

Cyclophoria Management, Therapy & Lens Treatment

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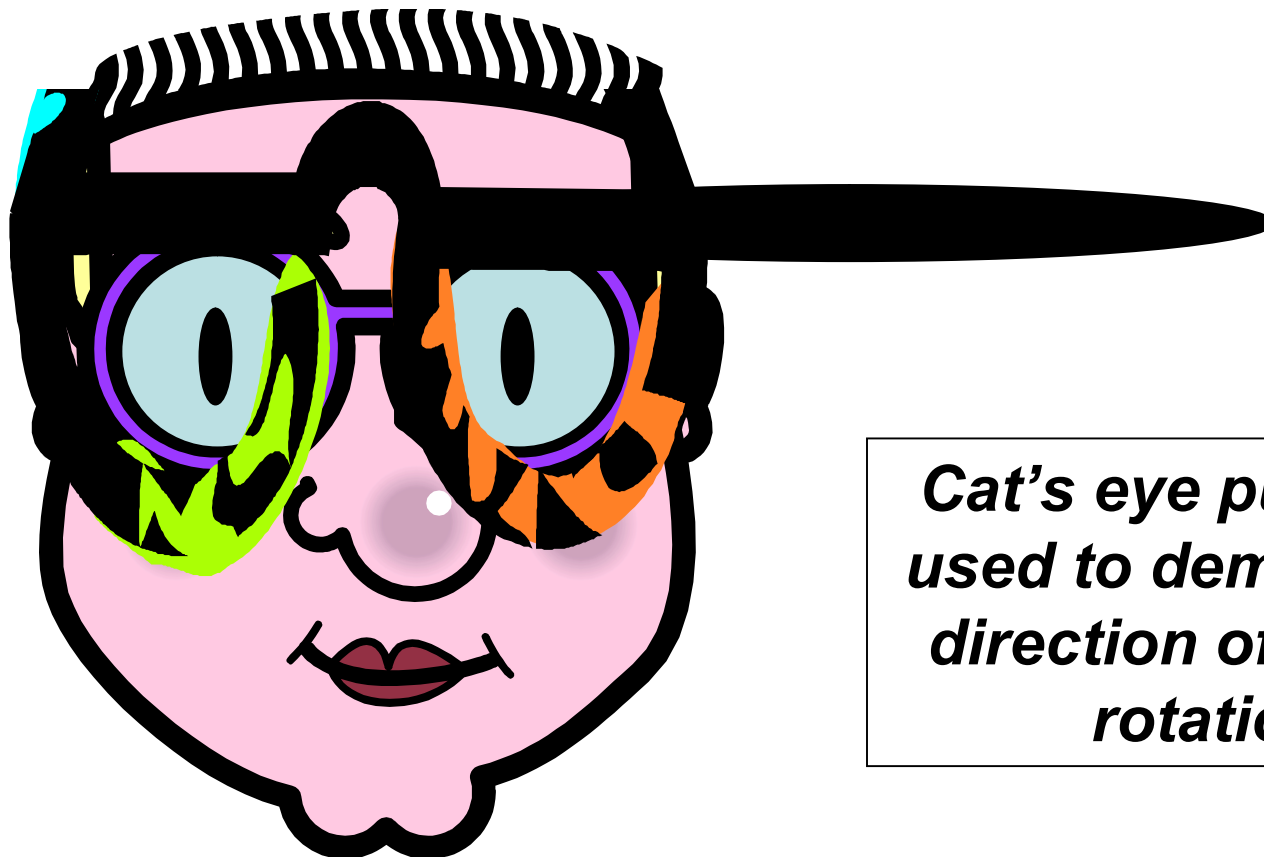
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Clinical Considerations in Cyclo-hyperdeviation Management

- **Cyclovergence can be trained**
 - Expand cyclofusional range and dynamics:
 1. Rotating cylinder:
-2.00 x 180 **OU**.
 2. Fixate vertical line.
 3. Rotate lenses (flippers) to induce a visual stimulus for cyclorotation *while maintaining fusion*



Visually-induced cyclorotation: Tilt the flipper handle to rotate axis of the cylinder (-2DCx180 OU)



*Cat's eye pupils are
used to demonstrate
direction of eyeball
rotation.*

Visual Stimulus for Cyclorotation

- If you look at a line through a cyl lens, when you rotate the cyl clockwise, the line appears to bend counter-clockwise.
- A vertical line will look CLEAR/unchanged when viewed through $-2.00DC \times 180$.
- If the axis of the cyl is tilted, the eye will see the vertical line MOST CLEARLY by rotating OPPOSITE the direction of the cyl power (@ 090).

