

RED/GREEN LITETRACS

Workbook and Guide

By Stephen Morgenstern, OD, FCOVD

FOR

RED/GREEN LITETRAC 1 (CLASSICAL)

RED/GREEN LITETRAC 11 (BINOCULAR)

**RED/GREEN LITETRAC PRIMARY LEARNING
(KIDS)**

RED/GREEN LITETRAC 1

Workbook and Guide

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HOW IT WORKS

The R/G Litetrac is an instrument that builds binocular vision. By using red/green glasses and a penlight, the patient can see an image of the penlight with the eye that has the red lens and see the track or maze with the eye that has the green lens. The red lens filters out the red portion of the presented target and the green lens filters out the penlight projection and any presented green images. The patient must use both eyes to follow through the maze.

There are black, blue, green and red pictures within the mazes.

- ◆ The black images are seen equally with both eyes.
- ◆ The blue images are seen predominantly with the eye with the red lens and slightly with the eye with the green lens.
- ◆ The green images are seen only with the eye with the red lens.
- ◆ The red images are seen only with the eye with the green lens.

The eye with the green lens sees the “peripheral border” (the outline of the maze) and the eye with the red lens sees the “central detail” (the penlight).

By reversing the lenses, the central-peripheral alignment is also reversed. Red/Green goggles allow the reversing of the lenses. By turning the goggles around, the colors reverse sides. With the use of Red/Blue goggles, the blue images cancel out more fully than the green images.

If one of the images disappear, blink the eyes to re-fuse the images (to avoid suppression).

PURPOSE:

1. Anti-suppression
2. Build fusion.
3. Motivate children to work towards binocularity.
4. Provide targets that require fine binocular alignment. The two eyes must sustain steadiness and align with one another for the penlight to stay within the boundaries of the maze.
5. Works with patients with tropias, phorias and amblyopias.

FAR TO NEAR SHIFTS:

To stimulate fusional alignment and accommodative shifts, shift the gaze from the R/G LITETRAC out to a distance target and then back to the R/G LITETRAC each time the penlight reaches an arrow. This forces alignment at distance and then re-alignment at near. Use of any red/green distance target will provoke more exacting distance alignment and accommodative functioning.

PUSHUPS:

To stimulate nearpoint convergence and accommodative flexibility and amplitude, slowly bring the mazes closer to the eyes and then back out to a 16 inch working distance each time the penlight reaches an arrow.

TRAINING VARIABLE AMOUNTS OF ANTI-SUPPRESSION:

To stimulate anti-suppression activities, from deeply imbedded to borderline suppression different intensities of color have been provided on specific R/G LITETRACS. These can be utilized in the varying stages of vision therapy.

- a. R/G LITETRAC 7 and 11 have the lightest intensity of green color and require the greatest amount of anti-suppression ability.
- b. R/G LITETRAC 17 has the slightly greater intensity of green color and is easier to maintain the constancy of binocularity.
- c. R/G LITETRAC 19 has more intensity and a deeper blue/green hue to make it easier to use binocularly.
- d. R/G LITETRAC 2 and 4 have variable intensities of blue color as the penlight tracks from image to image.

METHODS OF USE:

1. Put on the R/G (Red/Green) glasses.
2. Hold a penlight behind the R/G LITETRAC.
3. Trace through each R/G LITETRAC by moving the penlight image through each maze.
4. Trace each image (design).
5. Remove the R/G glasses and re-align the penlight image placing it on the correct target. This re-alignment will prevent fusional drifting. Have the patient do this three times for each R/G LITETRAC.
6. Reverse the lens colors and follow through the maze (if the red lens was in front of the right eye, now have the red lens in front of the left eye).

WORKING WITH EACH R/G LITETRAC

R/G LITETRAC 1 - “ CINEMA-PHOTO WITH FILMSTRIPS”

1. Follow the arrows through the maze using the penlight starting at the lower left.
2. Keep each black “Cinema-photo” image single and trace them with the penlight. Since each black image is seen equally with both eyes, they help keep unstable visual systems aligned.
3. Trace each red strip with the penlight. Stop at each white dot.

