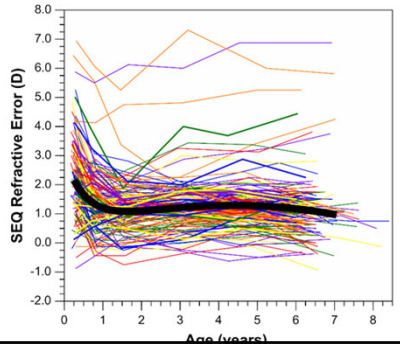
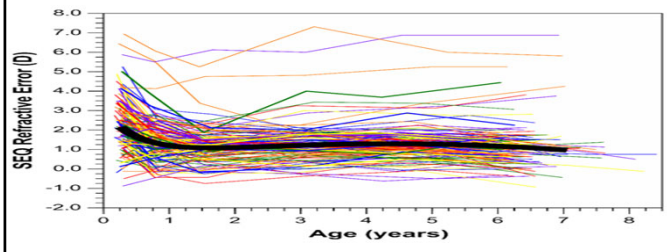
- Vision Development
- Infant Ocular conditions
- Amblyopia Treatment Studies
- Myopia Progression
- CITT updates
- Strabismus concepts

- Infant visual development

- Infant visual development
  - Refractive Development
  - Binocularity Development





- Infant visual development
  - Binocularity development (Eileen Birch)
  - Preferential looking / demonstrated binocular function turns on "suddenly" between 3 -6 mos of age

- Measurement of stereoacuity outcomes at ages 1 to 24 months: Randot Stereocards
- Eileen E Birch 1, Sarah E Morale, Brett G Jeffrey, Anna R O'Connor, Sherry L Fawcett
- Affiliations expand
- PMID: 15729278 DOI: 10.1016/j.jaapos.2004.11.013
- Abstract
- Purpose: The aim of the present study was to develop a simple, quick, and portable random dot stereoacuity test for measurement of binocular sensory outcomes during the first 24 months of life.
- Methods: Vertical bar random dot vectographs were adapted for presentation in a "Teller Acuity Card" format, called the "Randot Stereocards." A forced-choice preferential looking protocol was used. Study participants included 388 healthy, term infants and children (normative cohort; age range: 1 month to 8 years) and 280 patients with common pediatric ophthalmic disorders (patient cohort; age range: 5 months to 9 years).
- Results: Overall, the success rate for test completion in the normative cohort was 91.3%. By 4 months of age, normal infants' mean stereoacuity was about 600" and, by 6 months, 200". Mean stereoacuity further improved to about 100" by 12 months and 70" by 18 months. Normative results were similar to published data obtained with laboratory-based stereoacuity tests. Randot Stereocard data from normal children aged 2 to 6 years were similar to published normative data for the Preschool Randot Stereoacuity Test. In the patient cohort, concordance between the Randot Stereocards and the Preschool Randot Test was 87%; concordance between the Randot Stereocards and the Randot Test was 84%.
- Conclusion: The Randot Stereocards provide a simple, reliable, and valid method of obtaining a quantitative assessment of binocular vision in children up to 24 months of age for use in clinical trials and in clinical management.

- Invest Ophthalmol Vis Sci
- . 1985 Mar;26(3):366-70.
- Preferential-looking assessment of fusion and stereopsis in infants aged 1-6 months
- E E Birch, S Shimojo, R Held
- PMID: 3972517
- Abstract
- The ability of infants to discriminate zero-disparity stimuli from both reverse contrast (rivalrous) and disparate (stereoscopic) stimuli was investigated in a two-alternative, forced-choice, preferential-looking paradigm. Few infants under 4 months of age demonstrated discrimination for any stimulus pairing. Of the infants tested at 4 months of age, approximately 70% preferred zero-disparity stimuli to reverse contrast stimuli, and 82% preferred stereoscopic stimuli to zero-disparity stimuli. Nearly 100% of 5- and 6-month-old infants exhibited these preferences. These findings suggest that sensory fusion is not present at birth but develops rapidly over the first 6 months of life. The time course for the development of sensory fusion was similar to the time course for the development of stereopsis in nine infants tested longitudinally.

- Infant visual development
  - Marshall Park's
    - Reinforcement of macular and extramacular pathways
      - Prevents decay

- Infant visual development (Update)
  - Infant SPOT screenings

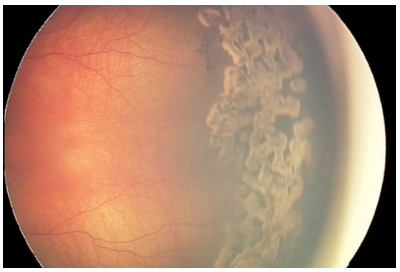
- The **Spot Vision Screener** was able to successfully evaluate 313 of 330 children (95%). The sensitivity of the **Spot Vision Screener** to detect American Association for Pediatric Ophthalmology and Strabismus guidelines for amblyopia risk factors was 89.5% and the specificity was 76.7%

- Sensitivity: the ability of a test to correctly identify patients with a disease.
- Specificity: the ability of a test to correctly identify people without the disease.
- True positive: the person has the disease and the test is positive. True negative: the person does not have the disease and the test is negative

- Increase in number of 12- 24 mos old patients being referred in for eye exam
- Perfect time!

