

*ACTIVITIES TO*  
***BUILD EXECUTIVE FUNCTION***  
*IN CHILDREN*



Washington State Department of  
**Early Learning**

**ACTIVITIES TO BUILD  
EXECUTIVE FUNCTION IN CHILDREN**

Prepared for Washington State Department of Early Learning by Hollinger Group Training Solutions, LLC.

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## Introduction

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Scientists and researchers are finding that executive function skills are the biological key to school readiness and a good predictor of school success, better even than IQ. These skills are required for children to be able to get along with others, to compromise, plan, negotiate, pay attention, problem solve and stop themselves from impulsively reacting. Executive functioning captures a set of skills that are increasingly understood as the foundation for successful learning and social relationships. They enable us to work effectively with others, with distractions, and with multiple demands. These are the skills that contribute to the effectiveness of the American workforce.

Most tasks require the successful orchestration of several types of executive function skills. Among scientists who study these functions, three dimensions are frequently highlighted:

- *Working Memory* is the ability to hold and manipulate information in our minds over short periods of time. An example of Working Memory is learning a multistep process like long division.
- *Inhibitory Control* is the ability to filter thoughts and impulses in order to resist temptations and distractions. Classic inhibitory control is shown in this marshmallow test where a child in a laboratory setting is given two choices: take one thing he really wants, the marshmallow, right away or wait for 15 minutes and get two marshmallows.
- *Cognitive or Mental Flexibility* is having the ability to adjust to changes in demands, priorities, or perspectives. It is the capacity to nimbly switch gears and adjust to changes in demands, priorities, or perspectives, to apply different rules in different settings and to catch mistakes and fix them.

In most real-life situations, these three functions don't work in isolation, rather they work together. Being successful often means we need to be able to filter our thoughts and impulses so we can resist temptations, distractions, and habits. Impulse control allows us to pause and think before we act.

A child's experiences during the earliest years of life have a lasting impact on the architecture of the developing brain and their executive function". Developing executive function helps children learn to: pay attention; reason logically; exercise judgment; control their impulses; plan; identify goals and work to achieve them; and assess what is happening and adjust as needed. Play is an important way children build executive function.

## ***How to use this booklet***

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Children use play to learn and make sense of the world, develop social and cognitive skills and mature emotionally. Adults (teacher or parents) can use these fun activities to help children build their executive function skills. Many of the activities in this booklet are things you already do. The “Objective” for each activity describes the executive function skill the activity supports.

This booklet organizes activities and resources by child’s age. Most the activities have “More to Do” suggestions for how to extend the activity for different ages and to continue to challenge the child as they develop. Parents and caregivers can use these activities to introduce and reinforce executive function.

When doing activities with children, you build executive function by:

- Being responsive to your child’s interests.
- Encouraging your child to try different ways to do something.
- Playing hide-and-search games with your child.
- Playing games that require following “rules” that you agreed on and can change together, such as when playing make-believe.
- Providing ample time and enough materials for make-believe play with other children.
- Asking your child what he or she is doing and feeling, and why.
- Asking your child: “What else could you do? What do you think would be best?” in a nonjudgmental, interested tone.
- Sharing your own thinking about what you are doing and feeling, and why.
- Problem-solving with your child in daily activities.
- Listening to your child’s ideas and thoughts.
- Noticing what allows laughter to bubble up and playing in ways that allow for your child’s laughter (avoiding tickling, which can feel overwhelming).

## Birth to 18 month olds

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Lap songs help very young children learn body parts. These songs also help children learn to follow directions, and learn impulse control.

Tummy time activities help infants gain body strength to support their head, turn their head from side to side and to start crawling. Infants that do not have tummy time can experience motor skills development delays.

Communicating with infants during lap stories and tummy time is an excellent way to reinforce serve and return in infants. The back and forth process of serve and return is fundamental to forming brain connection during these critical early years of brain development.

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### Hiding Games

Birth– 18 month olds

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#### *Objective*

Hiding games help small children develop their working memory

#### *Materials*

A variety of small items that can be hidden under a cloth/blanket

Small cloth or blanket

Lazy Susan

Cups

Small object that will fit underneath the cup

#### *What to Do*

Hide a toy under a cloth and encourage the infant to look for it. Once infants can find the toy quickly, hide it in a different location, show the child that you have moved it and encourage the child to find it. Continue to make more moves to make it harder to find. As the child remembers what was there and mentally tracks the move, he or she is using working memory.

#### *More to Do*

Older infants may enjoy hiding themselves and listening to you search loudly for them (while they track your location mentally).

You can also hide objects without showing an older infant where it is and allow the infant to search for it. He or she will practice keeping track of searched locations.

Putting a set of cups on a lazy Susan and hiding an object under a cup, then spinning the Lazy Susan is another challenging version of these games. Hiding more than one object can also increase the challenge

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## Conversation

*Birth – 18 month olds*

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### *Objective*

Simply talking with an infant is a wonderful way to build attention, working memory and self-control

### *What to Do*

Follow the child's attention. Say out loud the items that hold his/her attention. The child will maintain his/her attention a little longer, practicing actively focusing and sustaining attention.

### *More to Do*

As the child get older, point out and talk about interesting objects or events. This helps the child learn to intentionally focus their attention on something the adult has identified. As babies learn language, they develop a memory of what is said, eventually mapping words to objects and actions.

Conversations in any home language are also important. Bilingual children of a variety of ages have been found to have better executive function skills than monolingual children, so maintaining a home language is an important skill.

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## Lap Games

*Birth – 18 month olds*

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### *Objective*

Different games practice different skills, but all are predictable and include some basic rules that guide adult and child behavior. Repetition helps children remember and manage their own behavior to fit these rules.

### *Materials*

Blanket, cloth

### *What to Do*

*Peek a Boo* – Hide-and-find games like this practice working memory, as the baby is challenged to remember who is hiding, and basic self-control skills as, in some variations, the baby waits for the adult to reveal him or herself. In others the baby controls the timing of the reveal, providing important practice regulating the tension around the expected surprise.