R/G LITETRAC 2 – “GIFTWRAP”

1. Follow the red arrows through the maze.
2. Trace each blue “greeting card.” Since the blue image is seen predominantly with the eye with the red lens and only slightly with the eye with the green lens, work to keep the blue images single. Work to keep each image from disappearing, even the lighter images.
3. Trace the red “ribbons” and “bows.”

R/G LITETRAC 3 – “WOODWORKING”

1. Follow the red arrows through the maze.
2. Trace each red “tool.”
3. Trace each piece of “lumber” and stop at each red dot.
4. Use “far to near shifts” and “push-ups”, re-aligning on each dot.

R/G LITETRAC 4 – “WEATHER”

1. Follow the red arrows through the maze.
2. Trace each blue “weather” image. Work to keep each image from disappearing, even the lighter images.
3. Trace each red strip and stop at each white “star.”

4. Use “far to near shifts” and “pushups.”

R/G LITETRAC 5 – “”MUSIC”

1. Follow the red arrows through the maze.
2. Trace each black musical instrument. Keep each instrument single.
3. Stop at each red musical instrument that makes up the maze. For finer control, trace each musical instrument with the penlight.
4. To perform “far to near shifts” and “pushups”, use the red musical “notes” as targets.

R/G LITETRAC 6 – “ACUITIES”

1. Follow the red arrows through the maze.
2. Trace the red bar with the penlight. Don’t go on the white!
3. Stop at each letter and where possible, trace each letter with the penlight.
4. The visual acuities for each letter at a 16 inch nearpoint working distance are:

A= 20/500

B= 20/300

C= 20/250

D= 20/100

E= 20/80

F= 20/60

G= 20/40

5. Perform “far to near shifts” and “pushups” using each letter, keeping the penlight centered on the letter.

R/G LITETRAC 7 – “NONSENSE FIGURES”

1. Start at the green “START” and follow the green arrows through the maze all the way to the center.
2. Trace each green circle and red “Nonsense Figure Triangle” on the upper left and each red circle and red “Nonsense Figure Triangle” on the upper right. Now do the lower circles and figures. Work to keep each image from disappearing, even the lighter images.
3. ANISOMETROPIAS – OPTICAL SIZE IMBALANCES: Note that the upper right figures are larger than the upper left figures. That lower left figures are larger than the lower right figures. If your patient has an optical size imbalance (aniseikonia), seen most often in an anisometropia, you can teach this patient to fuse equally. This fusion exercise can be done with or without red-green glasses.

Converge the eyes by pulling them inwards to fuse the images. If needed use BASE-IN prisms. Vary the BASE-IN prism power to build ranges. Add BASE-OUT prism to develop even greater convergence ranges.

To vary the size imbalance between the right and left images, tilt the R/G LITETRAC so that the right side is closer or further from the patient’s face ... The left side goes the other way. (Rotate the R/G LITETRAC around a midline “Y” axis).

R/G LITETRAC 8 –“VISIT THE ZOO”

1. Start at the upper left and follow the arrows all the way through the maze.
2. Trace the peripheral outline of each arrow and trace each animal.
3. Trace the wide red border of each animal “cage.”

R/G LITETRAC 11– “BOATS, SHIPS AND SUBMARINES”

1. Starting at the far left, trace the borders of the red triangles, going counterclockwise, following the direction of the arrows.
2. Trace each green boat with a penlight. Work to keep each image from disappearing, even the lighter images.
3. Trace each circle and each nautical flag with the penlight.
4. Using convergence, have the patient pull their eyes inwards and fuse the upper images and then the lower images. If necessary use BASE-IN prisms. Vary the BASE-IN prism power to build ranges. Add BASE-OUT prism to develop even greater convergence ranges. When the images are fused, slowly bring the R/G LITETRAC closer to the face to build convergence amplitude while sustaining fusion.