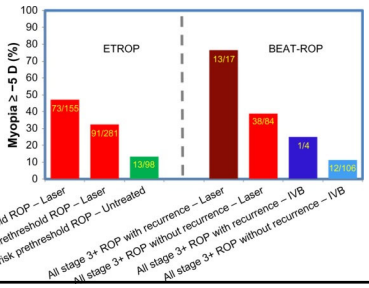
- Infant ocular conditions

- Retinopathy of Prematurity
  - 31 week
  - 1500 grams
  - Laser tx



- Retinopathy of Prematurity
  - 31 week
  - 1500 grams
  - Laser tx
  - Update: Avasatin
    - Stops vasoproliferative process / less incidence of myopia

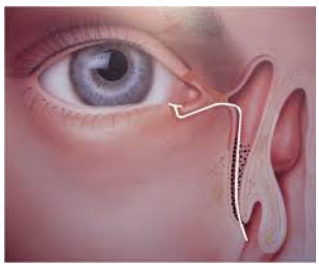
- Avastin retina ROP



- NLDO
  - Probe
  - Stent
  - Timing – update – waiting until later
  - *Ophthalmology* 2018 – most spontaneous resolution occurs between 9 – 15 mos of age
  - Success rate of probe:
    - 94.5 % 9- 11 mos
    - 97.8 % 12-14 mos
    - 71 % 18-24 mos
    - 64 % older than 24 mos

Spontaneous resolution and timing of intervention in congenital nasolacrimal duct obstruction , Ophthalmology, Sathiamoorthi, S 2018 JAMA Ophthal

- NLDO
  - Stent
  - Monocanalicular – in office removal



- Consider referring non resolving NLDO 14-18 mos of age
- Prepare the parent
- Monitor refraction *OU*

Slide 22

HT1 Hug, Timothy, 7/28/2021

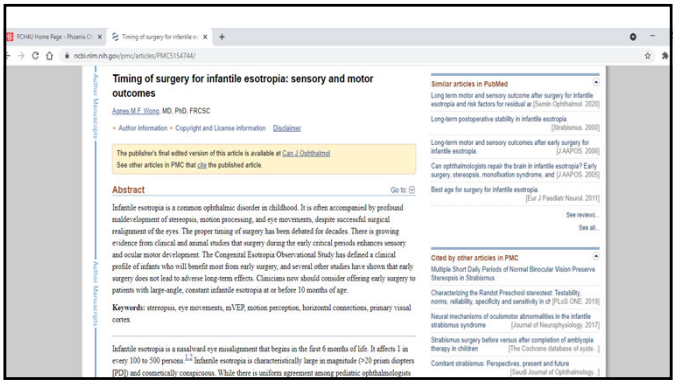
- J AAPOS
- . 2013 Jun;17(3):235-8. doi: 10.1016/j.jaapos.2012.11.022. Epub 2013 Apr 18.
- Anisometropia and amblyopia in nasolacrimal duct obstruction
- Michael A Kipp 1, Michael A Kipp Jr, William Struthers
- Affiliations expand
- PMID: 23602456 DOI: 10.1016/j.jaapos.2012.11.022
- Abstract
- Purpose: To investigate an association of childhood nasolacrimal duct obstruction (NLDO) with anisometropia and amblyopia.
- Methods: The medical records of patients from newborn to 6 years of age with a diagnosis of NLDO seen from 2000 to 2010 were retrospectively reviewed. Data collected included age at onset of NLDO, laterality of NLDO, cycloplegic refractive error, determination of clinically significant anisometropia (defined as ≥1 D), and diagnosis of amblyopia with amblyopia subtype (anisometropic vs other).
- Results: A total of 1,218 patients with NLDO were included. Of these, 887 cases (72.8%) were unilateral; 331 (27.2%), bilateral. Anisometropia was found in 67 (7.6%) unilateral cases and 12 (3.6 %) bilateral cases on initial examination ($\chi 2=5.48$, $P < 0.01$). Same-sided unilateral NLDO was significantly associated with greater hyperopia in the anisometropia patients ($\chi(2) = 33.01$, $P < 0.001$). Follow-up data were available for 482 NLDO patients and revealed an additional 26 patients with anisometropia for a total of 105 of 1218 (8.6%). Of the 482 patients, 28 (5.8%) developed amblyopia, 16 cases of which were purely attributable to anisometropia. Of 41 patients with anisometropia who were in the follow-up, 9 (22%) developed amblyopia.
- Conclusions: Anisometropia occurred at a greater rate in unilateral NLDO patients compared with bilateral NLDO patients and occurred at a greater rate in this NLDO cohort than expected in the general pediatric population. Several patients with anisometropia developed clinical amblyopia. Measurement of cycloplegic refraction in all NLDO patients at initial examination should be considered. Periodic follow-up is appropriate for patients with NLDO and anisometropia.

