Table S1. Coefficients of variation of erythrocyte fatty acid composition

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>Coefficient of variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linoleic C18:2n6</td>
<td>12.3%</td>
</tr>
<tr>
<td>γ-Linolenic C18:3n6</td>
<td>0.15%</td>
</tr>
<tr>
<td>α-Linolenic C18:3n3</td>
<td>0.13%</td>
</tr>
<tr>
<td>Eicosadienoic C20:2n6</td>
<td>0.31%</td>
</tr>
<tr>
<td>Dihomo-y-linolenic C20:3n6</td>
<td>1.83%</td>
</tr>
<tr>
<td>Arachidonic C20:4n6</td>
<td>16.6%</td>
</tr>
<tr>
<td>Eicosapentaenoic C20:5n3</td>
<td>0.43%</td>
</tr>
<tr>
<td>Docosatetraenoic C22:4n6</td>
<td>3.70%</td>
</tr>
<tr>
<td>Docosapentaenoic C22:5n6</td>
<td>0.79%</td>
</tr>
<tr>
<td>Docosapentaenoic C22:5n3</td>
<td>2.00%</td>
</tr>
<tr>
<td>Docosahexaenoic C22:6n3</td>
<td>3.95%</td>
</tr>
</tbody>
</table>

Values are only presented for n-3 and n-6 polyunsaturated fatty acids
Table S2. Unadjusted mean (5th and 95th percentile) values of erythrocyte and dietary PUFA by quartile, n=1032