R/G LITETRAC 12 – “WILD ANIMAL PHOTOGRAPHY”

1. Trace through the maze, stopping at each wild animal.
2. Trace each animal and each camera.
3. Trace the red wide bar from the upper left all the way around to the center.

R/G LITETRAC 13 – “SEA CREATURES”

1. Trace through the maze, stopping at each sea creature.
2. Trace each sea creature. What are their names?

In order through the maze)

- 1) Sea Horse
- 2) “Great White” Shark
- 3) Sting Ray
- 4) Monster Squid
- 5) “Hammerhead” Shark
- 6) Swordfish
- 7) Giant Octopus

3. Trace the wide bar from the upper left all the way around to the center.

R/G LITETRAC 14 – “BUG SPRAY”

1. Trace the maze from the upper left, follow the arrows, and stop at each bug. Exterminate the bug by keeping the penlight image on it and alternately winking each eye three times. If alternate winking cannot be accomplished, use alternate occlusion with a hand held occluder –in front of the red-green glasses.
2. Trace each bug spray can.
3. Trace each wide red bar with the penlight.

R/G LITETRAC 15 – “LETS CATCH BUTTERFLIES”

1. Trace the maze from the upper left, follow the arrows, and stop at each butterfly until the end.
2. Put the penlight on each butterfly. Using a jerky motion the way a butterfly flies, trace the penlight along a white path and into either butterfly net. Blink your eyes quickly while “flying” to the net.

R/G LITETRAC 16 – “AROUND AND AROUND”

1. Starting at the upper left, follow the maze of arrows around the periphery of the R/G LITETRAC, and then more centrally until the end.

R/G LITETRAC 17 – “CIRCLE MAZE”

1. Beginning with the green “start”, follow the circular maze until reaching the magic “Pegasus” (Flying Horse) in the center. Work to keep each image from disappearing, even the lighter images.
2. Trace each large red circle.

3. Trace each outer green and inner red circle and green image in the periphery of the R/G LITETRAC.

R/G LITETRAC 18 – “ROAD RACE”

1. Start at “Go” at the lower left and trace through the image till the end ... “You Won.” Always keep the penlight within the red borders of the thin maze.
2. Stop at each sharp turn in the maze and blink twice to “don-shift” your race car to a lower gear. There are multiple gear shifts and changes of direction near the end of the track.
3. Go around the track four times, going faster each successive time, always staying on the track.
4. Trace the penlight through four “warm-up mini-tracks” around the track. Repeat each warm-up four times, alternating between clock-wise and counter-clockwise directions.
5. With the red-green glasses on, and with the penlight on each blue race car, shift your gaze from a 20 foot distance target and back to the R/G LITETRAC at near. Keep the blue race cars in their correct locations in the “warm-up circular tracks” and near the race track.

R/G LITETRAC 19 – “RUNNING THROUGH THE JUNGLE”

1. Starting from the upper left, follow the maze, making sure you “ride on” each animal in the jungle.
2. Work to keep each image from disappearing, even the lighter images.
3. There are three extinct animals that can no longer be found in the jungle. Go to the corners of the jungle that are empty.
4. Trace the red line all the way around with the penlight.
5. By looking out at a distance and back to the animals, they seem to move around on the R/G LITETRAC. Keep re-aligning them.

R/G LITETRAC 20 – “TRAFFIC SIGNS”

1. Start at the upper left and follow the arrows until the “STOP” sign.
2. Trace around each arrow and each sign.
3. What does each sign mean? Where would you put each one?

RED GREEN LITETRAC 11 – BINOCULAR

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HOW IT WORKS

R/G LITETRAC 11 (BINOCULAR) involves the same methodology as R/G LITETRAC 1, however the targets and background images are seen in 3-D and require binocular fusion while the tracking of the penlight image is followed.

In general, the R/G Litetrac is an instrument that builds binocular vision. By using red/green glasses and a penlight, the patient can see an image of the penlight with the eye that has the red lens and see the track or maze with the eye that has the green lens. The red lens filters out the red portion of the presented target and the green lens filters out the penlight projection and any presented green images. The patient must use both eyes to follow through the maze.

