Reversing Lens-Induced Myopia

A Human-Friendly Primer

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Disclaimers

I am not a medical professional. What follows is obviously shaped a bit like medical advice. It is not delivered with the warranty of fitness for any purpose. I am some guy on the Internet. You are responsible for your health. If you follow

the model's interventions, make sure you read the note about driving.

The model deals with glasses-induced myopia, and probably with certain kinds of habit-induced myopia. Myopia happens for a range of medical reasons and the model doesn't attempt to speak to all of them. I don't know what kind you have.

I am not asserting that this model is correct. It is a theory. I am only enumerating my understanding of it in detail. I happen to suspect that the interventions it suggests are somewhat effective, but that more good research is necessary.

I am not trying to sell you anything.

If you are concerned about your vision health, speak to an ophthalmologist (the medical doctors who work with eyes).

Which method is this?

It will probably end up being called the EndMyopia method or the Steiner method if it hits mainstream. It's not the Bates method.

I dunno, it's the Wild West out here, man. This is a method that says that some specific poor vision habits plus slightly-too-powerful glasses induce myopia, and that some other specific good vision habits plus different glasses can reverse it.

In various corners of the internet there is an overwhelming abundance of anecdotal claims from people who aren't

sockpuppets (I checked) that the model's interventions are effective. This is what led me to try it. A lot of the information here is based on a synthesis of the perspectives provided by people in various communities attempting this process.

The damage model

- Glasses, a permanent solution, are initially prescribed for a temporary condition: ciliary spasm induced by excessive close-up work.

- **The long-term use of over-correcting glasses then induces myopia.** They may be over-prescribed, or they may be used for close-up. (Usually both.) This excessive correction focuses the image behind the retina. In response, the eye

physically gets longer for as long as the over-correction is applied, in order to get the focal plane in the right place. *Scientific consensus disagrees here. It recognizes that eyeball lengthening happens in children (who mostly start out slightly far-sighted), but says that the process stops after childhood.*

- This process is the eye becoming myopic. The person will notice it when they return to tasks which the initial amount of lens correction was appropriate for, such as distance vision: their sight will be blurry. The quality of the myope's vision habits determines the speed and extent of decline.

- As the eyeball continues to elongate, stronger glasses are prescribed to maintain distance vision acuity at an optometrist-selected (high) level,

causing a cycle of decline as the process above happens again.

- The risk of serious physiological damage massively increases after about -8, including glaucoma, cataract and retinal detachment[1].

This image summarizes the process visually. (via Todd Becker)

By way of completely unscientific analogy, if you led a very sedentary life and had weak muscles from disuse, you could use a mechanical exoskeletal suit which let you do normal tasks. Your muscles would continue to atrophy further, and the suit would have to do more and more of the work.

The repair model

- The process which leads to the eyeball getting longer works in the other direction too, and with the correct stimulus the eyeball's length can be reduced. *Scientific consensus disagrees here too. It says that this change is one-directional, and that as a result, a series of stronger lenses (or lasers) is the only intervention available for myopic adults.*

- You need a specific amount of correction at all distances. This means using at least two pairs of glasses, one for distant stuff and one for near stuff, and using none at all (if possible) for very close work like reading. **The right amount of correction is this: however much leaves the thing you're looking at very slightly blurry.** This is called "useful blur".

- The best way to do this is to find a sympathetic optometrist who will let you use her lens kit. You walk around with a given amount of correction, increase it and decrease until you have slight blur at the right distance, and then buy lenses at that strength. You need to do this for both your distance glasses and your near glasses. Try the near glasses with whatever your normal distance from your work is. *You can order cheap glasses off the internet at whatever strength you like if you don't have access to an optometrist. Buy a range in 0.25 increments and do this test for yourself. You can also buy complete lens kits, but they are expensive.*

- You now have two pairs of glasses which are slightly weak for their intended distance. **Gradually push the**

"blur horizon" back in each pair, working to reduce that small amount of "useful blur" you included in your correction. You do this by practicing good vision habits.

