

Exercises for vision tracking and improving brain function

Vision Tracking

One of the key areas for learning has to do with the eyes and their connection to the brain itself. This is called “vision tracking” and does not relate to whether the child can physically see the board or his books.

(Note: Poor vision is separate issue and is a problem specifically to the eye. If a child squints, complains he can't see, asks to be moved to the front, or has frequent headaches, they may have a vision problem. Parents should be told about it and encouraged to have the child's vision checked, as the child may need glasses. If glasses are not an option, do work with the student to find the best place in the room for them to sit to minimize the eye strain.)

Vision tracking is the movement of both eyes together across a line of print from the left margin to the right margin. There are serious learning problems when either one or both eyes have difficulty making a smooth sweep across the page. When reading, 90% of the brain energy is focused on the letters and words; 10% is used for understanding. When the eyes don't work together with the brain, the energy that is supposed to be used for understanding is taken up with simply trying to focus clearly on the words and letters.

Approximately 80-90% of students who make slow progress in reading actually have a vision tracking problem. When treated and given some extra help with reading, many can make rapid progress. Approximately 20-35% of the general population has a vision tracking problem. Symptoms of vision tracking problems:

- Take much longer to read
- Can't easily remember what they've read
- Can't read for very long
- Can't read/understand at an appropriate level for their age
- Often may have behavior problems due to frustration, boredom
- May have coordination problems in sports

There are two ways that the eye and brain need to coordinate:

1. eyes need to be able to cross the midline of the body (read across the page)
2. eyes need to be able to focus both near to the face (e.g. while reading), and off at a distance (e.g. while looking at the teacher or board).

Note: The exercises we will focus on today are exercise that will benefit the whole class. These simple activities concentrate on practicing a smooth eye movement from side to side and from objects near to the face to those further away. This can be done at home or in the classroom. Tracking usually improves in about 60 days, if practiced 12-15 minutes, 3 to 4 days a week. For those students needing additional help, they can be given extra time individually using a parent helper.

Activities:

There are many activities here. Teachers should be supplied with the following notes to read through in their own time, and keep as a reference. However, try out as many activities with the whole group as time permits in this session. You may like to ask the trainers to conduct some of the activities.

Quick assessment activity**Appropriate Reading Distance**

Instruct students to bring their elbow up, and plant their fist on their nose. The bend of elbow is where books should be held for reading. For the testing, students hold their heads still, while a small object (a pen or pencil works well) is moved back and forth in front of their face at that distance.

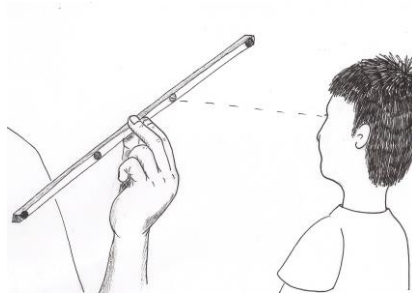


- To test for crossing the midline: move the pen from side to side in a figure 8, all the way to the edge of the field of vision (40-60 cm). Watch to see if the child's eyes can smoothly follow the object through the air from one edge to the other. You can add asking questions to distract the student and see if they can continue to focus successfully.
- To test for the ability to focus both near and far: bring the pen in to the nose and back out to $\frac{1}{2}$ a meter. Watch to see if the student can smoothly track all the way in and out. Again, begin to ask questions as they do this to evaluate how well they can focus.
- One issue to watch for is called "saccades" - when the eyes jump back and forth quickly instead of moving smoothly. The exercises will address this condition as well.

Group activities for crossing midline

1. Calling Colors

Have students help create enough sticks so that every pair of students has one. The sticks should be the length from nose to tip of finger for the average student in your class. The sticks should be marked with four colors in the same order on every stick. The colors should be positioned at each end, and then at equal intervals in between.



For the exercise, students will work in pairs standing 1 meter apart. One holds the stick, the other focuses on the spot of color on the stick as names of colors are called out. The teacher can call the sequence, or as students become used to the exercises, they can call the sequence out for their partner. You can call the same color out several times as well as mix them up; you can call out a color every 2 seconds, or slow it down to 5 seconds. The variation in sequence and timing all add to training the brain and eye to focus in a coordinated manner. This exercise can be done for 45 seconds – 1 minute.

