

SNS COLLEGE OF PHYSIOTHERAPY

Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai
Coimbatore – 641035

COURSE NAME : Basic physics and biomechanics

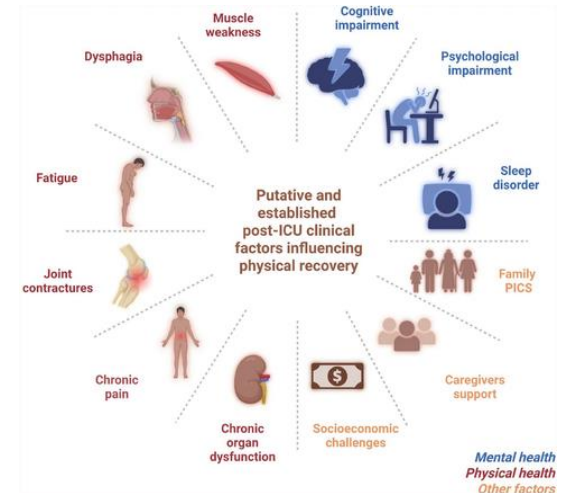
SUBJECT CODE : 6273

TOPIC : Empathize: Patient with Muscle Weakness

Empathize: Clinical Need

- Pain modulation requires precise current control
- Different tissues have varied resistance
- Patient comfort and safety are priorities

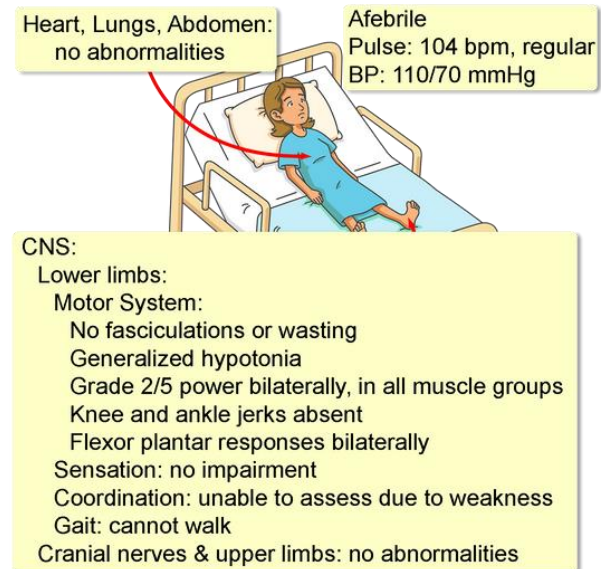
Understanding patient and therapist needs in electrotherapy.



Empathize: Patient Scenario

- Post-op patient with hypersensitivity Low
- tolerance to sudden current changes
- Requires smooth intensity adjustment

Clinical case highlights need for gradual current variation.



Heart, Lungs, Abdomen:
no abnormalities

Afebrile
Pulse: 104 bpm, regular
BP: 110/70 mmHg

CNS:

Lower limbs:

Motor System:

- No fasciculations or wasting
- Generalized hypotonia
- Grade 2/5 power bilaterally, in all muscle groups
- Knee and ankle jerks absent
- Flexor plantar responses bilaterally

Sensation: no impairment

Coordination: unable to assess due to weakness

Gait: cannot walk

Cranial nerves & upper limbs: no abnormalities

Define: Problem Statement

- Sudden current causes discomfort
- Fixed resistance limits adaptability
- Risk of burns or ineffective treatment

Problem defined around lack of controlled current delivery.

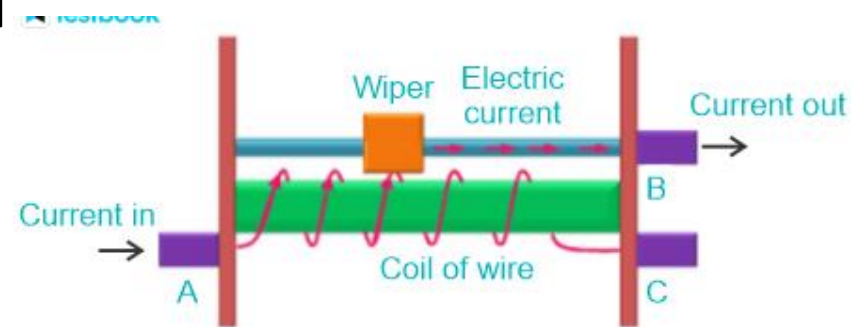
Define: Learning Objective

- Understand rheostat function Apply
- current control clinically Ensure
- exam and practice relevance

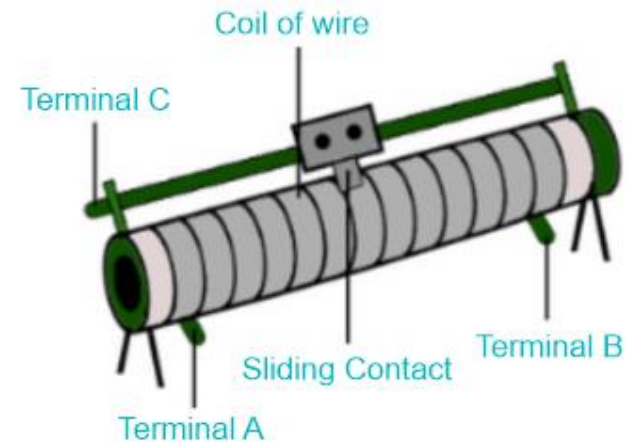
Clear objectives guide solution development.