- As you reach clear vision with a given set of glasses, you buy weaker glasses in the smallest increment you can afford. For example, once you achieve clear vision with your -3.00 distance glasses, you would ideally replace them with -2.75s. The same applies to your near glasses. Repeat until clear, unassisted vision is attained. *A similar gradual process might potentially be able to clear astigmatism.*

- The repair process is aided by printing a home Snellen chart and frequently measuring and recording your visual acuity. This lets you quantify your

progress, which both encourages you and makes choosing when to swap glasses simpler.

- Repair is fast at first as you clear the ciliary spasm, and then slows down as you work on shortening the eyeball itself. The final diopter is very slow, for reasons that aren't entirely clear. On average, it takes 6 months to 2 years per diopter reduced.

Analogously, you can make the choice to gradually reduce the "assistive quotient" on your mechanical exoskeleton and exercise your muscles into capability again.

What are good vision habits?

- Ensure that you are at all times slightly under-corrected for whatever you're looking at. This means carrying both pairs of glasses around with you all the time, swapping them where appropriate, and adjusting your distance where possible so that you fall in this sweet spot. You want the thing you're looking at to always be very slightly blurry. *For example, your near glasses are probably enough correction for cooking, sitting down to eat, and working on stuff around the house. If you're "out and about" but really only looking at things near you, your near glasses might be more appropriate than your distance glasses. Learn to make good judgments here.*

- **Practice "active focus" or "focus pushing", which is the key method for pushing the blur horizon back.**

Move towards what you're looking at until it's clear, blink a couple times, then gradually move away until it's just beginning to get blurry. Blink and look at it until it starts to look clearer. Repeat. This is easiest with chunky, high-contrast stuff like trees and printed text, and can be done at any distance, as long as the amount of correction leaves a little bit of blur. It can take a long time to figure out how to do this. Try not to get discouraged. *It took me at least two months to be able to do it reliably.*

- Limit close-up time. Minimize the total time per day spent doing stuff close-up. Hard limit suggestions vary from 2 to 6 hours per day.

- Avoid screens. Close up time with screens is worse than any other kind.

Poor screen quality (especially the flicker from PWM screens) may induce eye exhaustion. Darker visual themes may be easier on the eyes. **Try to find screen-free alternatives for the things you do on screens.** *I successfully moved from Google Calendar to a paper calendar.*

- Do close-up stuff from as far away as possible. For example, if you need to use a computer, experiment with making all the fonts as large as possible so you can sit as far back as possible while retaining legibility.

- Take breaks. Make sure that all time spent doing stuff close up is broken up by really substantial breaks. Make sure you spend these breaks looking at things far away. A 10 minute break after each 45 minutes of close-up time is a reasonable baseline. There is

software to help remind you about these for screen time. *I also recommend a short break every 15 minutes.*

- Get more distance time. Get outside. Spend at least one large chunk of time each day with no close-up vision. A popular way to do this is a "focus walk", which is a 20 minute plus walk around while practicing active focus on trees. This is the bare minimum. The more time you spend outdoors, the better. Taking up an outdoor hobby will accelerate your progress.

- Use good light. Light quality affects eye exhaustion. Ensure that your space is sufficiently lit. Use as much natural light as possible. *If you need to use artificial light, try to use light which best matches the Sun in both emissive spectrum*

and consistency (no flicker). I suspect that halogen bulbs get the closest.

- Stay healthy and happy. General health, including stress, diet, and sleep quality and quantity, affects eye exhaustion.

Important stuff

- **You need great visual acuity to drive safely.** This applies to any other piloting or operation of heavy machinery. Until you are close to switching your distance glasses for weaker ones, keep your most recent stronger glasses around for driving. If you have an accident, your insurance may (quite reasonably) refuse to cover

you if you were not wearing the optometrist-prescribed correction for your myopia. The lives of you and those you drive with or near are worth a lot more than slightly faster vision improvement.

