Vision Therapy Activities for Preschoolers

Boulder Valley Vision Therapy
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Course Objectives:

1. Learn about normal vision development in Preschoolers (ages 3-6)
2. Identify delayed visual skills development
3. Become familiar with the Wachs Analysis of Cognitive Structures (WACS) assessment
4. Work-shop on Age-appropriate Vision Therapy Procedures
	1. Visually-guided Motor
	2. Tracking
	3. Accommodation
	4. Binocularity
	5. Visual-Perceptual
5. Learn how to adapt common vision therapy activities to the appropriate level for this age group

**Vision in Preschoolers Research Study (VIP)**

* Early detection increases the likelihood of effective treatment
* Fewer than 15 percent of all preschool children receive an eye examination. Fewer than 22 percent of preschool children receive some type of vision screening.

Prevalence of Vision Disorders:

* Amblyopia (2-5%)
* Strabismus (3-4%)
* Significant refractive error (10-15%)

Motor LEADS Vision Development: From Birth until Six Months, motor development drives visual development

* A child at one month can follow moving lights
* Accidental touch of objects leads to visual reach at 3 months
* A four month old can focus as an object is moved as close as 16 inches

The Emergence of Vision

* Object Permanence develops between 9-12 months. The child will search for a covered object because they know that it still exists. First concept that an object isn’t gone if it isn’t seen.

At the age of 9 months to 1 year, vision plays a key role in LEADING motor development

## **Functional Vision Skills:**

* Fixate
* Follow
* Focus
* Fuse
* Figure-Out

# Age 3

* Able to switch attention from near to far
* Shows good spatial orientation
* Able to scan smoothly
* Can team the two eyes at near and intermediate distances (up to 7-10 feet)
* Ability to plan ahead and predict movements in space (better able to catch a ball)
* Able to name more objects seen
* Able to describe experience of space – over, under, back, bigger, more
* Able to turn eyes without moving head

Signs of Developmental Lags (25% below Average)

Oculomotor

* Unable to follow a moving object without moving the head
* Has to move the head to shift attention
* Unable to walk and observe at the same time – has to be still to look

Eye-Hand Coordination

* Unable to complete a three-piece form board
* Cannot draw a circle
* Unable to fold paper

Space Perception

* Few spatial words (does not use over, from, by, on top of)
* Unable to place an object as directed
* Cannot specify space details: kitchen vs. “house”

# Age 4

* Able to make eye contact at 10 to 16 feet
* Able to make recognizable drawings
* The child can begin to visualize and look ahead to plan motor activities
* More peripherally aware
* Imaginative play
* Able to combine horizontal and vertical movements

Signs of Developmental Lags (25% below Average)

Oculomotor

* Can only watch an object as close as 5 inches
* Eyes move in large jumps to follow an object
* Loses track of target if keeps head still

Eye-Hand Coordination

* Unable to do tasks without watching hands
* Unable to build a bridge with blocks

Space Perception

* Unable to follow directions such as “place the toy (on, in, behind, in front, beside)”
* Unable to fit shapes together to make a design
* Unable to copy a sequence of four

# Age 5

* Acuity has now developed to see clearly at 20 feet
* Able to maintain eye contact
* Can draw circle, cross and edges
* Can accurately judge where things are in space
* Can identify objects by color, size and position
* Improved tracking skills (fully developed at age 7)
* Improved binocularity (able to fill a cup without spilling)

Signs of Developmental Lags (25% below Average)

Oculomotor

* Can only watch an object to 3 inches
* Eyes move in small stops and starts
* Eyes overshoot or undershoot the target

Eye-Hand Coordination

* Square looks like a capital D
* Unable to copy a triangle
* Unable to complete a form board

Space Perception

* Unable to put two triangles together to make a rectangle
* Does not know his left or right side
* Cannot follow directions when drawing to place a mark under, above, behind, or in front of a printed shape.

## WACS – Wach’s Analysis of Cognitive Structures: Identification of Objects

Shape Matching

Color Matching

Shape Identification

Color Identification

Tactile – Visual Match

Visual Identification Activities

Require fixation, accommodation, visual perception

Visual Thinking Hierarchy

Age 1-2 same – different

Age 2-3 direct matching

Age 3-4 side-by-side matching

Age 5-6 recall

Age 7-8 more difficult patterns

Age 9-10 Transpose (flip & rotate)

Age 11-12 Tilted figures

Age 13-14 Adult level skills

* Attribute Sorting
* Matrix
* Object-Picture-Symbol-Word
* Pattern Matching

## WACS – Wach’s Analysis of Cognitive Structures: Object Construction

Block Stacking

Block Patterns

Stick Patterns

Peg Patterns

## WACS – Wach’s Analysis of Cognitive Structures: General Movement

Balance

Hopping and Skipping

Body Lifts

Line Walking

Ball Catching

Visually Guided Gross Motor Activities

Eye/Body Coordination

Vestibular system

Auditory system

Tactile perception

Eye-foot coordination

Eye-body coordination

Doll’s Eyes

<https://www.youtube.com/watch?v=okqT4aF8ltw>

Oculocephalic reflex

Trampoline

<https://www.youtube.com/watch?v=lUh8XWnZK1I>

Bowling/Rolling Ball

Marble Trap

Bowling

Marble catch

OKN Ball

Foam Puzzles

Volleyball Balloon

Rolling

Optokinetic Nystagmus (OKN)