There are black, blue, green and red pictures within the mazes.

- ◆ The black images are seen equally with both eyes.
- ◆ The blue images are seen predominantly with the eye with the red lens and slightly with the eye with the green lens.

- ◆ The green images are seen only with the eye with the red lens.
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The eye with the green lens sees the “peripheral border” (the outline of the maze) and the eye with the red lens sees the “central detail” (the penlight).

By reversing the lenses, the central-peripheral alignment is also reversed. Red/Green goggles allow the reversing of the lenses. By turning the goggles around, the colors reverse sides. With the use of Red/Blue goggles, the blue images cancel out more fully than the green images.

If one of the images disappear, blink the eyes to re-fuse the images (to avoid suppression).

PURPOSE:

1. Enhance and build binocular function
2. Anti-suppression
3. Build fusion.
4. Motivate children to work towards binocularity.
5. Provide targets that require fine binocular alignment. The two eyes must sustain steadiness and align with one another for the penlight to stay within the boundaries of the maze.
6. Works with patients with tropias, phorias and amblyopias.

FAR TO NEAR SHIFTS:

To stimulate fusional alignment and accommodative shifts, shift the gaze from the R/G LITETRAC out to a distance target and then back to the R/G LITETRAC each time the penlight reaches an arrow. This forces alignment at distance and then re-alignment at near. Use of any red/green distance target will provoke more exacting distance alignment and accommodative functioning.

PUSHUPS:

To stimulate nearpoint convergence and accommodative flexibility and amplitude, slowly bring the mazes closer to the eyes and then back out to a 16 inch working distance each time the penlight reaches an arrow.

METHODS OF USE:

1. Put on the R/G (Red/Green) glasses.
2. Hold a penlight behind the R/G LITETRAC.
3. Trace through each R/G LITETRAC by moving the penlight image through each maze.
4. Trace each image (design).
5. Remove the R/G glasses and re-align the penlight image placing it on the correct target. This re-alignment will prevent fusional drifting. Have the patient do this three times for each R/G LITETRAC.
6. Reverse the lens colors and follow through the maze (if the red lens was in front of the right eye, now have the red lens in front of the left eye).

WORKING WITH EACH R/G LITETRAC 11

1. “ INTO THE WILD BLUE YONDER”

1. Follow the red arrows through the maze.
2. The clouds are seen in depth (3-D), but at varying depths. Go from cloud to cloud, tracing each cloud.
3. Some appear closer to you and some appear further. State whether they are “closer” or “further away”.
4. Now trace the clouds from the deepest (greatest 3-D effect) to the most subtle.

2. “FOOTSTEPS AROUND THE ROOM”

1. Follow the footsteps through the maze in numerical order.
2. The footsteps are seen in depth (3-D), but at varying depths. Go from footstep to footstep, tracing each step.
3. Some appear closer to you and some appear further. State whether they are “closer” or “further away”.
4. Now trace the footsteps from the deepest (greatest 3-D effect) to the most subtle.

3. “DIAMONDS ARE FOREVER”

1. Follow the red and green arrows through the maze.
2. Place the penlight image on the number 1 in the upper left diamond. Now, close your eyes for one second, then open your eyes and re-place the penlight image in the center of the circle again. Repeat for all the other numbers.
3. Some diamonds are seen in depth (3-D), but at varying depths. Go from diamond to diamond, tracing each diamond – inside and out.
4. Some appear closer to you and some appear further. State whether they are “closer” or “further away”.
5. Now trace the diamonds from the deepest (greatest 3-D effect) to the most subtle.

4. “LET IT SNOW, LET IT SNOW”

1. Follow the red and green arrows through the maze.
2. Place the penlight image on the number 1 in the second row to the far right, then turn the light off. Now, close your eyes for one second. Now turn on the light and open your eyes and re-place the penlight image in the center of the circle again. Repeat for all the other numbers.
3. Some snowflakes are seen in depth (3-D), but at varying depths. Go from snowflake to snowflake, tracing each one – inside and out.
4. Some appear closer to you and some appear further. State whether they are “closer” or “further away”.
5. Now trace the snowflakes from the deepest (greatest 3-D effect) to the most subtle.

