SUPPLEMENTAL MATERIAL
## Table S1. Checklist: PRISMA 2020 Main Checklist.

| Topic                                | No. | Item                                                                 | Location where item is reported |
|--------------------------------------|-----|----------------------------------------------------------------------|---------------------------------|
| **TITLE**                            |     |                                                                      |                                 |
| Title                                | 1   | Identify the report as a systematic review.                         | Line 1                          |
| **ABSTRACT**                         |     |                                                                      |                                 |
| Abstract                             | 2   | See the PRISMA 2020 for Abstracts checklist                        |                                 |
| **INTRODUCTION**                     |     |                                                                      |                                 |
| Rationale                            | 3   | Describe the rationale for the review in the context of existing knowledge. | Line 50-64                      |
| Objectives                           | 4   | Provide an explicit statement of the objective(s) or question(s) the review addresses. | Line 69-72                      |
| **METHODS**                          |     |                                                                      |                                 |
| Eligibility criteria                 | 5   | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | Line 81-89                      |
| Information sources                  | 6   | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted. | Line 77-80                      |
| Search strategy                      | 7   | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | Line 77-78 and Table S2         |
| Selection process                    | 8   | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. | Line 80-81                      |
| Data collection process              | 9   | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | Line 92-93                      |
| Data items                           | 10a | List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | Line 93-96                      |
|                                      | 10b | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. | Line 96-97                      |
| Study risk of bias assessment         | 11  | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | Line 89-90                      |
| Topic                        | No. | Item                                                                 | Location where item is reported |
|------------------------------|-----|----------------------------------------------------------------------|---------------------------------|
| **Effect measures**          | 12  | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | Line 99-102                     |
| **Synthesis methods**        | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item 5)). | Line 125-128, Table S3         |
|                              | 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | Line 107-108; Line 110-114      |
|                              | 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | Line 110-114                    |
|                              | 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | Line 110-114 and Line 120-121   |
|                              | 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | Line 114-120                    |
|                              | 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | Line 107-108                    |
| **Reporting bias assessment**| 14  | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | Line 104-107                    |
| **Certainty assessment**     | 15  | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. | N/A                             |

**RESULTS**

| Topic                        | No. | Item                                                                 | Location where item is reported |
|------------------------------|-----|----------------------------------------------------------------------|---------------------------------|
| **Study selection**          | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | Line 125-128, Figure 1          |
|                              | 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | Line 125-128, Figure S1         |
| **Study characteristics**    | 17  | Cite each included study and present its characteristics.            | Supp. references and Table S3   |
| **Risk of bias in studies**  | 18  | Present assessments of risk of bias for each included study.         | Table S4                        |
| **Results of individual studies** | 19  | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | Line 129-149 and Table 1, S3    |
| **Results of syntheses**     | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | Line 198-199                    |
| Topic                  | No. | Item                                                                 | Location where item is reported |
|-----------------------|-----|----------------------------------------------------------------------|---------------------------------|
| **Topic**             |     |                                                                      |                                 |
| **No.**               |     |                                                                      |                                 |
| **Item**              |     |                                                                      |                                 |
| Location where item is reported |     |                                                                      |                                 |
| 20b                   |     | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | Line 151-196                    |
| 20c                   |     | Present results of all investigations of possible causes of heterogeneity among study results. | Line 168-196                    |
| 20d                   |     | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | Line 203-205                    |
| **Reporting biases**  | 21  | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | Line 198-203                    |
| **Certainty of evidence** | 22  | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | Line 151-166                    |
| **DISCUSSION**        |     |                                                                      |                                 |
| **Discussion**        | 23a | Provide a general interpretation of the results in the context of other evidence. | Line 208-262                    |
| 23b                   |     | Discuss any limitations of the evidence included in the review.       | Line 263-273                    |
| 23c                   |     | Discuss any limitations of the review processes used.                | Line 263-273                    |
| 23d                   |     | Discuss implications of the results for practice, policy, and future research. | Line 274-282                    |
| **OTHER INFORMATION** |     |                                                                      |                                 |
| **Registration and protocol** | 24a | Provide registration information for the review, including register name and registration number, or state that the review was not registered. | N/A                             |
| 24b                   |     | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | N/A                             |
| 24c                   |     | Describe and explain any amendments to information provided at registration or in the protocol. | N/A                             |
| **Support**           | 25  | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | Line 284-285                    |
| **Competing interests** | 26  | Declare any competing interests of review authors.                    | Line 286                        |
| **Availability of data, code and other materials** | 27  | Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | N/A                             |
### PRISMA Abstract Checklist

