EOM Ocular Deviations

Video and Explanation

Senior Paper

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Abstract

The goal of our project is to organize and create an educational video of binocular anomalies to be used for demonstration purposes by both clinicians and students. The video will be supplemented by a descriptive paper written on each of the visual conditions seen in the video. This project will help a clinician identify the following binocular anomalies in their patients: Exophoria, A/V Pattern Exo, Convergence Insufficiency, Divergence Excess, Exotropia, Esophoria, A/V Pattern Eso, Convergence Excess, Divergence Insufficiency, Esotropia, and Hyperphoria and Hypertropia.

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Introduction

Importance of EOM Function

General optometric practitioners need to be educated and familiar with EOM function because it is essential in our everyday practice in order to properly manage our patients. We must be able to differentiate a tropic condition from a phoric condition in either symptomatic or asymptomatic patients. The purpose of this paper is to familiarize clinicians and students with basic eye deviations and to become more comfortable and efficient at recognizing, diagnosing and treating these patients.

Recognizing the classic signs and symptoms of common binocular anomalies is very critical in leading down the right path to the correct diagnosis. A thorough case history is a great starting point. Question the adult, as well as the child when applicable, to obtain the maximum historical data. Children do hold valuable clues and answers, so remember not to leave them out. Then perform a simple cover test at distance and near to determine the deviation present. Quantify the deviation using prismatic lenses. Once the deviation is obtained, the possible differential diagnosis list becomes much shorter.

Next, binocular tests need to be administered to determine the appropriate diagnosis. Suggested tests to start with include NRA, PRA, NPC, stereopsis, lag of accommodation, and accommodative facility. For example, when a patient is complaining of problems with near work, one possible reason would be that the patient might have CI or CE. Performing near tests will help differentiate between the two. Thinking back on previous data already obtained through a cover test, the clinician would already have a working hypothesis depending on if the patient had a greater esophoric deviation at near, which would suggest CI, or if the patient had a greater exophoric deviation at near, which would suggest CE. Once the diagnosis is obtained, the clinician needs to determine if treatment needs to be initiated.

Some form of treatment needs to be initiated if the patient is symptomatic and having difficulties performing everyday tasks Sometimes treatment can be as simple as doing at-home eye exercises or incorporating prism in a new pair of glasses. Other times the treatment needs to be in office, done once or twice a week and accompanied by at-home exercises as well. Some treatment programs will last 4 weeks and result in a symptom free patient. Other times treatment programs will last longer and may only be able to reduce symptoms and/or enhance skills. It is the job of the clinician to recognize which vision therapy procedures should be used with which anomalies and implement when appropriate.

Overall, this paper and supplemental video is to help practicing optometrists and optometric students learn in a simple manner how to recognize, diagnose and treat simple binocular vision anomalies. This paper is an outline and is to be used in conjunction with the video.

Exo deviations

Exophoria (XP) aka. Basic Exo (BE)

Definition: The phoric position of the eyes is displaced temporal rather than in the straight ahead position. The far and near angles of deviation are approximately equal.

Mechanism: Inadequate PFV. Vision therapy (VT) procedures encourage convergence.

Onset: Typically congenital; possibly surgical

Population: Any

Symptoms: Difficulty sustaining near work; if large angle- diplopia

Alternating Cover: ex. Constant Alternating

Cover OD	OD moves out, no motion OS; LE fixates
Cover OS	OD moves in, OS moves out; RE fixates
Cover OD	OD moves out, OS moves in; LE fixates

(same amount of deviation at distance and near)

Characteristics:

AC/A: Normal
Lag: Low to normal
NRA: Low
PRA: High
NRC: High

Other tests:

Worth 4 Dot: 2 red dots to the left; 3 green dots to the right
Maddox Rod: Vertical red line seen to the left of the white fixation light
Stereo: May be reduced depending on the severity of the phoria

Treatment: BI prism or VT

Management: If prism is not favorable, then VT with focus on convergence training is an option. VT is aimed at enhancing PFV and usually responds rather quickly.

