

SNS COLLEGE OF PHYSIOTHERAPY

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

COURSE NAME: ELECTROTHERAPY II

SUBJECT CODE: 6282

TOPIC: SHORTWAVE DIATHERMY - INTRODUCTION

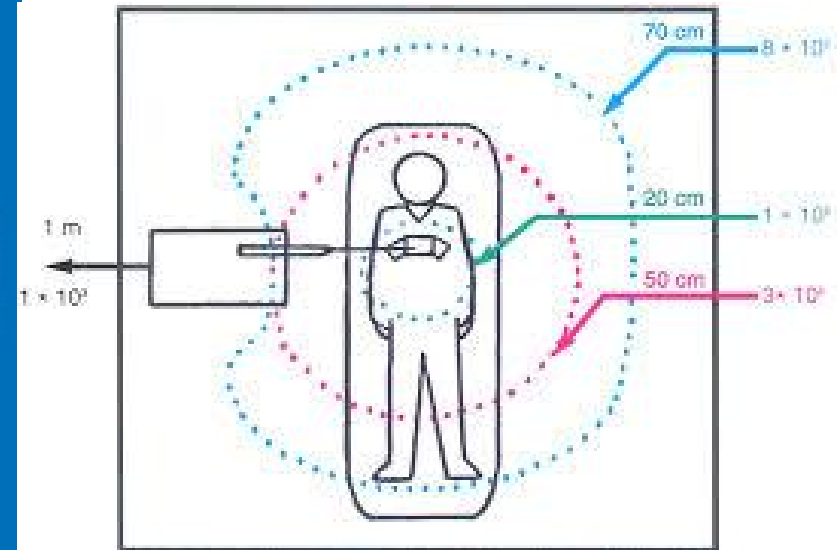
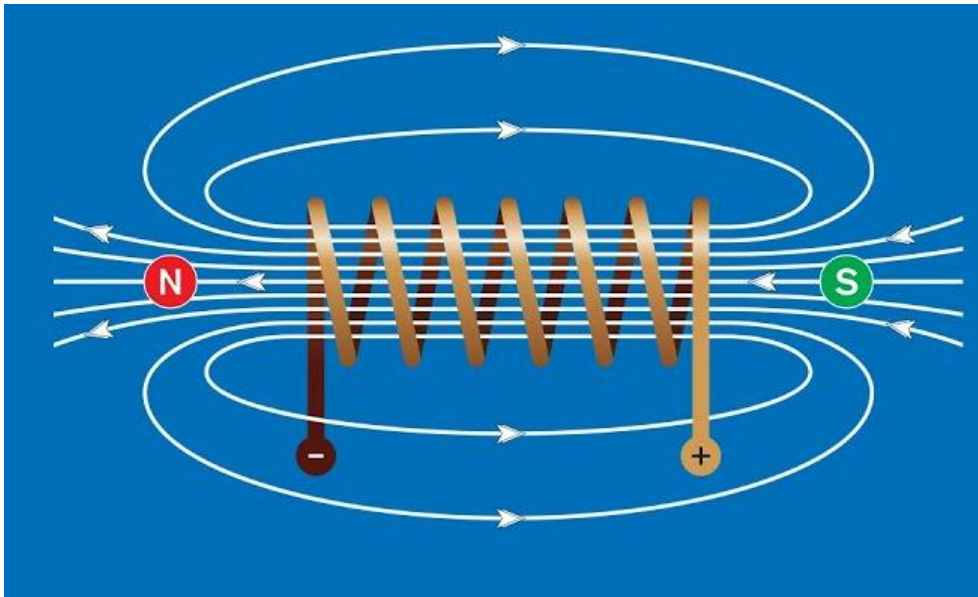
Definition of SWD

- Short Wave Diathermy is a deep heating modality using high-frequency electromagnetic waves.
- Commonly operates at 27.12 MHz frequency.
- Produces therapeutic heat within deeper tissues.