| Topic               | No. | Item                                                                 | Reported? |
|---------------------|-----|----------------------------------------------------------------------|-----------|
| **TITLE**           |     |                                                                      |           |
| Title               | 1   | Identify the report as a systematic review.                         | Yes       |
| **BACKGROUND**      |     |                                                                      |           |
| Objectives          | 2   | Provide an explicit statement of the main objective(s) or question(s) the review addresses. | Yes       |
| **METHODS**         |     |                                                                      |           |
| Eligibility criteria| 3   | Specify the inclusion and exclusion criteria for the review.         | Yes       |
| Information sources | 4   | Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched. | Yes       |
| Risk of bias        | 5   | Specify the methods used to assess risk of bias in the included studies. | No        |
| Synthesis of results| 6   | Specify the methods used to present and synthesize results.         | Yes       |
| **RESULTS**         |     |                                                                      |           |
| Included studies    | 7   | Give the total number of included studies and participants and summarise relevant characteristics of studies. | Yes       |
| Synthesis of results| 8   | Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured). | Yes       |
| **DISCUSSION**      |     |                                                                      |           |
| Limitations of evidence | 9   | Provide a brief summary of the limitations of the evidence included in the review (e.g. study risk of bias, inconsistency and imprecision). | No        |
| Interpretation      | 10  | Provide a general interpretation of the results and important implications. | Yes       |
| **OTHER**           |     |                                                                      |           |
| Funding             | 11  | Specify the primary source of funding for the review.               | No        |
| Registration        | 12  | Provide the register name and registration number.                  | No        |

*From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. MetaArXiv. 2020, September 14. DOI: 10.31222/osf.io/v7gm2. For more information, visit: [www.prisma-statement.org](http://www.prisma-statement.org)*
Table S2. Literature retrieval strategies for online databases.

| Database | Search Strategy |
|----------|----------------|
| PubMed   | #1 (“Dietary fats, unsaturated” [MH] OR “fish oils” [MH] OR “fish oil” [tiab] OR “fatty acids, omega-3” [MH] OR "Docosahexaenoic Acids" [tiab] OR “PUFA” [tiab] OR “DHA” [tiab] OR “EPA” [tiab] OR “long chain omega-3 fatty acids” [tiab] OR “polyunsaturated fatty acid” [tiab] OR "Docosahexaenoic Acids" [tiab] OR “eicosapentaenoic acid” [tiab])

#2 (“blood pressure” [MH] OR “blood pressure determination” [MH] OR “arterial pressure” [MH] OR “hypertension” [MH] OR “blood pressure” [tiab] OR “hypertension” [tiab])

#1 AND #2 AND “human study” |
| Embase   | #1 (“fish oils”:ab,ti) OR (“omega-3 fatty acids”:ab,ti) OR (“docosahexaenoic acids”:ab,ti) OR (“PUFA”:ab,ti) OR (“DHA”:ab,ti) OR (“EPA”:ab,ti) OR (“ALA”:ab,ti) OR (“long chain omega-3 fatty acids”:ab,ti) OR (“polyunsaturated fatty acid”:ab,ti) OR (“eicosapentaenoic acid”:ab,ti) OR (“alpha linolenic acid”:ab,ti)

#2 (“blood pressure”:ab,ti) OR (“blood pressure determination”:ab,ti) OR (“arterial pressure”:ab,ti) OR (“hypertension”:ab,ti)

#1 AND #2 AND ‘human’/de |
Table S3. Summary of study characteristics of 71 trials.