2. Eye tennis

- Use any classroom-size book with regular print. (Do not use paperback or books with pictures.) Lines of print must go across full page, no columns.
- Begin with first letter of the first word. Student must say only the **first** letter of the first word. He moves his eyes smoothly to end of line and say only the **last** letter of the last word.

This is a sample of what student is supposed to do when exercising the eyes during eye tennis lesson.

Student returns his focus to next line. (**Do not skip lines.**) Say **first** letter of first word; smoothly move focus to the **last** letter of the last word on that line and say that letter. Repeat this pattern to the last letter on the last line of the page.

Reading this page, student would say: T F; W S; S D; W G; T G; E N

For variation, you can start at the **last** letter of the last word on the bottom line and say that letter. Move focus (from right to left) smoothly from the last letter of the last line to the **first** letter of the first word on that line and say that letter.

- Move focus to **last** letter of last word on line above and move eyes smoothly from right to left to **first** letter of first word on that line. Students would read: N E; G T; G W; O S; S W; F T
- Students can pair up for this exercise; as one student reads the letters aloud, the other can check for accuracy.

3. Pencil Movements

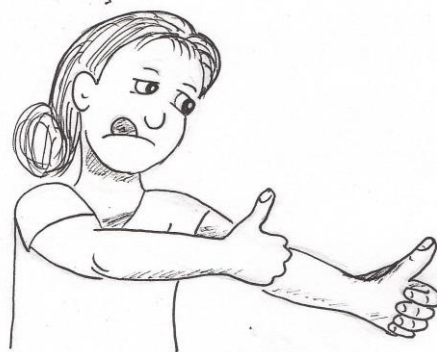
One student holds a pencil $\frac{1}{2}$ meter from another student's face. Move the pencil in a smooth, rhythmical manner in a rectangle, X-pattern, and figure-8 pattern. Holding their head still, the student follows the pencil movement with their eyes focused on the end of the pencil. Do this for 1-2 minutes.

Near-far focus

1. Thumbs up

Have students stretch out one arm with thumb up. With thumb up on the second arm, rest the hand on the inside of the elbow of the outstretched arm.

Teacher calls out “near” or “far” as students focus on the appropriate thumb. Teacher calls out instructions in a different sequence, pausing for different amounts of time in between instructions. Can hold the call up to 4 seconds, or change the call very quickly. Call in different patterns. Students should be able to focus and see only one thumb.



2. Calendar Match

- Each student is handed a small piece of paper with the number of a day of the month printed on it. Students hold their square out in front of their face at arm's length. A large calendar can be posted on the wall 2-5 meters away.
- As students focus on their own square of paper, one student calls out the number on their paper. The whole class looks up to find that number on the large calendar posted in the front of the room. They resume looking at their own square, and the next student calls out the number they are holding. Students quickly look up to focus on the

number on the calendar. One after another, each student calls out the number on their square of paper until all have had a turn.

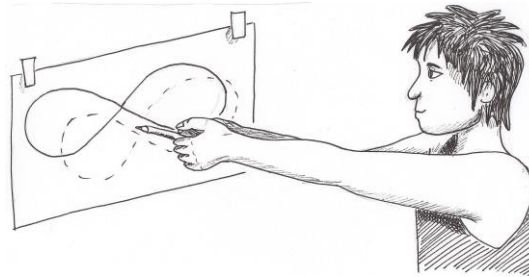
- If there is a large classroom or a large number of students, the class can be split. Half the class can turn and face the opposite wall of the classroom where another calendar can be posted. A second set of calendar squares can be handed out.

Individual activities (with adult help) Crossing Midline

Figure 8

Teacher draws figure-8 on the board – length of comfortable arm extension for the student. Student has to maintain head straight so only the eyes track his hands as he copies over the figure with his own pen – held with 2 hands.

Add in: eyes focused on center of figure while their hands hold the pen and trace a figure-8. Add in: asking questions so they have to increase their focus.



Individual activities (with adult help) Near Far



Bead on a String

String 60 cm in length and 1 bead. Student holds string at their nose; teacher holds the other end. Start with the bead approximately 40 cm away. When students look at the bead, they should see an X with bead in the center.

Slowly move the bead closer to their nose until it is 20 cm away. They should concentrate to continually see the X at each point.

