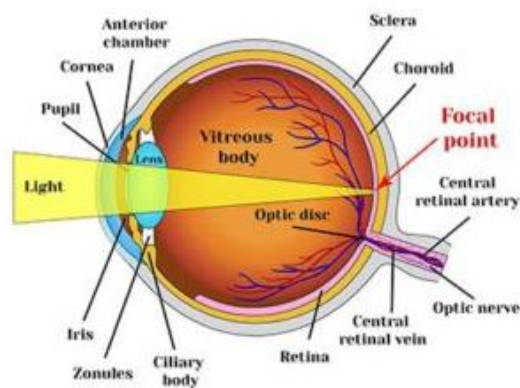


Monovision

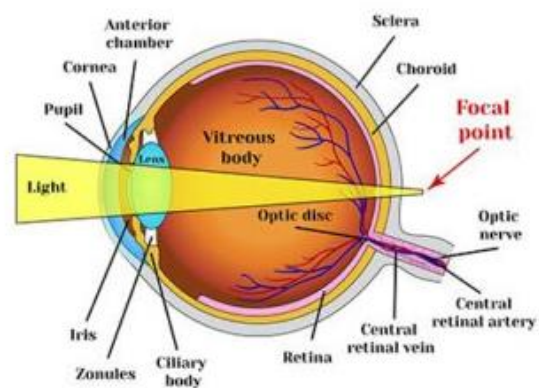
What is Monovision?

Monovision or blended vision is a vision correction approach where one eye (typically the dominant eye) is corrected for distance vision, while the other eye is corrected for near vision. This technique is commonly used to address presbyopia, a refractive error that makes it difficult for middle-aged and older individuals to see up close. Presbyopia occurs when the lens of the eye, responsible for focusing light, loses its ability to focus correctly on the retina.

Normal vision



Presbyopia



While presbyopia is a natural part of aging, many patients find the use of prescription reading glasses burdensome. Monovision offers a viable alternative for those seeking to reduce their dependence on glasses throughout the day.

How does Monovision work?

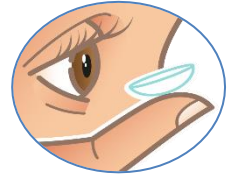
Essentially, monovision alters the natural coordination of the eyes, assigning one eye to focus on distant objects and the other on close-up tasks. This technique can be achieved using contact lenses, artificial lens implants (intraocular lenses), or refractive surgery such as LASIK.

The principle behind monovision the dominant eye provides a slightly stronger input to the visual cortex and is relied upon more for visual processing. By biasing distance vision to the dominant eye enables the crucial roles of precise aim and focus, perceiving fine details and focusing on objects to remain active, whilst the non-



dominant eye plays a supportive role providing additional visual information and a wider field of view and allowing focus on close work activities like reading.

It's important to note that the success rate of monovision treatment is around 50%, meaning that some patients adapt well to it while others do not. To help patients make informed decisions, our optometrists provide trial contact lenses for them to experience and perfect the prescription before committing to permanent changes. We recommend trialling monovision for a few weeks in various situations tailored to the patient's lifestyle to ensure full acceptance of the treatment.



Monovision correction often leads to a loss of depth perception which can lead to several difficulties across different aspects of daily life, and certain age groups or medical conditions may be more affected than others.

Here are some of the primary difficulties and affected groups:

1. Mobility and Navigation.

- Stair Negotiation: Difficulty judging the height and distance of steps.
- Walking / Cycling: Trouble with uneven surfaces, curbs, or obstacles.
- Driving: Challenges in judging distances between vehicles, estimating speed, and making safe turns or lane changes.



2. Sports and Physical Activities.

- Ball Sports: Difficulty in catching, hitting, or kicking balls accurately.
- Hand-Eye Coordination: Challenges in activities that require precise hand movements relative to objects in space (e.g., badminton, tennis).



3. Daily Tasks.

- Pouring Liquids: Difficulty in judging the level of liquid and preventing spills.
- Reaching and Grabbing: Trouble determining how far away objects are, leading to potential knocks or misses.
- Using Tools: Difficulty in tasks that require precision, like cutting with a knife or using hand tools.



4. Reading and Writing.

- Eye Strain: Increased effort to maintain focus can lead to eye strain and headaches.
- Tracking Lines: Difficulty following lines of text smoothly, leading to slower reading speeds.