| Author            | Year | Country    | n, M/F | Age*, y Mean (SE/SD) range | Design      | HTN | HL | Device | Intervention type | DHA dose d/day | EPA dose d/day | Total dose d/day | Control                      | Duration, week |
|-------------------|------|------------|--------|---------------------------|-------------|-----|----|--------|------------------|----------------|----------------|-------------------|-----------------------------|---------------|
| Albert            | 2015 | Australia  | M47    | 35-55                     | Crossover   | No  | No | Automatic | Supplementation | 0.15           | 0.23           | 0.38              | Canola oil                 | 8             |
| Armstrong         | 2012 | United States | M35/F81 | 20-59                     | Parallel    | No  | No | Automatic | Supplementation | 1.00           | 2.00           | 3.00              | Corn + soy oil              | 6             |
| Bach              | 1989 | United States | M16/F14 | 31(9)                     | Parallel    | No  | Yes| NR      | Supplementation  | 1.44           | 1.08           | 2.52              | Neutral oil                | 5             |
| Barcelo-Coblijn   | 2008 | Canada     | MF62   | 36-44                     | Parallel    | No  | No | NR      | Supplementation  | 0.13           | 0.25           | 0.38              | Sunflower oil              | 12            |
| Blonk             | 1990 | Netherland | M45    | 22-48                     | Parallel    | No  | No | Manual  | Supplementation  | 0.60           | 0.90           | 1.50              | Not specified              | 12            |
| Bonaa             | 1990 | Netherland | MF156  | 20-61                     | Parallel    | Yes | No | Automatic| Supplementation  | 1.82           | 3.26           | 5.08              | Corn oil                    | 10            |
| Buckley           | 2009 | Australia  | M25    | 22(1)                     | Parallel    | No  | No | Automatic| Supplementation  | 1.56           | 0.36           | 1.92              | Sunflower oil              | 5             |
| Burgin-Maunder    | 2015 | Australia  | M23/F19 | 45-58                     | Parallel    | No  | No | Automatic| Supplementation  | 0.84           | 1.68           | 2.52              | Canola oil                  | 12            |
| Carter            | 2012 | United States | M18/F20 | 24(2)                     | Parallel    | No  | No | Automatic| Supplementation  | 1.10           | 1.60           | 2.70              | Olive oil                   | 8             |
| Chin              | 1993 | Australia  | M29    | 18-32                     | Parallel    | No  | No | Manual  | Supplementation  | 0.58           | 0.89           | 1.47              | Palm+safflower+olive oil    | 4             |
| Cobiac            | 1991 | Australia  | M31    | 30-60                     | Parallel    | No  | Yes| Automatic| Diet              | 3.00           | 1.50           | 4.50              | Vegetable oil              | 5             |
| Cobiac            | 1992 | Australia  | M36/F19 | 60-80                     | Parallel    | No  | No | Automatic| Supplementation  | 1.70           | 2.50           | 4.20              | Sunflower oil              | 4             |
| Conquer           | 1999 | Canada     | M19    | 30(2)                     | Parallel    | No  | No | NR      | Supplementation  | 1.70           | 1.30           | 3.00              | Vegetable oil              | 6             |
| Dart              | 1989 | United Kingdom | M14/F7 | 46(2)                     | Crossover   | No  | Yes| NR      | Supplementation  | 2.50           | 3.52           | 6.02              | Olive oil                   | 8.5            |
| Demke             | 1988 | United States | M8/F23 | 18-60                     | Parallel    | No  | Yes| NR      | Supplementation  | 0.79           | 0.93           | 1.72              | Safflower oil              | 4             |
