

Visual Issues in FXS

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Classroom requirements

80% of information is visual, 20% of information is auditory

Children need:

Good distance and near vision

Ability to change focus and eye position quickly and accurately

Ability to look and copy

Ability to listen and write

Functional vision assessment - Measuring physical parameters

Acuity - ability to distinguish fine details

Refraction – short / long-sighted, astigmatism

Accommodation / focussing

Convergence

Binocular vision

Eye movements / oculomotor skills

Depth perception

Colour vision

Eye health

STRABISMUS

Squint, eye turned in (eso) or out (exo) - Constant or intermittent

2% of normal paediatric population

20% in FXS (n = 70) = 10 x normal popn

50% eso / 50% exo

REFRACTIVE ERROR (> 1D) (n = 70)

Hyperopia (long-sighted) - 30 % (21) (2 x normal population)

Myopia (short-sighted) - 3 % (2)

Astigmatism (non-spherical) - 6 % (4)

Anisometropia (diff refrn b/n eyes) - 7 % (5)

NYSTAGMUS ('Wobbly eyes') 4 % (3)

Functional vision assessment-Treatment

Spectacles - lenses, prisms, tints

Exercises - to help convergence, muscle strength, lazy eye (amblyopia)

Visual hygiene advice - environmental modification, posture, lighting

Perceptual vision assessment

How visual info is processed (perceived)

Standardised neuro-developmental tests

eg Piaget - R / L awareness, Gardner - reversal recognition

Visual motor, visual spatial, visual memory, eye movement and visual auditory

Visual spatial skills - R/L up down awareness (reversals)

Visual motor skills - ability to look and copy, catch a ball

Visual auditory skills - phonemic awareness

Visual memory - visualizing, visual span required for spelling, sight words, maths and abstract concepts

Eye movements - pursuit (for tracking a ball), saccade (hopping type for reading words), fixation

TEST BATTERY

Write name and numbers 1 - 10

Visual spatial - Piaget, Bilateral integration, Gardner reversal

Visual analysis - TVPS, MVPT

Visual motor - VMI, TVAS

Visual memory - VADS

Auditory analysis - TAAS

TEST

RESULT

OCULOMOTOR Generally poor
pursuits, saccades, fixation Attention related

VISUAL SPATIAL

Piaget R / L awareness 1/6 age appropriate

Bilateral integration 4/5 unable (all M)

Gardner reversal freq 5/5 unable

VISUAL ANALYSIS 3/4 VD strength

TVPS (Gardner) 1/4 VC "

VISUAL MOTOR

VMI - 20 yo M achieved 4.0 yo level

- 5.5 yo F achieved 4.9 yo level

TVAS - range prep to grade 3 level

AUDITORY ANALYSIS

TAAS - some are grade appropriate

Perceptual vision assessment-Treatment

Vision therapy is an optometric intervention designed to improve co-ordination, efficiency and processing of the visual system.

In office and home based exercises are prescribed

Computer programs specific for visual processing

www.homevisiontherapy.com

www.covd.org

Conclusion

Both functional and perceptual assessment

2 yearly minimum eye checks recommended

Remove visual / sensory obstacles to learning

Most FXS have visual processing problems

Visual discrimination relative strength in some

Vision therapy important in management

Improvement in visual processing can affect reading, writing and spelling