

# Interferential Current Therapy

IFC



# Interferential Current Therapy

- Interferential current is essentially a deeper form of electrical stimulation

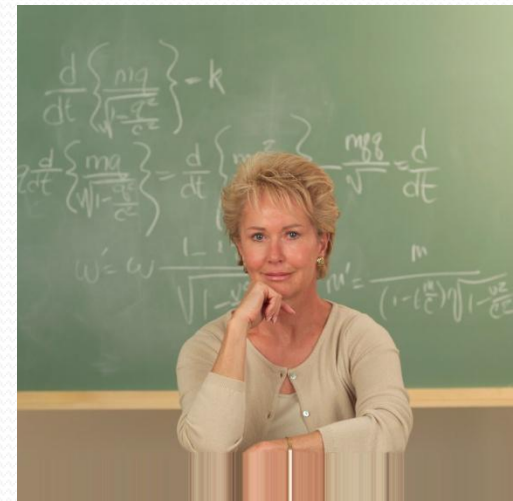


# Interferential Current Therapy

- In essence, IFC uses a carrier frequency, usually 4000 Hz and by crossing 2 individual current generators they “interfere” with each other, resulting in the desired treatment frequency within the body.

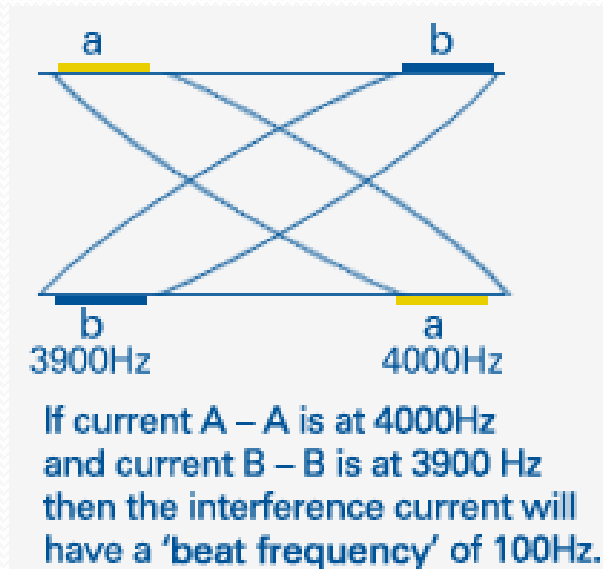


- **4000Hz** crossed with **4100Hz**
  - Leaves us with
  - **100Hz**



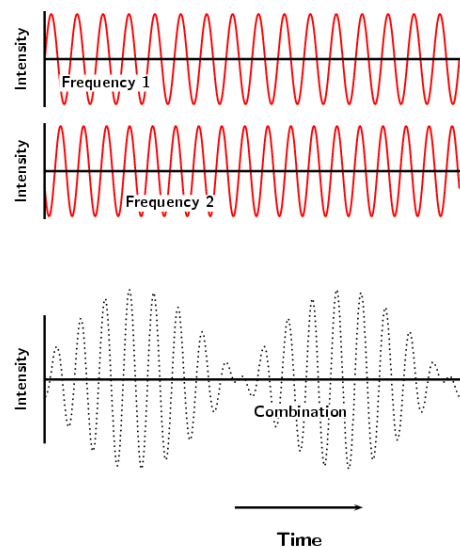
# Interferential Current Therapy

- The carrier frequency overcomes skin resistance more easily and penetrates the skin more deeply than a regular electrical stimulator, with less user discomfort for a given level of stimulation.



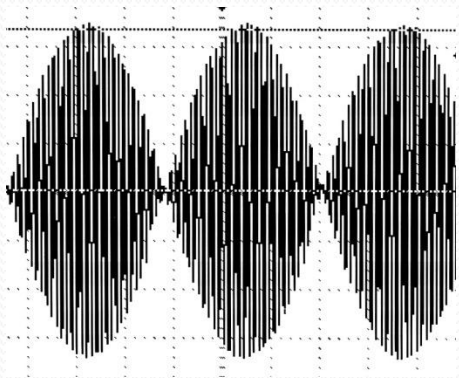
# Interferential Current Therapy

- Deep in the tissues, the body perceives the difference between the carrier frequencies which is the treatment frequency, resulting in electrical stimulation deep within the tissues rather than just under the electrodes where there actually is a numbing effect taking place.