### *More to Do*

Trot, Trot to Boston  
This is the Way the Farmer Rides  
Pat-a-Cake

Many varieties of predictable rhymes with a highly stimulating (and expected) surprise at the end are well loved. Infants exercise working memory as they develop familiarity with the rhyme and practice anticipating a surprise, inhibiting anticipatory reactions while managing high levels of stimulation.

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## **Imitation Games**

**Birth – 18 month olds**

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### ***Objective***

When children imitate, they have to keep track of your actions, remember them, wait their turn and then recall what you did, practicing attention, working memory and self-control.

### ***What to Do***

These games can take a variety of forms, from taking turns making simple gestures (like waving to each other) to organizing toys in certain ways and then asking children to copy you (i.e. placing toy animals in a barnyard) or building simple (putting one block on another), perhaps knocking them down to rebuild.

### ***More to Do***

As infants' skills improve, make the patterns they copy more complicated.

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## ***Activities for 18 to 36 month olds***

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During the 18 to 36 month age range, children are quickly developing their language skills. Language plays an important role in the development of executive function as it helps children identify their thoughts and actions, reflect on them and make plans that they hold in mind and apply. It also helps children understand and follow increasingly complex rules, both those that regulate behavior and those that apply to simple games. As children develop more language they can begin to actively engage in conversation with an adult and tell simple stories. Additionally, there is evidence that bilingualism is associated with better executive functions, so encourage parents who speak languages other than English to continue using these at home.

At this age, toddlers are also actively developing many important physical skills and love physical challenges. These challenges require them to focus and sustain their attention on achieving a goal, inhibit unnecessary and ineffective actions and try things in new ways when the first attempt fails. They may not always succeed, but the practice is very important. But remember, this is a learning process and many of these activities will require many reminders to organize and may not last long.

Children are now able to play simple matching/sorting games, which require children to understand the rule that organizes the activity (sorting by shape, color, size, etc.), hold the rule in working memory and focus on following it.

Toddlers imitate adult actions using objects that they have available (such as sweeping with a broom and pretending to cook with a pot), but now, rather than being simply imitative, these actions can be sustained and show signs of simple imaginary play plots (after cooking in the pot, the child will put the pot on the table and pretend to eat).

For very young children, simply watching their play and narrating can be a great way to help them understand how language can describe their actions. As children get older, questions can be added, such as “What will you do next?” or “I see you want to put the ball inside the jar. Is there another way to do that?” These comments can help children pause to reflect on what they are trying to do, how the things they have tried have worked and make a plan for their next move.

Talking about feelings is also important, either by labeling children’s feelings as they are noticed (“It looks like you are really angry right now”) or telling the story of a time a child became upset. By giving children language to reflect on their feelings, these conversations can support the development of emotional regulation, essential for engaging executive functions. Practicing Mindfulness activities, quiet activities that focus children on this moment, right now, what they are hearing, seeing, what emotions they may have and what body sensations they are experiencing can also help children develop emotional regulation.

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## Sharing Events

18 to 36 month olds

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### Objective

Telling stories about shared events can be a great way to reflect on these experiences. The experience must be held in working memory while the child considers the order in which things happened, why things happened the way they did and make meaning of the experience. These stories can also be made into books and revisited.

### Materials

Construction Paper, magazine pictures, white paper, crayons for making book of shared event

### What to Do

After a shared event: such as a fire truck or rescue squad visiting the school or after a field trip, gather the group of children into a circle, then have tell you what happened. Ask follow up questions about the order things happened. You can stop here for younger toddlers.

For older toddlers ask deeper follow up questions, such as Why do you think it happened that way or what did a specific action mean.

After completing the discussion part of the exercise, assist the class with making a book of the experience.

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## Narrating Play

18 to 36 month olds

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### Objective

The play that imitates adult actions can be sustained and show signs of simple imaginary play plots. Use narrating play and follow up play with an individual child to help begin that sustaining process.

### Materials

Use familiar props and toys to encourage children's imaginary play

### What to Do

As children are playing, quietly approach and say something like, "I see David cooking. What are you cooking?" Give the child opportunity to respond, then ask follow up questions such as, "Oh, dinner. What are you going to eat for dinner? Who is eating dinner with you? Can I come back and see your special dinner when it's ready?"

Remember to engage each child in conversation.

### More to Do

Ask to play with a child. Allow the child to direct the play. Give the child a chance to tell you what role you should play and how you should do it. Such "other regulation" is an important way that children develop their own self-regulation skills.

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## Punchinella

18 to 36 month olds

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### *Objective*

Older toddlers can enjoy simple copy games. These types of games are great challenges to working memory in addition to attention and inhibition.

### *Materials*

Space to play

### *What to Do*

Select a child to be Punchinella. Sing the song as you explain the directions.

"Look who is here." Students circle around one child, who is Punchinella.

"What can you do?" Punchinella dances or some other movement, hopping, skipping, etc.

"We can do it too." Students imitate Punchinella's dance.

"Which one will you choose?" Punchinella closes eyes, spins, and chooses the next player.

### *Lyrics to song*

Look who is here Punchinella, Punchinella  
Look who is here Punchinella in the shoe.  
Oh, What can you do, Punchinella, Punchinella  
What can you do, Punchinella in the shoe?

Oh, We can do it too Punchinella, Punchinella,  
We can do it too Punchinella in the shoe.  
Which one will you choose, Punchinella, Punchinella,  
Which one will you choose, Punchinella in the shoe?

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## Imitation Games

18 – 36 month olds

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### Objective

When children imitate, they have to keep track of your actions, remember them, wait their turn and then recall what you did, practicing attention, working memory and self-control.

### Materials

Cards with animals.

### What to Do

Animal Card Sort: Sort cards with the child watching you sort. Tell the child what you are doing as you are sorting. Then have the child sort the cards, or point which card goes next.

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## Matching and Sorting

18 to 36 month olds

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### Objective

This activity requires children to understand the rule that organizes the activity, hold the rule in working memory and focus on following it.

