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VISION THERAPY FOR PRESBYOPIA

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THE READ WITHOUT GLASSES METHOD™

Sharpen your near vision.
Reverse middle-age sight.

Why be dependent on reading
glasses? In as little as 6 minutes
a day you can:

- Keep yourself from needing reading glasses
- See better up close without reading glasses
- See better in dim light
- Reduce the strength of your glasses
- Avoid, eliminate or reduce the need for bifocals



With leading vision experts

Ray Gottlieb, O.D., Ph.D.
and
Martin Sussman, President
Cambridge Institute for Better Vision

Overview of the Course

- The presbyopia convergence chart will be demonstrated and taught in-depth.
- Review of research about presbyopia, accommodation, convergence, AC/A, & CA/C.
- Review of other approaches to reversing presbyopia.

Can vision exercise improve presbyopia?

Presbyopia predicts longevity

- Early presbyopes die earlier and the late-onset-presbyopes live longer.
- True for those who died from cardiovascular but not pneumonia, diabetes, cancer, etc.
- Late onset presbyopes' life expectancy at age 50 was 11-years longer.
- Hypertension combined with obesity early loss of accommodation age difference striking.

The change in the range of accommodation with age and its connection with the length of life. Benstein; Science 81, (MAY 3, 1935) 423-424

The Basel longitudinal study on aging (1955–1978). Brückner, et al., Documenta Ophthalmologica, 64, (3) (1987), 235-310

Presbyopia is a Gerontological Maverick

- Presbyopia ages (accommodation loss) significantly faster than any other biological function so far studied.
- The sum or interactive consequence of several factors including: growth, tissue constancy and ageing.
- Presbyopia proceeds faster than any of these components taken separately.

Presbyopia is a Gerontological Maverick. Piercione & Weale, Archives of Gerontology and Geriatrics 20 (1995) 229-240

Loss of Accommodation after Reading Spectacles are Worn

- In response to short-term treatment (2-weeks) with reading spectacles accommodation recedes and does not recover even after 2 months of discontinued treatment.
- To preserve the remaining range of focusing ability in incipient presbyopia, it would be beneficial to delay the prescription of reading spectacles.

Indu Vedamurthy, et al., The Influence of First Near-Spectacle Reading Correction on Accommodation and Its Interaction with Convergence. *Investigative Ophthalmol Vis Sci.* 2009 September; 50(9): 4215–4222

History of the Discovery:

Two Questions

- 1. Discovery of the convergence approach to presbyopia control occurred in 1976 in response to a patient's desire to eliminate his need for reading glasses.
- Paul was 52 male w Rx +1.25 DS & +1.75 add OU

Two Questions

1. Since converging increases accommodation in young people, will it also for presbyopes?
2. If so will practicing it strengthen normal accommodation (without over-converging)?

Can vision exercise improve presbyopia?

The answer was yes & yes

- I taught him the exercise, he learned it easily and saw better immediately while converging.
- After just two weeks of practice he was glasses-free at both distance and near.
- Uncorrected acuity improved from 6/12 to 6/6 at far and 6/60 to 6/12 at near.
- Three years later, at age 55, he measured 6/6 at far and 6/7 at near.

Here is how he did it.

- He loved the exercise and practiced frequently every day. He even converged distant targets when he saw the opportunity.
- After twelve days of daily practice he was able to read all day long without glasses at near or far with clear vision and no discomfort.
- He kept up his practice on a regular, long-term basis.

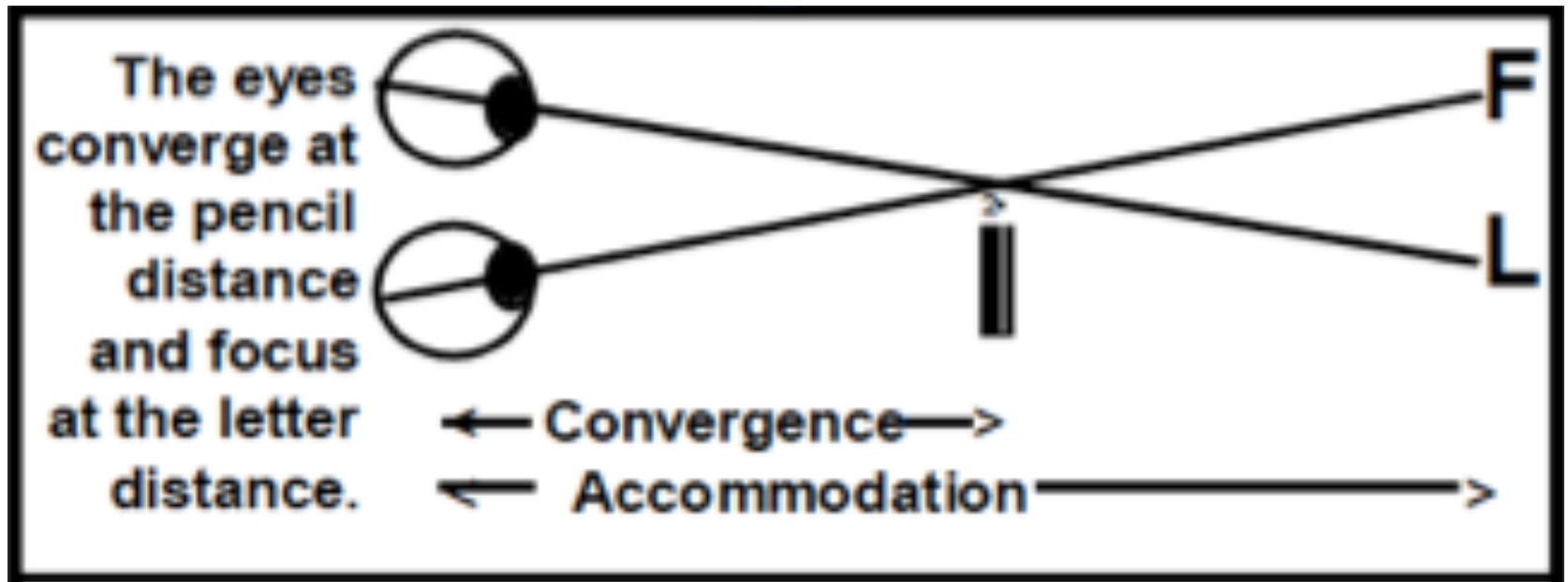
After his success:

- I was amazed and pleased, but unwilling to tell my colleagues about it.
- A few years later when my presbyopia symptoms started, I made my own chart and followed Paul's example. Now 30+ years later I still don't wear reading or distance Rx.
- In late 1998 I made new chart and presented it at COVD and then at other conferences.
- Martin Sussman at CIBV approached me and we made the RWG DVD.
- Recently there has been a great surge of interest in presbyopia control.

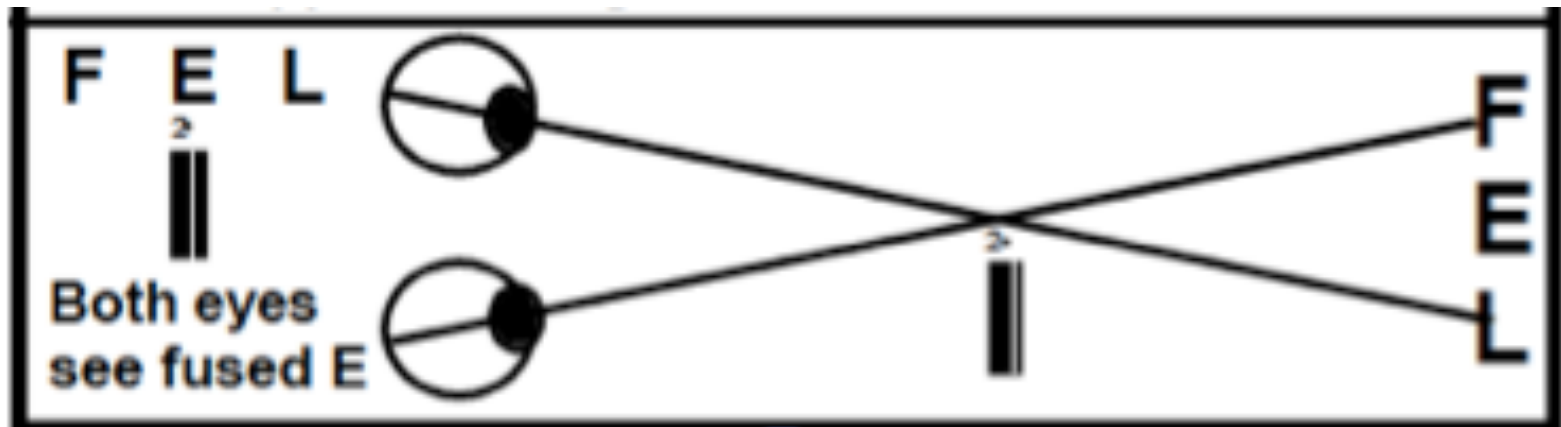
Here is how it works

1. Presbyopia convergence chart brings convergence nearer (20 cm) than accommodation (40 cm).
2. Diplopia is avoided due to overlapped fusion of the central images.
3. Converging increases accommodation
(disparity is the initial stimulus, not retinal defocus)
4. Text appears sharper, blacker and smaller.

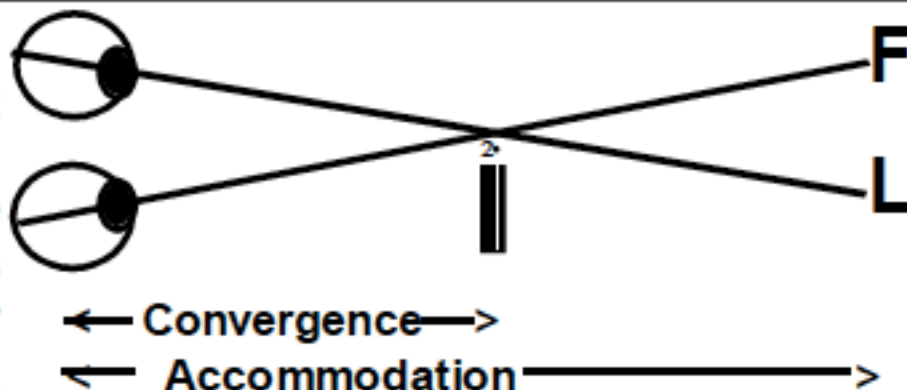
Converging Closer than Accommodating



**Diplopia of the central target
is avoided due to overlapped fusion**



The eyes converge at the pencil distance and focus at the letter distance.



