



Binocular Vision: Why is it So Important?

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Binocular vision should form a fundamental part of every visual assessment, especially when looking after children's vision, for three main reasons.

Binocularity:

Having two eyes that work together, enables us to have three-dimensional vision, depth perception, distance judgement and eye-hand coordination. Without binocular vision, catching a ball, driving a car or even a simple task like walking becomes difficult.

- Binocular vision problems could have a significant effect on quality of life and have the best prognosis if diagnosed and treated early when the visual system is still developing [1].

Comfortable vision when reading and learning:

- Children spent at least 60% of their time in the classroom looking at near objects and digital screens, with fixations from distance-to-near occurring 10 times a minute. This requires a stable and accurate visual system to ensure comfort and comprehension [2].
- An insufficient accommodation reserve affects our ability to focus on near work for sustained periods, while accommodation infacility would make changing focus from distance-to-near slow and tedious.
- Alignment issues, like reduced vergence facility and esophoria, are known to affect not only our visual comfort, but also speed and accuracy during reading [3].
- Convergence insufficiency (CI) becomes so uncomfortable, that it is linked to behaviours issues like attention and avoid-

ance of schoolwork. Many children have been diagnosed with attention deficit hyperactivity disorder (ADHD), when in fact, they actually had CI [4].

Myopia onset, progression and management:

- Myopia is affected by inaccurate binocular vision - including near esophoria, higher AC/A ratios, accommodative lag and greater variability in accommodative responses [5-8].
- Intermittent exotropia (IXT) has also been associated with a higher prevalence of myopia, with 47% of children with IXT becoming myopic by age 10 and 91% by age 20 [9].
- Binocular vision is therefore a very important consideration when deciding on treatment options for a myopic patient.
- Myopia management, when esophoria, accommodation issues and higher AC/A ratios are present, have shown better efficacy with progressive addition or bifocal (BF) spectacle lenses, as supposed to peripheral defocus spectacle or contact lenses [10].
- Fitting exo myopic children from spectacles to contact lenses, can increase their exo deviation which could affect visual comfort and myopia control efficacy [11,12].

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