NMES cases studies 18-19-2

Case study 1-1

RS is a 62-year-old right-handed female housewife who fell and fractured her left distal radius 7 weeks ago. She underwent an open reduction, internal fixation, and her cast was removed 1 week ago. She was able to vacuum and cook simple meals, but she could not fold laundry, cook typical meals, shop independently for all groceries, or perform her usual house cleaning activities because she could not lift with her left hand. She was also not able to play golf. She has not yet returned to any of these activities. RS has no history of heart disease, cancer, or any major medical problems.

1-Would this patient be a good candidate for electrical stimulation?

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2. Assessment regarding the appropriateness of the treatment

On observation ----------

On examination:

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3. Proposed goals of treatment

- ----------
- ----------

4. Proposed treatment plan (parameters for ES - appropriate for this case) and rationale

Patient position	
Waveform	
Pulse duration	
Pulse frequency	
On: off time	
Ramp up/down time	
Amplitude (intensity)	
Treatment time	

Electrodes placement

Wrist extension with ulnar deviation

Wrist extension with radial deviation

Wrist extension

Electrode placement: A single channel is placed on the wrist extensors.

Rational	

4. Proposed procedures (practical steps) to apply selected program

NMES cases studies 18-19-2

Case study 1-2

Patient is 56 years old male who is 4 weeks post-injury of the Right knee due to a twisting injury (sprain) at work, RICE self-Rx was performed acutely and patient was placed on light duty; patient was largely non-compliant with therapeutic strengthening exercise. However, examination reveals active extension of the knee lacking 15°; and passive extension is 0 degrees. Now patient is unable to return to regular duties because of weak knee extension (MMT grade is 2+/5) & Atrophy is present but motor control of quads is satisfactory. Patients has no history of heart disease, cancer, or any major medical problems.

1-Would this patient be a good candidate for electrical stimulation?

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2. Assessment regarding the appropriateness of the treatment

On observation ----------

On examination:

- ----------
- ----------
- ----------
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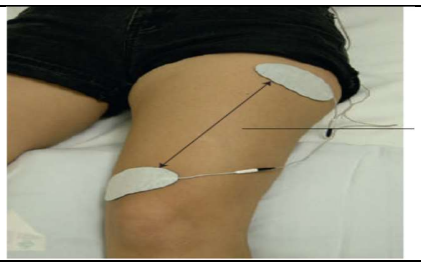
3. Proposed goals of treatment

- ----------
- ----------
- ----------

4. Proposed treatment plan (parameters for ES - appropriate for this case) and rationale

Patient position	
Waveform	
Pulse duration	
Pulse frequency	
On: off time	
Ramp up/down time	
Amplitude (intensity)	
Treatment time	
Electrodes placement	 
One channel is set up on the quadriceps with one electrode over the VM, and the second electrode at the proximal lateral anterior thigh.	
Rational	

4. Proposed procedures (practical steps) to apply selected program

NMES cases studies 18-19-2

Case study 1-3

Patient is 48 year old female with mild **Left hemiparesis** secondary to a stroke three week ago. Examination reveals very weak and incomplete voluntary dorsi-flexion at the ankle. There is very mild spasticity in the plantar flexors. The patient sometimes exhibits a footslap, and sometimes a forefoot-first initial contact with gait. No pain is present and passive ROM is normal. Patients has no history of heart disease, cancer, or any major medical problems, however, patient suffering from mild hypertension.

1-Would this patient be a good candidate for electrical stimulation?

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2. Assessment regarding the appropriateness of the treatment

On observation ----------

On examination:

- ----------
- ----------
- ----------
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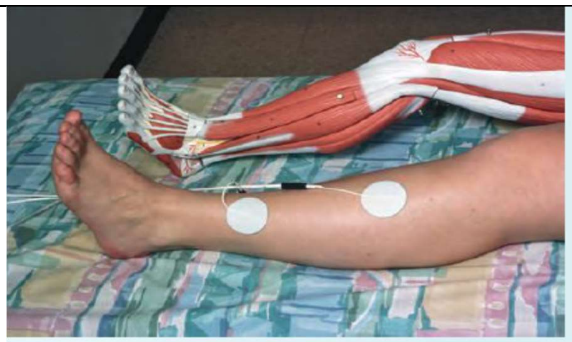
3. Proposed goals of treatment

- ----------
- ----------

4. Proposed treatment plan (parameters for ES - appropriate for this case) and rationale

Patient position	
Waveform	
Pulse duration	
Pulse frequency	
On: off time	
Ramp up/down time	
Amplitude (intensity)	
Treatment time	
Electrodes placement	
Rational	

