

Working out the brain

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Propositions accompanying the thesis

Working out the brain:

Clinical applications of fMRI neurofeedback
& ultra-high field investigations of the underlying mechanisms

1. fMRI neurofeedback can help patients learn to control their brain activity specific to their disorder, improve the region's functioning, and relieve disorder-associated clinical symptoms.
2. Although EEG neurofeedback remains the most widely used neurofeedback modality due to its portability and lower costs, fMRI offers higher spatial resolution and depth penetration, and therefore enables more fine-tuned research and applications.
3. fMRI neurofeedback is not only a training tool used for clinical improvement and cognitive enhancement but can also be used for fundamental research to better understand normal brain functioning.
4. Caution is advised when translating or comparing training effects and benefits in healthy participants to clinical populations; non-performing can be due to many reasons, including poorer metacognition, structural changes in the brain, or regional activation deficit related to symptom severity.
5. Clinical trials are needed to confirm the proposed clinical benefits of fMRI neurofeedback.
6. To optimally utilize neurofeedback training, participants and patients need to gain a level of performance self-awareness to guide and monitor their self-regulation.
7. Laminar-based neurofeedback could enable targeting of more specific regions or parts of a network through connectivity.
8. Procedural and reporting standardization is essential for correct interpretation of demonstrated effects.
9. This dissertation brings fMRI neurofeedback closer to real-life everyday clinical applications.