



## The importance of hand dominance and the ability to cross midline.

### Terms that may be used in a report:

**Cross dominance;** this refers to a motor skill wherein the person favours one hand for some tasks and the other hand for other tasks but is not actually ambidextrous.

**Ambidextrous:** this is the term used to describe a person who is equally adept or able to use each hand and is very rare.

**Lateralisation:** this describes the development of lateral dominance, in other words one eye, hand, foot and ear becomes dominant. It also involves the development of specialised centres and functions in the left and right hemispheres of the brain. Thus, the right hemisphere sends messages to the left side of the body and the left hemisphere sends messages to right side. The ability to cross the midline is a prerequisite for appropriate lateralisation.

**Crossing the midline:** this is the ability of the one side of the body to cross over to the other side by moving across the centre line of the body, thus the right hand can cross over the midline and pick up an object from the left side of the body, for example.

**Bilateral integration:** the communication between the right and left cerebral hemispheres, which allows the two sides of the body to move together in coordination with one another.

Most people develop what is known as unilateral cerebral dominance, which means that their dominant eye, ear, hand and leg are on the same side of their body. Students, who lack unilateral dominance, or lateralisation, need to have very efficient inter-hemispheric integration, or communication between the two hemispheres of the brain, in order to compensate for the specific demands that come from having to combine information from two different perceptual areas. However, research has indicated that approximately 20% of the population has mixed dominance, which can cause perceptual, organisational and performance problems in various areas of a person's life.

### Signs of dominance not being established include;

1. The child's switching hands when writing, colouring in and drawing
2. Not using a specific hand consistently to write, draw, cut etc
3. Using different feet to kick a ball

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4. Writing on the right side of the paper with the right hand and on the left side of the paper with the left hand

Specific areas of difficulty if dominance is not established include:

1. Papers being read or written on are dramatically rotated
2. Difficulty perceiving left and right sides of objects and letters
3. Uncertainty about personal left and right body sides
4. Difficulty making decisions
5. Difficulty in accepting a change in rule or decision once it has been made
6. Delayed language acquisition
7. Difficulty comprehending instructions
8. Problems with word finding
9. Difficulty with organisational skills
10. Diminished concept of consequences
11. Poor gross and fine motor skills in general, in other words difficulties with kicking a ball, colouring in, cutting with scissors, drawing, etc.
12. Writing patterns that are inconsistent and untidy
13. Not crossing the midline
14. Possible difficulties with writing and reading activities

The reason a child has a dominant hand, foot, ear and eye is because one of the two brain hemispheres has stepped forward as the dominant hemisphere, thus taking the lead in the process of making decisions as well as the way we perform tasks. This dominance should be established by the age of five and it should correlate or be on the same side of the body by the age of six years. This means that by six, the child should demonstrate dominance on the same side for his hand, foot, ear and eye.

The importance of establishing bilateral integration is so that the child is able to establish dominance for their feet, arms, ears and eyes. So attempt some of the following as part of their everyday play:

**Level 1 (start at this level)**

This involves both sides of their body completing the same action.

1. Paint with their hands, putting paint on both of their hands and touching their hands to the paper at the same time
2. Throw and catch a large ball that requires the use of both hands at the same time
3. Skip with a rope where both feet are kept together
4. Jump on a trampoline keeping both feet together

**Level 2 (move to this level when the child can do the above activities)**

This involves both limbs working at the same time executing a different movement

1. Play a game where the child mimics the walks of different animals
2. Play with play-dough, rolling the dough into snakes and cutting them into pieces with a pair of scissors
3. Thread beads
4. Draw or colour in encouraging the free hand to support the paper

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### **Level 3 (once they are able to do level 2 activities)**

Activities at this level involve only one side of the body

1. Practice hopping on one leg
2. Kick a ball, ten times with one leg and then ten times with the other
3. Paint with the fingers and put fingerprints on the page, one finger at a time
4. Keep a balloon up in the air by only hitting it with one hand

### **Level 4**

This is when both sides of the body work at the same time completing alternating patterns of movement)

1. Bicycle riding
2. Skipping
3. Marching like a soldier
4. Running activities
5. Hitting a punching bag with alternating hands

### **Crossing the midline:**

It is advisable to speak to a physiotherapist or an occupational therapist before you begin any specialised exercises at home, however, as your child is growing up there are a number of activities that you can do with them to encourage crossing of the midline. Newbridge Outreach has prepared a range of different activity sheets you can download containing ideas.