RETINOSCOPY METHOD: ON-AXIS VERSUS OFF-AXIS

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ABSTRACT

Background: Retinoscopy finding is the key determinant in deciding prescription for low cooperative or unreliable patients. Retinoscopy must be performed on visual axis to obtain an accurate refractive result. However, in unavoidable circumstances such as limited space of refraction room, an off-axis retinoscopy method has been applied. The main objective of this study was to evaluate the difference of on-axis, horizontal off-axis, and vertical off-axis retinoscopy findings in myopes.

Methodology: This cross-sectional study involved 26 young adult myopes. A total of 9 retinoscopy measurements were performed on- axis, 5- and 10-degree off nasally and temporally along horizontal axis, and 5- and 10-degree off superiorly and inferiorly along vertical axis. All findings were analysed using repeated measure ANOVA.

Results: There was a significant difference between the retinoscopy measurements on-axis, horizontal and vertical off-axis, $p<0.05$. The 5- and 10-degree off errors along both axes were 0.15D (inferior) to 0.23 D (temporal) and 0.23D (inferior) to 0.38 D (temporal), respectively. The error was higher along horizontal off-axis compared to vertical off-axis. As the angle of displacement increased, the error was significantly increased for horizontal displacement ($p<0.05$) but not for vertical displacement ($p>0.05$).

Conclusion: Although off-axis retinoscopy showed statistically significant difference from on-axis retinoscopy, the errors of 5-degree off were clinically minimal (<0.25D) along both horizontal and vertical axes. Vertical off-axis were exposed to less error compared to horizontal off-axis. Off-axis retinoscopy method more than 5-degree and along horizontal axis is not recommended and should be avoided.

Keywords: retinoscopy, Off-axis retinoscopy, On-axis retinoscopy