

【文献調査】

Task-based neurofeedback training: A novel approach toward training executive functions

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1 タイトル

タスクベースの神経フィードバック訓練：実行機能を訓練するための斬新なアプローチ

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3 出典

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4 アブストラクト

認知訓練は、様々な神経発達および神経変性疾患における認知機能を改善するための新興アプローチである。しかしながら、現在の訓練プログラムは、比較的長い可能性があり、認知困難な患者にとって、もしかすると忠実に行うことは難しいかもしれない。以前の研究では、脳活動のレベル（神経フィードバック）に関するリアルタイムのフィードバックを個人に提供することは、もしかすると特定の脳領域の活性化を制御することを学ぶのを助けることを示唆している。本研究では、ニューロフィードバックの効果をコンピュータ化された訓練と並行して享受する、タスクベースのニューロフィードバック訓練パラダイムを開発した。我々は、様々な発達障害および神経変性疾患における中心的介入を考慮して、実行機能トレーニングに重点を置いた。前頭前野の酸素化ヘモグロビンの変化を測定することにより、神経フィードバックを提供するために、近赤外分光法（NIRS）が使用された。

20人の健康成人参加者のうち、10人が認知訓練中の前頭前野活動に対して実際の神経フィードバック（NFB）を受け、10人が偽フィードバック（SHAM）を提示された。SHAMと比較して、NFB群は、4回の訓練（合計100分）後の作業記憶の測定値を含む、有意に改善された実行機能パフォーマンスを示した。NFB群はまた、SHAMと比較して右前頭前野領域および下前頭領域を含む実行機能ネットワークにおいて、トレーニング関連脳活動を有意に減少させた。我々のデータは、認知訓練に加えて神経フィードバックを提供することは、比較的短い訓練期間の後に実行機能を高めることを示唆している。類似の設計は、既知の神経病理学を有する患者集団のために潜在的に使用され、もしかするとそれらが冒された脳領域における活性を増強/回復するのを助ける。

5 キーワード

Functional plasticity, Neurofeedback, Cognitive stimulation, Prefrontal cortex, NIRS

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