F L
2x



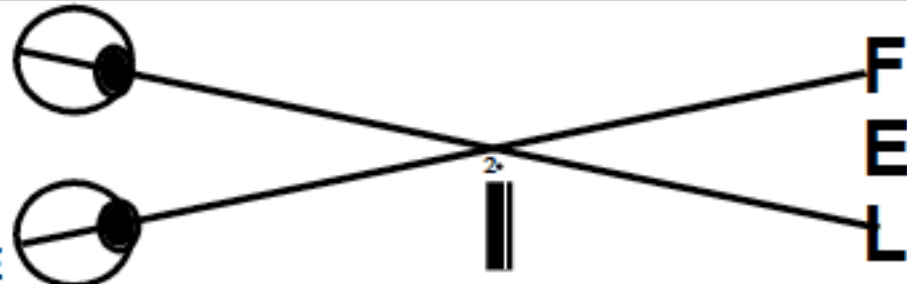
Left eye aims over the pencil at L. F appears on left.

F L
2x



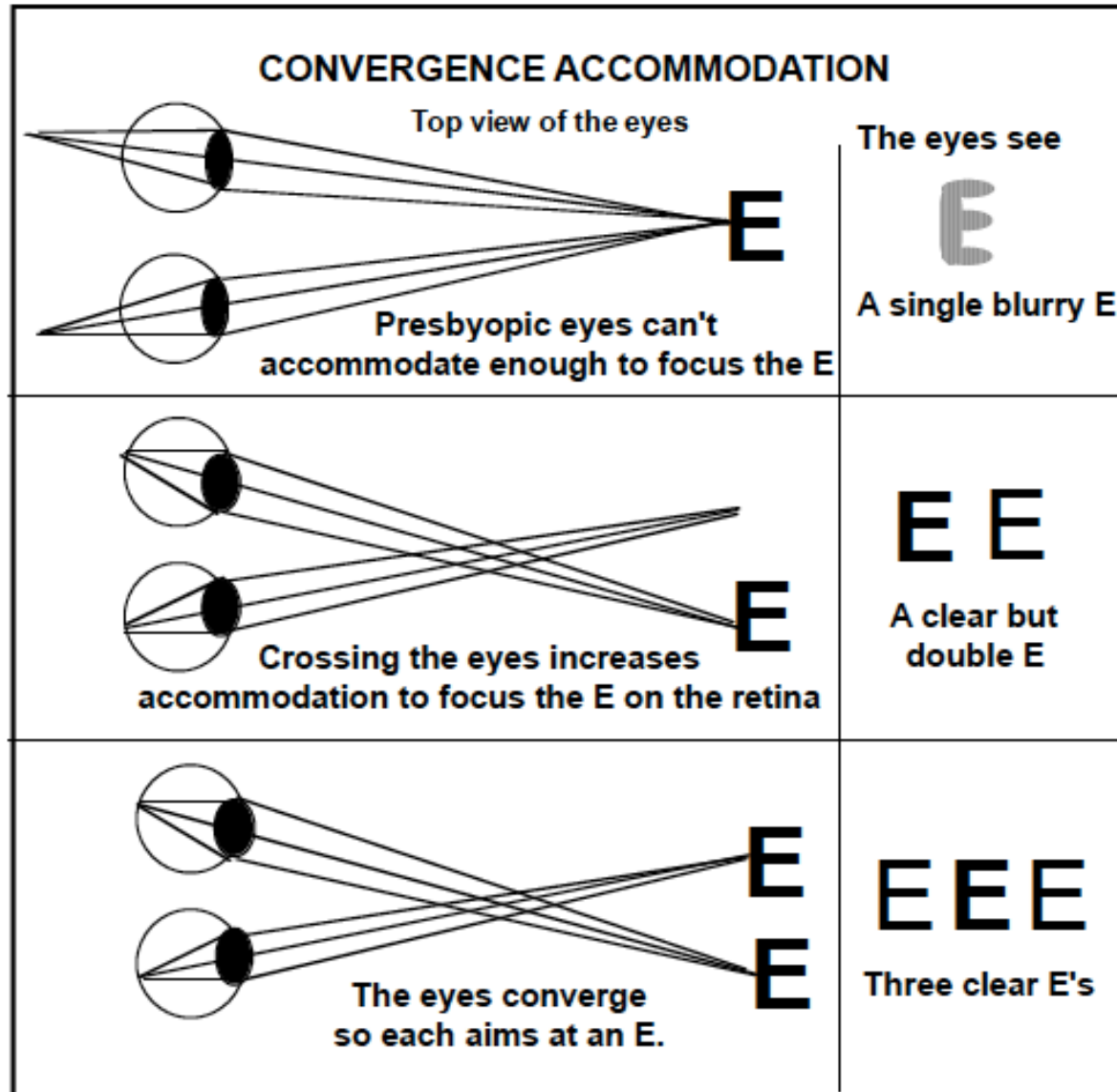
Right eye aims over the pencil at F. L appears on right.

F E L
2x



Both eyes see fused E

Converging Increases Accommodation



The Presbyopia Reduction Chart

E
HT
AERB
DNAKNILB
OTYRTESAELP
STLUSERTSEBROF
VRYOTEUQINWQETTSBSEHT
tnirpeziashidmarotelsabonjanyuoy

Cross your eyes to clear this print. Hold a pen, point up, half-way to this page. Look at the point. Notice the dots above. See four? Move the pen nearer or farther to see three. To learn to hold three dots without a pen, look at the middle dot and bring the pen slowly to your nose. Is this clearer with crossed eyes?

If you cannot read this fine print, do not strain. The more you strain the worse you'll see. The secret to better vision is relaxation. Excess tension in eye muscles stops circulation and makes vision inflexible and insensitive. To clear this print, cross (converge) your eyes as above. Can you see the print through either dot while converging? Can you read it?

You can overlap these eight paragraphs seven ways by converging at different distances. Hold your pen closer to converge more or further to converge less. Do you have to converge more to clear this print? Notice the depth in the center paragraphs as you change convergence. Breathe!

Relax while clearing this tiny print. Learn to wait for the letters to clear. If you see blurred images, ghost letters or black or white lines, do nothing. Allow the image to change by itself. Don't strain for clarity. Breathe, relax, and practice letting go in your feet, legs, pelvis, stomach, hands, shoulders, neck, jaw, and eyes. Breathing should not be forced. Try rapid and slow blinking. This new way to focus will become stronger and more automatic. Eventually you will see clearly without converging.

E
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TEACHING CONVERGENCE


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Converging to use the chart

- Converge near target
- See three dots
- Hold three dots
- Be aware of stereo (middle paragraph farther)
- Move target, walk, swing, stand up or sit, etc.
- Look at middle dot or text while converging
- Move fixation around the chart while converging

Patients who can already cross their eyes are easy to teach (usually).

- Hold presbyopia reduction chart at 40 cm.
- Patient pays attention to the two black dots
- Patient crosses eyes and learns to fuse two dots to see three
- If they have difficulty seeing three, patient can fixate a pointer or finger at 20 cm.

Patients who can't cross their eyes

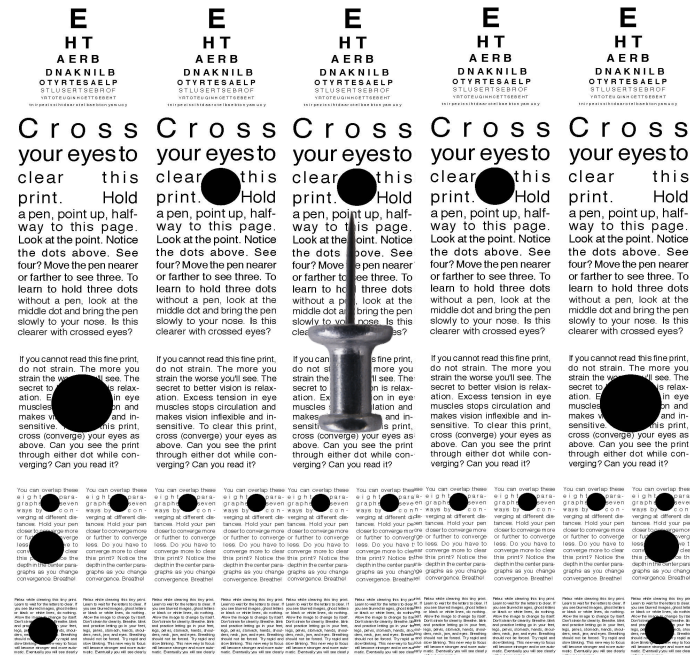
- Use a pen or finger tip as a fixation target
 - Practice fixating the target (pen) with both eyes
 - Follow the target as slowly move it to and from the nose, horizontally, vertically, in a circular movement.

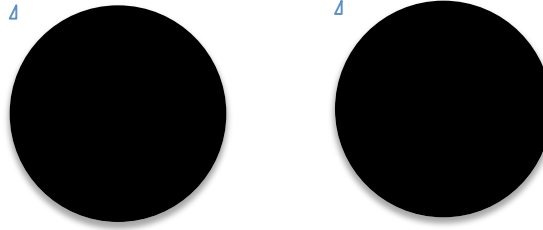
Then add the chart:

