

A non-invasive technique for recording the electrical activity of the human spinal cord

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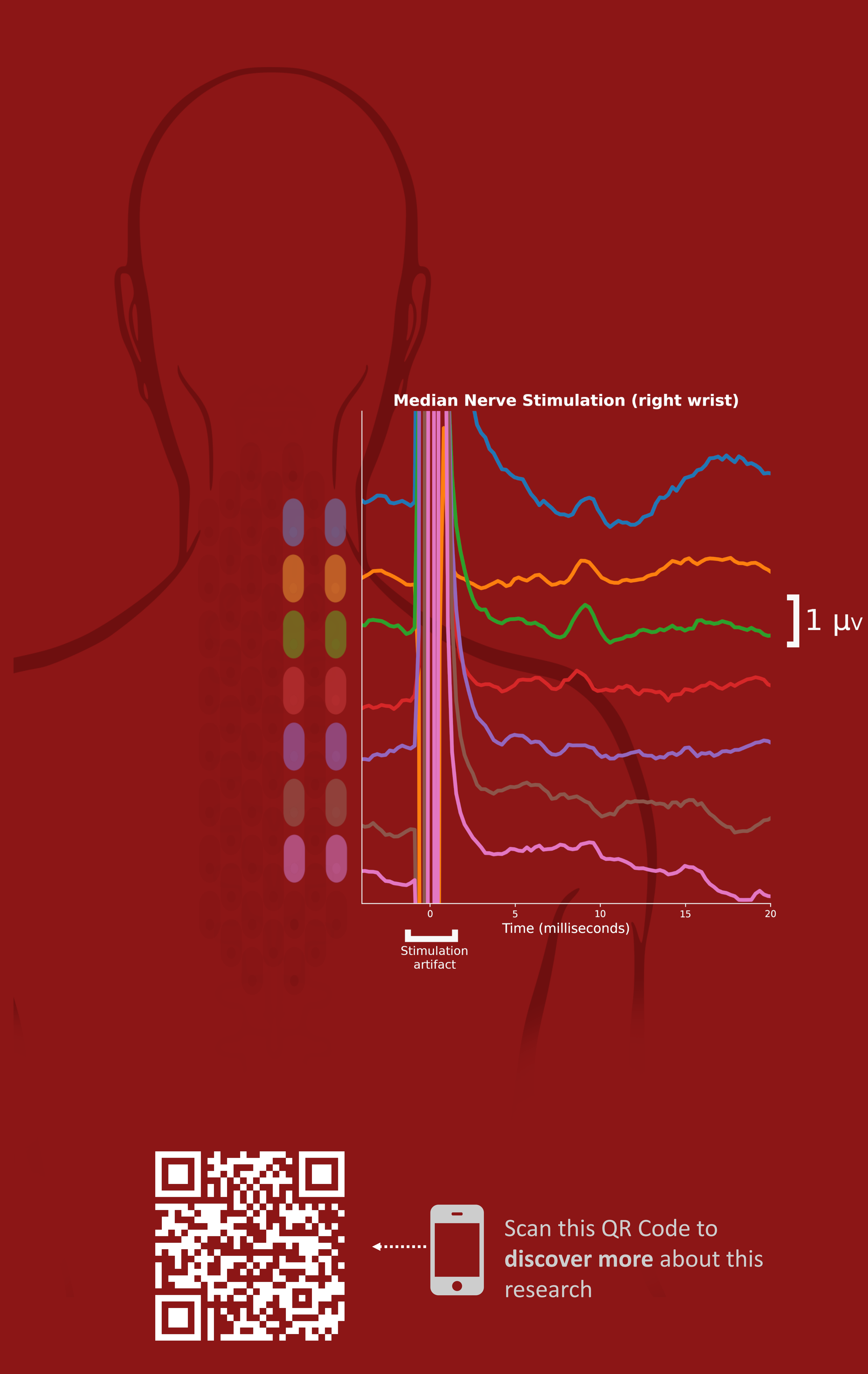
AIM OF THE PROJECT

This work aims to develop a **non-invasive technique** to record the **electrical activity of the spinal cord** using active surface electrodes.

