

## CASESTUDY

# Music Drives Single-Session Gait Progress for Incomplete Spinal Cord Injury

## Sheridan VA Hospital

Since April 1922, the Sheridan VA Medical Center has been treating Veterans in Wyoming who served our country. This property was once a military fort set aside by President William McKinley in 1898, but now roughly 12,500 Veterans are treated annually at Sheridan VA. Les Smith, a patient, is rehabbing from an incomplete SCI. Biodex Clinical Educator David Wilcox had the pleasure of working alongside Les and Dr. Joseph Hagy, DPT. Using the Gait Trainer 3 with Music-Assisted Therapy, the patient made significant improvements in a single session.

By combining the Gait Trainer 3 with Music-Assisted Therapy, specific songs can be used to facilitate desired gait patterns. Music tempo can be adjusted to influence gait components, while biofeedback is used to inform patients about their step lengths, step symmetry, and other parameters. It is the music-focused approach that enhances traditional methods of rehabilitation.

### Starting Out Gait Training

Early in the session, Les had an average walking speed of .31 m/s, an average step cycle of .31, an average step length of 59/70, and a 92/108 coefficient of variation. He also spent a significantly uneven portion of time on each foot. These results were captured by the instrumented deck of the Gait Trainer 3.



Working with Biodex equipment in a supported environment helped Les safely improve his condition and enhance traditional rehabilitation methods.

### Gait Training with Practice

Next, Mr. Smith was cued by Dr. Hagy to take big steps so the Gait Trainer 3 would beep. This auditory feedback was used to keep each step consistent and to lengthen the patient's strides. After only 3-4 minutes, the patient saw improvement.

### Gait Training with Music-Assisted Therapy

Lastly, Music-Assisted Therapy was engaged on the Gait Trainer 3. This process was used to encourage neuroplasticity and improve the patients' movements, muscle control, and cognitive skills through learning. By the end of the session, Les had an average walking speed of .68 m/s, an average step cycle of .63, an average step length of 51/53, and a 10/8 coefficient of variation. His time spent on each foot also drastically improved; from 45/55 at the beginning, to a much more evenly distributed 49/51 split.

### Sheridan VA Equipped for Success

With the help of numerous Biodex products, Sheridan VA Medical Center is able to safely and effectively work with patients suffering from neurological situations, traumatic brain injuries, and spinal cord injuries. Equipped with Biodex's Gait Trainer 3 with the Music-Assisted therapy application, the facility is prepared to work tirelessly to honor America's Veterans by offering health and mental wellness services to the Rocky Mountain Region.

### Single-Session Results

#### Gait Training early in session

Average walking speed: .31m/s	Coeff of variation: 92/108
Average step cycle: .31	Time on each foot: 45/55
Average step length: 59/70	

#### Gait Training with auditory feedback

Average walking speed: .57m/s	Coeff of variation: 21/15
Average step cycle: .57	Time on each foot: 49/51
Average step length: 46/47	

#### Gait Training with Music-Assisted Therapy

Average Walking Speed: .68m/s	Average step length: 51/53
Average step cycle: .63	Coeff of variation: 10/8
	Time on each foot: 49/51

Biodex is always advancing our technology to serve you better.

### Gait Trainer 3:

[www.biodex.com/gait](http://www.biodex.com/gait)

### Music-Assisted Therapy:

[www.biodex.com/musictherapy](http://www.biodex.com/musictherapy)

For more information on Biodex Physical Medicine & Rehabilitation devices:

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