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Robert's extract conversations with ChatGPT, AI, relating to his online posting about his "wet macular degeneration". Always consult your professional registered health specialists, if in any doubt. The evaluation of the merit, accuracy, bias and limitations of the AI responses to my questions, is left to the individual reader. This PDF document is to be read in conjunction with my online posting. Caveat emptor applies.

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Distinguish between macular and peripheral vision. The role of eccentric vision.



What is the origin of the word macular. Explain in detail the role of the macular within the human eye. What is its function and how does it actually work. What is the size of the macular in the human eye.

The word "macular" comes from the Latin word "macula," which means spot or stain. It is derived from the phrase "macula lutea," which translates to "yellow spot," referring to the yellow pigmentation of the area.

The macula is a small, oval-shaped area near the centre of the retina in the human eye. It is responsible for providing central vision, which is essential for activities like reading, driving, and recognising faces. The macula contains a high concentration of cone cells, which are specialised photoreceptor cells that detect colour and detail. It also contains a depression called the fovea, which is the centre of the macula and the area of the retina with the highest concentration of cone cells.

The macula works by focusing light onto the fovea, where the cone cells are densely packed. When light enters the eye, it passes through the cornea and lens before reaching the retina. The macula filters out blue light and reduces glare, allowing the cone cells to accurately detect color and detail.

The size of the macula in the human eye is approximately 5.5 mm in

diameter. Although small in size, the macula is essential for clear and detailed vision. Damage to the macula, such as age-related macular degeneration, can cause loss of central vision and have a significant impact on daily activities.



Continue: human vision is made up of two primary components, macular vision and peripheral vision. Personally, I have completely lost macular vision in both eyes. Discuss the role of peripheral vision from the following perspectives. In terms of the human vision experience, what is the percentage value of only having peripheral vision with no macular vision at all. Describe the limitations of only having some peripheral vision in both eyes, in other words, what is my vision experience.

Human vision is a complex system that involves two primary components: the macular vision and peripheral vision. While macular vision provides sharp and detailed central vision, peripheral vision allows us to detect movement and perceive our surroundings beyond the central visual field.

When an individual completely loses macular vision in both eyes, they are left with only peripheral vision. This means that their visual experience is primarily limited to detecting movement and shapes in their peripheral visual field. The percentage value of only having peripheral vision with no macular vision at all can vary, depending on the individual's specific condition and the extent of their visual impairment. However, it is safe to say that individuals with complete loss of macular vision have a severe visual impairment that significantly affects their daily life.

Even with some peripheral vision in both eyes, there are still significant limitations to the visual experience. The peripheral visual field is generally less sharp and detailed than the central visual field, making it difficult to recognise faces, read, or perform tasks that require precise visual acuity. Additionally, peripheral vision can be easily affected by glare or low lighting conditions, making it even more challenging to navigate the environment safely.

In summary, while peripheral vision is essential for detecting movement and perceiving the environment beyond the central visual field, it cannot

replace the detailed and sharp vision provided by the macular. Loss of macular vision can significantly impact an individual's visual experience, even with some peripheral vision remaining.



Continue: what may be the psychological burden experienced by myself as a person with no macular vision at all.

As a person with no macular vision at all, there may be significant psychological burdens that come with the visual impairment. The loss of central vision can result in a range of emotional and psychological challenges, including:

- 1 Depression: The inability to see clearly and perform everyday tasks can lead to feelings of frustration, helplessness, and depression.
- 2 Anxiety: The lack of visual information can create anxiety, particularly in new or unfamiliar environments.
- 3 Social isolation: The difficulty in recognising faces or reading body language can make social interactions more challenging and may lead to feelings of isolation and loneliness.
- 4 Loss of independence: The inability to perform daily tasks independently, such as driving or cooking, can impact self-esteem and confidence.
- 5 Adjustment difficulties: The significant change in visual ability can be difficult to adjust to and may require significant emotional and psychological support.

Overall, the psychological burden of having no macular vision at all can be substantial, and it is essential to seek emotional and psychological support to manage these challenges. Professional support from a counsellor or psychologist, as well as support groups, can be beneficial for addressing the emotional and psychological impacts of the condition. Additionally, assistive technology and visual aids can help to enhance remaining vision and improve independence and quality of life.



