Your THERAPY Source

Digital Magazine for Pediatric Occupational and Physical Therapy

January 2018 Issue 98

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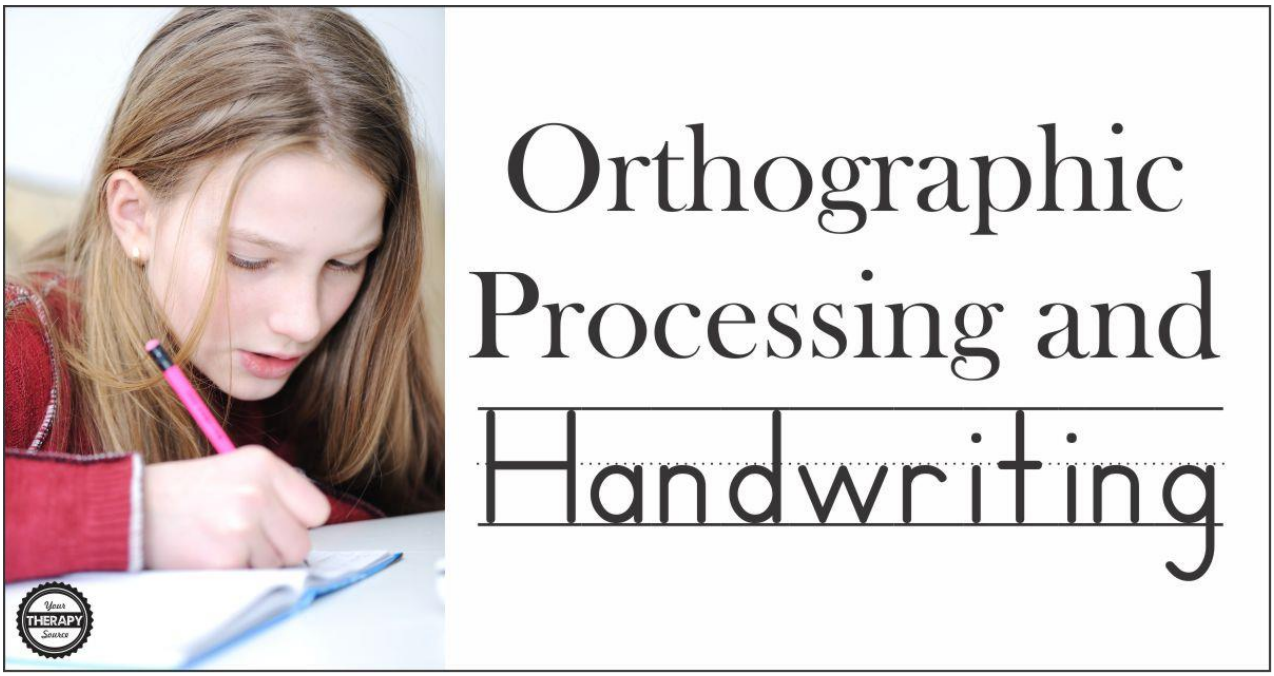
Your Therapy Source Digital Magazine January 2018

ORTHOGRAPHIC PROCESSING AND HANDWRITING



Handwriting evaluations usually include legibility, speed, spacing and pencil grip but do you consider orthographic processing? Orthographic processing is the ability to understand and recognize writing components such as spelling, capitalization, and punctuation. Students with weak orthographic processing rely very heavily on sounding out common words that should be in memory, which can result in deficiencies in decoding skills and written expression. In addition, there can be difficulties with letter recognition and letter reversals. If a student does not have the visual memory skills to recognize the shape and orientation of a letter, they are more likely to make reversal errors.

Cognitive Neuropsychology published research on how deficits in orthographic processing affect movement production during word writing. The participants included children with dyslexia and dysgraphia. To assess the impact of spelling process disorders on handwriting, participants had to write on digital tablets different categories of words: regular and irregular, common and rare, sensical (ex: futur) and pseudo, non-sensical words (ex: furut).

The results indicated the following:

- writing irregular words and pseudo-words increased movement duration and dysfluency indicating that the spelling processes were active while the children were writing the words.
- the impact of these spelling processes was stronger for the children with dyslexia and dysgraphia.
- most dyslexic/dysgraphic children presented similar writing patterns.
- the act of writing irregular and pseudowords had a particularly noticeable impact on the hand movements of dyslexic children. When the spelling was so difficult it impaired some children's efforts to write resulting in irregular, and sometimes, unreadable shapes.

The researchers concluded that the interaction between orthographic and motor processing add up to a significant cognitive load that may affect the handwriting of the children with dyslexia/dysgraphia.

Read more about spelling, handwriting and dyslexia.

