



Università degli Studi di Palermo
Facoltà di Medicina e Chirurgia
Dipartimento di Biomedicina Sperimentale
e Neuroscienze Cliniche
Sezione di Oftalmologia
Responsabile: Prof. Salvatore Cillino



“L’occhio che invecchia: il cristallino”
***Possibilità di correzione e
qualità di vita***

*Salvatore Cillino
Alessandra Casuccio*



Review

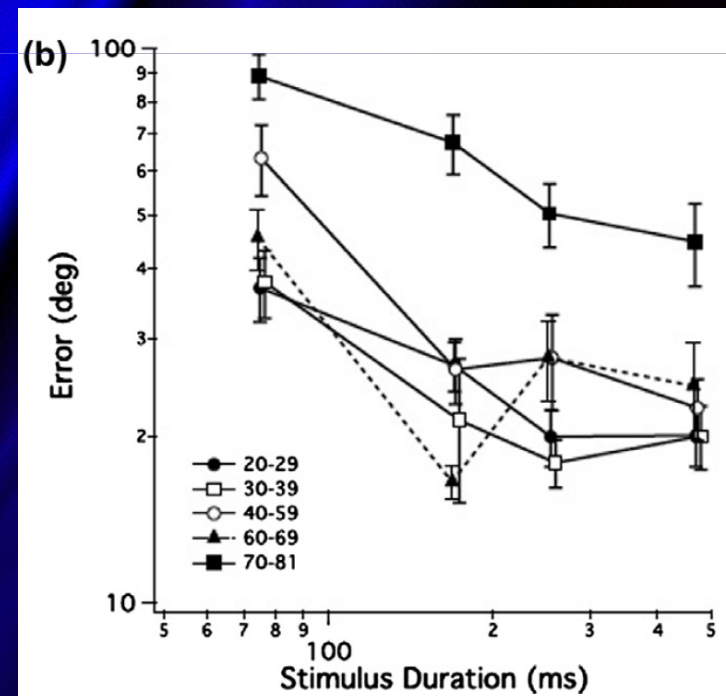
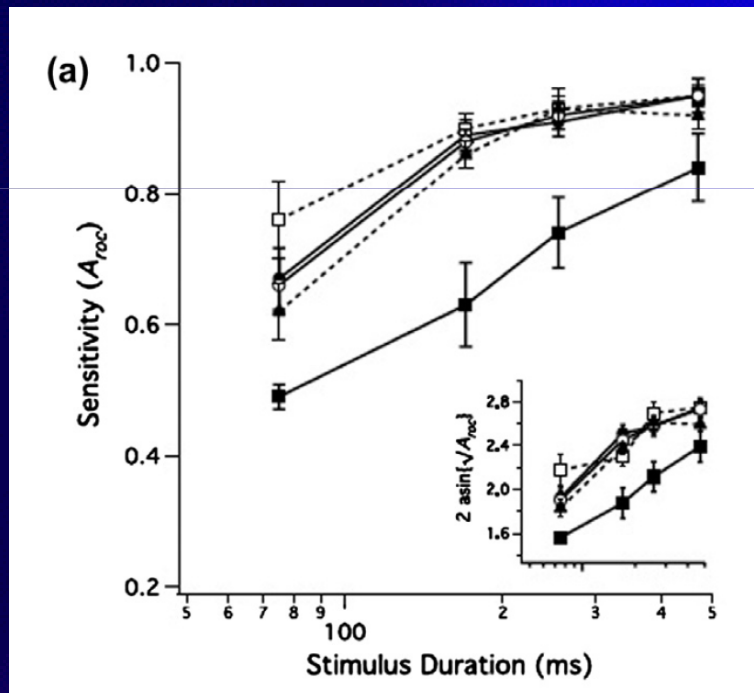
Aging and vision

Cynthia Owsley

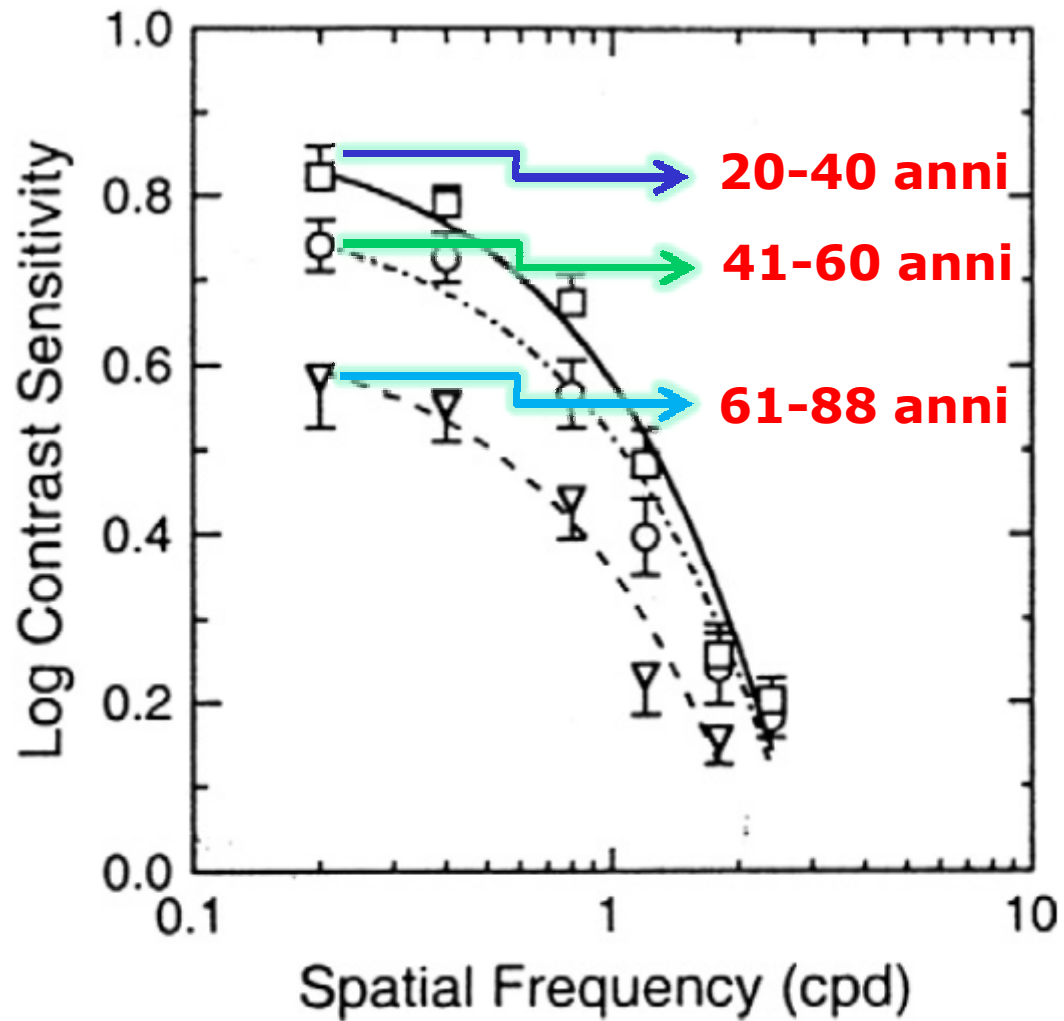
Vision Research

ARTICLE IN PRESS

Department of Ophthalmology, School of Medicine, University of Alabama at Birmingham, Birmingham, AL 35294-0009, USA