Continue: thank you, you are going well. Nominate the most up-to-date assistive technology available to a person, who has no macular vision

whatsoever.

There are various assistive technologies available that can help individuals with no macular vision to navigate their environment and perform daily tasks more easily. Here are some of the most up-to-date options:

- 1 **Electronic Magnifiers:** Electronic magnifiers, also known as video magnifiers, are devices that use cameras to enlarge text and images. They allow users to adjust the magnification level, colour contrast, and brightness to suit their visual needs.
- 2 **Screen Readers:** Screen readers are software programs that convert on-screen text into speech or braille output. They can help individuals with visual impairments to access and navigate digital content, including web pages, documents, and emails.
- 3 **Optical Character Recognition (OCR) Software:** OCR software converts printed text into digital text, which can then be read aloud by a screen reader or magnified on a computer screen. OCR can help individuals with visual impairments to read printed documents, such as books, newspapers, and letters.
- 4 **Wearable Devices:** Wearable devices, such as smart glasses, can provide visual assistance in real-time. They use cameras and other sensors to detect and interpret visual information, which is then displayed on a screen or spoken aloud to the user.
- 5 **Navigation Apps:** Navigation apps, such as BlindSquare or Soundscape, use GPS and other location-based technologies to provide audio-based directions and descriptions of the user's environment. These apps can be particularly useful for navigating unfamiliar environments, such as airports or shopping centres.

It is worth noting that the most appropriate assistive technology will depend on an individual's specific needs and preferences. It is essential to work with a healthcare professional, such as an optometrist or low vision specialist, to determine the best options for the individual.



Continue: an element that has not been considered enough in my view for persons who have no macular vision whatsoever, but have some peripheral vision, is to maximise the use of this peripheral vision, to possibly provide an improved vision experience for that person. Is there current optical technology that can enhance peripheral vision out there.

While there is no technology that can fully restore lost macular vision, there are optical devices that can enhance the remaining peripheral vision for individuals with no macular vision but some peripheral vision. Here are some examples:

- 1 Prism Glasses: Prism glasses can be prescribed to shift the visual field towards the peripheral vision. They can be particularly useful for individuals with central vision loss, as they can help to expand the visual field and enhance peripheral vision.
- 2 Biotopic Telescopes: Biotopic telescopes are small telescopes that can be mounted onto eyeglasses. They can provide enhanced magnification for distant objects and can help to expand the peripheral visual field.
- 3 Virtual Reality Headsets: Virtual reality headsets can be used to create immersive environments that can enhance peripheral vision. For example, virtual reality environments can simulate a larger visual field, providing a more expansive visual experience for individuals with limited peripheral vision.
- 4 Low Vision Glasses: Low vision glasses can be prescribed to enhance contrast and reduce glare. This can help to improve visual acuity and make the most of the remaining peripheral vision.

It is essential to work with a healthcare professional, such as an optometrist or low vision specialist, to determine the most appropriate optical device for an individual's specific needs and preferences. They can conduct a comprehensive low vision evaluation and prescribe the most effective optical devices to enhance the remaining peripheral vision.



Continue: explain the phenomenon of reading moving text across a screen by a person who only has peripheral vision. I have found this useful.

Reading moving text across a screen can be challenging for individuals with no macular vision but some peripheral vision. However, some individuals may find it useful as it can help to expand the visual field and make the most of the remaining peripheral vision.

The phenomenon of reading moving text across a screen is related to a visual phenomenon known as the "Optokinetic Nystagmus" (OKN). OKN is an involuntary eye movement that occurs in response to a moving visual stimulus. When a person with some peripheral vision reads moving text across a screen, their eyes follow the movement of the text, and the OKN kicks in, causing the eyes to make small, jerky movements.

The OKN movement can help to expand the visual field and provide a more comprehensive visual experience. It can also enhance visual attention and reduce visual fatigue, making it easier to read for longer periods. However, it is important to note that reading moving text across a screen can also cause dizziness or motion sickness for some individuals, particularly if the text is moving too quickly or is presented on a small screen.

Overall, while reading moving text across a screen may not be suitable for everyone, it can be a useful technique for individuals with no macular vision but some peripheral vision to make the most of their remaining vision. It is essential to work with a healthcare professional, such as an optometrist or low vision specialist, to determine the most appropriate reading techniques for an individual's specific needs and preferences.