In-office VT procedures:

- •Brockstring
- •Aperature rule trainer
- •Tranaglyphs
- •BI/BO prism flippers
- •Vectograms
- •Computer orthoptics

Home VT procedures:

- •Brockstring
- •Tranaglyphs
- •Prism flippers

Prognosis: Likely to have good single binocular vision

A/V Patterns Exo

Definition:

A-pattern: Less exo seen in up gaze than in down gaze (>/=10pd difference between up gaze and down gaze)

V-pattern: More exo seen in up gaze than in down gaze (>/=15pd difference between up gaze and down gaze)

Mechanism: Non-comitant exophoric deviation due to mechanical cause, likely overaction or underaction of oblique or vertical recti muscles.[3]

Onset: Congenital

Population: Any, <1/3 of all strabismic patients

Symptoms:

A-pattern: Difficulties with reading, prolonged near work

V-pattern: Few, if any

Alternating Cover: ex. A-pattern exophoria

Cover OD OD moves out, no motion OS; LE fixates
Cover OS OD moves in, OS moves out; RE fixates
Cover OD OD moves out, OS moves in; LE fixates

*For V-pattern exophoria, the alternating cover test looks exactly the same as for an A-pattern exophoric, except that the exophoria is greater in inferior gaze at distance and near.

Characteristics:

AC/A: Normal

Lag: Low to normal

Chin elevation or depression

Other tests: See exophoria

A-pattern: Same results but greater disparity when tested in down gaze compared to up gaze.

V-pattern: Same results but greater disparity when tested in up gaze compared to down gaze.

Treatment: If symptomatic, try BI prism or VT

Management: If VT is needed, follow the same in-office and at-home procedures as discussed under "Exophoria". VT is aimed at enhancing PFV and usually responds rather quickly. Tropes may require EOM surgery.

Prognosis: Likely to have good single binocular vision

Convergence Insufficiency (CI)

Definition: Greater exophoria at near than distance.

Mechanism: Inadequate PFC reserve for near

Onset: Possibly elderly

Population: Any

Symptoms: Mainly near- tired when reading, occasional diplopia, near blur.[1]

Cover-Uncover: ex. Constant Alternating
Same as exophoria, but greater deviation when tested at near. May be less exo to ortho at distance.

Alternating Cover: ex. Constant Alternating
Same as exophoria, but greater deviation when tested at near. May be less exo to ortho at distance.

Characteristics:

AC/A: Low[1]
Lag: Low to none, monocular>binocular[1]
NRA: Low[1]
PRA: Normal to high[1]
PRC: Low[3]
NPC: Low[3]
Near BO Vergence < Near BI Vergence[1]
Artificially inflated by inclusion of near XP values + exhaustion of available PFC to maintain fusion[1]

Other tests: see exophoria

Treatment: BI prism or PFV training with VT (if young enough).[1] If the exophoria is too large or unresolved with prism, then do VT.

Management: (1)BI prism to satisfy Sheard's
(2)VT to build PFC reserves with maintenance therapy

Prognosis: Likely to have good single binocular vision

Divergence Excess (DE)

Definition: Greater exophoria at distance than near.

Mechanism: Inadequate PFC at distance to maintain comfortable, clear vision.[1]

Onset: Any

Population: Any

Symptoms: Mainly distance- tired eyes, distance blurred vision, forced blinking to maintain fusion.[1]

Cover-Uncover: ex. Constant Alternating
Same as exophoria, but greater deviation when tested at distance.
May be less exo to ortho at near.

Alternating Cover: ex. Constant Alternating
Same as exophoria, but greater deviation when tested at distance.
May be less exo to ortho at near.

Characteristics:
AC/A: High
Lag: Normal[1]

Other tests: see exophoria
Stereo: may be poor[1]; opposed to possibly reduced

Treatment: BI prism, PFV training with VT[1]. If there is enough accommodative amplitude[1], could over-minus, instead of prism, if only a small amount is needed.

