

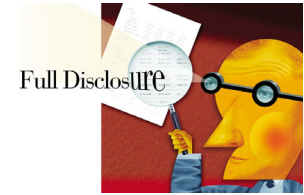
Contact Lens Myopia Control

Jeffrey J. Walline, OD PhD



Disclosures

- Bausch + Lomb: research materials

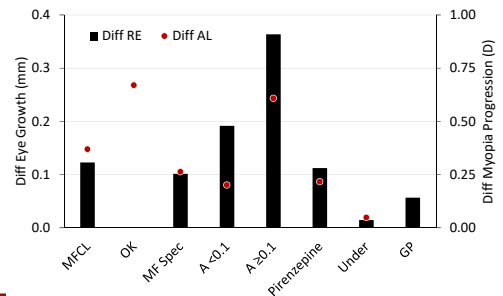


Agenda

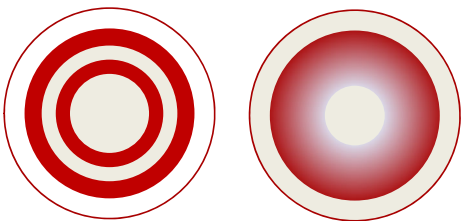
- Soft multifocal myopia control
- Orthokeratology myopia control
 - Which is better: multifocal or OK?
- Questions in myopia control
 - Do I have to measure axial length?
 - Should I change treatments if progressing?
 - At what age should I start myopia control?
 - When can I stop myopia control?



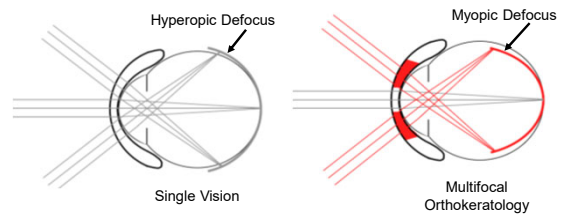
Myopia Control Summary



Soft Multifocal Myopia Control



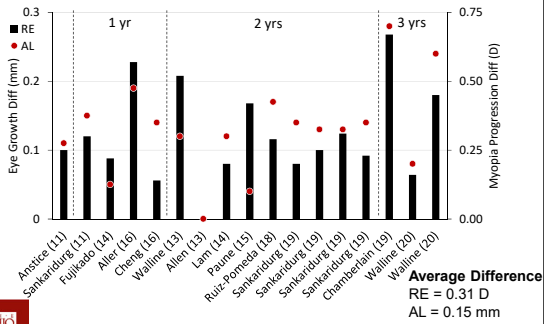
How Contact Lenses Work



Figures courtesy of Donald O. Mutti, OD PhD



Soft CL Myopia Control Summary





Center-Distance Lenses

Lens	Company	Replacement	Design
Oasys for Presbyopia	J&J	2-week	Concentric
Proclear Multifocal "D"	CooperVision	Monthly	Gradient
Biofinity Multifocal "D"	CooperVision	Monthly	Gradient
NaturalVue	VTI	Daily	Gradient
MiSight	CooperVision	Daily	Concentric
Duette Progressive	Synergeyes	6 months	Gradient
Specialty soft CL	Varies	Varies	Gradient