### Materials

Toys of different shapes, sizes and colors

### What to Do

Ask the children to sort the toys by size, shape or color

Older children can be asked to put small shapes in a big bucket and big shapes in a small bucket. Children tend to put like with like so asking them to change that challenges inhibition of the habitual action, selective attention and working memory.

### More to Do

Simple puzzles (require attention to the shape and colors). Adults can ask children to think about what shape or color they need, where they might put a certain piece, or where else they might put it if it doesn't fit, thereby exercising reflection and planning skills.

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## Balloon Breath

18 – 36 month olds

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### Objective

Develop mindfulness and challenge children's attention and working memory.

### What to Do

Demo first, then have the child imitate. Begin by breathing in, and then lift arms up overhead in a circle, imagining that air is filling up a balloon. Breathe out and bring arms to sides. Repeat 5 times.

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## Seed to Tree

18 – 36 month olds

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### *Objective*

Develop mindfulness and challenge children’s attention and working memory.

### *What to Do*

Children slowly “grow” from a seed (yoga Child’s Pose) to a tree (yoga Tree Pose) as the parent covers them with imaginary dirt, water, and sunshine. Repeat and discuss how the body feels as a seed, sprout, and tree. For child’s pose: have your child sit on their knees and place their forehead on the ground, with arms either stretched in front of them or at their sides. For tree pose: have your child balance on one leg with their other foot braced against the standing leg, when they are balanced they can place hands in “prayer” position at their chest or over their head.

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## I am a Helper

18 – 36 month olds

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### *Objective*

Activities to develop EF function through music and rhythm sensory play.

### *Materials*

Dust Cloth  
Broom  
Mop

### *What to Do*

Take turns with any activity that interests the child, such as sweeping, picking up toys, dusting, etc. These games introduce the basics of imaginary play and practice working memory, self-control and selective attention, as the toddler must hold the activity in mind to complete it while inhibiting the impulse to do other things and avoiding distractions.

### *More to Do*

As they get older, the roles they remember and play out can get more complicated and they will begin to self-initiate the activity. Providing the necessary materials can help sustain this type of play.

## Songs and activities for 18 months and older

Many songs and activities are appropriate for very young children and can be made more complex as the child gets older.

### Movement Songs

18+ month olds

#### Objective

Song games that require active inhibition and require children to start and stop motions as determined by the words of the song can be fun too. Expect children to need a few reminders.

#### What to Do

Have children hold hands and sing as they walk in a circle and sit down without hitting anything.

#### Lyrics to Ring-around-the-Rosy

Ring-around-the-rosy  
A pocket full of posies  
Ashes, ashes  
We all fall down!  
On "fall down," sit quickly on the floor.

#### More to do

Add a little variety, by chanting this verse while you're still sitting, then jump up at the end:

Mommy in the teapot  
Daddy in the cup  
When our mother calls us  
We all jump up!

### More Movement Songs

18+ month olds

#### Lyrics to Motorboat, Motorboat:

Motorboat, motorboat go so SLOW.  
Motorboat, motorboat go so FAST.  
Motorboat, motorboat...STEP ON  
THE GAS!

#### Lyrics to Jack in the Box:

Jack in a box jumps up! (Jump up)  
Jack in a box goes flop! (Flop over at the waist)  
Jack in a box goes round and round! (Spin around)

**The lid goes down with a plop! (Sit down)**

#### Lyrics to Head, Shoulders, Knees and Toes:

Head, shoulders, knees and toes,  
Knees and toes.

Head, shoulders, knees and toes,  
Knees and toes.

Eyes, and ears, and mouth,  
And nose.

#### Lyrics to Teddy Bear, Teddy Bear:

Teddy bear, teddy bear, turn around.  
Teddy bear, teddy bear, touch the ground.  
Teddy bear, teddy bear, shine your shoes.  
Teddy bear, teddy bear, that will do.

Teddy bear, teddy bear, Go upstairs.  
Teddy bear, teddy bear, Say good night.  
Teddy bear, teddy bear, Turn out the light.  
Teddy bear, teddy bear, Say good night.

***Lyrics to Hokey Pokey:***

You put your right hand in,  
You put your right hand out,  
You put your right hand in,  
And you shake it all about,  
You do the hokey pokey  
and you turn yourself around  
That what it's all about.

- 1) left hand
- 2) right foot
- 3) left foot
- 4) head
- 5) bottom
- 6) whole self

***Lyrics to I'm a Little Teapot:***

I'm a little teapot  
Short and stout  
Here is my handle  
Here is my spout  
When I get all steamed up  
I just shout  
Tip me over and pour me out

I'm a clever teapot  
Yes it's true  
Here let me show you what I can do  
I can turn my handle into a spout  
Tip me over and pour me out

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***Fingerplay – Songs with Hand Gestures***

***18+ months olds***

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***Objective***

Fingerplays challenge children's attention, working memory and inhibition.

***What to Do***

Match songs and rhymes with hand gestures

Use songs that have motions such as:

- Itsy, Bitsy Spider
- Pat-a-Cake
- Open Shut Them
- If You're Happy and You Know It
- Where is Thumbkin
- Down in the Meadow
- The Wheels on the Bus

