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Chapter 12

EYE PRACTICES

I. FIXATION AND ANTISUPPRESSION PRACTICES

A. Fixation with the Non-Preferred Eye

Equipment: Red Filter
Penlight

Pre-requisite: Vision should be equal (but may be attempted with one or two lines lower in the non-preferred eye).

Recommended Time: This exercise should be performed 15 minutes per day in 5 minute sessions.

Procedure:

1. Place a red filter in front of the preferred eye.
2. Hold the light 13 inches from the patient. The light should be level with the patient's eyes.
3. The patient will only see a red light because the red-filtered eye is the dominant eye.
4. Occlude the red-filtered eye and have the patient fixate on the white light and ask the patient to place his finger on the white light.
5. Encourage the patient to maintain fixation on the white light and slowly remove the occluder from the red-filtered eye.
6. Step 5 is constantly repeated until the patient can voluntarily hold fixation on the white light for 50 counts with the red-filtered eye uncovered.
7. Repeat the above exercise with the light 18 to 20 inches from the patient. When the count of 50 is achieved, again increase the distance by another four or five inches and repeat the exercise.

B. Alternate Fixation Practices

Equipment: Red Filter
Penlight

Pre-requisite: Child should be able to hold fixation voluntarily with the non-preferred eye.

Recommended Time: 15 minutes per day in 5 minute sessions.

Procedure:

1. Place a red filter in front of the preferred eye.
2. Hold the light 13 inches from the patient. The light is held level with the patient's eyes.
3. Occlude the preferred eye (red-filtered eye) and have the patient hold fixation on the white light. While shifting the occluder from one eye to the other, instruct the patient to fixate on the red light and then on the white light. This is repeated for several minutes so the patient will learn the mechanism of shifting fixation from one eye to the other.
4. Without help of the occluder, ask the patient to voluntarily fixate on the red light and then on the white light. If the patient should have difficulty in performing this task, assist by occluding one eye momentarily.
5. When the patient can easily and voluntarily alternate fixation at 13 inches, repeat this exercise placing the light 18 to 20 inches from the patient. Gradually recede from the patient, as long as the patient can alternate voluntarily.

C. Alternation with Diplopia Awareness

Equipment: Red Filter
Penlight

Pre-requisite: Child can voluntarily alternate fixation.

Recommended Time: 15 minutes per day in 5 minute sessions.

Procedure:

1. Place a red filter in front the preferred eye.
2. Hold the light 13 inches from the patient at eye level.
3. Have the patient fixate on the white light and move the occluder up and down continuously in front of the red-filtered eye (referred to as flashing). While maintaining fixation on the white light, the patient is asked if he can see the red light to the side. Then repeat with the patient fixating on the red light and continuously moving the occlude up and down in front of the unfiltered eye, ask the patient if he sees a white light off to the side. This is repeated several minutes at a time until the patient can observe diplopia while fixing with either eye while flashing occurs.
4. Encourage the patient to maintain diplopia awareness without flashing. If the patient has difficulty maintaining diplopia, he can briefly move his own hand above and below the non-fixing eye to stimulate diplopia appreciation. This step is repeated until the patient can voluntarily maintain diplopia with either eye fixing.

D. Red Filter Therapy for Fixation Practice and Antisuppression

Equipment: Red Filter
White paper for drawing, coloring books, tracing books, or workbooks
Crayons in red or red-related colors (orange, pink, etc.) and yellow
Red marking pencil or colored pencils in red-related colors or pastels
Red beads or red-related colors and white or yellow and string for threading

Pre-requisite: Voluntary alternation or fusion.

Recommended Time: Total of 20 minutes per day.

Procedure:

1. Place a red filter in front of the preferred eye. Anything done in red (e.g. red drawing, coloring, beading, etc.) appears faded and difficult to see with the filtered preferred eye because the red filter absorbs the red color.
2. Patient is encouraged to do detailed, close work to stimulate usage of the non-dominant eye.

II. FUSION PRACTICES

A. Fusion Practice with Red Filter - Recession

Equipment: Red Filter
Penlight

Pre-requisite: Some Fusion
Patient should be aware of diplopia with red filter when fusion is not present.

Recommended Time: 15 minutes per day in 5 minute sessions.

Procedure:

Recession Practice: (to a distance of six meters)

1. Place a red filter over preferred eye.
2. Place a small light on a stable object at eye level.
3. Start at 7 inches from the light, which should be PINK (mixture of red and white) indicating fusion.
4. Walk back from the light slowly while keeping the light pink.
5. If the light is not pink, it should be seen as DOUBLE (one red and one white) indicating loss of fusion. When this occurs, try to combine the images again (achieve pink light).
6. If this cannot be accomplished, walk towards the light until it can again be seen as pink. Once achieved, recession is continued until fusion is steadily maintained to a distance of six meters.