Chart at 40 cm

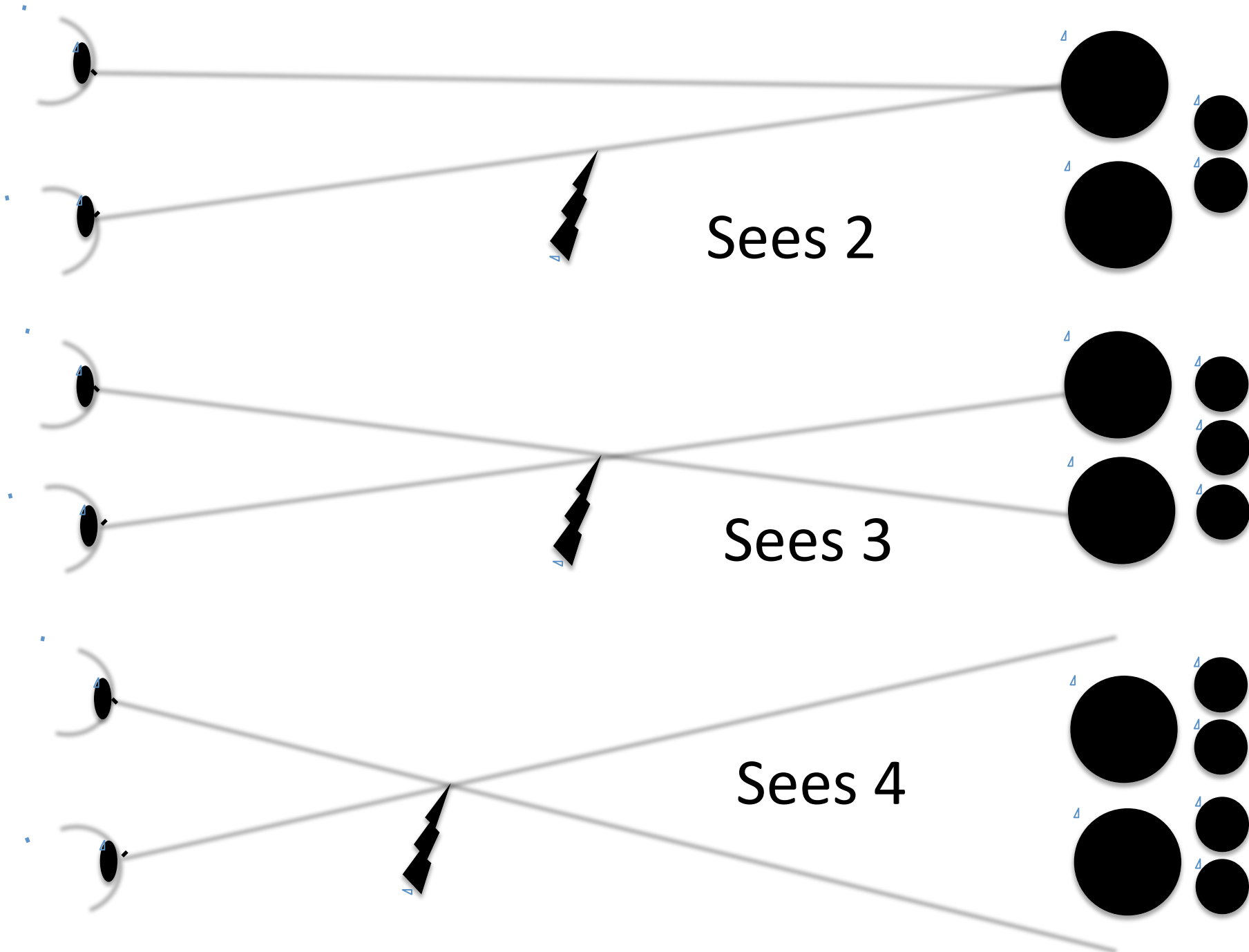
Target (pen) at 20 cm

Line up the fixation target just below the top big black dots





- Look at the fixation target (pen, finger)
- Keep reminding patients to look at the fixation target (the most common error is to lose fixation)
- Do you see the page behind the fixation target?
- Do you see the dots? How many? 2, 3 or 4?
 - 2 not aiming at the target but at the chart (or suppressing)
 - 3 means they are seeing correctly
 - 4 indicates they must move fixation closer or farther
 - Patients often unconsciously pull target and chart closer and must be reminded to move to correct position



When they can see and hold 3 dots

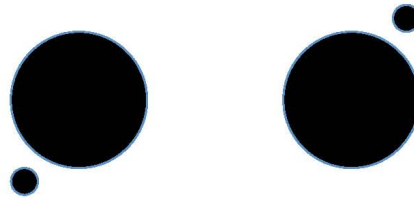
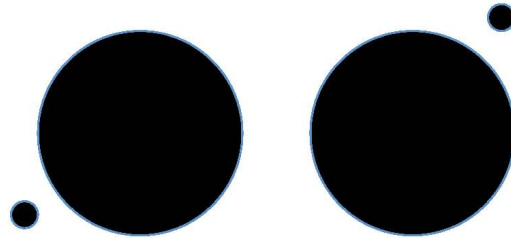
- Coach to see middle paragraph in farther away.
- To look at the word “Cross” while converging
- To be able to move eyes to smaller text
- To be able to walk while holding convergence
- To be able to move chart, head, eyes and fixation all together, up, down, left, right, etc.
- To be able to remove need for fixation target

Take frequent breaks to avoid discomfort & fatigue

Help for patients who have difficulty learning to use the chart

- Use easier convergence chart: big dots chart.
- Move chart farther away (if convergence insufficiency).
- Use prisms or lenses to make it easier.

Big Dots Chart



Continued Practice Can Result In

1. Clear at near without converging.
2. Decrease or eliminate late onset hyperopia (and sometimes myopia)

Important

The convergence presbyopia exercise **does not promise instant or permanent cure.**

Individual Differences – you can know the results only after you attempt the therapy. Vision improvement exercises are like stroke or head trauma rehabilitation,

Commitment and discipline is required.

If your heart is only half-committed and your foot is halfway out the door, you seal your own fate.

Predicting Success

Who are most likely to succeed?

- New presbyopes,
- Physiologically younger/healthier,
- Smaller pupils,
- Self-disciplined/motivated,
- Letters look clearer and blacker when first converging the Acuity Test Chart,
- Sight remains clearer after,
- Eyes feel good from the exercise

It doesn't work for everyone.

- There are **great individual differences** that bring some people quick, lasting and full success, while others need to work longer, and others partial or little improvement.
- Who can't use it
 - Monocular individuals,
 - Strabs & suppressors (unless you can train them),
 - People who experience immediate, lasting discomfort (possible to slowly build up tolerance).

For some patients success means only a complete recovery and seeing like at age 20. These patients will feel like a failure and overlook important gains.

- Reducing a reading add from +2.25D to +1.25D increases accommodative range and eliminates the need for trifocals or progressive lenses.
- Slowing progress of presbyopia is also a gain.

Is there an upper age limit?

- Success becomes more difficult with age.
- BUT Some patients surprise you. You never know until you try.

The Presbyopia Reduction Test Chart

E
H T
A E R
B D N A K
N I L B O T
Y R T F L E S T I Y B
R A E L C T X E T E H T
T E L D N A X A L E R O T
N R A E L N I A R T S T O N
O D T N I R P Y N I T S I H T D A E R O T

E
H T
A E R
B D N A K
N I L B O T
Y R T F L E S T I Y B
R A E L C T X E T E H T
T E L D N A X A L E R O T
N R A E L N I A R T S T O N
O D T N I R P Y N I T S I H T D A E R O T

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Y R T F L E S T I Y B
R A E L C T X E T E H T
T E L D N A X A L E R O T
N R A E L N I A R T S T O N
O D T N I R P Y N I T S I H T D A E R O T

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T E L D N A X A L E R O T
N R A E L N I A R T S T O N
O D T N I R P Y N I T S I H T D A E R O T

What glasses to take test?

- Myopes wear distance only Rx.
- Mild hyperopes and near emmetropes wear no Rx.
- Higher hyperopes wear distance Rx.

Test Instructions

- Hold chart at 40 cm in bright light (no glare)
- Test vision using top, single target (no converging)
 - Ask about how black and clear the letter look.
 - Note how far down they can read.
- Teach patient to converge the middle pair
 - Does converging improve letter clarity & blackness?
 - Note changes in contrast, acuity, and eye strain.
- Repeat for the bottom 2 paragraphs
 - Does converging more improve vision even more?
 - Note changes in contrast, acuity, and eye strain.

Warning Patients about Discomfort or Fatigue

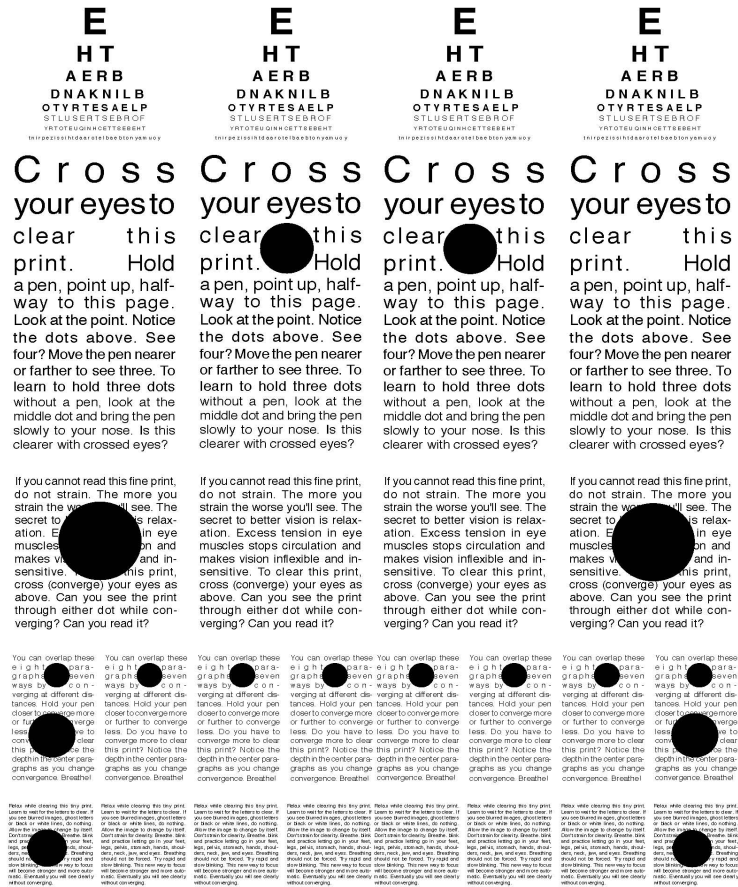
- It's very important to warn patient to stop at the first sign of discomfort.
- If using the chart brings significant fatigue or discomfort, it's better to practice many times a day for very short periods (sometimes for only 20 or 30 seconds). As symptoms reduce, carefully increase time.

The Presbyopia Reduction Chart – Use of glasses or contact lenses

- Low myopes or near emmetropes practice without glasses or contacts if possible.
- Myopes should use single vision distance Rx.
- Hyperopes may find it necessary to wear their distance Rx, a reduced distance Rx or a reduced near Rx to begin.
- Single vision distance Rx contact lenses can work for patients who need to wear Rx.
- Depends on patient's goals.

Using subtle aspects of chart

- Stereo,
- Fixation dots vs. Suppression dots,
- Increasing convergence,
- Exercising convergence,
- Smooth ductions using separated half charts,
- Photocopy for smaller text



Suppression Dots

C r o s s
your eyes to
clear this
print. Hold

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When and how often to practice is very individual

- Paul claimed that he practiced whenever he had the opportunity. He love how it made his eyes feel.
- At home, he kept a chart in every room.
- At work he closed his office door and converged as he spun around in his executive swivel chair.
- He converged at distance, window frames, columns of a building, chair backs.

