ABSTRACT

Driven Gait Orthosis (DGO) are commonly used in gait rehabilitation. These devices commonly lack an actuator at the ankle. As a result the ankle trajectories often differ considerably from those seen normally. The question arises whether these abnormal trajectories affect the phase-dependent modulation of cutaneous reflexes from the foot. To investigate this, the sural nerve was stimulated electrically at the end of the swing phase in subjects walking "passively" in a DGO. It was found that the tibialis anterior was less active at end swing during this type of walking and that the reflex induced suppression was absent. It is concluded that the normally occurring suppression does not depend on interactions from other sensory sources (since these are still present in "passive" walking). Instead the suppression is likely to depend on cortical activations. Training of these cortical activations may be reduced in current DGO walking and therefore it is argued that normalization of the ankle trajectory in future designs of DGO’s could have a beneficial effect.