Visually-induced cyclorotation: The vertical line stays clear when the eyes rotate against the CYL



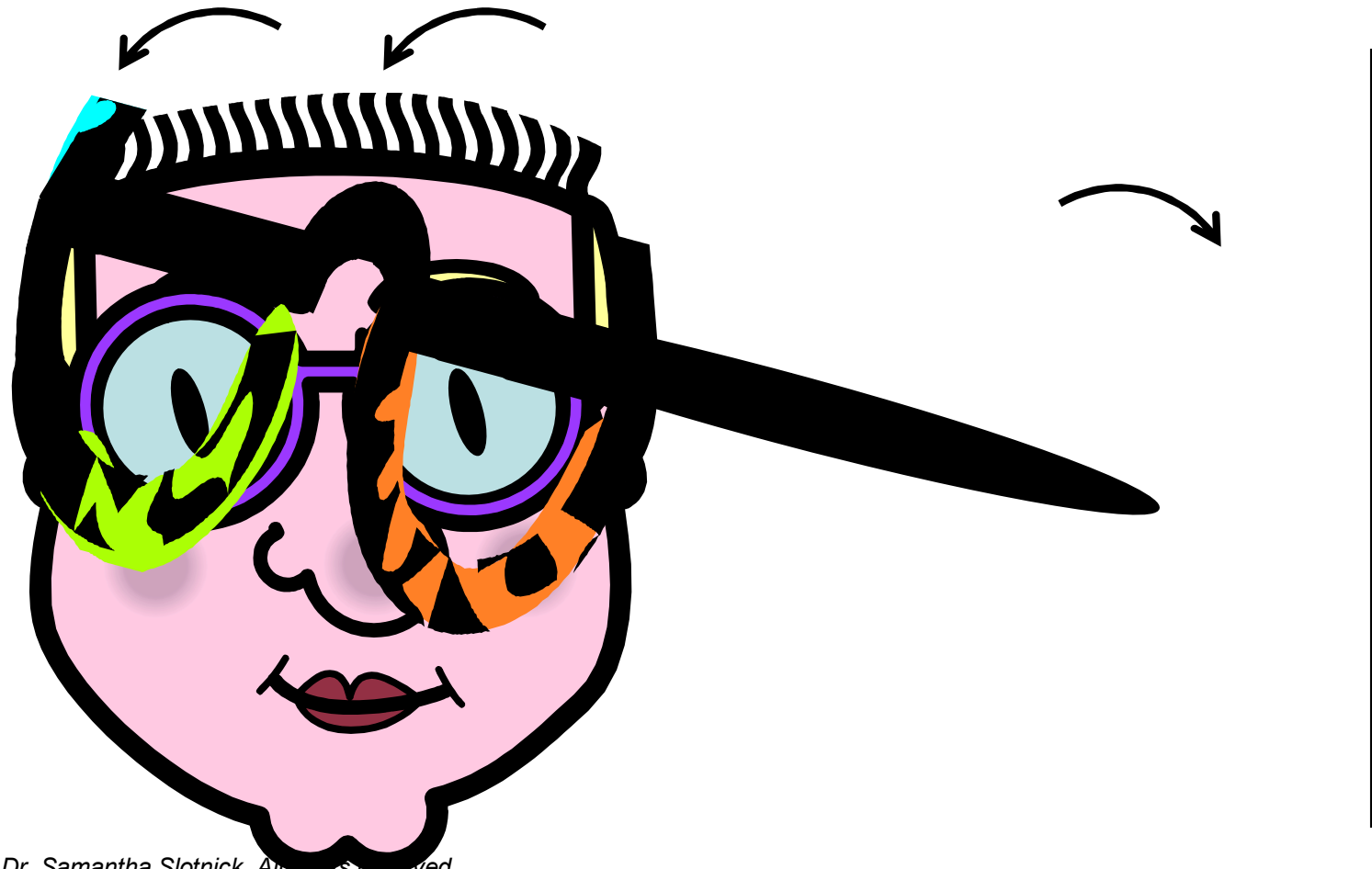
Muscle tension with Cyclorotation

- When the eyes are in the cyclorotated posture, viewer will experience a subtle muscle tension around the eyes.
- This tension can be alleviated by tilting the head in the direction of the handle axis, neutralizing the visually-induced cyclorotation.