Management: (1)BO prism to satisfy Sheard's
(2)VT to increase convergence ranges. Better results with younger patients. Build convergence reserves to meet convergence demand, then BO maintenance therapy.

Prognosis: Likely to have good single binocular vision

Exotropia (XT)

Definition: Primary Comitant Exotropia (PCX)

(1)Constancy: Mostly intermittent (80%).[1]
(2)Comitancy: Horizontal, many with A/V patterns.
(3)Correspondence: Usually NRC if late, ARC if early onset.

Mechanism: Developmental innervational anomaly with multifactorial genetic origin.[3]

Onset: Birth (40%) to 8 years old; Gradual decompensation from XP to intermittent strabismus to constant XT due to suppression. Late onset due to illness, fatigue, alcohol intoxication, daydreaming, inattentiveness, photophobic reactions.[3] Usually Progressive.[3]

Population: Early childhood. Women > Men (2:3)[3]

Symptoms: Tired eyes, sleepiness, eyestrain, intermittent blur, reading difficulty, headaches, photophobia (of unknown etiology).[3] Symptoms increase as day proceeds.[3]

Cover-Uncover: ex. Constant Alternating. Starting OD out, OS fixating.

Cover OD	OS moves in, OD moves out; LE fixates
Uncover OD	no motion OU; LE fixates
Cover OS	OD moves in, OS moves out; RE fixates
Uncover OS	no motion OU; RE fixates

Alternating Cover: ex. Constant Alternating

Cover OD	OS moves in, OD moves out; LE fixates
Cover OS	OD moves in, OS moves out; RE fixates

Characteristics:

AC/A: Normal- low[3]

Other tests:

Without suppression:
- *Worth 4 Dot*: 2 red dots to the left, 3 green dots to the right
- *Maddox Rod*: Vertical red line to the left of the white dot
- *Stereopsis*: Good

With suppression:
- *Worth 4 Dot*: Either 2 red dots OR 3 green dots
- *Maddox Rod*: Either a vertical red line OR a white fixation light
- *Stereopsis*: Poor

Treatment: Early and aggressive VT[3]

Management:

PCX<20-25 pd:	VT
PCX>25pd:	Start with VT, surgery probable for comfortable alignment[3]

Prognosis: Good for binocularity if long period of intermittency.[3]
Later onset- better prognosis.
Good if NRC, poor if ARC.

Eso deviations

Esophoria (EP) aka. Basic Eso (BE)

Definition: The phoric position of the eyes are displaced nasal rather than in the straight ahead position. The far and near angles of deviation are approximately equal.[3]

Mechanism: Inadequate NFV. VT procedures encourage divergence.

Onset: Typically congenital; possibly surgical

Population: Any

Symptoms: Similar to CE and DI

Alternating Cover: ex. Constant Alternating
Cover OD OD moves in, no motion OS; LE fixates
Cover OS OD moves out, OS moves in; RE fixates
Cover OD OD moves in, OS moves out; LE fixates
(same amount of deviation at distance and near)

Characteristics:
AC/A: Normal
Lag: Normal to high
NRA: High[3]
PRA: Low[3]
NRC: Low[3]

Other tests:
Worth 4 Dot: 2 red dots to the right and 3 green dots to the left.
Maddox Rod: Vertical red line seen to the right of the white fixation light.[3]
Stereo: May be reduced depending on the severity of the phoria.

Treatment: Maximum plus lenses, BO prism, or VT.

Management: If prism is not favorable, then VT with focus on divergence training is an option. VT is aimed at enhancing NFV, but it does not respond as well as PFV training.