| Derosa            | 2009 | Italy      | M164/F169 | ≥18                      | Parallel    | No  | Yes| Manual  | Supplementation  | 1.50           | 0.90           | 2.40              | Sucrose, mannitol and mineral salt | 26            |
| Derosa            | 2012 | Italy      | M82/F85 | 18-75                     | Parallel    | No  | Yes| NR      | Supplementation  | 1.35           | 1.20           | 2.55              | Sucrose, mannitol and mineral salt | 26            |
| Lofgren | Dewell13 | Lofgren | Dyreberg94 | Flaten46 | Geelen46 | Grieger47 | Grimsgaard58 | Grundt48 | Hallund46 | Harris41 | Hill53 | Howe41 | Huerta46 | Hughes46 | Jones47 | Kelley68 | Kestin69 | Knapp32 | Kristensen70 | Lee31 | Levinson24 | Lindqvist21 | Lofgren53 |
|---------|---------|---------|------------|----------|---------|----------|--------------|---------|---------|----------|--------|--------|--------|--------|--------|---------|--------|---------|---------|--------|----------|--------|----------|
| 2011    | United States | M64/F36 | 50(10) | Parallel | No | No | NR | Supplementation | 0.50 | 0.70 | 1.20 | Soybean oil | 6 |
| 2004    | Denmark | M51 | 20-60 | Parallel | No | No | NR | Supplementation | 1.50 | 2.10 | 3.60 | Soybean oil | 6 |
| 1990    | Norway | M56 | 35-45 | Parallel | No | No | NR | Supplementation | 2.87 | 3.60 | 6.47 | Olive oil | 6 |
| 2003    | Netherland | M36/F38 | 50-70 | Parallel | No | No | NR | Supplementation | 0.56 | 0.70 | 1.26 | Sunflower oil | 12 |
| 2014    | Australia | MF80 | 70(6) | Parallel | No | No | Automatic | Diet | NR | NR | 0.80 | Usual diet | 8 |
| 1998    | Norway | M234 | 36-56 | Parallel | No | No | Automatic | Diet | — | 3.80 | 3.80 | Corn oil | 7 |
| 1995    | Norway | M51/F6 | 18-70 | Parallel | No | Yes | Manual | Diet | 2.00 | 0.90 | 2.90 | Chicken | 8 |
| 2010    | Denmark | M45 | 40-70 | Parallel | No | No | Automatic | Diet | 1.28 | 2.07 | 3.35 | Corn oil | 12 |
| 2008    | United States | M9/F13 | 21-70 | Parallel | No | No | NR | Supplementation | 0.98 | 0.98 | Soybean oil | 16 |
| 1993    | Sweden | MF40 | 30-60 | Parallel | No | Yes | NR | Supplementation | NR | NR | 2.00 | Corn oil | 21 |
| 2007    | Australia | M28/F53 | 25-65 | Parallel | Yes | Yes | Automatic | Supplementation | 1.56 | 0.36 | 1.92 | Sunflower oil | 12 |
| 2018    | Australia | M26/F12 | 40-85 | Parallel | Yes | No | Automatic | Supplementation | 1.60 | 0.40 | 2.00 | Corn oil | 20 |
| 2015    | Spain | F77 | 20-50 | Parallel | No | No | Manual | Supplementation | 0.04 | 1.30 | 1.34 | Sunflower oil | 10 |
| 1990    | United States | M13 | 32(9) | Crossover | No | No | Automatic | Supplementation | 1.50 | 3.50 | 5.00 | Wheat germ oil | 4.3 |
| 2014    | United States and Canada | M60/F70 | 46(14) | Crossover | No | No | Automatic | Supplementation | 0.35 | 0.01 | 0.36 | Oleic acid | 4 |
| 2007    | United States | M34 | 39-66 | Parallel | No | Yes | Automatic | Supplementation | 3.00 | — | 3.00 | Olive oil | 14 |
| 1990    | Australia | M33 | 46(2) | Parallel | No | No | Automatic | Supplementation | 1.30 | 2.10 | 3.40 | Linoleic acid | 6 |
| 1989    | United States | M36 | 30-71 | Parallel | Yes | No | Automatic | Supplementation | 1.20 | 1.80 | 3.00 | Safflower oil | 4 |
| 2016    | Denmark | M60/F83 | 52(12) | Parallel | No | No | Automatic | Supplementation | 1.50 | 1.50 | 3.00 | Olive oil | 24 |
| 2019    | Canada | M45/F45 | 18-30 | Parallel | No | No | Automatic | Supplementation | 0.81 | — | 0.81 | Olive oil | 12 |
| 1990    | United States | MF17 | 18-75 | Parallel | Yes | No | Automatic | Supplementation | 6.00 | 9.00 | 15.00 | Safflower oil | 4 |
| 2009    | Sweden | M35 | 35-60 | Crossover | No | No | NR | Diet | NR | NR | 1.20 | Baked lean pork + chicken | 6 |
| 1993    | United States | M23 | ≤60 | Crossover | No | No | Manual | Supplementation | 2.40 | 3.60 | 6.00 | Safflower oil | 12 |