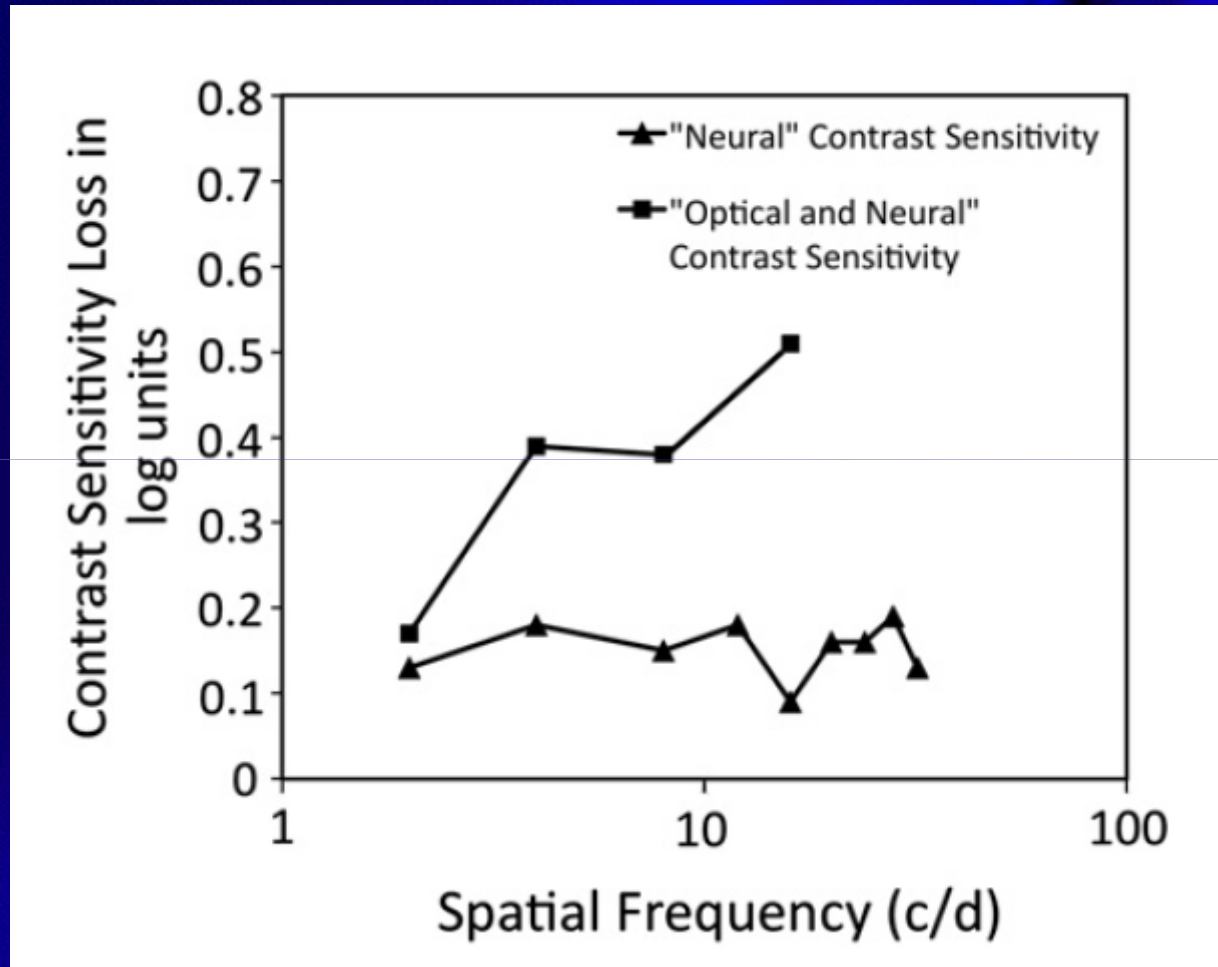


Average scotopic spatial contrast sensitivity for three age groups

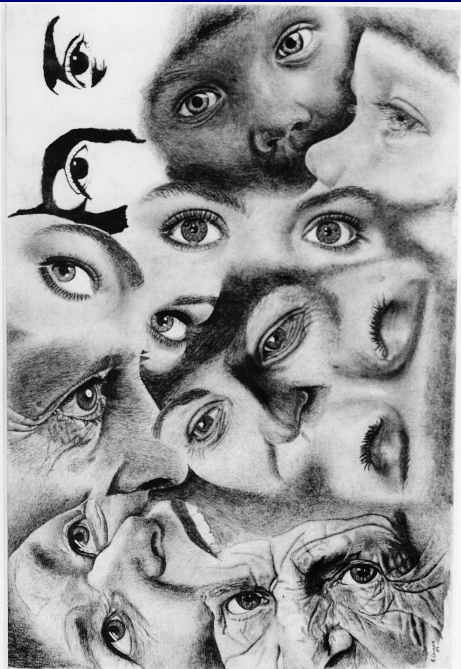


Scheffrin et al. (1999)

Comparison of older adults' loss in photopic spatial contrast sensitivity



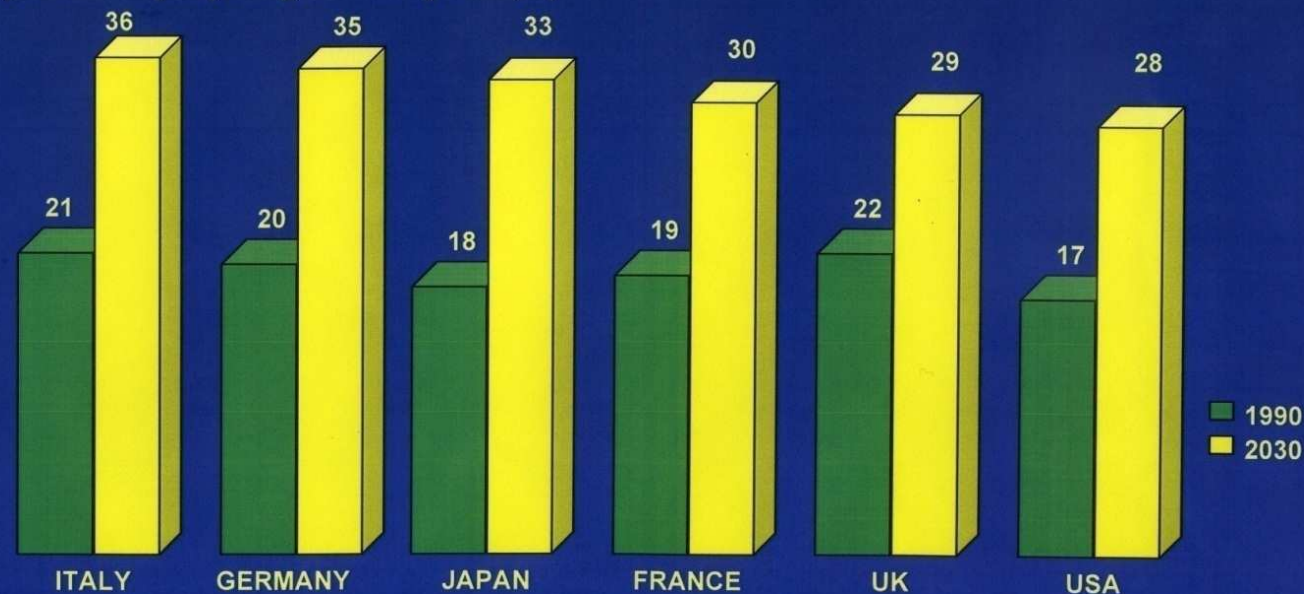
Burton et al. (1993)



- Capacità visiva e autonomia limitate da patologie legate all'invecchiamento
- La cataratta interessa oltre il 90% dei soggetti over 70

Population ageing

Proportion of people aged > 60 years (%)





Richiesta di perfezione: "Baby Boomers"

- Aspettative estetico/funzionali
 - Alto profilo professionale
 - Rifiuto di limiti nella visione
 - Rifiuto del "progredire dell'età"
- Superamento di confini sociali "tradizionali"

ASTIGMATISMO
PRESBIOPIA
CATARATTA



Visione da vicino

Visione intermedia

Indipendenza da occhiali

Guida notturna

Buona sensibilità al contrasto

Aspetti estetici

Bricolage, lavoro fine

Perché ?



Procedure fotorefrattive corneali

(Schallhorn et al., 2006; Aliò et al., 2006)

Multifocalità LASIK →

(Presby-LASIK)



