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Comparison of lens orientation stability of two daily disposable silicone hydrogel toric lenses

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Purpose & background

- There are several daily disposable (DD) silicone hydrogel (SH) options to correct astigmatism
- Soft toric lenses require stabilization designs to maintain the correct orientation of the cylindrical power.
- This study compared orientation stability of 2 x DDSHs of different stabilization designs.

❑ **MDT: MyDay toric**

(stenfilcon A; Optimised Toric Lens Geometry™, CooperVision)

❑ **AO1A: Acuvue® Oasys 1-Day with Hydraluxe™ for Astigmatism**

(senofilcon A; Blink Stabilized® design, Johnson & Johnson)

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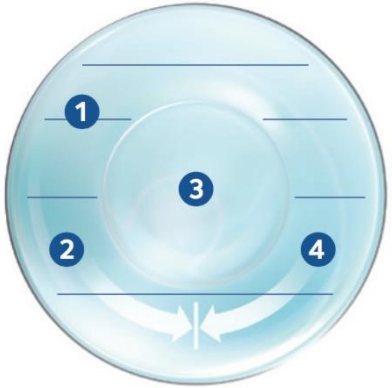
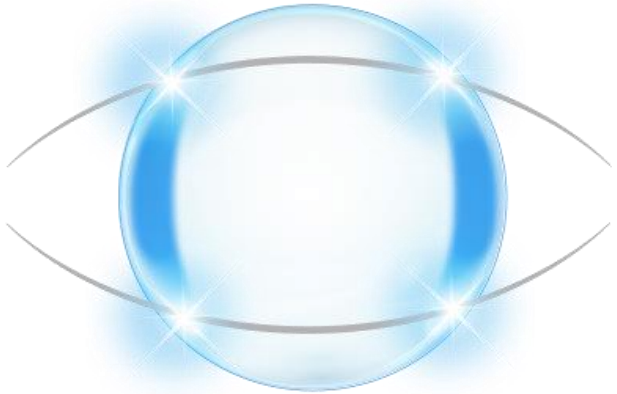
MDT



1. **Uniform horizontal ISO thickness**
   - Improves lens stability and reduces rotation for better visual acuity*
2. Smooth, continuous ballast
   - Maximizes comfort* during eyelid interaction
3. Larger toric optic zone
   - Provides clear visual acuity*
4. Optimized ballast toric design
   - Provides a stable, comfortable fit*

AO1A



BLINK STABILIZED™

Balanced with four Zones of stability

From manufacturers' websites

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Methods

- 1 site - CORE, 20 subjects, habitual soft toric wearers
- 1-week cross-over, randomized lens order, double masked
- Key outcomes, comparing data from 1-week visits :
  - LogMAR acuity & lens orientation with
    - Head straight
    - Head tilted 30^{o} to right
    - Head tilted 30^{o} to left
  - Rotational recovery (# degrees lens rotates back in 10 blinks after 30^{o} forced lens rotation)

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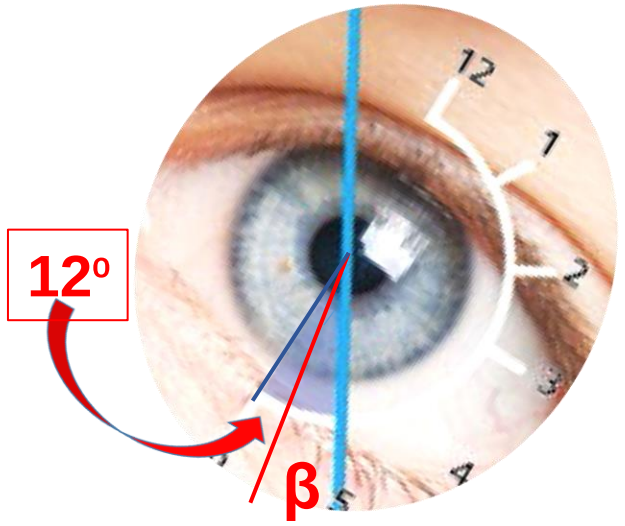
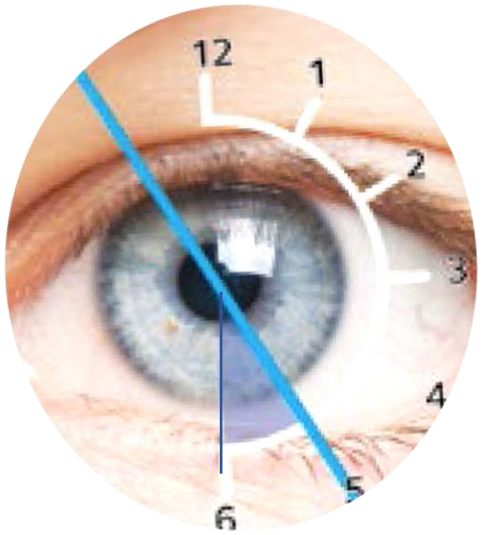
Methods

HEAD TILT	ROTATIONAL RECOVERY
	
• Tilt head 30º, wait for >1 minute. • Measure lens orientation relative to 'new' vertical position (β). • If β = 18º, lens rotates 12º • from habitual. • Best case is β = 30º ie. no rotation on head tilt	• Rotate lens 30º from habitual position • After 10 normal blinks, measure degrees recovered. • Best recovery = 30º, returned to habitual position • Worst recovery = 0º

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Results: RE mean data

			
LOGMAR ACUITY	MDT -0.07 AO1A -0.08 p=0.45 ½ letter diff	MDT -0.03 AO1A -0.04 p=0.07 ½ letter diff	MDT -0.03 AO1A -0.06 p=0.049 1½ letter diff
LENS ORIENTATION relative to vertical	MDT 6° AO1A 3° p=0.01 (Absolute values)	β: MDT 18° AO1A 17° p=0.41 Lens rotates temporal by MDT 12° AO1A 13°	β : MDT 17° AO1A 19° p=0.20 Lens rotates nasal by MDT 13° AO1A 11°
ROTATION RECOVERY Degrees rotated back after 10 blinks (full recovery = 30°)	Nasal: MDT 27° AO1A 19° p<0.01 Temp: MDT 22° AO1A 17° p=0.01	n/a	n/a

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Conclusions

MDT and AO1A have DIFFERENT STABILISATION designs:

- BOTH lenses performed well for visual acuity & lens orientation
- BOTH lenses rotated similar amount to follow the head tilt, <50% of head tilt angle
- MDT showed a faster return when displaced away from habitual position

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