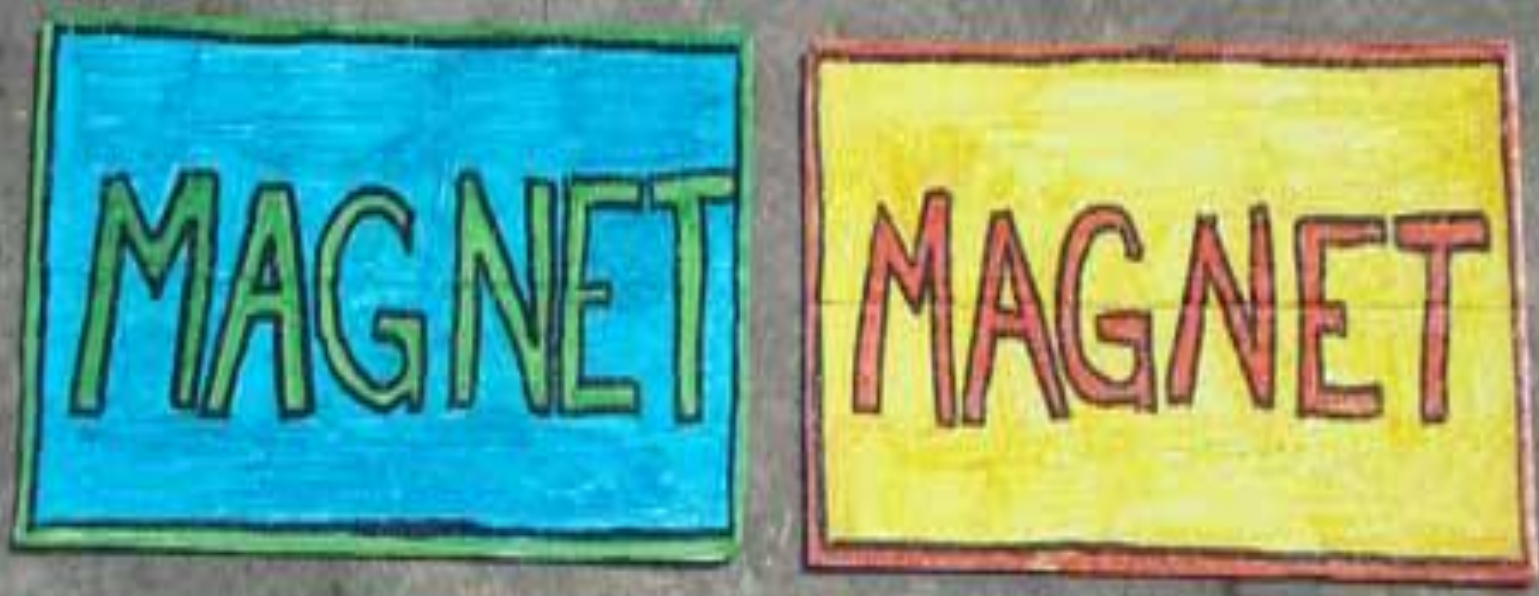
Magnetic Therapy



RHS 321

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Outlines

1. Definition of magnet
2. Types of magnet
3. Properties of magnet
4. Magnetic lines of force
5. Electromagnetism
6. Right hand thumb rule
7. Therapeutic benefits of magnets and electromagnetic field (EMF)
8. Therapeutic magnets
9. Physiological effects
10. How to use magnet therapy
11. Safety Issues

Objectives

By the end of this lecture the student should be able to:

1. Define the magnet
2. List the types of magnet
3. Clarify the properties of magnet
4. Define magnetic lines of force
5. Define electromagnetism
6. Clarify right hand thumb rule
7. Identify therapeutic benefits of magnets and electromagnetic field (EMF)
8. List therapeutic magnets
9. Identify physiological effects of magnets
10. Identify how to use magnet therapy
11. Determine safety issues of magnet use

Introduction

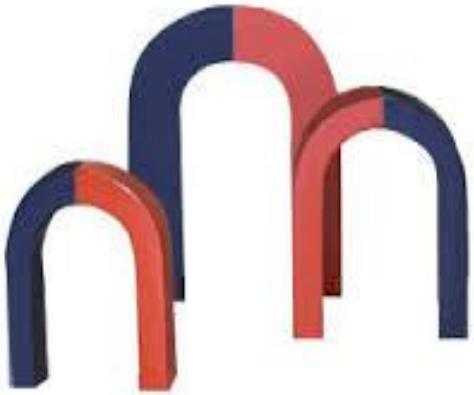
Science of magnetism dates back to 600 BC

Magnet: is a piece of substance, which possesses the property of attracting small pieces of iron toward.

