Abstract: far and near vergence expected values in a sample of healthy young adults

Purpose: obtaining vergence values in a healthy proved young adults population, in order to help classification of vergence disorders.

Methods: A detailed ophthalmologic and refractive examination was systematically performed (*Tropicamide* cycloplegia) in order to confirm the normal visual status of the studied population.
Thirty-three young adults (28 M & 5 F), aged from 18 to 30 years old (Mean (SD) : 22 y (3,5)) were recruited from October 2018 to April 2019 amongst a population of candidates to professional licenses in French Air Forces.

Visually normal adults underwent twelve vergence measurements with an horizontal prism bar :
1. Base-In vergences (BI-V): blur-point, break-point, refusion point, at distance of 5 m & 40 cm
2. Base-Out vergences (BO-V): blur-point, break-point, refusion point, at distance of 5m & 40 cm

Results: at 5 m, the mean ($^+/_-$ SD) BI-V blur-point was 4.6 Prism Diopters (PD) ($^+/_-$ 1.7) ; BI-V break-point was 7.9 PD ($^+/_-$ 2.1) and BI-V refusion was 5.8 PD ($^+/_-$ 2.7). At 40 cm, the mean BI-V blur-point was 8.4 PD ($^+/_-$ 3.3) ; BI-V break-point was 12.8 PD ($^+/_-$ 3.8) and BI-V refusion was 11.0 PD ($^+/_-$ 3.1). At 5 m, the mean BO-V blur-point was 8.8 PD ($^+/_-$ 2.8) ; BO-V break-point was 22.2 PD ($^+/_-$ 6.1) and BO-V refusion was 14.8 PD ($^+/_-$ 4.1). At 40 cm, the mean BO-V blur-point was 16.3 PD ($^+/_-$ 4.2) ; BO-V break-point was 30.2 PD ($^+/_-$ 8.1) and BO-V refusion was 21.8 PD ($^+/_-$ 5.9).

Conclusions: All participants demonstrated fusional ranges significantly higher compare to the *Sheiman & Wick* optometric's table, often considered as a reference. This could be linked to the more restrictive inclusion criteria of our study (mainly in terms of refraction). These findings could have clinical implications with regard to Convergence Insufficiency disorder classification.