Case Study

Prior to the initiation of therapy, pt had very poor tolerance to light touch due to hypersensitivity.

PERFORMED AT:
Performance PT and Wellness

DIAGNOSIS:

Pt is a 62-year-old male who presents to outpatient PT s/p left transhumeral amputation after a farming accident 2 weeks prior. Pt's mechanism of injury was the result of having his upper extremity entangled in a self-propelled forage chopper.

TREATMENT AND OUTCOME:

Patient reported substantial reduction in the need for pharmaceutical intervention within 2 weeks of using the Neubie resulting in improved tolerance to sleep and pain at rest as well as improved functional ROM and strength enabling him to use mechanical driven UE prosthesis without surgical repair of rotator cuff tear. Treatment initially included the use of Neubie to decrease the tone of pectoralis and surrounding residual limb, improve ROM throughout the entire left glenohumeral joint, and progressed to scapular and deltoid strengthening. The intervention also included the use of the Neubie using frequency-specific microcurrent settings to assist in decreasing inflammation of the nerves in his residual limb. Treatment is ongoing however has been seen 2-3 times per week starting 12 days postoperatively and is still ongoing. At the time of this report, pt is now able to use his prosthesis to complete most all ADL's and is returning to using his UE to return to manual labor duties.

As a result of the mechanism of the injury which included a traction injury of his upper extremity, pt had a traumatic amputation with targeted muscle

innervation nerve transfers as well as full-thickness supraspinatus tear, partial thickness tear ofthe infraspinatus. The use of Neubie including the Neufit method was integral in decreasing post-trauma and phantom limb pain, improving ROM and functional strength as well as improving motor function resulting in the ability to effectively use a mechanical prosthetic arm within 4 months.

CLINICAL FINDINGS:

Within 2 weeks of therapy, patient noted that he was able to cut his need for Gabapentin by 50%, was able to get a full night's rest. Within 6 weeks his phantom limb pain was at least 60-70% resolved. Patient was able to progress to UE strengthening with his mechanical prosthesis and his ROM was adequately functional to use his involved UE to don and doff clothing, his hat, and able to use his arm for many activities on his farm.

DISCUSSION:

Patient's response to treatment was very favorable and resulted in immediate improvement in his resting pain and within several weeks of therapy he was able to eliminate the need for narcotic pain medication and within several months is nearly off of Gabapentin. Patient's ROM significantly improved and was able to progress to strengthening within a few weeks after amputation. The ability to strengthen a muscle can be done by mechanically overloading the joint, metabolically inducing hormone release, or neurologically through direct current. As a transhumeral amputee both mechanically overloading or metabolically inducing strength were not good options however a neural approach to drive both motor control and scapular strength was very appropriate and resulted in a successful progression to the use of a mechanical prosthesis within three months of his amputation and did not require repair of his rotator cuff tears. This individual continues to demonstrate ongoing improvement in his motor control and is hoping to progress to use a hybrid myoelectric prosthetic to improve his ability to complete fine motor tasks.

PATIENT PERSPECTIVE:

This patient reports that he is overwhelmingly happy with his progress and feels as though he is able to do many tasks he never thought he would be able to do. He is hoping that he will be able to progress to either a hybrid or a complete myoelectric prosthetic. He notes that he feels his residual limb and scapular muscles are far stronger than he thought possible with use of the Neubie. His wife notes that she feels very fortunate that they were able to utilize this innovative technology so close to home.