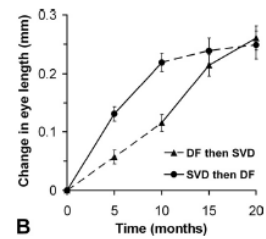
Soft Multifocal Myopia Control

		
RE Difference	0.38 D	0.52 D
AL Difference	0.18 mm	0.25 mm

*Not a direct comparison

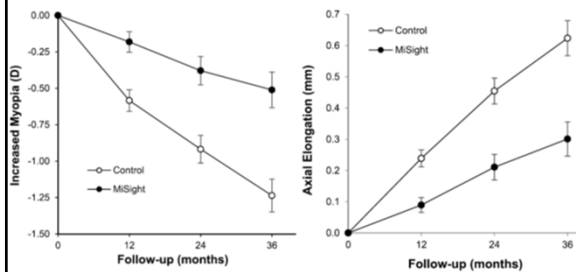


Soft Multifocal Myopia Control



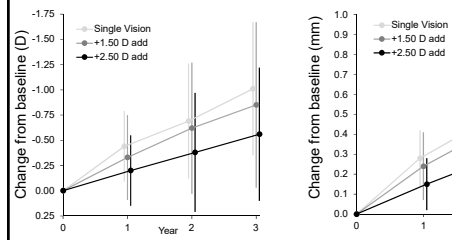
Anstice N, Phillips J. *Ophthalmol* 2011;118:1152-61

Soft Multifocal Myopia Control



Chamberlain P, et al. *Optom Vis Sci.* 2019;96:556-67

Soft Multifocal Myopia Control



Walline JJ, et al. *JAMA.* 2020;324(6):571-80

Soft Multifocal Myopia Control

		BLINK	MiSight
Myopia Progression (D)	Mean Difference	0.46	0.67
	CI	0.29 to 0.63	0.49 to 0.84
Axial Elongation (mm)	Mean Difference	-0.23	-0.28
	CI	-0.33 to -0.17	-0.36 to -0.20

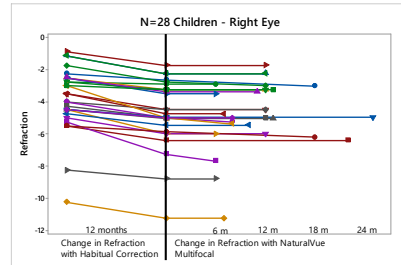
Walline JJ, et al. JAMA 2020;324(6):571-80

Chamberlain P, et al. OVS 2019;96:556-67



Soft Multifocal Myopia Control

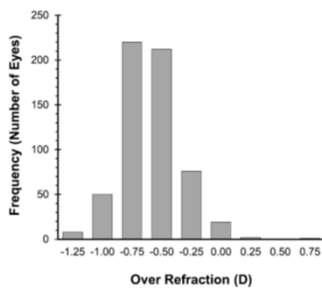
- NaturalVue by VTI



Cooper J, et al. Eye Contact Lens. 2017



Soft Multifocal Myopia Control

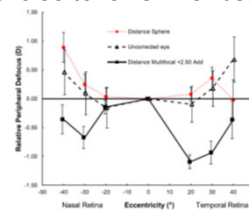


Schulle KL, et al. OVS 2018;95(4):292-298



Soft Multifocal Myopia Control

- Spherical equivalent, vertexed
- Strongest add (+2.50)
- Most require -0.50 to -0.75 D for best vision



Berntsen and Kramer. Optom Vis Sci 2013;90:1215-1224.



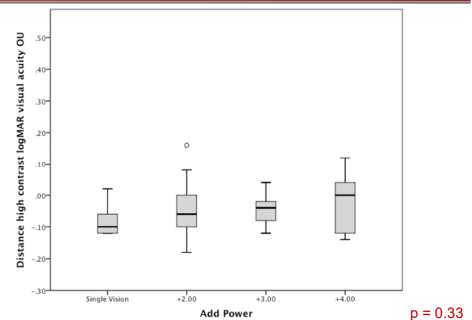
Soft Multifocal Myopia Control

- If vision still poor, decrease add power
 - One step (0.50 D)
 - Rare!