| Un | 8 |
| Author | Year | Country | Design | Randomization | Fat Type | VLDL | HDL | LDL | Triglycerides | Control group |
|--------|------|---------|--------|---------------|---------|------|-----|-----|--------------|---------------|
| Shen   | 2020 | China   | Parallel| Mixed         | Automatic| 0.85 | 1.28| 2.13| Caloric restriction | Soybean oil   |
| Shabrina | 2017 | China   | Parallel| No            | Automatic| 0.52 | 0.10| 0.62| Sunola oil    | Sunola oil    |
| Sanders | 2011 | United Kingdom | Parallel| No            | Automatic| 0.18 | 0.27| 0.45| Olive oil     | Olive oil     |
| Sanders | 2006 | United Kingdom | Parallel| No            | Automatic| 0.80 | 1.60| 2.40| Safflower oil | Olive oil     |
| Passfall | 1993 | Germany | Crossover| Yes          | Automatic| 0.14 | 2.04| 3.44| Olive oil     | Olive oil     |
| Prisco  | 1998 | Italy   | Parallel| Yes           | Automatic| 0.89 | 1.26| 2.16| Olive oil     | Olive oil     |
| Noreen  | 2012 | United States | Parallel| No            | Automatic| 0.81 | 0.51| 1.32| Olive oil     | Olive oil     |
| Nef    | 1981 | United States | Parallel| No            | Automatic| 0.72 | 0.90| 0.80| Corn + olive oil | Olive oil     |
| Nestel  | 2002 | Australia | Parallel| No            | Automatic| 0.99 | 1.97| 1.97| Olive oil     | Olive oil     |
| Mori   | 1999 | Australia | Parallel| No            | Automatic| 0.85 | 1.25| 2.00| Olive oil     | Olive oil     |
| Maki   | 2009 | United States | Parallel| No            | Automatic| 0.72 | 0.90| 0.80| Corn + olive oil | Olive oil     |
| Meland | 1989 | Norway   | Parallel| Yes           | Manual   | 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Mills  | 1990 | Canada   | Parallel| No            | Automatic| 0.18 | 0.21| 0.39| Olive oil     | Olive oil     |
| Monahan| 2004 | United States | Parallel| No            | Automatic| 0.80 | 1.60| 2.40| Safflower oil | Olive oil     |
| Murphy | 2007 | Australia | Parallel| No            | Automatic| 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Murdoch | 2015 | United States | Parallel| No            | Automatic| 0.81 | 0.51| 1.32| Olive oil     | Olive oil     |
| Logan  | 2015 | Canada   | Parallel| No            | Automatic| 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Pase   | 1978 | United States | Parallel| No            | Automatic| 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Neff   | 1991 | United States | Parallel| No            | Automatic| 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Ryu    | 1990 | United States | Parallel| No            | Automatic| 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Sagara | 2011 | United States | Parallel| Yes           | Automatic| 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Sanders | 2006 | United Kingdom | Parallel| No            | Automatic| 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Sanders | 2011 | United Kingdom | Parallel| No            | Automatic| 0.10 | 0.25| 0.35| Olive oil     | Olive oil     |
| Author         | Year | Location          | Number | Start-Age | Design   | Randomization | Diet Type | Supplementation | DBP差 | SBP差 | Total差 | Oils                  | Notes |
|---------------|------|-------------------|--------|-----------|----------|---------------|-----------|------------------|-------|-------|---------|-----------------------|-------|
| Stark         | 2004 | Canada            | F32    | 45-70     | Crossover| No            | No        | Automatic        | 2.80  |       | 2.80    | Corn and soy oil       | 4     |
| Sveinsdottir  | 2016 | Iceland           | M30/F69| >50       | Parallel | Mixed         | No        | NR               | 0.50  | 1.00  | 1.50    | Olive oil              | 4     |
| Theobald      | 2007 | United Kingdom    | M20/F19| 45-65     | Crossover| No            | No        | NR               | 0.70  |       | 0.70    | Olive oil              | 13    |
| Toft          | 1995 | Norway            | M50/F28| 21-61     | Parallel | Yes           | No        | Manual           | 1.20  | 2.10  | 3.30    | Corn oil               | 16    |
| TOHP          | 1992 | United States     | MF350  | 30-54     | Parallel | No            | No        | Manual           | 0.90  | 2.10  | 3.00    | Olive oil              | 24    |
| Vandongen     | 1993 | Australia         | M51    | 30-60     | Parallel | No            | No        | Automatic        | 1.70  | 2.60  | 4.30    | Olive, palm, safflower oils | 12    |
|               |      |                   |        |           |          |               |           |                  |       |       |         | Olive, palm, safflower oils | 12    |
|               |      |                   |        |           |          |               |           |                  |       |       |         | Olive, palm, safflower oils | 12    |
|               |      |                   |        |           |          |               |           |                  |       |       |         | Olive, palm, safflower oils | 12    |
|               |      |                   |        |           |          |               |           |                  |       |       |         | Olive, palm, safflower oils | 12    |
|               |      |                   |        |           |          |               |           |                  |       |       |         | Olive, palm, safflower oils | 12    |
| Vericel       | 1999 | France            | MF20   | 70-83     | Parallel | Yes           | No        | NR               | 0.15  | 0.03  | 0.18    | Sunflower oil          | 6     |
| von Houwelingen| 1987 | Norway and Netherland | M82   | 20-45     | Parallel | No            | No        | Manual           | 3.00  | 1.70  | 4.70    | Meat paste             | 6     |
| Wang          | 2008 | China             | M37/F6 | 42(3)     | Parallel | Yes           | Yes       | Manual           | 0.36  | 0.54  | 0.90    | Vegetable oil          | 8     |
| Wu            | 2014 | United Kingdom    | M29/F55| 21-65     | Crossover| No            | No        | Automatic        | 0.60  | 0.90  | 1.50    | Corn oil               | 8     |