In-office VT procedures:

- •Brockstring
- •Aperature rule trainer
- •Tranaglyphs
- •BI/BO prism flippers
- •Vectograms
- •Computer orthoptics

Home VT procedures:

- •Brockstring
- •Tranaglyphs
- •Prism flippers

Prognosis: Likely to have good single binocular vision

A/V Patterns Eso

Definition:

A-pattern: Less eso seen in down gaze than in up gaze (>/=10pd difference between up gaze and down gaze)

V-pattern: More eso seen in down gaze than in up gaze (>/=15pd difference between up gaze and down gaze)

Mechanism: Non-comitant esophoric deviation due to mechanical cause, likely overaction or underaction of oblique or vertical recti muscles.[3]

Onset: Congenital

Population: Any, <1/3 of all strabismic patients

Symptoms:

A-pattern: Difficulties with reading, prolonged near work

V-pattern: Excessive near work problems

Alternating Cover: ex. A-pattern Esophoria

Cover OD — OD moves in, no motion OS; LE fixates
Cover OS — OD moves out, OS moves in; RE fixates
Cover OD — OD moves in, OS moves out; LE fixates
(esophoria is greater in superior gaze at distance and near)

* For V-pattern esophoria, the cover-uncover and the alternating cover tests look exactly the same as for an A pattern esophoric, except that the esophoria is greater in inferior gaze at distance and near.

Characteristics:

AC/A: Normal

Lag: Normal- high

Chin elevation or depression

Other tests: see esophoria

A-pattern: Same results but greater disparity when tested in down gaze compared to up gaze.

V-pattern: Same results but greater disparity when tested in up gaze compared to down gaze

Treatment: If symptomatic, try plus lenses, BO prism, or VT

Management: If VT is needed, follow the same in-office and at home procedures as discussed under "Esophoria". VT is aimed at enhancing NFV, but it does not respond as well as PFV training. Tropes may require EOM surgery.

Prognosis: Likely to have good single binocular vision

Convergence Excess (CE)

Definition: Greater esophoria at near than distance.[1]

Mechanism: Inadequate NRC reserve for near.[1]

Onset: Most patients are between 14 and 20 years old

Population: Young adults

Symptoms: Mainly near- asthenopia, frontal headaches, tired eyes when reading[1]; possibly diplopia when reading and short attention span with near work[1]; problems refocusing the eyes for distance after sustained near work.

Cover-Uncover: ex. Constant Alternating
Same as esophoria, but greater deviation when tested at near. May be less eso to ortho at distance.

Alternating Cover: ex. Constant Alternating
Same as esophoria, but greater deviation when tested at near. May be less eso to ortho at distance.

Characteristics:

AC/A: High[1]

Lag: Low, binocular>monocular[1]

NRA: Normal[1]-High[3]

PRA: Low[1]
NRC: Low[3]
PRC: High[3]
NPC: High[3]
Near BI Vergence < Near BO Vergence[1]
Artificially inflated by inclusion of near EP values + exhaustion of available NFC to maintain fusion[1]
Latent Hyperopia[3]

Other tests: see esophoria

Treatment: Plus lenses, BO prism or NFV training with VT (if young enough).[1] Make sure to prescribe the maximum amount of plus if a hyperopia is present. Plus lenses for near help decrease the convergence when reading or doing near work. Always remember to prescribe the minimum amount of plus that relieves the patient's symptoms. If the esophoria is too large or unresolved with plus lenses, then try prism. If still unresolved, do VT.

Management: (1)Bifocal add or Distance CLs with reading glasses (immediate relief and improved performance)[1]
(2)BO prism to satisfy Sheard's[1]
(3)VT to build NFC reserves with maintenance therapy[1]

Prognosis: Likely to have good single binocular vision

Divergence Insufficient (DI)

Definition: Greater esophoria at distance than near.[1]

Mechanism: Inadequate NFC at distance to maintain comfortable, clear vision. Mainly a tonic convergence problem.[1] Possible over-minused refraction[1]

Onset: Any

Population: Any

Symptoms: Mainly distance- tired eyes, diplopia, frontal headaches[1]; forced blinking to maintain fusion[1]; symptoms increase as day proceeds[1]; problems driving at night[3].