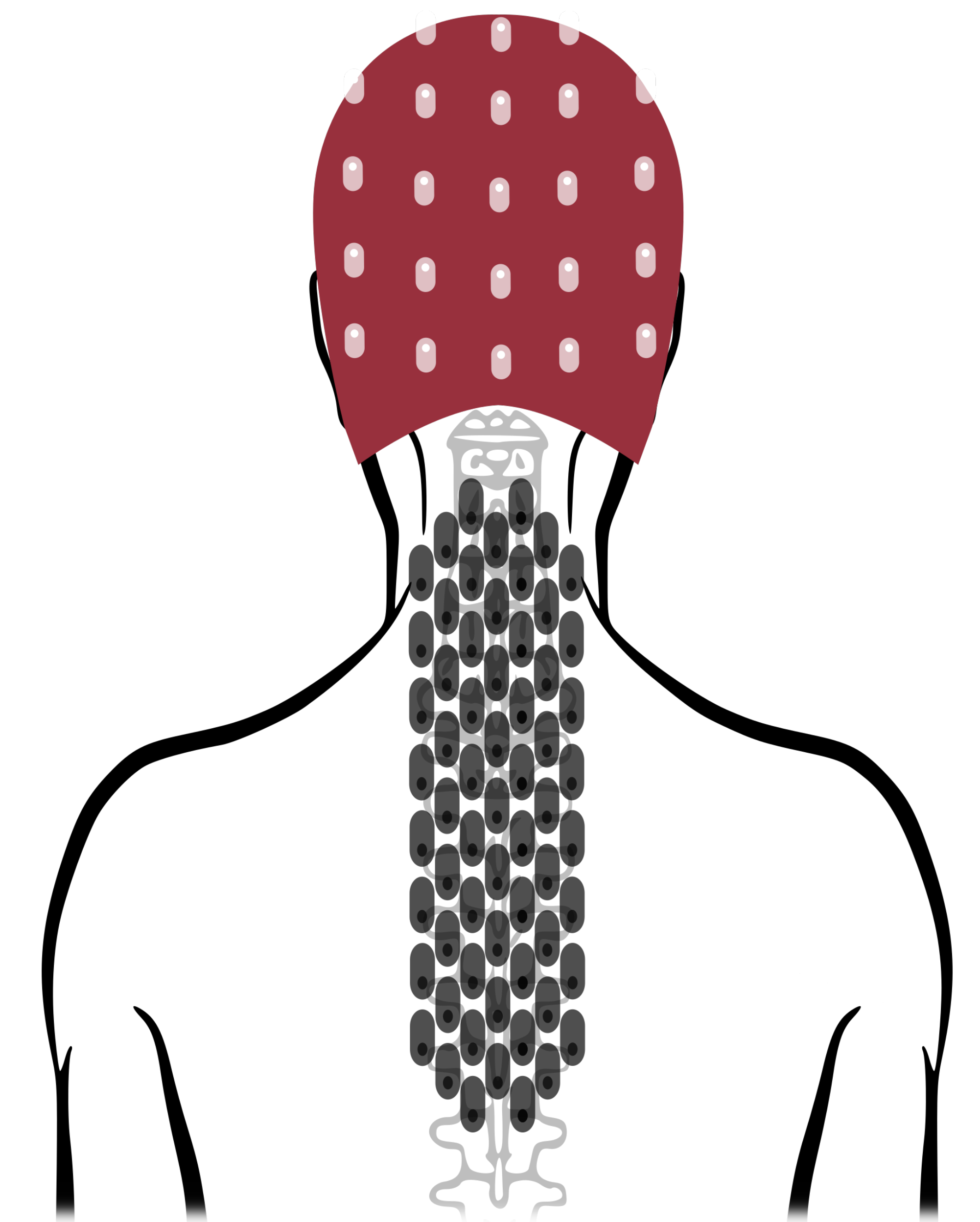
METHODS

We collected electrical activity of the spinal cord using an array of 64 active electrodes placed on the skin overlying the vertebral spinous processes from C2 to T6.

Subjects participated in three recording sessions entailing: (1) transcutaneous electrical stimulation of the median nerve; (2) discrimination of different levels of sandpaper coarseness, passively delivered on the fingertips; (3) discrimination of different sizes of spheres through active manipulation.



SETUP



- 63 active electrodes for spinal recording
- 32 active electrodes for EEG recording
- ECG
- 6 additional active electrodes on the Erb's point (2), anterior margins of the sternocleidomastoid muscles (2), anterior neck midline (1), right ear lobe (1).

PRELIMINARY RESULTS

After careful removal of massive ECG artifacts we detected **physiologically-plausible electrical potentials** evoked by median nerve stimulation. It remains to be ascertained whether these potentials reflect local synaptic activity or far-field potentials transmitted along lemniscal afferent pathways.