



**37th Meeting of the  
European Strabismological Association**

Scuola Grande di San Rocco, Venice, Italy  
October 1 - 4, 2015



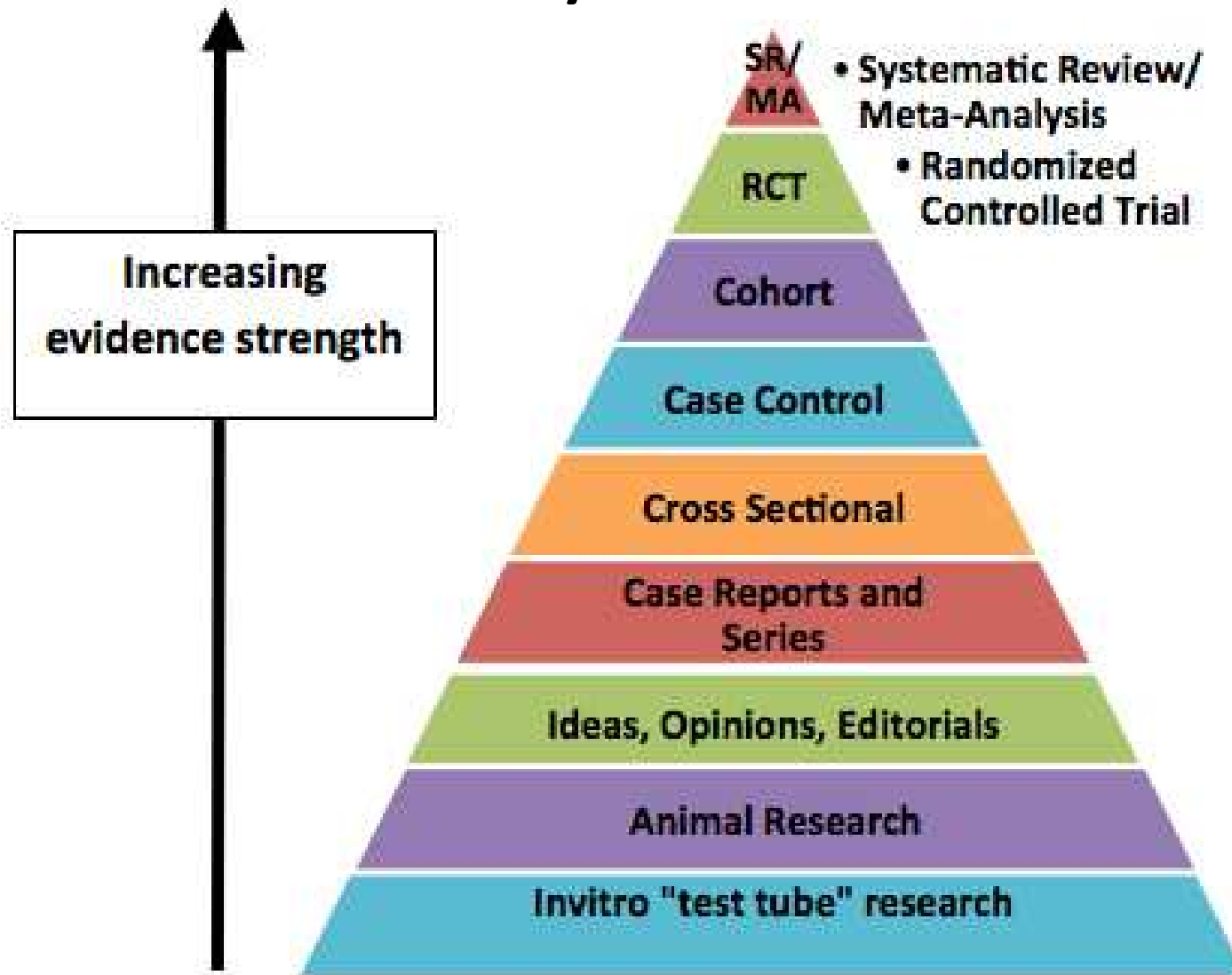
# Systematic reviews of interventions relevant to strabismus

Fiona Rowe, Sue Elliott, Iris Gordon, Anupa Shah



**Cochrane**  
Eyes and Vision

# Quality of evidence



# Cochrane Library

- Cochrane Eyes and Vision Group (CEVG) consists of CEVG UK and CEVG US
  - National Institute for Health Research (NIHR)
  - National Eye Institute (NEI), National Institutes of Health (NIH)
- CEVG works with voluntary authors
  - 1) Systematic reviews of interventions
    - effectiveness of eye health care interventions using RCTs
  - 2) Reviews of diagnostic test accuracy (DTA)
    - compare diagnostic tests ability to detect disease, i.e. reference test versus index test, using prospective and retrospective cohorts and case control studies