# Interferential Current Therapy

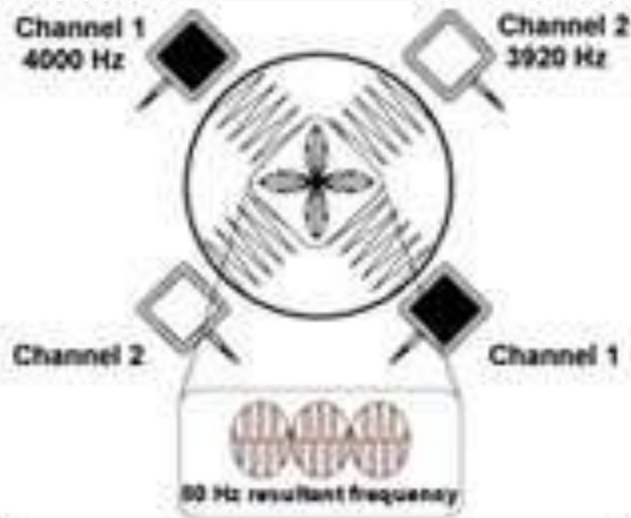
- For example, at a frequency of 4,000 Hz skin resistance is eighty (80) times lower than with a frequency of 50 Hz.
- Thus, Interferential current crosses the skin with greater ease and with less stimulation of cutaneous nociceptors allowing greater patient comfort during electrical stimulation



- $C = V/R$

# Interferential Current Therapy

- In addition, because Interferential current is tolerated better by the skin, the dosage can be increased, thus improving the ability of the Interferential current to permeate tissues and allowing easier access to deep structures.



# The physiological effects of IFC:

- 1. Depending upon the parameters that are selected, there can be an increase in localized blood flow





# The physiological effects of IFC:

- 2. Depending upon the parameters that are selected, there can be the stimulation of local nerve cells that can have a pain reducing/analgesic effect due to potentially blocking the transmission of the pain signals (pain gate mechanism) or by stimulating the release of pain reducing endorphins (opiod mechanism)



# The physiological effects of IFC:

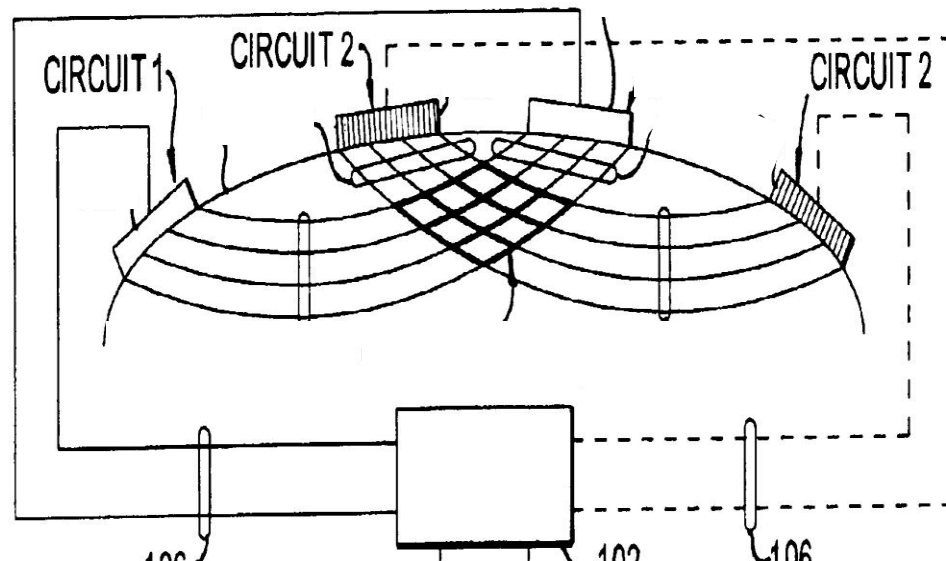
- 3. Depending upon the parameters that are selected there can be some degree of muscle stimulation as muscle contraction can be achieved through external application of electrical current, overcoming some of the muscle inhibition often caused by local injury and edema



# IFC

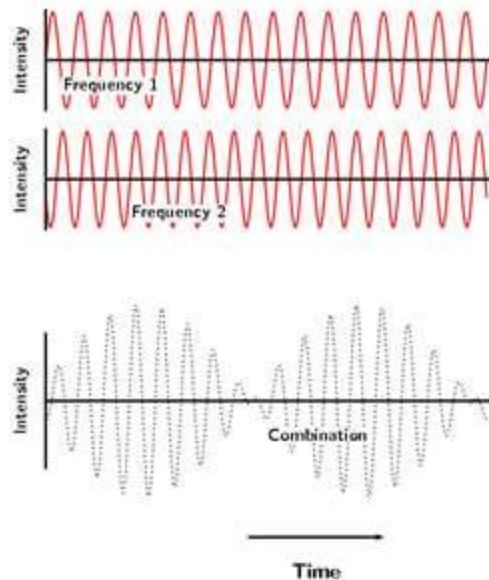


- The electrical current is applied to the affected area using four electrodes from 2 channels of the stimulator.
- The four electrodes are placed in such a way that the two channels cross each other in the affected area.