5. Safety.

- Falls: Higher risk of tripping or falling due to misjudged distances.
- Crossing Streets: Difficulty in accurately judging the distance and speed of oncoming traffic.



Age groups and conditions most affected.

1. Children.

- Developmental Challenges: Difficulty in developing motor skills and coordination, affecting play and learning.
- Education: Challenges in activities requiring fine motor skills and spatial awareness.



2. Elderly.

- Falls: Increased risk of falls due to impaired depth perception and decreased mobility.
- Driving: Potentially hazardous driving conditions due to difficulty in judging distances and speeds.



3. People with Specific Medical Conditions.

- Cataracts: Clouding of the lens reduces visual clarity and depth perception.
- Macular Degeneration: Central vision loss affects the ability to judge distances.
- Glaucoma: Peripheral vision loss impacts spatial awareness and depth judgment.
- Brain Injuries: Traumatic brain injuries can affect visual processing areas, impacting depth perception.
- Vestibular neuritis or labyrinthitis, which involve inflammation of the inner ear.
- Meniere's disease, characterized by episodes of vertigo, hearing loss, and tinnitus.
- Diabetes and hypertension can impair blood flow to the inner ear, leading to balance issues.
- Multiple sclerosis.
- Parkinson's disease.

- Stroke can disrupt the brain's ability to process balance information.
- Medications like certain antibiotics (aminoglycosides), diuretics, antihypertensives, and sedatives.
- Chemotherapy drugs and some antiseizure medications are also known to affect vestibular function.
- Prolonged use of benzodiazepines and alcohol abuse can impair the central nervous system's control over balance.

4. Sports Performance.

- Ball sports such as golf, tennis, squash, cricket, baseball and sports such as darts, billiards, badminton need good spatial awareness and accurate depth perception. They work better with clear binocular vision.



5. Workplace Safety Standards.

- Pilots both marine and aviation standards require good distance acuity for both eyes. Plant machinery such as bulldozers, graders and forklifts require depth perception skills. Similarly heavy vehicles require good distance acuity for both eyes.



6. Computer Work.

- Monovision may create a 'no man's land' between reading distance and distance viewing, particularly for those over 50 years of age. Computers screens sit within this intermediate vision zone and the lack of clarity can make life awkward. Similarly, lack of binocular vision in this range can rapidly result in fatigue, headaches and eye strain.



Types of monovision intervention.

- Monovision Lasik surgery- using a laser to correct the eyes vision for set tasks.
- Monovision contact lenses- Contact lenses allow opportunity to assess what you gain on the swings to what you lose on the roundabouts. Gaining clear close vision whilst sacrificing stereoacuity can initially seem a tolerable compromise. Only by performing tasks which require depth perception ability can you determine if the compromise is suitable for you. Both as a 'test-drive' before surgically intervention, and as a semi-

permanent vision correction contact lenses can provide adaptable, modifiable and functional monovision.

- Intra-ocular lenses (IOLs) for Monovision- surgically changes the eyes lens, one for distance and one for reading.
- Monovision glasses- customised lenses to guide the eye's focus.
- Monovision PRK- laser-assisted cornea re-shaping for balanced near and distance vision.
- Orthokeratology: Contact lenses worn whilst you sleep can change the refractive error of the eye, achieve a monovision result and allow you to see clearly all day without glasses or awake time contact lenses.

In the long run, monovision may not be favourable for everyone and wherever possible we prefer to recommend multifocal vision correction or single vision distance vision correction with readers as required. Both contact lenses and IOLs have multifocal options: These also have a range of advantages and disadvantages. There are also alternatives such as modified monovision which use extended focus lenses to create a mid-zone where both eyes see well and with less difference in blur allow some stereoacuity.

Overall, monovision serves as an alternative for middle-aged (45-55 years) presbyopic patients who wish to reduce their reliance on glasses throughout the day. While not perfect, monovision can help patients achieve functional distance and near vision, making it effective for suitable candidates. If you're considering monovision, we encourage you to schedule a consultation today.

During the consultation, we can thoroughly assess your eyes and prescription to determine whether monovision is a viable alternative for your visual needs and lifestyle. Making an informed decision with the guidance of our optometrists ensures the best possible outcome for your eye health and vision.