Abbreviations: DHA, docosahexaenoic acid; DBP, diastolic blood pressure; EPA, eicosapentaenoic acid; HTN, hypertension; HL, hyperlipidemia; NR, not reported; —, not administered.

Note: a, The age is expressed as Mean (SD/SE), SD, standard deviation and SE, standard error.
**Table S4. Risk of bias of included trials.**

| Author               | Year | Randomization | Blinding        | Missing outcome | Measurement | Selection of results | Overall    |
|----------------------|------|---------------|-----------------|-----------------|-------------|----------------------|------------|
| Albert               | 2015 | low           | low             | low             | low         | low                  | low        |
| Armstrong            | 2012 | some concern  | some concern    | low             | low         | low                  | low        |
| Bach                 | 1989 | some concern  | low             | low             | some concern| low                  | low        |
| Barcelo-Coblijn      | 2008 | some concern  | some concern    | low             | some concern| low                  | low        |
| Blonk                | 1990 | some concern  | medium          | low             | moderate    | some concern         | moderate   |
| Bonaa                | 1990 | low           | low             | low             | low         | low                  | low        |
| Buckley              | 2009 | some concern  | some concern    | low             | low         | low                  | low        |
| Burgin-Maunder       | 2015 | some concern  | some concern    | low             | some concern| low                  | low        |
| Carter               | 2012 | some concern  | some concern    | low             | low         | low                  | low        |
| Chin                 | 1993 | some concern  | some concern    | low             | low         | low                  | low        |
| Cobiac               | 1991 | low           | some concern    | low             | low         | low                  | low        |
| Cobiac               | 1992 | some concern  | some concern    | low             | low         | low                  | low        |
| Conquer              | 1999 | moderate      | some concern    | low             | some concern| low                  | moderate   |
| Dart                 | 1989 | moderate      | some concern    | low             | some concern| low                  | moderate   |
| Demke                | 1988 | some concern  | low             | low             | some concern| low                  | low        |
| Derosa               | 2009 | low           | low             | low             | low         | low                  | low        |
| Derosa               | 2012 | low           | some concern    | low             | some concern| low                  | low        |
| Dewell               | 2011 | some concern  | low             | low             | some concern| low                  | low        |
| Dyerberg             | 2004 | low           | some concern    | low             | some concern| low                  | low        |
| Flaten               | 1990 | some concern  | some concern    | low             | low         | low                  | low        |
| Geelen               | 2003 | some concern  | some concern    | low             | some concern| low                  | low        |
| Grieger              | 2014 | some concern  | low             | low             | low         | low                  | low        |
| Grimsgaard           | 1998 | low           | some concern    | low             | low         | low                  | low        |
| Grundt               | 1995 | some concern  | high            | low             | low         | low                  | low        |
| Hallund              | 2010 | low           | low             | low             | low         | low                  | low        |
| Harris               | 2008 | some concern  | some concern    | some concern    | some concern| low                  | moderate   |
| Hellsten             | 1993 | some concern  | low             | low             | some concern| low                  | low        |
| Hill                 | 2007 | low           | low             | low             | low         | low                  | low        |
| Howe                 | 2018 | some concern  | some concern    | low             | low         | low                  | low        |
| Huerta               | 2015 | low           | some concern    | some concern    | some concern| low                  | moderate   |
| Hughes               | 1990 | some concern  | low             | low             | low         | low                  | low        |
| Jones                | 2014 | low           | low             | low             | some concern| low                  | low        |
| Kelley               | 2007 | some concern  | low             | low             | some concern| low                  | low        |
| Kestin               | 1990 | some concern  | low             | some concern    | low         | low                  | low        |
| Knapp                | 1989 | low           | low             | low             | low         | low                  | low        |
| Kristensen           | 2016 | low           | low             | low             | some concern| low                  | low        |
| Lee                  | 2019 | some concern  | low             | low             | low         | low                  | low        |
| Levinson             | 1990 | some concern  | high            | low             | low         | low                  | low        |
| Lindqvist            | 2009 | some concern  | some concern    | low             | some concern| low                  | low        |
| Author       | Year | Risk of Bias | Randomization | Allocation Concealment | Blinding Participants and Personnel | Blinding Outcome Assessors | Missing Outcome Data | Measurement Bias | Selection of Results |
|--------------|------|--------------|---------------|------------------------|------------------------------------|---------------------------|---------------------|------------------|---------------------|
| Lofgren      | 1993 | some concern | medium        | low                    | low                                | low                       | low                  | low              | low                 |
| Logan        | 2015 | some concern | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Maki         | 2009 | some concern | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Meland       | 1989 | some concern | low           | low                    | low                                | low                       | low                  | low              | low                 |
| Mills        | 1990 | low          | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Monahan      | 2004 | some concern | low           | low                    | low                                | low                       | low                  | low              | low                 |
| Mori         | 1999 | some concern | low           | low                    | low                                | low                       | low                  | low              | low                 |
| Murphy       | 2007 | some concern | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Neff         | 2011 | some concern | some concern  | low                    | some concern                       | low                       | low                  | low              | low                 |
| Noreen       | 2012 | some concern | low           | low                    | some concern                       | low                       | low                  | low              | low                 |
| Pase         | 2015 | low          | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Passfall     | 1993 | some concern | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Prisco       | 1998 | some concern | low           | low                    | low                                | some concern              | low                  | low              | low                 |
| Radaek       | 1991 | low          | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Ryu          | 1990 | low          | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Sagara       | 2011 | some concern | low           | low                    | some concern                       | low                       | low                  | low              | low                 |
| Sanders      | 2006 | low          | low           | low                    | low                                | low                       | low                  | low              | low                 |
| Sanders      | 2011 | some concern | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Shabrina     | 2020 | some concern | low           | low                    | some concern                       | low                       | low                  | low              | low                 |
| Shen         | 2017 | low          | some concern  | low                    | some concern                       | low                       | low                  | low              | low                 |
| Sjoberg      | 2010 | some concern | low           | low                    | low                                | low                       | low                  | low              | low                 |
| Stark        | 2004 | low          | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Sveinsdottir | 2016 | some concern | low           | low                    | low                                | low                       | low                  | low              | low                 |
| Theobald     | 2007 | some concern | low           | low                    | low                                | low                       | low                  | low              | low                 |
| Toft         | 1995 | low          | low           | low                    | low                                | low                       | low                  | low              | low                 |
| TOHP         | 1992 | some concern | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Vandongen    | 1993 | some concern | high          | low                    | low                                | low                       | low                  | low              | low                 |
| Vericel      | 1999 | high         | medium        | low                    | some concern                       | low                       | low                  | high             | low                 |
| von Houwelingen | 1987 | some concern | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Wang         | 2008 | some concern | some concern  | low                    | low                                | low                       | low                  | low              | low                 |
| Wu           | 2014 | low          | low           | low                    | low                                | low                       | low                  | low              | low                 |