- VISX Star AMO
- Follow-up 12 mesi
- 96% 20/25 e J3

Perdita in BCVA, perdita in sensibilità contrasto medio-alte frequenze

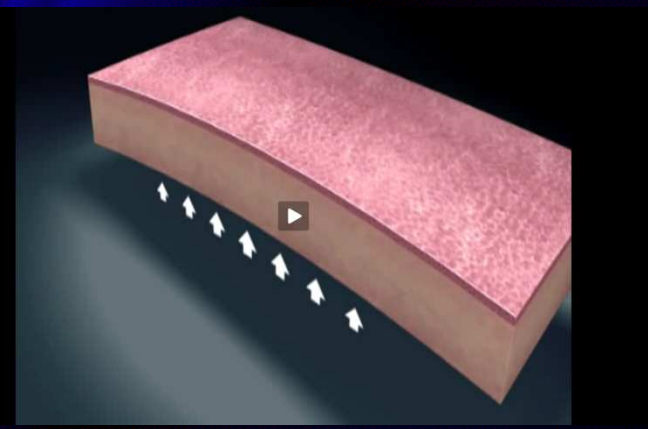
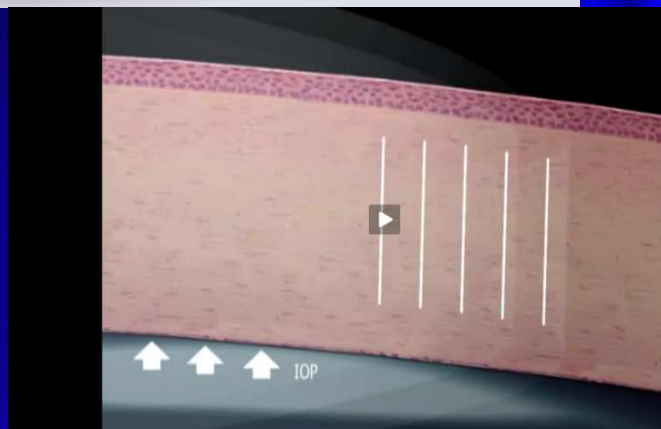
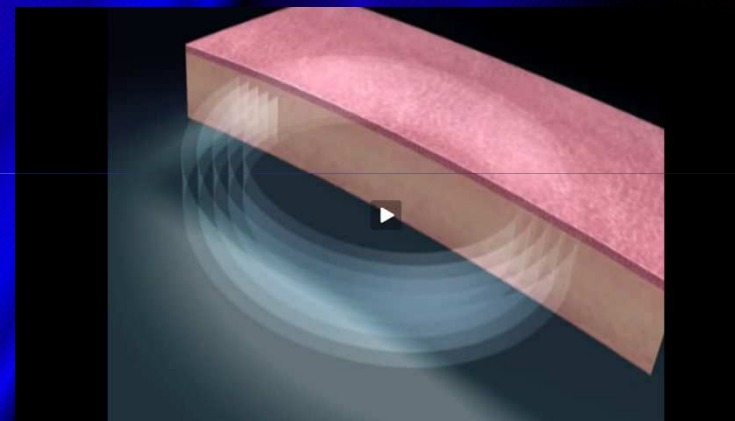
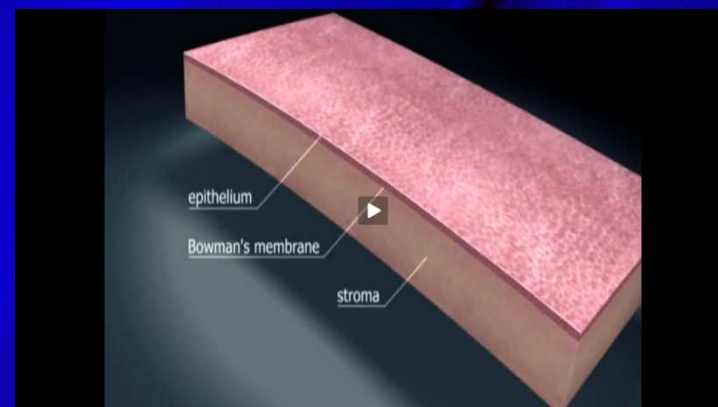
...E QUANDO INSORGE LA CATARATTA?

True Solutions for Presbyopia With Laser Technology

Capturing the growing
presbyopia market sector.



Sponsored by an educational grant from Technolas Perfect Vision



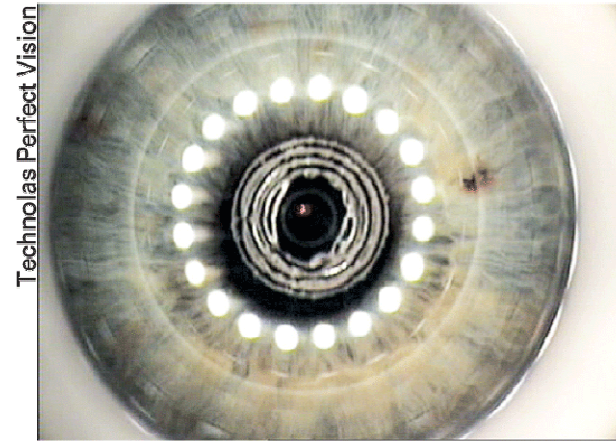
True Solutions for Presbyopia With Laser Technology

Capturing the growing
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FEMTOSECOND LASER INTRASTROMAL TREATMENT FOR PRESBYOPIA



**The 520 FS's Intracor procedure
creates intrastromal rings to correct
presbyopia.**

For patients between 0.00 and 0.50 D, TPV recommends a monocular treatment. First conduct a contact lens trial for a few days to decipher if the patient supports the induced monovision. If he does not support monovision, TPV recommends not to treat.

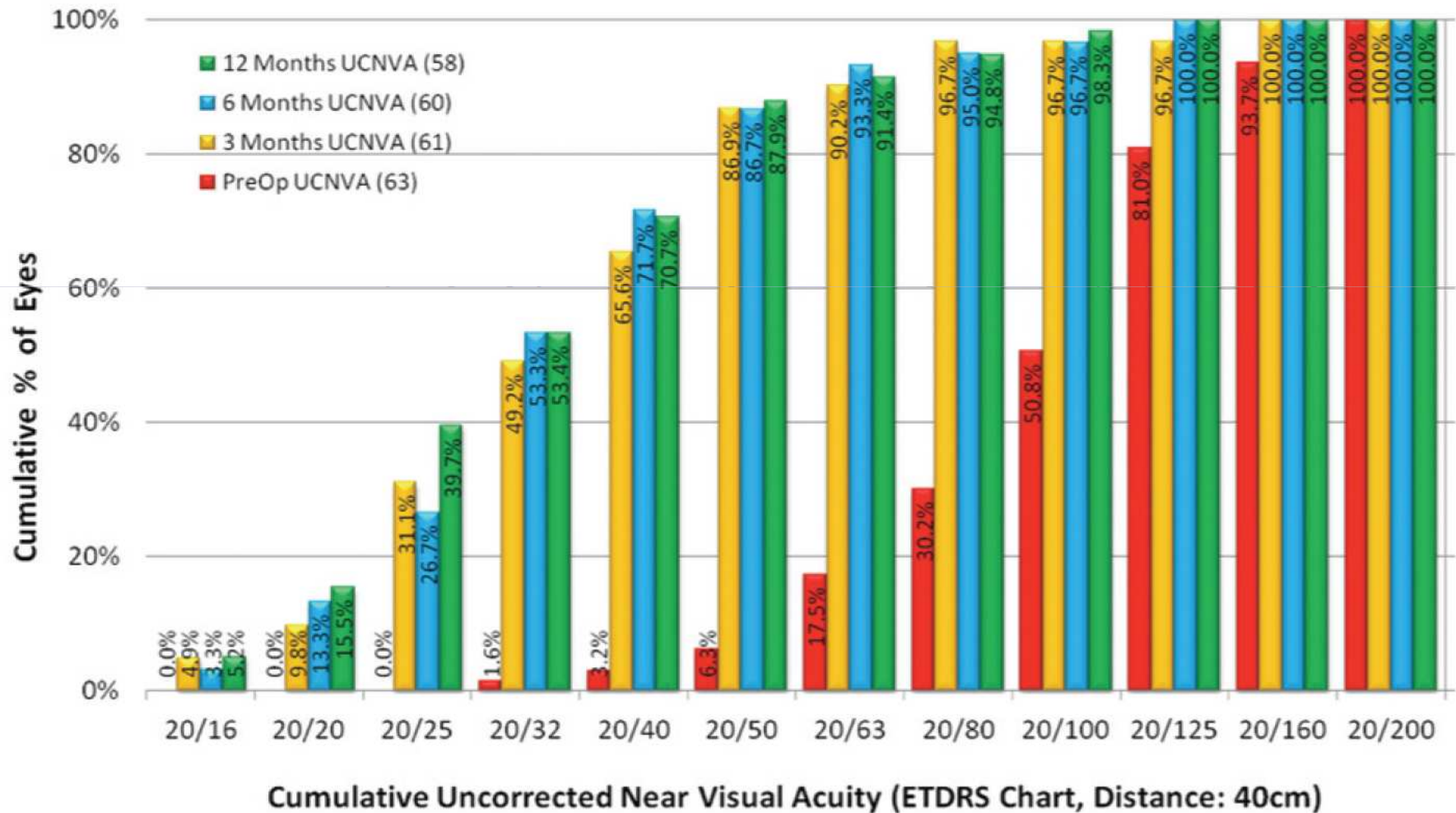
Early outcomes of INTRACOR femtosecond laser treatment for presbyopia.

Holzer MP, Mannsfeld A, Ehmer A, Auffarth GU.