<i>Objective</i>	<i>What to Do</i>
Enhanced executive function skills by promoting bilingualism	<p data-bbox="370 373 1130 409">"If You're Happy and You Know It / Si eres feliz y lo sabes"</p> <p data-bbox="370 436 574 472"><b>English lyrics:</b></p> <p data-bbox="370 474 1138 510">If you're happy and you know it, clap your hands (clap clap)</p> <p data-bbox="370 510 1138 546">If you're happy and you know it, clap your hands (clap clap)</p> <p data-bbox="370 546 1211 581">If you're happy and you know it, then your face will surely show it</p> <p data-bbox="370 581 1146 617">If you're happy and you know it, clap your hands. (clap clap)</p> <p data-bbox="370 644 1187 680">If you're happy and you know it, stomp your feet (stomp stomp)</p> <p data-bbox="370 680 1187 716">If you're happy and you know it, stomp your feet (stomp stomp)</p> <p data-bbox="370 716 1211 751">If you're happy and you know it, then your face will surely show it</p> <p data-bbox="370 751 1195 787">If you're happy and you know it, stomp your feet. (stomp stomp)</p> <p data-bbox="370 814 1122 850">If you're happy and you know it, shout "Hurray!" (hoo-ray!)</p> <p data-bbox="370 850 1122 886">If you're happy and you know it, shout "Hurray!" (hoo-ray!)</p> <p data-bbox="370 886 1211 921">If you're happy and you know it, then your face will surely show it</p> <p data-bbox="370 921 1122 957">If you're happy and you know it, shout "Hurray!" (hoo-ray!)</p> <p data-bbox="370 984 1390 1020">If you're happy and you know it, do all three (clap-clap, stomp-stomp, hoo-ray!)</p> <p data-bbox="370 1020 1390 1056">If you're happy and you know it, do all three (clap-clap, stomp-stomp, hoo-ray!)</p> <p data-bbox="370 1056 1211 1092">If you're happy and you know it, then your face will surely show it</p> <p data-bbox="370 1092 1398 1127">If you're happy and you know it, do all three. (clap-clap, stomp-stomp, hoo-ray!)</p> <p data-bbox="370 1155 591 1190"><b>Spanish Lyrics:</b></p> <p data-bbox="370 1190 951 1226">Si eres feliz y lo sabes , aplaude ( clap clap )</p> <p data-bbox="370 1226 951 1262">Si eres feliz y lo sabes , aplaude ( clap clap )</p> <p data-bbox="370 1262 1243 1297">Si eres feliz y lo sabes , entonces su cara seguramente lo mostrará</p> <p data-bbox="370 1297 967 1333">Si eres feliz y lo sabes , aplaude . ( clap clap )</p> <p data-bbox="370 1360 1081 1396">Si eres feliz y lo sabes , pisar los pies ( Stomp Stomp )</p> <p data-bbox="370 1396 1081 1432">Si eres feliz y lo sabes , pisar los pies ( Stomp Stomp )</p> <p data-bbox="370 1432 1243 1467">Si eres feliz y lo sabes , entonces su cara seguramente lo mostrará</p> <p data-bbox="370 1467 1081 1503">Si eres feliz y lo sabes , pisar los pies. ( Stomp Stomp )</p> <p data-bbox="370 1530 1032 1566">Si eres feliz y lo sabes , gritar " ¡Viva ! " ( hoo-ray! )</p> <p data-bbox="370 1566 1032 1602">Si eres feliz y lo sabes , gritar " ¡Viva ! " ( hoo-ray! )</p> <p data-bbox="370 1602 1243 1638">Si eres feliz y lo sabes , entonces su cara seguramente lo mostrará</p> <p data-bbox="370 1638 1032 1673">Si eres feliz y lo sabes , gritar " ¡Viva ! " ( hoo-ray! )</p> <p data-bbox="370 1701 1435 1736">Si eres feliz y lo sabes , no los tres ( clap - clap , pisotón - pise fuerte, rayos hoo !)</p> <p data-bbox="370 1736 1435 1772">Si eres feliz y lo sabes , no los tres ( clap - clap , pisotón - pise fuerte, rayos hoo !)</p> <p data-bbox="370 1772 1243 1808">Si eres feliz y lo sabes , entonces su cara seguramente lo mostrará</p> <p data-bbox="370 1808 1406 1848">Si eres feliz y lo sabes , hacer las tres cosas . ( clap - clap , pisotón - pise fuerte, rayos hoo !)</p>

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## Freeze Dance

18 + month olds

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### *Objective*

This activity helps children practice inhibitory control.

### *What to Do*

Put an upbeat song on. While the music is playing, the children dance. When you pause or stop the song they have to freeze.

### *More to Do*

For older children, choose a picture of a shape or person in various positions. When you pause or stop the song have the children freeze in the position shown in the picture you chose.

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## Obstacle Course

18 + month olds

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### *Objective*

Obstacle courses are a great way to allow for physical practice while supporting EF skills. But remember this is a learning process and many of these activities will require practice and the activity may not last long.

### *Materials*

Cones, spots, or other shapes taped to floor, bean bags, balance beam, incline board or other obstacles for an obstacle course.

### *What to Do*

1. Create an obstacle course with three or more motor activities. Use spots, cones, mats, bean bags, and other materials.
2. Set up simple rules for progressing through the obstacle course. Make the rules something that will develop working memory and inhibition challenges – such as taking turns going through the course or running to a line and back. Other examples of rules: Jump on all of the spots, roll on the mat, throw the bean bag in the basket and jump over the cones.
3. Switch out materials and create new more complex rules as the children get accustomed to the course.
4. Play for 20 to 45 minutes depending on class size.

### *More to Do*

Make it challenging, but fun for each age. As children get older, add materials like climbing structures, balance beams, see saws, etc. Include areas that will encourage complex motions like skipping.

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## **Activities for 3 to 5 year olds**

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Children’s executive function skills grow at a fast pace during this 3 to 5 year old period, so it is very important to adapt these activities to match the skills of each child. Younger children will need a lot of support in sustaining the rules and structures that guide these activities, while older children will be more independent. Ultimately, the goal is to move children towards more independent self- regulation, so try to intervene only as much as is necessary.

During imaginary play children develop rules for characters and plots to guide their actions, hold increasingly complex ideas in mind and shape action to follow these rules, while inhibiting impulses or habits that don’t fit the game. While younger children tend to play alone or in parallel, children quickly learn to play cooperatively and often regulate each other’s behavior, an important step in developing their own self-regulation.

Children love to tell stories. Early stories tend to be a series of events, each one related to the one before, but without any larger structure. With practice, children develop more complex and organized plots. As the complexity of the story telling grows, children are practicing holding and manipulating information in working memory.

