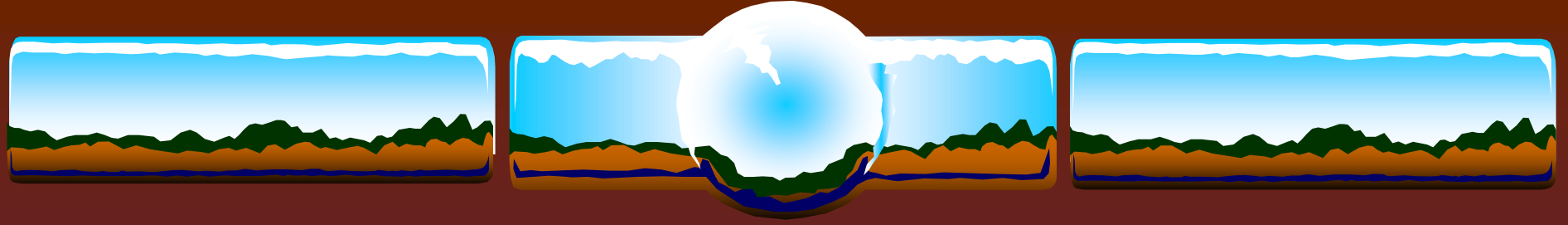

Advanced Electric Currents

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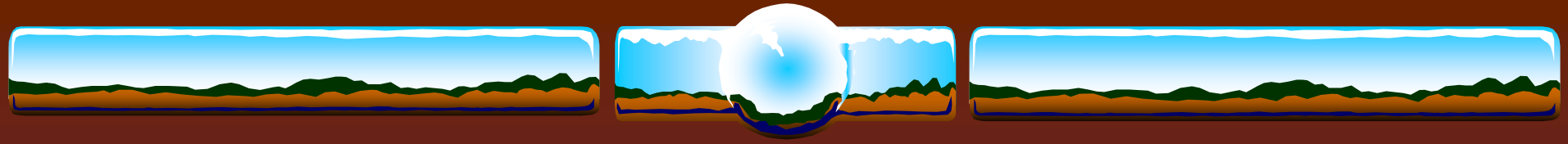
Professor

COP, SV



Advanced Electric Currents include

- DIA DYNAMIC CURRENTS
- RUSSIAN CURRENTS
- HVPGS – High Voltage Pulsed Galvanic Stimulation
- MENS – Micro ampere Electrical Nerve Stimulation

- In this Lecture we will be studying

Diadynamic Currents

Objectives of this lecutre

- At the end of the class you should be able to describe the following;
  - Definition
  - Physics of Diadynamic Currents
  - Different current modes in Diadynamic Currents
  - Physiological effects and Therapeutic Uses

DIADYNAMIC CURRENTS

- Pierre Bernard, a French Dentist, introduced this current in 1950

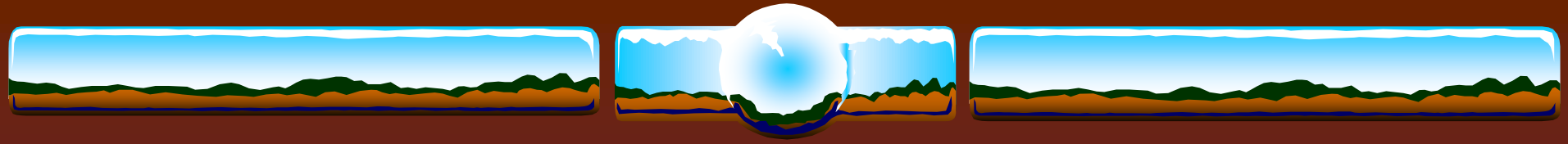
- He describes about this current in his French text book, “La therapie diadynamique”

