Contrast sensitivity during the initiation of smooth pursuit eye movements

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Introduction

Eye movements challenge the perception of a stable world by inducing strong retinal image motion, resulting from an acceleration of the eyes. For saccades there is strong evidence that this perceptual stability is accomplished by saccadic suppression. Here we explore whether suppression also occurs during smooth pursuit initiation.

Results

In a 2AFC design we investigated the sensitivity for threshold-level stimuli during the initiation of smooth pursuit and during saccades. At any time from 200 ms before target onset to 500 ms after target onset, a blurred 0.3 deg wide horizontal line appeared for 10 ms either 2 deg above or below the pursuit trajectory. The peak contrast of the line was adjusted to a level just above threshold for each subject. Subjects had to indicate whether the line appeared above or below the pursuit target.

Methods

We tested pursuit initiation, saccades during pursuit and normal saccades. Eye movements were elicited by 4 different target conditions: 1. step-ramp, 2. ramp, 3. fast ramp and 4. step stimuli. At any time from 200 ms before target onset to 500 ms after target onset, a blurred 0.3 deg wide horizontal line appeared for 10 ms either 2 deg above or below the pursuit trajectory. The peak contrast of the line was adjusted to a level just above threshold for each subject.

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