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Journal of Attention Disorders published research investigated the acute effects of aerobic exercise on cognitive flexibility in children with ADHD along with heart rate variability. Using a cross-over design, 36 participants (18 children with ADHD and 18 neurotypical peers) completed cognitive assessments following exercise (20-min moderately intense cycling) and a physically inactive control condition. Behavioral performance was assessed using the Alternate Uses task and heart rate variability was recorded via electrocardiography during the cognitive task. Cognitive flexibility is generally understood as the ability to adjust one’s behavior to changing task demands and allows a change of perspectives.

The results of the acute effects of aerobic exercise on cognitive flexibility in children with ADHD indicated the following:

- both groups (ADHD and control group) showed higher cognitive flexibility following aerobic exercise.
- participants showed a parasympathetic withdrawal during the task in the exercise condition, which was indexed by increased Low Frequency/High-Frequency quotient decreased.
The findings suggest that an increase in task-related arousal by the withdrawal of the parasympathetic modulation seems to be one of the mechanisms underlying exercise-induced benefits for this particular component of executive function. Since executive functions in children are challenged in school, classes, tests, etc., a short aerobic exercise session can help children to reach an adaptive state that allows optimal behavioral response in a situation requiring cognitive flexibility.


Movement Flashcards – Movement Flashcards digital download includes 10 aerobic exercises with flashcards templates. Students can get physical activity while reviewing material. The 10 aerobic activities include: run in place, jumping, hopping, squats, lunges, skipping, twists, cross crawls, jumping jacks and marching. Each page includes a picture image of the aerobic exercise along with a blank template for you to type in 18 flash cards. You choose what to work on for academic material.

Read more on:

Yoga and ADHD
Physical Exercise and Functional Outcomes in Children with ADHD
Physical Activity on Affect and Executive Functioning in Children with ADHD
ADHD, Motor Activity, and Executive Functions
Do you find that children with Autism Spectrum Disorder (ASD) experience higher levels of sensory dysfunction at home or school? Recent research investigated sensory processing at home versus school in children with Autism Spectrum Disorder (ASD). Each of the participants (41 children with ASD and 38 neurotypical children) were evaluated with the Sensory Processing Measure. The goal was to compare different types of sensory modulation (over-responsiveness, under-responsiveness, and sensory-seeking behavior) in different sensory modalities.

The results comparing sensory processing at home versus school in children with ASD indicated the following:

- the children with ASD had scores that indicated higher levels of dysfunction on all the assessed measures in both environments, with greater differences obtained in the school environment.
- under-responsiveness was the sensory response that showed differences in all the sensory modalities and in both environments.
- over-responsiveness and sensory-seeking responses showed no differences for some of the sensory modalities in the home environment.
The researchers concluded that under-responsiveness may be the most prominent and exclusive sensory symptom of children with ASD, with the school being the environment where sensory differences seem to be observed more.


Typical Classroom Sensory-Based Problem Behaviors & Suggested Therapeutic Interventions – Download of suggested therapeutic interventions based on 12 different problem behavior categories. Find out more.

Read more on:

- Sensory Behaviors in Children with Autism at Home
- Sensory Integration Therapy and Occupational Performance in Children with Autism
- Sensory Over-Responsivity, Autism, and Sleep
EDUCATING CAREGIVERS IMPROVES SELF CARE AND MOBILITY SKILLS IN CHILDREN WITH CEREBRAL PALSY

Do you spend time educating parents on how to carry over therapeutic activities? Most pediatric therapists do and recent research indicates it may be an integral part of improving self-care and mobility skills in children with cerebral palsy. Clinical Rehabilitation published a randomized, single-blind controlled study that included 63 children (ages 1-12 years of age) who were randomly assigned to two groups: an educational program for primary caregivers and conventional rehabilitation or conventional rehabilitation alone.

The educational program instructed caregivers to encourage the child to participate in everyday activities (6 days per week) of self-care such as feeding, dressing, personal grooming and sphincter control; mobility activities such as transfers of postures and maintaining positions like sitting, kneeling and standing. The caregivers collected data on whether the activities were completed and any problems that were encountered.

