

Reproducibility of motor task-based fNIRS and comparison with functional MRI in healthy adults.

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METHOD

- 1. Simultaneous NIRS and MRI data.
 - 9 healthy adults over two sessions.
 - 8x8 CW optode system (NIRScout NIRx) layout over motor cortices.
 - BOLD fMRI and pCASL MRI perfusion.
 - Flexion-extension motor task design:
- 2. Preprocessing:
 - NIRS: Bandpass filter ([0.01;0.09] Hz) with MNE-Python [2].
 - BOLD fMRI: Matlab/SPM12.
- 3. Statistical analysis : first and second level standard GLM with Bonferroni correction for multiple testing (p <0.05 corrected for 20 channels) [3, 4].

RESULTS

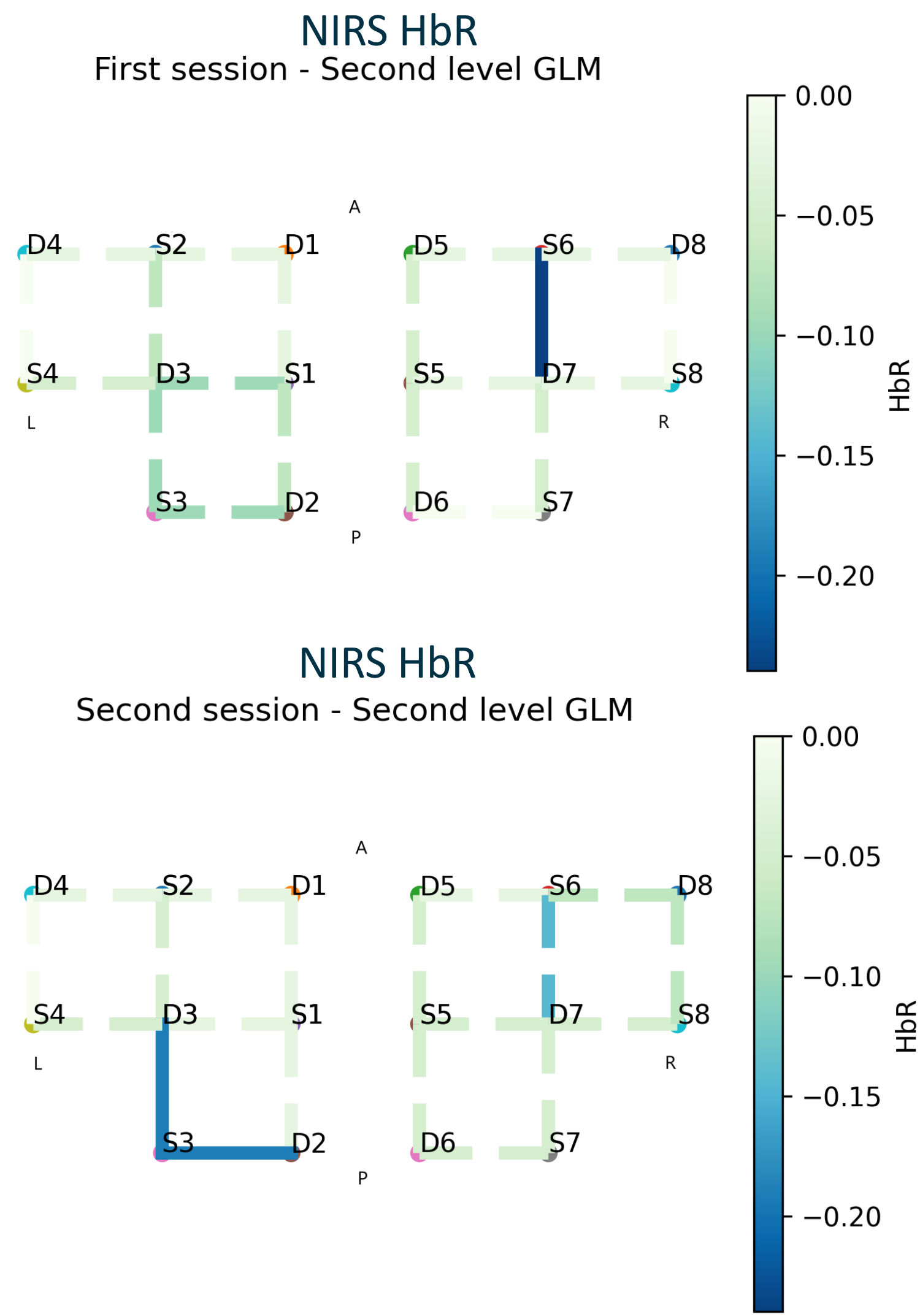
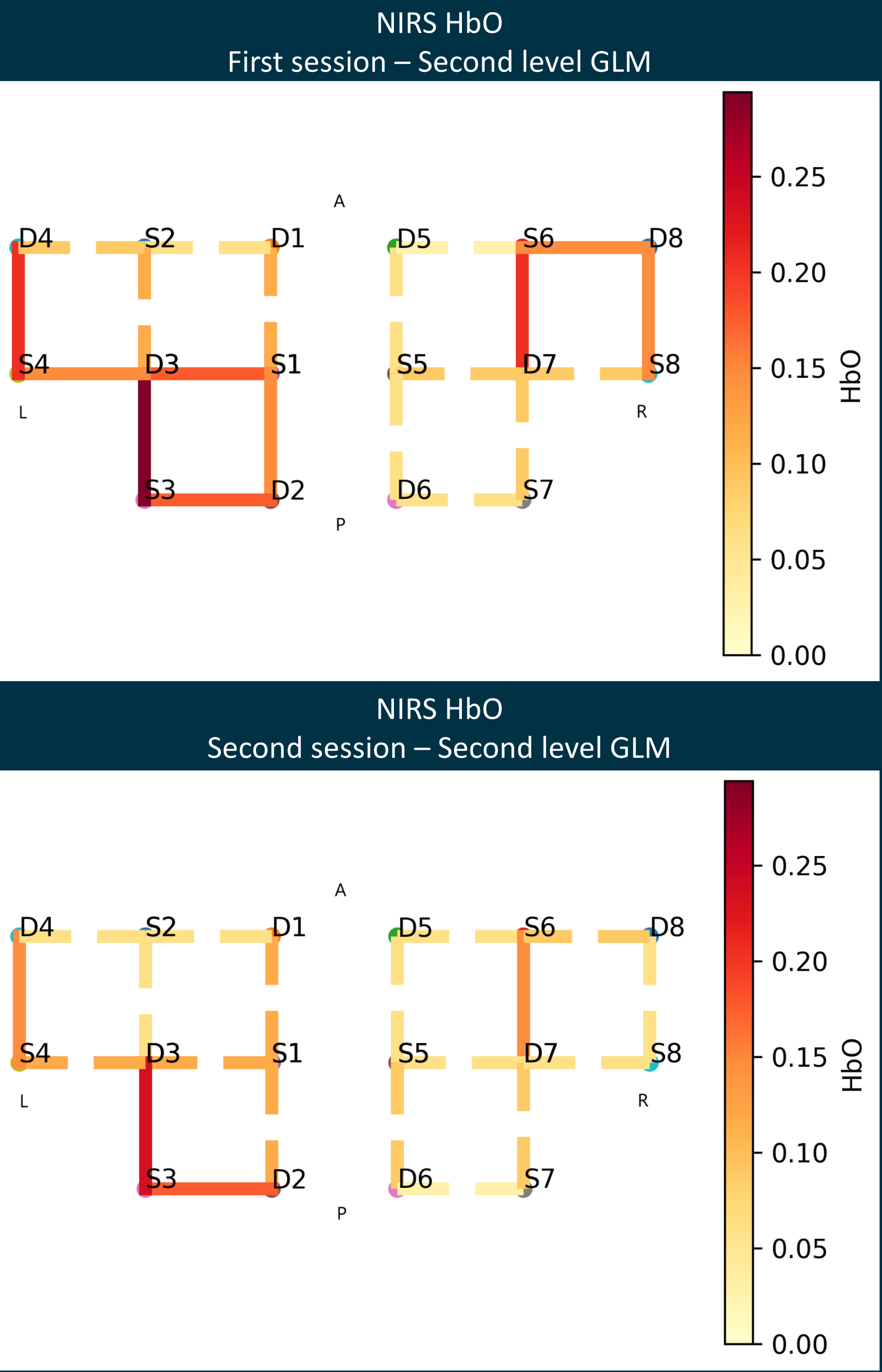
Individual level:

- **Concordant NIRS results** for HbO for session 1 and 2 in activated channels for 8 subjects.
- **Contralateral hemisphere activation** in NIRS and BOLD.
- **NIRS shows ipsilateral activation** for 5 subjects that were **not observed in BOLD** [5]. BOLD activations were systematically localized in the right-hand motor area.

Group level:

- **BOLD shows unilateral activation** on the left motor cortex.
- **NIRS shows bilateral activations** with maximal responses on the contralateral side.

NIRS shows reasonable inter-session spatial reproducibility but only partial agreement with MRI.



FUTURE WORK

- Spatial and temporal quantitative comparison of HbO and HbR to fMRI.
- Evaluation against pCASL MRI.

REFERENCES

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AFFILIATIONS

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