

## How pinhole glasses work

Pinhole glasses are something of a phenomenon. They allow anyone with blurry vision to see clearly - instantly - without the need for corrective lenses.

You can test the concept right now. Make a fist and put it up to one eye, with the other eye closed. Open your fist just a tiny miniscule amount, just enough to create a small hole to peep through. Amazingly, you can now see clearly!

It's a bit miraculous, isn't it? What's more, there is lots of anecdotal evidence to show that wearing pinhole eyeglasses can improve your vision naturally in just 15 minutes each day. While optometrists have been reluctant to carry out the necessary clinical trials to verify this, my personal experience leaves me with little doubt that pinhole glasses can improve vision naturally with daily use.

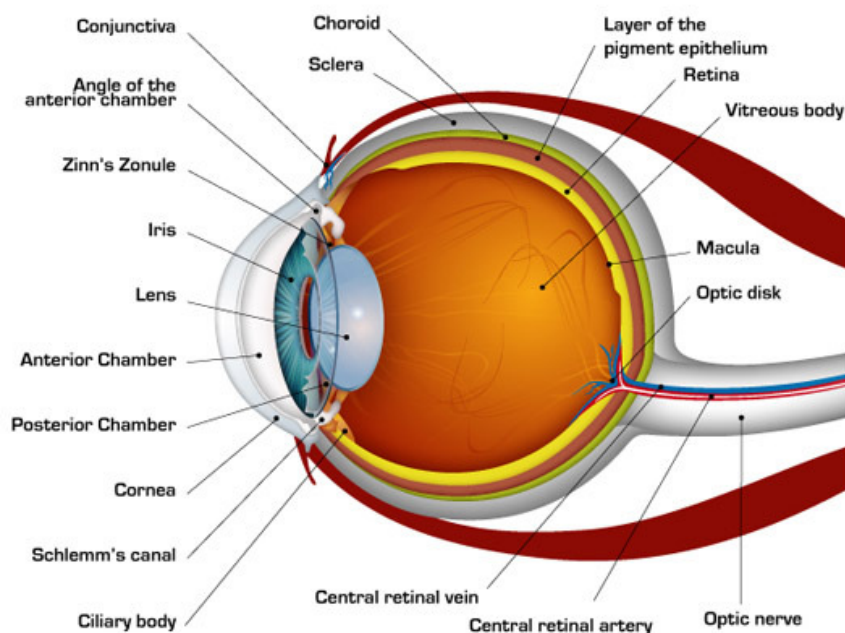
In fact, I believe that pinholes are an excellent support to daily vision training,

Pinhole glasses, or stenopeic glasses, are an alternative to conventional eyeglasses to improve vision. The shape and design are similar to normal frames, but the difference is in the lenses. Instead of a lens, pinhole glasses have a series of pinhole-size perforations in a sheet of plastic, and each hole allows only a small beam of light to enter the eye.

Pinhole glasses are worn like normal glasses. Instead of transparent glass or plastic for lenses, opaque black plastic "lenses" are used. Wearers see through small holes (pinholes) in the black plastic.

To fully appreciate how pinhole glasses work it is necessary to understand how the eye processes light rays to form an image.

### How the eye works:



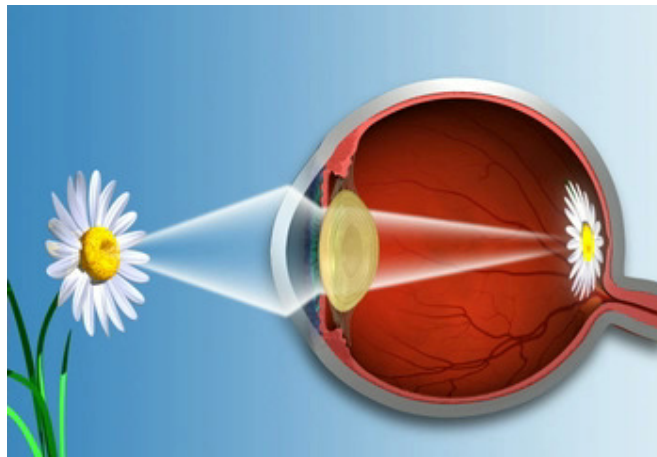
Our ability to "see" starts when light reflects off an object at which we are looking and enters the eye. As it enters the eye, the light is unfocused. The first step in seeing is to focus the light rays onto the retina, which is the light sensitive layer found inside the eye. Once the light is focused, it stimulates cells to send millions of electrochemical impulses along the

optic nerve to the brain. The portion of the brain at the back of the head (the visual cortex) interprets the impulses, enabling us to see the object.