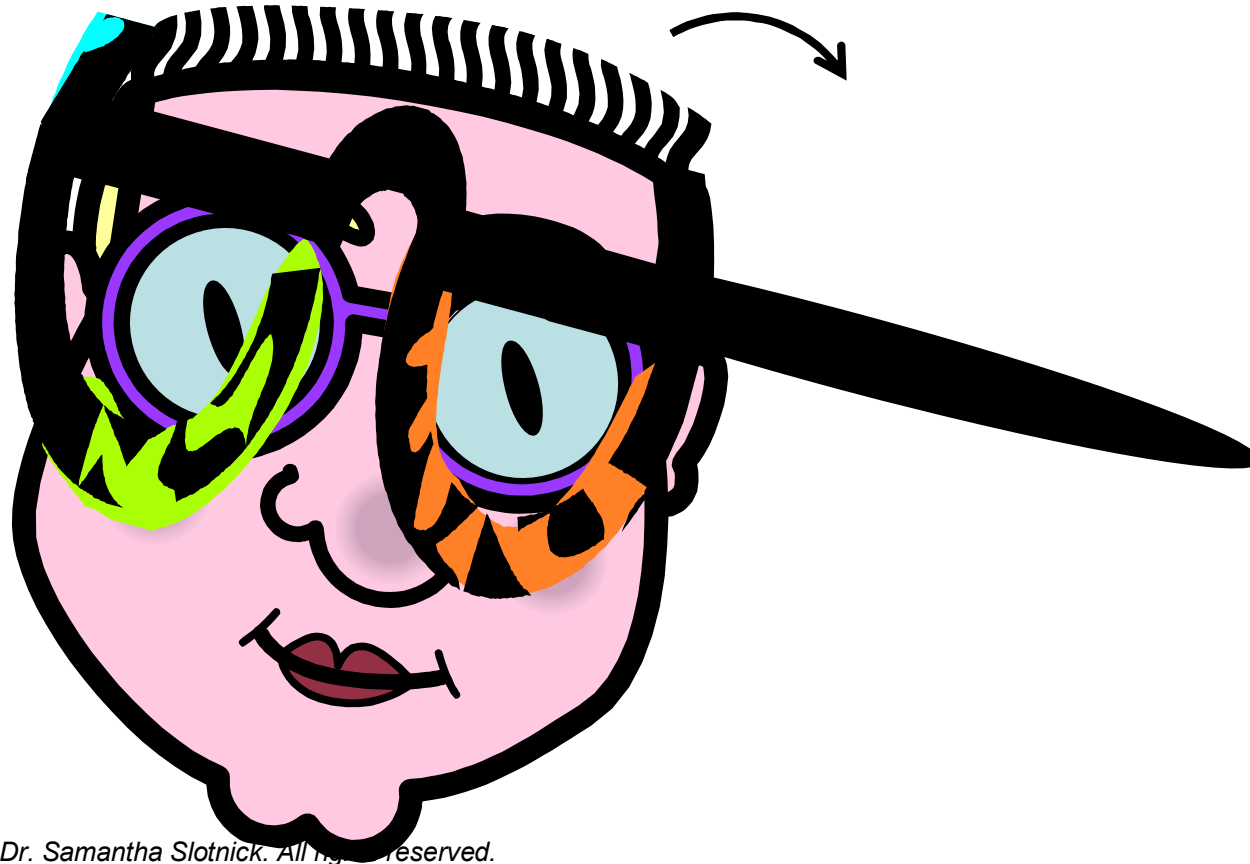
Visually-induced cyclorotation:
Alleviate tension by tilting head to
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Once the head is rotated,
the cyclorotation of the
eyes matches the familiar
position induced during
cyclorotary VOR.
In this case: Tip head to L,
OD extorts, OS intorts.

Visually-induced cyclorotation: Alleviate tension by tilting head to neutralize the cyclorotation.



Before tilting head, the binocular cyl induces bilateral, paired cyclorotation while the head is upright.