Each participant was evaluated using the Gross Motor Function Classification System, Gross Motor Function Measure and daily functioning with the Pediatric Evaluation of Disability Inventory. Clinical outcomes were measured following the 12 weeks of treatment.

The results of the single-blind controlled study indicated the following:

- the combined educational program and rehabilitation program when compared with conventional rehabilitation alone, yielded significantly greater benefit in the self-care domain of the Functional Skills Scale, self-
care and the mobility domain of the Caregiver Assistance Scale of Pediatric Evaluation of Disability Inventory.

The researchers concluded that self-care and mobility improved in children with cerebral palsy with the addition of an educational program for primary caregivers in addition to conventional rehabilitation.


Need ideas to encourage carryover of therapeutic activities for children with cerebral palsy?

Therapeutic Play Activities for Children digital download includes 100 play activity pages and 12 tip sheets. The play activities encourage the development of fine motor skills, bimanual skills, rolling, crawling, tall kneeling, standing balance and cruising with a strong focus on children with cerebral palsy. FIND OUT MORE INFORMATION.
10 SIMPLE ACTIVITIES TO IMPROVE GRIP STRENGTH IN CHILDREN

Developing grip strength in children is super important for everyday functional skills. Kids need to have adequate muscle strength to use the monkey bars, hold a writing utensil, use school supplies and getting dressed. Young children can work on improving grip strength through play and everyday activities. Here are 10 simple activities to improve grip strength in children.

**USE PLAY DOUGH** – All of the squishing, pinching, rolling and squeezing help to strengthen all the muscles in the fingers and hands. Check out [Creative Clay Activities](#) for more ideas!

**USE STRESS BALLS** – Need to keep those fingers busy with a fidget during to help a student focus? Make a stress ball. The child can fidget and increase grip strength at the same time. Find out [how to make a stress ball here](#).

**WATER SQUEEZE** – Squeeze water out of washcloths or sponges.

**MAKE SLIME** – Kids are super crazy about slime right now. All the stirring, mixing and kneading slime helps to strengthen the muscles in the hands.

**CARRY SHOPPING BAGS** – Have the children help with carrying in the groceries or shopping bags from the mall.

**TUG OF WAR** – Play tug of war with a small dish towel encouraging the child to hold on tight while you pull the cloth.

**HELP COOK** – Children can help with kneading bread dough, using a garlic press, rolling out cookie dough, peeling vegetables and more. All of these common chores help to increase grip strength.

**PLAY OUTSIDE** – Dig in the dirt, shovel sand, build a castle, climb a tree, use monkey bars – all of these tasks give the hand a great workout!
USE A WATER SPRAYER – Assign chores such as spraying the plants, washing the windows or cleaning the table tops using a water spray bottle. The child can squeeze the trigger to spray the water.

USE A HOLE PUNCH – Using a hole punch will help to improve grip strength with all that squeezing.

Download this HUGE Hole Puncher bundle pack to work on hand strengthening with ELA standards.

Check out Hole Punch Palooza to also encourage: hand strengthening, handwriting and drawing practice, visual discrimination skills, visual motor skills, right/left discrimination and bilateral coordination.

Looking for MORE easy, fun ideas for hand strengthening activities for kids that require little to no equipment and no, extensive preparation? The Hand Strengthening Workbook here.
HOW TO TEACH ORGANIZATIONAL SKILLS TO HIGH SCHOOL STUDENTS

Do you work with older students who struggle with organizational and time management skills for large assignments or projects? Many students with ADHD can have a difficult time managing assignment and staying on tasks. These skills can be taught to help students be independent at high school and college. Here are some suggestions on how to teach organizational skills to high school students and college students.

**Teach how to manage tasks** – Instruct the students how to break large projects or tasks into smaller chunks to manage. It can be very stressful for students to start a large project – it may feel overwhelming or impossible. Using a task analysis approach, write down the parts of the overall project to manage one part or requirement at a time.

**Teach time awareness and scheduling** – Begin with teaching students how to create to-do lists, calendar and watches/timers to improve time management. Try out different calendars (i.e paper versus digital). Practice estimating how long a task will take to complete. When done with the task compare the estimated time with the actual time it took to complete the task. This helps give feedback to students on their perception of time. Estimating the time accurately is an essential skill for long-term goals and planning.