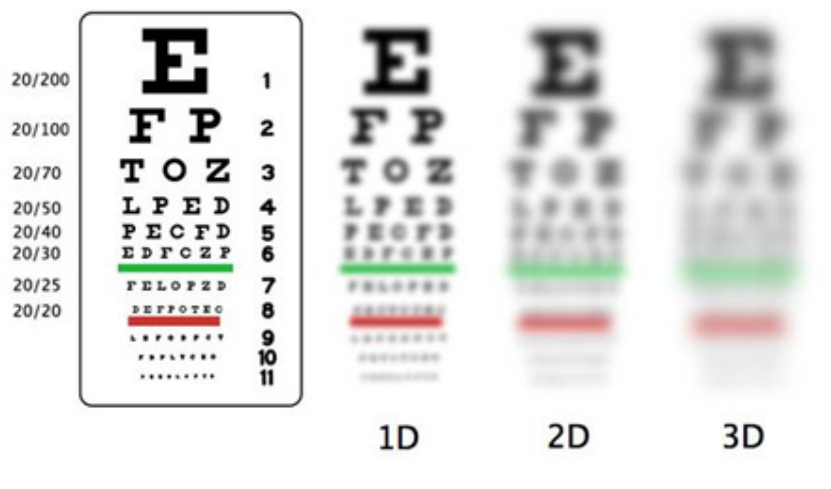
Light, refraction and its importance.

Light entering the eye is first bent, or refracted, by the cornea -- the clear window on the outer front surface of the eyeball. The cornea provides most of the eye's optical power or light-bending ability.

After the light passes through the cornea, it is bent again -- to a more finely adjusted focus -- by the crystalline lens inside the eye. The lens focuses the light on the retina. This is achieved by the ciliary muscles in the eye changing the shape of the lens, bending or flattening it to focus the light rays on the retina.

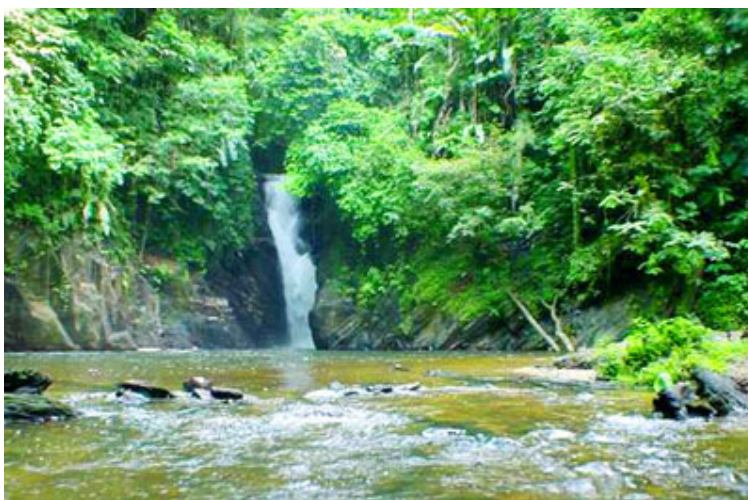


This adjustment in the lens, known as accommodation, is necessary for bringing near and far objects into focus. The process of bending light to produce a focused image on the retina is called "refraction". Ideally, the light is "refracted," or redirected, in such a manner that the rays are focused into a precise image on the retina.



