

# Motion perception, form discrimination and visual motor integration abilities in mTBI patients

Mariagrazia Benassi; Davide Frattini; Roberto Bolzani; Sara Giovagnoli; Tony Pansell

## — Author Affiliations & Notes

Mariagrazia Benassi

Department of Psychology, University of Bologna

Davide Frattini

Department of Psychology, University of Bologna

Roberto Bolzani

Department of Psychology, University of Bologna

Sara Giovagnoli

Department of Psychology, University of Bologna

Tony Pansell

Department of Clinical Neuroscience, Karolinska Institutet

([mariagrazia.benassi@unibo.it](mailto:mariagrazia.benassi@unibo.it))

Journal of Vision September 2019, Vol.19, 278a. doi:<https://doi.org/10.1167/19.10.278a>

## Abstract

Although former studies demonstrated that patients with mild traumatic brain injuries (mTBI) have abnormal visual motion sensitivity and motor difficulties (Spiegel et al., 2016), little is known about the effect of mTBI on form perception and visual motor integration. The aim of this study was to evaluate temporal resolution, motion, form, form-from motion perception and visual motor integration in mTBI patients. Eleven mTBI patients (2 females, mean age 22.8 years) and ten age-matched controls (4 females) participated in the study. Motion perception was evaluated with the motion coherence test (MC). Temporal resolution was evaluated with the critical flicker fusion test (CFF). Form discrimination was assessed with form coherence test (FC) and form-from-motion test (FFM). VMI-6 was used to evaluate visual motor integration. The MC, FC, and FFM were displayed in a foveal position, while CFF was assessed in central and peripheral positions. Generalized linear models evidenced differences between mTBI and controls in CFF test and in VMI tasks. In details, in CFF test the mTBI patients had lower performances in peripheral temporal resolution processing as compared to

controls and in VMI-6 test they had lower motor and visual motor integration abilities. No difference was found between mTBI patients and controls in MC, FC, and FFM tasks showing similar performance in mTBI and controls in motion, form and form from motion perception. These results demonstrated that mTBI is associate with fine motor and visual motor integration deficits and confirmed anomalous temporal resolution in peripheral vision. Although we failed to find a more generalized visual perception impairment in motion and form perception, caution is needed in interpreting this result because of the small sample size.

This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