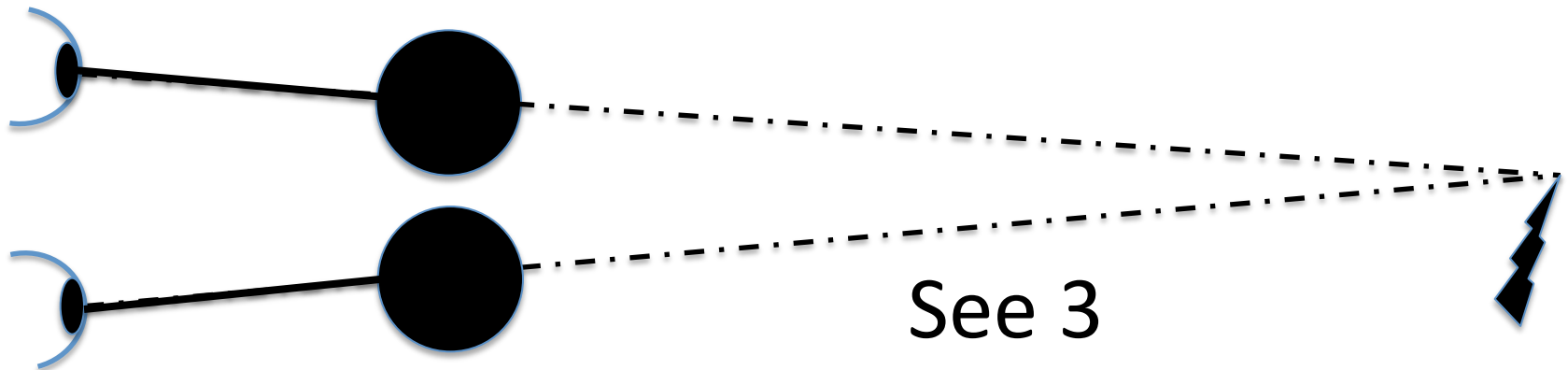
Practice Strategies

- Work just above the blur threshold,
- Clear by dynamic relaxation (Bates Method)
- Z-axis tromboning,
- Add stressors,
- Find new threshold by changing:
 - Illumination,
 - Chart distance,
 - Text size
 - Position of gaze,
 - Degree of convergence

AND

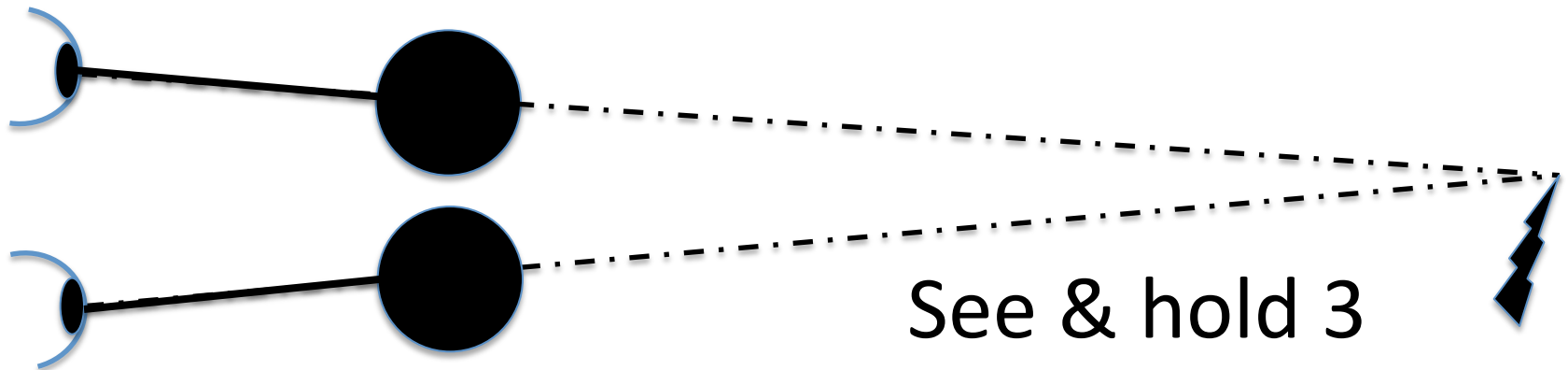
Diverging the chart

- To guard against training excess convergence esophoria.
- To practice clearing the text while diverging helps to bring improved vision with normal convergence viewing.



Training Divergence

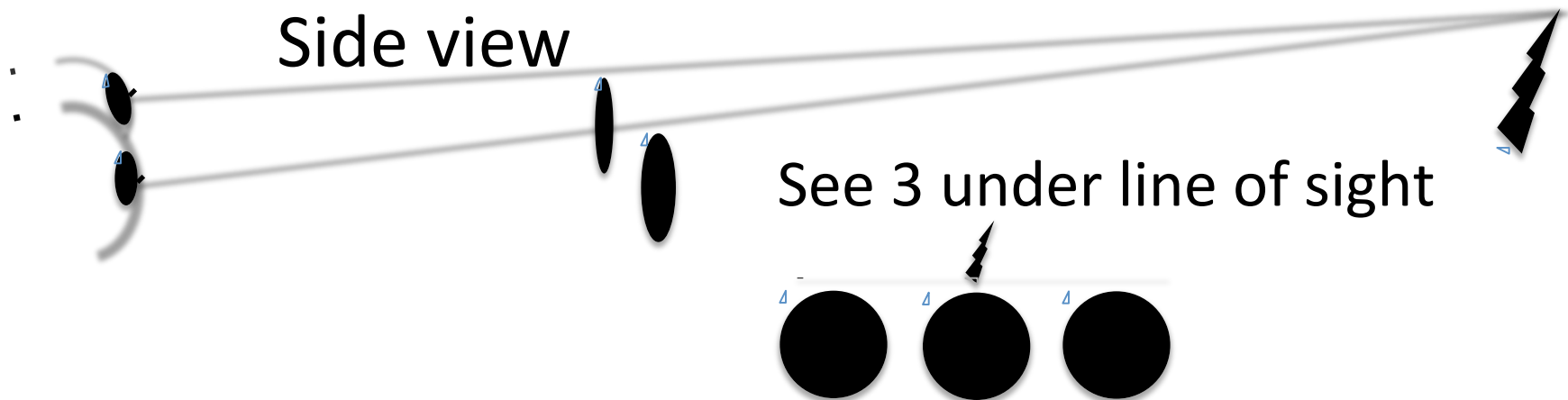
- Nose touching chart, a dot in front of each eye
- See one big, fuzzy dot?
- Move chart out 2cm. See three? For how long?
- Slowly move farther to 40cm. Sees 3 dots?
- Practice making text clear while diverging



Training Divergence (cont.)

OR

- Look over top of Big Dot Chart at mid distance
- Gradually move dots up into line of sight



Or make transparent see-through chart

Relax while clearing this tiny print. Learn to wait for the letters to clear. If you see blurred images, ghost letters or black or white lines, do nothing. Allow the image to change by itself. Don't strain for clarity. Breathe, blink and practice letting go in your feet, legs, pelvis, stomach, hands, shoulders, neck, jaw, and eyes. Breathing should not be forced. Try rapid and slow blinking. This new way to focus will become stronger and more automatic. Eventually you will see clearly without converging.

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- Relax while clearing this tiny print, wait for the letters to clear.
- If you see ghost letters or black or white lines, DO NOTHING.
- Don't stare or strain for clarity. Allow the image to change by itself.
- Breathe! Breathing should not be forced. “Count 4” breathing.
- Blink! Try rapid and slow blinking to see better. “Count 4” blinking.
- Practice letting go of strain in your feet, legs, pelvis, stomach, hands, shoulders, neck, jaw, and eyes.
- This new way to focus will become stronger and more automatic.
- Eventually you will see clearly without converging.

Practice with chart

- Remember Light Levels
- Remember target distance
- Remember to find blur/clear threshold
- Remember to work in and out of just blur
- Remember to relax and to use Bates' ideas
- Remember to move around with chart

Theoretical background

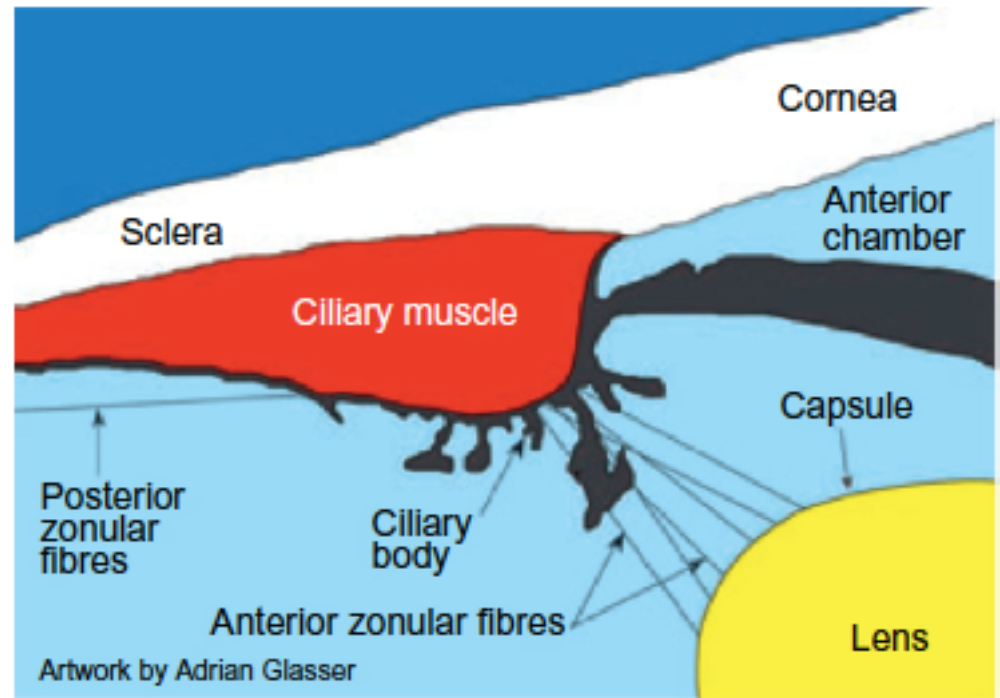
- Convergence Role in Accommodation CA/C
- Accommodation – Traditional Theories
- Accommodation – Non Traditional Theories

Evidence suggesting presbyopia can be improved with vision therapy

- Residual accommodation exists after age 50
- Vision researchers report self-data
- Optometric vision therapy works for children and pre-presbyopic adults
- The Portland Presbyopia Onset Delay Study
- Objective Measures of the Effects of the “Read Without Glasses Method”

Accommodation – Traditional Theories

- Lens power increases
- Lens moves forward
- Vitreous support
- Ciliary Muscle
- Ciliary fibers



Traditional Theories of What Causes Presbyopia

A. Lens theories

1. Lens keeps growing
2. Lens gets hard
3. Nucleus gets hard
4. Lens capsule loses flexibility

B. Ciliary theories

1. Muscle gets weak.
2. Fibers Stretch
3. Fiber insertion position on lens alters (due to lens size increase).

“... the Etiology of Presbyopia Remains Controversial”

- **Mordi & Ciuffreda:**

**“Despite well over a century of research,
experimental results are often conflicting.”**

Dynamic aspects of accommodation: age and presbyopia.