  Author: Bernard, P. (1950)
  Publisher: Les Editions Naim. Paris

Definition

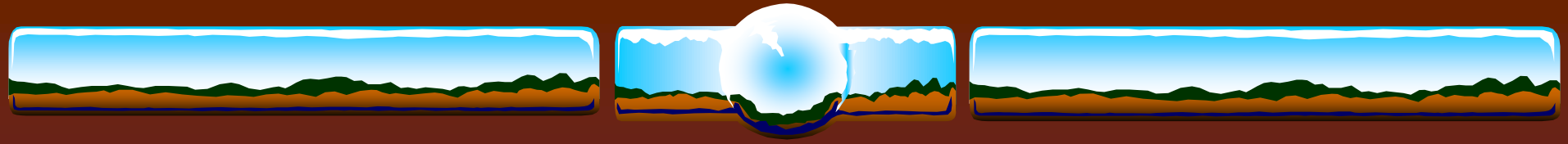
- Since it was first described by a French dentist, all the terms used in this currents are French
- To describe the current the very close English terms are used

- Dia means Through
- Dynamics means Force



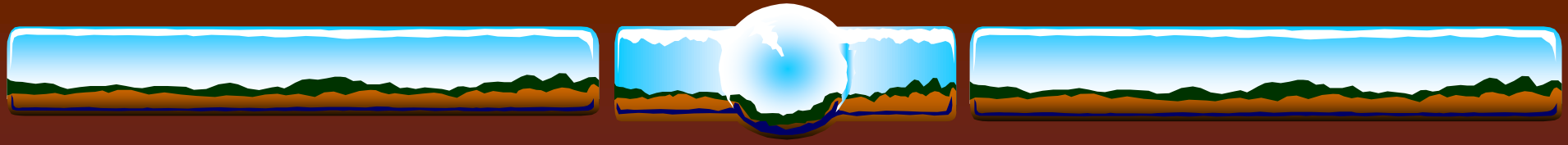
Physics of Diadynamic Current

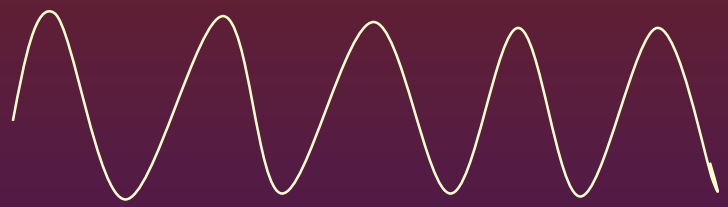
- Currents from main source (household supply) is Alternating Current and its characteristics are
  - 220 volts
  - 50 Hz
  - Sinusoidal in nature



Physics of Diadynamic Current

- For Diadynamic Currents the voltage is stepped down
- Alternating current is Rectified (AC is turned into DC)
- This Rectification can be either Half wave Rectification or Full wave Rectification

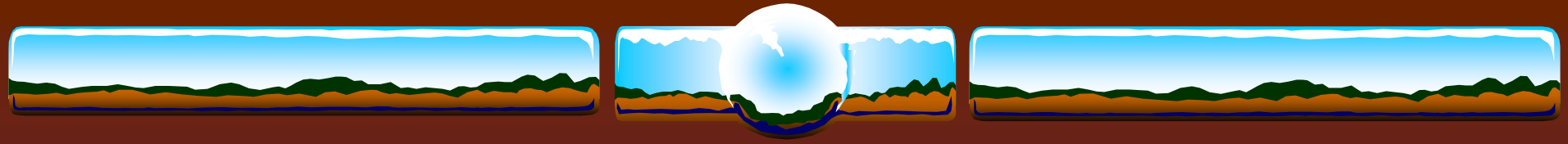




- AC – Sinusoidal in nature

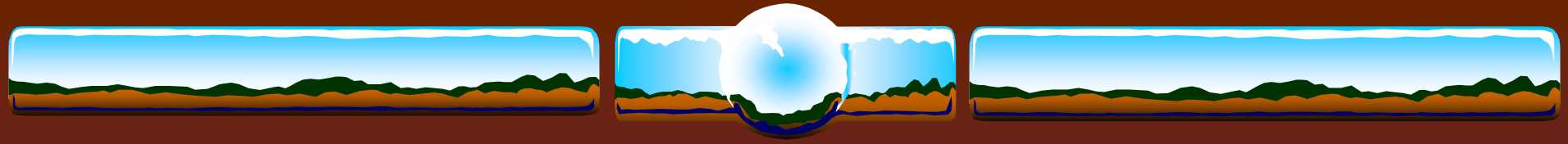
- Full wave rectification

- Half wave rectification



Physics of Diadynamic Current

- So the resultant current is
  - Monophasic in nature
  - Frequency
    - 50 Hz in Half wave rectification or
    - 100 Hz in Full wave rectification
  - Each Pulse Duration is 10 ms