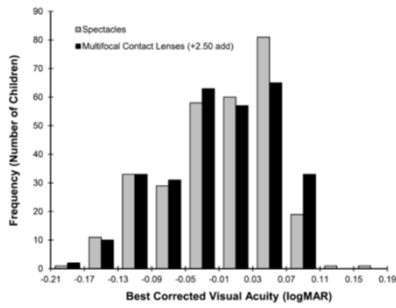
Walline JJ, et al. JAMA 2020;324(6):571-80



Soft Multifocal Myopia Control

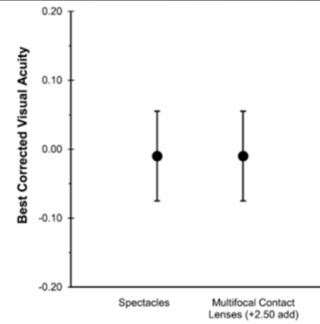


Soft Multifocal Myopia Control



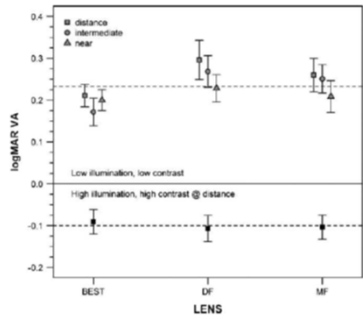
Schulle KL, et al. OVS 2018;95(4):292-298

Soft Multifocal Myopia Control



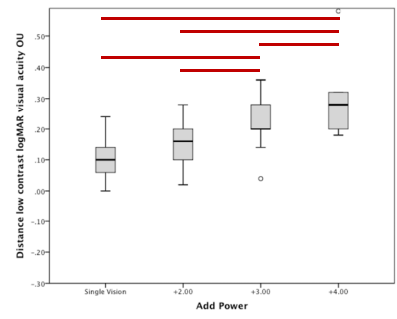
Schulle KL, et al. OVS 2018;95(4):292-298

Soft Multifocal Myopia Control



Kollbaum PS, et al. Optom Vis Sci 2013;90:205-14

Soft Multifocal Myopia Control



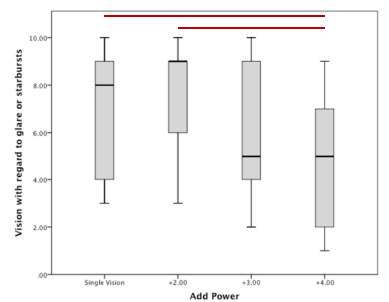
p < 0.001

Soft Multifocal Myopia Control

- No differences
 - Distance vision
 - Near vision
 - Ghost images
 - Computer
 - Strain or tiredness
 - Contact lens comfort
 - Sporting activities

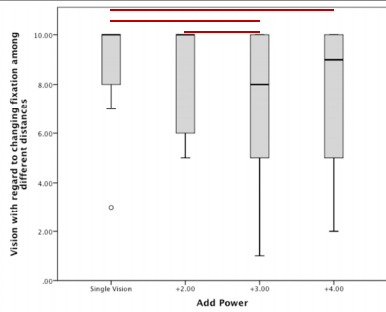


Soft Multifocal Myopia Control



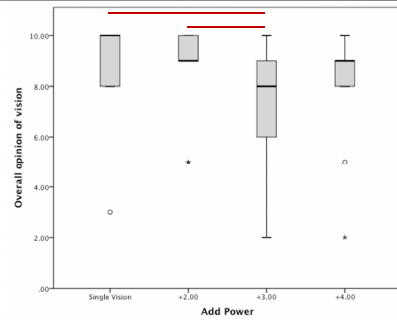
p = 0.03

Soft Multifocal Myopia Control



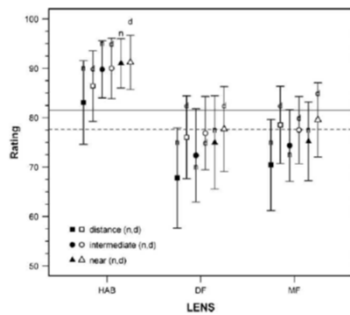
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Soft Multifocal Myopia Control



