

Toy Analysis: Koosh Ball

1. Three activities for early elementary school ages (6-9 years old)

Activity 1—Koosh ball target practice -- This activity involves picking up a Koosh ball and throwing it toward a target, which may be either an area marked out on the floor or a wall or one of several physical targets made of paper or various-sized receptacles. The targets are differentiated by distance, size, color, or a point allocation, to add up a score.

This activity addresses several **motor and praxis skills**. To retrieve the ball, the child will need to **bend** and **reach** for a ball, and in so doing will utilize, and test, **dynamic balance**. Moving to pick up the ball from the ground and to reach for it will challenge stability and improve balance control (O'Brien & Williams, 2010, p. 257). In order to grasp the ball, the child will utilize **reach** by extending and moving the arm to get the hand close enough to **grasp** the ball, demonstrating hand skill patterns that usually rely on tactile-proprioception and visual ability (Exner, 2010, p. 275). Once grasped, the next movement is to **carry** the ball, by moving and lifting, so that it is in position for a **voluntary release**. Again, carry and release are both hand skills, but in this case the **carry** is integrated into a synergistic movement that brings the child to a standing position. Standing before the throw will involve **static balance**. As O'Brien and Williams (2010, p. 252) have said, to maintain balance a child must be able to detect when balance has been challenged and equilibrium or stability is changing. In order to get to the position for voluntary release, the child will stand up, combining muscular-motor control, proprioceptive, visual, and vestibular inputs. The sequence will directly affect **body alignment** to further challenge **stability** and **balance**. To make a **voluntary release** in order to throw at a target will again involve **reach** and **hand manipulation** of the Koosh ball in the hand after the initial grasp. Throwing tests and trains **hand-arm interactive movement** and adds to both hand muscle strength and endurance (O'Brien & Williams, 2010, p. 252).

Selecting the target will involve **cognitive skills**, judgment, selection, and prioritization. This will test the child's decision-making ability. There is really no wrong decision, but this activity will show and develop a child's ability to sort through different stimuli and inputs. Through practice of the activity, the child's cognitive skills in this area will become smoother. Selecting the target also involves the **visual-cognitive process** (Schneck, 2010, p. 376). Selecting and aiming for the target falls into the area of **visual attention**, or more specifically **selective attention**, which addresses the child's ability to choose relevant visual information while ignoring less relevant information (Schneck, 2010, p. 376).

This activity raises a number of questions about a child's **vision** and **visual perception**. Can the child visually adjust from near to far vision? Does their **perceptual skill** enable them to adjust and hit the target? Can they use their **sensory-perceptual** input to enable them to first make a throw in the right direction and then to adjust, through sensory feedback, the effort to actually achieve a specific target? Repetition of the actions involved in this activity will help in the development and integration of the skills for visual perception.

The activity uses a lot of **sequencing**. It also involves **error-based learning**, in which the child will aim to make adjustments to better reach the target. The activity can often involve **emotional regulation** in dealing with failure, or frustration, and there is also a measure involved with the child's **motivational level**, or desire to be successful. By repetition the child learns a

habit of automatically performing the steps or sequence to achieve a successful throw with a corresponding level of emotional satisfaction at developing a more accomplished capability.

Grading up: Koosh ball tic-tac-toe -- While involving many of the same elements involved in simply throwing the ball -- balance, hand, visual, and cognitive skills -- Koosh ball tic-tac-toe focuses on higher **cognitive** and **emotional** elements associated with a structured game. Each team, perhaps as small as the client and the therapist, attempts to land Koosh balls in lines across a 3x3 grid marked out on the floor or a piece of paper. A greater skill level is needed to throw into a smaller area, and to do so within a more structured grid requires more fully developed sensory-motor coordination and sensory integration, as well as a higher level of cognitive development. The game deals with **emotional regulation skills**. How does a child respond to the joy of success, the disappointment of failure, and the motivation of competition? Are they able and willing to **persist** if they are having difficulty?