**Teach self-motivation techniques** – Create personal reward lists for self-reinforcement. For example, if you complete a certain task within 20 minutes you would earn one of your personal rewards. Having something to look forward to can help students when they begin to feel unmotivated.
Teach how to use an organizational system – Help students to identify priorities, transfer to-do lists to schedules/calendars and rank task based on importance. You can teach students the Eisenhower Box Method by ranking tasks based on a 4 point scale:

Do First – First focus on important tasks to be done the same day.
Schedule – Important, but not-so-urgent tasks should be scheduled.
Delegate – What’s urgent, but less important, delegate to others.
Don’t Do – What’s neither urgent nor important, don’t do at all.

You can download worksheets to help support this organizational system for high school and college students here.

References:

Transition means change. Many students can have difficulty moving from one activity to the next. In early childhood classrooms, transitions from playtime to clean up time can be challenging. For older students, moving from recess back to the classroom can be disruptive and hard to manage. Whatever the age range or activities, here are some tips on how to help students transition between activities.

1. FOLLOW A ROUTINE – Establish a consistent schedule or routine for the student to follow. Provide visual picture symbols if necessary for the student to follow.

2. MAKE SURE THERE IS ENOUGH TIME – Allow the student enough time to experience the activity before moving on to the next activity. Many children can exhibit negative behaviors if they never had any time to participate in the activity to begin with.
3. PROVIDE CLEAR AND CONCISE DIRECTIONS – Make sure the student understands what the directions are or what is expected of him/her. Some students will need to be taught how to follow the routine. This takes practice and time. One or two step motor commands should be effective and concise.

4. GIVE WARNINGS – Provide verbal and physical cues that a transition is approaching. There are plenty of visual timers that can be used to provide warnings for transitions.

5. DECREASE THE NUMBER OF TRANSITIONS – Modify schedules to have the least amount of transitions possible. For example, if a student is already out of class to go to the nurse or another related service it may be a good time to schedule therapy to reduce the number of transitions in and out of the classroom. Another option would be to provide push in therapy services to avoid transitioning in and out of the room.

6. SING – Sing songs or chants to signal transitions. Use the same songs each time so children can anticipate what is to happen next.

7. SNEAK IN MOVEMENT TIME DURING TRANSITIONS – If possible, transition time is a wonderful time to sneak in some physical activity. Remember to teach children what STOP and GO means. Here are 56 transitions for throughout the school day.

8. OFFER FEEDBACK – Provide feedback about transitions. If a student does a good job transitioning explain to him/her what they did correctly. If changes need to be made offer suggestions on how to improve the transition the next time.
9. DECREASE PROMPTS – As the student’s skills improve during transitions, encourage the student to transition independently.

10. ENCOURAGE SELF-MONITORING – Ask the students to reflect on what went wrong and what went right during the transition process. Try using the “Are You Ready to Work?” clip chart for self-monitoring.

11. REINFORCE POSITIVE BEHAVIORS – Provide positive reinforcement for other students who complete transitions successfully. Students will learn from each other and model other behaviors.

12. BE PREPARED – When a new activity is starting, be ready to go. When there is less downtime the transition may go smoother.

13. PRACTICE, PRACTICE, PRACTICE – Students need to be taught how to transition properly and they need to practice those skills over and over again.

14. TEACH CALMING STRATEGIES – Sometimes students may need some extra help when transitioning from recess, gym class or the lunchroom. Teach the students calming strategies or deep breathing in order to get their bodies ready to work.

Calming Strategies – Classroom edition includes 26 full page strategies for students to use in the classroom to help them to calm down. The packet also includes smaller versions of the cards to print and put on a key ring and a choice board with small picture icons. It is in full color and black and white.
Recent research examined the relationship between idiopathic toe walking and ADHD. Idiopathic toe walking was defined as a gait pattern with no contact between the heels and the ground in children older than 3 years. The study included 312 children diagnosed with ADHD, with a normal neurological examination, with no alterations in MRI scan, cognitive disorder or autism. A complete medical history and goniometric measurements were obtained for each of the participants (mean age 11 years old, 73.7% boys). The participants were classified according to ADHD subtypes:

- 53.8% had ADHD combined subtype
- 44.9% had inattentive ADHD
- 1.3% had hyperactive ADHD

