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The effect of test sequence on measurement of fusional vergence

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Introduction: A vergence is the simultaneous movement of both eyes in opposite directions to obtain or maintain single binocular vision. When a creature with binocular vision looks at an object, the eyes must rotate around a vertical axis so that the projection of the image is in the center of the retina in both eyes. Fusional vergences are motor responses used to eliminate horizontal, vertical, or torsional image disparity. Fusional vergence movements can be either positive or negative. When performing fusional vergence testing, the most commonly accepted clinical technique is to first measure negative fusional vergence (NFV) followed by a measurement of positive fusional vergence (PFV). The reasoning behind this is the supposition that if one tested convergence first, significant vergence adaptation would take place thus significantly altering the divergence fusion measurement.

Purpose: The objective of this study was to accurately measure the vergence adaptation in both directions in order to determine if order of testing affects the results.

Methods: Subjects ranging between the ages of 17 and 25 were tested using a step vergence method. Visual acuity, cover test, Maddox rod, stereopsis, negative fusional vergence and positive fusional vergence were checked after a one day gap this test was repeated by checking first the positive fusional vergence followed by negative fusional vergence. Subjects with 6/6, N6 vision were included for the study and subjects with mild severe visual impairment binocular vision anomalies, and high refractive errors were excluded from the study. Our analysis was limited to the break and recovery points as we were interested in the effects on total convergence (fusional plus accommodative) and not only fusional vergence. The statistical evaluation consisted of the student's t test. Sixty-six subjects (university students) were recruited for this study with 47 females and 19 males.

Results & Conclusion: As can be seen, the change in break and recovery measurements when testing BI after BO is statistically significant, whereas the reverse did not hold. Therefore, the previously stated supposition that the vergence adaptation effect is not symmetric is shown to be untrue. It is worthwhile mentioning that there were significant differences in the range of fusion among the subjects who were tested even though all were considered normal. This is in agreement with currently accepted information which states that standard deviation of fusion ranges in normal individuals is quite high.

Biography

Salai Dhavamathi Janarthanan has completed her MOptom from Amity University and Under-graduation from Elite School of Optometry, Chennai. She is currently working as a Clinical Instructor in Sri Ramachandra University, Chennai. She has presented many posters in International Conferences.

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Notes:

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