5. “GET THROUGH THE MAZE”

1. Start at the entrance to the maze and “rescue” the man. Then get back out through a different path.
2. Trace the entire maze.

6. “THE SOLAR SYSTEM”

1. Trace the orbital path of each planet.
2. Trace the “alien” spacecraft and the comet.
3. Don’t forget to trace the sun.

7. “SUBMARINE – THROUGH A MINE FIELD”

1. From the “START”, have the submarine follow the blue dotted path through the underwater mines to the “SECRET SUBMARINE BASE”. If an underwater mine is touched, the submarine is blown up and must start all over again.
- 2.

8. “ALPHABET MAZE”

1. Starting at the upper left corner, trace a path with the penlight through the maze, never touching any letters.
2. Now, with the penlight image, touch each letter in alphabetical sequence.

9. “FOLLOW THE NUMBERS”

1. Follow the alternating red and green arrows through the maze.
2. Now, with the penlight image, touch each number in correct numerical sequence.
3. Trace each green grid.
4. Trace each red grid.

10. “ARROW PATH”

1. Follow the red and blue-green arrows through the maze.
2. The arrows are seen in depth (3-D), but at varying depths. Go from arrow to arrow, tracing each one.
3. Some appear closer to you and some appear further. State whether they are “closer” or “further away”.
4. Now trace the arrows from the deepest (greatest 3-D effect) to the most subtle.

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HOW IT WORKS

The R/G Litetrac is an instrument that builds binocular vision. By using red/green glasses and a penlight, the patient can see an image of the penlight with the eye that has the red lens and see the track or maze with the eye that has the green lens. The red lens filters out the red portion of the presented target and the green lens filters out the penlight projection and any presented green images. The patient must use both eyes to follow through the maze.

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PURPOSE:

1. Anti-suppression
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4. Provide targets that require binocular alignment. The two eyes must sustain steadiness and align with one another for the penlight to stay within the boundaries of the maze.
5. Works with patients with tropias, phorias and amblyopias.

FAR TO NEAR SHIFTS:

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PUSHUPS:

To stimulate nearpoint convergence and accommodative flexibility and amplitude, slowly bring the mazes closer to the eyes and then back out to a 16 inch working distance each time the penlight reaches a near target.

METHODS OF USE:

1. First have the (small) child hold the penlight behind the R/G LITETRAC, **without** any red - green glasses on, and learn to follow the line of the targets and mazes with the penlight image.
2. Then, put on the R/G (Red/Green) glasses.
3. Hold a penlight behind the R/G LITETRAC.
4. Trace through each R/G LITETRAC by moving the penlight image through each maze or target.
5. Trace each image (design).
6. Regularly, remove the R/G glasses and re-align the penlight image placing it on the correct target. This re-alignment will prevent fusional drifting.
7. Reverse the lens colors and follow through the maze (if the red lens was in front of the right eye, now have the red lens in front of the left eye).

WORKING WITH EACH R/G LITETRAC

R/G LITETRAC 1 – “MULTIPLE DESIGNS IN MULTIPLE DIRECTIONS”

1. Follow the red arrows through each maze.
2. **PURSUIITS TRACKING IN EACH DIRECTION:** The arrows in the outer (larger) track of the square and triangle shapes proceed clockwise and the hexagon and star proceed counterclockwise. Each subsequent inner track reverses the direction.
3. When you reach the square or rectangle marker located on the border of each track, stop, look out at distance, and then look back at the penlight image, realign it centrally and then continue.
4. Trace each design and the perimeter of the large sphere.