Mordi & Kenneth, Vision Research 44 (2004) 2315–2316

WHY?

WHY?

- 1. Poor research designs that fail to look at INDIVIDUAL DIFFERENCES.***
- 2. Important factors affecting presbyopia have not been taken into consideration.***

Individual Differences

- Wide individual differences in accommodative response and other ocular elements have been found in many previous experiments.
- But most accommodation studies look for statistical differences between the experimental and control groups and not the outcomes between high and low responders in the experimental group.

Individual differences: example of bad research

Objective Measures of the Effects of the “Read Without Glasses Method”

- Eight emmetropic, presbyopic patients, age 52-62 years, - ave. 57.5 years.
- Practiced the Read Without Glasses Method at home. No instruction but DVD.
- Patients were tested objectively and clinically prior to, at 4-weeks (progress evaluation) and 10-weeks (final evaluation).
- Patients also answered a questionnaire at both progress evaluations.
- Measures of visual acuity and accommodation were averaged without regard to age, frequency and total time practiced, or patient reported success.
- The group data indicated slight but non-significant improvements in clinical accommodation and acuity after 4- and 10-weeks.
- The questionnaire responses indicated that 87.5% of subjects reported their near vision was somewhat to significantly better after 4 weeks of practice.
- None practiced every day and nearly half practiced 3 or less times/week and only 3 practiced every other day.
- Five of eight subjects (62.5%) reported that they used reading glasses “less than before” and one patient no longer used any reading glasses. Seven out of eight (87.5%) said they would recommend this program to a friend.
- The patients’ subjective success without significant objective improvement was explained by the authors as due to the “placebo effect”.

Individual differences, Example

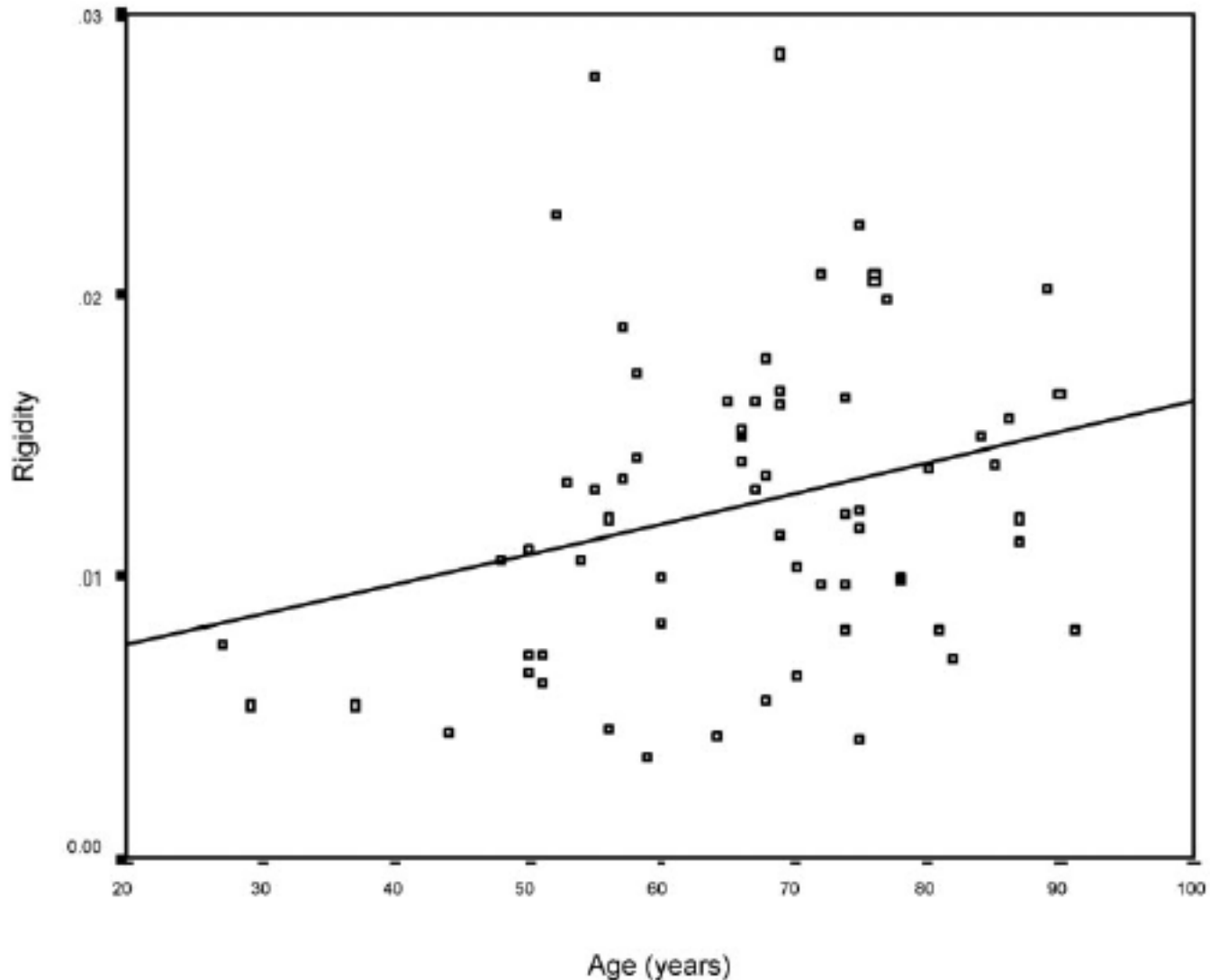
Dong Hui Lim, et al., Factors Affecting Near Vision After Monofocal Intraocular Lens Implantation, J Refract Surg. 2013;29(3):200-204.

- Instead of analyzing the average accommodation of all subjects, finding a little accommodation, ignore as too little to be of practical use;
- The researchers divided the subjects into two group: “good accommodators” and “poor accommodators”, and looked for differences between them.
- “Through testing of multiple factors, we showed in this study that small pupil size and short axial length may be significant determinants of good near vision after monofocal IOL implantation. Good postoperative near vision may be expected if the patients have pupils less than 2.6 mm and axial lengths less than 23 mm before surgery.

Individual Difference Example

Ocular Rigidity in Living Human Eyes

I. G. Pallikaris, IOVS, 2005, Vol. 46, No. 2 409-417



Individual Differences in Dynamics of Human Accommodation & Age

- There were striking individual differences in the maximal speed of accommodation and near to far accommodation even between subjects of the same age.
- Near to far accommodation was slower at all ages.
- Accommodative pupil constriction was absent in children under 10 and increased to average 1.6 mm per D of accommodation at the age of 47. A pupillary near response could still be elicited in presbyopic subjects when attempting to accommodate even though the refraction did not change.
- The magnitude of the pupillary near response was highly variable even among subjects of the same age. Corrected myopes had weaker pupil near responses than emmetropes or hyperopes.
- Both speed and time course of accommodation were significantly different among individuals such that they could be distinguished based on their accommodation behavior. But was not related to the refractive errors (range -4-5 to +2 D) of the subjects.

Non-traditional Sources of “Accommodation”

1. “Top Down” Image-processing mechanisms
 - a. Retinal defocus is contrast driven
 - b. Loss of contrast with age
2. Corneal Steepening
 - a. Study of accommodation in cataract patients with single-vision implants found some were good accommodators and others poor
 - b. Corneas of the good accommodators (but not the poor) increased curvature when accommodating
3. Increased Axial Length
 - a. Axial-length does increase at near viewing due to convergence rather than accommodation.
 - b. Co-contraction of the extraocular muscles shorted axial length by two diopters
4. Pupil Miosis

Convergence Role in Accommodation

– Convergence accommodation – CA/C

- First described by Porterfield in 1759:
- As the angle of convergence is increased, the eyes accommodate as if to focus objects nearer and nearer.

Convergence Can Dominate Accommodation

1. The role of CA/C increases systematically with the degree of target blur.
2. Vergence & accommodation rely on disparity signals.
3. CA/C ratio is not fixed but increases when targets quickly moves closer.
4. CA/C dominates initial phase of accommodation especially in response to moving target.
5. Accommodation to dim targets correspond closely to convergence-driven accommodation.
6. In early presbyopia, excess-convergence limits the available accommodation utilized at near.

Corneal Accommodation

- Kaichiro Wada, et al., A Study on Cases of Good Apparent Accommodation Using an All-distance Visual Acuity Chart and Corneal Shape Analysis. *Japanese J. Ophthalmol* 47, 226–231 (2003)
- Visual acuity and corneal topology of pseudo aphakic patients with single focus IOL were measured from far to near. One third were classed as good apparent accommodators and two thirds as poor. Acuity of the poor accommodators gradually decreased at closer target distances. Acuity of good accommodators declined more slowly and some declined initially but then increased near the nearpoint.
- Corneal curvature for the apparent accommodating group measured between 3 to 7mm steeper than the poor accommodators suggesting a gradient of corneal power related to apparent accommodation.
-

Current Surgical Management of Presbyopia

A. Cornea

1. Monovision Lasik
2. Laser in situ keratomileusis
3. Photorefractive keratectomy
 - a. Presbyopic LASIK (multifocal laser ablation)
 - b. Conductive keratoplasty
 - c. Intracor femtosecond laser
 - d. Corneal inlay

B. Lens

1. Monovision (monofocal IOL)
2. Multifocal IOL
3. Accommodative IOL

C. Sclera

1. Anterior ciliary sclerotomy

Combining with other non-surgical presbyopia reduction approaches

- Bates
- GlassesOff
- RevitalVision
- PATH to reading
- Aculite
- Red transscleral light
- Periocular warming
- EyeBlurMaster – pupil training

William H. Bates, MD



- The first patient that I cured of presbyopia was myself.
- I was then suffering from the maximum degree of presbyopia.
- One day, while looking at a picture of the Rock of Gibraltar which hung on the wall, I noted some black spots on its face. I imagined that these spots were the opening of caves and that there were people in these caves moving about. Then I looked at the same picture at the reading; distance, still imagining that the spots were caves with people in them. The retinoscope showed that I had accommodated, and I was able to read the lettering beside the picture. I had, in fact, been temporarily helped by the use of my imagination.