The results of the study on idiopathic toe walking and ADHD indicated the following:

- idiopathic toe walking was observed in 20.8% of patients, mostly in the combined subtype.
- Achilles shortening was present in 49.2% of the participants with idiopathic toe walking.
- idiopathic toe walking was associated with sociability disorders, an absence of pain in legs and a family history of toe walking.
- 11% of the participants had visited a doctor for toe walking.
The researchers concluded that children with ADHD have an increase in idiopathic toe walking and Achilles shortening, especially if they presented with a social communication disorder or a family history of toe walking. It is helpful when idiopathic toe walking is diagnosed early in order to begin effective treatments.


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

The T.W.O. Tool – Toe Walking Observation Screening Tool utilizes a parent survey and clinical assessment to screen possible sensory processing and motor coordination difficulties. The tool is scored to help determine if the child exhibits sensory-based toe walking of unknown origin, as opposed to other clinical observations that may indicate an origin that is not primarily sensory-based.

Read more articles on toe walking:

Toe Walking and Severe Autism Spectrum Disorder
Vibration Threshold and Toe Walking in Children
Motor Skills, Sensory Processing, and Toe Walking
Idiopathic Toe Walking and Left-Handedness
Toe Walking and Autism
HOW TO HELP CHILDREN IMPROVE EXECUTIVE FUNCTIONING

Executive functions are a popular “buzz word” right now and with good reason. In a nutshell, executive functions include the following skills: inhibitory control, working memory, cognitive flexibility, reasoning, problem-solving and planning. These super-important skills can be improved with training which is good news since they are necessary for at school, home and work. Executive function training includes activities such as computer-based training, working memory activities, traditional tae-kwon-do, aerobics, mindfulness, and yoga.

Here are several suggestions on how to help children improve executive functioning.

**Act Early** – children who need to improve executive functioning improve the most with executive functioning training.

**Try activities that address a variety of executive functioning skills** – If you work on working memory skills, the child’s working memory skills may improve but it will most likely not affect inhibitory control. Training while switching from one task to another helps to improve executive function skills across more domains.

**Keep Challenging Children** – Increase the difficulty of executive function tasks as children improve.

**Practice all day, every day** – Practice executive function skills throughout the school day and at home to ensure repetitive practice and learning in different environments.

**Push children to try harder** – Research indicates that the greatest gains in executive function skills are following the most demanding executive function skills and tasks.
Offer activities where children are self-motivated to improve – Children work much harder if they are invested in improving the skill. Pick tasks that children are motivated to participate in and improve their skills. Here are 5 suggestions to encourage self-motivation in children:

Independent thinking: Allow the child to work on a certain skill and report back to you how they have improved that skill. They can improve or change it any way that they think will help.

Provide choices: Children can be more intrinsically motivated if they have a say in how they are accomplishing a goal. Try not to make any activity a requirement.

Teach self-direction: Everyone feels a larger sense of accomplishment when you are able to do something all by yourself.

Power of positive thinking: Having an “I can” attitude can help tremendously and build up a student’s confidence. Check out Positive Affirmations Posters and Cards.

Ask questions: Encourage students to think for themselves rather than provide answers for them. For example – what suggestions do you have to increase your self-control?


Self-Regulation Skills Taught: This curriculum provides an effective, time-efficient structured system to provide classroom breaks, improve self-awareness and self advocacy and teach specific self-regulation skills so that kids have tools to use in their classrooms. This system will get kids moving, give them the benefits of a brain power boost [from getting their heart rate up], give them heavy work and isometrics to help them calm down, and help them learn techniques to quiet and control their bodies in order to return to their academic work. FIND OUT MORE.

Read more on executive function skills.
When it comes to the use of adaptive equipment, it is very important to have high standards for goal writing and data collection. Adaptive equipment spans across a huge range from gait trainers to pencil grips with everything in between. How many times have you seen adaptive equipment that was recommended for a student not being utilized properly or to its full potential? It is important to establish SMART goals for adaptive equipment the moment it is put into use. These goals may not necessarily be IEP goals but they need to be written for data collection on whether the adaptive equipment is helping the student to access the curriculum.

