

# **FUNCTIONAL VISION ASSESSMENT**

**VISUAL FUNCTION**  
**VS.**  
**FUNCTIONAL VISION**

**“ I got it”**

**VS.**

**“I got it and how I use it”**

**WHAT** is it

**WHY** is it  
necessary

**WHO**  
does it



**WHEN**  
is it done

**WHERE** is  
it conducted

**HOW** is it  
conducted

Document

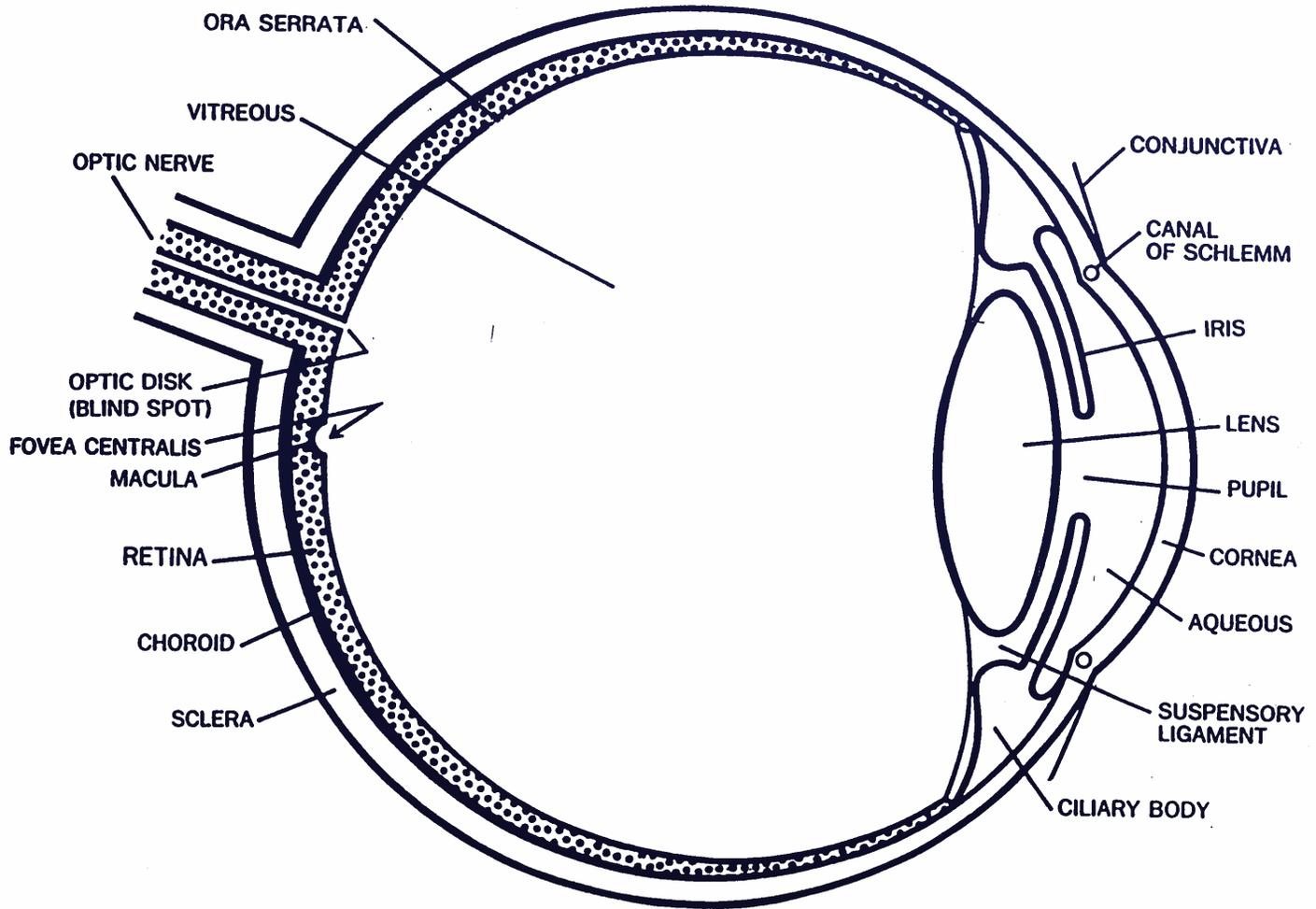
Observational Skills

Assessment Plan

Anticipating the Impact

Eye Anatomy & Disease

# The Globe



# Anticipating the impact on Visual Function

# Overall Blur (reduced visual acuity)



**Difficulty seeing details**

**Difficulty judging distance**

**Problems with glare**

**SOLUTIONS** 

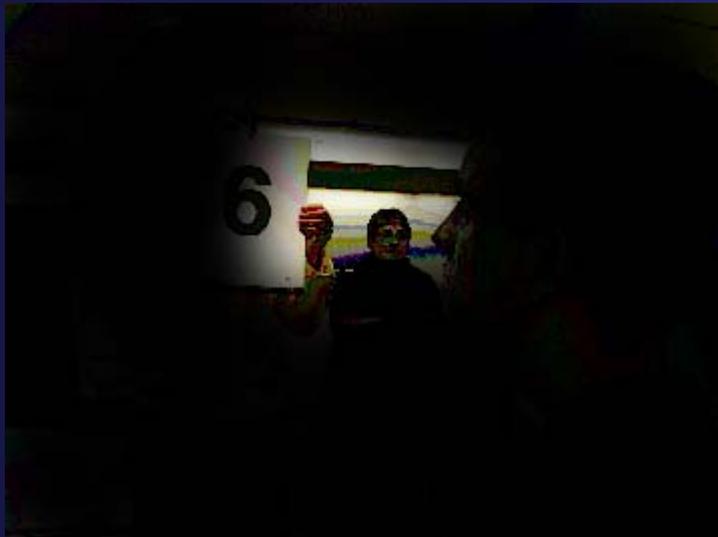
# Central Visual Field Loss

- Difficulty seeing details
- Incomplete or “blurred” images
- Loss of color discrimination
- Difficulty maintaining direct eye contact



SOLUTIONS 

# Peripheral Visual Field Loss



- **Possible Decreased Spatial Awareness**
  - “bumping”, “stumbling” into objects
  - object to object/self to object relationships
- **Decreased Visual Efficiency**
  - visual skills – scanning, tracking
  - saccades (horizontal & vertical)
- **Need for Increased Illumination**
- **Glare Sensitivity**
- **Light/Dark Adaptation**

SOLUTIONS



# Cortical Visual Impairment

- **Dependent on type/location of damage**
  - Blurred images
  - Visual field loss (hemianopia)
  - Visual neglect
  - Oculo-motor difficulties (visual skills)
- **Visual perception difficulties**
  - Figure-ground
  - Visual memory
  - Visual/spatial difficulties
- **Inability to coordinate visual information with other senses**
