

Anatomy and Physiology I

Learning Guide: Myology

Overview – The study of muscle tissue, or myology, will build upon previous topics presented in our study of cytology, metabolism, homeostasis, and others. This module will begin with a look at the histology of muscle tissue. Following this, we will consider the physiology of how muscles contract (the “sliding filament theory”), and what occurs at a neuromuscular junction. Lastly, the energetics involved in sustained muscle contraction during strenuous activity will be discussed.

Learning Objectives

- Identify that three primary classifications of muscle tissue.
- Describe the cytology of a myofiber, as well as the chemical makeup of contractile proteins.
- Explain the “Sliding Filament Theory,” or how a muscle contracts.
- Describe the metabolic processes during strenuous exercise that leads to a creatine-phosphate deficiency and an oxygen debt.
- Describe how muscle tone is maintained.

Getting Started – The module covering myology is of moderate length. The cytological considerations of a muscle cell will lead directly to the physiology of muscle contraction. You will undoubtedly want to know the physiology of muscle contraction well. The energetics of muscle contraction will build upon your understanding of Glycolysis and Cellular Respiration. You should find the process logical. In all cases, make your study visual. I have put together detailed handouts to walk you through the topics.

Exam – The exam uses standard exam questions to evaluate this module; however, there are two guided essays:

1. Muscle Energetics. It will be written out, but it is presented as a *Matching*.
2. How Muscles Contract “Sliding Filament Theory.” It will be written out, but it is presented as a typical *Fill in the Blank*.

Final Point – You should find that there is a flow or rhythm to the topics under discussion here. They are almost like stories. Learn the two “stories” well.