Applying to Patient Care

- Occasionally, patients indicate that they perceive a second image tilted, e.g. during Von Graefe phorias.
- One or both eyes may bias into a cyclo-deviated posture.
- To facilitate more comfortable binocularity, such patients may be observed tilting the head, especially during binocular ocular-motility testing (e.g., Wolff Wands).
- This procedure “yokes” the eyes into the same orientation to facilitate single binocular vision.

Musings...

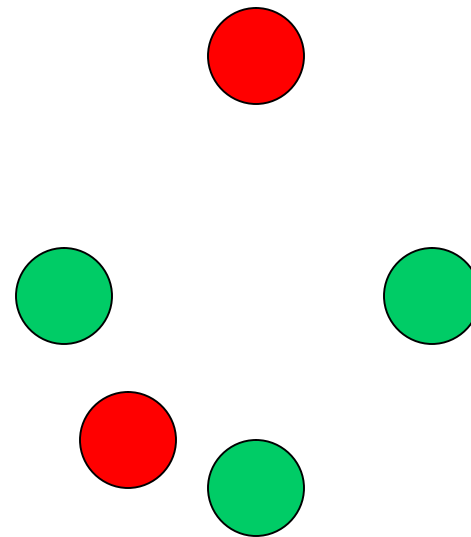
- OEP curriculum indicates that patients may develop with-the-rule astigmatism (x 180) as a compensation for a binocular deficit.
- If we provide (non-compensatory) cyl x 090 OU, are we not creating the same effect?
- With -0.50 DC x 090 OU, the vertical elements of text are accentuated/ elongated.
- Might this help patients with cyclophoria to YOKE their eyes into alignment?

Cyclophoria Case

“KK”

Treating Cyclophoria with Lens Rx

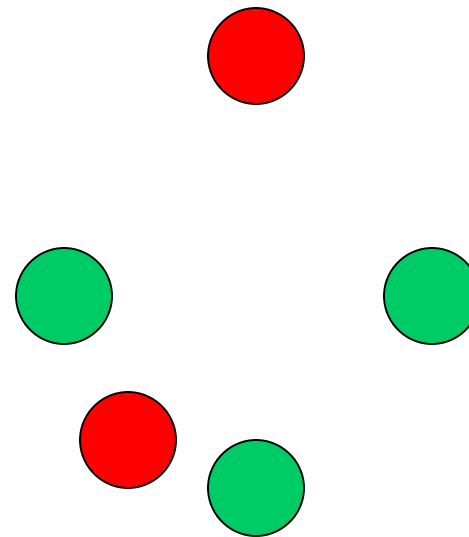
- 17yo F patient appeared to have “CI symptoms” (COVD-QOL score 53).
- Hates her glasses, only wears CL’s, *“Don’t use cyl in my Rx, please!”*
- Light irides: observed instability in cyclo-posture OD during binocular ocular-motility testing.
- **Worth 4-Dot**, reported/drew this image: (Red OD, intorted)



Treating Cyclophoria with Lens Rx

Wearing CL's, -2.75 OU:

- **CT:** 2XP; 2XP'
- Receded & "retreating"
NPC: 3"/5"; 5"/7";
OS out, (+)dpl
- Reduced stereoacuity:
Wirt: 140", 100" (sustained)
- **AHP:**
 - Turns to L on CT.
 - Tips to Right on binoc motil
- **VG:** Reports tilted image OS (*OS extorts*)
- (W4D, OD was intorting)



Treating Cyclophoria with Lens Rx

Add'l Exam findings:

- **Ret:**
-2.00 -0.75 x 165
-2.25 -0.75 x 005
- **Subj:**
-2.50 sph 20/20-
-2.50 -0.50 x 015 20/20
- **Bal:**
-2.50 sph OU 20/20-
- **VG:** 1 exo, $\frac{1}{2}$ ^ BD OS;
slants OS: CW rotation
- **BO:** x / 7 / 1 *"I don't like this."*
BI: x / 6 / 1

Near Phorometry:

- **FCC:** +0.50(H)
- **Base/PBU:** +0.50 ADD
to 20/20
- **NRA:** +1.50/+2.00
PRA: pl
- **VG** (c Bal):
1 exo, $\frac{1}{2}$ ^BD OS
c +1.00: 4 exo
- **c +0.50:** **BO:** 4 / 5 / 3
BI: 20 / 24 / 10
- **Amps:** 7D OD / 6D OS