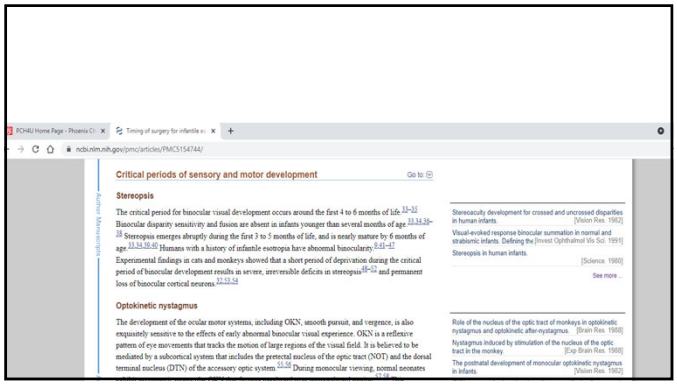
- Strabismus

- Strabismus
  - Infantile ET
  - Accommodative ET
  - Infantile XT
  - Intermittent XT

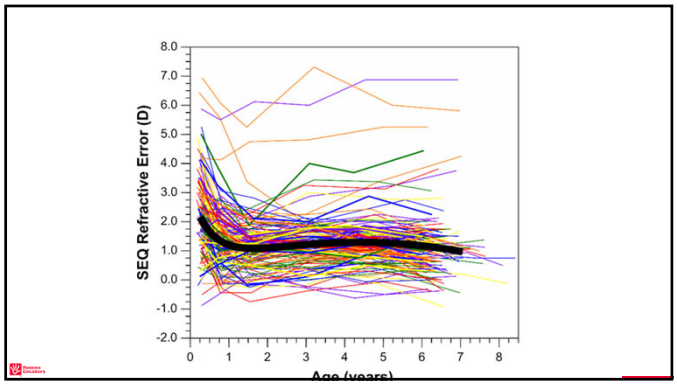
- Strabismus
  - Infantile ET
    - Associated DVD and IOOA

- Abstract
- Infantile esotropia is a common ophthalmic disorder in childhood. It is often accompanied by profound maldevelopment of stereopsis, motion processing, and eye movements, despite successful surgical realignment of the eyes. The proper timing of surgery has been debated for decades. There is growing evidence from clinical and animal studies that surgery during the early critical periods enhances sensory and ocular motor development. The Congenital Esotropia Observational Study has defined a clinical profile of infants who will benefit most from early surgery, and several other studies have shown that early surgery does not lead to adverse long-term effects. Clinicians now should consider offering early surgery to patients with large-angle, constant infantile esotropia at or before 10 months of age.





- Accommodative ET
  - Ingredients at age 12- 18 mos
  - Intervention
    - Is refractive error on track with graph ?
    - Is refractive error ingredient for ET?



- Accommodative ET
  - Ingredients at age 12- 18 mos
  - Intervention
    - Is refractive error on track with graph ?
    - Is refractive error ingredient for ET?
    - Treatment
      - Full plus as measured under cycloplegic conditions
        - AOA clinical practice guidelines/ AAPOS practice guidelines

- What's the update in accommodative esotropia?
  - Keep prescribing full plus to maintain alignment during binocular genesis time period

- Marshall Parks - re enforcement
- Disruption does not only stop development at "current" stage
- Leads to decay of cortical connections already established

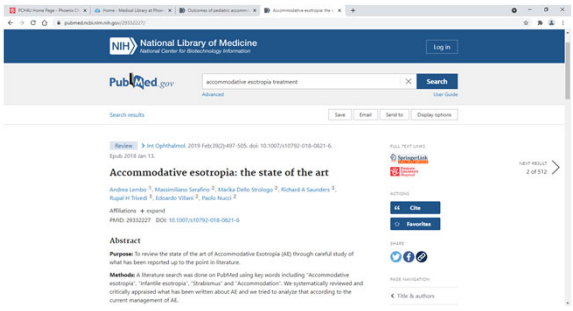
- Recipe for mixed mechanism ET – permanent impairment of bifoveality

