

# Handwriting

## Occupational Therapy Tips

### Overview:

Writing is a complex task requiring the synthesis and integration of appropriately developed sensorimotor, perceptual and cognitive skills. Deficiencies in any of these skill areas can have a subsequent negative effect on a student's ability to effectively produce handwriting of a **functional** quality.

### The Basic Principles:

The key to efficient handwriting production does not only lie in the fine motor abilities of the hand but is also reliant on a good stable core base. This is why **postural considerations** are so important when addressing handwriting problems.

### Posture:

The most optimal position for writing places the ankles, knees and hips at a 90 degree angle with the forearms resting on a slanted desk.

The top of the desk should be approximately 2 inches above the elbows when the arms are at the student's side.

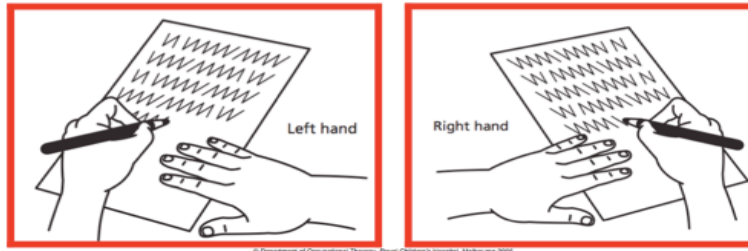
If a student is observed to lack the core stability to maintain an upright posture for writing tasks, the initial intervention must address this fundamental problem through developing the stomach muscles of the core.

The student must have a stable base to place their feet as dangling legs require a lot of energy to stay stable. Use a wooden box or telephone directory to provide a student with foot support if required.

Handwriting is a bilateral activity. The non-writing hand is essential to stabilise the page for a secure writing surface. Some students will have trouble independently doing this and will need frequent prompting.



The ideal paper slant is 30 degrees from vertical to the left for right handed students and 30 degrees to the right for left handed students.



### Grasp Patterns:

Grasp patterns are developed at a young age and are closely related to fine motor development. The patterns can be divided into two main groups; *functional* and *inefficient*.

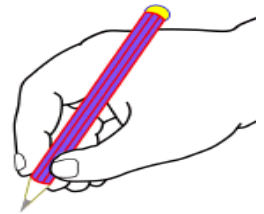
Young children can develop inefficient grasp patterns when they engage in handwriting tasks before their hands are developmentally ready for this activity.

Inefficient grasp patterns can lead to pain and fatigue. This often only manifests itself at secondary school as the writing challenges increase in duration.

A functional pencil grasp facilitates good pencil control with use of minimal muscular effort

### Functional Grasp Patterns:

1. **Dynamic Tripod:** The pencil is held with the tip of the thumb and index finger and rests against the side of the third finger. The thumb and index finger form a circle (open web space). It is the most common and most functional grasp pattern.
2. **Quadripod grasp with open web space:** The pencil is held with the tip of the thumb, index finger and third finger and rests against the side of the fourth finger. The thumb and index finger form a circle.
3. **Adapted Tripod:** The pencil is held between the index and third fingers with the tips of the thumb and index finger on the pencil. The pencil rests against the side of the third finger near its end.



### Ineffective Grasp Patterns:

- 1. Five Finger Grasp:** The pencil is held with the tips of all five fingers. The movement when writing is primarily on the fifth finger side of the hand.
- 2. Thumb Tuck Grasp:** The pencil is held in a tripod or quadripod grasp but with the thumb tucked under the index finger.
- 3. Thumb Wrap Grasp:** The pencil is held in the tripod or quadripod grasp but with the thumb wrapped over the index finger.
- 4. Finger Wrap/Inter Digital Brace Grasp:** The index and third finger wrap around the pencil. The thumb web space is completely closed.
- 5. Flexed/Hooked Wrist**  
The pencil can be held in a variety of grasps with the wrist excessively flexed. This grip is more typically seen in left handed writers.



### Is the grip functional? Is it legible?

A student's pencil grip is not a concern unless it is affecting the speed or legibility of their writing or the student is experiencing pain.

