

# Exploring The Brain.....

Hockey analogy, page 397

## Brain functions.....

- coordinate efforts from all organs and glands to maintain homeostasis
- processes sensory information from your PNS
- a high energy organ, 2 % of body mass, but 15 % of blood supply and 20 % of energy

## Early research :

studying brains of people with obvious brain diseases or injury, concluded that any brain abnormality was the cause of their symptoms....Unethical to subject healthy brains to study, used lab animals too.

## Later research :

technology was developed to study brains better and in “less invasive” ways...

1924, Hans Berger invents the electroencephalograph ( EEG ),

a device making a paper recording of brains different levels of electrical activity ( brain waves )....can diagnosis epilepsy and tumors. Also used to study brains during sleep, diagnosing sleep disorders.

1950's, Wilder Penfield develops a process of direct electrical stimulation of open brain tissue with tiny electrodes, mapping brain function as the conscious patient explains what they experience. Nobel prize winner.

1980's, Brain scanning techniques developed...

**Computerized Axial Tomography (or CAT scan)**...a series of x rays scan the body ( in slices or layers ) which are then compiled on computer to give an internal 3D human image.

**Positron Emission Tomography (PET Scan)**...a type of nuclear imaging using radioactive isotopes injected into the blood. Their movement is tracked to identify which parts of the brain are most active during specific tasks.

**Magnetic Resonance Imaging (MRI Scan)**...uses strong magnets and radio waves to excite hydrogen atoms in your body fluids, they emit a magnetic field, detectable by the scanner and shown on computer. Great soft tissue detail and a complete internal picture.

These technologies allow for very detailed internal scans of all tissues, blood flow, and abnormalities...

- spinal injuries
- strokes
- brain bleeds / swelling
- tumors
- developmental abnormalities

Allows doctors to carefully plan surgeries, identify emergencies, in a noninvasive means.