- Br J Ophthalmol
- . 2020 Sep;104(9):1283-1287. doi: 10.1136/bjophthalmol-2019-314891. Epub 2019 Dec 5.
- Refractive change in children with accommodative esotropia
- Lucas Bonafede 1, Lloyd Bender 1, James Shaffer 2, Gui-Shuang Ying 2, Gil Binenbaum 3
- Affiliations expand
- PMID: 31806647 DOI: 10.1136/bjophthalmol-2019-314891
- Abstract
- Objective: To determine whether there is a measurable change in hyperopia in children with accommodative esotropia over time.
- Methods and analysis: A retrospective cohort of children with fully or partially accommodative esotropia diagnosed by age 7 years, followed to age 10 or older, and with at least two cycloplegic refractions, one before age 7 years and one after age 10 years. The annual change was calculated from linear mixed-effect models, overall and during two age periods with subgroup analysis by baseline refractive error (<4D, ≥4D) and type (partial, full) of accommodative esotropia.
- Results: 405 subjects were studied. Mean age at first and last visit was 3.2 and 12.1 years, respectively, with mean 7.6 cycloplegic refractions. The annual change (95% CI) in refractive error was -0.071 (-0.087 to -0.055) D/yr. Between ages 3 and 7, hyperopia among children with baseline hyperopia <4D increased by 0.12 (0.08 to 0.16) D/yr, while hyperopia among those with baseline 4D or greater was stable (0.00 D/yr, -0.03 to 0.04) (p<0.001). Hyperopia decreased from age 7 to 15 years in both subgroups: <4D subgroup -0.17 (-0.20 to -0.14) D/yr, ≥4D subgroup -0.18 (-0.21 to -0.15) D/yr (p=0.758). There was no significant difference in refractive change between fully (n=274) and partially (n=131) accommodative esotropia (p≥0.10).
- Conclusion: Hyperopia in children with accommodative esotropia is stable or increases up to age 7 years, depending on baseline hyperopia, but decreases gradually between ages 7 and 15 years regardless of baseline refractive error

- Assessment of Refractive Error Changes and Factors for Decompensation in Patients With Fully Accommodative Esotropia
- Selcen Çelik, Osman Bulut Ocak, Aslı İnal, Ebru Demet Aygit, Ceren Gürez, Zahid Hüseyinhan, Birsen Gökyiğit
- PMID: 32687205 DOI: 10.3928/01913913-20200504-02
- Abstract
- Purpose: To determine the factors affecting the risk of deterioration and evaluate the refractive error change in patients with fully accommodative esotropia.
- Methods: Patients diagnosed as having fully accommodative esotropia (esotropic deviation that started before 7 years of age and less than 8 to 10 prism diopters [PD] of esotropia with full hyperopic correction and/or bifocals) were included in this retrospective population-based cohort study. Refractive error changes were recorded. For comparisons, patients were divided into two groups: nondecompensated fully accommodative esotropia group and decompen-sated fully accommodative esotropia group.
- Results: Two hundred and twenty-three patients met the inclusion criteria. The mean follow-up time was 5.94 ± 0.31 years (range: 5 to 8 years). The changes in spherical equivalent in the younger than 7 years, 7 to 12 years, and 12 to 17 years groups were statistically significant ($P < .001$). The decrease of hypermetropia was 0.13 diopters/year between 7 and 12 years and 0.06 diopters/year between 12 and 17 years. Forty-one of 223 patients (18.4%) discontinued spectacle therapy during the follow-up period. Hyperopic error and presence of amblyopia were lower, whereas visual acuity level and presence of near-distance disparity were higher in the spectacle discontinuation group ($P < .001$, .007, .01, and 0.01, respectively). Deterioration of fully accommodative esotropia occurred in 30 of 223 patients (13.5%). Boys were more likely to require strabismus surgery ($P = .32$). The mean age at presentation, esotropia angle with and without refractive correction at both near and distance fixation, near distance disparity, and inferior oblique overaction were significantly higher in patients with decompensated fully accommodative esotropia.
- Conclusions: Hyperopic error increased from the initial level until 7 years of age, followed by a myopic shift thereafter. Few children had resolution of fully accommodative esotropia and could discontinue spectacle therapy. Children with male gender, higher esotropia angle, older age at presentation, near-distance disparity, and inferior oblique overaction experienced a greater deterioration of the fully accommodative esotropia. [J Pediatr Ophthalmol Strabismus. 2020;57(4):217-223.].

- However, there are studies that contradict these results. MacEwen et al. conducted a prospective study of 30 patients and reported that deterioration of esotropia was observed in 50% of patients who received a reduction of hyperopic correction of 1–2 D.
- Furthermore, Black showed that a rapid reduction in hyperopia was not observed in patients who had RAET and were prescribed a reduction of hyperopic correction.
- The researchers explained that the weaning of spectacles or the changes in refraction can differ from normal and that one should be careful in patients with RAET.