References:

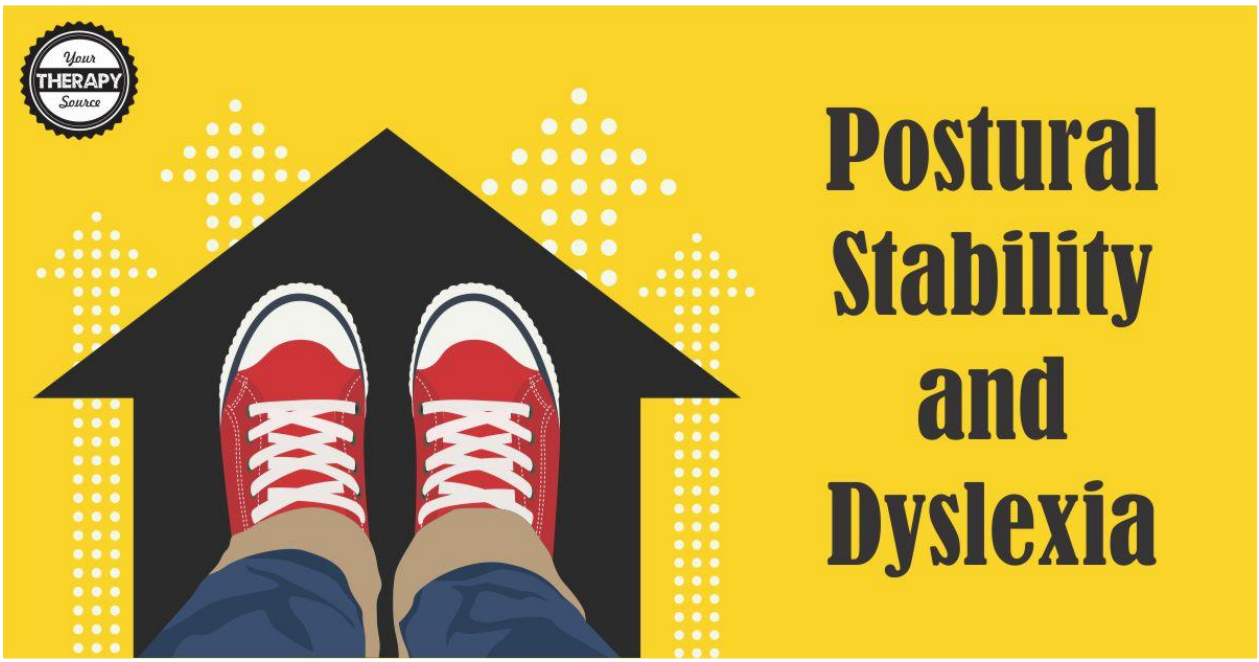
ACT Government and Training. Learning Difficulties Factsheet 7: What is orthographic processing? Retrieved from the web on 12/4/17 at https://www.education.act.gov.au/__data/assets/pdf_file/0019/714340/Learning-Difficulties-Factsheet-7.pdf

CNRS. (2017, November 28). Dyslexia: When spelling problems impair writing acquisition. *ScienceDaily*. Retrieved December 4, 2017 from www.sciencedaily.com/releases/2017/11/171128112649.htm

Kandel, S., Lassus-Sangosse, D., Grosjacques, G., & Perret, C. (2017). The impact of developmental dyslexia and dysgraphia on movement production during word writing. *Cognitive Neuropsychology*, *34*(3-4), 219-251.

Handwriting Stations includes the materials to create a handwriting station on a tri-fold or in a folder. The station includes proper letter formation for capital and lower case letters, correct posture, pencil grip, warm up exercises, letter reversals tips and self check sheet. In addition, there are 27 worksheets for the alphabet and number practice (Handwriting without Tears® style and Zaner-Bloser® style). This download is great for classroom use, therapy sessions or to send home with a student. Find out more information.

POSTURAL STABILITY AND DYSLEXIA



Gait and Posture published research on postural stability and dyslexia. The participants included 24 children with dyslexia and 24 children without dyslexia who were evaluated to determine the influence of foot soles and visual information on postural control. To evaluate postural stability, the surface area, the length and mean velocity of the center of pressure and the Romberg Quotient (a percentage of the measured instability during eyes closed to that during eyes open) was measured in two postural conditions (with and without a 4 mm foam under feet) and in two visual conditions (eyes open or closed).

The results indicated the following:

- the surface area, length and mean velocity of the center of pressure were significantly greater in the dyslexic children compared to the non-dyslexic children, particularly with foam and eyes closed.
- the Romberg Quotient was significantly smaller in the dyslexic children and significantly greater without foam than with foam.

The researchers concluded that children with dyslexia are not able to compensate with other available inputs when sensory inputs are less informative (with foam, or eyes closed), which results in poor postural stability. In addition, the researchers suggested that the impairment of the cerebellar integration of all the sensory inputs is responsible for the postural deficits observed in children with dyslexia.

The lead author of the study, Nathalie Goulème, Ph.D., recommends:

- exercises on a balance platform, challenging children to maintain their stability in different conditions i.e. eyes closed, unstable or visual stimulation in order to improve postural control and utilize efficient sensory strategies.
- children to participate in sports, games and leisure activities that require eye-hand coordination and balance skills.