When writing a SMART goal that includes adaptive equipment, the therapist or teacher needs to ensure that the goal is:

S – SPECIFIC: what, why and how are you going to use the adaptive equipment
M – MEASURABLE: evidence that the goal will be achieved ie data collection
A – ACHIEVABLE: goal needs to be challenging but reachable
R – RELEVANT: the goal should measure outcomes, not activities
T – TIME-BOUND: deadline that the goal needs to be achieved by

Here are some examples of writing SMART goals for adaptive equipment. *Keep in mind that SMART goals that include adaptive equipment may not only be measuring the student’s abilities but also school staff’s abilities to provide assistance if needed.*

**STUDENT #1 EXAMPLE**

Student #1 is able to use a gait trainer with close supervision. One of the student’s goals is to be able to use the gait trainer to occasionally walk during the school
day. School staff and therapists will help to encourage the daily use of the gait trainer for functional mobility.

SMART Goal for Adaptive Equipment Student #1

By June 2018, using a gait trainer the student will walk in a class line with close supervision from the classroom to the cafeteria at lunchtime 100% of the time.

**S – Specific:**

WHAT ARE YOU GOING TO DO? The student will walk in a class line from the classroom to the cafeteria.

WHY ARE YOU GOING TO DO IT? To enable the student to walk with peers to the cafeteria.

HOW ARE YOU GOING TO DO IT? The student will use a gait trainer to walk with close supervision by the teacher, teacher assistant or aide 100% of the time by June 2018.

**M – Measurable:** This can be measured using observation skills and data collection every day the student walks to lunch at the cafeteria. There is one measurement – did the student use the gait trainer to walk to the cafeteria from the classroom, yes or no?

**A – Achievable:** Make sure the student has the skill set to accomplish the goal. Make sure that the school staff can provide the close supervision.

**R – Relevant:** Transitioning from the classroom to the cafeteria is a functional skill during the school day.

**T – Time Bound:** Student and staff will achieve the goal by June 2018.

**STUDENT #2 EXAMPLE**

Student #2 uses a wheelchair for mobility. In the classroom, math lessons begin with morning math meeting on the carpet. The student would like to be able to participate in morning math meeting on the carpet with peers instead of the wheelchair. The student requires moderate assistance to transfer from the wheelchair to an adapted chair on the carpet. School staff and therapists will help to encourage the daily use of the adapted chair during morning math meetings.

SMART Goal for Adaptive Equipment Student #2
GOAL: By June 2018, classroom staff will provide moderate assistance to transfer the student to the adapted chair during circle time to participate in morning math meetings 100% of the time.

S – Specific:

WHAT ARE YOU GOING TO DO? The student will use an adapted chair.

WHY ARE YOU GOING TO DO IT? To enable the student to participate in morning math meetings with peers on the carpet.

HOW ARE YOU GOING TO DO IT? Classroom staff will provide moderate assistance to transfer the student to an adapted chair 100% of the time during morning math meetings.

M – Measurable: Collect data on whether the student used the adapted chair during math meetings – yes or no?

A – Achievable: Make sure the student has the skill set to accomplish the goal. Does the student tolerate the adapted chair for the entire math meeting? Make sure that the school staff can assist with the transfer.

R – Relevant: Participating in morning math meeting sitting on the floor is part of the classroom routine.

T – Time Bound: Student and staff will achieve the goal by June 2018.

STUDENT #3 EXAMPLE

Student #3 uses a manual wheelchair for mobility throughout the school day. A mobile stander is available to use in the classroom. During collaborative literacy activities, students in the classroom work standing up and move from table to table. This student requires minimal assistance to transfer in and out of the mobile stander and can independently propel the stander. School staff and therapists will help to encourage the use of the mobile stander to participate in collaborative conversations with diverse partners during literacy activities.

SMART Goal for Adaptive Equipment Student #3

GOAL: By June 2018, after the classroom staff provides minimal assistance to transfer the student to the mobile stander, the student will use the mobile stander to be upright and mobile during collaborative literacy activities 100% of the time.
**S – Specific:**
WHAT ARE YOU GOING TO DO? The student will use a mobile stander for collaborative literacy activities.

WHY ARE YOU GOING TO DO IT? To enable the student to participate in standing during group literacy activities with diverse partners.

