Visioffice Interpupillary & Segment Height Measurements vs Traditional Methods

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Synopsis

Many eye care practitioners now offer free-form progressive addition lenses to provide an improved, customized viewing experience for patients. These lenses require improved optical measuring capabilities, and practitioners can now incorporate electronic dispensing systems such as Essilor's Visioffice to meet this demand. As practitioners consider investing in these systems, they need to know how well the systems perform in a clinical setting. We determined if the Visioffice provides repeatable measurements and how its data compared to traditional methods of measuring interpupillary distance and segment height.

Introduction

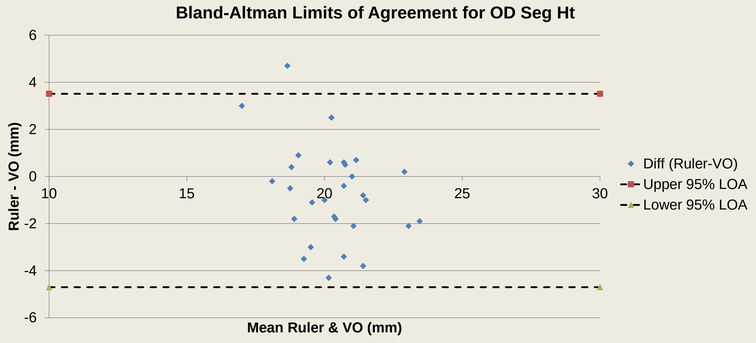
Interpupillary distance (PD) and segment height (seg height) are two common measurements taken when selecting eyewear. There are several methods to obtain these measurements, all of which should be repeatable and comparable. While PD is commonly measured with a pupillometer, seg heights are usually measured with a mm ruler. The advent of free-form progressive addition lenses (PALs) catalyzed ophthalmic technology advances that require more precise measurements of PD and seg height. Electronic dispensing systems such as Essilor's Visioffice were introduced to meet this demand. In this study, we determined if the Visioffice provides repeatable measurements of PD and seg height and how these measurements compare to traditional methods.

Methods

30 participants had their PDs and seg heights measured using traditional methods, pupillometer and mm ruler, respectively. The same measurements were then taken using the Visioffice system. A standard, adjustable frame was used for both measurements. Analysis of Variance (ANOVA) and Bland-Altman statistical analysis to detail the repeatability and comparability of the Visioffice system compared to the traditional methods.

Results

Bland-Altman analysis of the binocular PD measurements found the mean of differences and 95% limits of agreement between the Visioffice and the pupillometer to be 0.07 +/- 1.12mm. The intra-class correlation coefficient (ICC), a measure of repeatability, was 0.99 for the monocular PD measurements using the Visioffice (OD, OS). They were 0.98 and 1.0 for the pupillometer, OD and OS respectively. There was not a statistically significant difference between seg height measurements by the Visioffice and mm ruler by paired t-testing (p=0.13). However, neither the Visioffice nor mm ruler provided highly repeatable measurements of seg height (ICC=0.35, ICC=0.77).



Bland-Altman plot of seg height measurements of Visioffice and mm ruler

	Visioffice - Pupillometer	Visioffice - Viktorin
Binocular PD		
t-Test (p)	0.51	
Upper 95% Limit of Agreement (mm)	1.19	
Lower 95% Limit of Agreement (mm)	-1.05	
Bland-Altman 95% Confidence Interval Band (mm)	2.24	
OD Seg Height		
t -Test (p)		0.13
Upper 95% Limit of Agreement (mm)		3.51
Lower 95% Limit of Agreement (mm)		-4.70
Bland-Altman 95% Confidence Interval Band (mm)		8.21
Mean of Differences (mm)		-0.593 +/-4.11

Bland-Altman analysis of PD and seg height measurements of Visioffice vs "traditional"

Discussion

The data indicates the Visioffice does provide repeatable measurements of PD while its seg height measurements are no more repeatable than those obtained with a PD ruler. In fact, seg height measurements with a PD ruler were also not repeatable. Since the pupillometer also yielded repeatable PD measurements, there is no marked advantage of measuring PD with the Visioffice when compared to traditional methods. Eye care practitioners providing spectacles that require standard PD and seg height measurements would find no benefit in the Visioffice system. However practitioners wanting to prescribe more customized free-form PALs that require additional measurements (pantoscopic tilt, wrap angle, etc.) should consider electronic dispensing systems such as the Visioffice.

References

•Brooks CW, Borish IM. Measuring the interpupillary distance. In: Falk K, Hart CM, eds. System for ophthalmic dispensing, 3rd ed. St. Louis, MO: Butterworth-Heinemann; 2007:25-38.

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