Cover-Uncover: ex. Constant Alternating
Same as esophoria, but greater deviation when tested at distance.
May be less eso to ortho at near.

Alternating Cover: ex. Constant Alternating
Same as esophoria, but greater deviation when tested at distance.
May be less eso to ortho at near.

Characteristics:

AC/A: Low[1]
Lag: Normal[1]
NRA: Normal[1]
PRA: Slightly low[1]
NFC: Low reserves relative to convergence demand[1]; Near NFC adequate[1]
Distance Esophoria: >3pd[1]
Distance BI vergence recovery: Low[1]

Other tests: see esophoria

Stereo: May be poor[1]; opposed to possibly reduced

Treatment: Plus lenses over manifest, BO prism, NFV training with VT.[1] If prism does not relieve the symptoms, then VT is indicated.

Management: (1)BO prism to satisfy Sheard's
(2)VT to increase divergence ranges.[3] Better results with younger patient. Build divergence reserves to meet divergence demand, then BI maintenance therapy.[1]

Prognosis: Likely to have good single binocular vision. If uncorrected for lengthy period- deterioration into ET with possible suppression.[1]

Esotropia (ET)

Definition: Primary Comitant Esotropia (PCE)

(1)Constancy: Size 20-70pd, increases over time.[3]
(2)Comitancy: Horizontal, many with A/V patterns.[3]
(3)Correspondence: Usually NRC if late, ARC if early onset.[3]

Mechanism: Developmental innervational anomaly with multifactorial genetic origin.[3]
Possible supranuclear tumor (life-threatening).[3]

Onset: 6 months- 6 years[3]

Population: Early childhood[3]

Symptoms: None[3]- if developed early in life

Cover-Uncover: ex. Constant Alternating. Starting OD in, OS fixating.

Cover OD	OS moves out, OD moves in; LE fixates
Uncover OD	no motion OU; LE fixates
Cover OS	OD moves out, OS moves in; RE fixates
Uncover OS	no motion OU; RE fixates

Alternating Cover: ex. Constant Alternating

Cover OD	OS moves out, OD moves in; LE fixates
Cover OS	OD moves out, OS moves in; RE fixates

Characteristics:

AC/A: Normal to low[3]

Other tests:

Without suppression:
Worth 4 Dot: 2 red dots to the right, 3 green dots to the left
Maddox Rod: Vertical red line to the right of the white dot
Stereopsis: Good

With suppression:
Worth 4 Dot: Either 2 red dots OR 3 green dots
Maddox Rod: Either a vertical red line OR a white fixation light
Stereopsis: Poor

Treatment: VT or surgery[3]

Management: Surgery- Recession and resection with adjustable sutures and Botox injections to medial rectus for weakening in older children.[3]

Prognosis: Onset >1.5 yo with surgery= good prognosis
Later onset- better prognosis[3]
Good if early intervention with VT[3]
Good if NRC, poor if ARC[3]

Vertical deviations

Hyperphoria/ Hypophoria

Definition: The phoric position of one eye is displaced above or below the straight ahead position. Most are non-comitant.[3]

Mechanism: Innervational, anatomical[3]

Onset: Congenital; possibly surgical, traumatic

Population: Any, usually in combination with horizontal deviations[3]

Symptoms: Intermittent blur, skipping lines when reading, occipital headaches, vertigo, nausea, motion sickness, forced blinking to keep fixation, head tilt[1]; pulling sensation, asthenopia, losing place when reading, diplopia.[2]

Cover-Uncover: ex. Constant Alternating. OD Hyper, OS (Hypo).
Cover OD- OD moves up, no movement OS. LE fixates.
Uncover OD- OD moves down, no movement OS. Both fixate.
Cover OS- OS moves down, no movement OD. RE fixates.
Uncover OS- OS moves up, no movement OD. Both fixate.

Alternating Cover: ex. Constant Alternating. OD Hyper, OS (Hypo)
Cover OD- OD moves up, no movement OS. LE fixates.
Cover OS- OD moves down, OS moves down. RE fixates.
Cover OD- OD moves up, OS moves up. LE fixates.