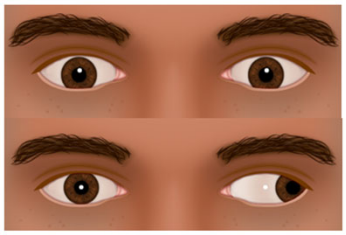
- Esotropia Outcomes and the Influence of Delay to Wearing Full Hypermetropic Correction
- Rosie Brennan, Patrick McCance, Jian Lee Yeong, Gary Adamson, John Mallett
- PMID: 32203591 DOI: 10.3928/01913913-20200117-01
- Abstract
- Purpose: To assess whether delay to full hypermetropic correction wear in children might influence the outcome of a diagnosis of full versus partially accommodative esotropia.
- Methods: All children younger than 7 years who were referred with possible strabismus over a 1-year period were assessed. A standard set of details were documented: age at which esotropia was first noticed, age at which esotropia was confirmed by an orthoptist, age at which glasses were prescribed, and age at which full refractive error was constantly worn. When full-time hypermetropic correction was worn, the type of esotropia was determined.
- Results: There were 430 children referred. Of these, 117 had a concomitant esotropia (62 males and 55 females). Esotropia was confirmed at 35.47 ± 16.67 months of age (range: 4 to 78 months). There were 51 children (43.6%) with full accommodative esotropia, 57 (48.7%) with partially accommodative esotropia, and 9 (7.7%) with nonaccommodative esotropia. Longer delays between the time at which esotropia was identified and the time at which glasses were prescribed were associated with a reduced likelihood of an outcome of full versus partially accommodative esotropia (odds ratio [OR] = 0.73, 95% confidence interval [CI] = 0.58 to 0.93). Delay to glasses wear for full and partially accommodative esotropia was 1.94 ± 6.4 and 6.24 ± 8.36 months, respectively. Higher average spherical correction scores were associated with a higher likelihood of being in the full accommodative esotropia group (OR = 1.35, 95% CI = 1.07 to 1.69).
- Conclusions: A child with recent onset concomitant esotropia is more likely to achieve full versus partially accommodative esotropia if the delay to full hypermetropic corrective glasses wear is minimized. [J Pediatr Ophthalmol Strabismus. 2020;57(2):85-89.]



- Strabismus
  - Infantile XT

- Intermittent XT
  - Age of onset
  - Definition(s)

- Different than Infantile XT: with partial reinforcement and binocular development



Both eyes are straight when looking at a near object

The left eye is turned outwards when looking at a distant object

- Intermittent XT
  - Divergence XS vs High AC/A
  - Why not amblyopia

- Treatment
  - Lenses
  - Prisms
  - Orthoptics
  - Surgery

- Treatment
  - Lenses
  - Prisms
  - Orthoptics
  - Surgery
    - Surgery "Emergency"

- Treatment Updates
  - Monitor
  - IXT study updates
  - Lenses – over minus update
    - Leads to myopia progression (PEDIG trial)
    - Exotropia control ceased when over minus discontinued

- Infantile Capillary Hemangioma
  - Facial
  - Eyelid
  - Treatment
    - Historically
    - Updates
      - Timolol gel
      - Propranolol

- Can be superficial or deep
- Capillary vessels
- Will involute spontaneously
- Can be treated with topical timolol or oral propranolol (or both)
- Can induce amblyogenic factor – ptosis or astigmatism

- After treatment with Timolol

- Infantile Cataract
  - IATS – study
  - IOL v Contact lens
  - No statistically significant visual difference
  - Both groups glaucoma
  - Re-op or additional surgical procedure
    - Greater for the IOL group

- The critical period for surgical treatment of dense congenital unilateral cataract
- E E Birch 1, D R Stager
- Affiliations expand
- PMID: 8675395
- Abstract
- Purpose: Early treatment of dense congenital unilateral cataract is associated with better acuity outcomes. It is unclear whether there is a gradual worsening of prognosis with delay of treatment from the time of birth (linear model) or whether there exists an early window of time during which treatment is maximally effective, followed by declining success (bilinear model). The aim of the current study was to determine which model better describes the response to treatment.
- Methods: A maximum likelihood procedure that permits statistical comparison between linear and bilinear models was applied to acuity outcomes from a group of 25 children 5 to 8 years of age with a history of dense congenital unilateral cataract diagnosed at 1 to 10 days of age. Contrast sensitivity and vernier acuity data from a subset of these children were evaluated with nonparametric statistical methods.
- Results: The bilinear model provided a significantly better fit to the acuity outcome data. The line fitted to the initial portion of the function had a shallow slope that was not significantly different from 0.0. The intersection of the two linear functions occurred at 5.6 weeks and was followed by a steep decline in visual acuity outcomes. Contrast sensitivity and vernier outcome measures over a range of spatiotemporal conditions showed better outcomes were obtained with early treatment.
- Conclusions: Intervention before 6 weeks of age may minimize the effects of congenital unilateral deprivation on the developing visual system and provide for optimal rehabilitation of visual acuity

- Why such poor vision outcomes?