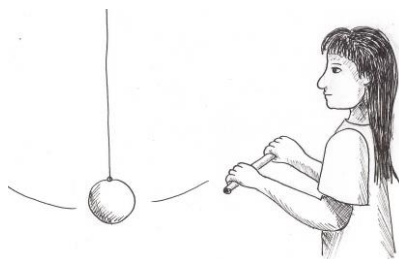
Add in: asking questions so they have to increase their focus.

Swinging Ball

Tie a ball to the end of a string, long enough to be suspended at the middle of student's chest. Tie to a branch or to a stick suspended between two tall cupboards, etc. Students have a tube (15 cm) to hold between their hands. Set the ball in motion, swinging towards and away from the student. They keep their eyes on the ball. Holding the tube between their hands, students copy the swinging motion back and forth.

Variation:

- tap the ball with the tube when it comes to them.
- Draw a line down the middle of the tube; alternate tapping the ball on right or left side of tube.
- Add in: students rock back and forth on their feet
- Add in: have them recite information, spell words, etc.



X on the Wall

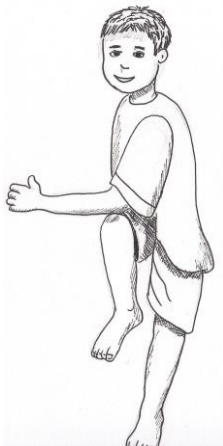
- Post an 8x11 sheet with a large X on the wall. Keeping constant focus on the X, the student walks up to 1 meter away from the wall, then backs up as far as 3 meters.
- Teacher stands next to the X, watching the child's eyes and keeping track of the time. Each exercise goes for 2 minutes. As soon as the child breaks focus, the activity is over for the day. This keeps the activity challenging; students REALLY want to do well so they can progress. After successfully completing each action for one minute, add in asking questions, have students recite spelling words, etc to increase the challenge of focus.
- 1st level: simply walk back and forth
- 2nd level: alternate knee touches (lift left knee, touch with right hand) walking back and forth
- 3rd level – alternate heel touches (touch right hand to left heel), walking back and forth
- 4th level – alternate knee touch then heel touch in back while walking back and forth

Cross Body/Cross Brain Connections

Another dimension of learning that has to do with the physical brain is integrating the learning that takes place particularly in the right or left side, or hemisphere, of the brain.

- Right brain is strongest with kinesthetic and verbal learning and is the center of creativity. Those with strong right brain activity work well in team and learn through creativity. They do best when they are given the big picture of what they're learning, how it connects to other topics, and the application of their learning.
- Left brain is strongest with linear thinking, using logic, creating and seeing structure. They want to understand how the pieces relate to the whole. They learn best when they are given time to learn each piece in a logical progression.

These strengths are designed into us by God and are likely the area where the student will make their richest contribution to the world around them. Every student's learning is increased when the two sides of the brain are encouraged to connect on a regular basis by simple movements that cross the center of the body. Following are descriptions of the exercises that can be done as a class to strengthen brain development.



Cross-Crawl

While standing upright, have students touch their left elbow to right knee, and then touch the right elbow to the left knee. Add in: walk forwards while touching alternate elbow to knee, and then do it walking backward. Add in: have students say the alphabet, or a verse they are memorizing, while they do this.

Mirror Image

Students stand at the board, with chalk, crayon or pencil, in each hand. They draw the same figure with both hands at the same time. If needed, they could squat and draw with their fingers in sand or dirt.

Add in: have students say the alphabet, or a verse they are memorizing, while they do this.¹



¹ There are many excellent resources developed for additional ideas on activities and research on the benefits of these activities. *Help Your Class to Learn and Overcoming Learning Difficulties* by