HOW ARE YOU GOING TO DO IT? Classroom staff will provide minimal assistance to transfer the student to the mobile stander in order for the student to be upright and mobile during collaborative literacy activities 100% of the time.

**M – Measurable:** Collect data on whether the student used the mobile stander during collaborative literacy activities – yes or no?

**A – Achievable:** Make sure the student has the skill set to accomplish the goal. Does the student tolerate the mobile stander for the group literacy activities? Can the student steer and stop the mobile stander in the classroom? Make sure that the school staff can assist with the transfer.

**R – Relevant:** Being upright and mobile during collaborative literacy activities is part of the classroom routine.

**T – Time Bound:** Student and staff will achieve the goal by June 2018.

**Student #4 Example**

Student #4 exhibits a slumped posture throughout the day during seatwork. A slantboard has been recommended for the student’s desk to increase upright posture, reduce neck fatigue and improve handwriting legibility. The student forgets to use the slantboard frequently resulting in illegible handwriting. The therapist and student have worked together to create a self-checklist as a tool to remember to use the slantboard. The self-checklist has been taped to the desktop.

SMART Goal for Adaptive Equipment Student #4

GOAL: By June 2018, using a self-checklist, the student will remember to use a slantboard during writing assignments 100% of the time.

**S – Specific:**

WHAT ARE YOU GOING TO DO? The student will use a self-checklist as a reminder to use the slantboard on the desk for writing assignments.
WHY ARE YOU GOING TO DO IT? To enable the student to produce legible handwriting and reduce neck fatigue.

HOW ARE YOU GOING TO DO IT? The student will use the self-checklist as a visual cue to remember to use the slantboard.

**M – Measurable:** Collect data on whether the student used the slantboard – yes or no?

**A – Achievable:** Make sure the student has the skill set to accomplish the goal. Can the student view the self-checklist and position the slantboard on the desk?

**R – Relevant:** Producing legible handwriting is necessary for writing assignments.

**T – Time Bound:** Student will achieve the goal by June 2018.

Read more on [Writing SMART Goals for School-Based Occupational and Physical Therapy](#).

Read more on [Follow Up Questions about Modifications and Adaptive Equipment in the Classroom](#).

Need more SMART goal ideas based on the Common Core Standards?

**IEP Goals Related to the Common Core for OT/PT Grades K-2** – Download of 6 files to align ELA and Math standards for grades K-2 with educationally relevant OT/PT goals. It is a large goal bank for school-based occupational and physical therapy that is aligned with the English Language Arts (ELA) and Mathematics common core standards for grades K-2. It is meant to provide guidance and suggestions on relating occupational and physical therapy goals to the common core curriculum in order to establish educationally relevant goals for a student’s individualized education program (IEP).

[Find out more.](#)

Get more information on [IEP Goals Related to the Common Core for OT/PT Grades 3-5 here](#).
GROSS MOTOR SKILL DELAYS, BEHAVIOR AND QUALITY OF LIFE
FOR CHILDREN WITH AUTISM

*Physical Therapy* published research to determine the associations between gross motor skill delays, behavior and quality of life for children with autism spectrum disorder (ASD). Using a cross-sectional, retrospective analysis data was collected from 3253 children (2-6 years old) with ASD. The following data were analyzed: Vineland Adaptive Behavior Scales, 2nd edition, gross motor v-scale score (VABS-GM) to indicate gross motor skill delays; Child Behavior Checklist (CBCL) to indicate problem daytime behavior; and Pediatric Quality of Life Inventory (PedsQL) to assess the quality of life.

The results regarding the associations between gross motor skill delays, behavior and quality of life for children with autism spectrum disorder indicated the following:

- mean VABS-GM was 12.12 (SD = 2.2), representing performance at or below the 16th percentile for gross motor skills.
- the internalizing CBCL t score decreased with increasing VABS-GM (problem daytime behaviors decreased with increase in gross motor scores)
- total and subscale PedsQL scores increased with increasing VABS-GM (quality of life increased with increase in gross motor skills).
- CBCL internalizing and externalizing t scores decreased with increasing PedsQL total score (problem daytime behaviors decreased with an increase in quality of life).

