

The Invisible Line

You may have heard there is an invisible line down the middle of your body. If you've worked with or had an experience with a Paediatric Occupational Therapist, you would have probably heard them talking about this 'midline'. There is an 'invisible' line down the centre of your body and to ensure we can coordinate both sides of our body, we need to be able to cross that imaginary line.

What is this midline?

To explain simply, our brains are divided into two sides (hemispheres) and one side controls the majority of the other side of the body, i.e. the right side of our brain has an effect on the left side of our body, just as the left brain has an effect on the right side of the body. However, if the brain works only one side at a time, then the body is only getting half of its use. As such, a child who neglects crossing their midline can suggest that the left and right brain hemispheres are not communicating well together. The anatomical structure in the brain that provides hemispheric communication is the corpus callosum. As each hemisphere is responsible for different functions, communication through the corpus callosum is important for effective communication between the brain and both sides of the body. Therefore, both sides of our brain need to work together, as do both sides of our bodies, in order to carry out activities using both sides of the body, also known as bilateral activities. This is where crossing the midline is so important in the development of bilateral co-ordination and hand dominance.

Why do children need to cross their midlines?

Midline activities are important to help coordinate the two sides of the body together and encourage communication between the right and left sides of the brain. Bilateral coordination (using both sides of the body together) is an important step in developing midline crossing. As a child improves their bilateral skills, both symmetrically and asymmetrically, the ability to cross the midline begins to develop. When a child finds it tricky to cross their midline, each side of the body tends to operate on its own. Children who avoid crossing the midline work the right side of the body with the right hand and the left side of the body with the left hand or they turn their body to avoid crossing the midline. This interferes with the normal development of a dominant hand and makes bilateral motor tasks very difficult.

Crossing the midline is important for academic tasks such as reading and writing (e.g. with eye tracking from left to right and hand dominance), as well as gross motor components such as sports (e.g. using two hands to swing a bat right across the body) and even playground play. Midline crossing can also be seen in functional tasks such as reaching down to the feet to put on socks.

So, if a child can't cross their midline...?

Children who have difficulty with crossing their midline will often 'compensate' or avoid crossing their midline. This can include:

- Hand swapping when they get to the midline (e.g. when painting a picture),
- Moving their whole body (usually twisting their trunk) to avoid crossing over to the 'other side' of their body,
- Using one hand for one side of the body (e.g. right hand for right side, left for left side), positioning things on a table or floor in a way that doesn't require midline crossing.

Difficulties with midline crossing can cause children great frustration in many functional (dressing, feeding) and academic tasks (reading and writing). Moreover, avoiding crossing the midline can lead to delays in handedness and a natural emergence of a child's 'dominant hand', which can impact on confidence in fine motor skills.

Okay, so midline crossing is important. What can I do to support this?

Lazy 8's

There is no better way to open up that corpus collosum communication than to use one hand to create a sideways figure eight pattern, moving the arm from one side of the body to the other.

Simple positioning

Building a puzzle, playing a game such as 'Pop-up-Pirate' or 'Connect-4', place the items to the opposite side of the hand which the child is using to play the game (e.g. place to the left of child's midline if they're using their right hand). Join the dots from one side of the page to the other, positioned so a child has to draw a long line across the page, crossing their midline.

Language

Using terms such as 'helping hand' and 'doing hand' to provide an understanding that the 'doing hand' (or dominant hand) is going to do the action, while the helping hand remains still or assists.

Household tasks

If wiping a table, helping clean the car, rubbing out activities on the whiteboard, encourage the child to wipe right across their body from one side to the other.

Bat and Ball games

Simple hand games such as baseball, cricket and tennis, require bilateral coordination (also important for crossing the midline) with hands and arms moving from one side of the body to the other, crossing that midline. Even a game such a totem tennis, which can be played independently, can promote midline crossing.

Simon Says

An easy game to understand, and instructions such as "Simon says put your left hand on your right knee", can help with the midline crossing.

Cross Crawlers

Can be done standing or sitting. Take a child's right hand and place on their left knee, at the same time, raise the child's left knee. Then bring the left knee down. Change sides. Take the left hand and place it on the child's right knee, at the same time, raise the child's right knee. Then bring the right knee down. Repeat.

Any activity that requires a child to pick something up across their body, move their limbs to the other side of their body and use both hands on one side of the body, will encourage communication between the left and right sides of the brain. This will lead to greater communication between the brain and body.