Image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

Bates

- I found that when I imagined the letters black I was able to see them black, and when I saw them black I was able to distinguish their form
- The normal eye usually sees the background of a letter whiter than it really is. In looking at the letters on the Snellen test card it sees white streaks at the margins of the letters, and in reading fine print it sees between the lines and the letters, and in the openings of the letters, a white more intense than the reality. Persons who cannot read fine print may see this illusion, but less clearly. The more clearly it is seen, the better the vision; and if it can be imagined consciously—it is imagined unconsciously when the sight is normal—the vision improves.

If you look closely at an out-of-focus line or edge, you'll see that it's not smudged but appears with one or more false or ghost lines as if they are doubled or tripled rather than just smudged. This is because retinal and visual cortex tries to make sense of the blurry retinal pattern. It filters the blur to appear as sharp, well-defined edges. The eye sends the image pattern to the brain but our visual awareness is the result of the brain's interpretation.

♦

♦

♦

Breathe and blink as you slowly move your eye(s) along one of the false lines. Try to be aware of where the point on the line where your eyes are aiming. This is known as the central fixation point. As you move, watch your central fixation point ease it's way along the line. Don't make an effort to clear your sight. Just wait and watch the false line reconfigure in your perception. You may see the false line disappear to join into the "real" line or it may spit into into even more false lines. With practice you'll learn see these false lines merge into one single, bold and sharp line. You will learn to make it come to focus and how to gently keep it clear without effort.

Bates

- My progress after this was not what could be called rapid. It was six months before I could read the newspapers with any kind of comfort, and a year before I obtained my present accommodative range of fourteen inches, from four inches to eighteen.
- But the experience was extremely valuable, for I had in pronounced form every symptom subsequently observed in other presbyopic patients.

Bates

- Fortunately for my patients, it has seldom taken me as long to relieve other people as it did to relieve myself. In some cases a complete and permanent correction was effected in few minutes.
- These extremely quick restorations are rare. In nine cases out of ten, progress has been much slower and it has been necessary to resort to all the methods of obtaining relaxation found useful in the treatment of other errors of refraction.

Bates

- When people who have reached the presbyopic age experience difficulty in reading, they are very likely to resort at once to glasses. . .
- Once the glasses are adopted, in the great majority of cases, they produce the condition they were designed to relieve, or, if it already existed, they make it worse, sometimes very rapidly.
- If persons who find themselves getting presbyopic, or who have arrived at the presbyopic age, would, *instead of resorting to glasses make a practice of reading the finest print they can find*, the idea that the decline of accommodative power is 'normal result of growing old, would soon die a natural death.

Contrast training improves acuity in myopes and early presbyopes

The interim results of this study show preliminary evidence in the efficacy of NeuroVision Technology in improving visual acuity and CSF in adults with low myopia and early presbyopia. The improvement in unaided VA & CSF of low myopic and early presbyopic groups is clinically significant.

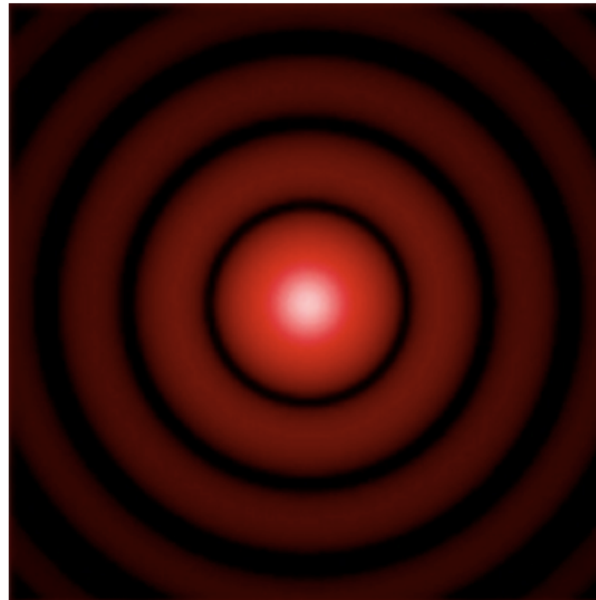
This neural plasticity in the adult primary visual cortex shows our potential for improving neural processing in the brain can enhance the image quality by compensating for blurred retinal images due to optical defocus of a low degree of myopia and presbyopia.

The mean improvements of 2.2 logMar lines in distance UCVA for patients with low myopia and 2.2 logMar lines in unaided near visual acuity for those with early presbyopia are clinically significant and are encouraging. The increased CSF further ratifies the acuity improvement and supports the original hypothesis of how the treatment works. With the limitation of a relatively small sample size and with the absence of a randomized double-masked control group in this study, it appears that the results of this study are similar to results reported among patients in Asia (D. Tan and A. Fong, unpublished data, 2007), which noted mean improvement of 2.8 logMar lines in distance UCVA for 55 patients with low myopia and mean improvement of 1.6 logMar lines in near UCVA for the 41 presbyopic patients (aged 41 to 55 years) after completion of the NeuroVision training. The improvements were shown to be retained for at least 12 months.

Age-related changes of defocus-specific contrast sensitivity in healthy subjects

- The optical system of a human eye increases in aberrations with age.
- Therefore, older people may be affected less by defocus than younger people.
- Until the age of approximately 50 years, there is very little loss of contrast sensitivity.
- After age 50 contrast sensitivity decreases (except for low spatial frequencies)
- This decline in both neural and optical contributions with age shows individual differences.

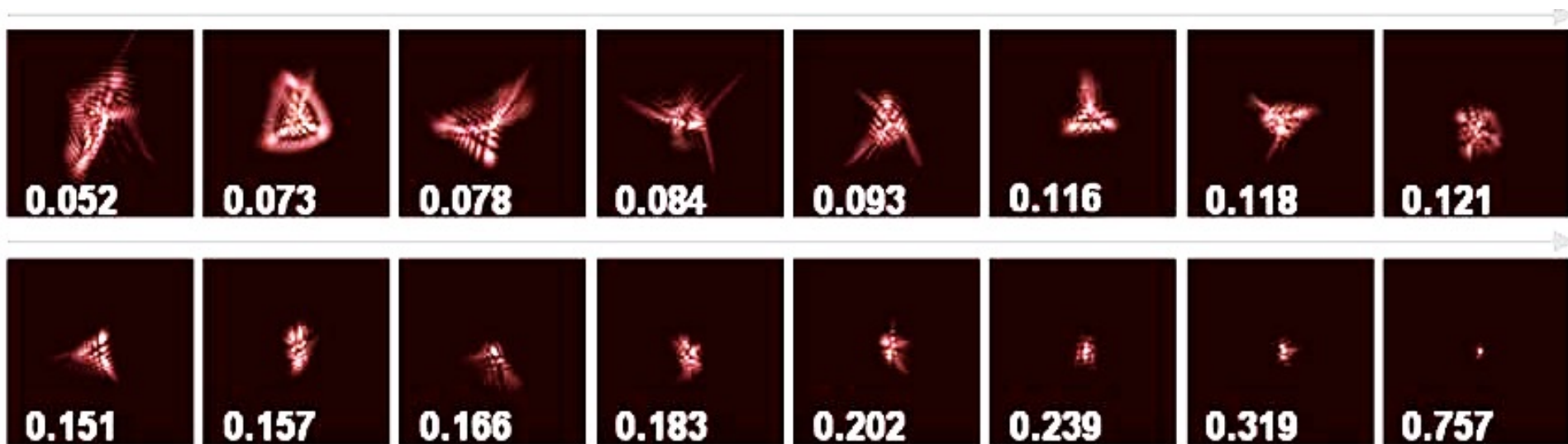
Even when in focus, the retinal image
is never totally 'sharp'.



Edges are always blurred by the optics
and media of the eye.

High Order Aberrations (HOA's)

The image formed by the eye's optics is blurred by aberrations specific to an individual's eyes. There is a wide range of individual differences across the population.