Click picture for larger eye chart

Most vision problems occur because of an error in how our eyes refract light. In nearsightedness (myopia) the light rays form an image in front of the retina. In farsightedness (hypermetropia), the rays focus behind the retina. In astigmatism, the curvature of the cornea is irregular, causing light rays to focus to more than one place so that a single clear image cannot be formed on the retina, resulting in blurred vision. As we age, we find reading or performing close-up activities more difficult. This condition is called presbyopia, and results from the crystalline lens being less flexible, and therefore less able to bend light.



Perfect vision in the unaided eye requires the eye lens to focus light rays from diverse angles into a single pinpoint directly on the retina at the back of the eye. For sufferers of refractive eye disorders, where the eye lens is too weak or the cornea or eyeball is misshapen, divergent light rays become focused in front of or behind the retina, casting an unfocused image onto the retina itself. This unfocused area of light is known as the 'blur circle'.

## How do Pinhole Glasses Work?

**Pinhole glasses are a natural form of vision correction, that can never harm your eyesight.**

**In contrast, glasses and contact lenses only correct your vision superficially and are known to make your vision worse over time.**

Contrary to their name, pinhole eyeglasses are not made of glass or corrective lenses. They are simply black plastic (or metal) with holes punched through where the lens would normally be.

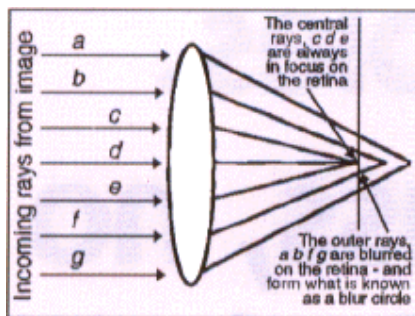
### So, how do pinhole glasses work?

In camera terms, pinhole glasses (also called spectacles, eyeglasses and sunglasses) reduce the effect of the eye's focusing errors by increasing optical depth of field by reducing aperture size

Pinhole glasses work based on the concept that each hole only allows a narrow beam of light through. This reduces the size of the optical spot not coming into perfect focus on your retina and increases your depth of field.

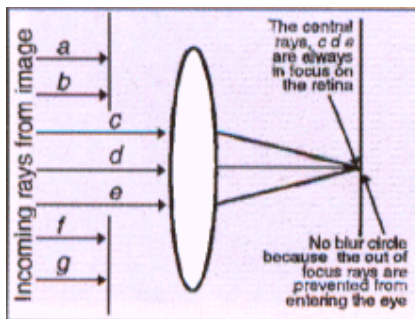
The lenses of pinhole glasses are perforated with an array of equally spaced minute holes of approx 1mm - 1.5mm in diameter. In contrast the average diameter of the pupil in normal daylight conditions is about 4mm. Each pinhole allows only direct rays through, and it is the amalgamation of these direct rays that make up a concentrated beam of light that enters the pupil. When this restricted light beam passes through the pupil and into the eye lens, the effects of any refractive eye disorders are reduced as the 'blur circle' on the retina is proportionally smaller. The resulting visual image is one of increased clarity, definition and brightness.

### The unaided weak eye without Pinhole Glasses



In a weak eye, light rays entering the eye's lens are not all focused onto the same place on the retina. For example rays a b f g, require more focusing by the lens to hit the same plane as rays c d e, which are nearer to the centre. Rays c d e are usually always in focus, regardless of the condition of the eye, and form a clear image on the retina. This clear image is flooded by the blurred image known as the "blur circle" formed by rays a b f g.

### The unaided weak eye with Pinhole Glasses



When the pinhole lens is used, only rays c d e are allowed to form an image on the retina and no blur circle is present to block the clear image. Consequently, by using a lens with multiple pinholes, many focused images form on the retina and a clear, natural image is seen. Also, no effort is required from the eye muscles, as the only rays entering the eye are already in focus. Hence there is a dramatic consequential, relaxing effect.

Pinhole glasses are based on the principle of natural reflexes as the same effect is achieved when you squint to try and see more clearly. Your eyelids close around the top and bottom of your eyes, filtering out light rays reaching your pupil from these angles. Only light from your central area of vision and to the left and right sides can now enter your eye. The image you see is often sharper with a greater depth of resolution, and is generally brighter as there is a narrower range of light levels to contrast against each other. Wearing pinhole glasses is of course much less stressful on the eye than squinting, and is far more efficient at blocking extraneous light rays to produce a sharper and brighter image on your eye.

