What determines how much force a muscle can produce?
What is the force response due to length vs. velocity?
Hill Muscle Model
(Musculo-tendon model)

CEC: Contractile Element Component
PEC: Parallel Elastic Component
SEC: Series Elastic Component
Sarcomere level
Figure 7.13  Three-dimensional plot showing the change in contractile element tension as a function of both velocity and length. Surface shown is for maximum muscle activation; a new “surface” will be needed to describe each level of activation. Influence of parallel elastic element is not shown.
Figure 2.7.27  Schematic illustration of the difference between theoretical estimation and experimental determination (e.g., Edman, 1979) of the force-velocity relationships.
Fig. 1.10. Hill's force-velocity curve. The shortening part of the curve was calculated from eq. (1.4) with $k = 0.25$. The asymptotes for Hill's hyperbola (broken lines) are parallel to the $T/T_0$ and $v/v_{\text{max}}$ axes. Near zero shortening velocity, the lengthening part of the curve has a negative slope approximately six times steeper than the shortening part. The externally delivered power was calculated from the product of tension and shortening velocity.