The the representation of the eeg channels and

The EEG is a recording of theelectrical activity in the brain.

It results from the activity of largepopulations of neurons. There are three ways in which a signal can be measured:'Action potentials along axons connecting neurones, currents through synapticclefts connecting axons with neurone, currents along dendrites from the synapseto the soma of neurones' (Hauk 2013). The electrical activity occurs from the cortical neurons in the brain which generateselectrical currents. These currents spread to the surface of the scalp wherethey are detected by the electrodes in the form of voltage changes. An EEGsignal can be explained by considering the electrical activity of a solitarypyramidal cell activated by an afferent pathway. The received signal of thesynapse allows a change in membrane potential of the postsynaptic membrane as aconsequence of the cations rushing into the cell. As this current transmitsdown the conductive dendron of the neurone, the size of the excitatorypostsynaptic potential (EPSP) decreases.

This results in a negative charge inthe extracellular space immediately surrounding the synapse. Thus, this createsa dipole with partial charges usually orientated in the cortex. Every neuronthat receive somatic inputs can therefore be thought as a dipole with specificorientation and polarity. Signals cannot be detected from single neurons as thepotentials are very small magnitude and on a cellular level are considered quitea distance from cell to scalp surface. The measurable signal detected is thesummation of thousands of neurones. (Hauk2013) These episodes might occur as hyperventilation triggers " typical" seizures and is performed by the child during EEGs. EEGs are measured using theInternational Federation 10-20 system. In

preparation, 21 silver-silverelectrodes are placed at specific anatomical points on the head of the patient.

A differential signal is amplified and sprayed as a channel of EEG activity. Montage is the representation of the EEG channels and there are many types: Bipolar (the difference between two adjacent electrodes), common reference(difference between one electrode and a common electrode) and finally averagereference (activity from all electrodes summed and averaged and then used as areference electrode. (ERS 2016)