Grading down: Basic grab and throw --The activity grades down to become a basic grab and throw, which may be between the therapist and the child. Even further, it can be graded down to be a toss from hand-to-hand or a hand-off from one hand to the other. This can be between the child's own hands or between the therapist and child. At this level, the activity can be altered to concentrate on all individual hand skills – **reach, grasp, carry, voluntary release, in-hand manipulation, and bilateral hand use**. For instance, the hand-offs between child and therapist might be done with a pincer grasp.

Activity 2—Koosh ball relay races, or a motivational game for one -- This activity involves using the Koosh ball in place of the *baton* in a relay race. If there is only one child, the activity can be done *as quickly as possible* or *as many times as possible* or *as far as possible* or with the therapist participating as the person next in the relay. How the Koosh ball is held alters the activity so as to address a number and variety of skills and to ensure that the activity remains interesting for the child. Examples include holding the Koosh ball with arm outstretched, on a spoon, on the head, between the knees.

This activity focuses on **motor and praxis skills** by having the child coordinate body movements in a fun exercise. It combines **dynamic movement**, such as walking quickly, with a **static movement**, such as holding one's arm still while balancing the ball. This activity will test the child's **proprioceptive** and **somatosensory systems**. This activity will alter a child's usual body position by increasing movement and, particularly for a child with a frozen pattern, this will cause them to change position, at least while they are doing the activity.

Proprioceptive and **visual sensory** feedback are tested by the child moving while having to control either their own body or the ball or both. Control of the ball tests the child's **haptic** abilities. Controlling the Koosh ball will be more difficult depending on the child's sense of touch. Holding the Koosh ball with a **pincer grasp**, for instance, would allow strengthening of the muscles, while running or walking would encourage exercise and **motor synergy**. **Balance** is also critical in this activity.

By making the race more challenging by using the knees to hold the ball, a child's **deep touch** sensations would be integrated with **prior habits** of motion, and demands would be made on the **vestibular system to balance** when running in a highly restricted way. The degree of the challenge has to be tuned to the skill level of the child so that they are **cognitively engaged** in

adjusting their actions to be successful. This task is difficult to do if you do not pay attention. In the relay situation, the child has to **communicate** with the person to whom they are transferring the Koosh ball. **Communication** can be **verbal** but, of necessity to transfer the Koosh ball, some of the communication will also be **physical**. When there is more than one team, a **social** and **emotional** element is added. The **social** element involves interacting with one's team members and members of the competing team. How the child deals with winning, losing, not being in sole control of activity are just some of the **emotional** elements involved, and some of the behavioral elements that can be learned.

Grading up: Long distance, high challenge relays -- The activity can be graded up by going for longer distances and by making the challenge harder, such as balancing the Koosh ball on the side of the head, or by holding the ball between two people, for instance at the hip or at the shoulder, or only allowing the child to hop instead of run.

Grading down: Simplified relays -- The activity can be graded down by using shorter distances, larger Koosh balls, or a larger spoon. Another way to grade down, if more than one child is involved, is to allow the transfer to happen not through a hand-off but by putting the Koosh ball down and having it picked up by the next child or OT.

Activity 3—Koosh ball aquarium -- This activity is to remove one or more Koosh balls from a container of water, with or without using your hands. To avoid any issues relating to germs or safety, this activity varies from the original *bobbing for apples* by using different **grasp patterns** or any available kitchen, or other, tools such as spoons, chop sticks, or kitchen tongs. A variation would include the singing or recitation of a rhyme before the child attempts to pick up the Koosh-fish: *Boop boop dittem dattam whattem chu* and then as they begin to lift the Koosh *and they swam and they swam right over the dam*. If the ball is dropped, they start over with the recitation.