Note: Two review authors independently assessed risk of bias of each included trials in the domains of randomization (random sequence generation); blinding (allocation concealment, blinding of participants and personnel, and blinding of outcome assessors); missing outcome (incomplete outcome data); measurement (method and measurement bias); and selection of results (reporting bias).
Figure S1. Histogram of dose and duration distribution. A, Histogram of trial duration (week). B, Histogram of the total dose (DHA+EPA, g/day).
Figure S2. Dose-response relation between changes in blood pressure and combined DHA+EPA intake, after excluding the two trials with a dose of 15 g/day.

Marginal average dose-response curve (solid line) with 95% point-wise confidence intervals (dashed lines) estimated by a one-stage random-effects restricted cubic spline model, using 0 g/day as the referent. DBP, diastolic blood pressure; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; SBP, systolic blood pressure. Studies included N=69 for SBP and N=68 for DBP.
Figure S3. Dose-response relation between changes in blood pressure and combined DHA+EPA intake of the studies stratified by the status of hypertension

Marginal average dose-response curve (solid line) with 95% point-wise confidence intervals (dashed lines) estimated by a one-stage random-effects restricted cubic spline model, using 0 g/day as the referent, in participants with or with on hypertension, baseline SBP ≥ 140 mmHg or DBP ≥ 90 mmHg. DBP, diastolic blood pressure; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; SBP, systolic blood pressure. N, number of the included study.
Figure S4. Dose-response relation between changes in blood pressure and combined DHA+EPA intake of the studies stratified by trial duration.

