013**. Your participation in the group discussions is part of your grade on this assignment. The report should be typed (front sides only). Any diagrams or illustrations other than those you generate should be a cut and paste operation. Your work should cite a minimum of three references. These should be written following MLA format. The work is only acceptable in a folder.