The effect of heterophoria on the size of fusion vergences in far and near

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Aims: We demonstrate changes in near and far fusional vergence measured with prism bars while compensating for the heterophoria present using current ametropia correction.

Material and methods: The basic sample includes 19 subjects with a mean age of 21.5 ±3.05 years, a mean distance heterophoria size (HTF D) of 0 ±3.23 pD, a positive fusion vergence to distance (PFV D) of 24.11 ±6.76 pD, negative fusion vergence to distance (NFV D) 10.53 ±3.99 pD. At near range, we measured an average value of heterophoria (HTF B) -1.11 ±4.99 pD, an average positive fusion vergence (PFV B) of 28.63 ±8.30 pD and an average negative fusion vergence (NFV B) of 15.53 ± 7.57 pD.

Resources (only most important):
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Table 1: Sizes of fusion reserves when dividing the set according to size of heterophoria [pD].

[pD]	D OR	D EX	p-value	D ES	p-value
PFV D	24,70	22,00	0,55	24,17	0,89
NFV D	10,80	15,33	0,01	7,67	0,07
	B OR	B EX	p-value	B ES	p-value
PFV B	28,44	28,20	0,96	29,40	0,83
NFV B	12,00	22,60	0,02	14,80	0,89

Results: In the case of both groups with exophoria (far, near), there was a decrease in the average value of positive fusion vergence (PFV) compared to the average value of PFV in orotophoria. However, the difference was not statistically significant (PFV D, p = 0.55 and PFV B, p = 0.96). We found a statistically significant result in these groups only for negative fusion vergence (NFV). **There was a statistically significant increase in NFV in sample with far and near exophoria (D EX, p = 0.01 and B EX, p = 0.02, respectively, see Tabel 1).** In the esophoria groups, there was a decrease in the mean values of both fusion reserves in the distance group (D ES). However, this result was not statistically significant (PFV D, p = 0.89 and NFV D, p = 0.07). In the near group, on the contrary, there was an increase in the average values of both fusion reserves. The result was not significant at the determined statistical level (PFV B, p = 0.83 and NFV B, p = 0.89).

Conclusion: By comparing the fusion vergence values in patients with exophoria and orthophoria, we demonstrated that in the presence of far or near exophoria, **there is a decrease in the opposite fusion vergence, and an increase in the ipsilateral fusion vergence**. In the case of a reduction in ipsilateral fusion vergence, the finding was statistically significant both far and near (p = 0.01 and p = 0.02, respectively). On the contrary, we were unable to prove this fact in the group of patients with esophoria. In this group, both fusion vergences decreased in the distance and both fusion vergences increased in the near range. However, the changes in these values were not statistically significant.