This activity invites the child to explore a variety of **sensory experiences**. Positioning properly to catch a Koosh-fish involves **visual** and **proprioceptive skills**. Depending on the child's tactile openness and **hand skills**, their **emotional regulation** ability may be tested. It should be a fun and varied activity. Depending on what tools are used to pick up the Koosh ball, different hand-arm muscle groups will be used. The fishing training is particularly effective in demonstrating, and teaching, an integrated **reach, grasp, and carry** motion. A good grasp for the stringy Koosh ball would be a **three-jaw chuck**. This could be a fun way to build up dexterity. By incorporating singing into the process, the child is learning to use **divided attention**, or multitasking. The child will need to adjust and integrate a number of **sensory-perceptual** and **sensory-motor skills**. **Cognitive** skills will be called into play if the child is given a choice about what tool to use to accomplish the task. The game combines an element of **problem solving**, particularly when the child is asked to pick up a specific color or size of Kooshes. The **verbal** element involves participation in a quasi-social example of a ritual, while also calling on the child to attend to more than one task at a time, something a child in a classroom is often called upon to do.

Grading up: The activity can be graded up by using a tool but only allowing the use of one hand, or graded further by using only the non-dominant hand. Also the activity can be graded up

by selecting more difficult tools, such as chop sticks, to work on a variant kind of **grasp pattern**. A cognitive grading can be applied by asking the child to rescue a particular subset of Koosh balls (perhaps by color). A psycho-social grading can be added by having the child tell a story about why they chose to rescue a particular kind of Koosh-fish from the sea.

Grading down: The activity can be graded down by using less water so that the Koosh ball is easier to catch, or by allowing the child to use their hand directly to pick out the ball. Instead of taking the balls out, a child could be asked to use the various tools to push the fish around, working on hand-arm movements and a variety of grasps.

2a. Basic hand-toss and catch in a pre-school setting -- The fundamental aspect of interacting with a Koosh ball is that it involves enormous sensory-motor coordination whether just touching it, running fingers through the rubber hairs, or by picking it up, holding it, or tossing it. Being able to coordinate the **visual, sensory, and motor** systems to throw or catch a Koosh ball involves many fundamental **hand, balance, visual, and cognitive** skills. Being able to be successful in these core skills is often a reward in itself, and being able to do this with other children is a basic element of pleasure and reward from **social interaction**. The basic hand toss and catch could be modified in many ways, such as passing in one direction round a circle or by tossing and catching across the circle. Speed and sequencing can be altered to make it a more difficult or cognitively challenging game.

2b. Fifth grade ping-pong paddle and Koosh ball baseball -- For a 5th grader, more cognitive elements can be added combining core skills with more advanced skills in a **social** environment that encourages good sportsmanship, social skills and, of course, a bit of competition and fun. Instead of a bat, children use a ping-pong paddle to hit the ball. Due to the Koosh balls tendency to drop and not bounce, double- or triple-tosses would be encouraged by the fielding team. Using the Koosh ball and a ping-pong paddle, a relatively sophisticated but safe indoor version of baseball can be constructed.

3. In a whole K-2 class this would be a circle game of either *Screech and Zoom* or *Word Toss* -- Children would form a circle and the Koosh ball would be passed in one direction. The child receiving the ball would decide whether to continue passing the ball in the same direction by shouting *Zoom* or to send the ball back in the direction from which it came by shouting *Screech*. This game involves **auditory, verbal, motor, postural, and cognitive** skills. It also helps develop **social** skills with the potential for mirth and merriment.

A variation is to send the ball around the circle but each person must name something from a category when they receive the ball before passing it on. They are to do this as quickly as possible. So for example, name an animal for each letter of the alphabet; A is for armadillo, B is for butterfly, C is for cat, etc. There are endless categories to use for this game, which means that the game could be used for short breaks, to wake up a sleepy class, or as a reward for good class behavior. It can also be graded cognitively by making the category harder, or by changing the sequence of throwing and not just passing it to the next person.

4. Two short-term goals from the activities in part one

4a. To demonstrate improved eye-hand coordination necessary for classroom activities, Michael will independently use a pencil to write using a three-jaw chuck grasp cued only by “let’s draw something” or similar words in 3 out of 5 trials.

4b. Julie will demonstrate attention skill by sitting quietly and attentively for 10 minutes during classroom instruction sessions without requiring redirection or cuing for 3 out of 5 days.

References

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