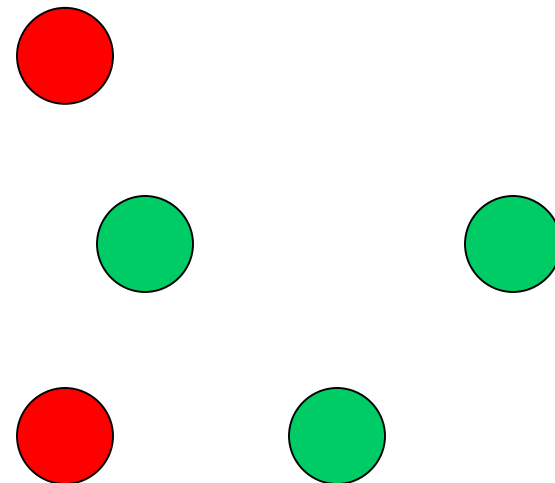
Treating Cyclophoria with Lens Rx

Near-point ret/ text:

- **Base -2.50 OU:**
Tracks off-line; *dull reflex*
- **c +0.50 ADD**
Tracks off-line; *dull reflex*
- **c +0.50 -0.50 x 090 OU**
applied as a vertical yoke:
began tracking accurately,
engaged
- **c +0.75 -0.50 x 090 OU**
fluency increased, *engaged*

Retest, +0.75-0.50x090 OU:

- **NPC:** TTN, x 2!
- **Stereo:** Wirt 70", 30"
- **W4D:** "Changed conformation"
exo/ no cyclo



Treating Cyclophoria with Lens Rx

Prescribed:

1. -2.50 sph CL's
2. NV Over-Rx: +0.75 -0.50 x 090 OU
3. NV specs: -1.75 -0.50 x 090 OU

Follow-up? (TBD)

Cyclofusion Therapy Procedure Details

As a therapy procedure...

1. View vertical line.
2. Tip the handle slowly: -2.00 DC x 180 OU
3. Pay attention to threshold
 - Too much tension
 - Loss of fusion (diplopia)
4. Tip the head to *neutralize* tension.
5. Bring head and handle back to normal posture (un-tilt all together).
6. Repeat in **same** direction for several reps (3-10x).
7. Gradually expand range before passing threshold.
8. Exercise opposite rotation direction too.

Train symmetrically: Repeat procedure in opposite direction.

- Some patients will have a marked asymmetry in their ability to cyclorotate.
- Patients with a paretic superior oblique commonly adapt an abnormal head posture (AHP).
- Such patients would benefit from this exercise, particularly after a decompensation of their ability to fuse.
- In these cases, one direction will be markedly easier than the other.