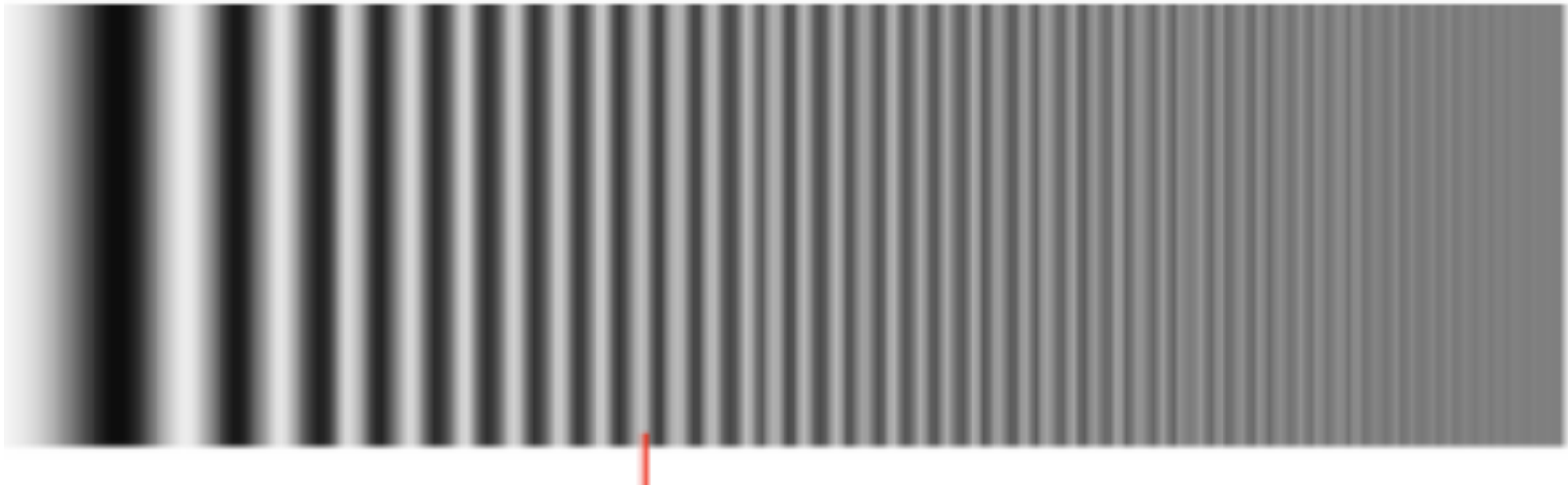


The Spatial Frequency Spectrum

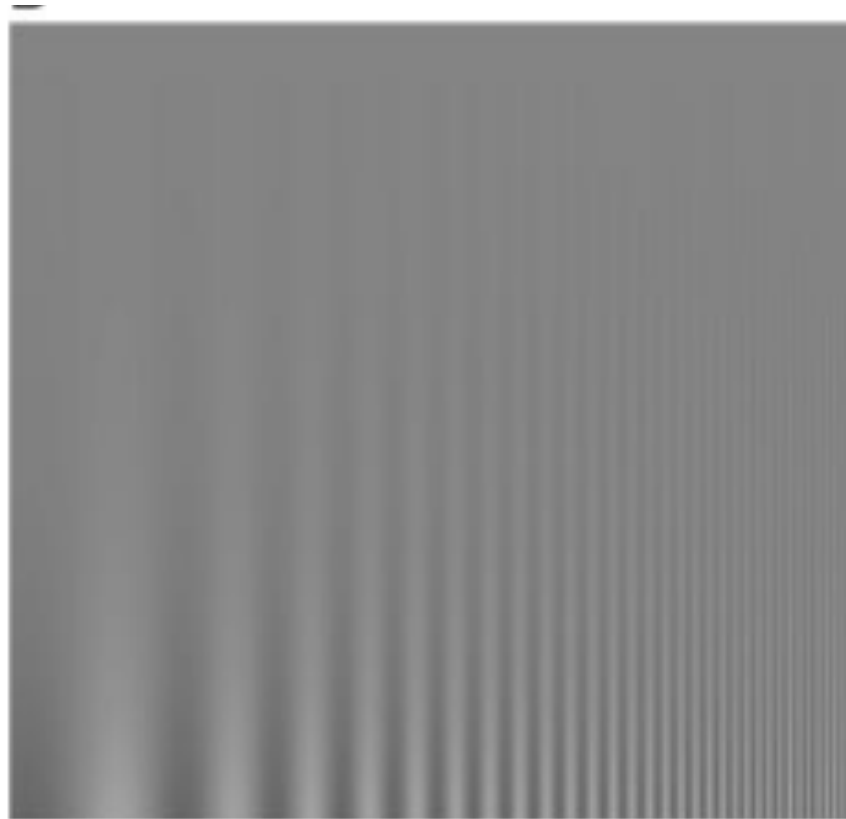
Digitally-induced blur (removing the high end frequencies) and sharpness (removing the low end frequencies)