<b>A</b>	<b>G</b>	<b>O</b>
Acute Respiratory Infections Group	Gynaecological Cancer Group	Occupational Safety and Health Group
Airways Group		Oral Health Group
Anaesthesia Group	<b>H</b>	
	Haematological Malignancies Group	<b>P</b>
<b>B</b>	Heart Group	Pain, Palliative and Supportive Care Group
Back Group	Hepato-Biliary Group	Peripheral Vascular Diseases Group
Bone, Joint and Muscle Trauma Group	HIV/AIDS Group	Pregnancy and Childbirth Group
Breast Cancer Group	Hypertension Group	Prostatic Diseases and Urologic Cancers Group
		Public Health Group
<b>C</b>	<b>I</b>	<b>R</b>
Childhood Cancer Group	Incontinence Group	Renal Group
Colorectal Cancer Group	Infectious Diseases Group	
Consumers and Communication Group	Inflammatory Bowel Disease and Functional Bowel Disorders Group	<b>S</b>
Cystic Fibrosis and Genetic Disorders Group	Injuries Group	Schizophrenia Group
		Sexually Transmitted Infections Group
<b>D</b>	<b>L</b>	<b>S</b>
Dementia and Cognitive Improvement Group	Lung Cancer Group	Skin Group
Depression, Anxiety and Neurosis Group		Stroke Group
Developmental, Psychosocial and Learning Problems Group	<b>M</b>	
Drugs and Alcohol Group	Menstrual Disorders and Subfertility Group	<b>T</b>
	Metabolic and Endocrine Disorders Group	Tobacco Addiction Group
<b>E</b>	Methodology Review Group	
Ear, Nose and Throat Disorders Group	Movement Disorders Group	<b>U</b>
Effective Practice and Organisation of Care Group	Multiple Sclerosis and Rare Diseases of the Central Nervous System Group	Upper Gastrointestinal and Pancreatic Diseases Group
Epilepsy Group	Musculoskeletal Group	
<b>Eyes and Vision Group</b>		<b>W</b>
	<b>N</b>	Wounds Group
<b>F</b>	Neonatal Group	
Fertility Regulation Group	Neuromuscular Disease Group	

# Cochrane Review Groups

# Eyes and Vision Editorial base

Co-ordinating editors

Richard Wormald

Jennifer Evans

Managing editor

Anupa Shah

Trials search co-ordinator

Iris Gordon

Statistical editor

Catey Bunce

International editors

10 ophthalmologists

3 orthoptists

1 optometrist

# Review process

- Title registration
- Protocol preparation
- Editorial and peer review of the protocol
- Publication of the protocol
- Systematic review preparation
- Editorial and peer review of the systematic review
- Publication of the systematic review

Cochrane reviews are updated on a regular basis and so give an ongoing analysis of available evidence

# Reviews and protocols

- Co-existing diseases
- Conjunctival diseases
- Corneal diseases
- Eye haemorrhage
- Eye injuries
- Eye neoplasms
- Eyelid diseases
- Glaucoma
- Iris diseases
- Lacrimal diseases
- Lens diseases
- **Ocular motility disorders**
- Optic nerve diseases
- Orbital diseases
- **Refractive errors**
- Rehabilitation
- Retinal degeneration
- Retinal diseases
- Retinal vascular occlusion
- Scleral diseases
- Uveal and choroid diseases
- **Various** (CI, ABI, screening)

# Methods

- Database search: 2015 Cochrane Library
- Identification: completed reviews and protocols of direct relevance to strabismus practice
- Available on [www.thecochranelibrary.com](http://www.thecochranelibrary.com) (free to UK health employees) or via the CEVG website [www.cochraneeyes.org](http://www.cochraneeyes.org)



# Results

## **Cochrane Eyes and Vision library**

Topics of strabismus/ocular motility, amblyopia and refractive errors

- 18 completed reviews
- 9 completed protocols

## **Cochrane Stroke library**

Topic of eye movement impairment and visual perceptual disorders

- 1 completed review

# Refractive error protocols

Authors and date	Title	Objectives
<b>Li et al. 2012</b>	Optical correction of refractive error for preventing and treating eye symptoms in computer users	The primary objective of this review is to assess the effectiveness, safety and applicability of optical correction of refractive error for the reduction and prevention of eye symptoms in computer users.