Types of magnets:

1. Natural magnets: found in nature. Theses magnets are weak and shapeless
2. Artificial magnets: man made . These magnets are strong and of different shapes.

They may be bar shaped, horseshoe shaped, magnetic needles, magnetic compass, etc



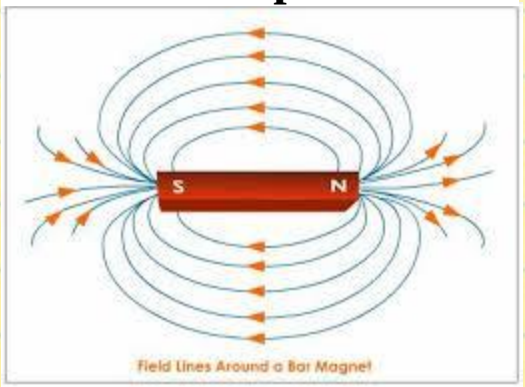
Horseshoe shaped

Magnetic needles

Ring shaped

Bar shaped

Magnetic compass



Types of artificial magnets

1. **Temporary magnets:** magnetism of these magnets is temporary. It is made of soft iron.
2. **Permanent(static) magnets**: magnetism of these magnets are permanents. It is made of steel, nickle and cobalt.

Magnetic poles

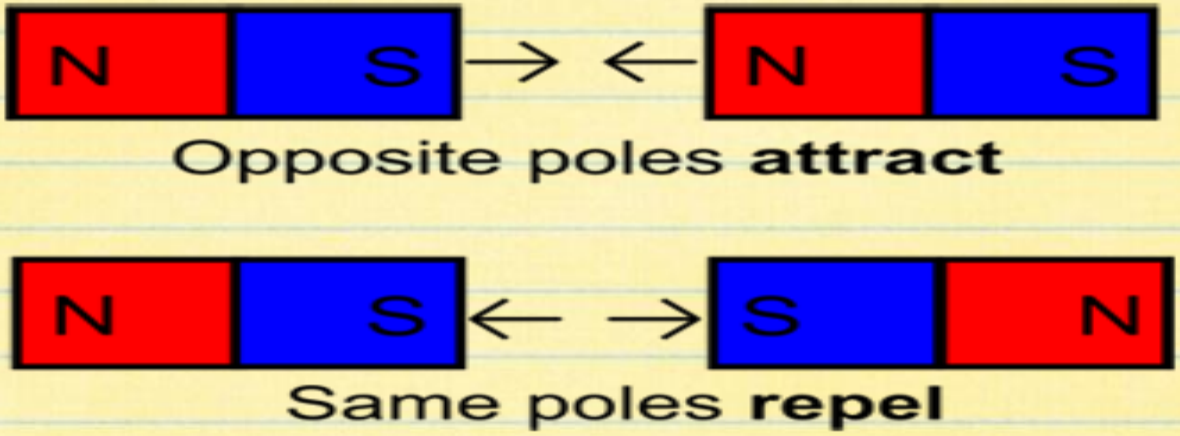
The points inside the magnet, where attraction is maximum are called poles.

Each magnet has two poles viz, north pole and south pole.

North pole: the end of the magnet pointing towards north is called north
seeking pole or north pole

South pole: the end of the magnet pointing towards south is called south
seeking pole or south pole

In the magnet the unlike poles attract each other and like poles repel each other



Properties of magnets

It attract the magnetic substances such as pieces of iron. These pieces are attracted towards both the poles, north as well as south. The attraction is greatest at the poles and decreased as we move towards the center of the magnet.

1. A freely suspended magnet sets itself in the direction of north to south.
2. Similar poles repel and opposite poles attract each other.
3. Isolated north or south pole is not possible
4. Heating and hammering destroy the magnetic property of the magnet
5. Magnetic substances are magnetized by magnetic induction
6. A magnetic field is the area or zone of influence around a magnet in which its magnetic force is apparent. The field is made up of magnetic lines of forces

