

Supplemental Table 1. General information of the fish oil capsule intervention study subjects.

Subject ID	Treatment (FO or Placebo)	Age	Gender	BMI	Body Weight (kg: pre/post)	Fat-Free Mass (kg: pre/post)	Fat Mass (kg: pre/post)	Compliance (capsules/day) For 42 Days	Side Effects	Protein Intake (g/day)	Fat Intake (g/day)	CHO Intake (g/day)
22-A	FO	61	F	35.3	91.41 / 92.40	43.24 / 44.99	48.17 / 47.42	8/8	None	45.62	28.22	106.63
22-B	FO	73	M	30	77.62 / 77.87	47.97 / 49.95	29.64 / 27.92	8/8	None	79.29	40.83	118.21
22-C	OO	73	F	28.7	80.19 / 79.06	48.60 / 47.45	31.60 / 31.62	8/8	None	109.48	81.12	184.88
22-D	FO	82	F	23.9	55.38 / 55.38	35.20 / 35.56	20.19 / 20.02	8/8	None	99.60	54.85	194.64
22-E	OO	86	F	24.6	75.27 / 74.57	41.68 / 42.00	33.59 / 32.57	8/8	None	46.94	29.38	155.68
22-F	OO	82	M	23.8	69.76 / 71.99	50.93 / 53.68	18.82 / 18.31	8/8	None	49.94	19.02	90.61
22-G	OO	78	M	30	87.85 / 90.10	52.50 / 55.93	35.35 / 34.17	8/8	None	120.73	58.00	78.53
22-H	OO	80	F	27.1	66.80 / 66.88	39.70 / 40.42	27.10 / 26.46	8/8	None	56.07	46.79	162.17
22-I	FO	75	M	24.8	74.74 / 74.94	49.53 / 49.86	25.21 / 25.07	8/8	None	45.81	47.73	196.33
22-J	OO	59	F	28	68.62 / 69.59	40.21 / 42.00	28.40 / 27.60	8/8	None	79.05	66.58	252.20
22-K	FO	82	M	27.8	73.48 / 72.42	49.07 / 49.11	24.40 / 23.30	8/8	None	81.93	75.83	251.99
22-M	FO	67	M	24.9	72.38 / 71.57	55.48 / 55.74	16.90 / 15.83	8/8	None	100.51	92.14	187.31
22-N	FO	65	F	26.6	80.75 / 80.62	63.17 / 63.43	17.58 / 17.19	8/8	None	69.80	44.37	190.29

FO = Fish Oil Capsules; OO =Olive Oil Capsules.

Supplemental Table 2. In vitro incorporation of exogenous fatty acids into activated human CD4⁺ T cell neutral lipids.