- Amblyopia

- Amblyopia
- Unilateral aphakia is constant amblyogenic factor

- Amblyopia Treatment Trials
- PEDIG
- PTO v FTO
- Atropine v PTO
- Daily Atropine v Weekend Atropine

- Amblyopia Treatment Trials
- Ipad games and binocular treatments
  - Not better than occlusion
- Anisometropia
  - Glasses only
  - Additional PTO

- J AAPOS
- . 2015 Feb;19(1):6-11. doi: 10.1016/j.jaapos.2014.09.009.
- Binocular iPad treatment for amblyopia in preschool children
- Eileen E Birch 1, Simone L Li 2, Reed M Jost 2, Sarah E Morale 2, Angie De La Cruz 2, David Stager Jr 3, Lori Dao 3, David R Stager Sr 4
- Affiliations expand
- PMID: 25727578 PMCID: PMC4346708 DOI: 10.1016/j.jaapos.2014.09.009
- Free PMC article
- Abstract
- Background: Recent experimental evidence supports a role for binocular visual experience in the treatment of amblyopia. The purpose of this study was to determine whether repeated binocular visual experience with dichoptic iPad games could effectively treat amblyopia in preschool children.
- Methods: A total of 50 consecutive amblyopic preschool children 3-6.9 years of age were assigned to play sham iPad games (first 5 children) or binocular iPad games (n = 45) for at least 4 hours per week for 4 weeks. Thirty (67%) children in the binocular iPad group and 4 (80%) in the sham iPad group were also treated with patching at a different time of day. Visual acuity and stereoacuity were assessed at baseline, at 4 weeks, and at 3 months after the cessation of game play.
- Results: The sham iPad group had no significant improvement in visual acuity (t4 = 0.34, P = 0.75). In the binocular iPad group, mean visual acuity (plus or minus standard error) improved from 0.43 ± 0.03 at baseline to 0.34 ± 0.03 logMAR at 4 weeks (n = 45; paired t44 = 4.93; P < 0.0001). Stereoacuity did not significantly improve (Ns4 = 1.35, P = 0.18). Children who played the binocular iPad games for 28 hours (250% compliance) had significantly more visual acuity improvement than children who played 0-4 hours (t63 = 4.21, P = 0.0001).
- Conclusions: Repeated binocular experience, provided by dichoptic iPad game play, was more effective than sham iPad game play as a treatment for amblyopia in preschool children.

- ATS
  - PTO 2 hours increased to 6 hours
  - Regression
    - 2 way “door”
    - Maintenance patching

- Myopia Progression
  - Outdoor time
  - Multifocal soft contact lens
  - Orthokeratology
  - Atropine – low dose
  - Best practice?
  - Considerations

- Outdoor Time

- Outdoor Time

- Two studies of 1st graders showed a 9 % reduction in myopia incidence for group of one hour outdoor time
- compared to control

- Multifocal soft contact lens

- A 3-Year Randomized Clinical Trial of MiSight Lenses for
- Myopia Control
- Paul Chamberlain, BSc,1* Sofia C. Peixoto-de-Matos, MSc,2 Nicola S. Logan, PhD,3 Cheryl Ngo, MBBS, MMed,4
- Deborah Jones, BSc, FAAO,5 and Graeme Young, PhD, FAAO6

- 0.40 less than control at 12 mos
- 0.54 less than control at 24 mos
- 0.75 less than control at 36 mos

- Orthokeratology

- Orthokeratology
- 2 year study –
  - Progression – axial elongation - in ortho k group - 0.36 mm
  - Progression – axial elongation - in Control group - 0.63 mm

- Orthokeratology
- When lens wear was stopped – axial length elongation in lens wear group was faster than the control group (rebound effect)

- Low Dose Atropine (LAMP studies)

- Low Dose Atropine (LAMP studies)
  - 0.05 %
  - 0.25 %
  - 0.01 %

- Over the 2-year period, the mean SE progression was 0.55
  0.85, and 1.12 in the 0.05%, 0.025%, and 0.01% atropine groups, respectively

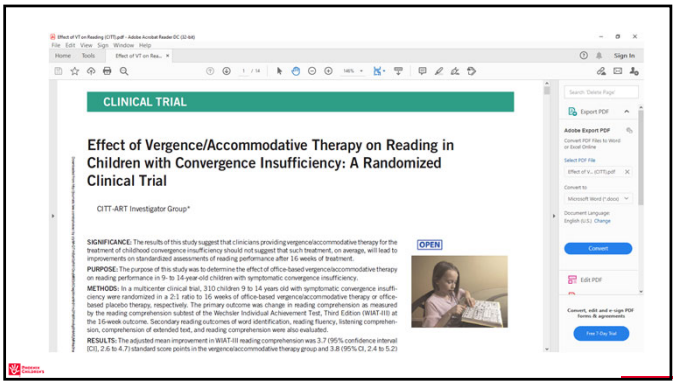
Used placebo group in crossover

Younger children needed stronger concentration of atropine to achieve same results as lower dose in older children

