

# CASE STUDY

51 y/o Female with low back pain with right lower extremity radiculopathy including right lower extremity weakness and right foot drop.

**PERFORMED BY & LOCATION:**  
*Philip Hixson PT, MSPT, DPT, TPS with treatments performed at the Keystone Functional Restoration Program in Sacramento California using the NeuFit method.*

**KEY WORDS:**  
*51-year-old female physician with chronic low back pain and significant right foot drop.*



## TREATMENT AND OUTCOME

Ms. M performed 12 NeuFit sessions over the course of 6 weeks at the Keystone Functional Restoration Program in Sacramento, California using the Neubie device for neuromuscular re-education and strengthening. Of note, prior to use of the Neubie device a complete neurological exam was performed by her physical therapist, and it was concluded that the patient's right lower extremity weakness and right foot drop was likely not caused by a structural abnormality, cancer, infection, blood clot or other medical conditions that require immediate medical intervention. Once this was complete the NeuFit mapping process was used to identify sites of neurological dysfunction in her low back and right lower extremity. The areas that appeared to be most affected were her right hamstrings, right quadriceps, and right anterior tibialis. Once these spots were located Ms. M. was set up on the Neubie device

and began performing various movements and corrective exercises geared towards stimulating the affected musculature in her right leg. The exercises performed included active assisted and active range of motion with right ankle dorsiflexion/plantar flexion, right ankle alphabet, right knee extension (both SAQ/LAQ), right knee flexion (both supine and prone), right SLR and right single leg balance.

After her first session Ms. M. reported feeling an immediate difference in her ability to actively dorsiflex her right foot. She reported a residual affect while walking after the Neubie device was detached for about 10 steps in the treatment office. After those 10 steps her right foot rapidly fatigued, but this was to be expected as she had a 3-year history of right foot drop. By the end of the 2nd week, Ms. M's residual affect while walking was for approximately 10 minutes and her right foot slowly fatigued. By the end of week 4, Ms. M's right hamstrings strength improved from 2+/5 to 3+/5. Her right quadriceps strength improved from 2/5 to 3+/5 and her right anterior tibialis strength improved from 1+/5 to 3+/5. Beyond that, by the end of week 4, the residual affect while walking was approximately 30 minutes. By her 12th visit (end of week 6) her right lower extremity strength improved to 4 to 4+/5 for all muscle groups. Her gait pattern significantly improved with appropriate gait speed, step sequencing and overall balance. It is also worth noting that as her gait pattern normalized, her low back pain significantly improved.

## **PATIENT INFORMATION/DIAGNOSIS**

Prior to her Neubie treatments, Ms. M had significant tension and tenderness to palpation in her bilateral lower back and into her right gluteal and right lateral hip region. In an attempt to relieve this pain, she received two epidural steroid injections from her treating physician. After her second injection she began to present with significant right lower extremity weakness, and right foot drop. After months went by without improvement the doctor that provided the injections told her that there was nothing he could do about her right leg weakness, and she would simply have to wait for her strength to return. Unfortunately, this weakness continued for almost three years and during that time Ms. M. was evaluated and unsuccessfully treated by multiple doctors, two separate physical therapists, a chiropractor, and an acupuncturist. Ms. M. reported that nobody had any answers for her as to why her right leg continued to be weak. During her first day in the Keystone Functional Restoration Program her gait pattern was very slow, unsteady, with a steppage gait due to an inability to dorsiflex her right ankle to clear her right toes from the ground. Her right anterior tibialis strength was 1+/5, right quadriceps strength was 2/5 and her right hamstring strength was 2+/5.



## DISCUSSION

Ms. M's was extremely frustrated with her ongoing low back pain and continued right lower extremity weakness over the course of 3 years. She failed to see improvement with traditional physical therapy, chiropractic care, acupuncture sessions or other medical interventions. It goes without saying that she was very pleased with the treatments she received and the outcome of those treatments as she has finally returned to a normal functional life. Prior to her injury she was a physician treating in the anesthesiology department of a local hospital. After her low back injury, she was forced to quit her job and go on disability. Today she is back to work and enjoying life with her husband and teenage age children. She described her experience in this testimonial:

*"For almost 3 years my life was a nightmare. I suffered from low back pain and right leg weakness that no doctor or treating practitioner had any answers. Not only was I not able to work, but I wasn't able to walk. I wasn't able to do so many things that I used to take for granted, especially the activities I found to be enjoyable. At several points during this process, I considered taking my own life in order to take the burden off my family. Luckily, I found my way out of this nightmare when I found Dr. Hixson and the Keystone Functional Restoration Program. Through their treatments and the use of Neubie I was able to regain my strength, my confidence and my life back. I will be forever grateful for this opportunity. Thank you for being my light when my path was so dark."*