# Refractive error reviews

Authors and Date	Title	Objectives
<b>Jones-Jordan et al. 2014</b>	Spectacle correction versus no spectacles for prevention of strabismus in hyperopic children	To assess the effectiveness of prescription spectacles compared with no intervention for the prevention of strabismus in infants and children with hyperopia.
<b>Wei et al. 2011</b>	Acupuncture for slowing the progression of myopia in children and adolescents	To assess the effectiveness and safety of acupuncture in slowing the progression of myopia in children and adolescents.
<b>Walline et al. 2011</b>	Interventions to slow progression of myopia in children	To assess the effects of several types of interventions, including eye drops, undercorrection of nearsightedness, multifocal spectacles and contact lenses, on the progression of nearsightedness in myopic children younger than 18 years. We compared the interventions of interest with each other, to single vision lenses (SVLs) (spectacles), placebo or no treatment.
<b>Wei et al. 2011</b>	Acupuncture for slowing the progression of myopia in children and adolescents	To assess the effectiveness and safety of acupuncture in slowing the progression of myopia in children and adolescents.
<b>Powell et al. 2004</b>	Vision screening for correctable visual acuity deficits in school-age children and adolescents	To evaluate the effectiveness of vision screening programmes carried out in schools in reducing the prevalence of undetected, correctable visual acuity deficits due to refractive error in school-age children.

# Conclusions and Recommendations

- Limited trials or no robust trials to draw conclusions from.
- Effects may have been chance findings, or due to bias.
- Due to the high risk of bias and poor reporting of included trials, the true effects are uncertain.
- There is, therefore, clearly a need for well-planned randomised controlled trials to be undertaken in various settings so that the potential benefits and harms can be measured.

# Strabismus protocols

Authors	Title	Objectives
<b>Hancox et al. 2015</b>	Psychosocial interventions for improving quality of life outcomes in adults undergoing strabismus surgery	To investigate the effects of psychosocial interventions versus no intervention on quality of life and psychosocial outcomes in adults undergoing strabismus surgery.
<b>Taylor et al. 2014</b>	Tests for detecting strabismus in children age 1 to 6 years in the community	To assess and compare the accuracy of tests, alone or in combination, for screening for strabismus in children aged one to six years, in a community setting by lay screeners or primary care professionals.
<b>Korah et al. 2014</b>	Strabismus surgery before versus after completion of amblyopia therapy in children	To study the functional and anatomic outcome of strabismus surgery when amblyopia therapy is completed before surgery as compared to amblyopia therapy completed after surgery.
<b>Theodorou &amp; Karim 2014</b>	Non-surgical interventions for nystagmus developing in the first year of life (infantile nystagmus)	To assess the efficacy and safety of non-surgical interventions for nystagmus developing in the first year of life.
<b>Rowe et al. 2014</b>	Interventions for eye movement disorders due to acquired brain injury	To assess the effects of any intervention and determine the effect of timing of any intervention in the treatment of strabismus, gaze deficits and nystagmus due to acquired brain injury in order to align visual axes in primary and/or secondary gaze positions.
<b>Holmes et al. 2013</b>	Interventions for dissociated vertical deviation	To assess the effects of surgical and non-surgical interventions for dissociated vertical deviation (DVD).

# Strabismus reviews I

Authors	Title	Objectives
<b>Korah et al. 2014</b>	Strabismus surgery before versus after completion of amblyopia therapy in children	To study the functional and anatomic (ocular alignment) outcomes of strabismus surgery before completion of amblyopia therapy as compared with surgery after completion of amblyopia therapy in children under seven years of age.
<b>Jones-Jordan et al. 2014</b>	Spectacle correction versus no spectacles for prevention of strabismus in hyperopic children	To assess the effectiveness of prescription spectacles compared with no intervention for the prevention of strabismus in infants and children with hyperopia.
<b>Haridas et al. 2013</b>	Adjustable versus non-adjustable sutures for strabismus	To examine whether adjustable or non-adjustable sutures are associated with a more accurate long-term ocular alignment following strabismus surgery and to identify any specific situations in which it would be of benefit to use a particular method.
<b>Elliott &amp; Shafiq 2013</b>	Interventions for infantile esotropia	The objective of this review was to assess the effectiveness of various surgical and non-surgical interventions for IE and to determine the significance of age at treatment with respect to outcome.

