King Saudi University
Collage of Applied Medical Science-Rehabilitation Science Department
Electrotherapy RHS325-

Pain Control Using Electrical Stimulation

Student name ……. Student number……
Course name……course code…….

Objective

To determine comfort of different electrical stimulation units and the different parameters used to control pain.

Materials Needed

1. TENS unit
2. Interferential therapy unit

Notes: (student should be able to Explain TENS/ interferential a and basic operation Effects, Advantages, Disadvantages, Indications, Contraindications, Precautions)

Procedures.

1. Flow the steps described in electrotherapy application procedures as summarized in table.
2. Set the parameters for pain control using the charts below.

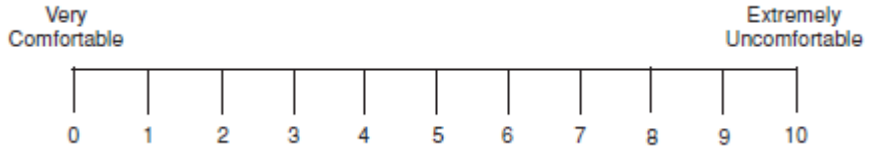
Table 1- TENS

Parameters	High-frequency	Low-frequency	Brief-intense
Output intensity	Sensory level	Motor level	Noxious
Pulse frequency	80–120 Hz	5–20 pps	Variable
Phase duration	≤ 150µsec	≥150µsec	300–1000 sec
Pain modulation mechanism	Gate control	Opiate release	Opiate release
Electrode arrangement	Variable	Variables	Variables

Table 2-Interferential

Parameters	Gate control (acute pain)	Opiate release (chronic pain)
Burst frequency	80–150 Hz	1–10 Hz
Sweep	Fast	Slow
Electrode arrangement	Bipolar/Quadripolar	Bipolar/ Quadripolar
Electrode placement	Around the periphery of the target area	Around the periphery of the target area
Output intensity	Strong sensory level	Moderate to strong sensory level

3. Ask the subject to rate their pain or comfort level on a VAS or 0–10 scale.



4. Use several different pain control settings and record the treatment parameters and subject comfort score on the chart provided

Electrotherapy application procedures: TENS

TENS PROCEDURES	EVALUATION		
	0	1	**2**
1-Check and prepper the equipment			
a-Select the proper TENS/interferential unit			
b-Obtain sheet or towel for draping, conducting			
c-Check stimulator, electrodes, and cable for charge battery, broken or frayed insulation and so on,			
d- Insure the amplitude controls are at zero**.**			
2-Prepare patient psychologically/physically			
a-Verify identity of the patients			
b-Verify the absence of contraindications			
c-Ask about previous treatment of current condition, and check treatment nots.			
d-Place patient in a well supported comfortable position (How)			
e-Exposed the part to be treated, and removed all jewelry from the area			
f- Inspect body part to be treated Check for light touch perception/sensation Check circulatory conditions (Pulses, capillary refill, pallor) Check skin conditions (open wound, rashes, eczema, narcotic, dermatitis) Assess function of body part to be treated (e.g. Pain, ROM)			
G-Explain procedure and expected outcomes and give brief physiology if interested			
3- Application procedures (TENS/interferential)			
a- Select **suitable electrodes** , place conducting gel on electrodes and secure it to the patients			
b-Remind the patient to 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".			
c-Adjust the pulse rate, pulse width, and mode of stimulation (TENS modes/ interferential modes) to desired setting if possible as in tables 1&2			
d- Turn on the stimulator, and increase the amplitude slowly, Monitor the patent's response, not the stimulator.			
e- Set a timer for the appropriate treatment time and give the patient a signaling device. Make sure the patient understands how to use the signaling.			
f- Re-check 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.			
4-Post-Application Tasks			
1-Complete the treatment **a-** When the treatment time is over, turn the intensity to zero and move the electrodes away from the patient, remove conducting gel with towel. b- Clean the treatment area and the equipment according to normal protocol.			
2-Assess the treatment efficacy **a-** Ask the patient how the treated area feels b-Observe: visually the treated area for any adverse reaction c-Perform functional test as indicated			
3-Document **- Duration and frequency of treatment** Acute cases 15-20 minutes & Chronic cases: treatment 20-30 minutes Frequency: usually 3/week **Dosage and parameter of TENS/interferential** **Location and placement of electrodes**			

On completion of the activities for pain control using electrical stimulation (TENS& interferential) , review the following case studies to enhance practical application of electrical modalities

CASE STUDY 1: A56-year-old man with severe pain and decreased range of motion of his left shoulder. The pain is diffuse over a large portion of his shoulder. His pain appears to be secondary to a deltoid strain suffered 2 weeks ago while he was doing yard work.