Continue: possibly another term not discussed so far is eccentric vision. If I look directly at a person's face, I see nothing. If I look directly to the side of the face, my peripheral vision gives me a poor image of that face. Is there new technology eyewear available, which uses this principle to give a better vision experience to persons without macular vision. Also explain eccentric vision.

Eccentric vision refers to the ability to see objects outside the central visual field. For individuals with no macular vision but some peripheral vision, eccentric vision can be particularly important as it can provide a way to see objects and images that would otherwise be missed.

There are several types of eyewear that can make use of eccentric vision to enhance the visual experience for individuals with no macular vision. These include:

- 1 Telescopic glasses: Telescopic glasses are designed to enhance distance vision and can be particularly useful for individuals with no macular vision. They work by using a combination of lenses and mirrors to magnify and redirect the visual field towards the peripheral vision.
- 2 Prismatic glasses: Prismatic glasses use prisms to shift the visual field towards the peripheral vision. They can be particularly useful for individuals with central vision loss, as they can help to expand the visual field and enhance eccentric vision.
- 3 Microperimetry systems: Microperimetry systems are specialised devices that can be used to measure and map the visual field. They can be particularly useful for individuals with no macular vision as they can help to identify areas of functional vision and develop personalised visual aids that make the most of the remaining eccentric vision.

Overall, while there is no technology that can fully restore lost macular vision, there are optical devices that can enhance the remaining peripheral and eccentric vision for individuals with no macular vision but some peripheral vision. It is important to work with a healthcare professional, such as an optometrist or low vision specialist, to determine the most appropriate visual aid for an individual's specific needs and preferences.



Continue: explain how eccentric vision works from the perspective of a person who has no macular vision.

For a person who has no macular vision, eccentric vision works by allowing them to see objects or images using their peripheral vision, which is the part of the visual field outside the central vision. The peripheral vision is still intact, and the brain learns to use it to see objects in the environment.

When a person with no macular vision wants to see an object, they must first locate it using their peripheral vision. Once they have located the object, they must then move their eyes to place the object on the part of the retina that has the best visual acuity. In individuals with no macular vision, this is often an area of the retina outside of the macular region, such as the peripheral retina or the far periphery.

The process of locating an object using peripheral vision and then moving the eyes to place it on the part of the retina with the best visual acuity is known as eccentric viewing. Eccentric viewing allows individuals with no macular vision to make the most of their remaining vision by using the peripheral visual field.

However, eccentric vision is not as clear or detailed as central vision, and it can take time and practice to develop effective eccentric viewing skills. Additionally, eccentric viewing can be tiring and may not be suitable for all visual tasks. Therefore, it is important for individuals with no macular vision to work with a healthcare professional to develop personalised visual aids that can enhance their visual experience and improve their quality of life.



Continue: for persons who are limited to only using their eccentric vision, analyse what might be the most suitable eyewear for that person to use. Address issues of best colour filters to use and the appropriateness of polaroid lenses to use, to enable the optimum vision experience. Both for indoor and outdoors.

For individuals who are limited to using their eccentric vision, there are a few different types of eyewear that can be beneficial in improving their visual experience.

One option is to use bioptic telescopes, which are small telescopes mounted onto the top of regular glasses. These telescopes can be adjusted to different magnifications, allowing individuals to see distant objects more clearly. However, bioptic telescopes are typically only suitable for outdoor use and may not be helpful for all visual tasks.

Another option is to use tinted lenses or colour filters to enhance contrast and reduce glare. Certain colours, such as yellow or amber, can be particularly helpful for enhancing contrast in low light conditions. Polarised lenses may also be useful for reducing glare from reflective surfaces, such as water or snow. However, it is important to note that polarised lenses can affect the perception of LCD screens, such as those found on phones or computers.

In terms of indoor eyewear, there are a few different options that can be

helpful for individuals who are limited to using their eccentric vision. One option is to use high-contrast lenses, which enhance the contrast between different objects and can make them easier to distinguish. Another option is to use prism lenses, which can help to shift the image of an object onto a part of the retina with better visual acuity.

Ultimately, the most suitable eyewear for a person with limited eccentric vision will depend on their specific visual needs and preferences. It is important to work with a healthcare professional to determine the best eyewear options and to ensure that any eyewear is properly fitted and adjusted for maximum benefit.

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