Songs and movement games continue to be popular at this age, but it is important that they become increasingly complex to interest and challenge children as they get older.

Matching and sorting activities are still fun, but now children can be challenged to sort by different rules, such as first sorting objects by color, then resorting them by shape. For a more challenging version, play a matching game, but change the rule for each pair. Or play a lotto game where children have to mark the opposite of what is called (i.e. for “day”, put a chip on a picture of night). Children have to inhibit the tendency to mark the picture that matches while remembering the rule.

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## Imaginary Play

3 – 5 year olds

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### Objective

During imaginary play children develop rules for characters and plots to guide their actions, hold increasingly complex ideas in mind and shape action to follow these rules, while inhibiting impulses or habits that don't fit the game.

### Materials

Healthy Play Foods: cheese, apples, bananas, grapes, broccoli, squash, cucumbers. Shopping bags, play money, purses, cash register, play grocery cart.

### What to Do

Set up a grocery store where children have imaginary play. They can pretend to shop for items that help keep teeth healthy. Include signs, food labels, and prices.

### More to Do

Use any of the PROPELS ideas found in the Tools of the Mind curriculum..

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## Storytelling

3 – 5 year olds

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### Objective

This activity will encourage children to develop more complex and organized plots. As complexity grows, children are practicing holding and manipulating information in working memory.

### Materials

Regular materials like construction paper, magazine pictures, white paper, crayons for making book of shared event and familiar props and toys to encourage children's storytelling.

### What to Do

Encourage children to tell stories to you and write them down to reread to the child.

Children can make pictures and create their own books. Revisiting the story, either through reviewing pictures or words, supports more organization.

### More to Do

Tell group stories. One child starts the story and then each person adds something to it. Children need to pay attention to each other, reflect on possible plot twists and constrain their additions to fit the plot.

Have children act out stories they have written. The story provides the structure that guides children's actions and requires them to attend to the story and follow it, while inhibiting the impulse to create a new plot.

Encourage bilingual families to tell stories in the home language. Benefits of bilingualism for a variety of executive function skills have been found for children of all ages.

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## Walk the Line

3 – 5 year olds

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### *Objective*

This exercise helps the child control their body; develop balance and equilibrium, as well as to strengthen the mind's control of its body's movements.

### *Materials*

Red Line - The line used during this exercise should run the length of the room, be a little wider than the shoe of a child and be a permanent shape in the center.

### *What to Do*

Have the children all stand on the red line, an equal distance from each other.

Tell them that when the music begins, please walk on the line in a normal manner, but keep the same distance from the person in front of them.

Once the music has stopped, they can all have a seat where they were.

Start playing the music and stop it when you feel they are losing their concentration.

Discuss as a group how this was for each of the children. Tell the children that they are free to walk on the line just as you did today whenever they would like.

### *More to Do*

Have the children:

- Vary the speed of the walk. Ask them to walk very slowly.
- Straddle the line with one foot on either side and try not touch the line
- Walk backwards down the line
- Jump down the line
- Walk the line heel of one foot to the toe of the other foot. You may need to demonstrate this one first.
- Hold an object while walking the line

**Objective**

Challenge working memory. Songs that repeat and add on to earlier sections (either through words or motions) challenge the working memory.

**Materials**

Enough space for children to form a circle.

**What to Do**

Sing the song adding a new animal for each verse.

**Lyrics to: Bought me a Cat**

Bought me a cat and the cat pleased me,  
I fed my cat under yonder tree.  
Cat goes fiddle-i-fee.

Bought me a hen and the hen pleased me,  
I fed my hen under yonder tree.  
Hen goes chimmy-chuck, chimmy-chuck,  
Cat goes fiddle-i-fee.

Bought me a dog and the dog pleased me,  
I fed my dog under yonder tree.  
Dog goes bow-wow, bow-wow,  
Horse goes neigh, neigh,  
Cow goes moo, moo,  
Pig goes oink, oink,  
Sheep goes baa, baa,  
Goose goes hissy, hissy,  
Duck goes quack, quack,  
Hen goes chimmy-chuck, chimmy-chuck,  
Cat goes fiddle-i-fee.

**More to Do**

Do the motions to *She'll be Coming Round the Mountain*.

**The Alphabet Song**

*Five Green And Speckled Frogs* (countdown to "Then there were no green and speckled frogs".)

Five green and speckled frogs sat on a speckled log  
Eating some most delicious bugs -- YUM YUM!  
One jumped into the pool where it was nice and cool  
Then there were four green and speckled frogs.

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## Movement Songs

3 – 5 year olds

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### *Objective*

Movement songs require children to attend to the words, hold the words of the song in working memory and use them to guide their actions.

### *Materials*

Enough space for children to form a circle.

### *What to Do*

Stand in a circle as you sing the song. "IT" walks around the outside of the circle until you hear the lyrics, "Find your lucky zero." Then "IT" stops and stands back-to-back with the nearest child. "IT" moves to the side and front of the child as directed by the lyrics, then "IT" taps the chosen child's shoulder. Then "IT" sits down and the "lucky zero" becomes "IT".

### *Lyrics to song*

Circle 'round the zero.  
Find your lucky zero.  
Back, back, zero.  
Side, side, zero.  
Front, front, zero.  
Tap your lucky zero. (Repeat until all children are sitting down.)

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## Matching and Sorting

3 – 5 year olds

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### *Objective*

This activity requires children to understand the rule that organizes the activity, hold the rule in working memory and focus on following it.

### *Materials*

Bingo style cards with words. A set of words that are opposite of the words on the Bingo style cards.

### *What to Do*

Play a Bingo style game where children have to mark the opposite of what is called (i.e. for "day", put a chip on a picture of night).

### *More to Do*

Puzzles – children can master increasingly complicated puzzles and exercise their visual working memory and planning skills. They must match each puzzle piece to its intended location.

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## Imaginary Play

3 – 5 year olds

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### Objective

Pretend cooking is also a lot of fun for young children. They practice inhibition when waiting for instructions, working memory while holding complicated directions in mind and focused attention when measuring and counting.

