**Introduction**

Saccades and smooth pursuit are inextricably linked, particularly in cases of low vision, where saccades can help bring the fovea back on target. Individuals with macular degeneration (MD) have compromised foveas due to central field loss, which impacts both fixation stability and saccades, as well as the interaction between the saccade and pursuit systems. To investigate how saccades associated with pursuit are affected, we conducted a quantitative analysis of binocular smooth pursuit eye movement data collected for saccadic study (Shanidze et al., 2017) of smooth pursuit in MD. Here we extend that work by characterizing saccadic intrusions in MD participants during pursuit and pre-pursuit fixation.

**Methods**

- Examined saccade frequency, magnitude, and direction through viewing conditions.
- 7 MD participants 4 control participants.

**Participants with MD had more sacs in all directions during fixation & pursuit**

**Unlike controls, saccades of MD partici-pants in non-target directions**

**Does fixation instability contribute to higher saccade numbers in MD?**

**Saccade direction is less aligned with target direction in MD**

**Summary**

- Participants with MD made significantly more saccades during fixation and pursuit than age-matched controls (Figure 1C).
- Saccades of MD participants during pursuit occurred in a broad range of directions relative to target direction (Figure 2).
- MD participants had more variable fixation stability, with some participants making larger fixational saccades (Figure 3B). The number of saccades during fixation were not significantly different across groups (Figure 3C).
- Even after excluding fixational saccades, saccade directions during pursuit were not as closely linked to target direction in MDs as in control participants. MD participants' saccades were marginally less aligned with the target direction than controls (Figure 5).

**Conclusions**

Despite higher frequency, a large number of sacs in MD participants are not in the target direction, and thus are not catch-up sacs that serve to keep the eye on the target. The saccades in non-target directions cannot be fully accounted for by the significant increase in sacs during fixation. Thus, MD participants do not effectively use saccades to compensate for the lower pursuit gains reported previously (Shanidze et al., 2017; Shanidze et al., 2016).

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**References:**
