Previous studies have shown that spinal rats that experience constant current AC shock whenever one leg is extended (controllable shock) will learn to maintain that leg in a flexed position to avoid shock delivery (Master rats). Conversely, spinal rats that receive the same type of shock independent of their own leg position (uncontrollable shock) will fail to learn (Yoked rats). When all subjects are later tested with controllable shock, Master subjects will rapidly reacquire the prolonged flexion response. Previously Yoked subjects, on the other hand, will not (learning deficit). Subsequent neurobiological investigations have concluded that both the learning and learning deficit are dependent on innervation from the sciatic nerve and the activation of AMPA, NMDA, NK1, and NK2 receptors. Research examining other types of spinal plasticity has demonstrated that electrical stimulation of the sciatic nerve can induce central sensitization. We have suggested that central sensitization may be responsible for the activity-dependent changes we observe. However, it has been difficult to make comparisons with other preparations examining central sensitization because they typically utilize DC pulse stimulation, while we employ AC constant current shock. The present experiment examined the consequences of 6 min of uncontrollable DC pulse stimulation (100Hz) of the sciatic nerve on instrumental learning in spinal rats. Trains of stimulation were provided for 80 msec on a variable interval schedule (0.2-3.8 s). Following sciatic stimulation rats were tested on the contralateral leg with controllable shock to measure their capacity for instrumental learning. Results demonstrated that unshocked controls, as well as subjects that received 20V of sciatic stimulation, were capable of maintaining a prolonged flexion response at test. Subjects that received 30V of sciatic stimulation showed an intermediate amount of learning, while subjects that received 40V demonstrated a learning deficit. Experiments in progress are examining the impact of varying shock frequency manipulations and the role of various afferent fiber types.