### Materials

Pictures of food, cooking utensils, kitchen appliances and a picture recipe.

### What to Do

Display a picture of food (i.e. a cake with frosting). Have the children choose the pictures of what foods, utensils and appliances they would need to make the object shown in the picture.

Ask the children questions like; what comes first, cracking the eggs, mixing the batter, baking the cake, eating it. What happens if you bake the cake before adding all ingredients?

### More to Do

If your environment allows, cook the recipe the class created with the pictures.

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## Animal Span

3 – 5 year olds

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### Objective

This activity assists children in developing working memory skills

### Materials

Pictures of animals like a cat, horse, frog, and insect.

### What to Do

Show the child all the pictures in no particular order. Then have the children place the pictures of the animals in order from the smallest to biggest.

### More to Do

Have the children sort by color, or number of legs

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## Body Parts

3 – 5 year olds

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### Objective

To work on impulse control.

### Materials

Index card, magazines and glue  
Cut out body parts from the magazines, glue to index cards. You could use store bought body part cards if you have them.

### What to Do

Hold up a card with one body part and call out the name for a different body part. The impulse, of course, is to touch the part seen on the card, rather than listening to what the teacher said to do.

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## Telephone Game

3 – 5 year olds

### **Objective**

This game allows you to see how well you listen.

### **Materials**

Several silly sentences printed on a piece of paper.

### **What to Do**

Line the class up in a straight line. The teacher should read the sentence into the ear of the first child in line. That child then repeats what she heard into the next person's ear. You can't ask to hear it again. The last person in line says what he/she heard out loud. Read the sentence out loud to the class.

### **More to Do**

#### Clap and Follow

This game can begin with the class in their chairs, just make sure there is enough room for everyone to stand up and move freely. Give the class the following instructions:

When I  
clap 1 time, stand up  
clap 2 times, hop in place  
clap 3 times, rub your belly

Go through the series of claps several times, mixing up the order.

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## Plant Care

3 – 5 year olds

### **Objective**

Introduce child to taking care of plants. Many people who garden find it meditative. Similarly for children, plant care is a simple task that requires a present state of mindfulness.

### **Materials**

Plant with leaves that are large enough to hold. The leaves need to be large enough that they can be dusted.  
Small cloth or sponge

### **What to Do**

Show the child a plant and the cloth or sponge. With one hand, gently hold the leaf without pulling it or tearing and with the other hand, gently wipe the surface of the leaf. This activity can be extended to include watering the plant as well.

**Objective**

Reinforce 3 basic types of social skills that can be developed into grace and courtesy lessons: manners/courtesy, classroom procedures, conflicts

**What to Do****Identify the behavior/situation you want to address**

Through observation, experience and anticipation.

**Identify what it is that you want the children to do**

This requires thoughtful preparation

**Enlist the help of other adults/capable children to help if needed**

Classroom assistant

Experienced children

**Gather a small group of children**

*“I’m going to show you what to do/say when----“*

**Act it out****Give each child the opportunity to practice the role play**

*“Now you know what to do when ----“*

**Considerations:**

- All adults must consistently model the behavior/action.
- In order to be effective, adults must have trusting relationships with the children
- Repeat the role plays until you see it happening spontaneously in the classroom.
- Some situations will need supports or prompts.
- Do not single out the “target child”
- Do not explain, or give a reason- this is not appropriate for children under 6.
- Keep each role play short and fun!

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## Sensory Play – Sounds

3 – 5 year olds

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### *Objective*

Help children develop self-regulation.

### *Materials*

Sensory play objects (three different materials that make different sounds)

Music that changes in rhythm and may repeat

### *What to Do*

In this activity, children are given music cues for cognitive shifting and must inhibit the response with one movement to move on to the next.

Use the materials to “play” along with the song. Change the prop and associated noise or movement with each change in rhythm. For example, slither streamers, sweep the scarves and snap a piece of plastic to the music.

### *More to Do*

Tell a story out loud to music. Look for a piece of music that changes in relation to the feeling and mood of the story. The adult can act out the story through body movements and then have the children try the next time.

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## Sensory Play - Music

3 – 5 year olds

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### *Objective*

Activities to develop EF function through rhythm and music sensory play. Help children develop self-regulation.

### *Lyrics to song*

Sung to the tune of Brother John:

Have children line up facing a wall and demonstrate an activity walking backwards with coordinated movements through a chant.

“Now I’m marching, now I’m marching, back, back, back...back, back, back. Running, Running, Running.... Running, Running, Running, now we stop, now we stop!”

Or

“Now I’m tipping, now I’m tipping, side to side, side to side, running, running, running... running, running, running, now we stop, now we stop!”

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## Sensory Play – Hearing

3 – 5 year olds

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### *Objective*

Help children develop self-regulation and mental memory.

### *Materials*

Story Book  
Regular materials for creating pictures.

### *What to Do*

Tell your class you are going to tell them a story. Emphasize they will need to listen very careful.

Ask the class to act out the story. Select a child to be the painter and rest of the children to be mice. Read the story as they act out what you are reading.

Read the story again in about a week, then ask the children to act it out again. Continue this process with less and less scaffolding.

### *More to Do*

This activity can be extended by creating a book to capture the story that can be revisited. The experience must be held in working memory while the child considers the order in which things happened and why things happened the way they did.

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## Red Light-Green Light

3-5 year olds

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### *Objective*

Help children develop self-regulation and mental flexibility.

### *What to Do*

Have children stand in a line. When you say green light children can move or run forward. When you say red light the children must stop and stand still,

### *More to Do*

For older children, choose a picture of a shape or person in various positions. When you pause or stop the song have the children freeze in the position shown in the picture you chose.

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***Objective***

Help children develop self-regulation and mental flexibility.

***What to Do***

Have children line up across from you. Tell the children they should obey you when you first say the words "Simon says." (or Mother May I). Tell them that they are out of the game if they follow an order that doesn't begin with "Simon says," or if they fail to do what Simon says to do.

