Skeletal muscle is a highly plastic tissue, which can adapt to the different functional demands placed upon it. The present study aimed to evaluate the effects of 4 weeks of chronic low frequency (10 Hz) electrical stimulation on the whole muscle contractile characteristics of the tibialis anterior muscle, of 5 male, chronic spinal cord injured subjects. Training was performed 5 days per week starting at 2hrs total stimulation per day rising to 6 hrs, with a duty cycle of 5s on 5s off. The muscle was stimulated at a current intensity that generated approximately 70% of maximal tension (at 10 Hz), with the ankle joint fixed in a apparatus, at an angle of 10° plantar flexion to generate loaded isometric contractions. The other tibialis anterior served as control. Muscle twitch time to peak tension became significantly prolonged following training (64±22 vs. 90±38ms, mean ± SD, P<0.05). No significant changes in maximum force production evoked at 10, 20, 50 and 100 Hz were observed following training. Muscle fatigue resistance (tested using 2s maximal contractions repeated every 3s for 5min at 20 Hz) increased following training (% decline = 46±27 vs. 24±26, p<0.05). The contractile data suggest a change towards a slower contacting, more fatigue resistant muscle following training.