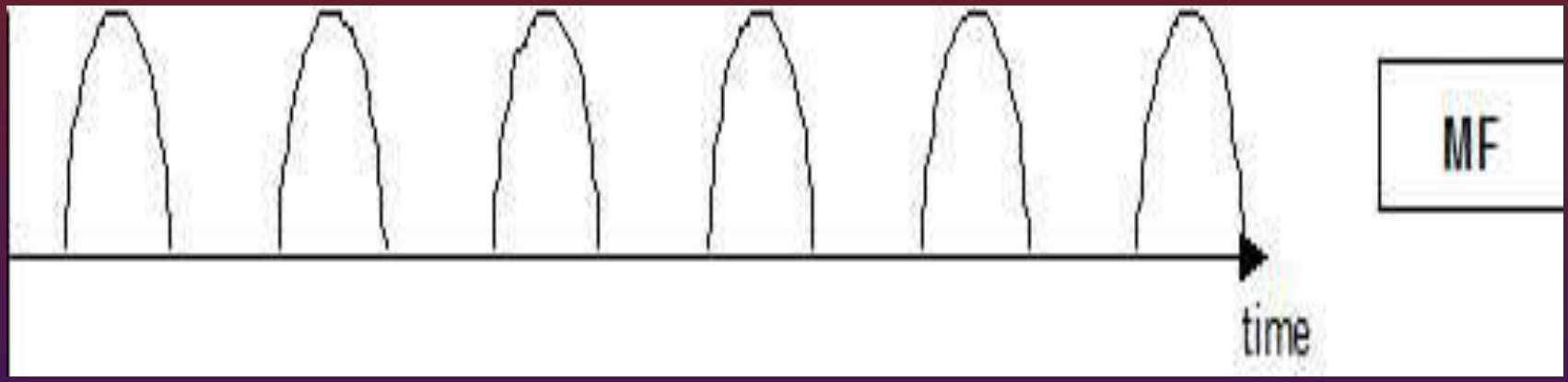


Different Modes of Diadynamic

- Bernard described 4 forms of Diadyamic
  - MF – Monophase Fixe
  - DF – Diphase Fixe
  - CP – Courtes en pêriodes
  - LP – Longues en pêriodes

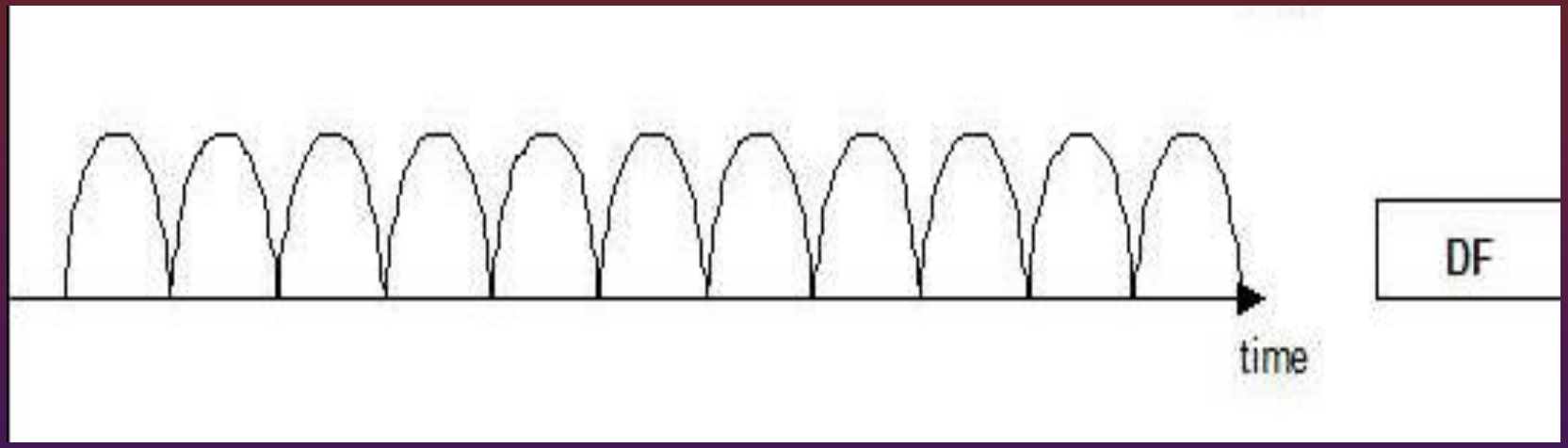
(Terms are in French)