R/G LITETRAC 2 – “MULTIPLE SQUARE DESIGNS”

1. Trace the penlight image around the perimeter of the large central square, then the next two smaller inner squares.
2. Now trace each of the four smaller outer squares, the squares inside them, and the two 3-D cubes on the bottom.
3. Then, trace the central hexagon, the “secret magical chamber”, that contains invisible items ... anything you want to draw in it with the penlight.
4. Note that each of the designs has a fine set of lines (slightly inwards of the large designs and part of the “depth” of the smaller designs) requiring finer control to trace.

R/G LITETRAC 3 – “MULTIPLE STAR DESIGNS”

1. Follow the red lines of each star.
2. Work from the larger stars to the inner stars.
3. Trace the central inner “hidden” box.
4. Note that each of the stars has a fine set of lines (slightly offset of the large star and part of the “depth” of the smaller stars) requiring finer control to trace.

R/G LITETRAC 4 – “COMPASS DIRECTIONS – WITH DIRECTIONAL FOCUSING TUBES ”

1. Trace each of the solid circles that make up the “bulls-eye” image of the compass directions.
2. Starting at the center criss-cross arrows, with the penlight image, move upward (North) through the small “N” following the dotted black lines, stopping at each dotted black line to the large “N”.
3. Now go downward (South) the same way. Then go East and then West.
4. Now trace the outlines of the “Directional Focusing Tubes”. These tubes gaze in the diagonal, alternate directions. They point to North-East, South-East, South-West and North-West.
5. Starting at the center criss-cross arrows, trace the penlight image to the North-East stopping at each dotted line and ending at the “NE” and repeat for South-East, South-West and North-West.
6. **SHOOTING INTO SPACE GAME:** Now put the penlight image back at the center criss-cross and quickly shoot the image through the center of the North-East “Directional Focusing Tube” all the way off the R/G LITETRAC. Repeat for South-East, South-West and North-West.

R/G LITETRAC 5 – “MULTIPLE TRIANGLE DESIGNS”

1. Follow the red lines of each triangle.
2. Work from the outer larger triangles to the inner triangles.
3. Trace the central inner “double whammy” circle – don’t forget to trace the mostly hidden back circle.
4. Note that each of the triangles has a fine set of lines (slightly offset of the large triangle and part of the “depth” of the smaller triangles) requiring finer control to trace.

R/G LITETRAC 6 – “CENTRAL FIXATION WITH CONSISTENT PERIPHERAL MOVEMENT”

1. This R/G LITETRAC requires a central localization awareness (on the central spatial oval) – as it’s center orientation point, while sustaining a consistent rate of movement of the penlight image as it traces each of the orbits around it. The central oval is in reality a sphere image on an angle. The orbital ovals, if viewed in space, are equidistant from the central figure. These configurations become automatically apparent as the patient follows the orbit around the central “sphere”.
2. Point to the “central sun” and then point to the wider outer part of one of the rings.
3. State: “There is a central sun that is surrounded by circles going in different directions. Put the penlight image onto the outer ring of one of the circles and move the penlight image smoothly around that outside part of the ring.”
4. Now have the patient trace around an outer, darker, ring, always smoothly and staying the same distance from the “sun”. Then trace the inner ring. Repeat three times.
5. Repeat with the other two rings.

R/G LITETRAC 7 – “MATH SIGNS”

1. Trace the red math signs and the descriptive titles.
2. Trace the small numbers and numerical signs in the equations.

R/G LITETRAC 8 – “IMPORTANT STREET SIGNS”

1. Trace each of the lines making up the street signs.
2. What do they mean?

R/G LITETRAC 9 – “TELLING TIME”

1. Trace around the perimeter of the “clock “and trace each of the numbers.
2. Trace the large “minute hand” and the smaller “hour hand”.
3. Now put the penlight image onto the point of the hour hand and then move the penlight image to: 12:00 O'clock; then 1:00; 2:00 ... till 12:00 O'clock again.
4. Now put the penlight image onto the point of the minute hand and then move the penlight image to: 5 minutes after, 10 minutes after, etc...

R/G LITETRAC 10 – “ALPHABET”

1. Trace the red letters through the alphabet.
2. Now, trace the green borders around the letters.