Visually-induced cyclorotation:
Alleviate tension by tilting head to
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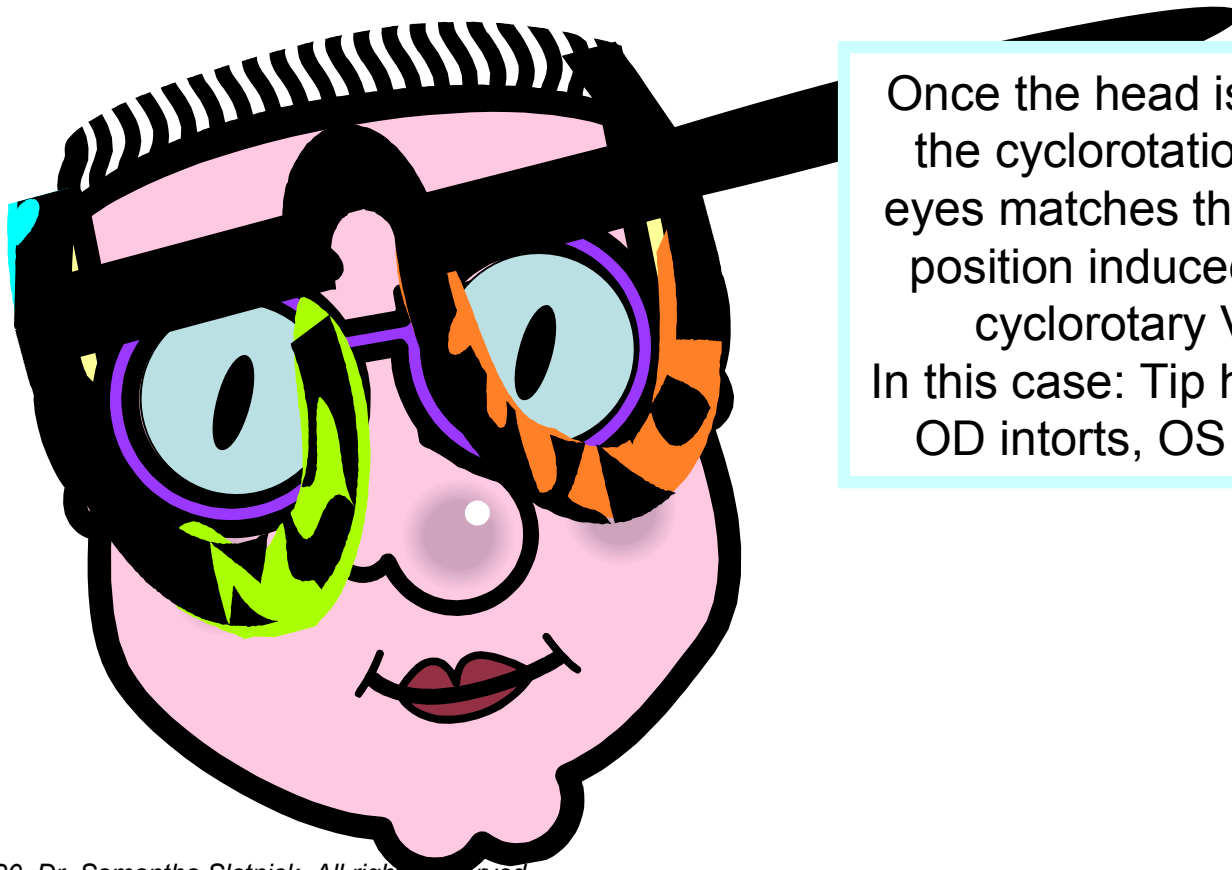
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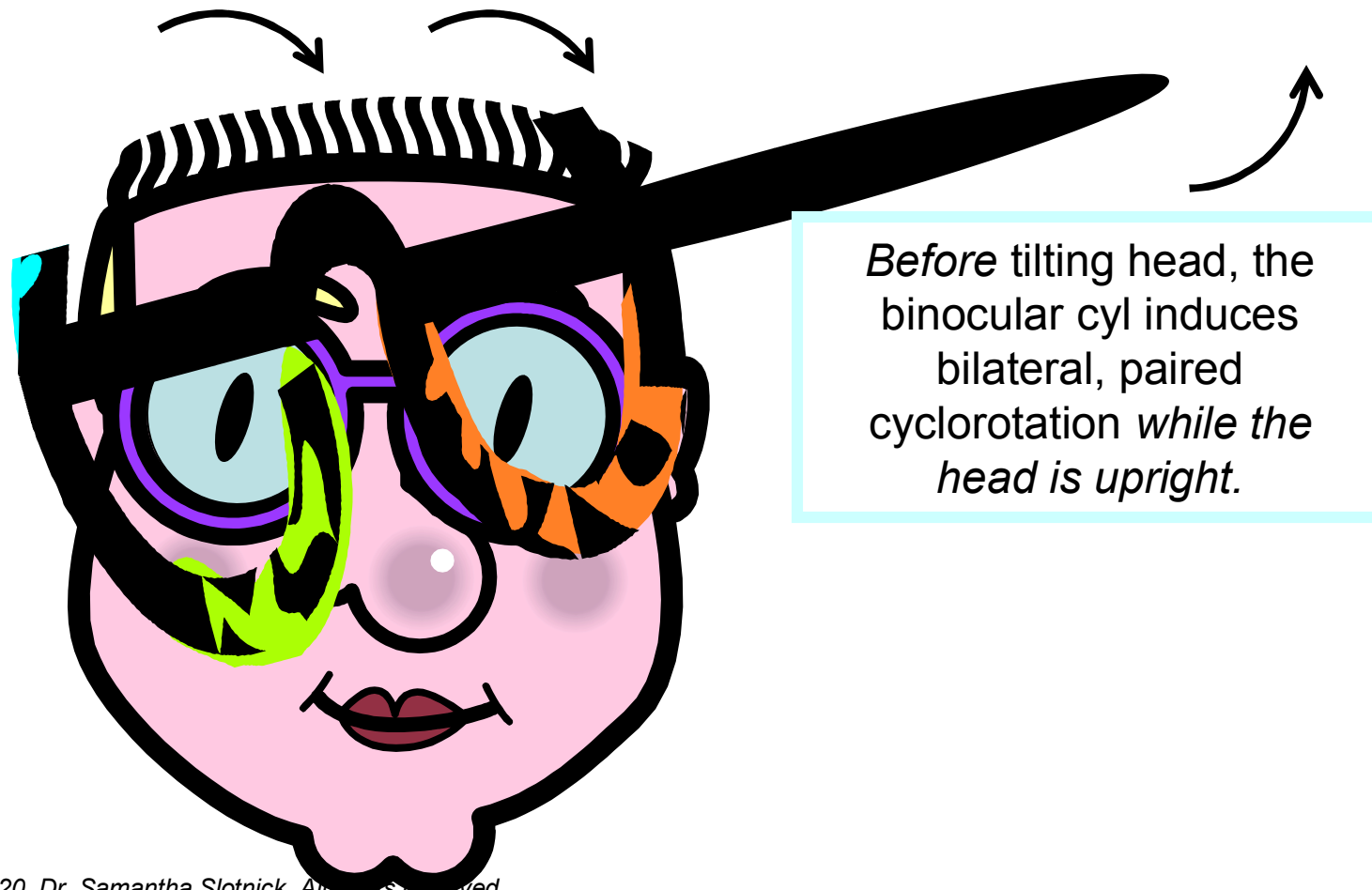