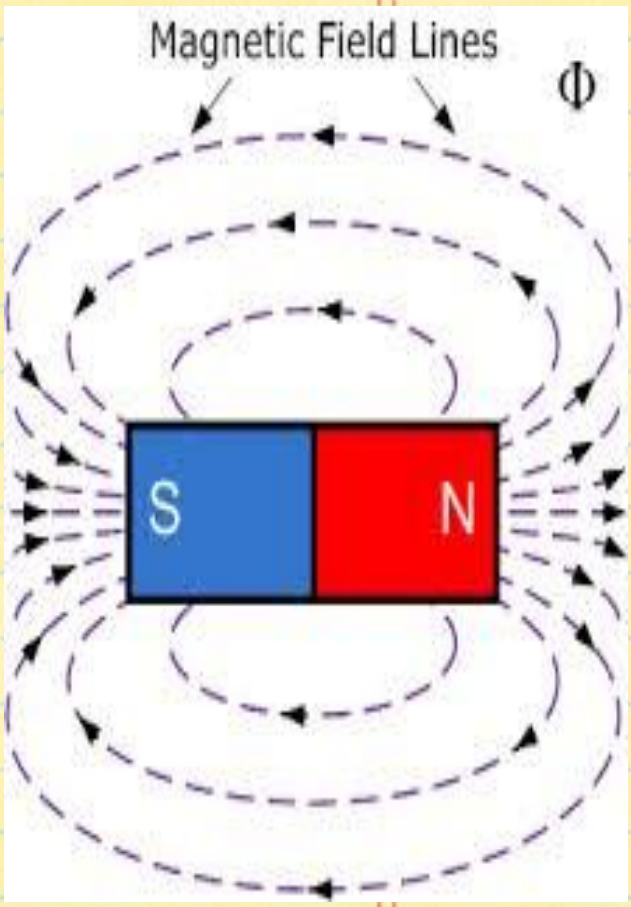
Magnetic lines of force

Magnetic lines of forces are the graphical representation of the magnetic field .

Magnetic lines of force is the smooth curve in a magnetic field such that the on it gives the direction of the magnetic field at that point

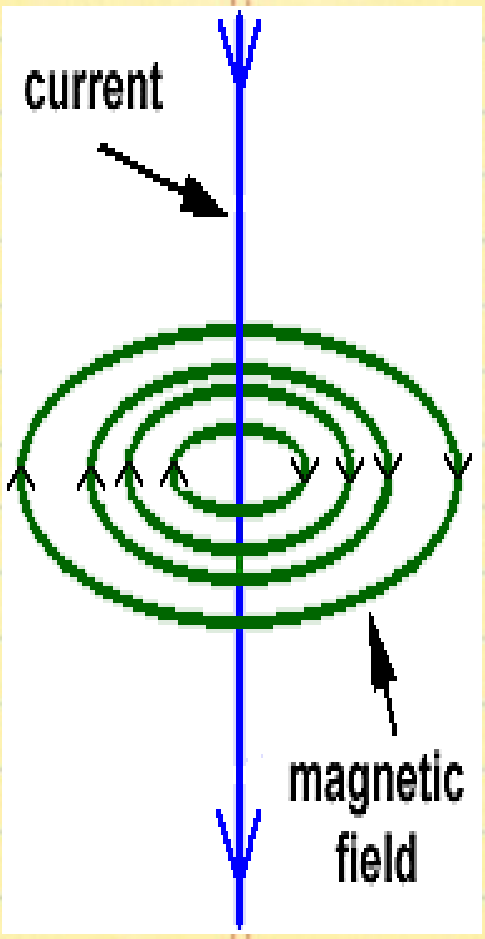
Magnetic induction

The phenomenon by which magnetism is produced in the magnetic substance with the help of the magnet is called magnetic induction