Just look through any pin-hole and you'll see what they mean. When you do this, blurred images become focused. This is because the amount of peripheral light rays (which are responsible for blurring) is reduced. With appropriately spaced multiple pin-holes, you'll get clear straight vision without the difficulty of concentrating on a single hole. Regular use of

these special pinhole glasses helps exercise eye muscles and helps eyes relax at the end of a tiring day and thus has a beneficial effect. Particularly useful for those who spend a great deal of time looking at computer and/or TV screens, Pinhole Glasses help retrain your eye muscles, just as other forms of exercise retrain muscles elsewhere.

### **The Downhill Slide.**

When your eyes are placed behind normal prescription glasses you fall into a trap. You no longer use the focusing muscles in your eyes to the full. This important "ciliary muscle" begins to weaken requiring visits to your eye doctor for stronger and stronger lenses. Reverse the downhill slide and help develop your eye muscles now.

### **Inexpensive - No Prescription Required.**

Pinhole Glasses are inexpensive when compared to prescription glasses. Now you can refresh your tired eye muscles and keep the eyes from staring - a common cause for eye fatigue.

### **How They Work.**

Pinholes provide an infinite depth of focus so that even when the eye is not correctly focused, objects will appear as if in focus. Importantly they eliminate scattering of light to the retina and hence improve vision.

The idea behind pin-hole glasses is not new. It was known centuries ago and was used before the advent of glass lenses. The reason they work is simple. "Light passing through a small hole (or holes) is restricted to rays coming straight from the viewed object; these rays do not need focusing to bring them to a point," according to Drs. Russell S. Worrall and Jacob Nevyas in *The Eye Exorcisors* published in *The Health Robbers*.

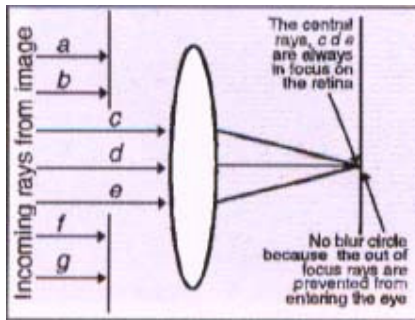
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### **MORE ON PINHOLE GLASSES**

Pinhole glasses (also known as stenopeic glasses) are not made of glass at all but of an opaque substance such as metal or plastic. The user looks through any of the many small holes in the material. These holes have the effect of reducing the width of the bundle of diverging rays (called a "pencil of light") coming from each point on the viewed object. Normally, the full opening of the pupil admits light. It is the improper bending of the outermost rays in that pencil of light which causes refractive errors such as myopia, hyperopia (farsightedness), presbyopia (diminished accommodative range with age) and astigmatism to be noticeable. Pinholes can bring about clearer vision in all these conditions.

By blocking these peripheral rays, and only letting into the eye those rays which pass through the center portion of the pupil, any refractive error in the lens or cornea is not noticed as much. Of course, in the case of myopia, let's not blame the lens or cornea. It is the abnormal lengthening of the eye which is the problem.

The pupil may be wide open, but only the central portion is receiving light. The improvement in visual acuity can be striking. Look at this *Converging Lens* and imagine it as the lens of the eye.



All the light rays within the outermost yellow lines make up a pencil of light. Imagine that this bundle of light passes through one of the pinholes while rays outside this area are blocked. You will see that the eye does not need to deal with the rays that would need the most bending. It is said that Scheiner first described this effect in 1573. Those who are familiar with cameras will recognize that this is the same principle used to increase the depth of focus by decreasing the aperture.