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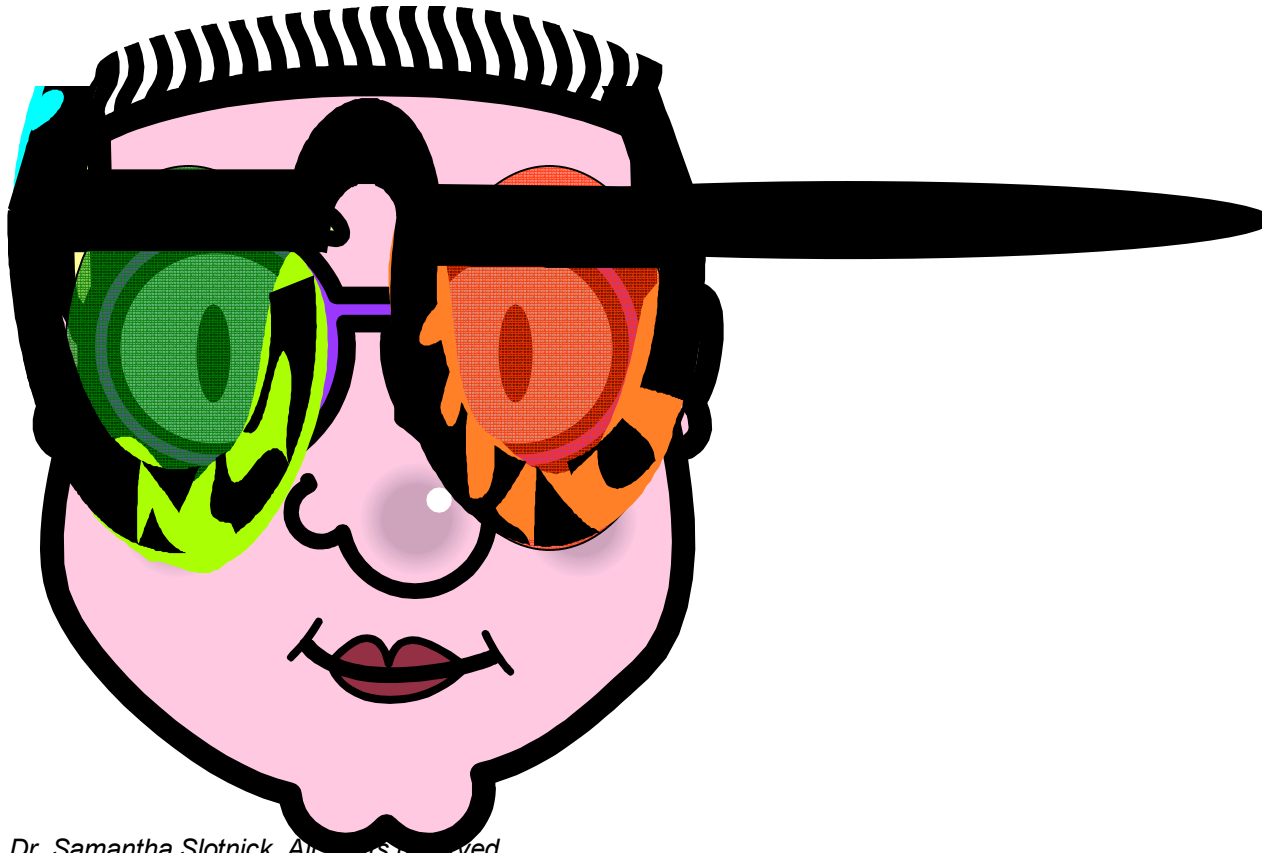
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Binocular Biofeedback with Cyclorotation