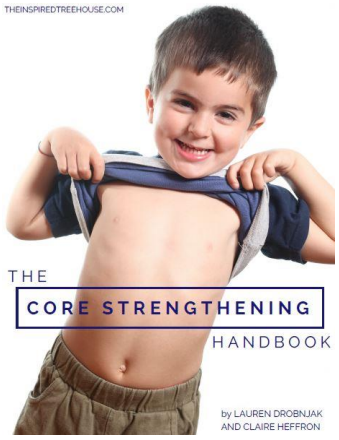
When children have difficulties maintaining postural control it involves more energy, therefore during higher cognitive load tasks such as reading attention is shared possibly decreasing learning capabilities.

Reference:

Bell, Katie. (2017) Dyslexia affects ability to adjust to impaired sensory feedback. LER Pediatrics. Retrieved from the web on 12/7/17 at http://lerpediatrics.com/issues/august/dyslexia-affects-ability-to-adjust-to-impaired-sensory-feedback/

Goulème, N., Villeneuve, P., Gérard, C. L., & Bucci, M. P. (2017). Influence of both cutaneous input from the foot soles and visual information on the control of postural stability in dyslexic children. *Gait & Posture*, *56*, 141-146.

If you need more core strengthening activities for children check out:



The Core Strengthening Handbook: This download includes 50+ activities including:

- Quick and Easy Core Strengthening Activities for Kids
- Core Strengthening Exercises With Equipment
- Core Strengthening Play Ideas

The Core Strengthening Exercise Program: This digital download includes exercises to help make core strengthening fun and entertaining for kids while promoting carryover in the classroom and at home! FIND OUT MORE.

TASK-ORIENTED TRAINING FOR CHILDREN WITH HEMIPLEGIA

The *Journal of Physical Therapy* published research on task-oriented training for children with hemiplegia. The researchers investigated the effects of task-oriented training (TOT) on hand dexterity and strength in 12 children with spastic hemiplegic cerebral palsy. Six children were assigned to the experimental group who received the task-oriented training for 20 minutes of a 60-minute conventional occupational therapy session. The other six children served as the control group and received 60 minutes of conventional occupational therapy.

The task-oriented training sessions consisted of activities such as repeated reaching, ring activity, and stacking cup to catch the target using the involved hand with therapist feedback provided. Following 4 weeks of 2 sessions per week, the following results were seen from dynamometer testing and the Box and Block Test (number of blocks moved from one box to another in one minute):

- the task-oriented group showed a significant improvement in hand dexterity but not in strength
- the control group did not show a significant improvement in hand dexterity or strength

The researchers recommend further research with a larger sample size and to determine any long-term effects.

Reference: Moon, J. H., Jung, J. H., Hahm, S. C., & Cho, H. Y. (2017). The effects of task-oriented training on hand dexterity and strength in children with spastic hemiplegic cerebral palsy: a preliminary study. *Journal of physical therapy science*, *29*(10), 1800-1802.

KEYBOARDING VERSUS HANDWRITING SPEED AND LEARNING DISABILITIES

Computers & Education published research investigating keyboarding versus handwriting speed and learning disabilities. Many individuals handwrite faster than they can keyboard. In order to close this gap, the researchers offered a touch-typing program which was completed by 17 neurotypical higher education students and 25 students with specific learning disabilities (i.e reading and/or writing disabilities). The immediate and long-term effect of the touch-typing program indicated the following:

handwriting remained a faster writing mode than keyboarding.

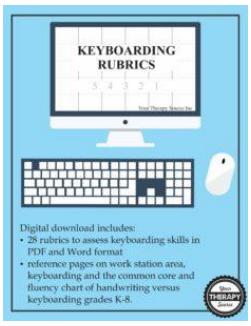
although at the delayed post-test (approximately 3 months following the completion of the program), keyboarding became faster than handwriting only for the group of students with specific learning disabilities.

The researchers concluded that efficient and automatic keyboarding for writing is important for the general population and especially students with specific learning disabilities.

Read 5 Evidence-Based Factors that Effect Handwriting Speed.
Read results from the handwriting versus keyboarding survey.
Download FREE Keyboarding Words Per Minute Goal Tracker.
Read more on workstation positioning.
Read research on Manuscript, Cursive or Keyboarding.

Reference: Weigelt-Marom, H., & Weintraub, N. (2018). Keyboarding versus handwriting speed of higher education students with and without learning disabilities: Does touch-typing assist in narrowing the gap?. *Computers & Education*, *117*, 132-140.

If you need to collect data on keyboarding skills check out Keyboarding Rubrics. This is an electronic book of 28 rubrics to assess keyboarding skills.



SLEEP, BEDTIME ROUTINES, ANXIETY, AND AUTISM

The association between sleep, bedtime routines, anxiety, and Autism Spectrum Disorder in children is an important quality of life issue although there is a limited amount of research regarding this topic. Bedtime routines are a component of sleep hygiene defined as 'a set of observable, repetitive behaviors which directly involve the child and at least one adult acting in an interactive or supervisory role … in the hour preceding bed each night'.

