Short-term choroidal response to optical defocus in Chinese schoolchildren
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Purpose
To examine the short-term choroidal response to optical defocus in Chinese schoolchildren

Methods
Chinese schoolchildren aged 8-15 with myopia were recruited and allocated into three groups randomly: control (CG), myopic defocus (MD) and hyperopic defocus groups (HD). Children in MD and HD received +3D and -3D in one eye. The other eye was given full correction. Full corrections were given to both eyes in CG (n=17 for each group).

Cycloplegic refraction, baseline measurements of axial length (AXL) and subfoveal choroidal thickness (SFChT) were performed. AXL was measured by IOL-master. Choroidal images were captured by Heidelberg spectral domain ocular coherence tomographer (SD-OCT) using mode of enhanced depth imaging. After randomization, children are required to wear the full correction with or without optical defocus according to their groups for 2 hours. Optical defocus was removed afterwards and only full corrections were given. AXL and OCT imaging were acquired hourly for 4 hours in total. SFChT was measured manually by two independent examiners.

Results
The mean SFChT at baseline among three groups were comparable (mean SFChT ± SEM; CG vs. MD vs. HD; 255.29 ± 11.74μm vs. 241.40 ± 15.18μm vs. 225.87 ± 15.26μm, p>0.05, one-way ANOVA). Choroids thickened when exposed to myopic defocus while it thinned in response to hyperopic defocus significantly after 2 hours (p < 0.05, two-way ANOVA). After cessation of defocus lens wear, SFChT significantly decreased in eyes treated with myopic defocus whereas it increased in eyes with hyperopic defocus after one and two hours of exposure to defocus lenses