MF – Monophase Fixe

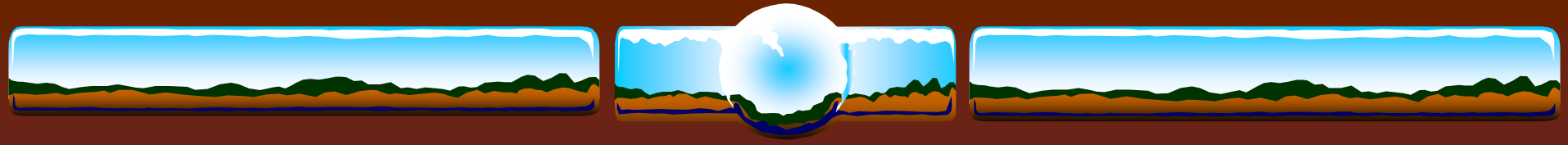


- Half wave rectification
- 50 Hz
- 10ms pulses with a 10ms interval
- Used for Muscle contraction

DF – Diphase Fixe



- Full wave rectification
- 100 Hz
- 10ms pulses with zero interpulse interval
- Used for Pain relief



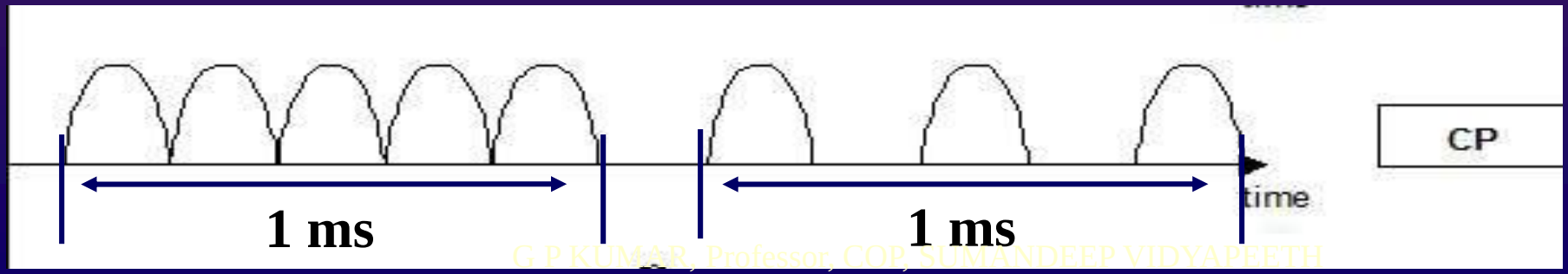
- Both MF and DF are constant in nature so Accommodation shall take place

- To Avoid Habituation he introduced two more modes
  - Courtes en pêriodes (CP Module)
  - Longues en pêriodes (LP Module)

CP Module
(Module en courtes pêriodes)

- Alternate application of MF and DF
- MF for first One second then DF for next One second
- Repeating the cyclical application