- CITT
  - Original Studies
  - Updates

- CITT
  - Original Studies
    - Office based accommodative and convergence therapies showed increased positive fusional ranges and decreased symptoms vs home convergence therapies or placebo
    - All groups showed some improvement in all categories

- CITT
  - Updates
    - Fusional amplitudes sustained
    - No improvement in attention span or reading comprehension


CLINICAL TRIAL

Effect of Vergence/Accommodative Therapy on Reading in Children with Convergence Insufficiency: A Randomized Clinical Trial

CITT-ART Investigator Group*

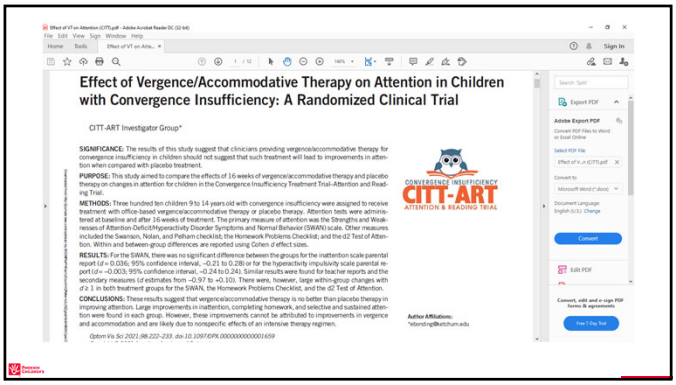
SIGNIFICANCE: The results of this study suggest that clinicians providing vergence/accommodative therapy for the treatment of childhood convergence insufficiency should not suggest that such treatment, on average, will lead to improvements on standardized assessments of reading performance after 16 weeks of treatment.

PURPOSE: The purpose of this study was to determine the effect of office-based vergence/accommodative therapy on reading performance in 9- to 14-year-old children with symptomatic convergence insufficiency.

METHODS: In a multicenter clinical trial, 310 children 9 to 14 years old with symptomatic convergence insufficiency were randomized in a 2:1 ratio to 16 weeks of office-based vergence/accommodative therapy or office-based placebo therapy, respectively. The primary outcome was change in reading comprehension as measured by the reading comprehension subtest of the Wechsler Individual Achievement Test, Third Edition (WIAT-III) at the 16-week outcome. Secondary reading outcomes of word identification, reading fluency, listening comprehension, comprehension of extended text, and reading comprehension were also evaluated.

RESULTS: The adjusted mean improvement in WIAT-III reading comprehension was 3.7 (95% confidence interval (CI), 2.6 to 4.7) standard score points in the vergence/accommodative therapy group and 3.8 (95% CI, 2.4 to 5.2)

OPEN


Effect of Vergence/Accommodative Therapy on Attention in Children with Convergence Insufficiency: A Randomized Clinical Trial

CITT-ART Investigator Group*

SIGNIFICANCE: The results of this study suggest that clinicians providing vergence/accommodative therapy for convergence insufficiency in children should not suggest that such treatment will lead to improvements in attention when compared with placebo treatment.

PURPOSE: This study aimed to compare the effects of 16 weeks of vergence/accommodative therapy and placebo therapy on changes in attention for children in the Convergence Insufficiency Treatment Trial-Attention and Reading Trial.

METHODS: Three hundred ten children 9 to 14 years old with convergence insufficiency were assigned to receive treatment with office-based vergence/accommodative therapy or placebo therapy. Attention tests were administered at baseline and after 16 weeks of treatment. The primary measure of attention was the Strengths and Weaknesses of Attention-Deficit/Hyperactivity Disorder Symptoms and Normal Behavior (SWAN) scale. Other measures included the Swanson, Nolan, and Pelham checklist; the Homework Problems Checklist; and the d2 Test of Attention. Within and between-group differences are reported using Cohen *d* effect sizes.

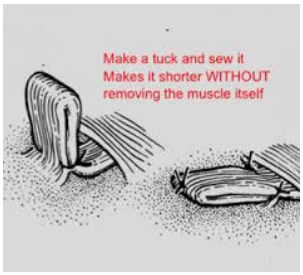
RESULTS: For the SWAN, there was no significant difference between the groups for the inattention scale parental report (*d* = 0.036; 95% confidence interval, −0.21 to 0.28) or for the hyperactivity impulsivity scale parental report (*d* = −0.003; 95% confidence interval, −0.24 to 0.24). Similar results were found for teacher reports and the secondary measures (*d* estimates from −0.97 to +0.10). There were, however, large within-group changes with *d* ≥ 1 in both treatment groups for the SWAN, the Homework Problems Checklist, and the d2 Test of Attention.

