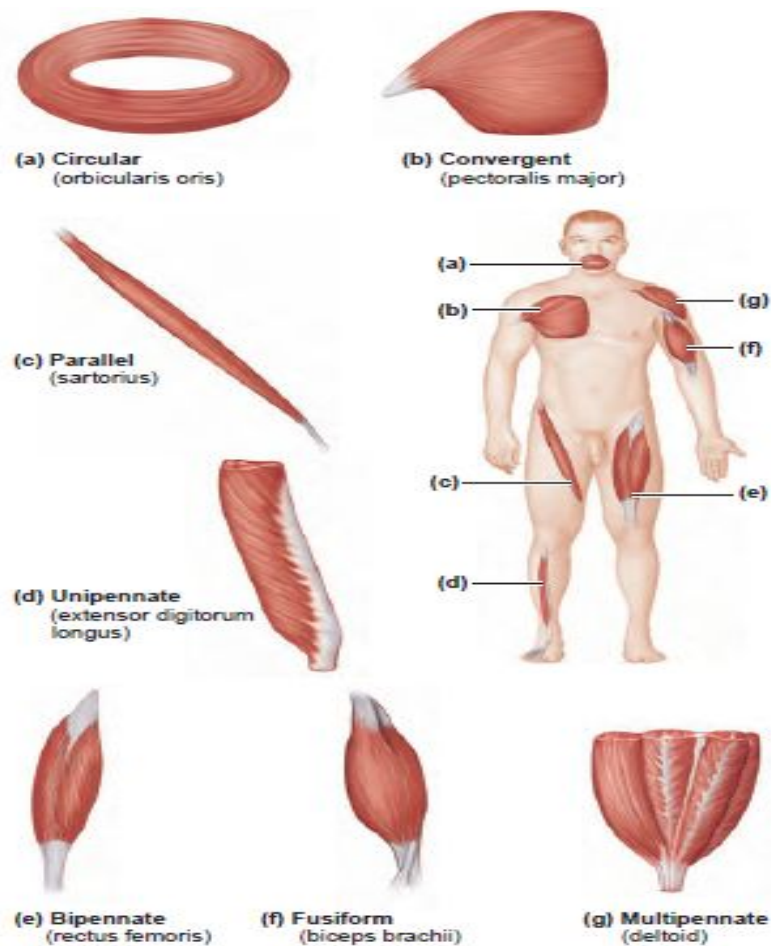


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Use of combined characters for muscles naming

Often, several criteria are combined in the naming of a muscle. For instance, the name *extensor carpi radialis longus* tells us the muscle's action (extensor), what joint it acts on (*carpi* _wrist), and that it lies close to the radius of the forearm (*radialis*); it also hints at its size (*longus*) relative to other wrist extensor muscles. Unfortunately, not all muscle names are this descriptive.



Patterns of fascicle arrangement in muscles .

Muscle Mechanics

Name the common patterns of muscle fascicle arrangement and relate these to power generation. Define lever, and explain how a lever operating at a mechanical advantage differs from one operating at a mechanical disadvantage. Name the three types of lever systems and indicate the arrangement of effort, fulcrum, and load in each. Also note the advantages of each type of lever system.

Arrangement of Fascicles

All skeletal muscles consist of fascicles (bundles of fibers), but fascicle arrangements vary, resulting in muscles with different shapes and functional capabilities. The most common patterns of fascicle arrangement are circular, convergent, parallel, and pinnate. The fascicular pattern is **circular** when the fascicles are arranged in concentric rings (Figure 10.1a). Muscles with this arrangement surround external body openings, which they close by contracting. A general term for such muscles is *sphincters* (“squeezers”). Examples are the orbicularis muscles surrounding the eyes and the mouth. A **convergent** muscle has a broad origin, and its fascicles *converge* toward a single tendon of insertion. Such a muscle is triangular or fan shaped like the pectoralis major muscle of the anterior thorax. In a **parallel** arrangement, the long axes of the fascicles run parallel to the long axis of the muscle. Such muscles are either *straplike* like the sartorius muscle of the thigh, or spindle shaped with an expanded belly (midsection), like the biceps brachii muscle of the arm. However, some authorities classify the spindle-shaped muscles into a separate class as **fusiform muscles**. This is the approach we use here.