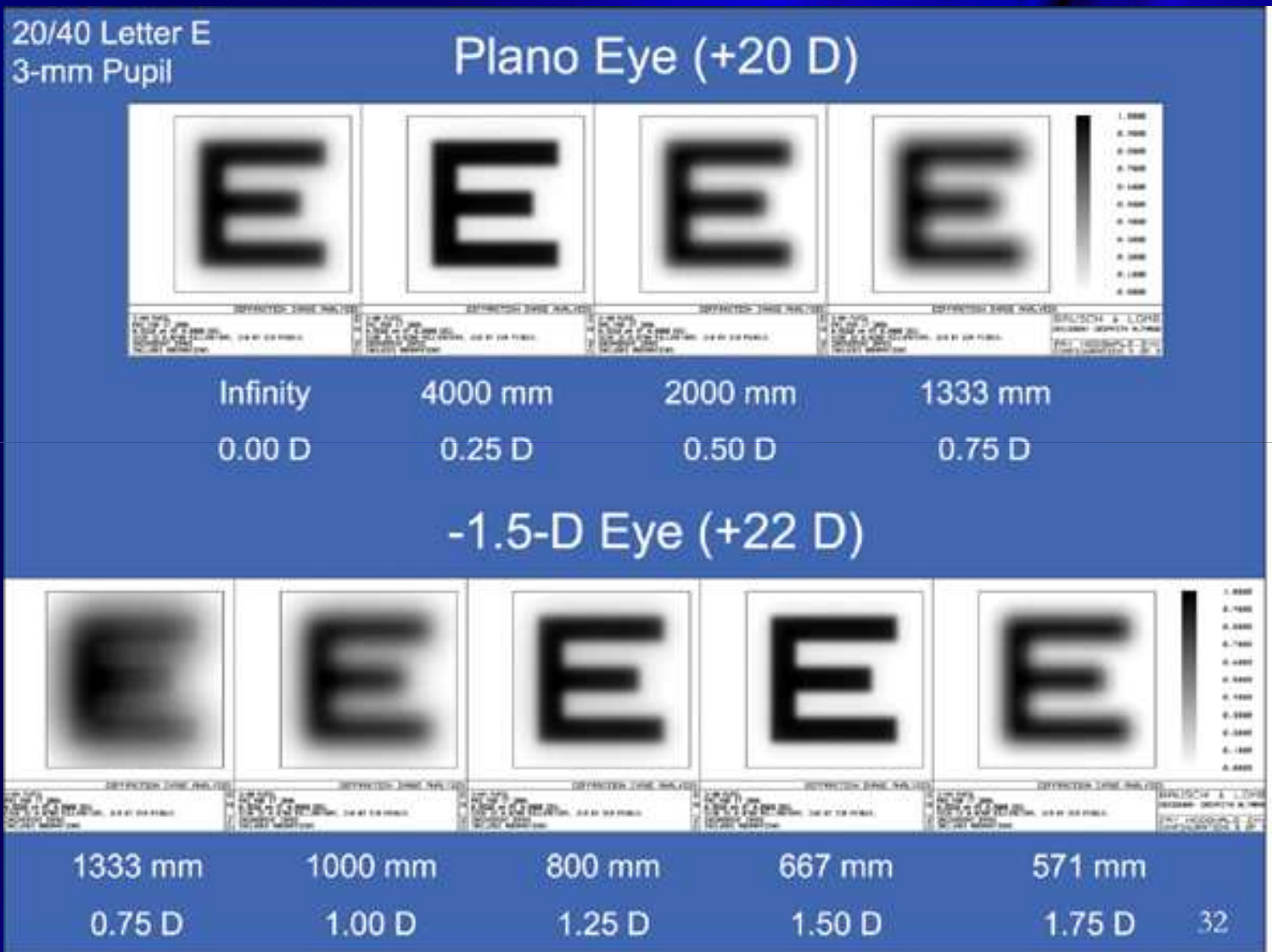
University of Heidelberg, Department of Ophthalmology, International Vision Correction Research Centre, Germany. mike.holzer@med.uni-heidelberg.de

Comment in:

J Refract Surg. 2009 Oct;25(10):837-40.



Pseudophakic Monovision



Visual function and patient satisfaction: Comparison between bilateral diffractive multifocal intraocular lenses and monovision pseudophakia

Fuxiang Zhang, MD, Alan Sugar, MD, Gordon Jacobsen, MS, Melissa Collins, COA

J Cataract Refract Surg 2011

PURPOSE: To compare visual function and patient satisfaction in patients with bilateral diffractive multifocal intraocular lenses (IOLs) and patients with monofocal IOL monovision.

CONCLUSIONS: Pseudophakic monovision achieved distance vision and near vision that were comparable to those with bilateral multifocal IOLs without the inherent risk for disturbing visual symptoms associated with multifocal IOLs. Monovision patients also had significantly better intermediate vision and less difficulty using computers without glasses.

- Counseling
- Biometria
- Stereopsi
- Costi

XRob24a



Premium IOLs

- Il termine "premium IOLs" si riferisce a lenti che forniscono una funzione visiva superiore a quella standard ottenuta con lenti monofocali
- Anche le lenti asferiche sono da considerare di tipo "premium"

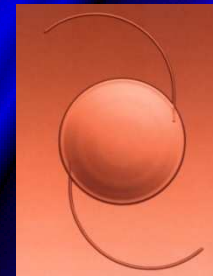
PREMIUM IOLs PER LA CORREZIONE DELLA PRESBIOPIA

- MULTIFOCALI:

- REFRATTIVE:

- *CONCENTRICHE (ReZoom)*

- *SETTORIALI (Lentis Mplus)*



- *DIFFRATTIVE:*

- *SIMMETRICHE (Tecnis: 50/50)*



- *SIMMETRICHE IBRIDE (ReSTOR: 50/50)*

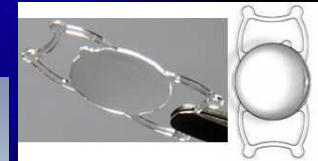
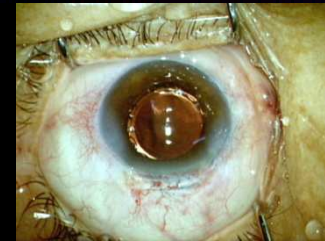


- *ASIMMETRICHE (Acry.LISA: 65/35)*



PREMIUM IOLs PER LA CORREZIONE DELLA PRESBIOPIA E DELL'ASTIGMATISMO

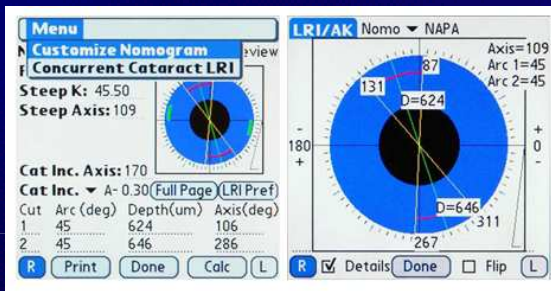
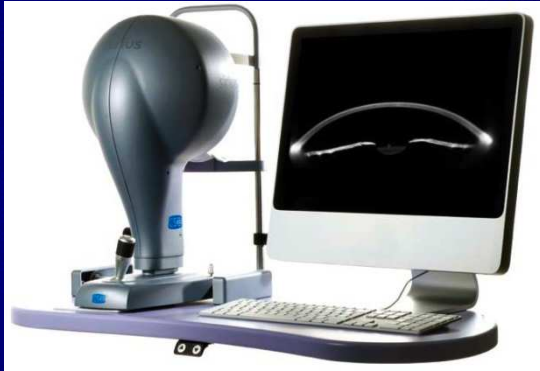
- ACCOMODATIVE (*MONO/DUAL OPTIC*)
- TORICHE
- TORICHE MULTIFOCALI (*DIFFRATTIVE/REFRATTIVE SETTORIALI*)



Valore aggiunto: asfericità

Lenti Premium in USA

- A fine 2009 la percentuale del mercato “premium” era ancora del 6,4%
- Alcuni chirurghi “high-volume” usano IOLs premium nel 60%-70% dei casi
- Altri hanno scelto di non usarle per l’incremento della durata della prestazione, con ridotto flusso di pazienti, e spesso aspettative più “difficili” da soddisfare



TORIC SINGLE-PIECE NATURAL IOL Alcon CE

Inserire le informazioni pre-op del paziente

Nome Chirurgo _____
 Nome Paziente _____
 Informazioni aggiuntive del paziente (Documento di identità, Caso, ecc...) _____
 Selezionare Occhio da operare OD OS

Unità di misura degli assi Diottria Millimetri

Asse (K) piatto _____ 35.00D ~ 50.00D
 @ Asse (K) piatto _____ 0° ~ 180°

Asse (K) curvo _____ 35.00D ~ 50.00D
 @ Asse (K) Curvo _____ 0° ~ 180°

Equivalente Sferico della IOL (P- IOL). _____ 6.0 D ~ 30.0 D
 Astigmatismo indotto chirurgicamente (SIA) _____ Default (0.50D)
 0.00D ~ 2.00D
 Sito dell' incisione (SI) _____ 0° ~ 360°

Continuare

Asse curvo -----
 Asse piatto -----
 Incisione -----

Dr. Test, User Change my data Help Logout

Patient ID: 123456 Change patient data

Right (OD) Subjective refraction S.C.A. *

Axial length: 24.0 mm
 Keratometry: R_{K1} 44 dpt Axis₁ 69°
 R_{K2} 46 dpt Axis₂ 159°
 Anterior chamber depth: 3.8 mm from Epithelium Endothelium
 Incision orientation: 0.00 Effect on K_{avg}: 0.00 dpt
 IOL type: AT LISA 46TD Target refraction: 0.00 dpt

Post-operative anterior chamber depth: 4.71 mm ± 0.1 mm

IOL refraction: S: 15.50 dpt C: 2.50 dpt A: 159°
 Residual refraction: S: -0.02 dpt C: -0.21 dpt A: 159°
 Spherical equivalent: -0.12 dpt