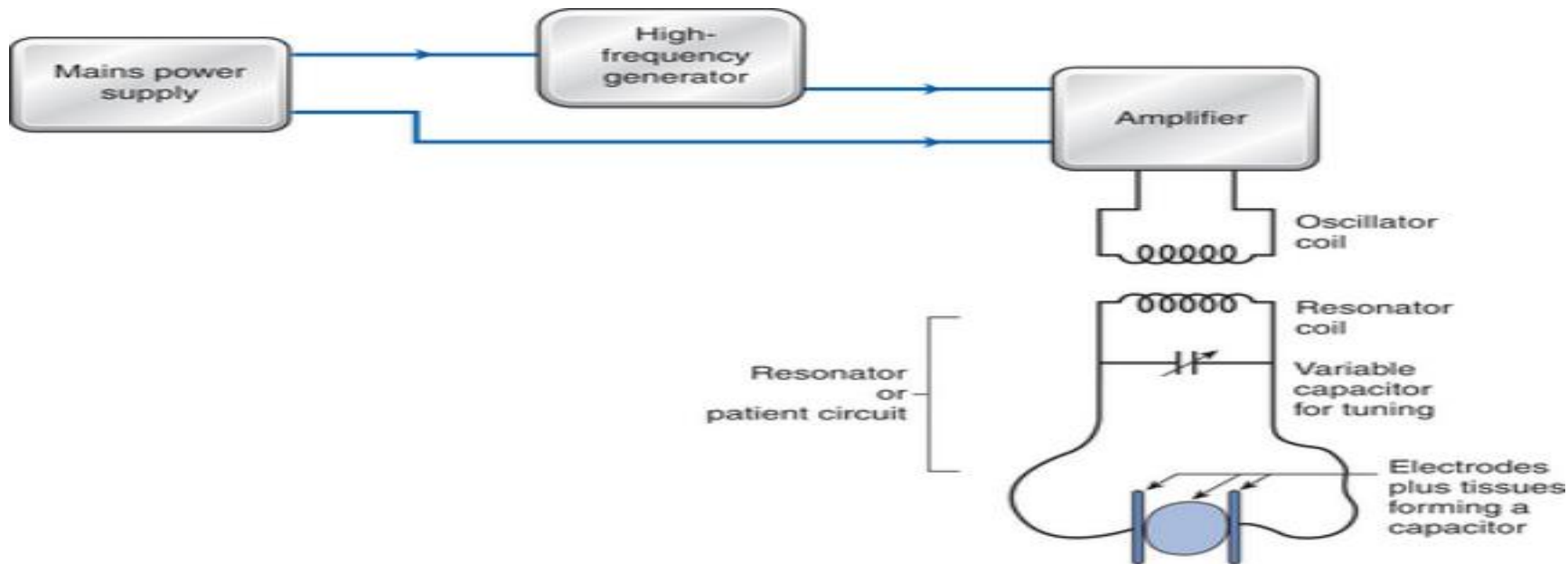
Electromagnetic Basis

- Uses radiofrequency range.
- Produces oscillating electric and magnetic fields.
- Energy absorbed by tissues increases molecular vibration → heat.



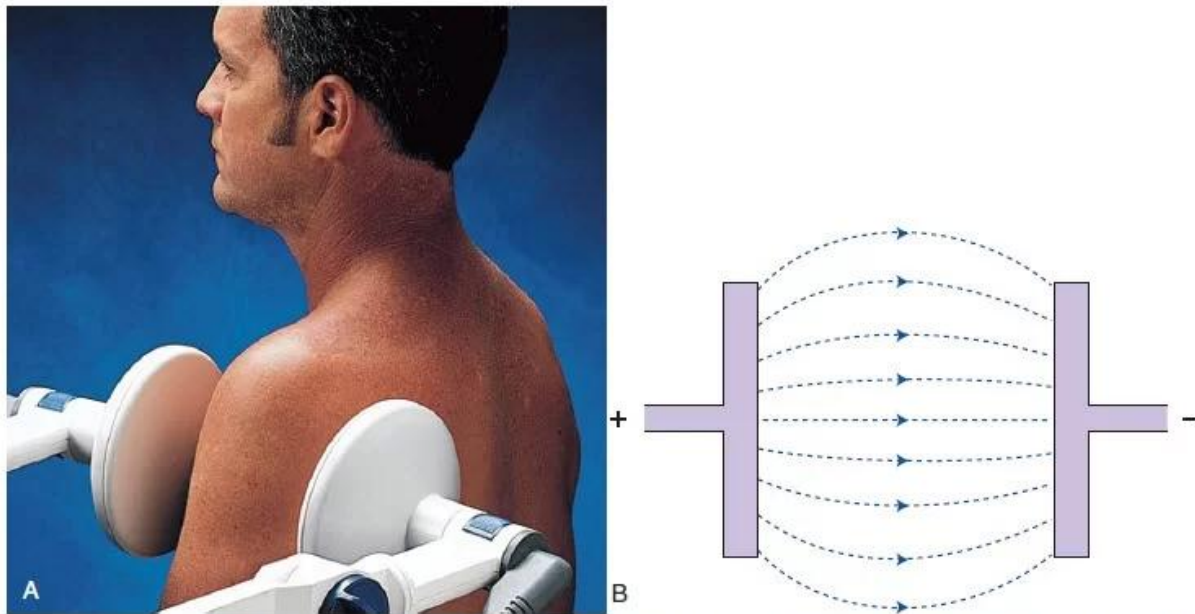
Principle of Working - Overview

- SWD generates heat using high-frequency currents.
- Heat production depends on tissue impedance.
- Higher water content = better absorption.