<table>
<thead>
<tr>
<th>PUFA Quartile</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>n-3 PUFA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythrocyte, % total FA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALA</td>
<td>0.072</td>
<td>0.11</td>
<td>0.14</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>(0.043,0.091)</td>
<td>(0.094,0.12)</td>
<td>(0.12,0.16)</td>
<td>(0.16,0.34)</td>
</tr>
<tr>
<td>EPA</td>
<td>0.24</td>
<td>0.34</td>
<td>0.44</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>(0.14,0.3)</td>
<td>(0.3,0.38)</td>
<td>(0.39,0.49)</td>
<td>(0.51,1.4)</td>
</tr>
<tr>
<td>DPA</td>
<td>1.6</td>
<td>1.9</td>
<td>2.1</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>(1.1,1.8)</td>
<td>(1.8,2)</td>
<td>(2,2.2)</td>
<td>(2.2,2.9)</td>
</tr>
<tr>
<td>DHA</td>
<td>2.7</td>
<td>3.6</td>
<td>4.2</td>
<td>5.4</td>
</tr>
<tr>
<td></td>
<td>(1.8,3.2)</td>
<td>(3.3,3.9)</td>
<td>(3.9,4.6)</td>
<td>(4.7,6.8)</td>
</tr>
<tr>
<td>n-3 VLCFA</td>
<td>4.9</td>
<td>6</td>
<td>6.7</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>(3.4,5.5)</td>
<td>(5.6,6.3)</td>
<td>(6.4,7.1)</td>
<td>(7.2,11)</td>
</tr>
<tr>
<td>Diet, % energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALA</td>
<td>0.41</td>
<td>0.51</td>
<td>0.6</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>(0.31,0.46)</td>
<td>(0.47,0.54)</td>
<td>(0.55,0.65)</td>
<td>(0.66,1.1)</td>
</tr>
<tr>
<td>EPA</td>
<td>0.0079</td>
<td>0.017</td>
<td>0.029</td>
<td>0.072</td>
</tr>
<tr>
<td></td>
<td>(0.0031,0.012)</td>
<td>(0.013,0.021)</td>
<td>(0.022,0.036)</td>
<td>(0.038,0.18)</td>
</tr>
<tr>
<td>DPA</td>
<td>0.0041</td>
<td>0.0074</td>
<td>0.011</td>
<td>0.022</td>
</tr>
<tr>
<td></td>
<td>(0.0019,0.0058)</td>
<td>(0.0061,0.0089)</td>
<td>(0.0093,0.014)</td>
<td>(0.014,0.044)</td>
</tr>
<tr>
<td>DHA</td>
<td>0.019</td>
<td>0.036</td>
<td>0.058</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td>(0.0085,0.026)</td>
<td>(0.028,0.045)</td>
<td>(0.047,0.072)</td>
<td>(0.075,0.27)</td>
</tr>
<tr>
<td>n-3 VLCFA</td>
<td>0.032</td>
<td>0.061</td>
<td>0.098</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>(0.015,0.046)</td>
<td>(0.048,0.075)</td>
<td>(0.079,0.12)</td>
<td>(0.13,0.48)</td>
</tr>
<tr>
<td><strong>n-6 PUFA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythrocyte, % total FA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LA</td>
<td>10</td>
<td>11.6</td>
<td>12.8</td>
<td>14.8</td>
</tr>
<tr>
<td></td>
<td>(8.57,11)</td>
<td>(11.2,12.2)</td>
<td>(12.2,13.5)</td>
<td>(13.6,17.3)</td>
</tr>
<tr>
<td>GLA</td>
<td>0.11</td>
<td>0.14</td>
<td>0.16</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>(0.078,0.12)</td>
<td>(0.13,0.15)</td>
<td>(0.15,0.17)</td>
<td>(0.18,0.28)</td>
</tr>
<tr>
<td>EDA</td>
<td>0.25</td>
<td>0.29</td>
<td>0.33</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>(0.21,0.28)</td>
<td>(0.28,0.31)</td>
<td>(0.31,0.34)</td>
<td>(0.35,0.46)</td>
</tr>
<tr>
<td>DGLA</td>
<td>1.4</td>
<td>1.7</td>
<td>1.9</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>(1.1,1.5)</td>
<td>(1.6,1.8)</td>
<td>(1.8,2)</td>
<td>(2.1,2.9)</td>
</tr>
<tr>
<td>ARA</td>
<td>14.2</td>
<td>16.1</td>
<td>17.2</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>(11.3,15.5)</td>
<td>(15.6,16.6)</td>
<td>(16.6,17.6)</td>
<td>(17.8,19.8)</td>
</tr>
<tr>
<td>DTA</td>
<td>2.8</td>
<td>3.5</td>
<td>3.9</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>(1.8,3.3)</td>
<td>(3.3,3.7)</td>
<td>(3.7,4.1)</td>
<td>(4.2,5.2)</td>
</tr>
<tr>
<td>DPA</td>
<td>0.56</td>
<td>0.72</td>
<td>0.83</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.37,0.66)</td>
<td>(0.67,0.77)</td>
<td>(0.78,0.89)</td>
<td>(0.9,1.3)</td>
</tr>
<tr>
<td>Diet, % energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LA</td>
<td>5.4</td>
<td>7.3</td>
<td>8.6</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>(3.8,6.5)</td>
<td>(6.7,7.9)</td>
<td>(8,9.1)</td>
<td>(9.3,12)</td>
</tr>
<tr>
<td>ARA</td>
<td>0.033</td>
<td>0.05</td>
<td>0.066</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>(0.016,0.043)</td>
<td>(0.044,0.057)</td>
<td>(0.059,0.076)</td>
<td>(0.077,0.14)</td>
</tr>
</tbody>
</table>
ARA, Arachidonic; ALA, α-Linolenic; DGLA, Dihomo-γ-linolenic; DHA, Docosahexaenoic; DPA, Docosapentaenoic; DTA, Docosatetraenoic; EDA, Eicosadienoic; EPA, Eicosapentaenoic; GLA, γ-Linolenic; LA, Linoleic; PUFA, polyunsaturated fatty acid; VLCFA, very-long-chain fatty acid (EPA+DPA+DHA).
<table>
<thead>
<tr>
<th>Cognitive Testing Variable</th>
<th>Description of test</th>
<th>Mean SD</th>
<th>Min-Max</th>
<th>Factor1 Executive Function</th>
