BHARATHIDASAN UNIVERSITY
TIRUCHIRAPPALLI-620 024,
Tamilnadu, India

Programme : **Master of Physical Education**

Course Title: **PORTS MEDICINE, PHYSIOTHERAPY AND REHABILIATION**

Course Code : **21BPE34EA**

Unit -IV

Dr.E.RAJASEKARN

Guest Lecturer

Department of Physical Education and Yoga

ELECTROTHERAPY: IV UNIT

Definition :

Electrotherapy is a medical treatment that uses electrical energy to stimulate nerves, Muscles, or Tissues to promote healing, reduce pain, or tissues to promote healing, reduce pain, or improve function. It encompasses various techniques, including TENS(Transcutaneous Electrical Nerve Stimulation), electrical stimulation for muscle rehabilitation, and Infrared Rays, Ultraviolet Rays , Shortwave diathermy, Ultrasonic Rays, Massage.

Infrare
d Rays:

1. Radio waves
2. Ultraviolet radiation
3. X-rays
4. Microwaves

▪Infrared (IR) is invisible radiant energy, electromagnetic radiation with longer wavelengths than those of visible light, extending from the nominal red edge of the visible spectrum at 700 nanometers (frequency 430 THz) to 1 mm (300 GHz) (although people can see infrared up to at least 1050 nm in experiments).

▪Most of the thermal radiation emitted by objects near room temperature is infrared.

Ultraviolet Rays:

- "Ultraviolet" means "beyond violet" (from Latin *ultra*, "beyond"), violet being the color of the highest frequencies of visible light.
- Ultraviolet light has a higher frequency than violet light.
- Wavelength between 10nm to 400nm.
- The sun is a major source of ultraviolet rays. Though the sun emits all of the different kinds of electromagnetic radiation, 99% of its rays are in the form of visible light, ultraviolet rays, and infrared rays (also known as heat).

Short Wave Diathermy (SWD):

✓In medicine field of 'Diathermy' was pioneered in 1907 by German Physician Karl Franz Nagelschmidt, who coined the term diathermy from the Greek words, literally means '**Heating Through**'.

✓Diathermy is **Therapeutic Treatment** using high frequency electric current to heat the deeper tissues.

✓Shortwave radio frequency in the range **1- 100 MHz** (Shortwave diathermy).

✓Microwave diathermy (**915 MHz or 2.45 GHz band**).

✓During the earlier days Long-wave diathermy was also in use.

Ultrason ic Rays:

Ultrasonic rays treatment, also known as ultrasound therapy, utilizes high – frequency sound waves to promote healing, reduce pain and inflammation, and improve tissue repair.

Principles:

1. High – frequency sound waves (typically 1- 3 MHz) are applied to the affected area.
2. Waves penetrate deep into tissue, causing mechanical and thermal effects.
3. Increased blood flow, reduced inflammation, and enhanced healing occur.