**Troubleshooting:**

<p><b>POOR LETTER FORMATION</b></p>	<ul style="list-style-type: none"> <li>• Demonstrate and have the student imitate.</li> <li>• Tape letter formation models to desktop.</li> <li>• Use the ‘Handwriting without Tears’ programme (slate chalkboard).</li> <li>• Use adapted paper underlays.</li> </ul> <p>Trace over letter models with tracing paper.</p>
<p><b>LETTER REVERSALS</b></p>	<ul style="list-style-type: none"> <li>• Use the ‘Handwriting without Tears’ method of wooden pieces and slate.</li> <li>• Teach letters in groups such as B,D,F,K,L,P,R. Start with vertical line at the top corner with curves and little lines added.</li> <li>• Use different colour pens to visualise differences in strokes.</li> <li>• Trace letters using colour markers.</li> </ul>
<p><b>POOR SPACING</b></p>	<ul style="list-style-type: none"> <li>• Use graph paper- one box per space.</li> <li>• Popsicle sticks spacers (decorate!).</li> <li>• Use non writing hand index finger as spacer.</li> <li>• Highlight margins to increase visual impact of where writing begins and ends.</li> </ul> <p>Use specially made spacers (see below in resources).</p>
<p><b>EXCESSIVE GRIP and WRITING PRESSURE</b></p>	<ul style="list-style-type: none"> <li>• Place something soft or textured under paper (Styrofoam sheet, sand paper).</li> <li>• Use a mechanical pencil or fine point pens to promote lighter writing pressure.</li> </ul> <p>Trial the use of various specialised pencil grips if the student is using an inefficient grasp pattern to reduce fatigue factor.</p>
<p><b>INADEQUATE GRIP/WRITING PRESSURE</b></p>	<ul style="list-style-type: none"> <li>• Do warm up activities before writing.</li> <li>• Have the student write on a grainy surface (sand paper).</li> <li>• Use felt pens or markers.</li> <li>• Trial a weighted pen to provide the child with more proprioceptive awareness of the implement.</li> <li>• Use a soft lead pencil.</li> </ul> <p>Use cylindrical grips.</p>
<p><b>DIFFICULTY HOLDING THE PEN/PENCIL</b></p>	<ul style="list-style-type: none"> <li>• Have an assortment of specialised grips in the classroom and trial.</li> <li>• Check that hips, knees and ankles are at 90 degrees and feet flat on a stable surface.</li> <li>• If pencil is pointing straight up into the air, loop two elastic bands together and put one around the wrist and one over the end of the pencil so it points to the shoulder.</li> <li>• Try using pencil stubs (1-2” long).</li> <li>• If the child moves his/her entire shoulder when writing, use a writing slope or large ring binder to encourage a more functional writing position and support shoulder stability.</li> </ul> <p>Use a small rubber band to remind the student of correct finger placement if an issue.</p>

If a student's handwriting difficulties persist despite teachers' interventions and the student's difficulties are negatively affecting their ability to engage with the curriculum to their potential, an assessment with an occupational therapist may be necessary to determine if motor skill deficits are an underlying factor.

### Handwriting Aids:

- 1. The Writing Slope:** The best writing surface is a slanted one. This helps to keep the head upright and supports the forearm and hand in the optimal position for writing.
- 2. Specialised Pencil Grips:** While a student's handwriting grasp is well developed by the time they are in post-primary education, specialised grips can help reduce pain and fatigue by reducing grip pressure and bringing the fingers into a more efficient position. Contact the NBSS for advice from an OT for the most appropriate grip.
- 3. Theraputty:** Using theraputty regularly is an excellent method of strengthening the intrinsic muscles of the hand in order to increase a student's fatigue tolerance and help reduce the onset of pain.
- 4. Slate Chalkboard:** This is an excellent method of helping students who still struggle with letter formation and frequently reverse letters and numbers. Refer to the ['Handwriting without Tears'](#) programme for further resources and intervention programmes.



5. **Word Spacers:** A useful method of helping students with messy and disorganised writing, to introduce appropriate and clear spacing between words.



6. **Pencil Weight:** The PencilWeight™ is helpful for individuals who experience decreased coordination, or need additional proprioceptive input during writing tasks. It can be used with most writing instruments or colouring tools, and can be used alone or in conjunction with most of the commercially available pencil grippers. Beneficial for those students who grip the pencil too lightly when writing.



7. **HandiWriter™:** The HandiWriter™ is designed to facilitate the correct positioning and holding of a writing tool. It is recommended for use with children of any age, who have inefficient grasp patterns. It can be used with many of the pencil grips currently available.





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