Electromagnetism

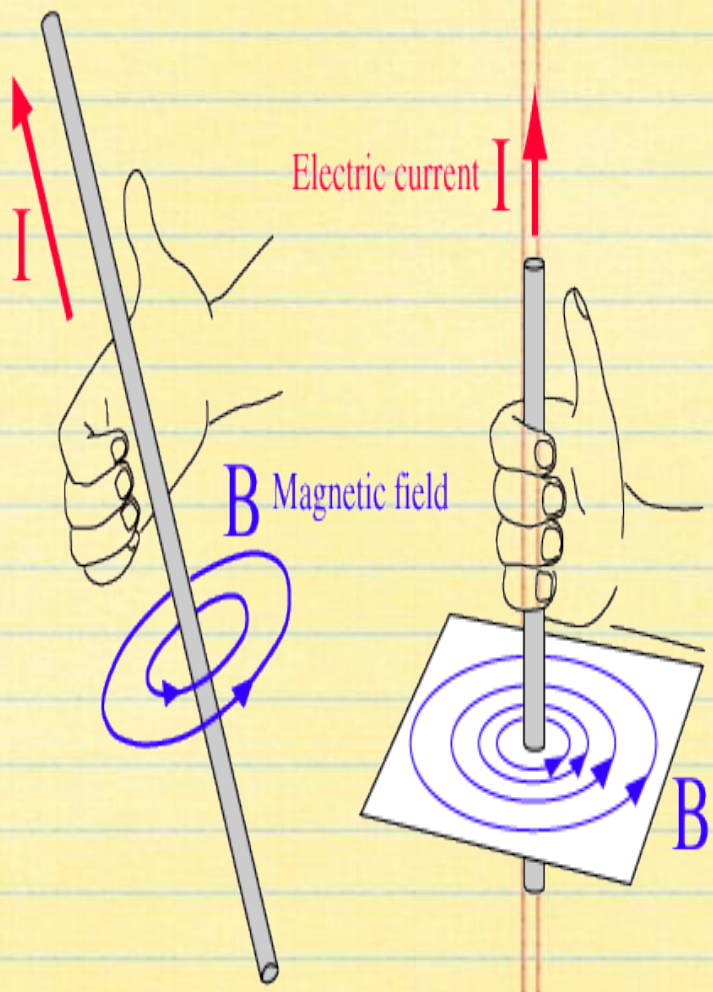
- An electromagnet consists of a coil of wire wound onto a soft iron bar. When a current passes through the wire it magnetizes the bar by induction. As soon as the current is put off, the magnetic field is lost.
- Wire carrying an electric current produces magnetic field around a straight wire in the form of concentric circles with the wire at their center



Right hand thumb rule

Imagine the wire carrying current , to be held in your right hand ,with the thumb pointing in the direction of electric current.

The direction, in which the fingers curl, gives the direction of the lines of the force of the magnetic field.



Therapeutic benefits of magnets and electromagnetic field (EMF)

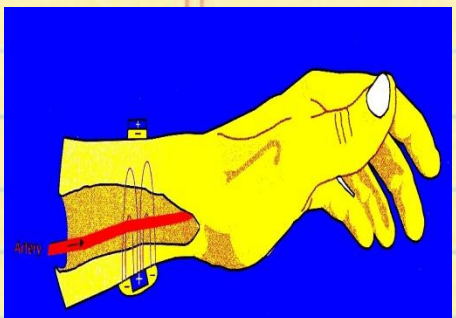
- Results of several preliminary studies (Scientific Evidence) suggested that both static magnets and electromagnetic therapy may indeed offer therapeutic benefits for several disorders.
- Static (permanent) magnets come in various strengths. The units of measuring magnet strength are gauss and tesla.
- One tesla equals 10,000 gauss. A refrigerator magnet, for example, is around 200 gauss. Therapeutic magnets measure anywhere from 200 to 10,000 gauss, but the most commonly used measure 400 to 800 gauss.

Therapeutic magnets come in two different types of polarity arrangements:

Unipolar magnets

1. ***Unipolar Magnets :***

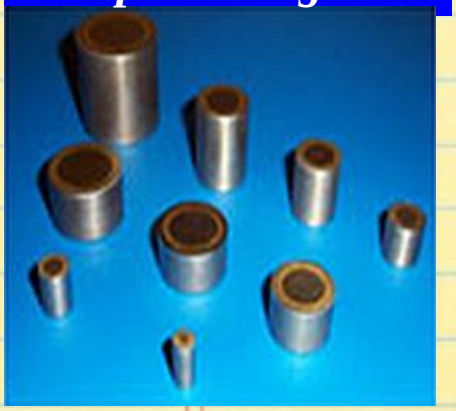
   A true unipolar magnet does not exist; however, **unipolar** refers to a biomagnet that is used in such a way that **only one pole** – either north or south (but not both) – **faces the body**, while the opposite pole faces away from the body.



Bipolar Magnet

2. ***Bipolar Magnet:***

   The term **bipolar** refers to biomagnet (healing magnet) that allows **both poles** – north and south – to **face the body** at the same time.



Physiological effects

- Magnets attract the iron in blood cells, thus moving the blood and stimulating circulation. However, the iron in the blood is not in a magnetic form.
- Static magnets could affect charged particles in the blood, nerves, and cell membranes or subtly alter biochemical reactions, although whether the effect is strong enough to make a difference remains to be shown.
- Some research results suggest that static magnets affect local blood circulation, but have no effect on blood flow.
- Another well-designed trial also failed to find effects on blood circulation. However, there is some weak evidence that static magnets may affect muscle metabolism.
- Further research will be necessary to sort out these possibilities.