The associations between CBCL internalizing or externalizing t scores and PedsQL were significantly modified by VABSGM.

The researchers concluded that gross motor delays were independently associated with problem daytime behaviors and quality of life in children with SD. Children with problem daytime behaviors exhibited greater gross motor delays. The researchers recommended that these children may be most appropriate for early physical therapist evaluation.

Did you know that research has indicated that perceptual and motor systems become linked only when individuals learn through self-generated actions? Basically, we learn more by doing an activity ourselves versus watching someone else complete the same exact activity. Babies and little ones learn coordination, visual-spatial skills, and motor skills through self-generated actions. So the question becomes – why do we teach children how to identify letters only by showing them letters? Is there a connection between handwriting and literacy?

By providing a multi-sensory approach to learning letters through movement, children can increase the connections between the perceptual and motor systems. One way to do this is through movement and learning through active play. For example, children can move their bodies into the shape of the letters. Action verbs starting with different letters of the alphabet can be used to further illicit self-generated actions.

Use Handwriting to Teach Children How to Identify Letters

Another option to teach children how to identify letters is through handwriting. Some research has demonstrated that we learn symbols better if we write them by hand during learning than through other forms of practice, including visual, auditory, and even typing. In order to determine how handwriting facilitates symbol learning, researchers carried out brain imaging studies on four-year-olds. They investigated whether experience printing letters by hand creates the perceptual-motor brain network that underlies letter identification and what kind of manual production is important for creating these brain networks. The brain imaging compared a “see and say” method of learning letters to printing letters without saying the letters. The results showed that only after the printing training did the visual regions that later become specialized in the literate individual for letter recognition become active. In a separate study, the “see and say” method was also compared with tracing, printing, and typing. Again, the results showed that only after the printing training, the children’s brain recruited the letter recognition network.
The researchers wanted to take it even one step further to determine how the visual and motor systems become connected in the brain. Again, using brain imaging, they concluded that the visual regions that are active during letter perception (the fusiform gyrus) become functionally connected to motor regions only because of handwriting experience. Further research indicated that the reason handwriting creates these connections is that children are forming many different variations of the same letter versus tracing and typing where it does not vary.

The final study looked 6-year-old children learning a new script—letters written in cursive—either through self-production or through seeing an experimenter produce those same letters in a variable manner. The brain imaging results indicated that only when the letters were self-produced did seeing the letters recruit the perceptual-motor network. Learning even variable letters did not result in recruiting the reading network unless the letters were self-produced. Although viewing and tracing variable instances of a given letter was helpful for letter categorization.

The researchers concluded that handwriting experience plays a crucial role in the formation of the brain network that underlies letter recognition.


Do you need a handwriting activity with variable letters? Missing Letters includes the materials to play a game where you turn over a letter flash card, visually scan to look for the missing letter and write OR trace the letter. The first player to write all 26 letters is the winner! There are 5 different types of font.

The ABC’s of Active Learning offers readers tons of multisensory literacy activities based on each alphabet letter. This book, based on years of experience as school-based therapists, is written by Laurie Gombash, PT with a Master’s degree in Education and Lindsey Justice, OT. FIND OUT MORE.

Read more on:

Link Between Reading, Visual Perception, and Visual–Motor Integration
Fine Motor Skills and Reading
Fundamental Motor Skills, Executive Function Skills, and Reading
12 Minutes of Exercise Improves Reading and Attention
Visual Motor Connections when Tracing, Handwriting and Typing
3 EVIDENCE-BASED REASONS WHY SPENDING TIME OUTDOORS HELPS CHILDREN’S VISION

Did you know that children aged 10 to 16 now spend only 12.6 minutes a day on vigorous outdoor activity compared with 10.4 waking hours being relatively sedentary? Or what about the fact that almost 50% of preschoolers do not experience even one parent-supervised outdoor play session per day? Children are spending more time indoors than previous generations for sure. Obviously, there are numerous benefits to outdoor time for children but did you know that more outdoor time has been shown to help a child’s vision? Here are 3 evidence-based reasons why spending time outdoors helps children’s vision.

