

TETANIC TENSION REDEVELOPMENT AFTER A RELEASE IN STRIATED MUSCLE : AN HYPOTHESIS.
G. Maréchal & L. Plaghki. Labo. Physiol. Générale, UCL, B-1200 Brussels, Belgium.

Many authors have shown that the isometric tetanic tension is not a monotonic function of muscle length : it depends on previous shortenings that have occurred during the contraction. We propose a model which accounts quantitatively for many facts. During a tetanic contraction, the actin monomers in the I-band are not strained in the same way as those in the A-band; the strained actin in the I-band does not affect the tension production as long as the contraction remains isometric; when a shortening occurs 'new' actin monomers enter the overlap region; their chemo-mechanical transduction is impaired in such a way that the force (F) generated in this new overlap region is subnormal or even zero. Our experiments indicate that F is proportional to the magnitude of the shortening, and decreases with the third power of the tension maintained during the shortening.