Left (OS) Subjective refraction S.C.A. *

Axial length: _____ mm
 Keratometry: R_{K1} _____ dpt Axis₁ _____°
 R_{K2} _____ dpt Axis₂ _____°
 Anterior chamber depth: _____ mm from Epithelium Endothelium
 Incision orientation: 0.00 Effect on K_{avg}: 0.00 dpt
 IOL type: (Select IOL model) Target refraction: 0.00 dpt

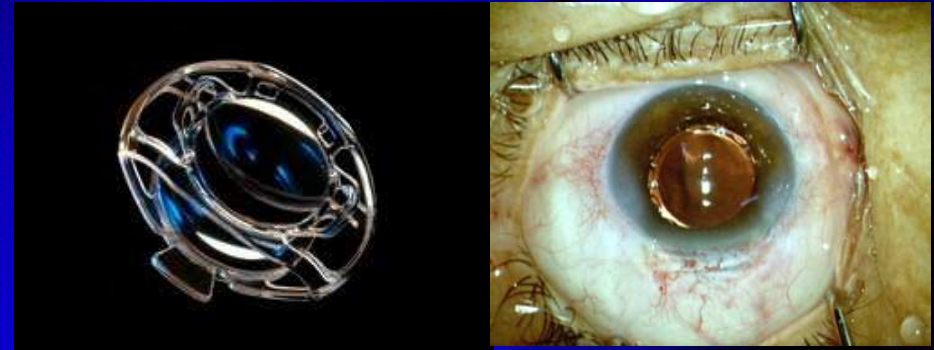
Post-operative anterior chamber depth: _____ mm ± 0.1 mm

IOL refraction: S: _____ dpt C: _____ dpt A: _____°
 Residual refraction: S: _____ dpt C: _____ dpt A: _____°
 Spherical equivalent: _____ dpt

Reset entries OS: Please enter the axial length. Complete calculation

IOLs

Accomodative

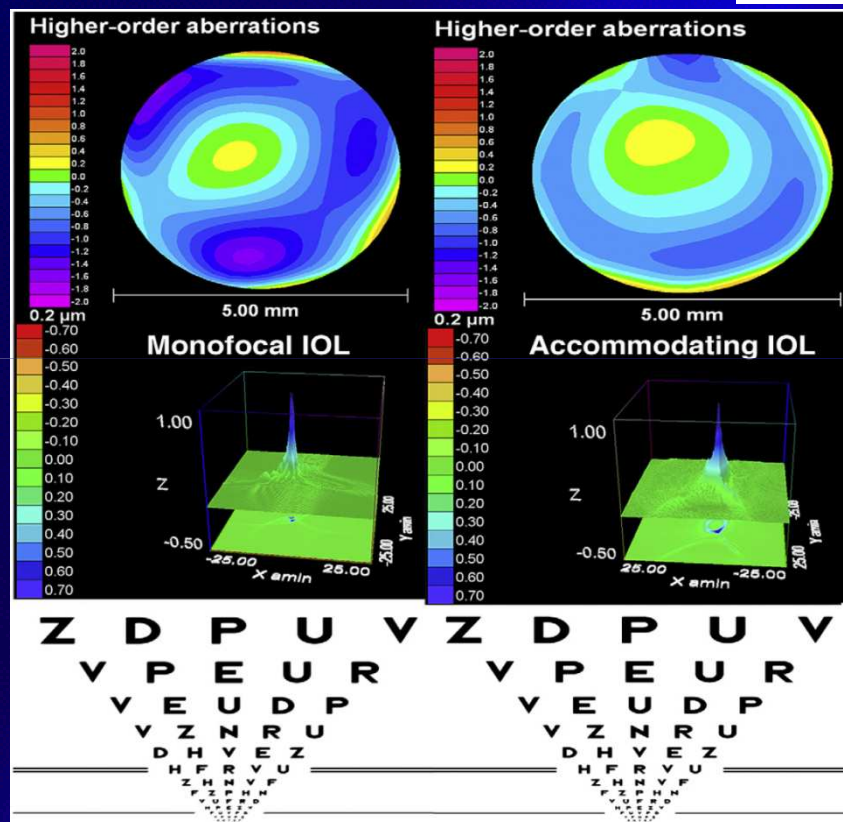


- BDCNVA 52% \geq J3 (FDA, Crystalens)
- Shift solo 0.33 mm (Marchini, Crystalens)
- Immobilità all'OCT, ma defocus, astigmatismo, coma, trefoil, sferica, sono incrementati da sforzo accomodativo (Wolffsohn, Tetraflex)
- Progressiva perdita funzione (Dogru, 1CU)
- Incremento secondaria: YAG LASER?

Visual outcomes and optical performance with a monofocal intraocular lens and a new-generation single-optic accommodating intraocular lens

Jorge L. Alió, MD, PhD, David P. Piñero, PhD, Ana B. Plaza-Puche, MSc

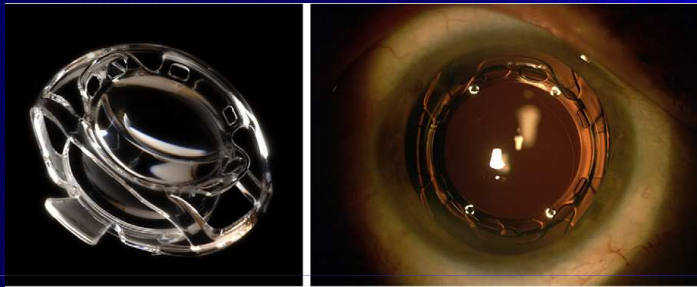
J Cataract Refract Surg 2010



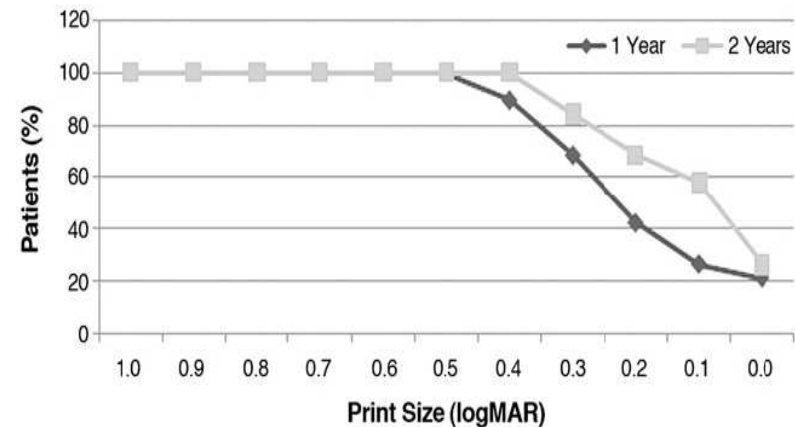
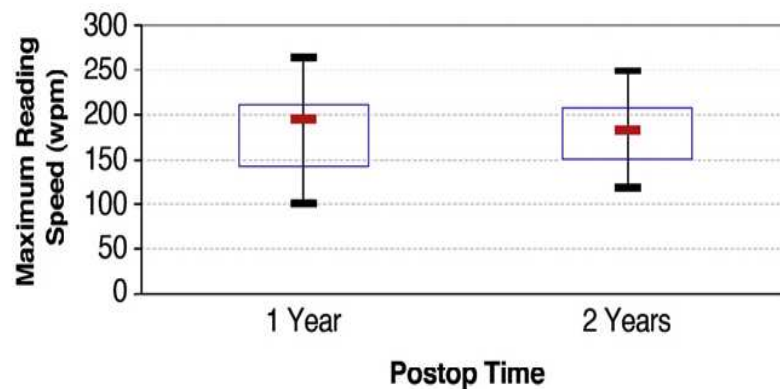
CONCLUSIONS: The new-generation single-optic accommodating IOL restored distance visual function after cataract surgery and improved near vision. The optical quality with the accommodating IOL was similar to that with the conventional monofocal IOL.

Long-term reading performance in patients with bilateral dual-optic accommodating intraocular lenses

Victor Bohórquez, MD, Ricardo Alarcon, MD



J Cataract Refract Surg 2010

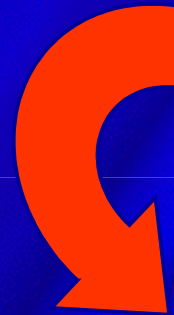


CONCLUSION: The dual-optic accommodating IOIOL provided stable or improved reading ability over a 2-year period.

Cosa significa qualità di vita (QoL)?



- Benessere fisico
- Benessere psichico
- Benessere sociale




**ACUITA'
VISIVA**

Guidare, lavorare al computer,
lavorare con precisione, cucire,
cucinare, salire e scendere le scale,
guardare la televisione, ecc.



