

Integration of past and current visual information during eye movements in amblyopia.

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Abstract

Combination of signals based on their reliability is an increasingly popular model for sensorimotor processing. However, how reliability is estimated, or how such estimation is affected by prolonged exposure to noisy inputs, is still unknown. In this study, we compare patients with unilateral functional amblyopia with control subjects tracking either a reliable target, or a blurry, unreliable target, in a task of repeated, sustained smooth pursuit. We provide evidence for a lower weight of visual information during smooth pursuit in amblyopic and control subjects tracking a blurry target, with no significant difference of prior information weight. In contrast, we found no evidence of lower visual information weight in the catch-up saccades of amblyopic subjects. We conclude that oculomotor performance in unilateral amblyopia mostly lays within the continuum between our control groups, without significant differences in the relative weights of prior and visual information. However, smooth pursuit exhibits additional deficits that might result from abnormal visual development.

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