An easy way to demonstrate this is to make a fist and put it up to one eye while closing the other eye. Open the fist just enough to create a small hole to look through. If you have a refractive error, you should see clearer this way. This same improvement in the vision takes place when someone squints to see more clearly. The upper and lower eyelids cut off the rays that would normally enter the top and bottom of the pupil and the vision improves somewhat. Since there is no similar way to cut off rays entering the sides of the pupil, these rays still contribute to the blurred vision. Looking through pinhole glasses instead of squinting cuts off the peripheral rays from all sides. Since the holes themselves are so close to the eye, they are greatly out of focus and are not as disturbing as one might think.

After a period of getting used to them, the brain tends to ignore their presence. Also of interest is that the farther away the viewed object is, the less the pinholes are noticed. The honeycomb effect of the holes is easily noticeable when viewing a book held close to the eyes, because the eyes are focused just a short distance in front of the glasses. When looking at a distant TV, however, the holes are hardly visible at all since the eyes are focused much farther away. Also, because of the distance, you can view the entire TV screen through one hole, an obvious benefit.

One limitation of pinhole glasses is that blocking some of the light makes it more important than usual to have good lighting on the viewed object. When looking at television this is not a problem since the set makes its own light. When reading, a good lamp should be provided nearby. Another limitation is that peripheral vision is diminished, so they should not be used for driving or similar activities involving motion. As with any glasses, even sunglasses, they should not be used to stare at the sun, thinking that no harm can be done.

We do not claim that pinholes can replace prescription glasses in every situation. Just as it would be risky to wear ordinary glasses in situations where they could be broken and damage the eyes, there are situations where using pinholes instead of prescription glasses is not advisable. Use common sense and only wear the pinholes when the limited view does not pose a risk. No one who manufacturers or sells pinhole glasses can be held liable for misuse of these glasses since this is beyond their control.

While pinholes are not as cheap as off-the-rack reading glasses, they are considerable cheaper than individual prescription glasses. For example, a person who is a little nearsighted but only needs clear distant vision for occasional TV viewing would find pinholes a cheaper solution than prescription glasses. There is no need to continually throw away old pairs and buy new, stronger ones. Unless the pinholes break, they can be used an entire lifetime.

The native people of Alaska have long used this principle by wearing glasses with narrow slits to look through, thus blocking out much of the glare from the sunshine reflecting off the snow and ice. Anyone who remains in this environment for long periods during the summer without protection can suffer from snow blindness. This painful condition forces the

person to discontinue the use of the eyes until healing can take place. This is nature's way of protecting the eyes from permanent damage.

Pinhole glasses are an excellent substitute for expensive bifocal glasses. They can provide good vision for any distance, both far and near.

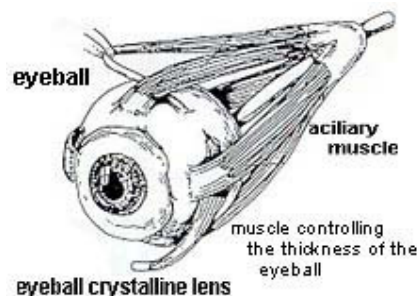
There is a pincushion effect when looking through the edges of prescription glasses. That is, straight lines appear curved. This disturbing effect does not occur with pinholes.

When you lay prescription glasses down improperly, they can easily get scratched at the center of the lens, the very area you have to look through. Scratching pinholes has no effect on their performance.

Some people with cataracts have given testimonials that they see better with pinholes because the scattering of the light is diminished. A cataract is actually one or more opacities in the lens that do not allow the light to pass through properly but instead cause it to scatter. By cutting off the peripheral rays, pinholes could reduce some of this scattering and improve the vision. The only way to determine if an individual will benefit in this way is to try the glasses.

However, the most important use for pinholes is in an application that has until now been totally ignored, Myopia Prevention.

When a person's eye has become abnormally long due to excessive close work, the outermost rays come to a focus in front of the retina and cause the blurred vision. Imagine for a moment the common situation where a child begins to develop myopia and can't see the blackboard clearly. The usual solution of giving the child minus lenses is disastrous. But suppose the child has a pair of pinholes and puts them on just to look at the blackboard.