Ideate: Concept of Rheostat

- Variable resistor Controls
- current intensity Used in
- electrotherapy units



Brainstorming identifies rheostat as solution.



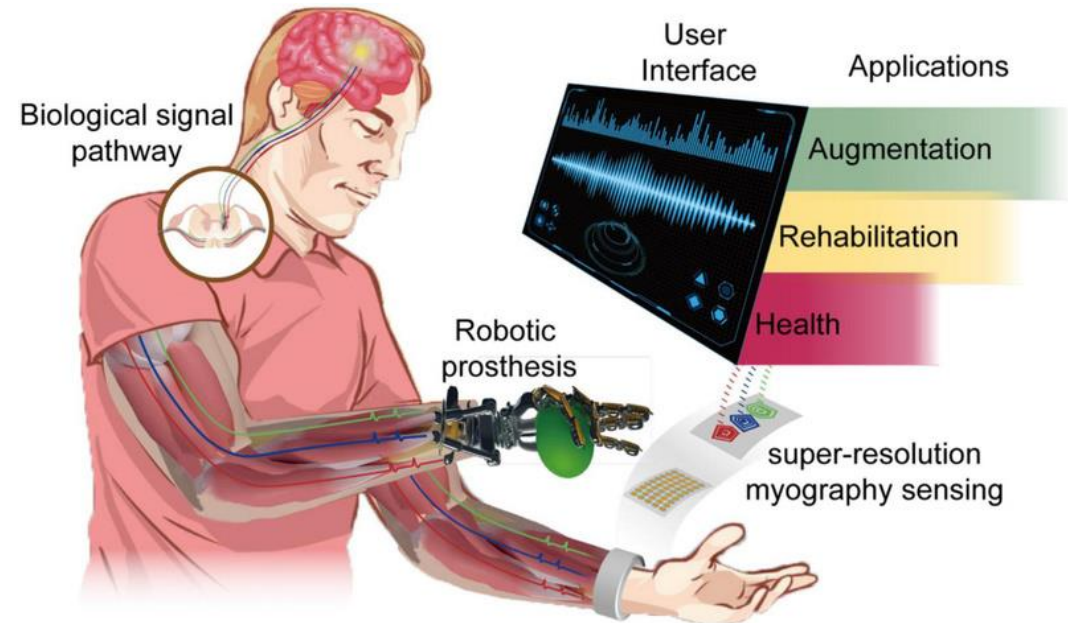
Ideate: Clinical Application

- Gradual current increase
- Patient-specific dosing
- Prevention of muscle shock

Ideas focus on safe clinical application.

Prototype: Device Integration

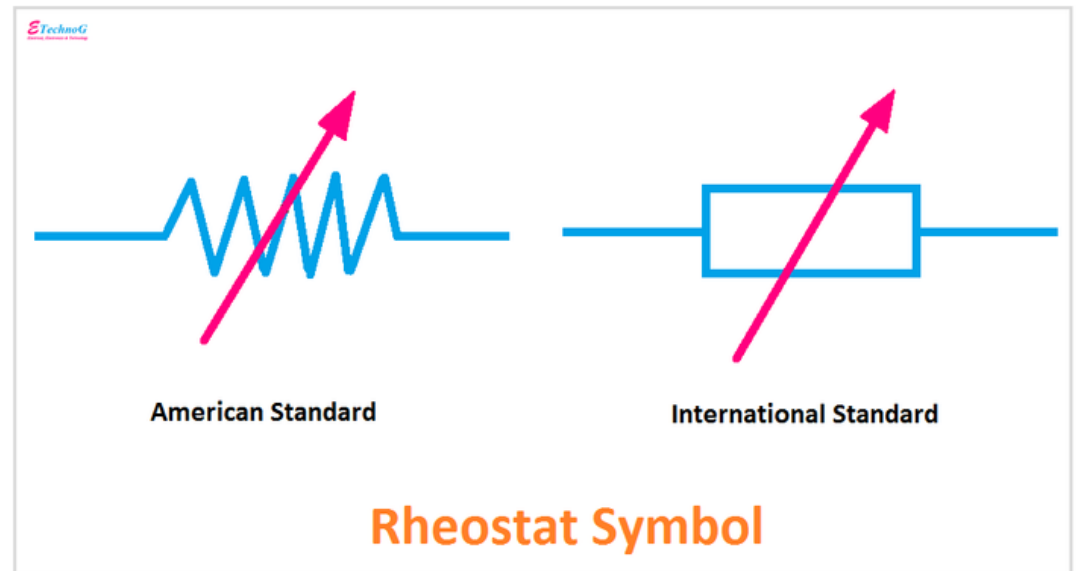
- Rheostat knob
- Series connection
- Calibrated scale



Prototype shows how rheostat is built into machines.

Prototype: Diagram

- Battery source
- Rheostat symbol
- Patient load



Visualizing circuit aids exam answers.

Test: Clinical Outcome

- Improved patient comfort
- Accurate dosage delivery
- Reduced adverse effects

Testing confirms effectiveness in practice.

Test: Exam & Practice Points

- Common viva question
- Asked in BPT/PG exams
- Link theory with clinic

Reinforces learning for assessments.