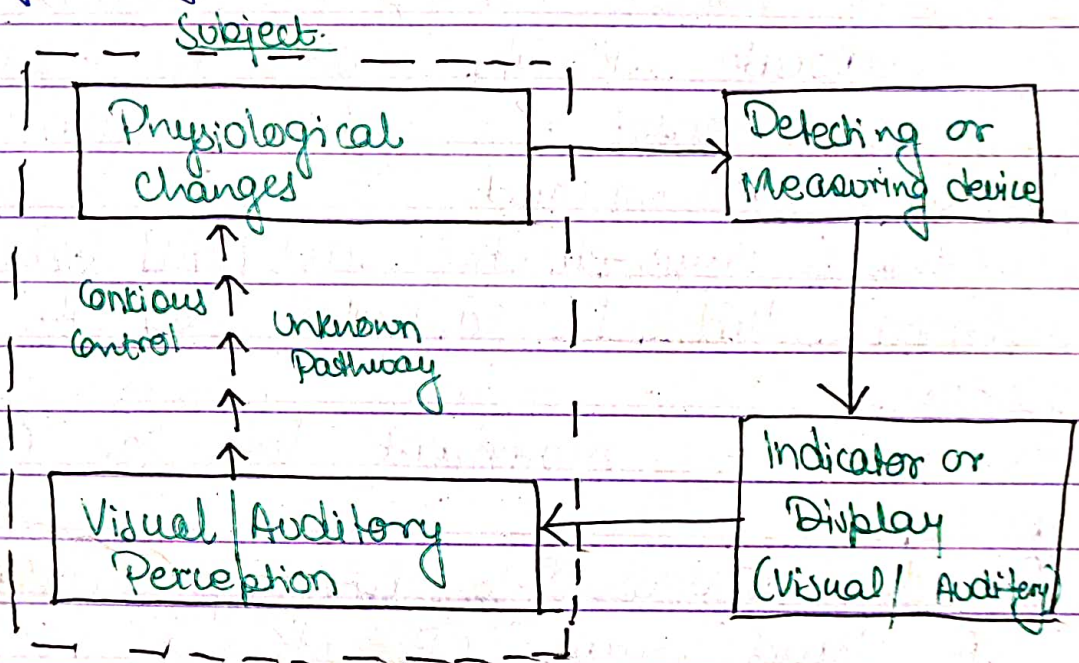


BIO-FEEDBACK

A technique to reveal to human being some of their internal physiological events normal & abnormal in the form of visual & auditory signals in order to teach them to manipulate these otherwise involuntary or unfaired events by manipulating the displayed signals.

Principle



- The concept of biofeedback is expressed in principle by the bio-feedback loop.
- The physiological changes are detected or measured by some device
eg - The skin temp. is displayed on a digital indicator
- The subject perceives the information about the physiological function & makes conscious

attempts to alter it.

→ A neuronal pathway & are involved is not known.

Uses Of Biofeedback

Biofeedback is used for 2 main purpose

1. For the control of muscle activity & movement
2. for the control of stress related conditⁿ.

Control of Muscle Activity And Movement

→ To re-educate activity or wt. bearing
̄ pressure sensor — control of movement by pressure measurement.

→ In the myo-electric artificial limb, the artificial limb is controlled by the EMG activity.

→ To re-educate movement lost in CVA patients.

→ for the control of spasticity in case of CVA, head injury, CP etc.

→ for the control of movement in dystonic disorders.

for eg → spasmodic Torticollis.

→ To re-educate specific muscle activity in case of trauma to a muscle or its attachment tendon or muscle transplant.

→ for postural control in head positⁿ trainers are used.

Control of stress Related Conditions

In this condition relaxation is beneficial & biofeedback provides the means & motivatⁿ for the continued practice of relaxation. It involves control of autonomic nervous system.

- For muscle relaxatⁿ & pain relief in tension headache.
- For BP control in hypertension.
- For HR control in arrhythmias
- For vasodilatⁿ of hand in case of Raynaud's disease.

Technique of Application of EMG - Biofeedback.

→ Preparatⁿ of Apparatus

Instruments for providing EMG Biofeedback vary in complexity. It may range from simplest one \leq give only arranged meter unit response on a meter. The more complex machines allow changes in sensitivity from showing single meter unit response to those coupled with computing facilities & chart recorders \leq provide a permanent record of each training session.

Source of Interference like JWD & other electric field sh/b kept away.

Silver or AgCl (Silver chloride) electrodes are used.

→ Preparatⁿ of Patient.

→ Positⁿ of pt. depends on the aim of treatment, if relaxatⁿ is attempted the body must be fully supported in lying or half-lying positⁿ.

→ If mov. is attempted the pt. is positioned so that the particular mov. can occur unhindered & be visible to the pt.

→ The skin must be cleaned wth an alcohol wipe & ~~sterilize~~ saline gel smeared b/w the skin & electrodes.

→ The electrode s/b fixed firmly in place wth sticking tape because mov. over the skin will lead to interference.

→ The positioning of electrode depends on the muscle involved usually over the belly of muscle or the point where it is most superficial.

→ Treatment

→ A full explanatⁿ of the purpose of the treatment & what is expected of the pt. is given. The need to remain still is emphasised.

→ The training session consist of series of

attempts by the patient

→ The therapist encourages the patient verbally & suggest activities & may lead to desired muscle contractⁿ.

→ As the voluntary control of ms. contractⁿ improves, the sensitivity of device c/b gradually reduced to provide a new goal to the patient.

→ If relaxatⁿ is the aim then sensitivity ↑ as the pt. improves.

→ In case of spasticity once the motor unit activity in the muscle at rest is under control the pt. attempts to reduce the electrical activity in the muscle during various degrees & rate of stretch.

→ Long treatment session s/b avoided as the pt. has to concentrate hard during the treatment session.