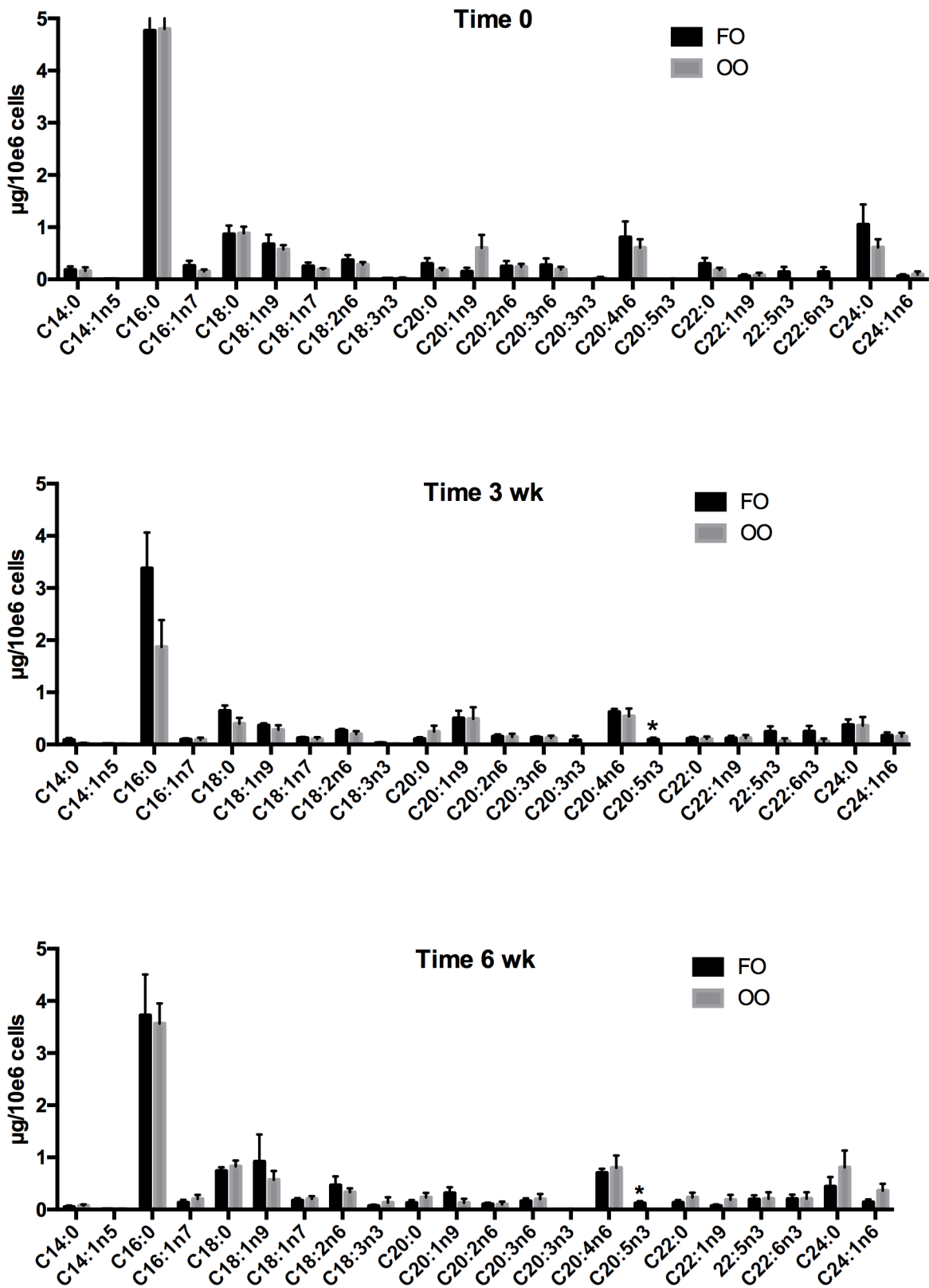
FA (mole%)	UT		L12.5		L25		L50		E12.5		E25		E50		D12.5		D25		D50	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
14:0	11.0	1.1	10.6	0.7	8.2	1.1	6.3	1.2	9.9	1.5	10.2	0.5	7.8	0.9	10.9	1.4	7.5	0.9	8.6	1.3
16:0	77.1	2.5 ^d	83.7	0.8 ^e	70.5	4.7 ^c	52.7	7.0 ^a	83.8	2.1 ^e	71.8	3.8 ^{cd}	58.6	4.0 ^b	85.3	1.8 ^a	72.2	4.0 ^d	67.1	5.9 ^c
18:0	6.7	1.3	5.7	0.3	5.7	0.3	3.3	0.5	6.4	0.6	6.0	1.1	4.0	0.4	3.4	0.5	4.5	0.6	2.5	0.8
18:1n9	3.2	1.2	nd		3.0	1.1	3.0	0.3	nd		4.1	1.3	4.0	0.6	0.4	0.4	3.7	1.0	2.9	1.1
18:2n6	nd ^a		nd ^a		9.0	3.3 ^b	30.0	6.9 ^c	nd ^a		nd ^a		nd ^a		nd ^a		nd ^a		nd ^a	
20:2n6	nd		nd		nd		1.2	0.6	nd		nd		nd		nd		nd		nd	
20:3n6	nd		nd		2.2	1.1	3.4	0.7	nd		nd		nd		nd		nd		nd	
20:5n3	nd ^a		nd ^a		nd ^a		nd ^a		nd ^a		2.2	0.8 ^a	12.4	2.2 ^b	nd ^a		nd ^a		nd ^a	
22:5n3	nd ^a		nd ^a		nd ^a		nd ^a		nd ^a		5.7	1.4 ^b	13.4	2.2 ^c	nd ^a		nd ^a		nd ^a	
22:6n3	nd ^a		nd ^a		nd ^a		nd ^a		nd ^a		nd ^a		nd ^a		nd ^a		11.1	2.2 ^b	17.3	4.9 ^c