Begin by saying something like, "Simon says, put your hands on your head." Look to make sure everybody has put their hands on their heads. Give another order such as, "Simon says, stand on one foot." Check again. Continue giving orders.

Mix it up and say something without the preface "Simon says" like, "Raise your right hand," Call out the players who raise their hands. Play until one person is left. This is the winner

***More to Do***

Let that child that won give the commands for the next round.

Cut the orders short, saying, "Simon says, do this," and make the motion you want mimicked, such as putting your hands on your shoulders. Do this step several times with a different command each time. Then say "Do this," and make the motion -- put your hands on your waist, for example. Many players will automatically follow your lead (and end up out of the game).

Relax and say something like "Straighten up the line," in a casual manner. Again, several players may comply (and they'll be out).

Single out specific players, especially older ones who are harder to fool. Say, "Chris, move back (or up) a step." She might fall for it. Or ask a question every now and then. Point and ask, "What's your name again?" If the person answers, he's out.

Keep the pace moving fast. Everyone will be laughing so hard, they won't care who's in or out, or who wins or loses.

## Activities for 5-7 year olds

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This handout provides a list of games that challenge children’s executive function skills—and allow them to practice the skills—in different ways. At this age, children are starting to enjoy games that have rules, but with widely varying interest and skill. Since the key to developing executive function skills is constant challenge, it’s important to choose games that are challenging but not too hard for each child. As children become familiar with these games, the challenge is greater if they remember and enforce the rules independently; try to step back as soon as possible. Just be prepared with some techniques for negotiating conflict such as flipping a coin or drawing a straw.

### Card/Board Games

- Games that require memory of the location particular cards are great at challenging working memory. At the simplest level, there are games like *Concentration* where children uncover cards and then have to remember where matches are. At a more complicated level are games that require tracking cards as well as remembering locations, like *Go Fish*, *Old Maid*, *Happy Families*, and *I Doubt It*.
- Games in which the child can match either by suit or number are also good at practicing cognitive flexibility – games like *Crazy Eights*, *Uno*, *Spoons* etc. *Blink* and *Set* are new card games in which cards can be matched on more than two dimensions.
- Games that require monitoring and fast responses are also great for challenging attention and inhibition. *Snap* and *Slapjack* are card games that fall into this category. *Perfection* draws on similar skills.
- Any board game that involves some strategy provides important opportunities to make and hold a plan for several moves ahead in mind, considering the varying rules that govern different pieces, and adjusting strategy in response to your opponents’ moves. Through strategizing, working memory, inhibitory control and flexibility have to work together to support planful and effective play. *Mancala*, *Checkers*, *Chinese Checkers*, *Sorry*, *Battleship* and *Parchesi* are some of the many examples of these types of games for children this age.

### Physical Activities/games

- Games that require attending and responding quickly practice attention and inhibition such as *Red Light*, *Green Light*, *Freeze Dance (Musical Statues)*, *Musical Chairs*, even *Duck, Duck, Goose* for younger children. Some of these games also require the person who is “It” to mentally track others’ movements, challenging working memory as well, like *Mother May I*, *What Time is it Mr. Fox*. Others require selective responding and challenge inhibition, such as in the *Magic Word Game*, in which children wait for a “magic word” to start an action.
- Fast moving ball games require constant monitoring, rule following, quick decision making and self-control, such as *Four Square*, *Dodgeball* and *Tetherball*.
- *Simon Says* is another great game for attention, inhibition and cognitive flexibility as the child has to track which rule to apply and switch as appropriate. Other versions are the Australian *Do This, Do That* or the variation, *Do What I Say, Not What I Do*.
- Children are now old enough to begin to enjoy structured physical activities, like organized sports. Games that require coordination and provide aerobic exercise, such as soccer, have been shown to support better attention skills. Physical activities that combine mindfulness and movement, like *yoga* and *tae kwon do*, also help children develop their ability to focus attention and control actions.

### *Movement/ Song Games*

- Copy games, when the person imitating has to hold in working memory the model's actions, challenge working memory. *Punchinella* is one example, with the model watching during the second verse ("I can do it too"). Call and response songs provide a similar auditory challenge, like *Boom Chicka Boom* and *I Met a Bear*.
- Songs that repeat and add on to earlier sections (either through words or motions) also exercise working memory, like the motions to *She'll Be Coming Round the Mountain*, the words to *Bought Me a Cat*. The classic memory game of *Packing a Picnic* or *Packing a Suitcase for Grandma's* fall in this category too. Older children can enjoy the added challenge of alphabetizing the list.
- Singing in rounds is also a great challenge for older children requiring use of working memory and inhibition. *Row, Row, Row Your Boat* is a simple round to start with, but there are many with increasing complexity.
- Complicated clapping rhythms also practice working memory, inhibition and cognitive flexibility, and have been popular with generations of children in many cultures. *Miss Mary Mack* and *Down Down Baby* are familiar examples.

### *Quiet Activities requiring strategy and reflection*

- Children become increasingly independent at this age and puzzle/ brain teaser books that include mazes, simple word finds, matching games, etc. provide challenges to attention and problem solving (requiring working memory and cognitive flexibility).
- Logic and reasoning games, in which rules about what is possible need to be applied to solve puzzles, start to become interesting as well and provide great working memory and cognitive flexibility challenges. Thinkfun provides some appealing and age appropriate versions with *Traffic Jam* and *Chocolate Fix*, while *Mastermind* is another old favorite that now has a simpler version for younger children. Educational online game sites provide many similar activities as well.
- Guessing games are also popular and require working memory and flexible thinking to hold in mind previous responses and develop and discard potential theories. *20 Questions* or *Guess My Rule* (often played with attribute blocks where children try to guess which attribute, or set of attributes, is the rule) are popular examples.
- *I Spy* and the books derived from this game require children to attend to categorization and use selective attention in searching for the correct type of object.

## Activities for 7-12 year olds

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Activities for this age group should challenge the children's executive function skills—and allow them to practice the skills—in different ways. During this age range, steadily increasing the challenge of games and activities that children enjoy is important.