Some research indicates that parent-reported sleep quality in children with ASD is associated with a consistent bedtime routine such as a consistent bedtime and the same sleep location. In addition, what occurs prior to bedtime can affect the quality of sleep. Certain pre-bedtime activities have been shown to disrupt sleep quality. Pre-bedtime activities that can increase physiological arousal and delay sleep onset include playing video games, active play, watching television and snacks/drinks. Avoiding these activities prior to bedtime may help improve sleep onset.

As children get older they become more independent at bedtime and parental interaction begins to decrease. Although, the increase in age in typically developing children is also associated with a higher frequency of maladaptive pre-bedtime activities (i.e. video games, tv, etc) during the hour before bedtime.

For children with ASD there is an association between sleep problems and anxiety symptoms. Research indicates that parent-reported sleep problems predicted later anxiety in school-aged children with ASD. In a small study of 21

children with ASD, there was a reduction in sleep quality characterized by an increase in anxiety symptoms and an increased frequency of maladaptive activities in the hour before bedtime.

Children with ASD should have a consistent bedtime routine and reduce maladaptive pre-bedtime activities to possibly increase sleep quality and decreased anxiety symptoms.

Reference: Fletcher, F. E., Foster-Owens, M. D., Conduit, R., Rinehart, N. J., Riby, D. M., & Cornish, K. M. (2017). The developmental trajectory of parent-report and objective sleep profiles in autism spectrum disorder: Associations with anxiety and bedtime routines. *Autism*, *21*(4), 493-503.

Autism Sleeps™ is an easy-to-read manual to help people with sensory processing difficulties, Autism Disorders or a restless mind, achieve an overall healthy sleep experience. It serves as a thorough resource for sleep sensory strategies and suggestions for preparing the "sleep environment". Sample bedtime and wake-up routines are provided as templates, especially to guide parents of children with sleep difficulties. Find out more information.

AUTISM Sleeps - Sensory Strategies to Help Restless Minds Sleep!
Available for immediate download or print version at YourTherapySource.com

Read more about autism and sleep:

Aquatic Exercise and Sleep in Children with Autism

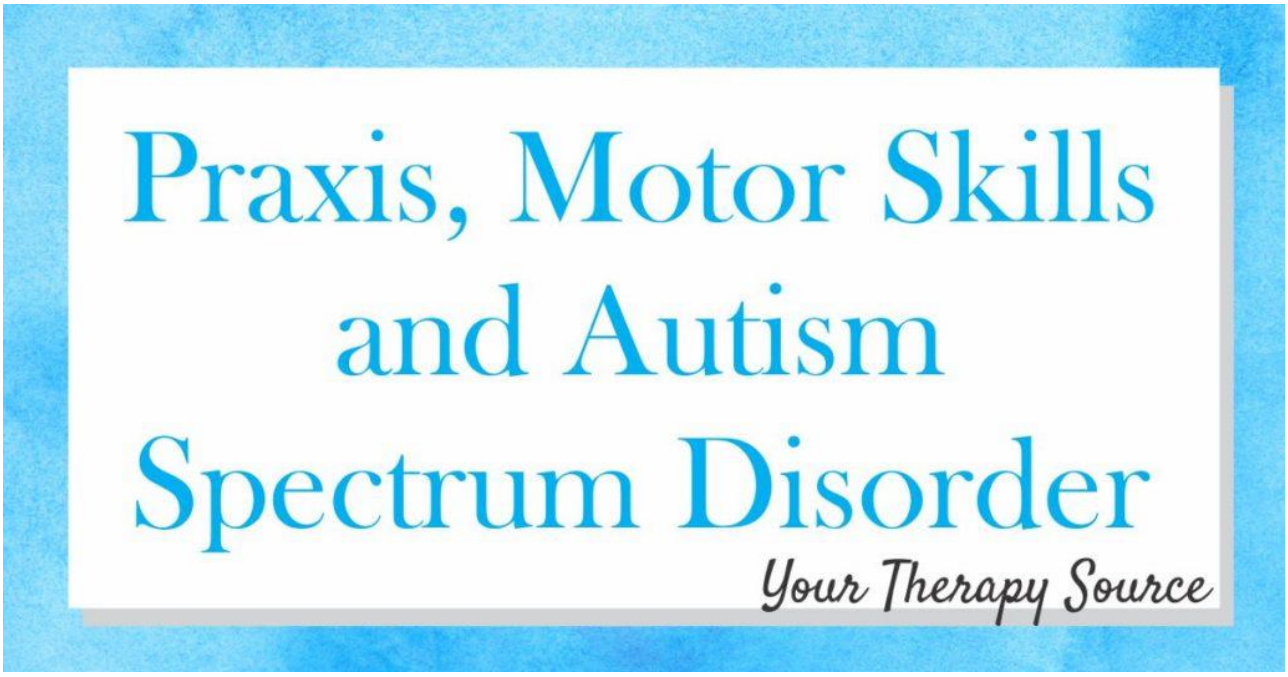
Works, ADLs, Sleep and Autism

Sensory Over-Responsivity, Autism, and Sleep

Weighted Blankets and Sleep Problems in Children with ASD

Media Use, Boys with Autism and Sleep

PRAXIS, MOTOR SKILLS AND AUTISM SPECTRUM DISORDER



Research in Developmental Disabilities examined the relationship of praxis, motor skills, and Autism Spectrum Disorder (ASD). As pediatric therapists, we are well aware of the basic motor skill deficits in balance, gait, and coordination in children with ASD but it can be hard to establish relationships between cognition, symptom severity, and motor performance in ASD. Using the Bruininks-Oseretsky Test of Motor Proficiency and the Bilateral Motor Coordination subtest of the Sensory Integration and Praxis Tests, recent research assessed three groups of children (5-12 years of age) – children with ASD with high IQ (HASD), children with ASD with low IQ (LASD), and typically developing (TD) children. In addition, children were also evaluated performing simple and complex rhythmic upper and lower limb actions on their own (solo context) and with a social partner (social context).

Results of the research regarding the relationship of praxis, motor skills, and Autism

1.When compared to the control group, both ASD groups exhibited:

- lower gross and fine motor scores
- greater praxis errors in total and within various error types
- lower movement rates
- greater movement variability

- weaker interpersonal synchrony

2. When compared to the higher IQ ASD group, the lower IQ ASD group had lower gross motor scores and greater mirroring errors.

3. Regardless of IQ scores, all of the children with ASD exhibited a variety of motor impairments.

4. Fine and gross motor performance significantly correlated with IQ but not with autism severity.

5. Praxis errors (mainly, total, overflow, and rhythmicity) strongly correlated with autism severity and not IQ.

The researchers concluded that motor evaluations and interventions should be the standard of care for children with ASD. In addition, dyspraxia should be recognized as an important part of the definition of ASD.

Reference: Kaur, M., Srinivasan, S. M., & Bhat, A. N. (2018). Comparing motor performance, praxis, coordination, and interpersonal synchrony between children with and without Autism Spectrum Disorder (ASD). *Research in developmental disabilities*, *72*, 79-95.

Looking for motor interventions for children with coordination or motor deficits? Check out the following –

TOE WALKING AND SEVERE AUTISM SPECTRUM DISORDER

Autism Research published research evaluating toe walking and severe Autism Spectrum Disorder (ASD). Two studies were carried out. In study number one, 69 individuals with ASD and intellectual disability (average age 14 years old) were observed in the clinic and interviews took place with the main caregivers.

The results indicated the following for toe walking and severe Autism Spectrum Disorder:

- toe walking was present in 32% of the subjects.
- toe walking occurred when standing, walking and running (45.5%), when walking and running (18.4%), or only when running (36.4%).
- toe walking subjects were more frequently nonverbal
- there was no significant difference in ASD severity between toe walking and non-toe walking subjects.

The second study was to determine if the floor surface had an effect on toe walking. For this study, 14 individuals with ASD participated (7 toe walkers and 7 non-toe walkers). The results indicated that a soft floor surface (foam mats) made a substantial difference in reducing the toe walking during static and/or dynamic tasks.

The researchers concluded that further evaluation is needed to clarify the potential pathophysiological implications of this toe walking.

Reference: Valagussa, G., Trentin, L., Balatti, V., & Grossi, E. (2017). Assessment of presentation patterns, clinical severity, and sensorial mechanism of tip-toe behavior in severe ASD subjects with intellectual disability: A cohort observational study. *Autism Research*.

Read more about toe walking:

Motor Skills, Sensory Processing, and Toe Walking

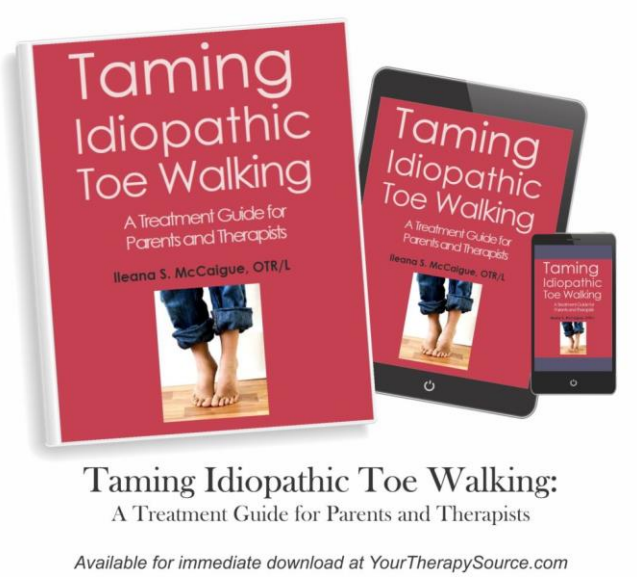
Prevalence of Toe Walking

Idiopathic Toe Walking and Left Handedness

Toe Walking and Autism

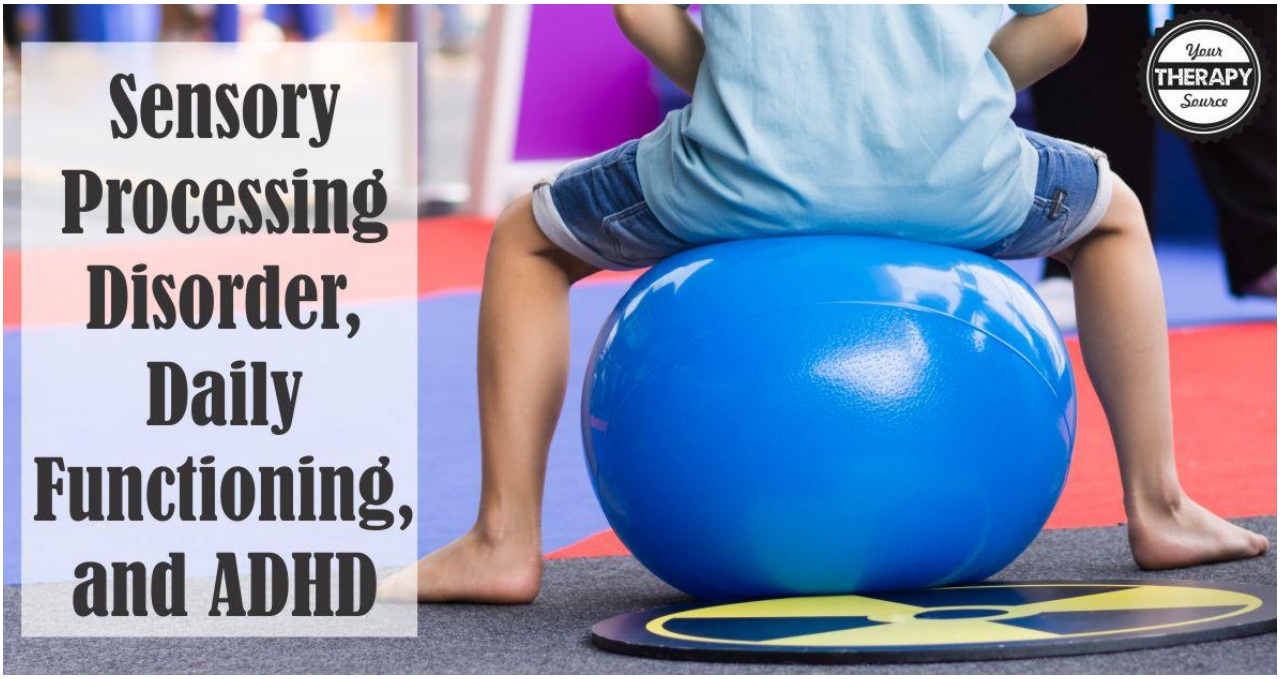
Idiopathic Toe Walking and Botox

Taming Idiopathic Toe Walking: A Treatment Guide for Parents and Therapists is a great electronic or print book that provides a non-invasive, efficient and effective sensory treatment strategy for children and adolescents that display atypical toe walking.



Written by renowned Occupational Therapist, Ileana S. McCaigue, OTR/L, 'Taming Idiopathic Toe Walking: A Treatment Guide for Parents and Therapists' serves as a definitive manual for children and adolescents that display atypical toe walking behaviors. Inspired by the overcoming of toe walking by numerous children during her years of practice, McCaigue's professional expertise and personal experiences are fused into a powerful resource. FIND OUT MORE.

SENSORY PROCESSING DISORDER, DAILY FUNCTIONING, AND ADHD



The *European Journal of Paediatric Neurology* published research on sensory processing disorder, daily functioning, and ADHD. The study included 77 children, ages 8-11 years old (37 with ADHD and 39 typical controls). Each child was evaluated using the Conner's Parent Rating Scale-Revised: Short Form (CPRS–R:S), the Short Sensory Profile (SSP) and the Children Activity Scale for Parents (ChAS-P). These tests were used to assess ADHD symptoms, sensory processing symptoms, and difficulties in daily function.

The results indicated the following:

- the Short Sensory Profile total score of the ADHD group was significantly lower than that of the control group.
- 65.8% of the children with ADHD had an abnormal Short Sensory Profile score indicating sensory processing disorder.
- only 2.6% of the typical children control group had an abnormal Short Sensory Profile score.
- the daily function of children with ADHD was significantly lower than in typical controls as indicated by the Children Activity Scale for Parents scores with the largest differences found in activities that require executive function skills.

- children with ADHD and abnormal Short Sensory Profile scores, had a significantly lower daily functional ability than controls.
- children with ADHD but normal Short Sensory Profile scores had only marginally lower daily functional abilities than controls.
- males had lower mean ChAS-P scores than females, however, these differences were statistically significant only among the children with ADHD.

The researchers concluded that sensory processing disorder may be a possible specifier of ADHD in children that is associated with functional consequences.

Reference: Mimouni-Bloch, A., Offek, H., Rosenblum, S., Posener, E., Silman, Z., & Engel-Yeger, B. (2017). Association between sensory processing disorder and daily function of children with attention deficit/hyperactive disorder and controls. *European Journal of Paediatric Neurology*, *21*, e171.

