

BACKGROUND

- Coronary artery disease (CAD) is associated with cognitive deficits, which may predict functional decline and increase the risk of dementia
- Greater dietary intake of omega-3 fatty acids (omega-3 FAs) eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) has been associated with a lower risk of cognitive decline
- Evidence of omega-3 FA supplements improving cognitive deficits or preventing decline is mixed
- Investigating pro-cognitive efficacy of omega-3 FAs in CAD patients may be ideal because omega-3 FAs have potentially favourable cardiometabolic effects
- This study is a secondary analysis of CAROTID, a randomized, double-blind, placebo-controlled trial investigating omega-3 FA efficacy for reducing depressive symptoms in CAD (NCT 00981383)

OBJECTIVES

Objective 1: Explore efficacy of omega-3 FA treatment for improving cognitive performance in CAD patients participating in cardiac rehabilitation (CR)

Objective 2: Depression is independently associated with cognitive deficits. This objective assessed potential differences in treatment efficacy between patients with and without depression

METHODS

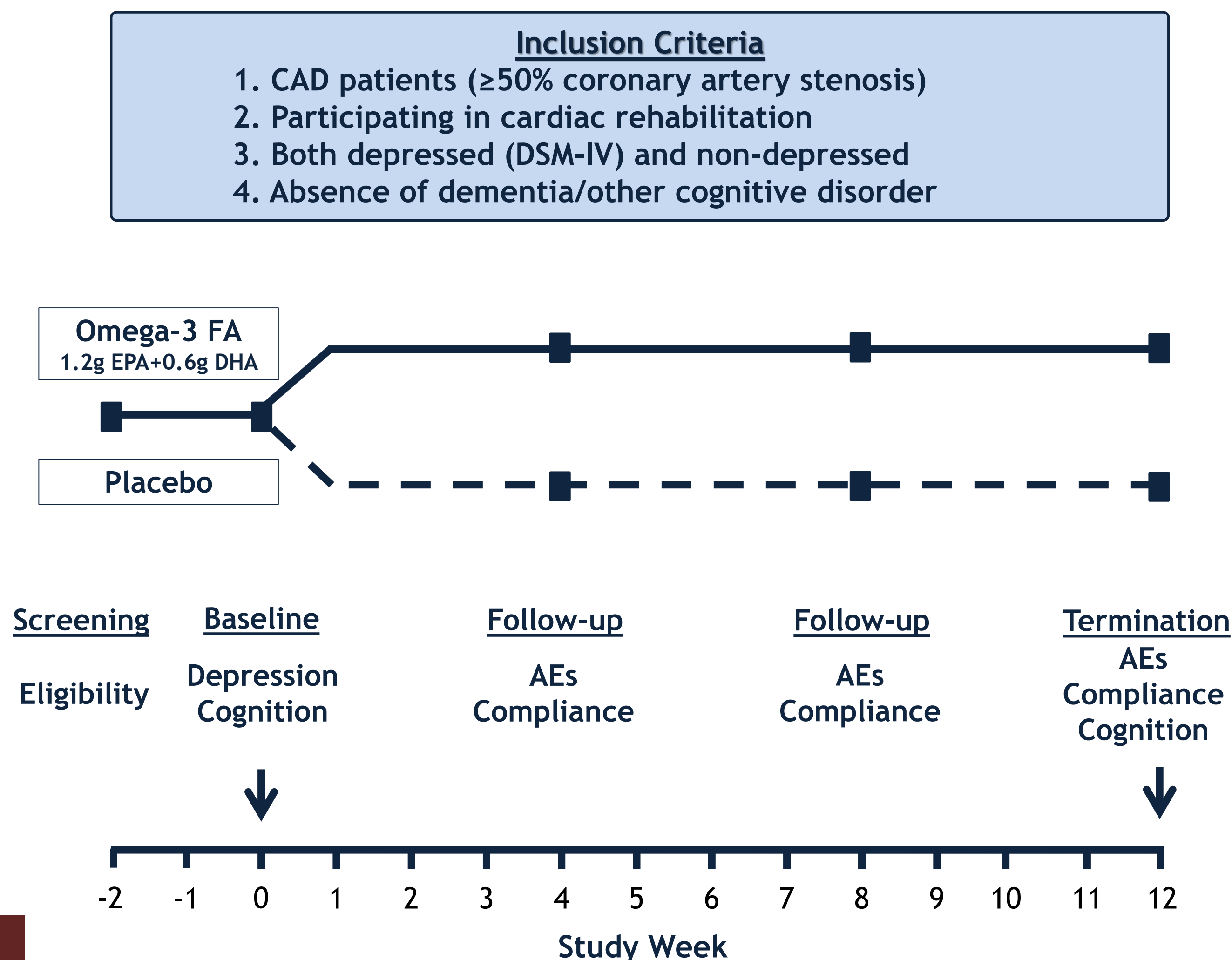


Figure 1. CAROTID Trial Design.

RESULTS

Table 1. Participant Characteristics.

	Omega-3 FA (n=45)	Placebo (n=47)	F or X ²	P Value
Age, mean (SD)	63.8 (9.1)	59.7 (7.9)	5.49	.02
Male, %	78	74	0.01	.90
Education, yrs, mean (SD)	14.9 (3.5)	15.7 (3.3)	1.17	.28
Vascular risk factors, # of 5, mean (SD)	3.1 (1.3)	2.8 (1.4)	0.89	.35
sMMSE, mean (SD)	28.5 (1.3)	29.0 (1.1)	3.54	.06
DSM-IV depression, %	40	40	0.02	.99
Antidiabetic medication, %	27	13	2.83	.09
Antihypertensive medication, %	87	70	3.66	.06
ASA, %	78	94	4.75	.03
Beta-blocker, %	73	68	0.31	.58
Statin, %	96	100	2.14	.14

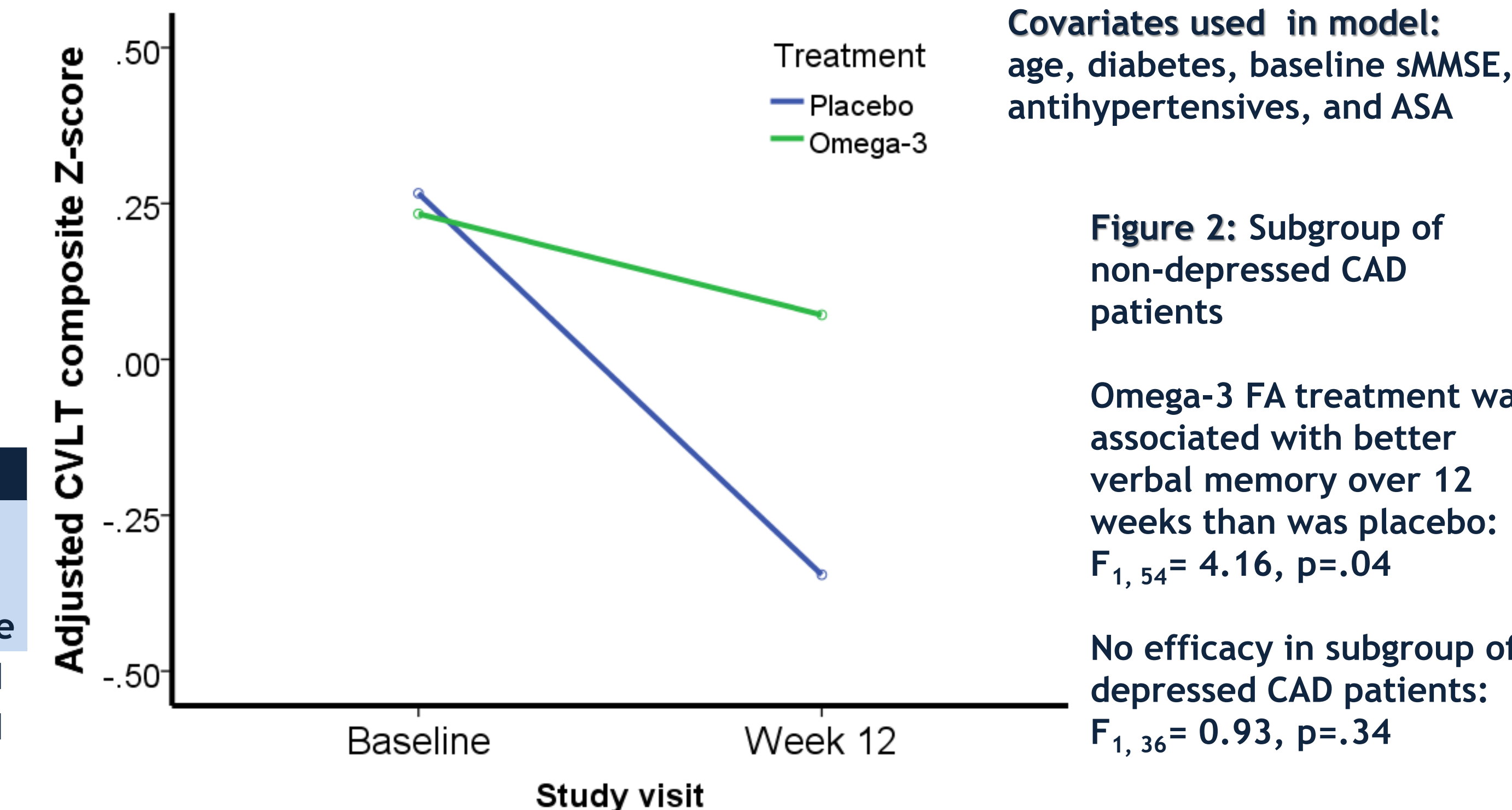
sMMSE = Standardized Mini-Mental State Examination, ASA = acetylsalicylic acid

