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**Neuroplastic effects and enhanced social behavior in patients with traumatic brain injury after neurologic music therapy**

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Damage to the Orbitofrontal Cortex (OFC) often occurs following Traumatic Brain Injury (TBI) and can lead to complex behavioral changes with a negative impact on the individual's social outcome. To investigate the effects of musical training on patients with behavioral and cognitive deficits following mild to moderate TBI, we performed a structured music-supported intervention of 8 weeks and recruited TBI patients in a chronic phase two years post injury. The intervention consisted of playing piano, two sessions per week, with instructor. Additional playing was required with minimum 15 minutes per day as home-practicing. Mean time was 3 hours per week for 8 weeks. Additional two control groups of healthy participants were included in the study. One group received music intervention whereas the second group was a baseline group without intervention. Participants were assessed with neuropsychological tests, fMRI pre-post intervention. The clinical group was presented semi-structured interviews in order to obtain subjective behavioral data. The music groups performed a daily log of practicing time. All TBI patients were on sick leave at the time of intervention. 6 out of 7 patients returned to work post intervention. The results demonstrated significant improvement of neuropsychological tests, functional changes in OFC and enhancement of social interaction. We propose a causal relationship between musical training and improved social functioning in reference to qualitative assessment, neuropsychological tests and functional neuroplastic changes in OFC. The novelty of the intervention may have clinical relevance for patients with behavioral problems following traumatic brain injury.

**Biography**

Berit Marie Dykesteen Vik has her expertise in exploring the brain's neural networks during music-production that is when playing an instrument. Her passion is in how music can change the brain's function in linking up lost neural connections and thus improve health and well-being. She has designed a method for neurologic music therapy after years of experience in research, evaluation, teaching and administration both in hospital and education institutions. She has founded the Institute of Cognitive Rehabilitation after Traumatic Brain Injury, an institute that applies her method in cognitive rehabilitation of brain disorders.

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