Do you need simple handouts to help explain sensory processing disorder and how it can affect function? The What? Why? and How? series helps to explain different topics to students, parents, and teachers. Each hand out includes a definition of what the topic is, why it is important and how you can help.

Series 3 includes one page hand outs on the following topics:

Sensory Processing

Proprioception

Vestibular System

Tactile System

Sensory Registration

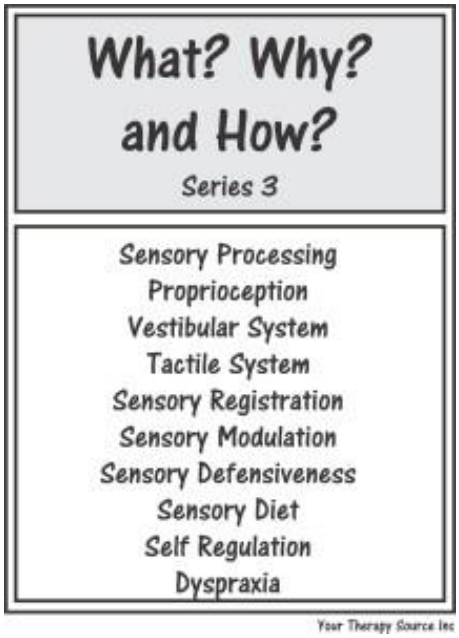
Sensory Modulation

Sensory Defensiveness

Sensory Diet

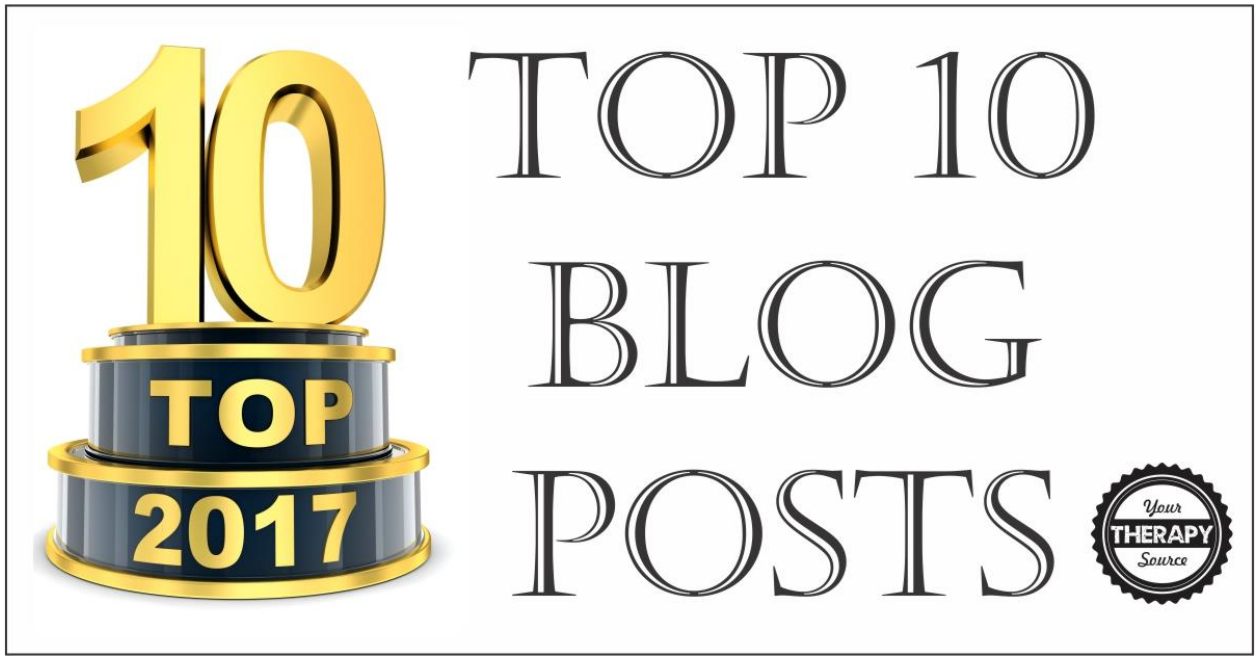
Self Regulation

Dyspraxia



FIND OUT MORE.

TOP 10 BLOG POSTS FROM 2017 AT YOUR THERAPY SOURCE



Ever wonder what people read the most here at Your Therapy Source? Well, here is your answer from 2017. Here are the top 10 blog posts from 2017:

10. Color, Cut, Glue Summer

9. Norms for Core Strength in Children

8. 26 Calming Strategies for the Classroom

7. Writing SMART Goals for School-Based OTs and PTs

6. Find and Color Christmas Doodle Find

5. Practice Scissor Skills – Color, Cut, Glue Spring

4. Five Tips to Help Children Develop Body Awareness

3. Fifteen Free Visual Spatial Printables

2. Self Regulation Activities

And the number ONE blog post from 2017 was…

Ten Fun Games to Practice Self Regulation Skills

10 AWESOME IDEAS TO START THE NEW YEAR FOR PEDIATRIC THERAPISTS

Do you like to start fresh in the new year? Do you set goals for yourself to accomplish during this time of year? Being a school-based therapist is a wonderful job but one of the most difficult aspects of the job is managing crazy schedules in a very tight time frame. It can be a struggle to fit in paperwork time on top of therapy sessions so setting goals to work smarter not harder can be amazingly helpful for pediatric therapists. Here are 10 awesome ideas to start the new year for pediatric therapists:

5 Ways to Improve Productivity – read tips on how to work smarter not harder

School-Based Therapy Resolutions – read about past resolutions and how they went

Self Improvement to Help Achieve Goals: this is a self-improvement worksheet to complete to establish what steps need to be taken to achieve a goal.