  - May “look’ then “look away” before attempting task
  - Slower processing/response time

SOLUTIONS



# Where Do They Fit?

Myopia/Hyperopia

OVERALL BLUR

Retinitis Pigmentosa (RP)

PERIPHERAL LOSS

Glaucoma

PERIPHERAL LOSS

Toxoplasmosis

COMBINATION

Optic Nerve Hypoplasia

OVERALL BLUR

Stargardt's

CENTRAL LOSS

Retinopathy of Prematurity  
(ROP)

COMBINATION

# SO WHAT?

What are the functional implications of each vision loss category?

**Let's Find Out!**

# SIMULATION ACTIVITIES

- Which tasks were easiest? Why?
- Which tasks were difficult? Why?
- How did illumination/color contrast impact your ability to perform the task?
- What organizational strategies might be helpful?
- What will you do differently with your students after this experience?

# Overall Blur (reduced visual acuity)

## Difficulty seeing details

- Corrective Lenses (magnification)
- Move Closer to Object (preferential seating)
- Move Object Closer
- Increase Contrast (color & illumination)
- Visually Simplify Area

## Difficulty judging distance

- Familiarity with Task
- Color Cues (stair edges)

# Overall Blur (reduced visual acuity)

## PROBLEMS WITH GLARE

- Sunglasses, Photogrey lenses
- Positioning Away from Source (preferential seating)
- Eliminate or Reposition Source

# Peripheral Visual Field Loss

## DECREASED SPATIAL AWARENESS

- Multi-Sensory Approach to Gather Information
- Use of Long Cane
- Use of Visual Cues (mark stair/table edges, hallway corners)
- Implementation of Visual Cues/Organizational Techniques

## DECREASED VISUAL EFFICIENCY

- Visual Skills Training (localizing, tracing, tracking, scanning)