Low

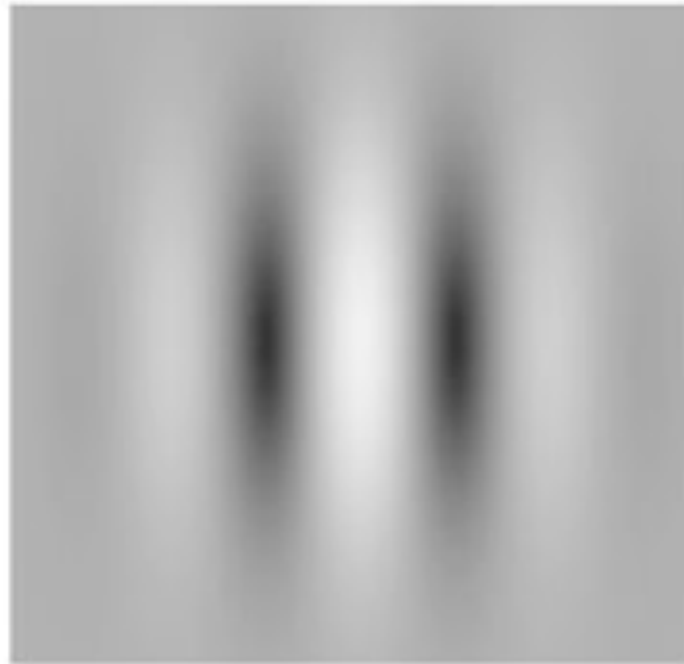
High



Spatial frequency and contrast sensitivity



Gabor Patch



RevitalVision

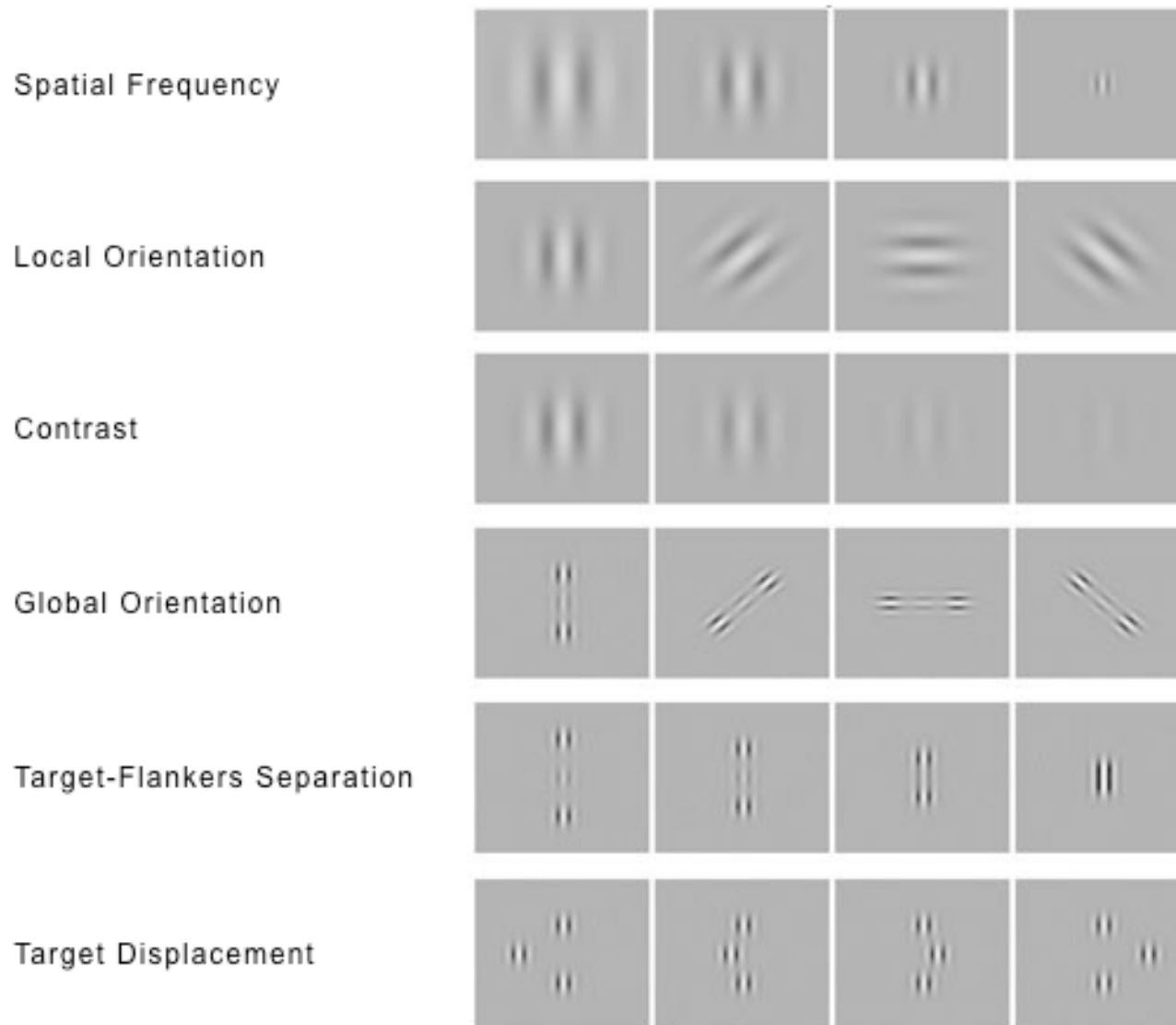


Figure 3. Manipulation of Gabors

RevitalVision clip



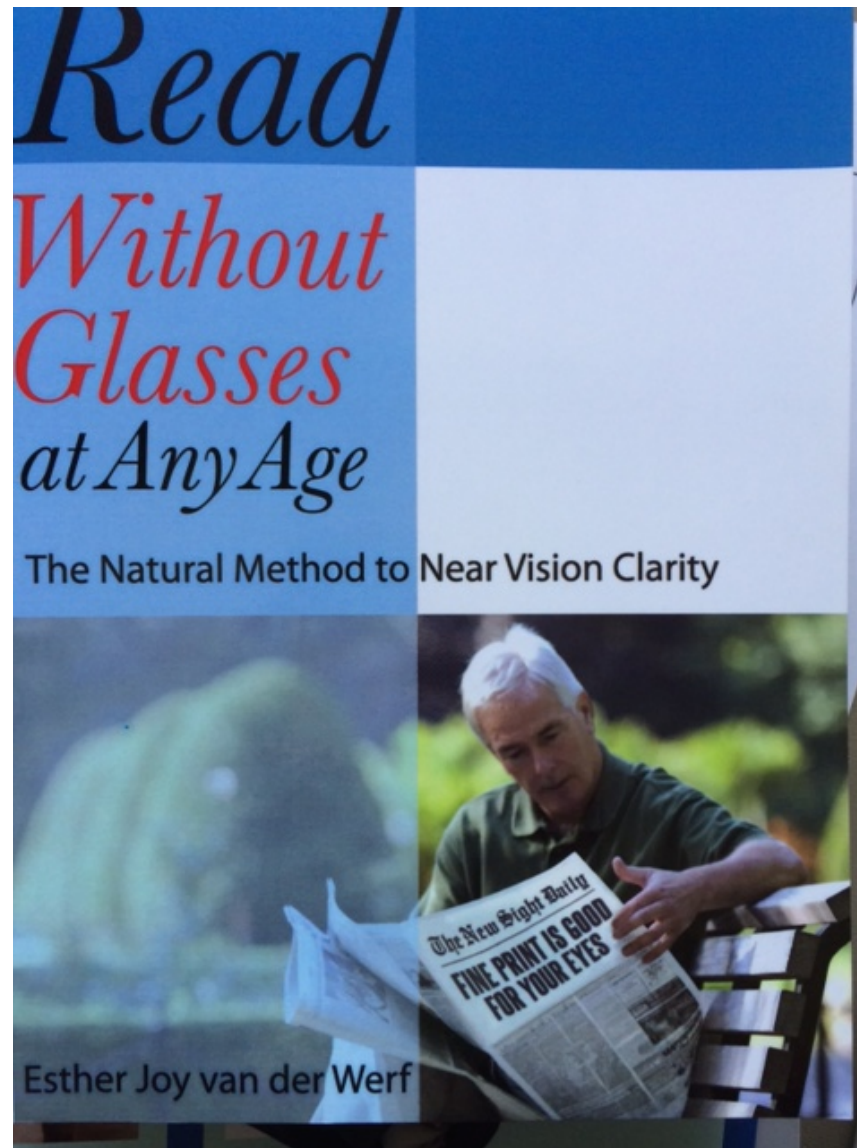
- <http://youtu.be/xArigif7fyc>

PATH to Reading



EyeBlurMaster app





- Esther Joy van der Werf
- www.VisionsOfJoy.org

AcuLight and Exercise
For
Presbyopia Relief

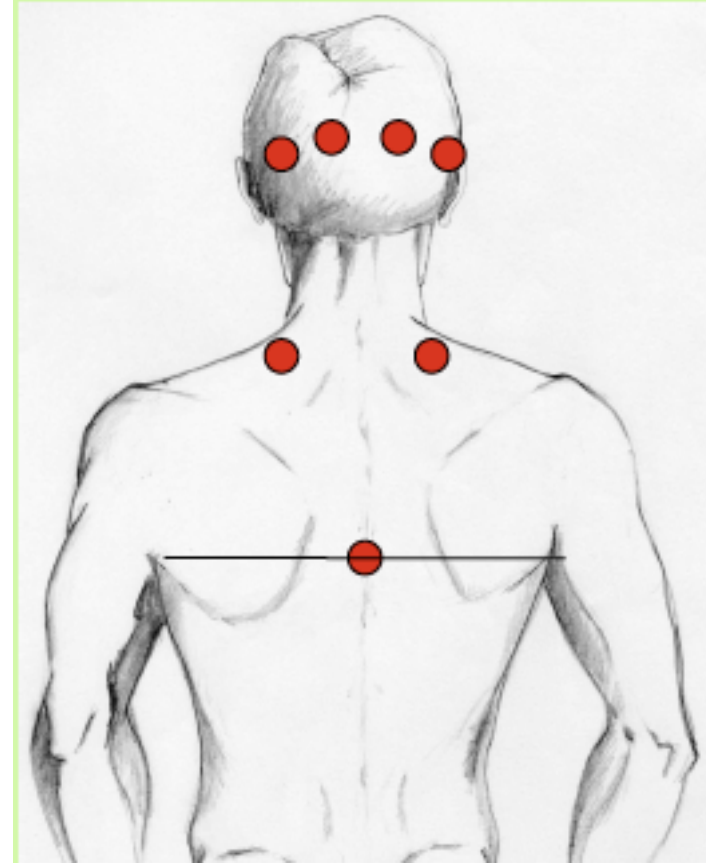


Sarah Cobb

eyeamssarah@hotmail.com

AcuLight Vision Enhancement

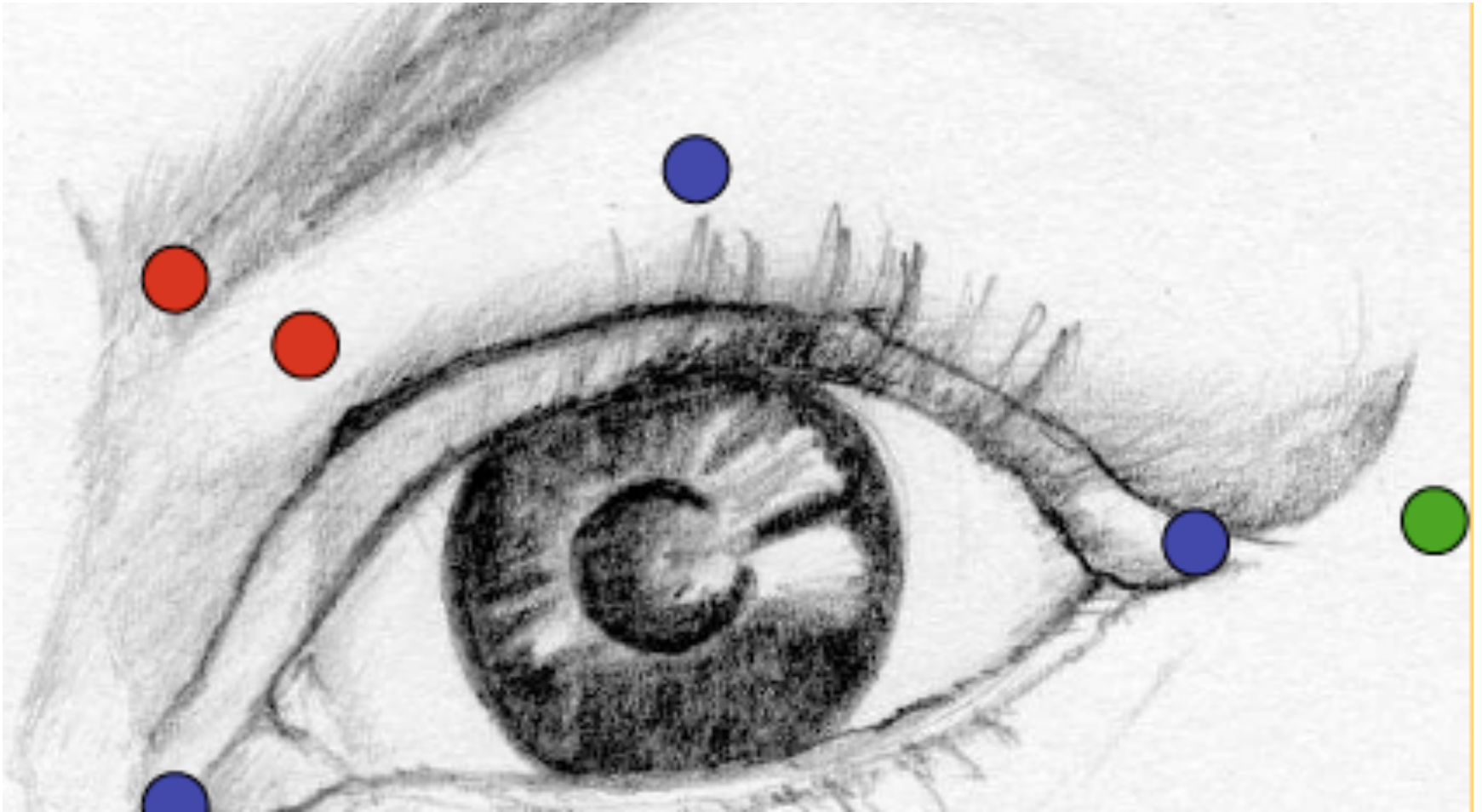
The goal is to bring the body into balance by addressing the brain and endocrine system with complementary colors offered to certain acupuncture points, meridians, and extrinsic muscle sites.



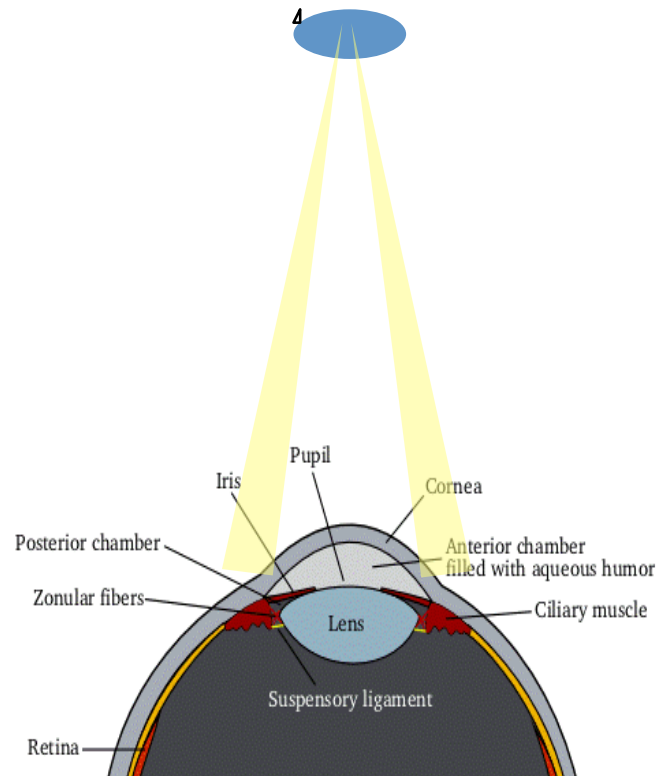
Sarah Cobb

eyeamssarah@hotmail.com

Aculite Presbyopia Points



Infra-Red Transscleral Light OCULATEK™ 9000



Laser beams applied through the sclera over the ciliary muscle at 3 and 9 o'clock for 9-min treatment

Early Presbyopia Study (<2D add). Three 9-min. treatments **67%** reduced add:

6 patients by 0.5 D

3 patients by 1.25 D

1 patient by 1.75 D

Applying Lasers to Accommodation Disorders

E. S. Avetisov, 1995 *Laser Physics*, Vol 5, No. 4, 1995, pp. 917 - 921

Infra-Red Transscleral Light

- 1300 nm wavelength Class I Laser (not an eye hazard)
- Mitochondrial function is stimulated, increasing blood flow, and ciliary muscle strength and mobility
- Improves the working capacity of the ciliary muscle by:
 - Elimination of the spasm in blood vessels
 - Increase in the transporting function of blood
 - Improvement in the structure of cells
 - Development in the network of micro vessels.

Periocular Warming



On two consecutive days, 20 subjects (mean age, 39.32 years [range, 36–43]) wore an eye covering mask or an eye wet-heat warming mask (40°C) for 10 minutes after 7 hours of VDT work (50 cm). Measures immediately and after 90 minutes. Ten percent of the eyes in the WS group improved at least 2 lines at near and had maintained that level of near vision at 90 minutes.

Table 1. Changes in Accommodation

	D≤0.0		0.0<D<0.5		0.5≤D		Mann–Whitney U Test
	N	%	N	%	N	%	
Immediately after:							
Warming sheet	1	5	9	45	10	50	P = 0.0027
Lid closure	8	40	10	50	2	10	

The Effect of Periocular Warming on Accommodation
 Yoko Takahashi, et al. *Ophthalmology* 2005;112:1113–1118

Syntonics Accommodation

- **Spasm of Accommodation**

Tonic - *Omega*

Clonic - *Omega*

- **Lack of Accommodation**

Functional - *Delta D*,

Paretic - *Alpha Delta, Mu* (Alternate days)

- **Myopes with low accommodation**

Mu Pi

- **Low Accommodation (in general)**

Delta and Alpha Omega

- **Push-up Blur-out Low**

Male- *Alpha Delta* alternated with *Mu*.

Female *Alpha Upsilon* alternated with *Mu*

Syntonics - Presbyopia

- **To retard the need for near lenses in early presbyopia and/or unequal accommodation**
 - ***3 treatments per day***: L-Mu Upsilon, L-Upsilon Omega D, L-Omega D.
 - Add push-up exercises on small print.
 - Correct general health conditions and add B complex and minerals.
- **To relieve distress**
 - Delta Omega or Theta Omega.

**THANK YOU FOR YOUR ATTENTION
AND
GOOD LUCK WITH YOUR PRACTICE.**