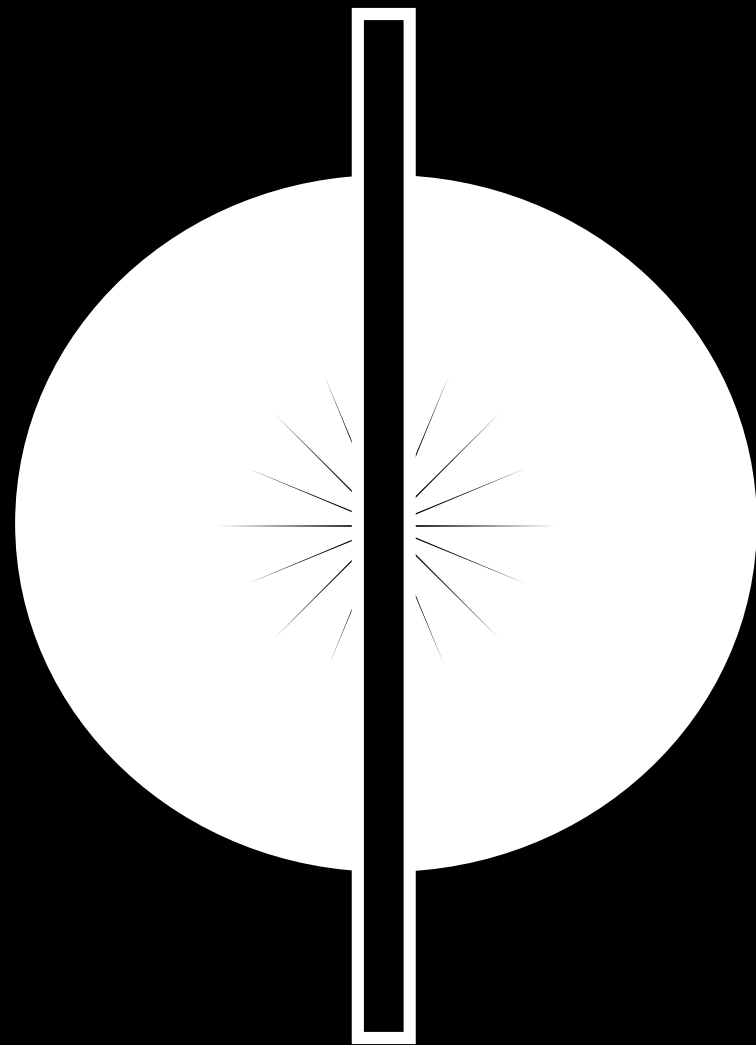
- Use **Red-Green** or **Red-Blue** biofeedback to help the patient perform this activity binocularly, and to learn to **maintain fusion** rather than *suppress* in the cyclorotated posture.
- This can be done with a black vertical line on a white page, and **red/green** glasses.

Visually-induced cyclorotation: Provide binocular biofeedback with Lustre.



Binocular Biofeedback with Cyclorotation

- For a stronger stimulus, the **Slotnick Swirl** has been adapted for use with cyclorotation exercises.



**To obtain a copy of the
Slotnick Swirl™, visit:
<http://drslotnickblog.com/downloads/>**

**Slotnick Swirl™ [Cyclofusion:](http://drslotnickblog.com/slotnick-swirl-cyclo/)
[http://drslotnickblog.com/
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Discussion Welcome!

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