¹ Abbreviations: nd, not detectable; UT, untreated – no exogenous FA; L=linoleic acid; E=EPA; D=DHA; number following each letter denotes concentration in μ M.

² Superscript with different letters indicate a significant difference ($P < 0.05$, $n = 3-7$).

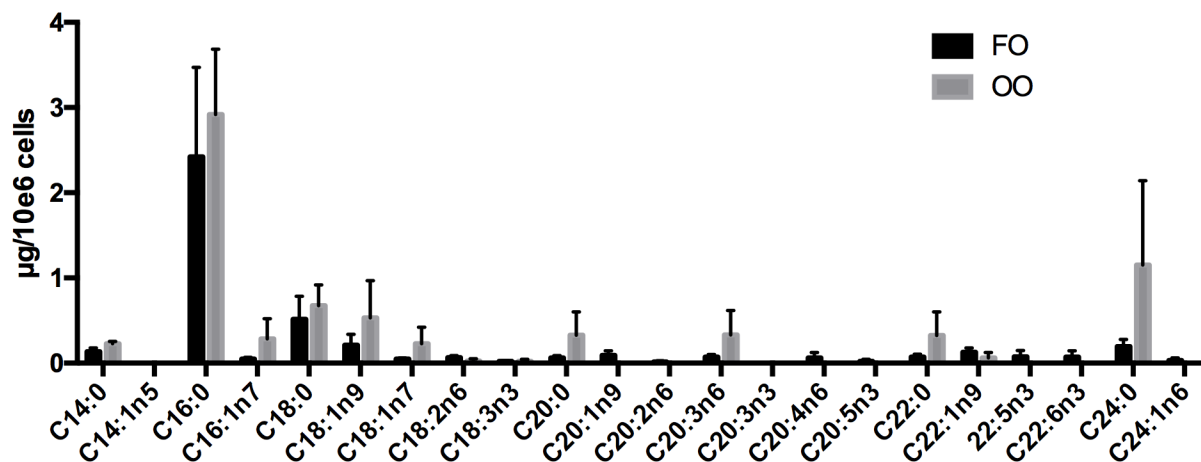
³ Only selected fatty acids (> 1 mol%) are reported.

Supplementary Figure S1. Time-dependent fatty acid incorporation into human primary CD4⁺ T cell membrane phospholipids (PL). Please see the Figure 3 legend for details of the supplementation trial in elderly humans. Data are expressed as μg fatty acid/ 10^6 cells.