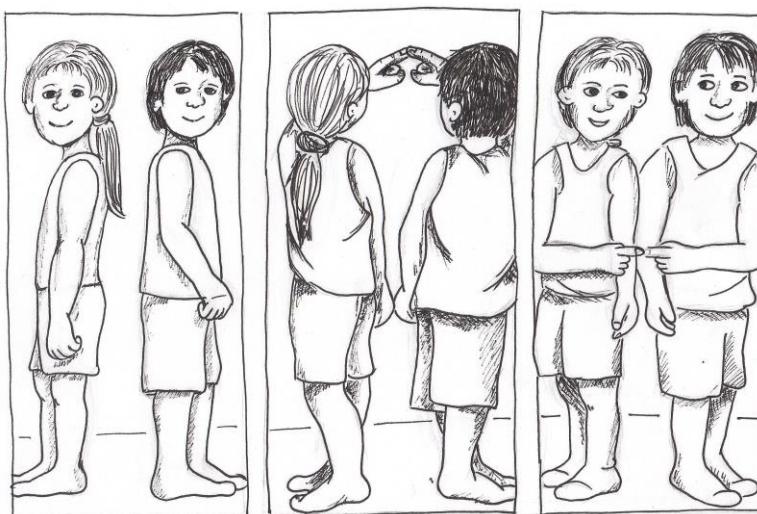


Look at the Butterfly

Students tightly press their left ear against their left shoulder. They extend their left arm, and with their finger, trace a figure-8 pattern, following the tip of their finger with their eyes. Switch sides and Add in: have students say the alphabet, or a verse they are memorizing, while they do this.

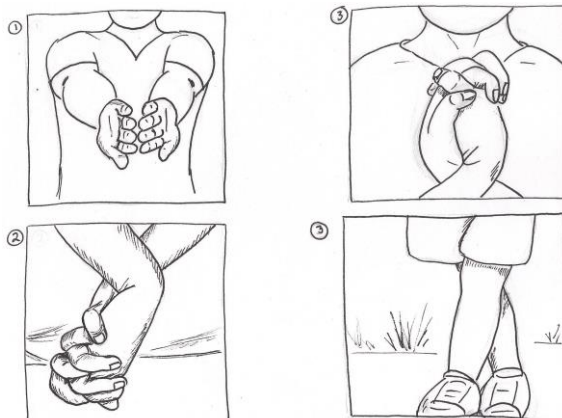
Robot Zap²

Students line up in pairs, back to back. Students reach over their left shoulders, touching the tip of the index finger of the student behind. They do this upper left and right shoulder, then alongside their hips left and right, and finally bend over and do alongside their ankles, left and right. As they touch finger tips, they call out, “zap.”



Human Pretzel

Cross your ankles, cross your arms, lace fingers together with backs of your hands facing each other. Then, fold up your arms, crossed and laced, against your chest. Hold for 10 seconds; repeat 3 times.

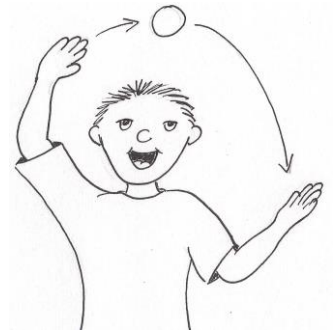


Barbara Pheloung and *Smooth Moves: Why Learning Isn't All In Your Head* by Carla Hannaford are several possibilities.

² Many thanks to occupational therapist Tara Riley

Solo Catch

Play catch with yourself! Hold the ball in your right hand, Then toss the ball over your head and catch it with the left hand. How many times can you toss it back and forth without missing?



Increase focus and energy:



Ear Rub

Rub tops of ears between thumb and fingers. Cup hands behind ears and rub back and forth. Students can speak out things they are trying to learn/remember as they do this.

Oxygen Boost

Place the index finger and thumb on the chest, just under the chest bones at the base of the neck. Press, hold for a count of 3 seconds, then release. Do it 5-10 times.



Chair Push-ups

In their seats, have students press their palms down on the seat of their chair at their side. Push down hard enough to lift themselves out of their seat, hold for 3 seconds. Repeat 5-10 times.

Head Rolls

Roll head in a relaxed, rag-doll way left and right and around in a circle. This will loosen muscles and increase circulation.

Alligator Yawn

Open mouth very wide and press on the muscles in front of the ears. Hold. This will increase oxygen and help children who are tense and clenching their teeth to relax and get more oxygen to the brain.

Water Wake Up

Drink water - around 8 glasses a day.

Brain Squeeze

Squeeze a tennis ball or play dough in the right hand hard, then in the left hand. Kids can be allowed to do this at their desks as long as they do so without distracting others.

Jumping Jacks

Students stand upright, hands at sides. As they raise their arms out to the side up over their head, they do a small jump to spread their feet out wider than their shoulders. They do another little hop to return to the starting position.

Simple playground equipment and activities which are helpful for brain development:

- Climbing ladders
- Log or board to balance on, jump over in zigzag pattern
- Swings
- Overhead bars to swing from, cross over
- Jump ropes
- Balls to shoot into basket, kick at goal, hit with bat, bounce to another student