Capacitive Method

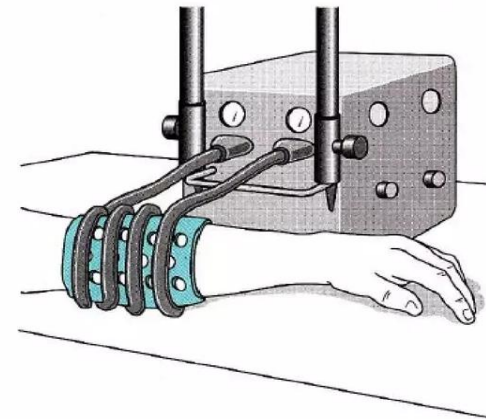
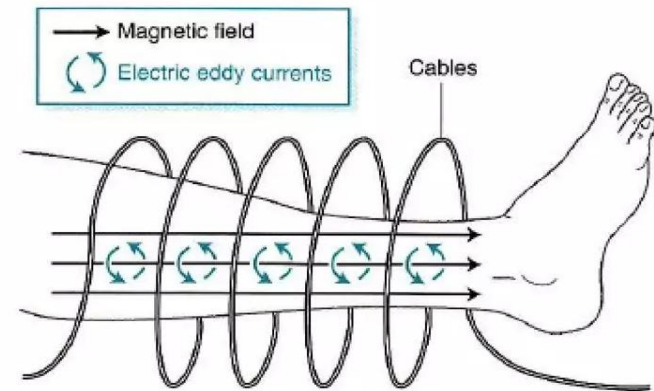
- Uses condenser plates.
- Patient's tissues act as a dielectric.
- Best for heating superficial and moderately deep tissues.



A. Capacitive plate shortwave diathermy applicators placed around the target to produce an electrical field directly. B. Electrical

Inductive Method

- Uses coil or drum electrodes.
- Produces magnetic field → eddy currents.
- Best for heating deeper tissues like muscles.



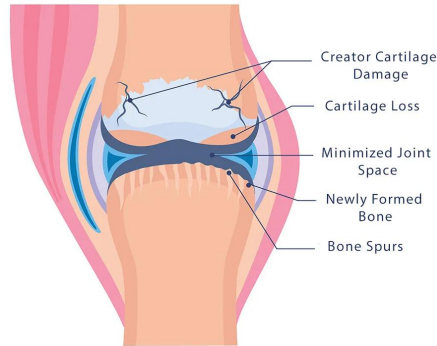
Types of SWD Application

- Continuous SWD – Produces thermal effects.
- Pulsed SWD – Produces non-thermal and mild thermal effects.

SWD	PSW
Electromagnetic energy absorption	
Thermal	Non Thermal
400 – 500 W max. output	Max. mean output in the region of 40 W
↑ molecular KE and heat	• primary effects appears to be at the cell membrane level & transport of ions across the membrane. • Cell ion binding properties • Cell membrane potentials • Protein synthesis • cellular energy (ATP)
↑ Cell metabolism	
Enhance soft tissue healing	

Indications of SWD

- Chronic pain conditions.
- Osteoarthritis.
- Muscle spasm.
- Soft-tissue injuries.
- Joint stiffness.
- Peripheral nerve injuries (non-thermal).
- Myofascial pain.
- Fibrositis.