- Without getting too deep into optics, the strength of myopia-correcting glasses is measured in diopters. The number always starts with a minus, then a number followed by two decimal points. Glasses are sold in increments of 0.25 diopters. Glasses at, say, -1.50 correct a small amount of myopia, while glasses at, for example, -4.75 correct a lot of myopia. When I say "weaker glasses", I mean glasses which are less powerfully corrective.

-1.50 glasses are weaker than -4.75 glasses.

- Your visual acuity changes dramatically based on exhaustion, time of day, light levels and quality, and many other factors. It is useful to prove this to yourself by doing some measurements, and then to be sceptical of weighty decisions made based on the single data point gathered by the optometrist.

- That data point - the "normal" optometric correction for your eyes - is still a useful reference point. Get them tested early in the day, when your eyes are not yet tired. You can do this at the same optometrist visit at which you buy the useful-blur-added glasses. *Here are my initial numbers, for the record. I was wearing -3.00 correction. The opto-measured*

"correct" script was -2.75. I purchased my first distance lenses at -2.25 and my first near lenses at -1.50. Please don't copy my gaps blindly. You need to try lenses on and see which strengths give you good vision with a small amount of useful blur.

- Accommodation (focussing on something close), together with the associated convergence (the eyes turning inward), is a physically strenuous process. Becoming mentally aware of this helps you learn to listen to your eyes for signs of fatigue.

- "Blur horizon" just refers to how far you can see before things get blurry. It changes based on how strong the glasses you're wearing are. If your blur horizon is at infinity (nothing is blurry) and you're wearing minus glasses, you're damaging your eyesight. More

so when you look at close-up things. To repair myopia, you want your blur horizon just nearer than the thing you're looking at.

- It may be possible to mitigate some of the damage from close-up time by wearing reading glasses (positive correction numbers) which bring the blur horizon closer than what can normally be achieved by removing your glasses, but this has been associated with double vision problems and should be approached with care.

- A significant proportion of people using this method suffer from phases of double vision as they improve, especially if their correction is at different strengths in each eye. Endmyopia.org has a lot more details on dealing with this. The gist is to take

things slowly and let your eyes adjust to each new lens strength fully.

- You can of course reduce diopters in bigger jumps at a time, which is cheaper. This is dangerous as it may tempt you to drive with some blur, and it may increase your overall repair time, as milder blur seems to make active focus easier and more effective. However, if cost is a limiting factor for you, it is possible in principle to reduce in fairly large jumps. Keep the "keep what you're looking at slightly blurry" principle in mind, and step up your correction aggressively enough when driving that you have absolutely no blur.

- As you may have figured out, this model requires a lifestyle change for the repair to stick. If you go right back

to loads of staring at close-up screens without breaks, or whatever your bad habits were, your eyes will deteriorate again. Fair warning.

Frequently asked questions

Does this work for older people? I can't answer that from personal experience, but there are stories in the communities of people 65 and over making substantial improvements. My guess is that repair is still possible, but the rate of repair gets slower as you age. Commit to being patient and go for it.

Did it work for you? Well enough so far that I made this site because I think getting this information out there is

urgent. I will post full documentation once my journey is complete, or amend this site with details if something goes wrong. I'm not going to answer "yes" until I have a signed document from an optometrist stating I have perfect vision. I'm not a disciple, I have no horse in this race beyond being a myopia sufferer. I am a scientifically-minded human. My vision has improved in empirical tests. I am not yet glasses-free.

So this actually works? If you dig around for the forums where people are doing this stuff, or look through the EndMyopia blog, there is a lot of evidence from people who have fixed substantial myopia, and from others who have made massive strides in doing so. The method's popularity is recent and gradual, and it's a

process which takes several years to complete. You decide.