> More time spent outdoors and less time indoors doing near work may slow axial elongation and prevent high myopia thereby reducing the risk of developing sight-threatening conditions such as retinal detachment and myopic retinopathy (Gwiazda et al, 2014)

> More time outside may decrease myopia progression. Less outdoor/sports activity before myopia onset may exert a stronger influence on the development of myopia than near work. (Jones-Jordan et al, 2011)

> Higher levels of outdoor activity were associated with lower amounts of myopia in primary school students. (Lin et al, 2014).

Educate parents and children are the multiple benefits of outdoor time! When the weather allows there are many simple changes you can make to increase outdoor time. Here are 8 suggestions:

Increase recess time.

Bring learning opportunities outside such as handwriting practice – watch a video on suggestions for outdoor handwriting practice.
Provide children and parents with easy ideas for outdoor time – try hanging up this Play Outdoors Tear Off Sheet.

Go on a Scavenger Hunt – ask your child to find three things in the yard such as brown leaf, green leaf, and white rock and bring in back within one minute. Check out Scavenger Hunts for more ideas.

Green Hunt – cut up green construction paper into one inch by 8-inch strips. Hide the green paper strips in the grass. The child must find all the strips that you have hidden.

Bubbles, Bubbles, Bubbles – practice blowing bubbles and chasing them. Blow bubbles, catch it on wand and child can clap or kick the bubble to pop it.

Sidewalk Chalk Games – Hopscotch is always a great physical activity to practice jumping, bilateral coordination, and motor planning. Draw long, twisty lines with the chalk and child can try to walk on the line without stepping off. Sidewalk Chalk Fun and Games includes 30 games for outdoor fun!

Ball games – play catch with different sized balls, beach balls or even better water balloons. Practice dribbling a ball with your feet – use a beach ball or balloon for easier control to start. Read more on teaching children how to throw, catch and kick.

References:

AOA Evidence-Based Optometry Guideline Development Group. Comprehensive pediatric eye and vision examination. St. Louis (MO): American Optometric Association (AOA); 2017. 67 p. [251 references]


Check out this Spring Mystery Word visual perceptual puzzle freebie! These FREE printable challenges letter recognition, visual constancy, visual scanning, visual discrimination and visual motor skills. ALL ON ONE PIECE OF PAPER – woohoo! You can download it at the bottom of this post.

Solve the Spring Mystery Word visual perceptual puzzle by crossing out any letters that are repeated more than once. When done, write any letters that are left in the spaces at the bottom of the page.

If a child finishes quickly, they can color the birds and flowers on the page.

Visual discrimination skills require the ability to recognize similarities and differences between shapes, size, colors, objects, and patterns. This ability helps children to determine differences and similarities between objects helps us to understand and interpret the environment around us. Visual discrimination is especially important to learn how to read and write. Children to be able to identify the differences between letters quickly. For more activities to practice visual discrimination skills, check out this complete Visual Discrimination puzzle pack that includes letter and number visual discrimination practice PLUS physical activity!
If you are looking for more Spring themed sensory-motor activities, check out this AWESOME bundle. It includes 12 packets to practice visual perceptual, fine motor, gross motor and handwriting skills all with a Spring theme!

Ready to download your FREE copy of the Spring Mystery Word puzzle? See below. If you are unable to solve it, send me an email to request the solution!

DOWNLOAD YOUR FREE SPRING MYSTERY WORD VISUAL PERCEPTUAL PUZZLE.
Are you in search of no-prep, Springtime activities to encourage fine motor and executive function skills? Well, search no more! Here is a three-page FREE sample download from the Spring Skill Builders packet, created by Thia Triggs, school-based Occupational Therapist. This Spring fine motor and executive function skills freebie challenges visual motor skills, literacy skills, number skills and executive function skills!

You can find MORE activities in the complete Spring Skill Builders packet. It features:
Teacher’s Guide for each of the six units.
Occupational Therapy tips and tricks for explicit instruction, developmental sequence, and breaking tasks into their smallest steps so all children can learn.
Specific differentiation tools and support.
Specific objectives for fine motor, visual motor, and executive function skill development.
Detailed table of contents so you can easily find what you need at a moment’s notice.
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71 pages.
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Reversal Repair
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Visual Supports: Schedules, Self Regulation, and Classroom Inclusion
Yoga Moves
Alphabet Movement Cards
Adapted Handwriting Paper