<th>Factor2 Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word-list learning test: Immediate Recall</td>
<td>A list of words is read and participants gets 5 attempts to repeat the list of words. Total number of correct words at each attempt are summed.</td>
<td>38.4 ± 10.3</td>
<td>4 - 71</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Word-list learning test: Retention and recognition</td>
<td>A list of words is read and participant identifies those words that were read from a previous word list</td>
<td>29.7 ± 5.7</td>
<td>0 - 36.4</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>Verbal fluency test</td>
<td>Name as many words possible starting with letter C. Repeat with letters F and L. Score calculated by summing number of words named in each trial.</td>
<td>24.5 ± 9.9</td>
<td>0-65</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>Figure copying</td>
<td>Draw 8 figures. Each figure is scored for accuracy and a sum total score calculated. Score is weighted for difficulty of figure.</td>
<td>11.1 ± 7.4</td>
<td>0 - 27</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Digit span forward</td>
<td>Read 2 sequences of numbers and participants repeats list from first to last.</td>
<td>7.4 ± 1.9</td>
<td>0 - 15</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>Digit span backward</td>
<td>Read 2 sequences of numbers and participants repeats list from last to first.</td>
<td>3.5 ± 1.5</td>
<td>0 - 9</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Clock drawing</td>
<td>Draw a clock with a specified time.</td>
<td>2.1 ± 0.9</td>
<td>0 - 3</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>Stroop test 1</td>
<td>Read the list of words (colors) as fast as possible in 45 seconds. Number of correctly read words is added.</td>
<td>70.5 ± 20.3</td>
<td>0 - 135</td>
<td>0.61</td>
<td>0.38</td>
</tr>
<tr>
<td>Stroop test 2</td>
<td>Read the list of words (colors) as fast as possible in 45 seconds. Number of correctly read words is added.</td>
<td>46.8 ± 14.8</td>
<td>0-102</td>
<td>0.66</td>
<td>0.46</td>
</tr>
<tr>
<td>Stroop test 3</td>
<td>Name the ink color that each word (color) is written in 45 seconds. Number of correctly read words is added.</td>
<td>23.7 ± 10.3</td>
<td>0-68</td>
<td>0.63</td>
<td>0.38</td>
</tr>
</tbody>
</table>
Factor loadings of >0.35 are shown.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Quartile of Dietary PUFA Consumption</th>
<th>P-Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>n-3 PUFA, % energy</td>
<td>0.47 ± 0.06</td>
<td>0.59 ± 0.03</td>
</tr>
<tr>
<td>Age, y</td>
<td>57.6 ± 0.468</td>
<td>56.5 ± 0.468</td>
</tr>
<tr>
<td>Female, %</td>
<td>70.8</td>
<td>69.5</td>
</tr>
<tr>
<td>High school educational attainment or greater</td>
<td>34.6</td>
<td>37</td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td>31.4 ± 0.408</td>
<td>31.8 ± 0.408</td>
</tr>
<tr>
<td>Physical activity score</td>
<td>31.6 ± 0.285</td>
<td>31.8 ± 0.285</td>
</tr>
<tr>
<td>CES-D score</td>
<td>21.2 ± 0.796</td>
<td>18.8 ± 0.796</td>
</tr>
<tr>
<td>Healthy Eating Index 2005 score</td>
<td>68.1 ± 0.548</td>
<td>72.2 ± 0.548</td>
</tr>
<tr>
<td>Healthy Eating Index 2005 score (excludes healthy oil component)</td>
<td>59.9 ± 0.534</td>
<td>63.2 ± 0.534</td>
</tr>
<tr>
<td>Currently smoking, %</td>
<td>28.2</td>
<td>23.2</td>
</tr>
<tr>
<td>Diabetes, %</td>
<td>35.8</td>
<td>34.4</td>
</tr>
<tr>
<td>Cardiovascular disease, %</td>
<td>17.8</td>
<td>20.9</td>
</tr>
<tr>
<td>n-3 supplement use, %</td>
<td>1.52</td>
<td>0.836</td>
</tr>
<tr>
<td>n-6 PUFA, % energy</td>
<td>5.5 ± 0.84</td>
<td>7.4 ± 0.42</td>
</tr>
<tr>
<td>Age, y</td>
<td>58.7 ± 0.464</td>
<td>57 ± 0.464</td>
</tr>
<tr>
<td>Female, %</td>
<td>73</td>
<td>72.5</td>
</tr>
<tr>
<td>High school educational attainment or greater</td>
<td>41.1</td>
<td>37</td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td>32.1 ± 0.41</td>
<td>31.5 ± 0.41</td>
</tr>
<tr>
<td>Physical activity score</td>
<td>31.8 ± 0.286</td>
<td>31.8 ± 0.286</td>
</tr>
<tr>
<td>CES-D score</td>
<td>20 ± 0.802</td>
<td>19.8 ± 0.802</td>
</tr>
<tr>
<td>Healthy Eating Index 2005 score</td>
<td>69.8 ± 0.562</td>
<td>71.5 ± 0.562</td>
</tr>
<tr>
<td>Healthy Eating Index 2005 score (excludes healthy oil component)</td>
<td>62.7 ± 0.546</td>
<td>62.2 ± 0.546</td>
</tr>
<tr>
<td>Condition</td>
<td>2001-3</td>
<td>2006-8</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Currently smoking, %</td>
<td>22</td>
<td>22.4</td>
</tr>
<tr>
<td>Diabetes, %</td>
<td>35.6</td>
<td>38.5</td>
</tr>
<tr>
<td>Cardiovascular disease, %</td>
<td>22.1</td>
<td>20.2</td>
</tr>
<tr>
<td>n-3 supplement use, %</td>
<td>4.96</td>
<td>2.72</td>
</tr>
</tbody>
</table>

