

# Initial comfort ratings of soft contact lenses



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## Background >>>

Recent advances in improving oxygen transmissibility of contact lens materials have resulted in improved corneal physiology during wear. Typically, higher transmissibility soft contact lenses have a higher modulus of elasticity than conventional hydrogels leading to concerns that their initial comfort may be adversely affected.

Comfort still remains the main reason that patients:

- choose one lens type above another<sup>1</sup>
- discontinue contact lens wear: discomfort (51%); problems with vision (13%)<sup>2</sup>

In addition to fitting characteristics, some practitioners may use initial comfort following insertion as one of the criteria for selecting a lens type.

## Purpose >>>

To compare the initial comfort response to a range of currently marketed soft contact lenses.

## Subjects >>>

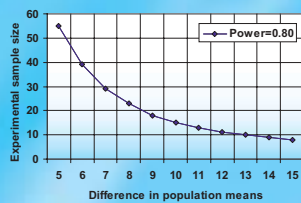
Ten females and 5 males participated in this single blind study.

Inclusion criteria were:

- contact lens wearing experience
- acceptable fit with all test lenses

This sample size (Figure 1) was sufficient to detect a 10% difference between lenses for a power of 80% and a significance level of 0.05 with a sd of 13 (pilot study).

Figure 1: Sample size calculation



## Lenses >>>

Each of the following lenses was worn monocularly for a period of 10 minutes:

lens	material	manufacturer
PureVision (PV)	(balafilcon A)	Bausch & Lomb
Focus Night & Day (ND)	(lotrafilcon A)	CIBA Vision
Focus Dailies (FD)	(neofilcon A)	CIBA Vision
1 Day Acuvue (AD)	(etafilcon A)	Johnson & Johnson
Proclear Compatibles (PC)	(omafilcon A)	Biocompatibles EYE CARE
Silicon Lens (S)	(elastofilcon A)	Bausch & Lomb



## Methods >>>

- Both the order of insertion and the wearing eye were chosen at random.
- Contralateral eyes remained without lenses throughout.
- No more than two lens types were inserted in any one day.
- Lenses were thoroughly rinsed with sterile saline prior to insertion.
- A standardised insertion technique was used: The contact lens was placed on the bulbar conjunctiva, moved onto the cornea and then returned to the bulbar conjunctiva. Here it was lightly massaged to remove any post lens debris and then moved back onto the cornea.



- Control eye comfort was arbitrarily anchored at a value of 100.
- Subjects rated the subjective comfort of each lens relative to the control eye.
- Ratings were made with both eyes occluded but not closed to avoid the influence of visual blur (ARVO poster # 2790).
- Ratings were obtained immediately after insertion, and after 1, 5 and 10 minutes of wear.
- Repeated measures ANOVA and multiple comparison corrected post hoc t-tests were used to analyse the data.

## Results >>>

### Differences in comfort between lenses (Figure 2)

There were no significant differences in comfort ratings between the ND, PV, AD, FD and PC lenses (FD:86±11, PC:84±13, ND:82±11, PV:79±12, AD:77±16; p > 0.05). However, the S lens was significantly less comfortable than the other lenses (SE:25±20; p < 0.01).

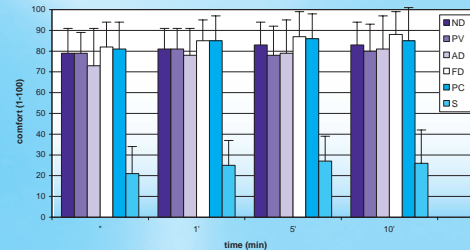


Figure 2: Average of the comfort rating of each lens immediately after insertion, 1 min, 5 min and 10 min after insertion (mean and sd)

### Differences over time (Figure 3)

The comfort ratings did not differ over time for any of the lens types (p=0.2). On average there was a 4 point (range 1 to 8 points) difference between insertion and 10 minute ratings.

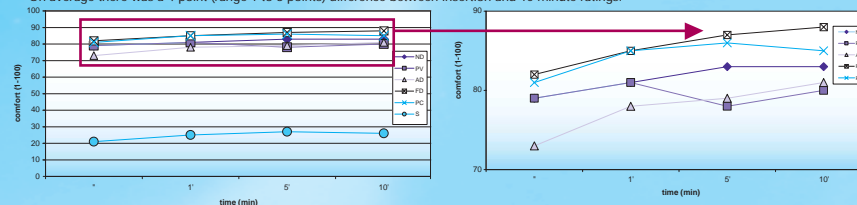


Figure 3: Mean comfort ratings over time (at insertion, 1, 5 and 10 minutes)

## Discussion >>>

- In this study, subjective comfort ratings for the ND, PV, AD, FD and PC lenses were similar on insertion and at 1, 5 and 10 minutes after insertion.
- Since these lenses differ considerably in material thickness, design and stiffness, other factors may contribute to initial comfort ratings.
- Initial comfort ratings may therefore not be an accurate predictor of the most comfortable lens for a patient.
- To distinguish between lens types direct contralateral comparison may be more appropriate.
- Historical Control: The comfort ratings from two separate contralateral trials (FD vs ACUVUE 2 (A2) and ND vs A2) with 10 different subjects are provided in table 1. (unpublished data)

Table 1: Comfort ratings of FD vs A2 and ND vs A2 (5 minutes after insertion and after 6 hours of lens wear)

Trial 1	FD (Mean ± SD)	A2 (Mean ± SD)	Trial 2	ND (Mean ± SD)	A2 (Mean ± SD)
Insertion	99 ± 6	96 ± 6	Insertion	80 ± 12	90 ± 6
6 hours	93 ± 5	95 ± 6	6 hours	77 ± 15	86 ± 10

- The numerical differences between comfort at insertion and after 6 hours of lens wear with the different lens types suggests that initial comfort may not be an accurate predictor of longer term lens comfort (Figure 4)

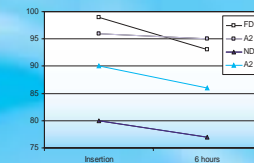


Figure 4: Comfort ratings FD vs A2 and ND vs A2 5 minutes after insertion and after 6 hours

- A possible reason for initial comfort being a poor predictor of long term comfort is that dryness (40%) is the most common type of discomfort that contributes to discontinuation of lens wear.<sup>2,3</sup>
- In a study where patients had adapted to contralaterally fitted gas permeable lens and soft lens fitted contralaterally over a 3 month period they preferred the soft lens overall because of comfort and handling despite the superior vision provided by the gas permeable lens.<sup>1</sup>
- The 'S' lens was rated significantly more uncomfortable indicating that subjects made use of the full range of the scale.
- Comfort ratings did not differ significantly over the 10 minute period (4 points on average) indicating the comfort may be assessed as soon as the lenses have settled.
- While the results suggest that when faced with a common control subjects do not report substantial comfort differences between soft lens types this may be due to a lack of sensitivity in the rating method used.

## Conclusion >>>

- Under the conditions of this experiment initial comfort ratings do not differ for a range of soft contact lenses.
- This suggests that the perception of comfort during the first few moments of wear may depend on factors other than lens design or material characteristics.

## References >>>

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