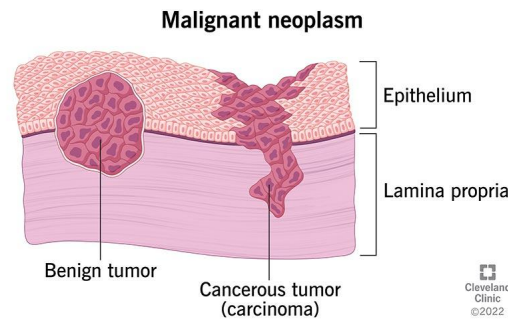
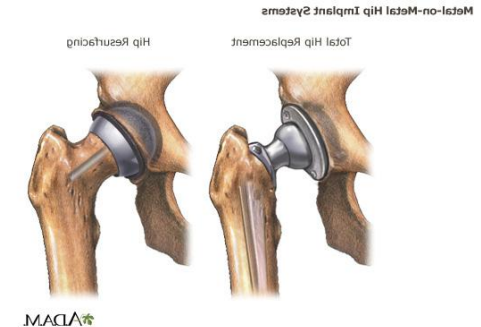
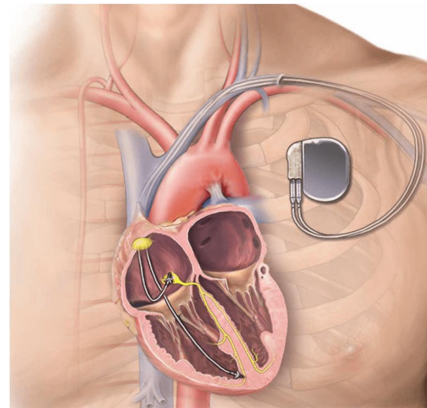
Osteoarthritis



Muscle Spasms

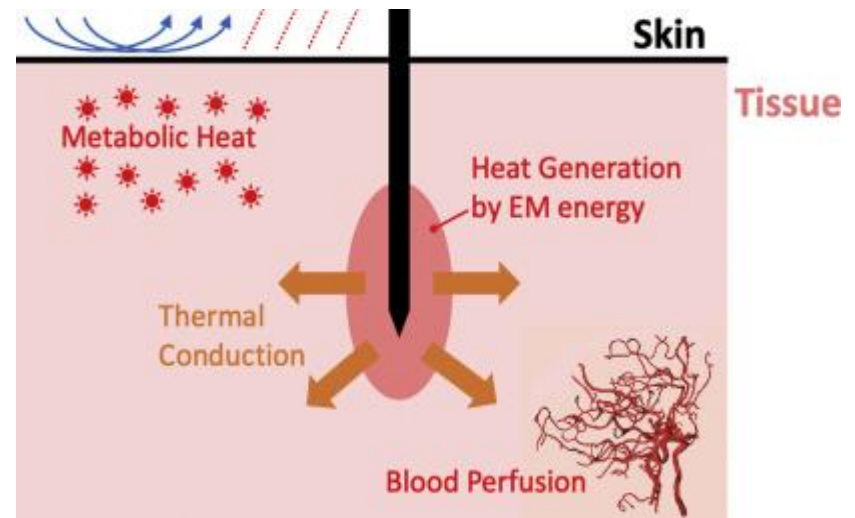
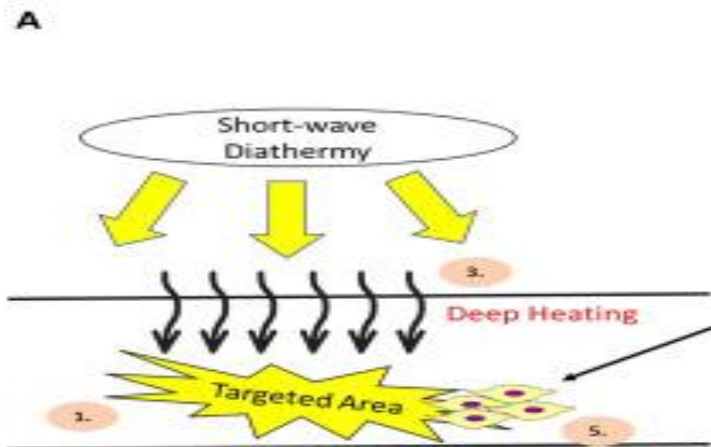
Contraindications of SWD

- Metal implants.
- Pregnancy.
- Pacemakers.
- Active infections.
- Malignancy.
- Sensory impairment.
- Open wounds (thermal mode).



Bio-physics of Deep Heating

- Electromagnetic waves penetrate tissues based on frequency & impedance.
- Conversion of electromagnetic $\rightarrow$ thermal energy.
- Heat produced is proportional to tissue resistance.