### Card/ Board Games

- Card games in which children have to track cards provide a good challenge in using working memory and flexible thinking for planning and strategy. Games like *Hearts*, *Spades*, and *Bridge* are popular examples.
- Games that require monitoring and fast responses continue to be great for challenging attention and quick decision making. *Spit* is an example that requires attending to your own play and your opponents' progress.
- Card games requiring matching by either suit or number continue to challenge cognitive flexibility for younger children. *Gin* and *Rummy* are popular examples. Games with more complicated sets of options, such as *Poker* and *Mah Jong* may challenge older children.
- Time spent developing skill at any game involving strategy provides important practice holding complicated moves in mind, planning many moves ahead and then adjusting plans, both in response to imagined outcomes and opponent's play. With practice, children can develop real skill at classic games of strategy like *Chess* or *Go*, while challenging working memory and cognitive flexibility. Many more modern strategy games exist as well. Mensa provides an interesting list of new favorites.
- Children also enjoy more complex fantasy play games which require holding in working memory complicated information about places visited in imaginary worlds, rules about how characters and materials can be used and strategy in attaining self-determined goals. *Minecraft* is a popular computer game of this sort while *Dungeons and Dragons* is a long-time favorite. For older children, computer games like *Myst*, provide a similar challenge.

### Physical Activities/ games

- Organized sports become very popular for many children during this period. Developing skill at these games practices children's ability to hold complicated rules and strategies in mind, monitor their own and others' actions, make quick decisions and respond flexibly to play. There is also evidence that high levels of physical activity, particular activity that requires coordination, like soccer, can improve all aspects of executive functions.
- Various jump rope games also become very popular during this period. Children can become very skilled at jump rope, double dutch, Chinese jump rope and other such challenges. Focused practice is necessary to develop the skills needed for these games, as well as the attention control and working memory to remember the words of the chant while simultaneously attending to the motions.
- Games that require constant monitoring of the environment and fast reaction times also challenge selective attention, monitoring and inhibition. For younger children, hiding/ tag games particularly those played in the dark, like *Flashlight Tag* and *Ghost in the Graveyard* are fun. Older children may enjoy games like *Laser Tag* and *Paintball*. Many video games also provide practice of these skills, but can include violent content, so care should be taken in selecting appropriate options. Common Sense Media provides useful reviews of popular games.

### *Music and Dance*

- Learning to play a musical instrument can challenge selective attention and self-monitoring, as children learn the physical skill required, as well as working memory to hold the music in mind. There is also some evidence that the practice of bimanual coordination involved supports better executive function.
- Singing in parts and rounds, as is done in children's singing groups, is also a great challenge requiring a similar coordination of working memory, monitoring and selective attention. As children's musical skill grows they can be presented with steadily increasing challenges.
- Participation in dance and music requiring the learning of complicated rhythmic patterns, particularly when improvisation is involved, can also provide such incremental challenges to coordination of working memory, attention, cognitive flexibility and inhibition. Rhythm games like *Pattin' Juba* are fun, as well as practice in drumming, tap dancing and jazz music.

### *Brain Teasers*

Puzzles that require information to be held and manipulated in working memory can be great challenges.

- Crossword puzzles are available for all skill levels and draw on manipulation of letters and words in working memory as well as cognitive flexibility.
- Sudoku puzzles provide a similar challenge but working with numbers and equations rather than letters and words.
- Classic spatial puzzles like the Rubik's Cube, require children to mentally rotate and consider spatial information to problem solve potential solutions.
- CogMed has developed a series of computer-based puzzle games for children that have been shown to develop working memory.
- *Fit Brains*, *Lumosity* and *Minds360* all provide computer-game format puzzles and challenges that are designed to exercise particular aspects of executive functions

## Add Your Own Activities

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<i>Objective</i>	<i>What to Do</i>  <i>More to Do</i>
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<i>Objective</i>	<i>What to Do</i>  <i>More to Do</i>
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## **Resources**

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These links go to additional games and resources.

### ***Movement and Music Activities for Toddlers***

<http://fun.familyeducation.com/toddler/music/37371.html>

### ***Play With Me! Activities That Make Learning Fun 12 to 24 Months***

<http://www.zerotothree.org/child-development/grandparents/play-12-24-final.pdf>

### ***Play With Me! Activities That Make Learning Fun 24 to 36 Months***

<http://www.zerotothree.org/child-development/grandparents/play-24-36-final.pdf>

### ***Tools of the Mind***

<http://www.toolsofthemind.org/parents/make-believe-play/>  
<http://www.toolsofthemind.org>

### ***Montessori Primary Guide***

<http://www.infomontessori.com/practical-life/control-of-movement-walking-on-the-line.htm>

### ***Children's Songs***

<http://kids.niehs.nih.gov/games/songs/childrens/index.htm>  
[www.scoutsongs.com](http://www.scoutsongs.com)

<http://www.cduniverse.com/productinfo.asp?pid=8388602>

### ***Online Games***

[www.coolmath.com](http://www.coolmath.com)  
<http://pbskids.org/lab/games/>

### ***Game Rules for Children's Games***

[http://en.wikipedia.org/wiki/List\\_of\\_traditional\\_children%27s\\_games](http://en.wikipedia.org/wiki/List_of_traditional_children%27s_games)  
[www.pagat.com](http://www.pagat.com)

## **Common Sense Media, Game Reviews**

<http://www.common sense media.org/game-reviews>

## **America Mensa Mind Games**

<http://mindgames.us.mensa.org/about/winning-games/>

## **Fit Brain Games**

<http://www.fitbrains.com/brain-games/>

## **COGMED**

<http://www.cogmed.com>

## **Lumosity**

[http://www.lumosity.com/landing\\_pages/380?qclid=CN6H2Yz967gCFUuk4AodSi4AtQ](http://www.lumosity.com/landing_pages/380?qclid=CN6H2Yz967gCFUuk4AodSi4AtQ)

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