# Strabismus reviews II

Authors	Title	Objectives
<b>Hatt &amp; Gnanaraj 2013</b>	Interventions for intermittent exotropia	The objective of this review was to analyse the effects of various surgical and non-surgical treatments in randomised trials of participants with intermittent exotropia, and to report intervention criteria and determine the significance of factors such as age with respect to outcome.
<b>Rowe &amp; Noonan 2012</b>	Botulinum toxin for the treatment of strabismus	To evaluate the efficacy of botulinum toxin in the treatment of strabismus compared with alternative treatment options, to investigate dose effect and complication rates.
<b>Pollock et al. 2011</b>	Interventions for disorders of eye movement in patients with stroke	To determine the effects of interventions for eye movement disorders on functional ability following stroke.
<b>Scheiman et al. 2011</b>	Non-surgical interventions for convergence insufficiency	To systematically assess and synthesize evidence from randomized controlled trials (RCTs) on the effectiveness of non-surgical interventions for convergence insufficiency.

# Conclusions and Recommendations

- As there are no RCTs currently available and the best existing evidence is only from non-randomized studies, there is a need for prospective RCTs to investigate strabismus surgery in the presence of strabismic amblyopia.
- No reliable conclusions could be reached regarding which technique (adjustable or non-adjustable sutures) produces a more accurate long-term ocular alignment following strabismus surgery or in which specific situations one technique is of greater benefit than the other.
- High quality RCTs are needed to obtain clinically valid results and to clarify these issues.
- Clarification is required as to the effective use of botulinum toxin as an independent treatment modality.



# Amblyopia protocols

Authors	Title	Objectives
<b>Liu et al. 2011</b>	Acupuncture for amblyopia in children	To assess the effectiveness and gather evidence on safety from randomised controlled trials (RCTs) of acupuncture for unilateral amblyopia in children.

# Amblyopia reviews

Authors	Title	Objectives
<b>Taylor et al. 2015</b>	Binocular versus standard occlusion or blurring treatment for unilateral amblyopia in children aged three to eight years	To determine whether binocular treatments in children age three to eight years with unilateral amblyopia result in better visual outcomes than conventional occlusion or pharmacological blurring treatment.
<b>Antonio-Santos et al. 2014</b>	Occlusion for stimulus deprivation amblyopia	To evaluate the effectiveness of occlusion therapy for SDA in an attempt to establish realistic treatment outcomes. To examine evidence of any dose response effect and to assess the effect of the duration, severity, and causative factor on the size and direction of the treatment effect.
<b>Taylor &amp; Elliott 2014</b>	Interventions for strabismic amblyopia	To examine the impact of conventional occlusion therapy for strabismic amblyopia and to analyse the role of partial occlusion and optical penalisation for strabismic amblyopia.
<b>Taylor et al. 2012</b>	Interventions for unilateral and bilateral refractive amblyopia	Evaluation of the evidence of the effectiveness of spectacles, occlusion or both in the treatment of unilateral and bilateral refractive amblyopia.
<b>Powell &amp; Hatt 2009</b>	Vision screening for amblyopia in childhood	The objective of this review was to evaluate the effectiveness of vision screening in reducing the prevalence of amblyopia.
<b>Tianjing &amp; Shotton 2009</b>	Conventional occlusion versus pharmacologic penalization for amblyopia	To assess the effectiveness and safety of conventional occlusion versus atropine penalization for amblyopia.

# Conclusions and Recommendations

- Both conventional occlusion and atropine penalization produce visual acuity improvement in the amblyopic eye.
- Atropine penalization can be used as first line treatment for amblyopia.
- Occlusion, whilst wearing necessary refractive correction, appears to be more effective than refractive correction alone in the treatment of strabismic amblyopia.
- In some cases of unilateral refractive amblyopia it appears that there is a treatment benefit from refractive correction alone. Where amblyopia persists there is evidence that adding occlusion further improves vision.

# Summary

## Clinicians

- Opportunity for any clinician to contribute to the establishment of reliable, evidence-based strabismus and related practice
- Full copy of the review with a conclusion section
  - implications for practice
  - implications for research.
- Summary of the available evidence on interventions,
  - guide for clinical practice
  - future research planning

## Patients

- Each review has an abstract and plain language summary
- Current reviews provide patients/parents/carers with information about various different conditions and treatment options
- Informed patient choices

# Access to Cochrane Library

<http://www.cochranelibrary.com/app/content/browse/page/?context=editorial-group/Eyes%20and%20Vision%20Group>



rowef@liverpool.ac.uk