Therapeutic effects

The studies suggests that magnet therapy may reduce the pain associated with:

1. Rheumatoid Arthritis, Post-polio Syndrome
2. Fibromyalgia,Peripheral Neuropathy
3. Postoperative (Surgery Support)(reduction of pain and swelling)
4. Low Back Pain and Other Forms of Chronic Musculoskeletal Pain
5. Osteoarthritis
6. Pelvic Pain (e,g menstrual pain)
7. Carpal Tunnel Syndrome ???????
8. Sports Performance (using magnetic insole)

Pulsed Electromagnetic Field Therapy (PEMF)

Pulsed electromagnetic field therapy (PEMF)

- PEMF therapy has been used to stimulate bone repair in non-union and other fractures.
- More controversially, PEMF has shown promise for osteoarthritis, stress incontinence, and Migraines.

How to Use Magnet Therapy

- The following is a brief description of the use of magnet therapy. However, keep in mind that the current ways that magnets are used have yet to be fully evaluated by long-term clinical testing.
- A full medical evaluation is advisable before using magnets.
- You don't want to be treating a painful back with magnets if the underlying cause of pain is a fracture or a tumor!

How to Use Magnet Therapy 1-Magnet type

- Choose among many different types of magnets and magnetic devices on the market today.
- There are a number of theories on the size and type of magnets to use and where to apply them, based on the type of condition being treated and other factors.
- Because unipolar magnets have greater depth of magnetic field penetration, some researchers consider these more effective in treating deeper tissues.
- Conversely, it is considered that alternating-pole magnet devices might be might be more effective at stimulating surface tissue.

- Thus, it might be appropriate to use a unipolar high-gauss magnet for low back pain that originates deep in the tissue and an alternating-pole configuration for an injury closer to the surface, such as a wrist sprain. However, there is no meaningful scientific evidence to support these distinctions.
- There is general consensus that the magnet should be placed as close to the affected part of the body as possible. This can be done by taping the magnet to the skin, slipping the magnet inside a bandage over the affected area, or using a wrap device that has magnets embedded in it.

Tape holding magnets to the body might irritate the skin; in addition, some research scientists and practitioners suspect that the body may accommodate to the magnetic field over time, thus reducing the therapeutic effect. In order to prevent both the irritation and the accommodation, practitioners usually recommend intermittent use, such as 5 days on, 2 days off; or 12 hours on, 12 hours off.

How to Use Magnet Therapy
2-Magnetic Devices Available

- Manufacturers make a wide range of magnetic devices.
- For treating large areas of the body, **wraps** and belts containing magnets are available. Wraps are specifically designed for the wrist, elbow, knee, ankle, neck, shoulder, and back, and are often made out of thermal material to have the added effect of warming the area.
- These wraps are often recommended in cases of injury and arthritis where heat feels better.

Wraps


IT IS MAGNETIC


29 Magnets!


ELBOW WRAP
with Bonus
Magnetic Patches
NEOPRENE
MAGNETIC


ore No : 324919

Proponents of magnet therapy recommend **magnetic foot insoles** for people with diabetic peripheral neuropathy, leg aches and pains, circulatory problems of the lower extremities, or foot injuries and problems, and for people who stand all day.

Magnetic necklaces are said to be useful for neck and shoulder pain as well as for generalized aches and pains, and magnetic bracelets are advocated for wrist pain and general problems.

Magnetic foot insoles

Magnetic necklaces

Proponents of magnet therapy often recommend the use of **magnetic mattress** pads and mattresses for people with problems affecting several areas of the body, such as fibromyalgia or arthritis; they also recommend magnetic mattress pads for insomnia and fatigue.

Safety Issues

- In general, magnets appear to be safe; the biggest risk appears to be irritation from tape holding them in place. people who use static magnets daily or sleep on them every night are subjected to a low level of magnetism over a long period of time.
- So far, it is not known whether this type of exposure has any deleterious effects. Nonetheless, one study, in which participants slept on a magnetic mattress pad every night for 4 months, found no side effects.

Safety Issues

- It was previously thought that people with implantable cardioverter defibrillators (ICDs) and pacemakers should not use magnetic devices at all, but this recommendation has been adjusted. One study found that with the exception of magnetic mattresses and mattress pads, most magnets sold for therapeutic purposes do not interfere with the magnetically activated switches present in most pacemakers.
- Magnetic mattress pads can deactivate and alter the function of ICDs and pacemakers, but other therapeutic magnets are safe if kept 6 inches or further from these devices

Summary


Thank you