A large area of the blackboard can be seen through just one hole. The cost and the risk involved with minus lenses has been avoided entirely. Suppose the child also leaves them on when reading or looking at a computer screen. This could help greatly in preventing myopia since the accommodative effort is reduced. For those children whose natural farsightedness has diminished to around +0.5 diopters and are on the verge of moving into myopia, sitting down at the school desk and putting on the pinholes should be almost simultaneous events.

Many children might need nothing more than this to insure that they do not develop myopia. Schoolteachers should have several pairs on hand to lend to the students who have difficulty seeing the blackboard.

Can you imagine what the eye doctors and optical industry think about this inexpensive solution? The fact that you don't find pinholes in the optical stores and eye doctors don't recommend them should give you a hint. In fact, it is just this opposition that has resulted in government persecution of those who sold such glasses in the past. It is both enlightening and appalling to look at some of "these cases".

Glare protection for eyes dates back to prehistoric time. Some devices were made of bone, wood or hide, and had slits in them to protect the eyes from the glare of the sun, snow or sea water. These were tied round the head with strips of hide. Today a scientific version of the glare interceptor, called by the distributor Stenopeic (multiple-pinhole) spectacles in which 7 rows of pin-holes of specific size and spacings are placed in a plastic opaque material

are available. These, after much experiment, were found to be valuable in certain cases of subnormal vision.

A few examples follow of the conditions in which they have been used successfully.

### **Complicated Cases**

Recently a case was brought to my attention. It involved a young serviceman whose eyes had been injured by sulfur dioxide gas. Both corneas had been transplanted and his vision, uncorrectable with glasses, was 20/400 in each eye -which meant he was nearly blind.

After studying the case I recommended he be given stenopeic spectacles. With these, vision was improved to 20/70 and he could read 9-point type.

A 70 year old stockbroker had a mature cataract in his left eye and nuclear sclerosis with a small cupuliform opacity in his right crystalline lens. Stenopeic spectacles, by removing the disturbing veiling glare, gave him 20/30 distant vision and permitted 4-point type to be read without difficulty.

### **Other Complicated Cases**

A recent case was most unusual. A 47-year old man had been disturbed for the past two years by seeing distant objects doubled through his only good eye. The other was amblyopic and markedly divergent. He consulted a qualified ophthalmologist who was puzzled and referred the patient to me. On refracting his seeing eye, I found he had excellent correctable vision, but even with correction he still noted a doubling of the hands on the large clock across the street and the red dots below the numbers on the dial. With stenopeic spectacles he was delighted to see everything sharp and with no doubling.

## **AMAZING EFFECT EXPERIENCED BY THE WEARERS**

### **IN THE FIRST PLACE**

You will see objects clearly through the pinholes drilled in the lenses. Even those who have near-sightedness, farsightedness, astigmatism, or amblyopia can see objects clearly through the small holes. In this case, the eyeball muscles of the wearer get normalized by themselves and the focus of the eyeball(the crystalline lens) is adjusted. The pinholes are small plain holes.

### **AFTER A SHORT PERIOD**

If you look at things without the glasses after wearing them for about half an hour, you will be surprised that you can clearly recognize even very small letters. (However, you will be soon again unable to see distinctly).

### **AFTER A SHORT TIME**

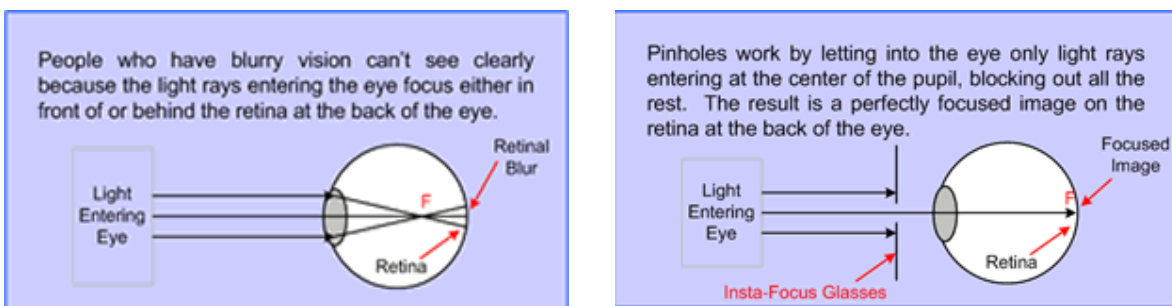
If you persist in wearing these glasses only a couple of hours a day while reading books or newspapers, or watching TV, and your eye problems are not hereditary, you will succeed in your sight-recovering exercise, and the eyeball muscles and crystalline lenses will be normalized.(You may not need glasses at all)