Progression Practice:

1. Place a red filter over the preferred eye.
2. Place a small light at eye level on a stable object at eye level.
3. Start at a distance of 6 meters from the light. Light should be PINK (mixture of red and white) indicating fusion.
4. Walk slowly toward the light keeping it pink.

5. If the light is not pink, then it should be seen as DOUBLE (one red and one white light). If the light is seen as double, walk back a short distance until it is seen as pink again, and again attempt progression toward the light.
6. The objective is to maintain a pink light from 6 meters to a few inches from the eyes.

III. NEAR POINT OF CONVERGENCE PRACTICES

A. NPC with Red Glass and Light

Equipment: Red Filter
Penlight

Pre-requisite: Some fusion with diplopia awareness when fusion is lost.

Recommended Time: 15 minutes per day in 5 minute sessions.

Procedure:

1. Place a red filter in front of the preferred eye.
2. Hold a penlight 1/3 meter from the patient at eye level.
3. The patient should see one PINK light (or white with red rays around it).
4. If diplopia is observed at 1/3 meter, move the light away from the patient until a pink light is seen.
5. Once a pink light is obtained, move the light slowly towards the bridge of the nose until the patient claims diplopia. The light is again moved away from the patient until one pink light is regained; and then the patient again attempts near convergence.

B. NPC with an Accommodative Target

Equipment: Small letter or picture on a tongue depressor

Pre-requisite: Diplopia awareness when not fusing.
Presbyopia corrected with bifocals.

Recommended Time: 15 minutes per day in 3 to 5 minute sessions.

Procedure:

1. Have the patient hold stick at 1/3 meter from the bridge of the nose and see a clear single image.
2. If the picture/letter is blurred or double, the stick is moved back until the picture is clear and single.
3. Once a clear picture is observed, the stick is gradually moved toward the bridge of the nose until the picture becomes blurred or double. The stick is again moved back until the picture is clear and one; at which time, the patient again attempts to move the stick closer. The objective is a single clear image at 5 to 6 centimeters from the bridge of the nose.

C. Jump Convergence

Recommended Time: 15 minutes per day in 5 minute sessions.

Procedure:

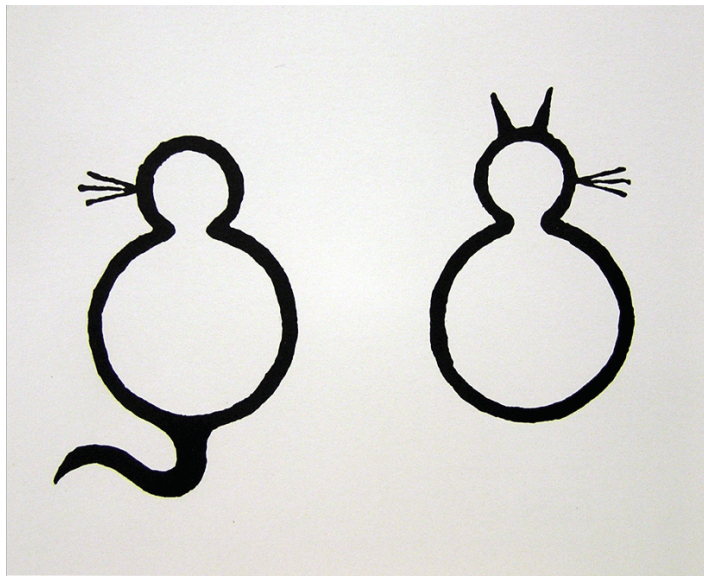
1. Look at a small object 6 meters away.
2. Hold a pencil (or finger) at arm's length in the line of gaze still looking at the distance object.
3. The distance object is seen single and the pencil is seen double.
4. Then look at the pencil and see the pencil single and the distant object double.
5. Repeat 25 times looking from the distant object to near pencil and back again.
6. Hold the pencil 6 to 8 centimeters closer and repeat another 25 times. Continue to move the pencil closer until it is only 4 to 6 centimeters from the eyes.
7. Look at an object in the far distance (e.g. a mailbox across the street, etc.), hold the pencil at near, and repeat the same exercise.

D. Voluntary Convergence (Stereograms)

This is particularly good for improving relative fusional convergence amplitudes.

Equipment: Stereogram card (such as the cats)
Pencil

Pre-requisite: Previously improved near point of convergence.

