

## CONTRAST SENSITIVITY ASSESSMENT OF MILITARY AIRCREW ASPIRANTS ON INDUCTION: REINFORCING THE VISUAL STANDARDS

*ÉVALUATION DE SENSIBILITÉ DE CONTRASTE D'ASPIRANTS MILITAIRES MEMBRES D'ÉQUIPAGE SUR L'INDUCTION: RENFORCER LES NORMES VISUELLES*

**B BHOWMICK, D GAUR, S JOSHI**

*Indian Air force, Bengaluru, Karnataka, India*

[bjplabavmed@gmail.com](mailto:bjplabavmed@gmail.com)

**Background:** The requirement of optimum vision for military aircrew operating in difficult terrain and marginal weather condition cannot be overemphasized. Research carried out over the past decades brings out the fact that Contrast Sensitivity (CS) correlates better with air-to-ground or ground-to-air visual tasks compared to conventional visual acuity tests. Despite this, most of the medical evaluation guidelines worldwide are silent about this parameter. While flying over a featureless terrain or low contrast environmental conditions (i.e. haze, fog, dawn, dusk) CS takes the upper hand over visual acuity for optimal performance. Vibration is an unavoidable stressor in aviation and higher levels of this stress experienced by helicopter and transport aircrew may put their visual performance in jeopardy. This study assesses the changes in CS under simulated low frequency whole body vibration, encountered in operational scenario.

**Material and Methods:** 30 healthy volunteers were assessed for their CS under low frequency whole body vibration using Multi-axial Vibration Simulator. Vibration frequency along the Z-axis varied from 4-20 Hz (fixed at X, Y-axes) for a period of 30 min. CS was measured in no vibration, under vibration and on recovery, using CSV-1000 equipment at spatial frequencies of 3, 6, 12 and 18 cpd in photopic conditions.

**Results:** Statistically significant changes in CS were observed across some vibration and spatial frequencies. No significant detrimental effect was recorded on CS post 30 min of continuous vibration as compared to baseline.

**Conclusion:** As optimal contrast perception is an integral part of vision while carrying out aviation tasks, any significant amount of deterioration in this visual parameter, as an effect of vibration or any other aviation stressors, is of aeromedical significance. Testing Contrast Sensitivity as a part of routine vision assessment in candidates will ensure selection of a superior military aircrew.