Bubble Popping

Movements that activate both hemispheres of the brain: Cross Crawls

Patty Cake Marching

Vestibular Prep activities

Swings

Balance Balls

Balance Boards

Rotations

Head Turns

Body Turns

Cars and Tracks

Pool Cue Knock - off

Bean Bag Toss

Cross Walking

Fishing

Feel and Find

## WACS – Wach’s Analysis of Cognitive Structures: Graphic Design

Shape Drawing and Tunnel Drawing

Line Tracing and Dot Connecting

Template Drawing

Visually Guided Fine Motor Activities

Drawing, Writing, Grasping, Stacking

Penny Drop

Shape Sorter

Fine Motor

Chopsticks/Tongs/Tweezers

Giant Peg Board

Rotating Peg Board

Marbles on Pegs

Cheerios on Pointer

Beading (string/shoe lace)

Lacing Cards

# Graphic Milestones

Scribbles 15 months

Imitates vertical stroke 2 years

Imitates a circle 2 years

Imitates a cross 3 years

Copies a circle 3 years

Copies a cross 4 years

Copies a square 4.5 years

Imitates oblique lines 4 yr., 9 mo.

Copies a triangle 5 years

Copies 2 pictures 5.5 years

Copies oblique lines 5 yr., 9 mo.

Copies divided rectangle 6 years

Chalkboard: Circles/Lines

<https://www.youtube.com/watch?v=cC0WIwYTC0U&index=2&list=PLf1dyFgHnH9XSSw8QGlWU4qIDn6odg1I0>

Drawing

# Visual Tracking: Fixations, Pursuits, Saccades

* Optokinetic Nystagmus (OKN)
* Training using reflexes
* Paint Stick Saccades
* Marsden Ball
* Tai Chi
* Ball Tap
* Flashlight Activities
* Tag
* Follow the leader
* Light Pursuits
* Target Practice
* Saccadic Fixator
* Gaze Stabilization
* Stimulate visual-vestibular pathways
* Finger Puppets
* Dr. Selwyn Super Eye Stretch
* 4 Corner Fixations

# Focusing Activities

* Glow in the Dark Board
* Near-Far activities modified for age, example: Disney Focus
* Lens Focus activities

# Amblyopia Training

Equalizing monocular skills and Developing Sensory Fusion

* Tap-n-See Now
* Red/Green Activities
* Red light / Red maze
* Magnetic playsets (red/green toy box)
* Sherman Cards
* Red/Green pom poms
* Opto “Alien Tracing” App

Binocular Activities: Motor alignment, sensory fusion, depth perception

* Fish Matching
* Frog Brock String
* Flashlight Tag
* Spoon and Ping Pong Ball
* Straw and Cotton Balls
* Blowing
* Suction
* 3D Pictures
* Alphabet Fusion Cards
* Keystone Cards
* Tranaglyphs
* BC Training Cards
* 3D Picture Books
* Computer Activities
* VTS
* Amblyopia Treatment Program
* Press Lights
* Opto
* Prism Bar

Fusion Activities

* Stereoscopes
* Red Lens Therapy
* iPad Activities
* Red/Green Activities
* Red light / Red maze
* Magnetic playsets (red/green toy box)
* Sherman Cards
* Red/Green pom poms
* Red/Green Activities
* Opto “Alien Tracing” App
* Fish Matching
* Flashlight Tag
* Press Lights
* 3D Pictures
* Alphabet Fusion Cards
* Keystone Cards
* Tranaglyphs
* BC Training Cards
* 3D Picture Books
* Frog Brock String
* Spoon and Ping Pong Ball
* Straw and Cotton Balls
* Blowing
* Suction
* Computer Activities
* VTS
* Amblyopia Treatment Program
* Opto
* Vectograms
* Prism

# Home activities for ages 3-4

* Play games of matching pictures.
* When you read aloud to your child, have them point to pictures that illustrate what you are reading.
* Play a game of hide and describe. See what the child can remember about the objects.
* Play with blocks
* Have the child make a pattern and then describe to you how you can make a matching pattern.
* Play catch
* Roll objects off of a table and see if they can catch it after it falls off the edge.
* See if the child can identify a partially covered toy

# Home activities for ages 4-5

* Identify landmarks and describe them in the order they were seen on the trip
* Demonstrate how to do activities in a certain sequence
* Describe photographs
* Play card games and board games
* Construction toys (Legos, blocks)
* Puzzles

References and Resources:

1. *The Journal of Pediatrics, December 2010 Volume 157, Issue 6, pgs. 889-893*
2. *Journal of Head Trauma Rehabilitation:* [*September/October 2006 - Volume 21 - Issue 5 - p 375–378*](http://journals.lww.com/headtraumarehab/toc/2006/09000)
3. <https://www.youtube.com/watch?v=lUh8XWnZK1I>
4. <https://www.youtube.com/watch?v=_BHBVe49Z1c>
5. <https://www.youtube.com/watch?v=2rszMv01psc>
6. <https://www.youtube.com/watch?v=cC0WIwYTC0U&index=2&list=PLf1dyFgHnH9XSSw8QGlWU4qIDn6odg1I0>
7. [*http://www.redgreentoybox.com/*](http://www.redgreentoybox.com/)
8. [*http://oepf.org/*](http://oepf.org/)
9. [*http://www.covd.org/*](http://www.covd.org/)*?*
10. [*http://www.bernell.com/product/WACSKIT/1268*](http://www.bernell.com/product/WACSKIT/1268)

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