Characteristics:

Amblyopia: Less common than horizontal[3]

ARC: Less common than horizontal[3]

Other tests: (ex. OD Hyper)

Worth 4 Dot: 2 red dots below 3 green dots

Maddox Rod: Horizontal red line seen below the white fixation light

Stereo: May be reduced depending on the severity of the phoria

Treatment: Vertical prism[1] [Formula for correcting prism=(BD to break-BU to break)/2[2] with BD=(+), BU=(-)]

Management: Prescribe vertical prism based on vertical associated phoria.[2]
Rx prism when:
(1) Significant ocular symptoms
(2) Testing gives consistent results
(3) Dissociated vertical phoria correlates with vertical fixation disparity in the same direction
(4) Absence of significant prism adaptation[2]

Prognosis: If small angle, likely to have good single binocular vision with treatment. If larger angle, likely to have good single monocular vision with treatment and suppression of the opposite eye.

Hypertropia

Definition:

(1)Constancy: Depends on magnitude and fusional status[3]
(2)Comitancy: Most non-comitant >10pd[3]
(3)Correspondence: ARC if constant horizontal deviation

Mechanism: Developmental innervational or mechanical (anatomic) abnormalities.[3] Paretic etiology and spread of comitancy.[3]

Onset: Congenital, surgical, traumatic

Population: Any

Symptoms: Diplopia, intermittent blue, eyestrain, nausea[3]

Cover-Uncover: ex. Constant Alternating. OD Hyper, (OS Hypo)
Cover OD- no movement OS. LE fixates.
Uncover OD- no movement OU. LE fixates.
Cover OS- OD moves down, OS moves down (under occluder). RE fixates.
Uncover OS- no movement OU. RE fixates.
Cover OD- OD moves up (under occluder), OS moves up. LE fixates.
Uncover OD- no movement OU. LE fixates.

Alternating Cover: ex. Constant Alternating. OD Hyper, (OS Hypo)
Cover OD- no movement OU. LE fixates
Cover OS- OD moves down, OS moves down (under occluder). RE fixates.
Cover OD- OD moves up (under occluder), OS moves up. LE fixates.

Characteristics:

Amblyopia: Less common than horizontal[3]
ARC: Less common than horizontal[3]

Other tests: see hyperphoria

Stereo: May be poor; opposed to possibly reduced

Treatment: Rx vertical prism for <10pd[3]. VT to increase vertical fusional ranges.[3]
Surgery if >10pd[3]

Management: Prescribe vertical prism based on vertical associated phoria.[2]
Rx prism when:
(1) Significant ocular symptoms
(2) Testing gives consistent results
(3)Dissociated vertical phoria correlates with vertical fixation disparity in the same direction
(4)Absence of significant prism adaptation[2]

Prognosis: If small angle, likely to have good single binocular vision with treatment.
If larger angle, likely to have good single monocular vision with treatment and suppression of the opposite eye.

APPENDIX

Duane-White classification

	Exophoria	Orthophoria	Esophoria
Low AC/A	Basic Exophoria, Convergence Insufficiency	Convergence Insufficiency	Divergence Insufficiency
Normal AC/A	Basic Exophoria	Fusional Vergence Dysfunction	Basic Esophoria
High AC/A	Divergence Excess	Convergence Excess	Basic Esophoria, Convergence Excess

Sheard's Criterion- Analytical criteria for evaluating lateral imbalances.[2] Fusional reserve should be >/= 2X the demand[2].

Ex. Positive Fusional Reserve Convergence should be >/= 2X the amount of XP

Ex. Negative Fusional Reserve Convergence should be >/= 2X the amount of EP

To determine the amount of prism needed:

(1) Trial & Error

(2) Graphical Analysis

(3) P=2/3D-1/3R (p=prism, d=demand, r=reserve)

Want P</= 0 in order for Sheard's criterion to be MET with prism correction.