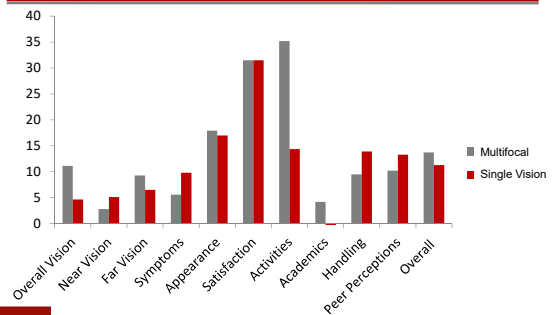
p = 0.05

Soft Multifocal Myopia Control



Kollbaum PS, et al. Optom Vis Sci 2013;90:205-14

Soft Multifocal Myopia Control



Soft Multifocal Myopia Control

- We aren't causing amblyopia or blinding kids
- Effective myopia control
- Higher add power is better

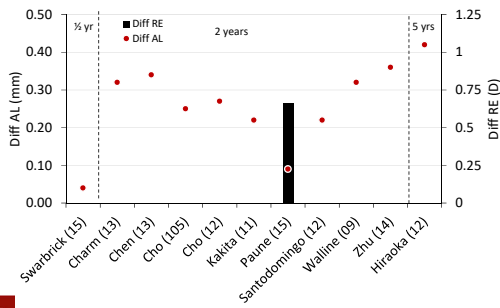
SUMMARY



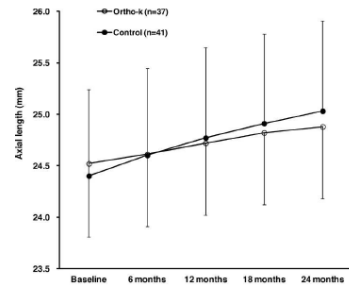
Orthokeratology Myopia Control



Orthokeratology Myopia Control



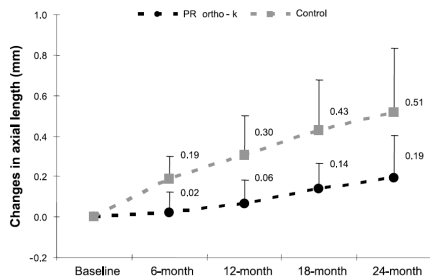
Orthokeratology Myopia Control



Cho P & Cheung SW. IOVS, 2012;53:7077-85.

Orthokeratology Myopia Control

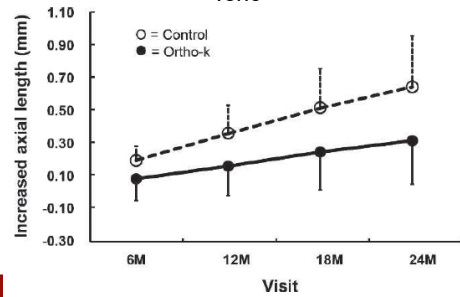
High Myopes



Charm J and Cho P. OVS 2013;90:530-9

Orthokeratology Myopia Control

Toric



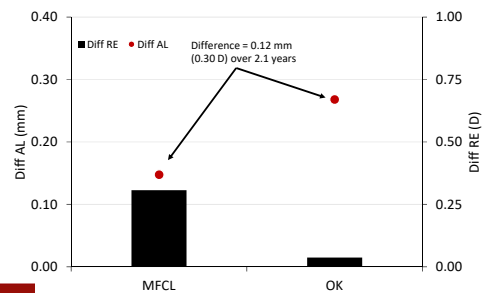
Chen C, et al. IOVS 2013;54:6510-7

Orthokeratology Myopia Control

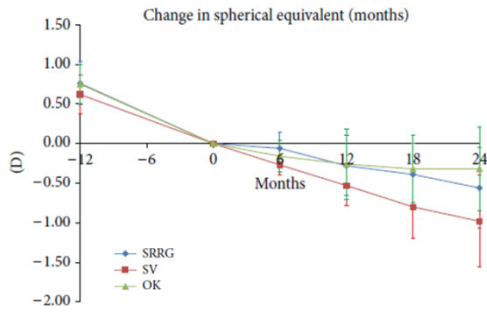
- Effective slowing of eye growth
- Works for high myopes