Table 2. Baseline Cognitive Performance, Z-score (SD).

Outcome	By Treatment			By Depression		
	Omega-3 FA (n=45)	Placebo (n=47)	P Value	Depressed (n=37)	Non-depressed (n=55)	P Value
CVLT	0.12 (0.91)	0.32 (0.91)	.31	-0.14 (0.95)	0.46 (0.84)	<.01
APS	-0.33 (0.78)	-0.15 (0.70)	.26	-0.50 (0.81)	-0.06 (0.64)	<.01
EF	-0.28 (0.66)	-0.18 (0.68)	.48	-0.41 (0.74)	-0.10 (0.60)	.03
BVMT	-0.04 (1.00)	0.26 (1.17)	.34	-0.15 (1.23)	0.35 (0.94)	.03

Table 3. Cognitive Z-score Changes over 12 Weeks (n=92).

Outcome	Change in all patients (95% CI)	F _{1,91} Statistic	P Value	Between-groups difference (95% CI)	F _{1,91} Statistic	P Value
CVLT	-0.11 (-0.06 - 0.28)	2.16	.15	0.10 (-0.23 - 0.44)	0.42	.52
APS	0.09 (0.02 - 0.20)	5.57	.02	-0.01 (-0.20 - 0.19)	0.25	.62
EF	0.16 (0.07 - 0.26)	14.64	<.01	-0.06 (-0.24 - 0.13)	0.22	.64
BVMT	0.13 (0.01 - 0.34)	4.01	.04	0.04 (-0.31 - 0.40)	0.23	.63



DISCUSSION & FUTURE DIRECTIONS

- Attention and processing speed, executive function, and visuospatial memory improved in all patients over 12 weeks of CR
- Omega-3 FA treatment was not efficacious compared to placebo for any cognitive outcome in all patients
- In a subgroup of non-depressed patients, omega-3 FA treatment was associated with better verbal memory performance over 12 weeks than among those in the placebo group (limitation: this was a subanalysis of a secondary RCT outcome)
- As verbal memory is an important predictor of compliance with CR, long-term cognitive health, and mortality, this finding may be clinically relevant