Marginal average dose-response curve (solid line) with 95% point-wise confidence intervals (dashed lines) estimated by a one-stage random-effects restricted cubic spline model, using 0 g/day as the referent, in participants with trial duration ≥ or <12 weeks. DBP, diastolic blood pressure; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; SBP, systolic blood pressure. N, number of the included study.
Figure S5. Dose-response relation between changes in blood pressure and combined DHA+EPA intake in studies stratified by study design.

Marginal average dose-response curve (solid line) with 95% point-wise confidence intervals (dashed lines) estimated by a one-stage random-effects restricted cubic spline model, using 0 g/day as the referent, in studies stratified by study design (crossover or parallel). DBP, diastolic blood pressure; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; SBP, systolic blood pressure. N, number of the included study.
Figure S6. Dose-response relation between changes in blood pressure and combined DHA+EPA intake of the studies stratified by the intervention type.

Marginal average dose-response curve (solid line) with 95% point-wise confidence intervals (dashed lines) estimated by a one-stage random-effects restricted cubic spline model, using 0 g/day as the referent, in studies restricted to different intervention types (diet-based or supplementation). DBP, diastolic blood pressure; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; SBP, systolic blood pressure. N, number of the included study.
Figure S7. Dose-response relation between changes in blood pressure and combined DHA+EPA intake of the studies stratified by sex.

Marginal average dose-response curve (solid line) with 95% point-wise confidence intervals (dashed lines) estimated by a one-stage random-effects restricted cubic spline model, using 0 g/day as the referent, among female- or male-only participants. DBP, diastolic blood pressure; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; SBP, systolic blood pressure. N, number of the included study.
Figure S8. Dose-response relation between changes in blood pressure and combined DHA+EPA intake of the studies stratified by the fish oil composition.

Marginal average dose-response curve (solid line) with 95% point-wise confidence intervals (dashed lines) estimated by a one-stage random-effects restricted cubic spline model, using 0 g/day as the referent, in studies either using purified ethyl esters or natural fish oils. DBP, diastolic blood pressure; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; SBP, systolic blood pressure. N, number of the included study.
Figure S9. Dose-response relation between changes in blood pressure and DHA/EPA intake of the studies stratified by the individual fish oils.

Marginal average dose-response curve (solid line) with 95% point-wise confidence intervals (dashed lines) estimated by a one-stage random-effects restricted cubic spline model, using 0 g/day as the referent, in studies using DHA or EPA alone. DBP, diastolic blood pressure; DHA, docosahexaenoic acid; EPA, eicosapentaenoic acid; SBP, systolic blood pressure. N, number of the included study.
Figure S10. Funnel plot for assessment of overall publication bias.

The plots are generated for the mean difference of changes in systolic (SBP) and diastolic (DBP) blood pressure levels as mmHg and its standard error using the trim-and-fill method. No imputed studies are predicted in both plots. Filled dots indicate observed studies. The Grey area indicates $p \leq 0.05$. The plot asymmetry analysis was performed by Egger’s regression test.

Estimated number of missing studies: 20; 
Test for funnel plot asymmetry: $z = -3.05$, $p = 0.002$

Estimated number of missing studies: 0; 
Test for funnel plot asymmetry: $z = -1.38$, $p = 0.17$
Figure S11. Funnel plot for assessment of publication bias in studies with stratification of hypertension status.

The plots are generated for the mean difference of changes in systolic (SBP) and diastolic (DBP) blood pressure levels as mmHg and its standard error using the trim-and-fill method for studies divided by hypertension status. Imputed studies are shown as empty dots. Solid dots indicate observed studies. The Grey area indicates $p \leq 0.05$. The asymmetry analysis was performed by Egger’s regression test.
Figure S12. Sensitivity analysis of overall effects of EPA+DHA on SBP.

Sensitivity analysis of mean difference for changes in systolic blood pressure (SBP) levels between DHA+EPA treatment and placebo groups, using the leave-one-out method where each time one study is omitted to compute the pooled estimate in the one-stage regression model.
Figure S13. Sensitivity analysis of overall effects of EPA+DHA on DBP.

Sensitivity analysis of mean difference for changes in diastolic blood pressure (DBP) levels between DHA+EPA treatment and placebo groups, using the leave-one-out method where each time one study is omitted to compute the pooled estimate in the one-stage regression model.