1. Describe the treatment options you have for treating this patient's chief complaint of pain.
2. Explain rational for selection of such treatment
3. Explain the examination procedures (question the patient)
4. Demonstrate application electrical stimulation related to

    - Patient position -
    - Electrode placement (target area)
    - Current stimulation parameters

CASE STUDY 2: A 35-year-old tennis player with elbow tendonitis. He has been doing conservative treatment for 3 weeks, with little improvement in the tendonitis. He wants to play in a community tournament in 2 weeks. Your facility has the equipment to provide electrical stimulation modalities. On examination, the patient seemed apprehensive to the use of electrical stimulation.

1. Describe the treatment options you have for treating this patient's chief complaint of pain.
2. Explain rational for selection of such treatment
3. Explain the examination procedures (question the patient) and how to calm the concerns about electrical stimulation
4. Demonstrate application electrical stimulation related to
    - Patient position
    - Electrode placement (target area)
    - Current stimulation parameters

CASE STUDY 3: A 22 years-old man sustained a mild grade II medial collateral ligament sprain of the left knee 3 days ago (sub-acute stage), in an football player accident, and is being treated with oral steroid and referred for physical therapy department to aid in relief of pain.

1. Describe the treatment options you have for treating this patient's chief complaint of pain. and why is this patient is candidate to electrical stimulation.
2. Explain rational for selection of such treatment
3. Explain the examination procedures (question the patient) and how to calm the concerns about electrical stimulation
4. Demonstrate application electrical stimulation related to
    - Patient position
    - Electrode placement (target area)
    - Current stimulation parameters

CASE STUDY 4: A 44-year-old male was diagnosed with upper back and neck pain 16 years prior to seeking help from Physical therapy. Over the years, he noticed a decreased range of motion in his neck. No medical treatment available as it caused stomach bleeding. He also tried various forms of massage to help keep his spine loose; however the inflammation, pain, and loss of range of motion worsened. on examination, the 2nd through 5th cervical vertebrae were fused, resulting in a very limited cervical range of motion and his pain on VAS was 8/10.

1. Describe the treatment options you have for treating this patient's chief complaint of pain. and why is this patient is candidate to electrical stimulation.
2. Explain rational for selection of such treatment
3. Explain the examination procedures (question the patient) and how to calm the concerns about electrical stimulation
4. Demonstrate application electrical stimulation related to
    - Patient position
    - Electrode placement (target area)
    - Current stimulation parameters

CASE STUDY 5: A 54 year old lady who presented to the clinic complaining of a 9 week history of left-sided shoulder pain and restricted movement. These symptoms started gradually but over time they began to affect her general quality of life and morale. Pain increased, particularly at night leaving her tired during the daytime and she started to experience problems manipulating her arm, especially when dressing. After conducting a thorough examination, which included assessment of active and passive range of movements (ROMs), and her pain on VAS was 8/10. We reached a diagnosis of frozen shoulder.

1. Describe the treatment options you have for treating this patient's chief complaint of pain, and why is this patient is candidate to electrical stimulation.
2. Explain rational for selection of such treatment
3. Explain the examination procedures (question the patient) and how to calm the concerns about electrical stimulation
4. Demonstrate application electrical stimulation related to
    - Patient position
    - Electrode placement (target area)
    - Current stimulation parameters

CASE STUDY 6: A 40 years old male patient with acute low back pain, secondary to self –made lifting; the symptoms were noted the day after the move on arising and were described as a tightness and restriction of mobility in lower back, referred for physical therapy department for management of his pain.

1. Describe the treatment options you have for treating this patient's chief complaint of pain. and why is this patient is candidate to electrical stimulation.
2. Explain rational for selection of such treatment
3. Explain the examination procedures (question the patient) and how to calm the concerns about electrical stimulation
4. Demonstrate application electrical stimulation related to
    - Patient position
    - Electrode placement (target area)
    - Current stimulation parameters