CONCLUSIONS: These results suggest that vergence/accommodative therapy is no better than placebo therapy in improving attention. Large improvements in inattention, completing homework, and selective and sustained attention were found in each group. However, these improvements cannot be attributed to improvements in vergence and accommodation and are likely due to nonspecific effects of an intensive therapy regimen.

CONVERGENCE INSUFFICIENCY CITT-ART ATTENTION & READING TRIAL

- Strabismus
  - SO Palsy (Congenital) v IV nerve palsy
    - Surgical options
      - Tuck
      - IO myectomy
      - Prism- cannot address the incomitance but maybe patient's preference

- Superior Oblique Palsy vs IV nerve palsy
  - Congenital SO Palsy – lax tendon
    - Tuck procedure
    - Inferior oblique myectomy
  - Non-congenital – insult to 4th cranial nerve
    - Inferior oblique transposition



- Strabismus Surgery - Adult
  - Psycho – social impact
  - Binocular function

The Negative Psychosocial Impact of Strabismus in Adults

Scott E. Olitsky, MD; Sudha Sadrek, MD; Anthony Graziano, PhD; Jessica Hamblen, MA; Steven E. Brooks, MD; and Steven H. Sharbe, PhD

Introduction: The goal in the treatment of strabismus is to realign the visual axes to eliminate diplopia, produce or restore binocular vision, expand the binocular visual field, and/or provide a normal appearance. The treatment of strabismus in adults who do not experience diplopia or who do not have binocular potential has sometimes been regarded as "cosmetic." Many adults with strabismus have stated that it has had a negative effect on their lives. This study was designed to ascertain whether there is a negative social bias against adult patients with strabismus that could affect interpersonal relationships and limit employment opportunities. Methods: An orthotropic person was photographed in primary, right, and left gaze. These photographs were then digitally altered to produce an esotropia and exotropia of similar magnitude. Subjects were then asked to evaluate a single photograph with reference to personality characteristics that are important for social interaction and employment capability. Results: Overall, the strabismic faces were judged significantly more negatively, across 11 descriptive characteristics, than the nonstrabismic face. The effect of esotropia was worse than exotropia. Conclusion: Strabismus creates a significant negative social prejudice. These biases can have a detrimental impact on socialization and employability. Treatment of strabismus may positively alter perceived characteristics of individuals and improve their ability to socialize normally and obtain employment. Therefore, the treatment of strabismus should not be considered cosmetic even when there is no hope of improving binocular vision. (J AAPOS 1999;3:209-11)

The goal in the treatment of strabismus is to realign the visual axes to eliminate diplopia, produce or restore binocular vision, improve the visual field, and/or provide a normal appearance. The treatment of strabismus in adults who do not experience diplopia or who do not have binocular potential has sometimes been regarded as "cosmetic." The use of the term *cosmetic* in the treatment of strabismus is incorrect.[1,2] Cosmetic surgery is performed to enhance or beautify. Strabismus is a result of an underlying disease process, abnormal binocular vision, which leads to an objective deviation from normal appearance. Therefore, strabismus surgery is performed to correct an abnormality caused by a congenital or acquired defect in binocular vision.[3]

The presence of strabismus has been considered a disability because it may lead to loss of normal eye contact, which may make normal socialization and the ability to gain employment difficult. The subjective feelings produced by the presence of strabismus on the affected individual have been studied. Satterfield et al[4] found that patients with strabismus felt a negative impact on their lives and reported difficulty with self-image, interpersonal relationships, and school performance. The patients also believed that their strabismus made it more difficult to secure employment or to be successful in careers that required direct face-to-face contact. However, these findings were subjective and based on the respondents' own beliefs. The psychosocial effect on people who interact with strabismic individuals has not been objectively studied. If strabismus does alter a person's ability to gain employment or to be successful, it should be considered a true disability. Treatment for strabismus should then be considered functional in nature, even if it does not restore or provide binocular vision. This study was designed to

Traits evaluated

- Attentiveness
- Communication Skills
- Competency
- Dependability
- Emotional Stability

Honesty

Humor

Intelligence

Leadership Ability

Organizational Skills

Sincerity

- Overall, the strabismic faces were judged significantly more negatively, across 11 descriptive characteristics, than the non-strabismic face.

Strabismus Surgery

Psychosocial aspects of strabismus study.

Satterfield D, Keltner JL, Morrison TL
Arch Ophthalmol 1993; 111:1100-5

- CONCLUSIONS: Psychosocial difficulties are a problem for teenagers and adults. Correction of strabismus in the older teenager or adult may offer them improvement in psychosocial functioning

Strabismus Surgery

- Who should decide if adult strabismus surgery is an option?

- Where can adult strabismus come from?

- Pediatric Ocular Conditions !