5. Proposed procedures (practical steps) to apply selected program

Electrotherapy Application Procedures

Student name	
ID	
Exam date	
Total score achieved	

A-Patient preparation procedures (4)			
A1-Position the patient appropriately and comfortably for the intervention; student is able to instruct patients to assume comfortable and relaxed position using necessary equipment and tools related to the case study			
A2-Identity of the patients; Student is able to list characteristics of the patients related to the case study Ask about previous treatment of current condition, and check treatment nots. Assess the patient and set treatment goals. E.g. ❖ Increase ROM, ❖ Increased Muscles strength, and/or endurance ❖ Prevent disuse atrophy ❖ Reduce edema through muscles pump ❖ Increase Activities of daily living and physical function			
A3-Exposed the part to be treated, and removed all jewelry from the area			
A4- Determine if electrical stimulation is the most appropriate intervention. Check the patient and review the patient's chart for contraindications or precautions regarding the application of electrical stimulation The student is able to **list 5 contraindication/precautions** related to the case study.			
A5-Inspect body part to be treated: Student able to exam and clinical evaluated skin where the stimulation is to be applied ❖ Light touch perception, ❖ Pain sensation, ❖ Skin conditions (open wound, rashes, eczema, narcotic tissue, and dermatitis) ❖ Clean the skin and clip hair if necessary			
❖			
A6- **Explain the procedure to the patient, including an explanation of what he/she might expect to experience** (e.g. type of sensation, MS contraction) and monitor the patent's response, not the stimulator.			

B-Equipment preparation procedures (1) The student is able to apply and practice the following			
B1-Select the proper electrical stimulation unit to achieve the desired goal in section (A2) (e.g. Muscle contraction, pain modulation, tissue healing). ❖ (e.g. TENS, NMES, HVPC, IFT, Russian current) ❖ Accesses (electrodes, cables, Adhesive tapes and Straps), ❖ Conducting material (e.g. sponge pad, gel) ❖ Obtain sheet or towel for draping ❖ Assessment tools (pin prick, light tough discrimination, goniometer, MMT).			
B2-Check stimulator, electrodes, and cable, battery, for continuity or signs of excessive wear, and replace any of those found faulty or of concern.			
B3-Insure the amplitude controls are at **zero**			

C-Procedure of ES Application student is able to (7)			
C1-Understand principle and practice of lowering skin resistance lowering <u>list 3 methods</u> to reduce skin resistance			
C2-Select and place the electrodes properly ❖ Types: (rubber electrodes, self-adhesive, metal pin or prop electrode) ❖ Size (small, medium large)/ Use conductive gel or straps ❖ Placement: on the target muscle (motor points) ❖ Configuration (monopolar, bipolar, quadrpolar) ❖ Understand principle of current density greatest ❖ Attach the lead wires to electrodes & to the stimulation unit.			
C3-Set optimal parameters for treatment, including ❖ waveform, polarity, frequency, pulse duration, on: off time, ramp up/ ramp down, and length of treatment time,			
C4-Slowly advance the amplitude until the patient is just able to notice a sensation under the electrodes. ❖ If sensory perception is required gradually increase amplitude to feel sanction of (tingling, numbness, vibrations, prickling) ❖ If a muscle contraction is needed to achieve, continue to increase the amplitude until the indicated strength of contraction is produced, **<u>N.B:</u>** ❖ **<u>Amplitude controlled according to patient tolerance,.</u>**			

❖ Patient should inform you when feels something. ❖ Do not tell the patient what will feel; for example, do not say "tell me when you feel a tingle ❖ Monitor the patent's response, not the stimulator.			
C5-Observe the patient's reaction to stimulation over the first few minutes of the treatment. If the treatment includes muscle contraction, observe the amplitude, direction, and quality of the contraction. The parameters may need to be adjusted or the electrodes may need to be moved slightly if the expected outcome is not achieved. Student is able to understand and practice principle of adaptation / and or accommodation through Recheck the patient's response after the first 5 minutes by asking the patient how it feels, if the sensation has diminished, adjust the amplitude appropriately.			
C6-Give the patient a signaling device and Make sure the patient understands how to use the signaling.			

D-Treatment follow-up and termination (3)			
D1-When the treatment is completed; ❖ Remove the electrodes ❖ Clean the treatment area and the equipment according to normal protocol			
D2-Recheck the patient's response ❖ **Inspec**t the patient's skin for any signs of adverse reaction to the treatment. ❖ **Ask** the patient how the treated area feels, ❖ **Palpate** treatment area for tenderness, pain, and muscle spasm. perform functional test			
D3-Document the treatment, including all treatment parameters and the patient's response to the treatment. ❖ Region treated, such as knee, shoulder, elbowed, back, neck), ❖ Conditions stage (acute, subacute, chronic) ❖ Parameter of treatment technique, dosage, frequency and duration, ❖ Patients positioning ❖ Electrodes placement /configuration ❖ Assessment parameter (pain, ROM, muscle strength etc.,) ❖ Response to treatment and Adverse effect (erythema, burning blisters)			