- La presbiopia non corretta è tra le cause significative di disabilità e riduce la qualità di vita (Mc Donnell et al., 2003)
- Qualità di vita: processo multifattoriale non basato sulla sola performance visiva
- Alcuni studi su differenti tipi di IOLs non hanno mostrato variazioni significative negli indici di qualità di vita (utilizzando questionari validati) a dispetto del miglioramento di alcuni parametri

VICINO				LONTANO
ARTICOLI GIORNALE PAGINE GIALLE UNCINETTO MAPPE STRADALI RICAMO	TITOLI GIORNALE COMPUTER CARTE DA GIOCO MENU' RISTORANTE CARTELLINI PREZZI	ATTIVITA' CUCINA TV PULIZIE DOMESTICHE OROLOGI PARETE PRANZO (GIORNO)	GUIDA AUTO (GIORNO) TENNIS GOLF CARTELLI STRADALI LONTANO (GIORNO) COMPUTER LETTURA	GUIDA AUTO (NOTTE) CINEMA TEATRO LUME DI CANDELA LONTANO (NOTTE)
ZONA 1 (30-40 cm)	ZONA 2 (40-65 cm)	ZONA 3 (60-120 cm)	ZONA 4 (lontano)	ZONA 5 (lontano)
<u>ZONA 1</u> <u>DIFFRATTIVA</u>	<u>ZONA 2</u> <u>REFRATTIVA</u>	<u>ZONA 3</u> <u>REFRATTIVA</u>	<u>ZONA 4</u> <u>DIFFRATTIVA/REFRATTIVA</u> <u>(Mix&Match)</u>	<u>ZONA 5</u> <u>DIFFRATTIVA</u>

Aspettativa di visione corretta da parte dei pazienti (William F. Maloney)

Pseudophakia—The right choice?

Emanuel S. Rosen, FRCSE

J CATARACT REFRACT SURG - VOL 35, JUNE 2009

"...it was recognized that implantation of multifocal and pseudoaccommodating IOLs could provide adequate near vision restoration..."

"Progressive (developed) patients are aware of the unknown fraction of hundreds of thousands of eyes with multifocal IOLs but expresses the well-known downside of multifocal IOLs..."

One-Year Outcomes with New-Generation Multifocal Intraocular Lenses

Salvatore Cillino, MD, PhD, Alessandra Casuccio, BS, Francesco Di Pace, MD, Raffaella Morreale, MD, Francesco Pillitteri, MD, Giovanni Cillino, MD, Gaetano Lodato, MD
Ophthalmology 2008;115:1508–1516 ©

Quality of life evaluation after implantation of 2 multifocal intraocular lens models and a monofocal model

Jorge L. Alió, MD, PhD, Ana B. Plaza-Puche, MSc, David P. Piñero, PhD, Francisco Amparo, MD, Jose L. Rodríguez-Prats, MD, PhD, María José Ayala, MD

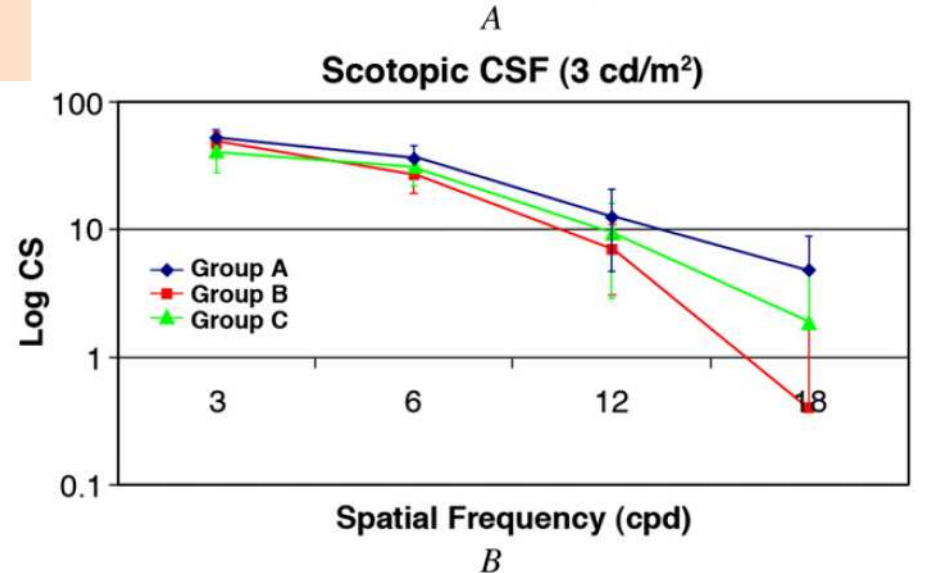
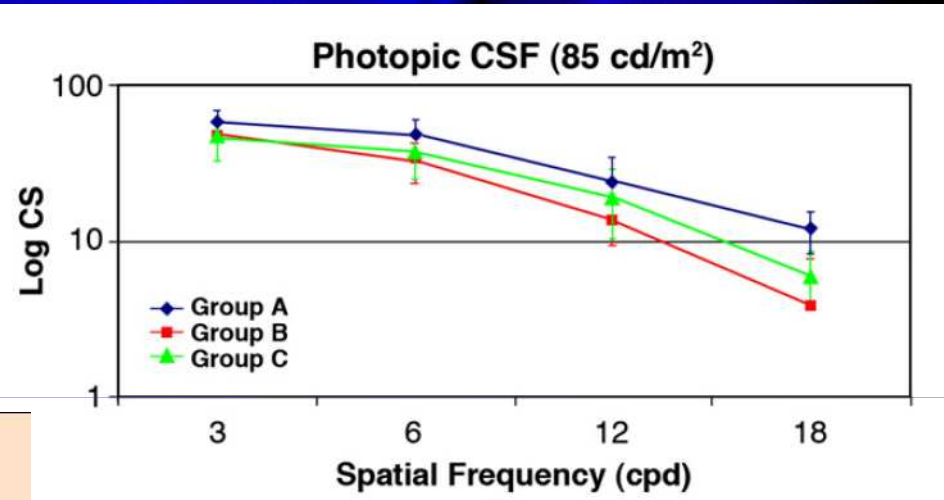
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Group A
(Monofocal IOL)

Group B
(Apodized IOL)

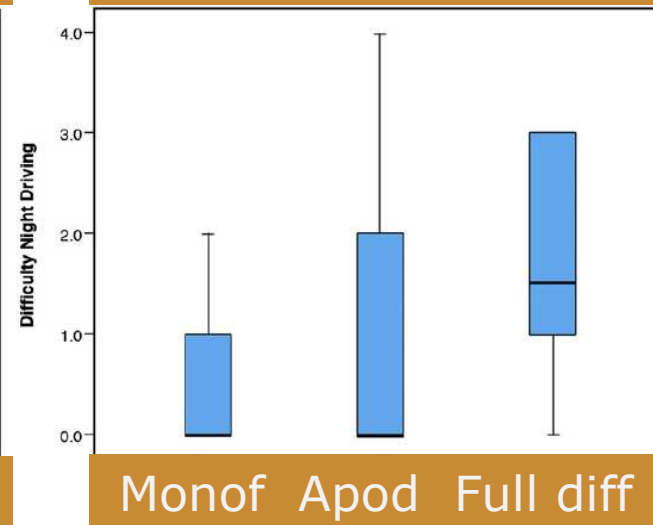
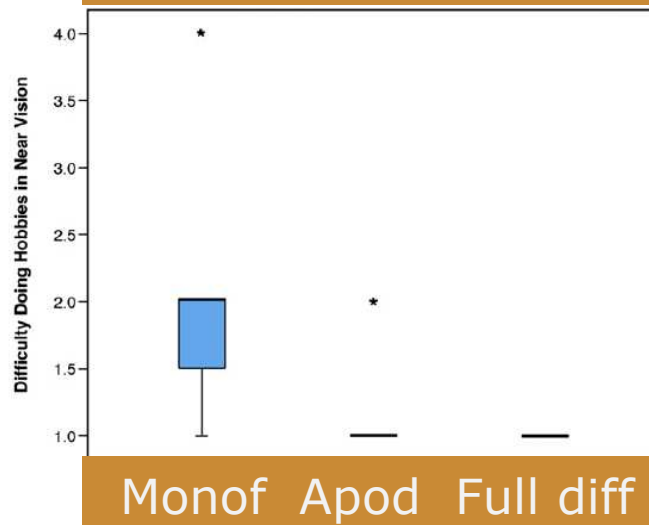
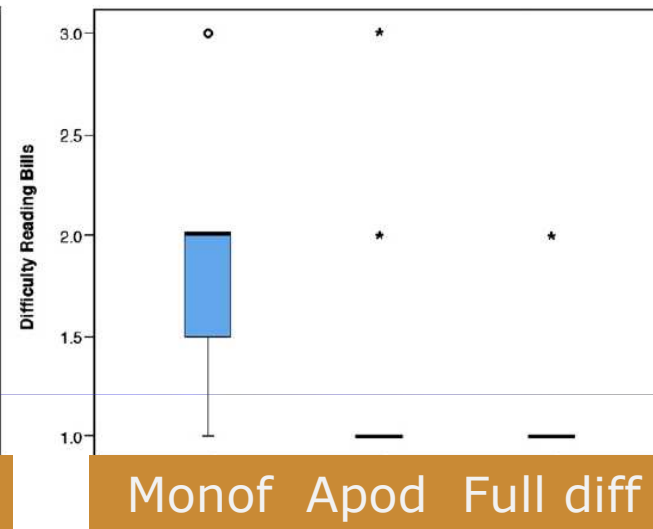
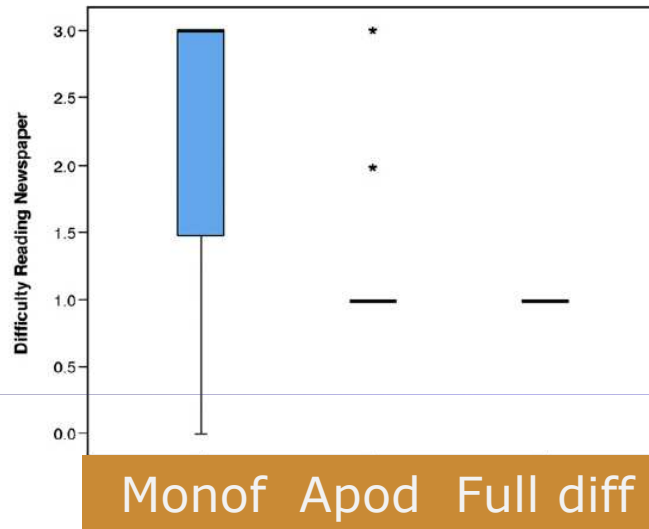
Group C
(Full Diffractive IOL)



