



FIGURE 36-4

Tension developed during contraction in whole muscle depends upon its length.

A. Measurements of tension are taken at a series of fixed muscle lengths while stimulating the muscle nerve at different frequencies. The motor serves to pull the muscle and maintain it at a series of set lengths, where a long train of stimuli is applied to the muscle nerve. The steady tension at each of these lengths is recorded by the tension transducer (strain gauge).

B. Length-tension relationship in stimulated muscle. The dotted line is the passive stiffness of the muscle. The solid line is the length-tension curve for the same muscle when it is stimulated to produce maximal tetanic tension. The amount of tension increases as the muscle is stretched. For lengths greater than L_{pass_0} the total tension (solid line) is the sum of the active (dashed line) and passive components (dotted line).

