

a method for cleaning electroencephalography data in conscious sheep*Charissa Harris, Peter White and Sabrina Lomax**University of Sydney, Australia; char2922@uni.sydney.edu.au*

The use of electroencephalography (EEG) offers potential as an effective and practical way of measuring pain response and efficacy of analgesia in livestock. A preliminary trial was conducted to identify muscle artefacts impacting EEG signal quality in conscious sheep. The trial was conducted using six hogget wethers sourced from the University of Sydney teaching flock, Cobbitty NSW. Lignocaine (1 ml) was administered to electrode placement sites to minimise discomfort. Subdermal 12 mm, monopolar needle electrodes (29 gauge) made from surgical steel (ADInstruments, Ltd.) were placed in a three-electrode montage adapted from Murrell and Johnson. EEG was recorded using Powerlab® and LabChart® software (ADInstruments Ltd). Initial traces were bandpass filtered between 0.5-40 Hz to obtain improved signals. Simultaneous video recording was used (Video Capture add on, LabChart ADInstruments) to identify artefacts caused by muscle movement, including blinking and head turns. Preliminary results for this trial show distinct artefact patterns for head movement to the right, left, eye blinks, and chewing. Further analysis in Matlab (Mathworks®) is being used to characterise these artefacts for removal from recordings. Data cleaning will allow accurate detection of changes in EEG output, such as differentiating muscle movements from treatment responses. These results will enable more accurate recording of EEG in conscious sheep, allowing the progression of this method for use as a means of pain detection in conscious sheep during husbandry procedures.