Quality of life evaluation after implantation of 2 multifocal intraocular lens models and a monofocal model

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J Cataract Refract Surg 2011



Visual outcomes after cataract surgery with implantation of a +3.00 D or +4.00 D aspheric diffractive multifocal intraocular lens: Comparative study

Niels E. de Vries, MD, Carroll A.B. Webers, MD, PhD, Robert Montés-Micó, PhD,
Teresa Ferrer-Blasco, PhD, Rudy M.M.A. Nuijts, MD, PhD

J Cataract Refract Surg 2010; 36:1316–1322

Table 4. Postoperative wavefront aberrometry (5.0 mm pupil).

Aberration	Mean RMS (μm) \pm SD		P Value
	+3.00 D IOL	+4.00 D IOL	
Higher order	0.27 \pm 0.13	0.42 \pm 0.15	<.001*
Coma	0.16 \pm 0.09	0.23 \pm 0.19	.014*
Trefoil	0.19 \pm 0.12	0.24 \pm 0.14	.026*
Spherical	0.03 \pm 0.06	0.08 \pm 0.12	.004*

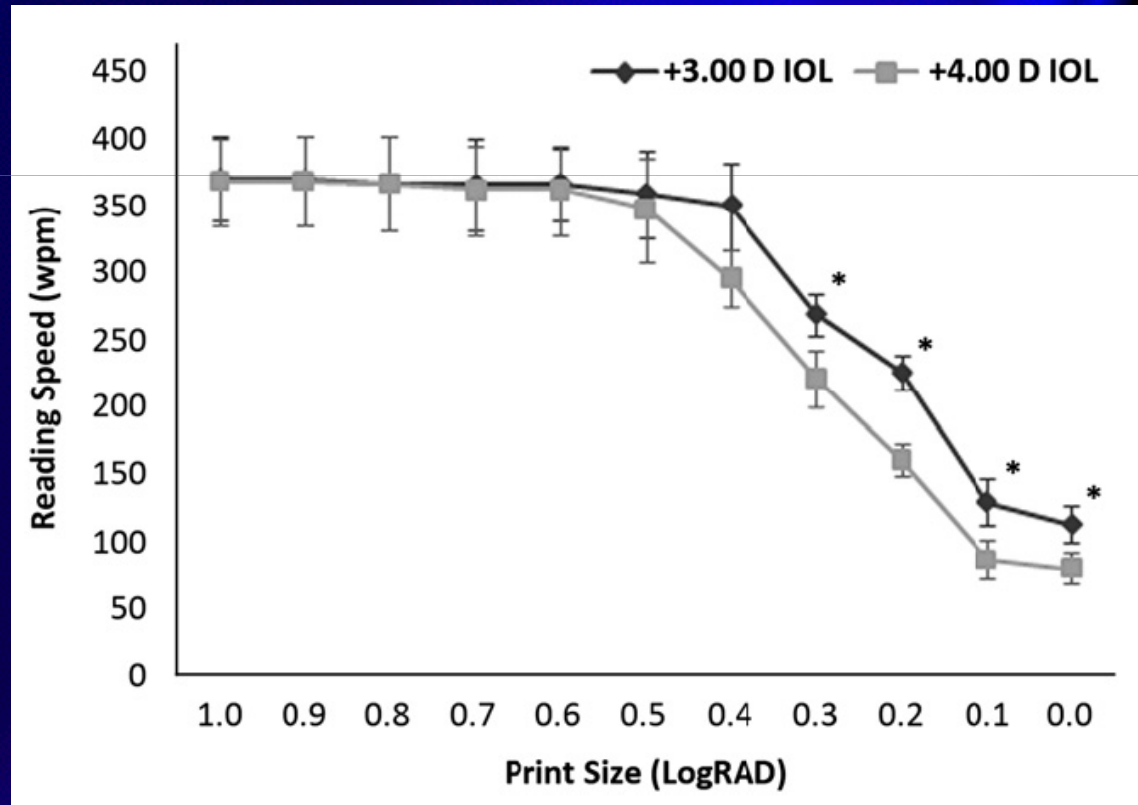
IOL = intraocular lens; RMS = root mean square

*Statistically significant

Comparison of reading performance after bilateral implantation of multifocal intraocular lenses with +3.00 or +4.00 diopter addition

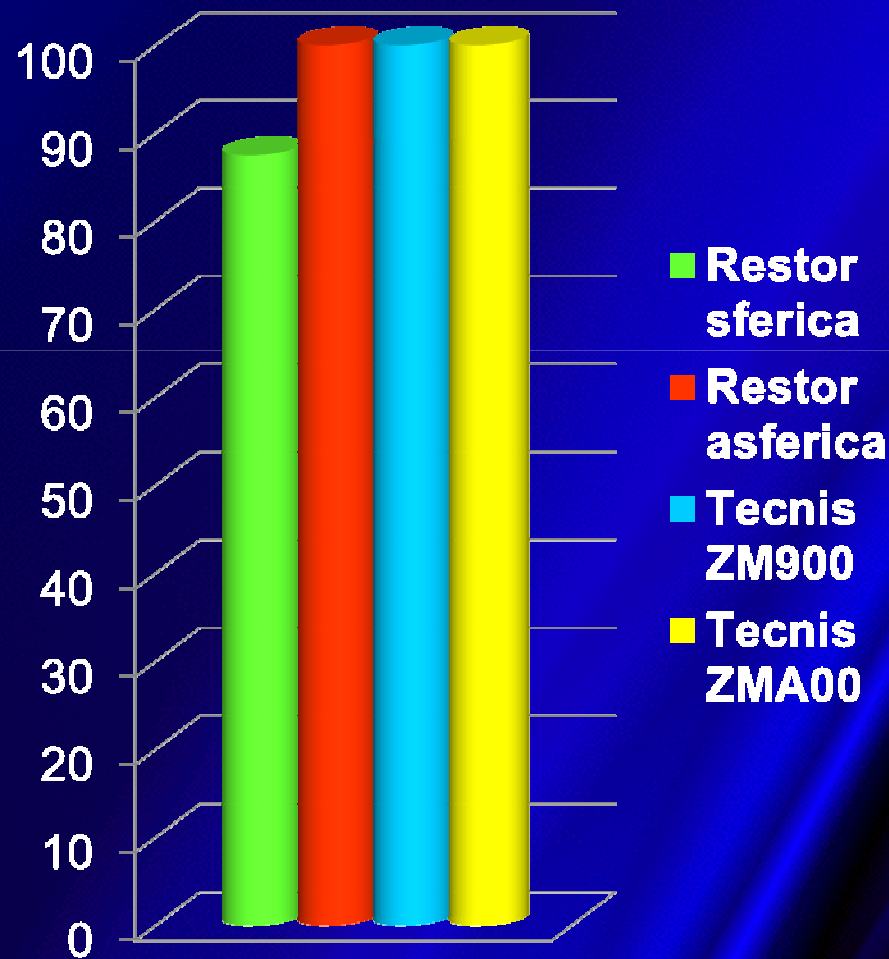
Marcony R. Santhiago, MD, Marcelo V. Netto, MD, PhD, Rodrigo F. Espindola, MD, Maysa G. Mazurek, MD, Beatriz de A.F. Gomes, MD, Tais R.R. Parede, MD, Hooman Harooni, MD, Newton Kara-Junior, MD, PhD