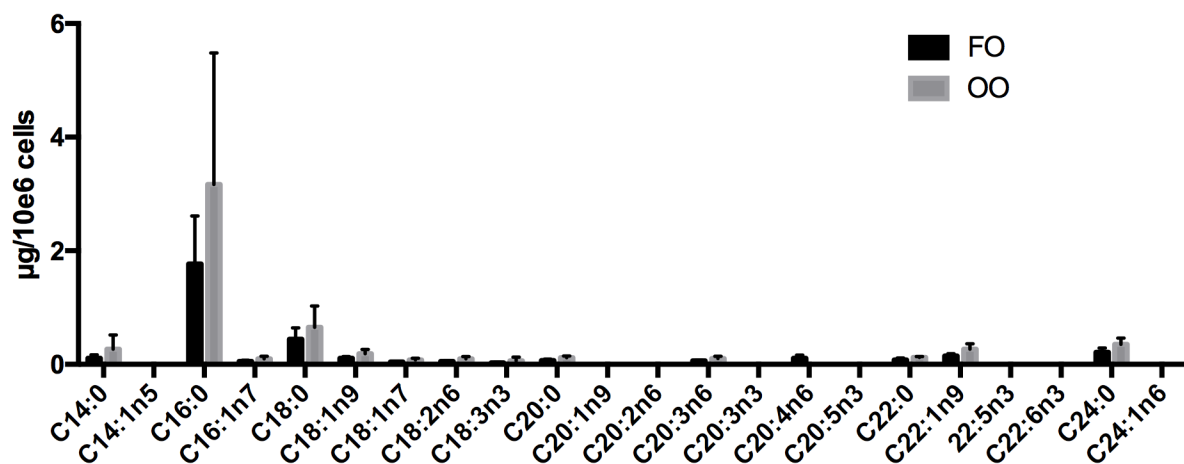


Supplementary Figure S2. Time-dependent fatty acid incorporation into human primary CD4⁺ T cell neutral lipids (NL). Please see the Figure 3 legend for details of the supplementation trial in elderly humans. Data are expressed as μg fatty acid/ 10^6 cells.

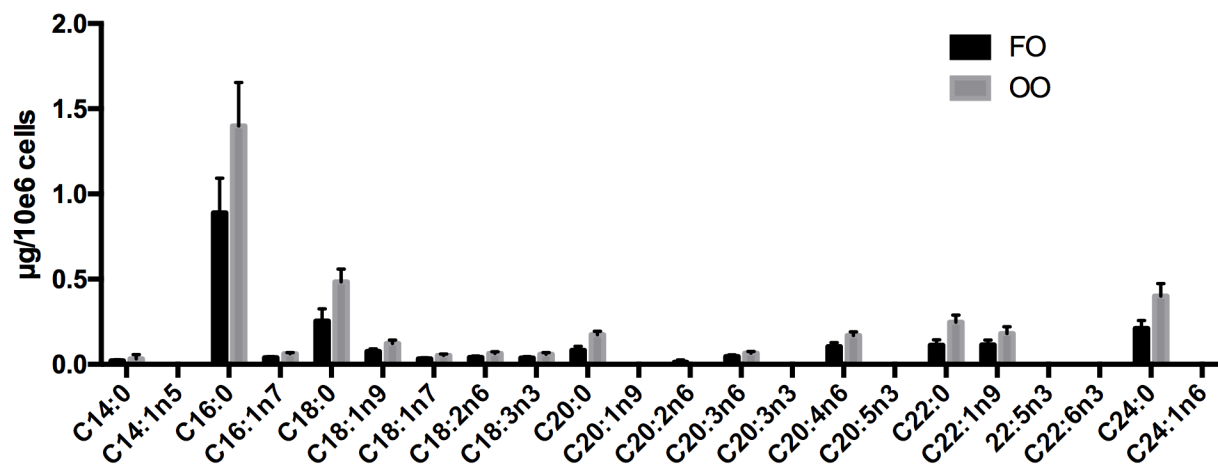
NL-time 0



NL-time 3 wk



NL-time 6 wk



Supplemental Figure S3. Lack of effect of dietary fish oil and olive oil supplementation in elderly humans on CD4⁺ T cell basal bioenergetic profiles and proliferation. See Figure 3 and 4 legends for experimental details. (A) Basal OCR/ECAR ratios. (B) Mitochondrial respiration associated proton leak at basal condition. (C) Cell proliferation was measured 3 days after activation. Data are reported as mean \pm SE (n = 2-4 for bioenergetic profile, n = 5-7 for cell proliferation).

