



Functional Electrical Stimulation in Neurorehabilitation

Dr. Kristin Musselman

June 17 & 18, 2017

Edmonton

Introduction

Functional Electrical Stimulation (FES) is the use of neuromuscular electrical stimulation to enhance control of movement towards the performance of functional activities. FES provides the needed repetition of muscle activity to effect neuro-plastic changes and motor learning in clinical populations such as stroke, TBI, SCI, MS and other upper motor neuron lesions. Applications include subluxed shoulders, upper limb weakness and gait retraining.

Course Objectives

After completing this course, you will be able to:

- 1) Understand the different stimulation parameters and how each affects the neurophysiological response.
- 2) Appropriately manipulate stimulation parameters.
- 3) Apply one- and two-channel FES efficiently & effectively.
- 4) Modify the application of FES in real time.
- 5) Identify neurological clients who are appropriate for FES.
- 6) Apply FES with confidence for common UE and LE applications.

The Speaker

Dr. Kristin Musselman is a physical therapist and Scientist with the Neural Engineering and Therapeutics Team at the Toronto Rehabilitation Institute – Lyndhurst Centre, and an Assistant Professor in the Dept. of Physical Therapy, University of Toronto. She completed a BSc (Life Sciences) and BScPT at Queen's University, followed by a MSc (Neurosciences) and PhD (Rehabilitation Science) at the University of Alberta. Dr. Musselman was a CIHR Post-doctoral Fellow at the Johns Hopkins School of Medicine and Kennedy Krieger Institute from 2010-2013 and an Assistant Professor in the School of Physical Therapy, University of Saskatchewan from 2013 to 2014. Her research interests include rehabilitation for individuals with spinal cord injury and children with cerebral palsy, including methods of training gait, balance and upper limb function. She also studies novel applications of FES and the implementation of FES into clinical practice. She is active in the Canadian Physiotherapy Association, serving on the Executive of the Neurosciences Division, and Co-chair of the FES Interest Group. Dr. Musselman is also Co-lead of the Standing and Walking Measures Group for the Rick Hansen Spinal Cord Injury Registry.

Location

Chateau St. Louis Hotel & Conference Centre 11727 Kingsway NW Edmonton

Program

8:30 – 9:00 Registration and/or breakfast

9:00 – 4:00 Saturday program

9:00 – 3:30 Sunday program

Participants are encouraged to bring their own FES machines with small and large electrodes.

Tuition

Before April 15: \$510 + GST = \$535.50

After April 15: \$560 + GST = \$588.00

Includes 5% GST, manual, breakfasts, lunches and refreshments.

Enrollment is limited to 28 seats.

Cheques may be post-dated to April 15 for the early bird or to May 27 for the regular rate. NSF cheques are subject to a \$25.00 administration fee. Interac transfers can be arranged. Sorry, credit cards are not accepted.

Deadline for registration is **May 27**. Please do not make any flight arrangements until the course is confirmed with sufficient registrants.

Cancellation Policy

Withdrawals must be made in writing prior to May 27; an administration fee of \$40 is charged.

No refunds are given after May 27 but you may send an alternate of your choosing. In the event of course cancellation, a full refund of the course fee only will be provided.

For More Information

Contact Dianna at dmjot@telus.net or (604) 263-8730 to leave a message.

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Name: _____

Organization: _____ Prof. _____

Mailing Address: _____

Tel. Work: _____ Home: _____

e-mail: _____

Bringing FES machine? _____yes _____no Accommodation information required _____

Dietary restrictions: _____

Before April 15: \$535.50. After April 15: \$588.00. Price includes GST. GST # 897046587RT0001

Make cheques payable to Dianna Mah-Jones OT Consultant; mail to 1243 W64th Ave. Vancouver V6P 2M7

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Agenda (subject to minor change if patient demonstrations are arranged)

1. The basics of electrical stimulation

- Electrical currents
- Neurophysiological response
- Precautions & contraindications
- Stimulation parameters
- Electrode placement & application

Lecture format interspersed with small group activities

2. Hands-on experience #1

- Setting & manipulating parameters

Small group lab activities to reinforce content covered in session #1

3. Introduction to FES

- Who is appropriate?
- Goals: Orthotic versus Therapeutic
- FES prescription
- Strengthening, endurance, hypertonicity

Lecture format interspersed with small group activities

4. Hands-on experience #2

- 1-channel UE case study (spasticity in triceps)

Small group lab activity to reinforce content covered in session #3

5. UE applications & evidence

- Electrode placement
- FES systems
- Hemiplegic shoulder, reaching, hand movements
- Overview of research evidence

Lecture format interspersed with small group activities

6. Hands-on experience #3

- 1- and 2-channel applications in the UE
- 3 case studies

Small group lab activities to reinforce content covered in session #5

7. LE applications & evidence

- Electrode placement
- FES systems
- Weight-bearing & pre-gait activities, gait, dropped foot, sit to stand
- Overview of research evidence

Lecture format interspersed with small group activities

8. Hands-on experience #4

- 1- and 2-channel applications in the LE
- 3 case studies

Small group lab activities to reinforce content covered in session #7

9. FES for the trunk

- Potential applications

Lecture format with group discussion

10. Strategies to increase FES use in clinical practice

Lecture format with group discussion

11. Small group clinical scenario

- Participants create FES plan for current or past patient

Small group activity with hands-on component