SMCL versus OK

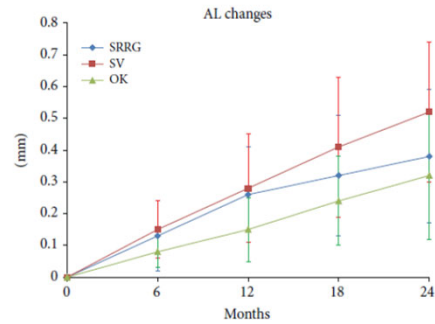


Which is Better: Multifocal or OK?



Paune J, et al. Biomed Res Int 2015;2015:507572

Which is Better: Multifocal or OK?



Paune J, et al. Biomed Res Int 2015;2015:507572

Which is Better: Multifocal or OK?

	Orthokeratology	Soft Multifocal
Parents want to manage all lens wear	X	
Child swims frequently	X	
Parents wear soft contact lenses		X
High myopia		X
Child has difficulty with dexterity	X	
Child mostly wants to wear glasses		X

Which is Better: Multifocal or OK?

- Essentially same myopia control
- Options are available
- If match patient's lifestyle, then more likely to be successful



Questions in Myopia Control

Do I need to measure axial length for myopia control?

Questions in Myopia Control

- Reasons to measure axial length
 - Measure myopia progression in orthokeratology
 - FDA requires it for myopia control indication
 - All studies measure it
 - Better informs you of how well you are controlling myopia progression

Questions in Myopia Control

- When examining myopes, raise your hand if...
 - you routinely measure refractive error
 - you routinely measure axial length
 - you think refractive error and axial length are highly correlated
 - you can accurately predict how much myopia will progress over the next year in single vision correction



Questions in Myopia Control

- May provide additional information
- Not **necessary** for myopia control
 - Practice myopia control, even if you can't measure axial length



Questions in Myopia Control

Should I change treatments when I think the myopia control patient progresses too much?



Questions in Myopia Control

- Can you predict progression over next 6-12 months?
- Do you know new treatment will work better?



Questions in Myopia Control

- Only tell them what you can do *on average*
 - Not for *their child*
- Put in myopia control to optimize compliance
- Maintain that treatment

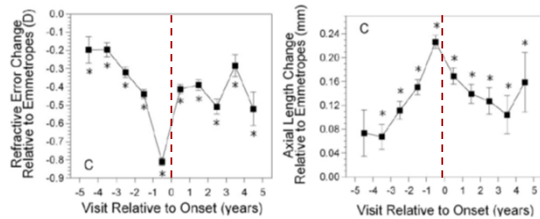


Questions in Myopia Control

At what age should I start myopia control?



Questions in Myopia Control



Mutti DO, et al. IOVS 2007;48:2510-9

Questions in Myopia Control

- The biggest treatment effect can occur at onset
- Age should not be factor when determining ability to wear contact lenses



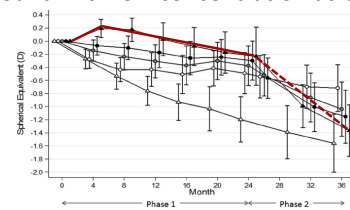
Questions in Myopia Control

When can I stop myopia control?



Questions in Myopia Control

- There is no evidence regarding rebound effect with optical strategies
- No rebound with low concentration atropine



Chia A, et al. AJO 2014;157:451-7

Questions in Myopia Control

- No evidence to answer that question
- Clinical hypothesis
 - Myopia control through expected age of progression (15-16 years)
 - Remove myopia control
 - If progress, reinstitute until no longer progressing



Clinical Pearls

- CLs are good options for myopia control
- Don't switch treatments to improve control
- Only say what we can do *on average*
- Help patients determine what fits lifestyle for best compliance
- Myopia control should be offered to all myopes

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