Rx BI for XP, BO for EP[2]

Hofstetter's Formula

Maximum Amplitude	25-0.4(age)
Probably Amplitude	18.5-0.3(age)
Minimum Amplitude	15-0.25(age)

*up to age 60[2]

Age Range in Yrs.	Minimum Amplitude in Diopters	Range of Near Adds in Diopters (40 cm)
40-44	5.00 to 4.00	+0.75 to +1.00
45-49	3.75 to 2.75	+1.00 to +1.50
50-54	2.50 to 1.50	+1.50 to +2.00
55-59	1.25 to 0.25	+2.00 to +2.25
60+	0	+2.25 to +2.50

*[1]

Morgan's Norms

	Mean	Standard Deviation	Normal Range
Distance phoria	1pd XP	2	0 to 2 XP
40 cm phoria	3pd XP	5	0 to 6 XP
Distance base-in limit			
Blur	X		
Break	7pd	3	5 to 9
Recovery	4pd	2	3 to 5
Distance base-out limit			
Blur	9pd	4	7 to 11
Break	19pd	8	15 to 23
Recovery	10pd	4	8 to 12
40 cm base-in limit			
Blur	13pd	4	11 to 15/ no blur
Break	21pd	4	19 to 23
Recovery	13pd	5	10 to 16
40 cm base-out limit			
Blur	17pd	5	14 to 20/ no blur
Break	21pd	6	18 to 24
Recovery	11pd	7	7 to 15
40 cm plus-to-blur	+2.00D	0.50	+1.75 to +2.25
40 cm minus-to-blur	-2.37D	1.12	-1.75 to -3.00
Gradient AC/A Ratio	4pd/D	2	3 to 5
Amplitude of Accommodation	16.0-(0.25)(age)	2.00	16.0- (0.25)(age)+/-1.00

*[2]

VOCABULARY & ABBREVIATIONS

AC/A Accommodative Convergence/ Accommodation Ratio

Alternating Switches eyes while testing.

ARC Anomalous Retinal Correspondence. Condition in which the two foveas do NOT correspond. Correspondence is cortical.

Comitant Measurement of angle is approximately the same in all positions of gaze.

Constant Always manifested in testing.

EP Esophoria

ET Esotropia

Intermittent Manifests occasionally during testing.

Lag Accommodative Lag

Monocular Always manifested in the same eye.

NFC Negative Fusional Convergence

Dist: (1)NRC + dist phoria
(+) phoria for eso
(-) phoria for exo
(2)Dist BI to break from dist phoria

Near: (1)NRC – near phoria
(+) phoria for eso
(-) phoria for exo
(2)Near BI to blur from near phoria

Non-comitant Measurement of angle is not the same in all positions of gaze.

NRA Negative Relative Accommodation

NRC Normal Retinal Correspondence. Condition in which the two foveas DO correspond to one another.

NRC Negative Relative Convergence

Dist: (1)NFC - dist phoria
(+) phoria for exo
(-) phoria for eso
(2)Dist BI to break from distance phoric position – distance phoria

Near: (1)NFC + near phoria
(+) phoria for exo
(-) phoria for eso
(2)Near BI to blur from near phoric position + near phoria

pd Prism dioptors

PFC Positive Fusional Convergence

Dist: (1)PRC – distance phoria
(+) phoria for exo
(-) phoria for eso
(2)Dist BO to break from distance phoria

Near: (1)PRC + near phoria
(+) phoria for exo
(-) phoria for eso
(2)Near BO to blur from near phoria

PRA Positive Relative Accommodation

PRC Positive Relative Convergence

Dist: (1)PRC + distance phoria
(+) phoria for eso
(-) phoria for exo
(2)Dist BO to break from distance phoric position + distance phoria

Near: (1)PRC – distance phoria
(+) phoria for exo
(-) phoria for eso
(2)Near BI to blur from near phoric position + near phoria

VT Vision Therapy

XP Exophoria **XT** Exotropia

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