# Peripheral Visual Field Loss

## NEED FOR INCREASED ILLUMINATION

- Use of General & Task Lighting

## GLARE SENSITIVITY

- Sunwear
- Preferential Seating away from light source

## LIGHT/DARK ADAPTATION

- Eliminate/Reduce Extreme Changes in Illumination
- Allow Time for Eyes to Adjust Before Engaging in Activities

# Central Visual Field Loss

## DIFFICULTY SEEING DETAILS

- Corrective Lenses (magnification)
- Move Closer To Object (preferential seating)
- Move Object Closer
- Increase Contrast (color & illumination)
- Visually Simplify Area

## INCOMPLETE OR “BLURRED” IMAGES

- Visual Training (eccentric viewing, scanning, tracing, tracking)
- Magnification (optical/non-optical)

# Central Visual Field Loss

## LOSS OF COLOR DISCRIMINATION

- Labeling
- Increase Illumination
- Compare Against Other Contrasting Colors

## DIFFICULTY MAINTAINING DIRECT EYE CONTACT

- Visual Training (eccentric viewing)

# Cortical Visual Impairment

## DEPENDENT ON TYPE/LOCATION OF DAMAGE

- Visual Skills Training
- Organizational Skills

## VISUAL PERCEPTION DIFFICULTIES

- Visually Simplify Area
- “Memory Tricks” (NEUMONICS)
- Organizational Skills
- Use of Long Cane

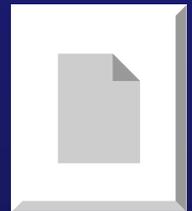
# Cortical Visual Impairment

## INABILITY TO COORDINATE VISUAL INFORMATION WITH OTHER SENSES

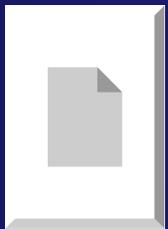
- Sensory Integration Therapy
- Reduce Amount of Sensory Stimuli (especially when learning must occur)
- Visually Simplify Area
- Allow Longer Response Time (minutes vs. seconds)
- Use Visually Stimulating Objects (red/yellow)

# Functional Implications Worksheet

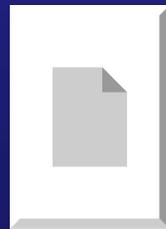
Practice using the worksheet to help make some functional predictions



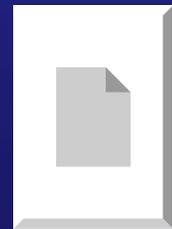
# Practice!



Cataracts



Albinism



ONH

**WHAT** is it

**WHY** is it  
necessary

**WHO**  
does it



**WHEN**  
is it done

**WHERE** is  
it conducted

**HOW** is it  
conducted



# **WHAT** is a Functional Vision Assessment

- A planned observation to determine how a person uses, or doesn't use, their vision when performing routine tasks in their normal environment.
- It utilizes information from clinical examinations and education/rehabilitation reports



## **WHY** is it necessary

- To determine the current level of visual functioning in a real environment while performing routine tasks.
- To make appropriate device recommendations and environmental modifications that may increase visual functioning.
- To develop instructional goals and strategies



**WHERE** is it conducted

- **School**
- **Work**
- **Home & Neighborhood**
- **Combination of areas**



## **WHEN** should it be conducted

- When there is a diagnosed visual impairment
- When changes occur in visual function
- When transitioning to a new or more visually demanding area/grade
- When a previous assessment has not been conducted



## **WHO** conducts a FVA

- **A qualified Teacher of the Visually Impaired**
- **A qualified Orientation and Mobility Specialist**
- **A qualified Rehabilitation Teacher**
- **A Certified Low Vision Therapist**



# **HOW** is it conducted

- **GATHERING HISTORY**
  - Previous reports
  - Conversations with team members
  - Primary Concerns
- **ANTICIPATE IMPACT ON VISUAL FUNCTIONING**
  - Helps identify potential visual difficulties
  - Helps identify primary concern(s)
  - Facilitates communication with Team
- **SEQUENCE ASSESSMENT COMPONENTS**
  - Increases assessment efficiency



# **HOW** is it conducted

- **CONDUCT OBSERVATION**
  - DIRECT OBSERVATION
  - INTEGRATED PLAY
    - You are part of the group, participating in the activities
- **INDIVIDUAL TESTING**
  - “PULL-OUT” SESSIONS
    - Student is “pulled-out” from group to separate area for specific testing and interaction
- **COMBINATION**

# Developing an Assessment Plan

# Based on...

- Assessment components
- Primary concern(s)
- Anticipated areas of impact
- Students' schedule
- Your familiarity of student
- Time