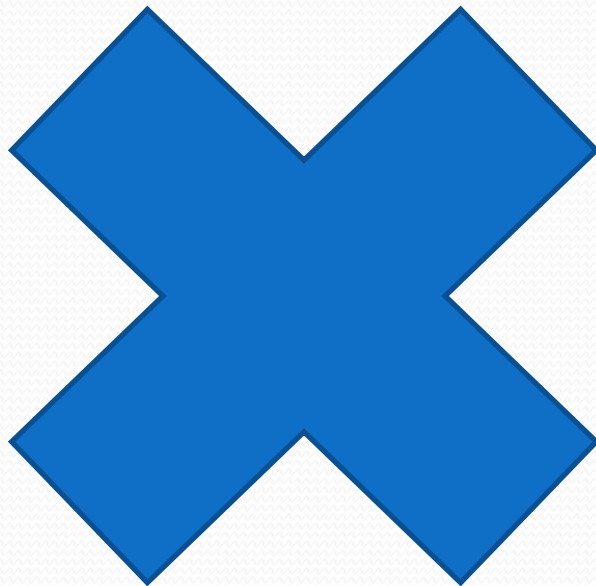
# Interferential Current Therapy

When the current pathways intersect, they will either be in phase, or out of phase. This means that they will either summate (add to each other) or neutralize (cancel each other out).



# Interferential Current Therapy

- For example, if it is a knee injury that is being treated, the two channels can be applied so that they cross deep within the actual knee joint itself. Where the two currents meet, they actually 'interfere' with each other; hence the name 'interferential.'



# Interferential Current Therapy

- The patient should not feel any discomfort from the application of the interferential current.
- The electrodes will usually be self-adhering electrodes or carbon electrodes that are used with a damp sponge placed between the electrode and the patient's skin.



# Interferential Current Therapy

- If discomfort is felt it is usually because an electrode is not damp enough which means that the resistance is too high!



Imagine what it would be like to try to run when you are tethered...the resistance would be incredible! It would be so much easier if you could just run!

# Interferential Current Therapy

- During treatment patient will feel a tingling or 'pins and needles' sensation at the contact area of the electrodes and may also feel the tingling sensation throughout the area being treated.
- This sensation may continue for a brief period following treatment as well.





# Interferential Current Therapy

- The intensity should be increased within the patient's comfort level.
- A stronger intensity will usually have a more beneficial effect but the intensity should not be turned up so high as to cause it to be uncomfortable.



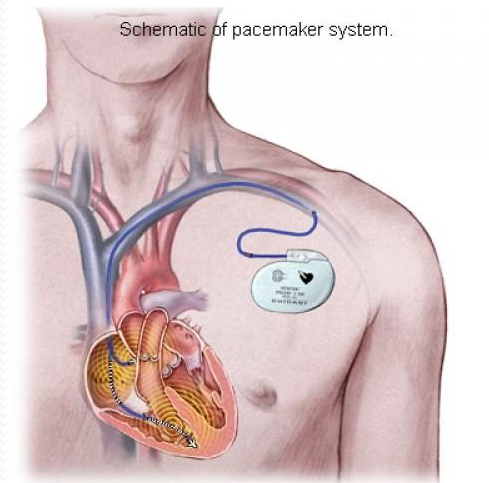
# Interferential Current Therapy

- IFC has been used in physical therapy treatment for many years and has been proven to be very safe.
- However, use should be avoided on individuals with pacemakers and near the low back or abdomen of pregnant women.



# Interferential Current Therapy

- You should also avoid the use of this modality in a body part where there is any possible risk of metastasis.
- It should never be used across the thoracic cavity as the heart is a muscle!



# Interferential Current Therapy

- OK, I think I understand IFC, but what happens under the electrodes?
  - Wedensky Inhibition
    - A Beta Fibers have a maximum conduction velocity of about 120 m/sec
    - Impulses are being delivered at a rate of over 4000 Hz
      - There is no time for the nerve to re-polarize which results in NO sensation = numbness



# Interferential Current Therapy

- The sensation is instead felt deep within the tissues where the current pathways intersect each other.
- It is felt at whatever the burst rate was set to be.



# Interferential Current Therapy

- This means that if your treatment goal was:
- Analgesia, you just select 70-120 Hz
- Edema reduction, you just select 35-50 Hz
- Muscle guarding reduction, you just select 50-80 Hz
- These numbers should sound very familiar to you!



# Interferential Current Therapy

- The benefit of IFC is that it is deeper, and more comfortable for your patient!



# Interferential Current Therapy

- It's just another form of electrical stimulation that you can use to accomplish your treatment goal
  - You just need to remember that:
    - It must be an IFC unit
    - The electrodes must be crossed
      - You must look at the lead wires to double check to make sure that the channels are crossed