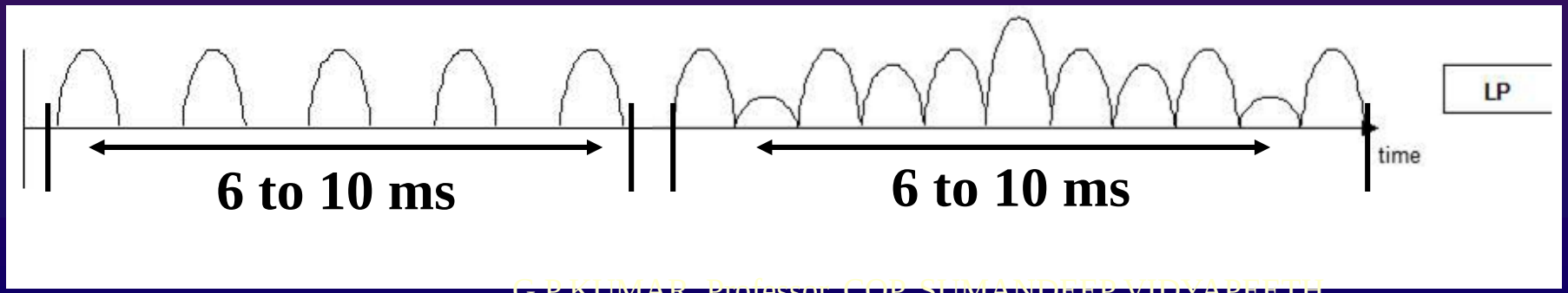
- Courtes in French means “Short”



LP Module
(Module en longues pêriodes)

- Alternate application of MF and DF
- Each form applied for 6 to 10 seconds
- DF applied in surging mode

- Longues means “Long”



Physiological Effects

- As with any other currents the physiological effects are determined by the characteristics of electrical currents

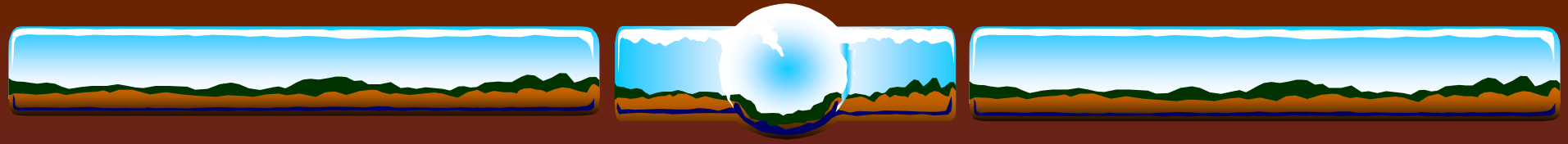
- It is 10 ms Pulse, comparatively long pulse duration
- Pulse frequency – 50 or 100 Hz

Physiological effects

- 10 ms Pulse – Strong sensory stimulation
- Uncomfortable in nature (than TENS)

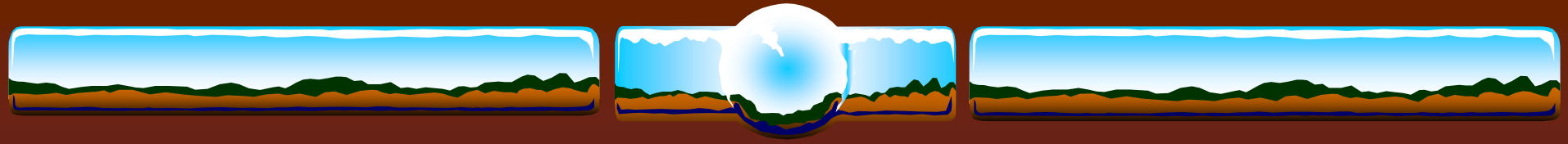
- Frequency
- 50 Hz – Muscle stimulation
- 100 Hz – Pain relief

- Both Sensory stimulation and muscle contraction can increase local blood circulation, thereby increase oxygen and nutrients supply, increase in metabolism



Therapeutic Uses

- Strong Sensory stimulation – Predominantly for Pain relief
- Along with Muscle contraction effects can be used for reducing inflammation
- Increase in local blood circulation can help in tissue healing



- Since it is a French invention very few literature are available in English
- Diadynamic current therapy is frequently used in Europe (mainland Europe) but not so commonly in UK and USA.
- Lack of literature is the major reason for its limited use

Any Questions

Queries will be answered during the online session

G P KUMAR, Professor, COP, SUMANDEEP VIDYAPEETH