



## DYSGRAPHIA

### What is dysgraphia?

Dysgraphia means difficulty with handwriting. There are several different kinds of dysgraphia. Some people with dysgraphia have handwriting that is often illegible and shows irregular and inconsistent letter formations. Others write legibly, but very slowly and/or very small. When these individuals revert to printing, as they often do, their writing is often a random mixture of upper- and lowercase letters. In all cases of dysgraphia, writing requires inordinate amounts of energy, stamina, and time.

Dysgraphia can interfere with a student's ability to express ideas. Expressive writing requires a student to synchronize many mental functions at once: organization, memory, attention, motor skill, and various aspects of language ability. Automatic accurate handwriting is the foundation for this juggling act. In the complexity of remembering where to put the pencil and how to form each letter, a dysgraphic student forgets what he or she meant to express. Dysgraphia can cause low classroom productivity, incomplete homework assignments, and difficulty in focusing attention.

Emotional factors arising from dysgraphia often exacerbate matters. At an early age, these students are asked to forego recess to finish copying material from the board, and are likely to be sent home at the end of the day with a sheaf of unfinished papers to be completed. They are asked to recopy their work but the second attempt is often no better than the first. Because they are often bright and good at reading, their failure to produce acceptable work is blamed on laziness or carelessness. The resulting anger and frustration can prevent their ever reaching their true potential.

### What causes dysgraphia?

A few people with dysgraphia lack only the fine-motor coordination to produce legible handwriting, but some may have a physical tremor that interferes

with writing. In most cases, however, several brain systems interact to produce dysgraphia. Some experts believe that dysgraphia involves a dysfunction in the interaction between the two main brain systems that allows a person to translate mental into written language (phoneme-to-grapheme translation, i.e., sound to symbol, and lexicon-to-grapheme translation, i.e., mental to written word). Other studies have shown that split attention, memory load, and familiarity of graphic material affect writing ability. Typically, a person with illegible handwriting has a combination of fine-motor difficulty, inability to re-visualize letters, and inability to remember the motor patterns of letter forms.

### What are the different types of dysgraphia?

While dysgraphia may be broadly classified as follows, there are many individual variations that affect both treatment and prognosis:

1. In *dyslexic dysgraphia*, spontaneously written text is illegible, especially when the text is complex. Oral spelling is poor, but drawing and copying of written text are relatively normal. Finger-tapping speed (a measure of fine-motor speed) is normal.
2. In *motor dysgraphia*, both spontaneously written and copied text may be illegible, oral spelling is normal, and drawing is usually problematic. Finger-tapping speed is abnormal.
3. In *spatial dysgraphia*, people display illegible writing, whether spontaneously produced or copied. Oral spelling is normal. Finger-tapping speed is normal, but drawing is very problematic.

### Who is qualified to diagnose dysgraphia?

Dysgraphia cannot be diagnosed solely by looking at a handwriting sample. A qualified clinician must directly test the individual. Such a test includes writing self-generated sentences and paragraphs and copying age-appropriate text. The examiner assesses

not only the finished product, but also the process, including posture, position, pencil grip, fatigue, cramping, or tremor of the writing hand, eyed-ness and handedness, and other factors. The examiner may assess fine-motor speed with finger tapping and wrist turning.

### **What is the treatment for dysgraphia?**

Prevention, remediation and accommodation are all important elements in the treatment of dysgraphia. Many problems can be prevented by early training. Young children in kindergarten and grade one should learn to form letters correctly; kinesthetic memory is powerful and incorrect habits are very difficult to eradicate.

Muscle training and over-learning good techniques are both critical for the remediation of dysgraphia. Specifically designed exercises are needed to increase strength and dexterity. A specialist can recommend the most appropriate plan of exercises. For all students, kinesthetic writing, that is writing with eyes closed or averted, is a powerful reinforcer. Work needs always to begin with the formation of individual letters written in isolation. Alphabets need to be practiced daily, often for months.

Finally, individuals can benefit from a variety of modifications and accommodations. One effective method is to teach the use of a word processor, bypassing the complex motor demands of handwriting. Many students may find learning the keyboard by the alphabet method easier than beginning with the home keys. For many, touch typing offers a whole new opportunity to learn to spell through a different kinesthetic mode. Students should also experiment with different writing tools; some people with dysgraphia may find pencil grips helpful. Other bypass methods include allowing the student to answer questions orally or into a tape recorder instead of writing, modifying written assignments so

that less writing is required, and allowing extended time to complete tests and assignments. Copying from the board is an especially difficult task. Teachers need to provide notes. Photocopying the notes of another student is one possibility. Providing an outline, with spaces left for the student to fill in information, is another. Writing on a slightly inclined plane may be helpful.

### **Should people with dysgraphia use cursive writing instead of printing?**

For many children with dysgraphia, cursive writing has several advantages. It eliminates the necessity of picking up a pencil and deciding where to replace it after each letter. Each letter starts on the line, thus eliminating another potentially confusing decision for the writer. Cursive also has very few reversible letters, a typical source of trouble for people with dysgraphia. It eliminates word-spacing problems and gives words a flow and rhythm that enhances learning. For children who find it difficult to remember the motor patterns of letter forms, starting with cursive eliminates the traumatic transition from manuscript to cursive writing. Writers in cursive also have more opportunity to distinguish *b*, *d*, *p*, and *q* because the cursive letter formations for writing each of these letters is so different.

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### **Reference:**

Deuel, Ruthmary K., M.D. Developmental Dysgraphia and Motor Skills Disorders. *Journal of Child Neurology*, Vol. 10, Supp.1. January 1995, pp. S6-S8.



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