# FVA Components

- **History**
  - Medical, Educational, Vocational
  - Family & patient expectations
  - Daily routine, Primary Concerns
- **The Environment**
  - Illumination, Contrast,
  - Visual Complexity, Safety
- **Eye structure/Reflexes**
  - General appearance, Blink reflex,
  - Pupil response
- **Functional Visual Acuity**
  - Light Perception
  - Object Awareness
  - Object Identification
  - Near, Intermediate & Distance
- **Functional Visual Fields**
  - Static
  - Dynamic

# Components of a Functional Vision Assessment

- **Ocular Motility**  
Alignment (tropias/phorias), Fixation, Convergence, Saccades, Tracking (pursuits), Scanning, Depth Perception, Eye Dominance (preference)
- **Color Perception**  
Red, yellow, green, blue, purple, brown, white, black
- **Use of devices**  
Assessment of prescribed devices  
Introduction of new optical/non-opticals
- **Recommendations**

# Patrick

**Background:** 10 year old boy enrolled in local public school

**Primary Concern:** Identification of modifications at school. Parents told he does not have “color vision”.

**Visual Diagnosis:** Retinitis Pigmentosa, significant reduction in scotopic sensitivity

OU: 20/20 using HOTV with correction (photogreys)

OD: 20/30 +2, OS: 20/25 +1 Without correction

**Additional Disabilities/Services:** Bilateral sensory-neural hearing loss. Uses BTE hearing aids, FM system, and Signed English Interpreter. Enlarged print, preferential seating. No vision related services at this time.

# Patrick

**Disease/Condition:** Retinitis Pigmentosa

**Etiology:** unknown – genetic?

**Portion(s) of anatomy affected:**

- Retina, pigment epithelium

**Category of Vision Loss:**

- Peripheral visual field loss

**Resulting effect on Vision:**

- Visual skills (scanning, tracking)
- Light/dark adaptation
- Glare
- Spatial orientation

# Patrick

## Examples of potential situations where decreased function may occur:

- Negotiating through crowded areas
- Locating obj. in dark, dim lit areas (storage “cubbies”)
- Visual access to communication
- Safe travel outside in bright sunlight

## ASSESSMENT SEQUENCE

- General observation/Environmental assessment
- Functional distance acuities
- Pull-out for near visual acuities
- Ocular motilities/Visual skills
- Visual Fields
- Color Screening
- Observation during recess outside

Observe  
&  
Document

# Brittany

## BACKGROUND

4 YEAR-OLD GIRL ENROLLED AT SCHOOL F/T DEAF

## PRIMARY CONCERN(S)

TO IDENTIFY CURRENT LEVEL OF VISUAL FUNCTIONING  
TO IDENTIFY POTENTIAL MODIFICATIONS TO ASSIST IN LEARNING

## VISUAL DIAGNOSIS

OD 20/30 - 20/40, OS 20/63 Preferential Looking; OU 10/63 (20/126) LEA  
Significant corneal scarring (neurotropic ulcer) in left eye, Corneal anesthesia  
Vertical nystagmus, Hyperopia, Rx for protection, Can fix and follow,  
Visual fields: OD grossly full, OS constricted temporally to midline.

## ADDITIONAL DISABILITIES/SERVICES

VATER Association - Vertebral defects, Anal atresia, TracheoEsophageal fistula, Radial limb dysplasia.

7th Cranial Nerve Paresis, Left Head Tilt, Uses crutches to walk independently, Severe Hearing Loss, Total Communication, OT, PT, Speech

# Brittany

## CATEGORY OF VISUAL IMPAIRMENT:

OVERALL BLUR, PERIPHERAL VISUAL FIELD LOSS

### POTENTIAL VISUAL DIFFICULTIES

- Difficulty seeing details at distance
- May miss objects to left and right side
- Visual Skills - scanning, tracking
- Depth Perception
- Glare

### ASSESSMENT SEQUENCE

- Environmental Assessment
- General Observation
- Functional Distance Acuity
- Near Visual Acuity
- EOM's, Visual Skills
- Visual Fields
- Eye-hand Coordination
- Color Screening

Brittany

General  
Observation  
(classroom)

# Brittany

General  
Observation  
(hallway)

Brittany

Functional

Visual Acuities

# Brittany

Formal

Near Acuties

LEA Symbols

# Brittany

Confrontational  
Visual Fields

# Brittany

Color Screening

Visual Skills

Brittany

EOM's

# Brittany - FVA results

- **ENVIRONMENT**

- Adequate, consistent OVHD florescent illumination + natural lighting. Classroom floors carpeted with dk color and dk tabletops. Hallway flooring tile with reflected glare from windows + OVHD florescent lights. Brittany seated in front of tchr + board approx. 6 feet away. Clsrm small, visually complex.