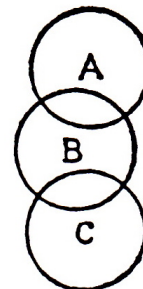
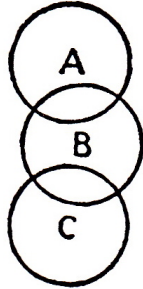


Procedure:

1. Hold a pencil $\frac{1}{3}$ meter from eyes.
2. Hold a card with cats at arm's length.
3. While looking steadily at the tip of the pencil, observe the number of cats in the background.
4. If four cats are seen, move the card back and forth a little until the center two cats superimpose, and three cats are observed. Note that the center cat has a tail, ears, and both sets of whiskers. Hold to the count of 10.



5. Relax and repeat, gradually increasing the count to 25.
6. While observing the three cats, remove the pencil and look steadily where the pencil WAS. You will be looking in mid-air. Observe the three cats in the background and your eyes are voluntarily converged.
7. Hold the voluntary convergence to the count of five. Relax, repeat, and increase to the count of 25.
8. Bring the pencil closer and repeat this exercise until you have voluntary convergence 4 centimeters away from eyes and can still hold three cats for the count of 25.
9. Substitute a more difficult stereogram (such as the rings below) and repeat.



E. Monocular Tracking Practice Following Surgical Restriction of Horizontal or Vertical Muscles

The objective of this exercise is to increase the field of vision in the area of the restricted muscle.

1. Near Practice
 - a. Maintain the head straight ahead in primary position and occlude the non-restricted eye.
 - b. Hold a light or fixation target at 1/3 meter.
 - c. Move the light or target toward the restricted area until the target disappears and slowly move the target toward primary position until it reappears. Repeat this back-and-forth movement at three minute intervals.
 - d. The total amount of time for this practice is a minimum of 20 minutes a day.
2. Distance Practice
 - a. Maintain head straight with the non-restricted eye occluded.
 - b. Look at TV or a target on the wall at a distance of four to six meters.
 - c. Slowly move the head in the direction opposite to the restricted muscle until the TV picture or wall target disappears. Slowly move the head toward primary position until the TV picture or wall target re-appears. Repeat the back-and-forth movement for three minute periods.
 - d. Practices should be performed a total of 20 minutes per day.

IV. AMPLITUDE TRAINING

A. Improving Horizontal Fusional Amplitudes for Distance

Equipment: Loose prisms to be loaned for home use.

Pre-requisite: Some minimal amplitudes.

Normal Amplitudes: Normal divergence (base-in) is 6 to 7 prism diopters for distance.

Normal convergence (base-out) is 25 to 35 prism diopters for distance.

Recommended Time: 30 minutes per day, may be divided into 10 minute sessions.

Procedure:

1. The size of prism given for home practice is decided in the office. Usually, the amount is 3 to 5 prism diopters lower than his break point of fusion for distance.
2. Inform the patient to do the practices while looking at a distance; such as watching television. If no TV, a picture on a wall is a good substitute.
3. The prism can be held in front of one eye; or for convenience, it can be taped to the patient's glasses. If no glasses are worn, an inexpensive pair of sunglasses frames can be used with the lenses removed and a prism taped in place.
4. The prism is placed base-in or base-out depending in which direction the amplitudes are limited. The patient starts at the farthest end of his room and moves toward the TV until a single clear image is steadily maintained.
5. Then the patient gradually moves back from the TV while maintaining one, clear image. If diplopia occurs, he again moves toward the TV to re-fuse the images. This method is continued until the patient can sit at a distance of 6 meters sustaining one, clear picture.

6. Use physiologic diplopia awareness (2 fingers/2 pencils) to detect the presence of suppression.
7. The patient is seen at three week intervals to check the improvement and to increase the size of prism.

B. Improving Horizontal Amplitudes at Near

Equipment: Loose prisms to be loaned for home use.

Pre-requisite: Some minimal amplitudes.

Normal Amplitudes: Normal divergence at near is 12 to 15 prism diopters.
Normal convergence and near is 25 to 35 prism diopters.

Recommended Time: 30 minutes per day, may be done in 10 minute sessions.

Procedure:

1. The amount of prism with which the patient can achieve a clear image is given for home practice. The prism is held or placed base-in or base-out depending in which direction the amplitudes are limited.
2. If suppression should occur, a red filter is used along with the prism so the patient is easily aware of diplopia when fusion is disrupted. Another excellent check against suppression is physiologic diplopia awareness. While the patient is reading, he holds his finger half way between his eyes and the book and he should be aware of two fingers while reading.

C. Improving Vertical Amplitudes

Improving vertical amplitudes is achieved with base-up and base-down prisms. Vertical amplitudes are improved in the opposite direction of the vertical deviation. This method is the same as described for improving horizontal amplitudes at distance and near.