### **REMARKS OF AMERICAN DOCTORS ON THE INVENTION**

1. **Dr. Janet Goodrich**(a distinguished eye-sight-correcting specialist)  
*"People with both close and distant blur and astigmatism are able to use micohole sight correctors."*
2. **Dr. David Michael**(author of Visual Optics and Refraction)  
*"Microholes reduce aberrations and light scattering, isolate a favorable area of the damaged cornea and increase depth of focus."*
3. **Dr. Norman Bies**(author of Correction of Subnormal Vision)  
*"The longer depth of focus obtained through microholes is well established --- patients enjoy a substantial increase in reading distance."*

## Vision improvement

For people who have been diagnosed with myopia, hyperopia, presbyopia, astigmatism or cataracts, pinhole glasses offer instant relief through better vision. You'll really notice the difference when focusing in the middle to long distance, such as when watching TV or reading from a classroom blackboard. Users of pinhole glasses report almost perfect vision and have little difficulty reading words or seeing definition in a TV image WITHOUT THEIR PRESCRIPTION SPECTACLES.

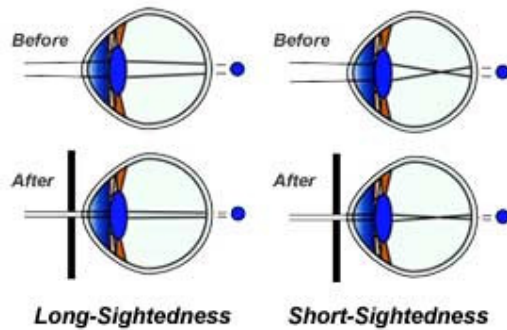


## What are Pinhole Glasses For?

1. Prevent Computer Vision Syndrome - if you use computers a lot you will recognize the signs: eye strain, dry eyes, fatigue, headache, blurry vision and double vision. This is all down to intense near point stress. Computer glasses can reduce the glare from the monitor, help relax the eyes, increase depth of field, and increase your natural focusing power (also known as accommodation).

- Because of the way pinholes minimize light to the eye, they work well as sunglasses or for extremely bright conditions. They also work well in reducing the visual stress of lengthy computer work

2. Relieve Eye Strain and Improve Your Vision - when I wear pinhole eyeglasses, I get a clear long distance focus without any eye strain. This is very supportive for reducing myopia. In fact, some users report that wearing pinhole glasses for just 15 minutes a day can noticeably improve your vision in 4 weeks. If you have farsightedness, you need simply read and write with pinholes on, while nearsighted people need just sit back and watch TV wearing pinholes.



**Cataracts** People with cataracts often see better through pinholes. A cataract doesn't allow light to enter the eye properly. Pinholes often improve the vision even with the existence of the cataracts.

Specialty Glasses

If any person is chronically myopic and is diagnosed with more than 6 diopters of near-sightedness, then pinhole glasses may not improve their vision significantly due to excessive problems with diffraction.

"When used for reading or other close work, pinholes reduce the amount of accommodation or focusing power that the eye must use to see clearly. There is an abundant amount of research that points the finger at excessive accommodation as the cause of acquired myopia.

It is clear that anything that can reduce this accommodative effort, including pinhole glasses, is a useful weapon in retaining good vision. It is for this reason, and the fact that those in the optical business want nothing to do with them, that we have decided to promote the use of pinholes on this website. These glasses could be a major tool in preventing myopia.

Its well proven Pinhole glasses make it easier to read and do other close-up work. They easily take the place of expensive prescriptions glasses, and they are durable enough to last a lifetime.

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