# Brittany - FVA results

- **EXTERNAL STRUCTURES**
  - See clinical data
- **FUNCTIONAL DISTANCE/INTERMEDIATE ACUITIES**
  - Visually ID + understand tchr from 8-10 feet when directly in front of her.
  - Visually ID 2 ½ inch black letters on white board at 6 feet. 1 inch objects @ 2-3 feet with accurate reach. Over/under reaching due to vision+motor skills. At distances greater than 6 feet, she adopts a head-back posture.

# Brittany - FVA results

- **NEAR VISUAL ACUITIES**

- 1.6M (1/4") isolated LEA playing cards at 16 inches
- Accurate reach for 1/4" size stickers
- Point to 2 1/2 inch "e" in her name at 6 inches.
- Traced raised letters with a pencil using a slant board (reading stand)

- **EOM's, VISUAL SKILLS**

- Full movement in all positions of gaze, increased difficulty in superior position (upgaze)
- She can visually track (follow) a moving object
- Visual scanning inefficient (front, left, then right). Must use whole head/body movement to observe objects in periphery.
- Can shift visual attention vertical + horizontal

# Brittany - FVA results

- **VISUAL FIELDS**

- Confrontation Methods with ½ inch yellow target. Decreased awareness in left temporal field due to corneal scarring. Functional loss in temporal visual fields without efficient scanning.

- **EYE-HAND COORDINATION**

- Unsteady, at 6-12 inches. Increased difficulty at extreme near and in up gaze. Possible combination of monocularly + motor skills

- **COLOR SCREENING**

- Could match and label all basic colors using 1 inch targets

# Brittany - FVA results

- **RECOMMENDATIONS**

- TVI services to address current visual needs, visual skills training, use of non-optical devices, development of monocular skills, on going support for school and educational team.
- Continue to see Ophthalmologist + Low Vision Optometrist
- Present information in primary position to gain visual attention and reduce fatigue
- Encourage left to right scanning techniques for visual efficiency

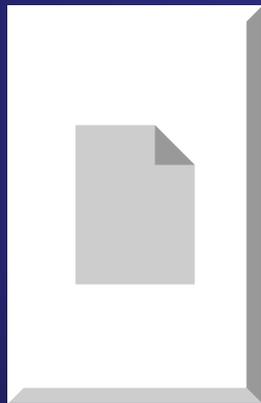
# Brittany - FVA results

- **RECOMMENDATIONS**

- Preferential seating directly in front of teacher or slightly to teacher's right during all activities. Monitor her distance from teacher, if too close she will adopt a head back position and increase fatigue.
- Slant board for reading/writing
- Increased contrast, all stair nosings (edges), doorframes, baseboards, hallway corner edges should be marked with contrasting color
- O&M evaluation to observe travel skills.

More Practice?

# Wendy



# RECOMMENDATIONS - Wendy

- Optometric Vision Rehabilitation Exam (clinical low vision exam) by a qualified pediatric optometrist with experience in low vision. This exam should include near/distance visual acuities and visual field testing.
- Visual skills training with emphasis on maintaining visual attention, tracking, scanning. Information/objects should be presented directly in front of her at eye level (primary position) to first gain her visual attention, then slowly moved either vertically/horizontally/outward to increase her ability to follow a moving target (visual tracking).

# RECOMMENDATIONS - Wendy

- Incorporate activities that will encourage her to extend her visual attention beyond 2-3 feet from her body into her daily routine.
- Increase the contrast between objects and the tabletop/floor using highly differentiated colors and high, non-glare illumination. During meals, a solid white or black placemat can provide enough contrast between food and utensils.

# RECOMMENDATIONS - Wendy

- Wendy should be positioned so that natural light is coming from behind or to her side during all activities. A florescent desk lamp in selected areas will increase contrast for specific activities.
- Reduce the amount of visual stimuli by avoiding “visual clutter” and/or reducing the number of toys she must choose from.
- Discuss with OT/PT options for providing upper body support to prevent her from “collapsing” inward with her head down and therefore unable to direct her gaze outward away from her body.

