







patients becomes more bilaterally distributed with recovery of swallowing [36]. Hence, brain activation patterns over swallowing motor areas elicited by executing swallowing movements seem to “normalize” in the stroke patient with dysphagia after NF training.

## CONCLUSION

This first proof of concept study shows that a stroke patient with dysphagia can benefit from NIRS-based NF training in which motor imagery of swallowing movements is used as mental strategy to activate the swallowing motor cortex. There is evidence that external stimulation or inhibition of the swallowing motor cortex using repetitive transcranial magnetic stimulation (rTMS) leads to recovered swallowing function in dysphagia patients [3, 35, 37–39]. With NIRS-based NF, dysphagia patients might learn to increase or decrease voluntarily the activation level in specific swallowing related brain areas, without the need of external stimulation such as rTMS [28].

Our results indicate that future NF training studies with larger samples of dysphagia patients might reveal the usefulness of NF training in dysphagia rehabilitation.

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