Helping Children to Establish Healthy Resolutions – kids need new goals for overall health

5 Quick Fixes to Improve Therapy Sessions – from room arrangement to timing these tips will help with each session

Integrate Therapy Goals into the Curriculum – infuse therapy into the curriculum

How to Be a Successful Pediatric Therapist Coach – A huge benefit to coaching is providing parents and teachers the skills to support their child's learning throughout daily routines, which can lead to an increase in the caregiver's involvement and follow through.

5 Simple Tips to Help Children Reach Their Goals and 5 Tips on Tackling Big Goals: easy suggestions to help the children reach their goals

What is a Growth Mindset? Learn how about self-perception and how it can help you succeed.

5 Reasons to Use Student Generated Data Collection – This method can help cut down on paperwork time and maximize goal achievement.

What do you hope to improve this school year? Start out by finishing this statement – "This year I will…"

Need a laugh when you look back over the years as a pediatric therapist? Play Have You Ever Therapist Style.

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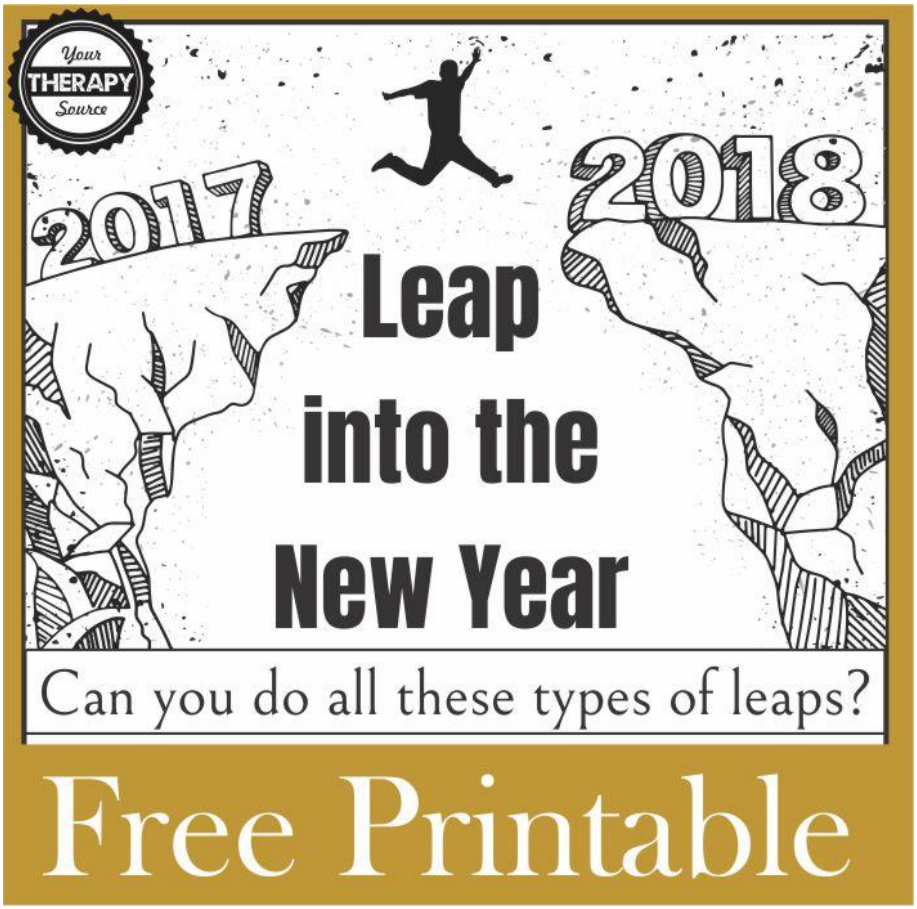
LEAP INTO THE NEW YEAR ACTIVITY FOR 2018



Can you believe it will soon be 2018? I certainly can not. The Fall always seems to go by so quickly. Back to school quickly morphs into Halloween, then Thanksgiving, the December holidays and BOOM New Year's Eve. The younger you are the better this celebration. Kids and teenagers love to stay up until midnight and parents not so much haha! The latest themed sensory motor packet is to help celebrate the new year.

This Leap into the New Year Activity for 2018 is from the New Year's Sensory Motor Packet. Children can practice all the different types of leaps. Print and test your leaping skills.

DOWNLOAD LEAP INTO THE NEW YEAR 2018

Check out the complete New Year's Sensory Motor packet.