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## Does coexisting accommodative dysfunction impact clinical convergence measures, symptoms and treatment success for symptomatic convergence insufficiency in children?

The Convergence Insufficiency Treatment Trial (CITT) Investigator Group and the Convergence Insufficiency Treatment Trial – Attention and Reading Trial (CITT-ART) Investigator Group

We recently discovered that 10 (3.2%) participants in the CITT-ART should not have been enrolled because they did not meet the eligibility criterion for positive fusional convergence. However, the blur values (used to characterise within- and between-group changes in fusional vergence) of ineligible participants (mean = 13.0 ) were similar to those of eligible participants (mean = 11.4 ) and there was no meaningful effect on published results thus far. We are gratified that a sensitivity analysis excluding these 10 participants showed the study results to be essentially the same. (1) Tables 2 and 3 below (table numbers correspond to the table numbers in the published paper) show the minimal impact of excluding the 10 participants, including no changes in the status of statistical significance (Table 3). Changes in effect size are not meaningful.

### References

1. Kulp MT, Sinnott LT, Cotter SA, Borsting E, Toole AJ, Chen AM, et al. Does coexisting accommodative dysfunction impact clinical convergence measures, symptoms and treatment success for symptomatic convergence insufficiency in children? *Ophthalmic & physiological optics : the journal of the British College of Ophthalmic Opticians.* 2022;42(1):59–70.

**Table 2.**

Number (percentage) of participants with coexisting convergence insufficiency and accommodative dysfunction within each treatment group in CITT-ART at study entry.

Type of Accommodative Dysfunction	Office-based Vergence/ Accommodative n (%)		Office-based Placebo n (%)		Overall n (%)	
	Published	After exclusions	Published	After exclusion	Published	After exclusions
<b>Decreased Amplitude</b> *	104 (52.5%)	102 (53.1%)	63 (60.6%)	61 (61%)	167 (55.3%)	163 (55.8%)
<b>Decreased Facility</b> **	67 (33.8%)	64 (33.3%)	37 (35.6%)	34 (34%)	104 (34.4%)	98 (33.6%)
<b>Either Decreased Amplitude or Facility</b>	130 (65.7%)	126 (65.6%)	72 (69.2%)	68 (68%)	202 (66.9%)	194 (66.4%)

\* more than 2D below the minimum expected amplitude for age ( $15 - \frac{1}{4}$  age)

\*\* less than 6 cycles per minute

**Table 3.**

Mean differences in Near Point of Convergence, Positive Fusional Vergence, and Convergence Insufficiency Symptom Survey (CISS) score at study entry for participants with and without accommodative dysfunction in both the CITT and CITT-ART studies.

Accommodative Measure		Decreased Accommodative Function**		Age-normal Accommodative Function		Difference Between Means (95% CI)	P Value*	Cohen's d
		N	Mean (SD)	N	Mean (SD)			
<b>Near point of convergence (cm)</b>								
Amplitude	Published	286	17 (8.2)	234	10.9 (5.8)	6.1 (4.9, 7.4)	<.001	0.85
	After exclusions	282	17.1 (8.2)	228	11 (5.8)	6.1 (4.8, 7.4)	<.001	0.84
Facility	Published	205	15.2 (8.3)	315	13.7 (7.4)	1.5 (0.2, 2.9)	0.03	0.2
	After exclusions	199	15.3 (8.4)	311	13.7 (7.4)	1.6 (0.2, 3)	0.03	0.21
<b>Positive fusional vergence ( )</b>								
Amplitude	Published	286	10.5 (4)	234	12.1 (4)	-1.6 (-2.3, -0.9)	<.001	0.4
	After exclusions	282	10.5 (4)	228	12.1 (4.1)	-1.6 (-2.3, -0.9)	<.001	0.39
Facility	Published	205	10.7 (4)	315	11.6 (4)	-0.9 (-1.6, -0.2)	0.02	0.21
	After exclusions	199	10.7 (4.1)	311	11.6 (4)	-0.9 (-1.6, -0.2)	0.01	0.22
<b>CISS Score</b>								
Amplitude	Published	286	30.9 (8.9)	234	27.9 (8.2)	3 (1.5, 4.4)	<.001	0.34
	After exclusions	282	30.9 (8.9)	228	27.8 (8.3)	3.1 (1.6, 4.6)	<.001	0.36
Facility	Published	205	30.9 (8.8)	315	28.7 (8.5)	2.2 (0.7, 3.7)	0.006	0.25
	After exclusions	199	30.8 (8.8)	311	28.7 (8.6)	2.1 (0.6, 3.7)	0.007	0.25

\* The p values are for independent samples t tests of mean differences.

\*\* Decreased accommodative amplitude was more than 2D below the minimum expected amplitude for age ( $15 - \frac{1}{4}$  age); Decreased accommodative facility was less than 6 cycles per minute