Humanity's myopia crisis

If the model (or some variant of it) is correct about glasses causing and exacerbating myopia, modern optometry might be responsible for an astonishing amount of eye damage.

Myopia prevalence is increasing at around 500 million sufferers per decade[2]. The rate of decay is appalling, especially in South-East Asia[3]. A WHO paper[4] puts the myope count at 2,584 million in 2020 and 4,949 million in 2050, and the high myope (-5 or worse) count at 300 million in 2020 and 925 million in 2050. As mentioned earlier, dramatic vision damage spikes after -8[1]. It is a colossal

and very recent epidemic. This supports the idea that it's a result of some newly different facet of life - more time spent staring at nearby screens with strong correction, perhaps.

I believe that the vast majority of optometry professionals seek in good faith to do right by the people who come to them for help. Glasses work. If your vision is blurry and you put on some glasses, you will see more clearly. This is helpful.

I also believe that with extraordinary power comes extraordinary responsibility. Doctors and their kin are the last bastion of blind faith when it comes to science. People trust them. These professionals need to take their power very seriously, and take exceptional measures to make sure they aren't doing harm. Those who

do not - who trust to the herd protection of "everyone else is doing it like this" - risk doing harm, and in their assent perpetuating much greater harm. Make sure your short-term help isn't doing long-term harm.

(My suspicion is that bad habits from Internet addiction and a generally more information-based society are a bigger part of the equation than optometric protocols, but that those protocols are still a key factor in myopia-inception. There's also a lot of missed potential for positive change: optometrists are uniquely positioned to teach people about good vision habits and reverse this epidemic. If, you know, the model is right.)

On Lasik

If you are considering laser eye surgery, please skim Lasik Complications. It is somewhat hyperbolic, but its point is ultimately valid: providers consistently undersell the risks going into the (very irreversible) procedure. One study[5] from a laser surgery provider itself noted 20% of patients with eye pain, 40% with light sensitivity, and 33% with difficulty to drive at night or do close-up work, at five years post-operation.

Further reading

- endmyopia.org is an indispensable resource with a wide range of relevant information.

- The Wikipedia articles on focal length, the diopter, focus, accommodation, pseudomyopia, myopia,

accommodative spasm, and emmetropia may improve your understanding of the systems involved. Bear in mind that Wikipedia relies on current consensus and as such (quite reasonably) characterizes interventions other than lenses and surgery as pseudoscience at the time of writing.

Where did the model come from?

The earliest ancestor to these principles I can find is from a YouTuber called C. G. Hayes, who released a document called the "No BS Guide to Vision Improvement" which summarized his findings. It's worth reading and it touches on all the most important principles.

Todd Becker of gettingstronger.org has some ideas I disagree with, but his take on the model (video) is pretty true to my experiences, and he digs into active focus well.

It was most substantially developed by Jake Steiner of endmyopia.org. Jake has a vast wealth of valuable writing about the subject and his blog posts go into a lot of useful detail. Unfortunately, Jake has some issues.

His posts are around 40% useful information and 60% ramble, awkwardly conspiratorial "let's you and me stick it to the man, eh?", and self-aggrandizement. He calls himself a guru unironically and has a pet collective noun for his readers. He has a financial incentive to make the blog archives hard to parse. Also, the blog archives are hard to parse.

He has also been making a concerted effort to move the community's conversations into forums which are not publicly accessible, and he enforces strong groupthink within those private groups. He comes across as a cult leader who is trying to keep his flock from straying. I honestly have no idea whether it's malicious but it is hugely damaging to the mainstream uptake of these ideas.

I thought I'd take a crack at summarizing the most important findings across all these thinkers on one page, including stuff from community members and my own experiences. I think Jake in particular has done humanity a valuable service in figuring out what he has, but it's time to stop treating this like property and start treating it like a common resource.

References

[1] (see also) [2] local [3] local [4] local [5] local