J Cataract Refract Surg 2010



NEI-RQL 42-2

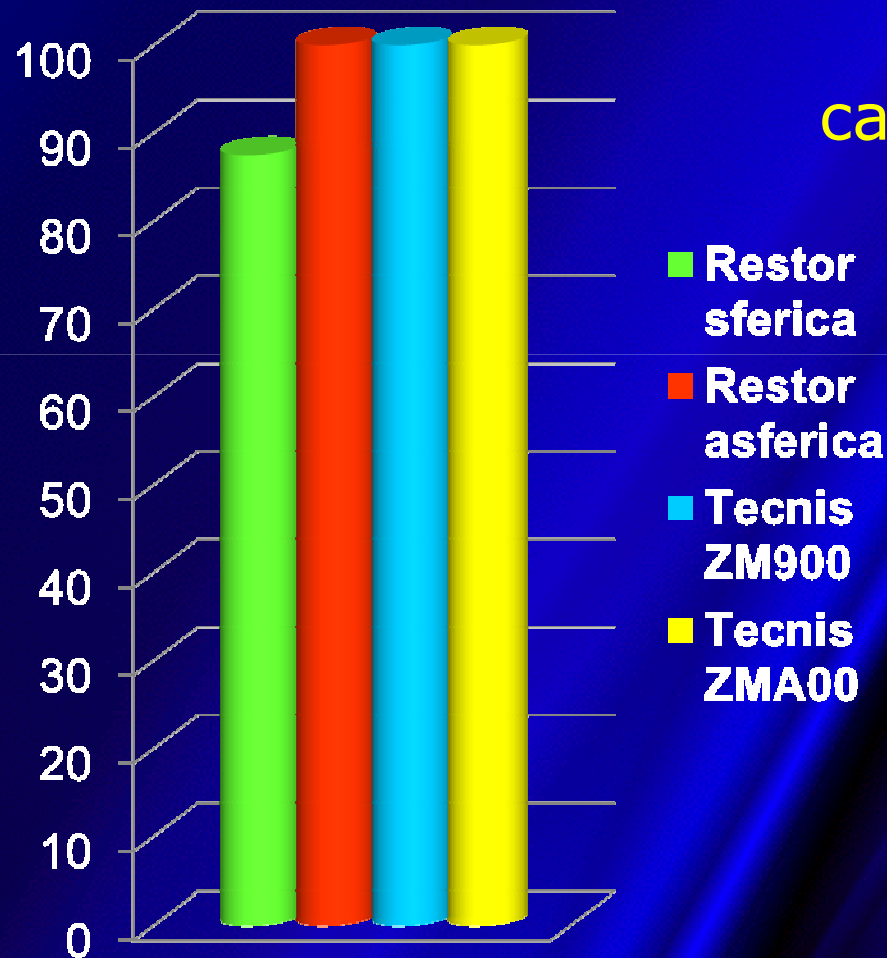
$p < 0.0005$ (tutte Vs Restor sferica)



Difficoltà nello svolgimento di attività professionali o ricreative che richiedono una visione ottimale, come cucinare, riparare oggetti, cucire, utilizzare strumenti manuali, lavorare al computer ?

NEI-RQL 42-7

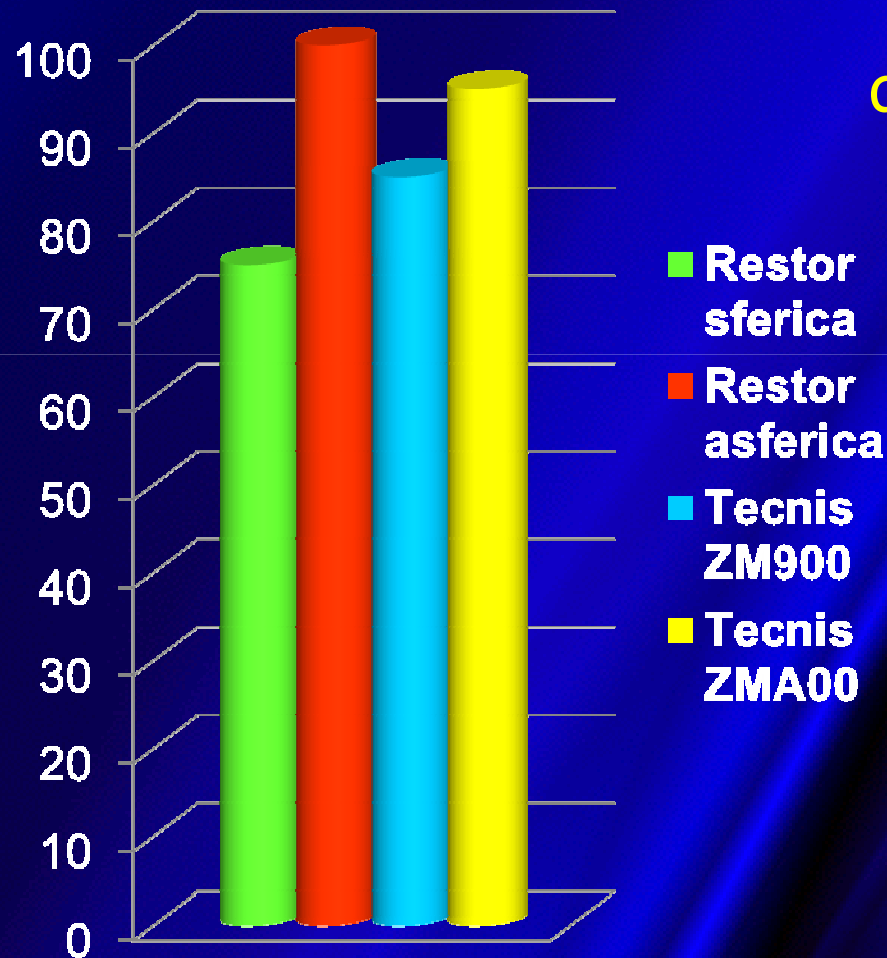
$p < 0.0005$ (tutte Vs Restor sferica)



Difficoltà nel leggere
caratteri normali tipografici
dei giornali

VF 14-15

P=0,034 (Restor asferica Vs Restor sferica)



Difficoltà nella guida durante le ore notturne a causa di problemi visivi

cataratta



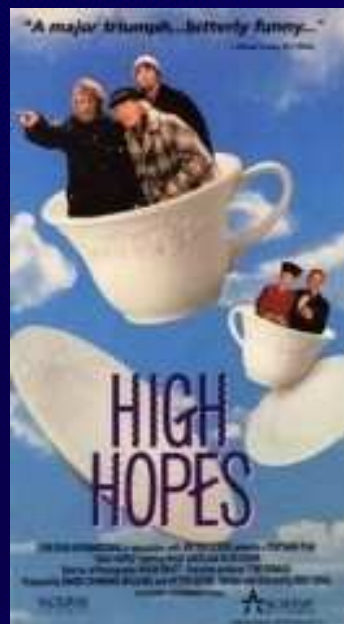
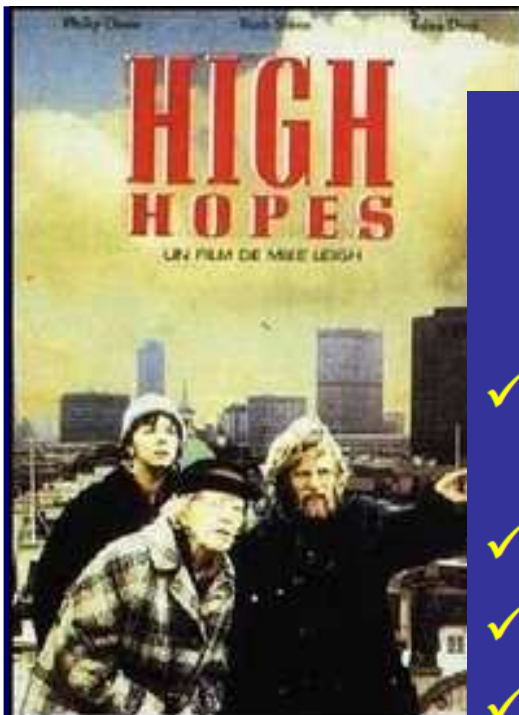
Presbiopia
Astigmatismo
Aberrazioni



monofocale



premium



Premium IOLs...quali problemi ?

- ✓ Non retribuite dal SSN e il co-payment non è al momento disponibile
- ✓ Medical staff “overloaded and overworked” (M. Piovella)
- ✓ Più controlli postop e attrezzature più sofisticate
- ✓ Maggiori attese da parte del paziente
- ✓ Domanda/offerta dipende da condizioni socioeconomiche locali (macchia di leopardo)
- ✓ Mai dimenticare che comunque il maggior impegno spesso esita in una qualità di vita e soddisfazione fonte di sorpresa per lo stesso paziente



All you need is



Happy surgeon needs

... happy patients !