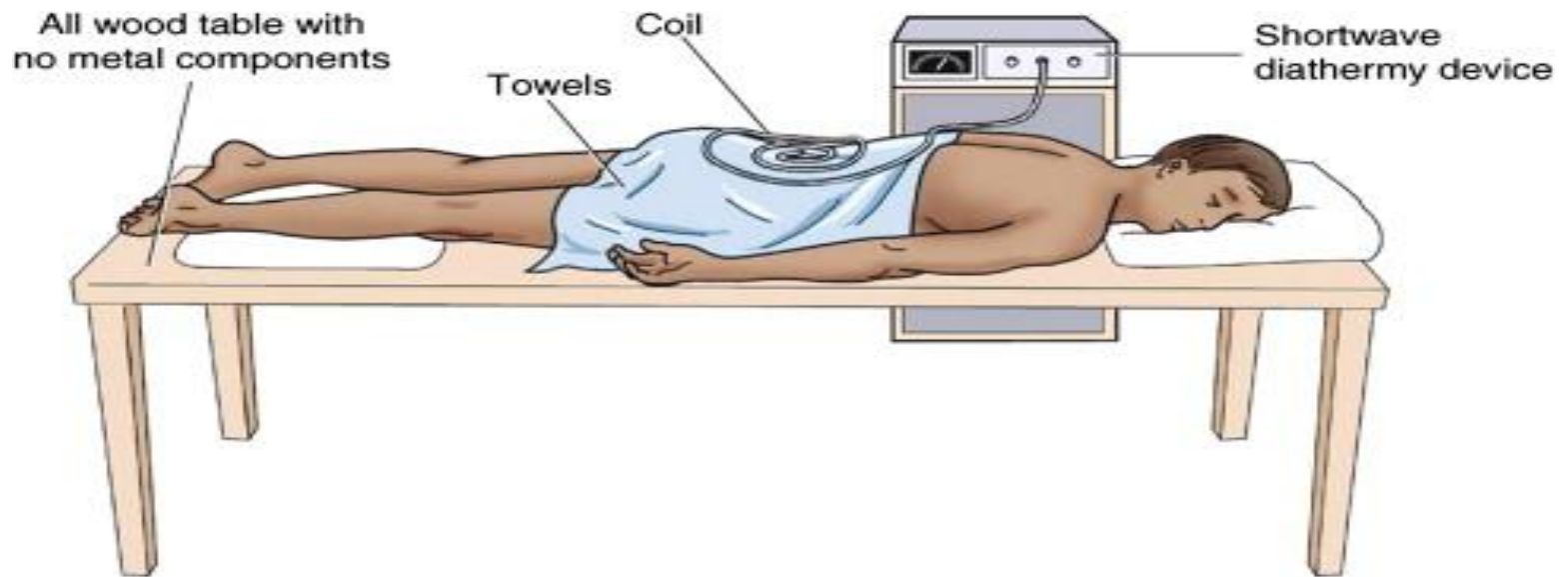


Advantages of SWD

- Produces uniform deep heating.
- Useful for large treatment areas.
- Comfortable and non-invasive.

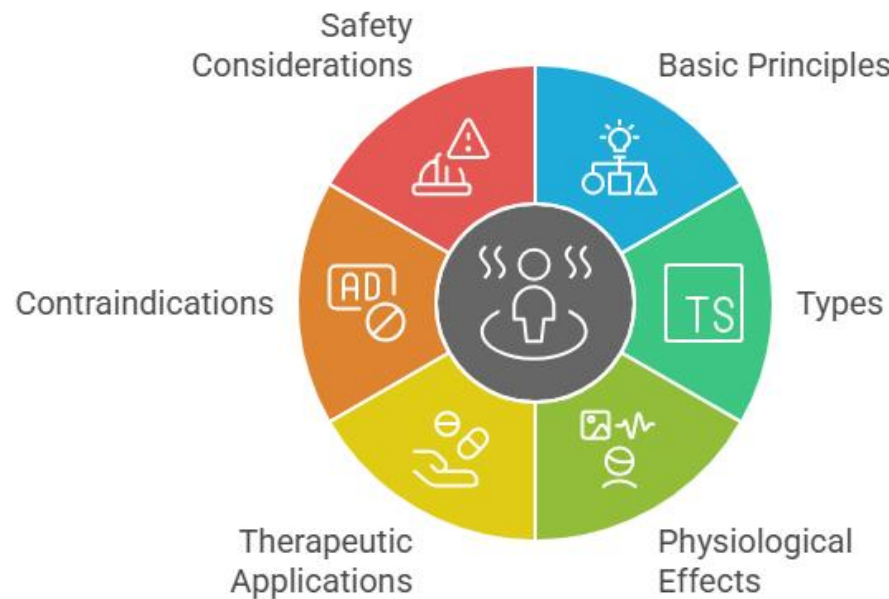
Safety Measures

- Remove metal objects.
- Maintain proper spacing of electrodes.
- Monitor patient feedback.



Summary

Comprehensive Overview of Shortwave Diathermy



Made with  Napkin

Thank you