CES-D, Center for Epidemiologic Studies Depression Scale; PUFA, Polyunsaturated Fatty Acid. Data represent means ± SD or proportion. Age comparisons are adjusted for sex and those for sex by age. All other comparisons are age- and sex-adjusted.
Table S5. Correlations between erythrocyte and dietary PUFA species, n=1032

<table>
<thead>
<tr>
<th>Erythrocyte, % total FA</th>
<th>Diet, % energy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n-3 PUFA</td>
</tr>
<tr>
<td></td>
<td>ALA</td>
</tr>
<tr>
<td>n-3 PUFA</td>
<td>ALA</td>
</tr>
<tr>
<td></td>
<td>EPA</td>
</tr>
<tr>
<td></td>
<td>DPA</td>
</tr>
<tr>
<td></td>
<td>DHA</td>
</tr>
<tr>
<td>n-6 PUFA</td>
<td>LA</td>
</tr>
<tr>
<td></td>
<td>GLA</td>
</tr>
<tr>
<td></td>
<td>EDA</td>
</tr>
<tr>
<td></td>
<td>DGLA</td>
</tr>
<tr>
<td></td>
<td>ARA</td>
</tr>
<tr>
<td></td>
<td>DTA</td>
</tr>
<tr>
<td></td>
<td>DPA</td>
</tr>
</tbody>
</table>

ARA, Arachidonic; ALA, α-Linolenic; DGLA, Dihomo-γ-linolenic; DHA, Docosahexaenoic; DPA, Docosapentaenoic; DTA, Docosatetraenoic; EDA, Eicosadienoic; EPA, Eicosapentaenoic; GLA, γ-Linolenic; LA, Linoleic; PUFA, polyunsaturated fatty acid. Data are age, sex, and energy adjusted Spearman’s correlations coefficients. *P < 0.05.
<table>
<thead>
<tr>
<th></th>
<th>Categorized as having cognitive impairment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>n=688</td>
<td>n=344</td>
</tr>
<tr>
<td>Mini-Mental State Exam</td>
<td>25.1 ± 0.07</td>
<td>20.0 ± 0.10</td>
</tr>
<tr>
<td>Age, y</td>
<td>56.5 ± 0.29</td>
<td>58.1 ± 0.285</td>
</tr>
<tr>
<td>Female, %</td>
<td>70.7</td>
<td>76.9</td>
</tr>
<tr>
<td>High school educational attainment or greater</td>
<td>36.3</td>
<td>33.5</td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td>31.9 ± 0.25</td>
<td>32.1 ± 0.25</td>
</tr>
<tr>
<td>Physical activity score</td>
<td>31.9 ± 0.17</td>
<td>31 ± 0.174</td>
</tr>
<tr>
<td>CES-D score</td>
<td>18.6 ± 0.485</td>
<td>22.3 ± 0.485</td>
</tr>
<tr>
<td>Healthy Eating Index 2005 score</td>
<td>72.3 ± 0.345</td>
<td>70.5 ± 0.345</td>
</tr>
<tr>
<td>Healthy Eating Index 2005 score (excludes healthy oil component)</td>
<td>63.2 ± 0.332</td>
<td>61.5 ± 0.332</td>
</tr>
<tr>
<td>Currently smoking, %</td>
<td>23.4</td>
<td>23.8</td>
</tr>
<tr>
<td>Diabetes, %</td>
<td>38.1</td>
<td>40.9</td>
</tr>
<tr>
<td>Cardiovascular disease, %</td>
<td>20.9</td>
<td>21.4</td>
</tr>
<tr>
<td>n-3 supplement use, %</td>
<td>3.41</td>
<td>1.32</td>
</tr>
</tbody>
</table>

Data represent means ± SD or proportions. Age comparisons are adjusted for sex and those for sex by age. Other comparisons are age- and sex-adjusted and, for Mini-Mental State Exam, additionally adjusted for high school educational attainment or greater. Presence of cognitive impairment was defined as an MMSE score <21 for those with less than a high school education or General Education Equivalency, <23 for those that completed high school, and <24 for those with some college education.