# Writing the Report

Once you have documented your observations and findings, then all you have to do is organize it into a narrative report!

I like to use the format found on the following slide, printed on letterhead.

**Patient Name:**

**D.O.B.:**

**Evaluation:** Functional Vision Assessment

**D.O.E.:** 22 January 2003

**Evaluator Name:**

## **Background**

- “According to the most recent reports available (Wright 2/03)...”
- Primary Concerns/Reason for referral

## **Assessment**

- Documentation of assessment components
- Location of assessment
- Team members present

## **Summary & Recommendations**

- Brief summation of background & assessment findings
- Recommendations & Referrals

# Plastic Wrap Simulators

You will need the following materials:

- 1 box of Plastic Wrap
- Masking Tape (3/4-inch width)

You can use colored tape if you prefer.



1. Tear off approx. 2.5 feet of plastic
2. Bring the right side to the left, folding it in half. Then smooth it out.
3. Continue folding in half until it is a long rectangle (approx 3 times) smoothing after each fold.

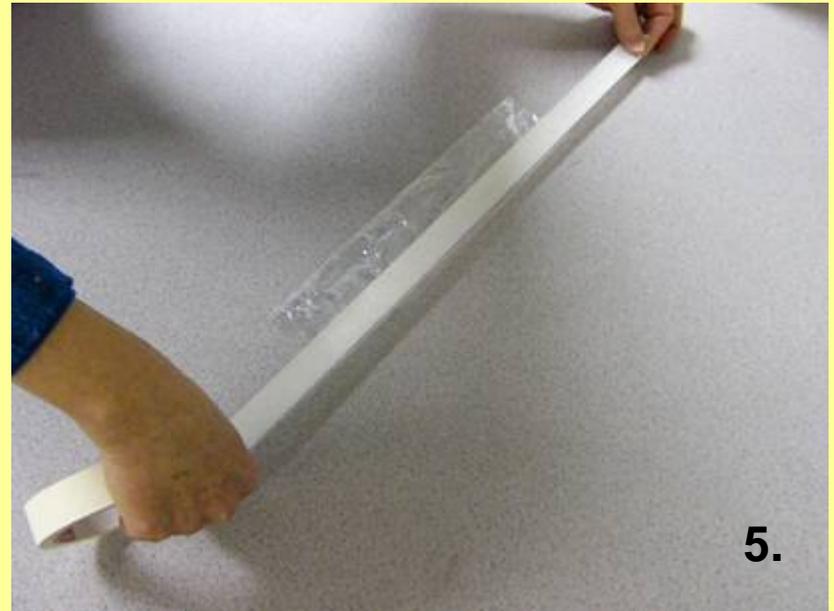


4. Roll the rectangle into a tight ball. The more you squash it, the more dense it will become.

*Try making several of these simulators with varying degrees of visual acuity loss.*

4. Tear off a long strip of masking tape and place “sticky” side up.

5. Place the “long side” of the plastic wrap rectangle in the middle of the masking tape



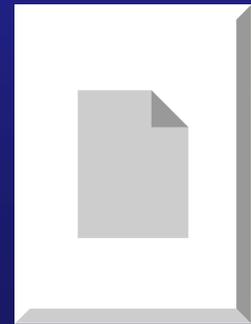
6. Tear off another long strip of masking tape that is slightly shorter than the original. This will leave a sticky side on each end.
7. Place on top of the original tape, “sandwiching” the plastic wrap in between.
8. Now it can be wrapped around the head, and is held in place with the two “sticky” ends.



Reduced Visual Acuity

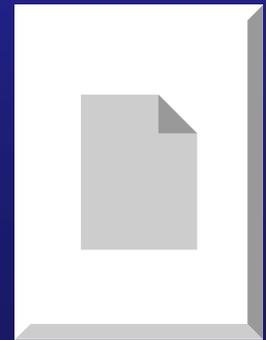
# Methods

# Functional Acuities



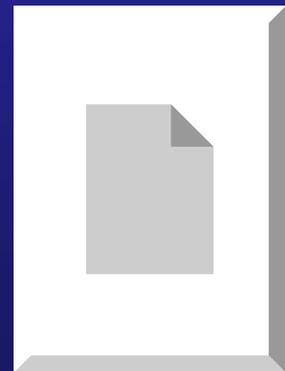
Lab Sheet

# Visual Field Testing



Lab Sheet

# Visual Skills



Lab Sheet

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