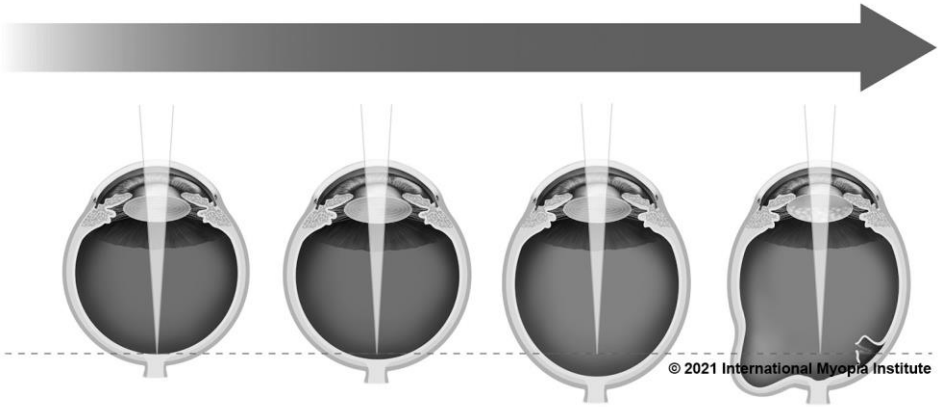

IMI CLINICAL SUMMARY

IMI Accommodation and Binocular Vision in Myopia Development and Progression

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The role of accommodation and binocular vision in myopia development and progression is not fully understood. More recently, the understanding of the mechanisms involved in accommodation and the consequent changes in ocular structures such as the ciliary body and choroid has expanded with high resolution non-invasive imaging techniques.

Below are the key findings of the IMI white paper on accommodation and binocular vision in myopia development and progression.

KEY FINDINGS

- Near-work and ocular accommodation has been associated with myopia development and progression but has not been shown to be causative.
- Increased accommodative effort required during near-work has been proposed as a cause of myopia. However, the relationship between accommodative demand and myopia is complex.
- Convergence is synergistically linked with accommodation. Higher AC/A ratios have been documented in myopic children compared to emmetropic children. Studies have found the AC/A ratio to be elevated prior to myopia onset and as early as four years prior to myopia onset. The AC/A ratio has been found to reach its peak at myopia onset and remain both stable and raised through at least five years after myopia onset.
- A higher AC/A ratio correlated with a greater lag of accommodation in myopic children; it was not associated with a faster rate of myopia progression.
- A lag in accommodative response, is more frequent and often greater in myopes. But studies in humans addressing accommodation report mixed results in myopia control.
- A large-scale longitudinal cohort study has shown that an increased accommodative lag occurs in children after the onset of myopia. Therefore, an elevated accommodative lag is unlikely to be a useful predictive

factor for the onset of myopia. Lag of accommodation has not been found to be associated with myopia progression itself.

- Esophoria at near has not been associated with myopia progression in studies using bifocal or progressive addition spectacle lenses.
- Aspects of blur from the lag of accommodation, the impact of spatial frequency at near and a short working distance may all be implicated in myopia development and progression.
- Researchers have not ruled out the role of the accommodative system in this field, but our current methods of intervention based on this theory have not yielded significant results.
- Providing a clear retinal image is important in reducing the risk for myopia. Despite the lack of strong evidence for accommodation to date, eye care practitioners should still consider assessing the accommodation and convergence system in young myopes and those at risk of myopia development.
- Further research is critical to understanding the factors underlying accommodative and binocular mechanisms in myopia, and to guide recommendations for future targeted interventions to slow myopia progression.

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REFERENCE

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