**Appendix 1.** Search strategy.

|  |  |
| --- | --- |
|  | Medline |
| 1 | exp Alcohols/ |
| 2 | exp Ethanol/ |
| 3 | exp Drinking Behavior/ |
| 4 | exp Alcohol Drinking/ |
| 5 | alcohol\*.mp. |
| 6 | ethanol.mp. |
| 7 | drink\*.mp. |
| 8 | frail\*.mp. |
| 9 | 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 |
| 10 | 8 AND 9 |
|  |  |
|  | Embase |
| 1 | exp alcohol consumption/ |
| 2 | exp alcohol/ |
| 3 | exp drinking behavior/ |
| 4 | alcohol\*.mp. |
| 5 | ethanol.mp. |
| 6 | drink\*.mp. |
| 7 | frail\*.mp. |
| 8 | 1 OR 2 OR 3 OR 4 OR 5 OR 6 |
| 9 | 7 AND 8 |
|  |  |
|  | PsycINFO |
| 1 | exp ALCOHOLS/ |
| 2 | exp ETHANOL/ |
| 3 | exp ALCOHOL DRINKING PATTERNS/ |
| 4 | exp DRINKING BEHAVIOR/ |
| 5 | alcohol\*.mp. |
| 6 | ethanol.mp. |
| 7 | drink\*.mp. |
| 8 | frail\*.mp. |
| 9 | 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 |
| 10 | 7 AND 8 |
|  |  |
|  | CINAHL |
| 1 | Ethanol+ |
| 2 | Alcohol Drinking+ |
| 3 | Drinking Behavior+ |
| 4 | Alcohol Drinking+ |
| 5 | alcohol\*  |
| 6 | ethanol  |
| 7 | drink\*  |
| 8 | Frailty Syndrome |
| 9 | frail\*  |
| 10 | 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 |
| 11 | 8 OR 9 |
| 12 | 10 AND 11 |
|  |  |
|  | Scopus |
| 1 | alcohol\* |
| 2 | ethanol |
| 3 | drink\* |
| 4 | frail\* |
| 5 | 1 OR 2 OR 3 |
| 6 | 4 AND 5 |

**Appendix 2. Modifications of Cardiovascular Health Study criteria.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Weight loss | Exhaustion | Weakness | Slowness | Low Physical Activity |
| Original by Fried et al. | Answering YES to “In the last year, have you lost more than 10 pounds unintentionally (i.e., not due to dieting or exercise)?” or more than 5% of unintentional weight loss since last year. | Reporting “a moderate amount of the time (3–4 days)” or “most of the time” in the last week to either of two questions from the Center for Epidemiological Studies-Depression Scale: “I felt that everything I did was an effort” or “I could not get going”. | Lowest 20% of handgrip strength stratified by gender and BMI quartiles (Cutoff for men: <29kg for BMI< 24, <30kg for BMI 24.1-26, <30kg for BMI 26.1-28, <32kg for BMI>28, For women: <17kg for BMI<23, <17.3kg for BMI 23.1-26, <18kg for BMI 26.1-29, <21kg for BMI>29). | Slowest 20% of usual walk speed stratified by gender and medium height (Cutoff time to walk 15 feet for men: >7 seconds for height<173 cm, >6 seconds for height>173 cm, For women: >7 seconds for height<159 cm, >6 seconds for height>159 cm). | Lowest 20% kilocalorie based on the short version of the Minnesota Leisure Time Activity questionnaire stratified by gender (Cutoff for men: <383 Kcal per week, For women: <270 Kcal per week). |
| Ortola et al. | Not included | Same as original.  | Same as original. | Slowest 20% of 3-meter walking speed test stratified by gender and height (Cutoff walking speed for men: <0.47 m/s for height<=173cm, <0.45 m/s for height>173cm, For women: <0.37 m/s for height<=159cm, <0.40 m/s for height>159cm). | Walking <=2.5 hours per week for men and <=2 hours per week for women. |
| Etman et al. | Answers ‘less’ or ‘diminution in desire for food’ to ‘what has your appetite been like?’ or answering ‘less’ to ‘So you have been eating more, or less than usual?’. | Answering ‘yes’ to ‘In the last month, have you had too little energy to do the things you wanted to do?’. | Same as original. | Having difficulty walking 100 meters or climbing one flight of stairs. | Answering ‘one to three times a month’ or ‘hardly ever or never’ to ‘How often do you engage in activities that require a low or moderate state of energy, such as walking, gardening, cleaning the car, or doing a walk?’ |
| Seematter-Bagnoud et al. | Self-reported unintentional weight loss during the last 12 months. | Self-reported lack of energy and fatigue during the last 4 weeks. | Same as original. | Same as original. | Doing less than 20 minutes of sports per week and walking less than 90 minutes per week, unless doing a high amount of daily usual physical activity such as climbing stairs or lifting weights. |
| Woods et al. | Unintentional weight loss of more than 5% of body weight in the previous 2 years. | Lowest 25% of the Rand-36 vitality scale. | For both weakness and slowness, lowest 25% of the Rand-36 physical function scale. | Lowest 25% of kilocalorie of energy expended in a week on leisure time activity. |

**Appendix 3.** Methodological quality assessment using the Newcastle-Ottawa Quality Assessment Scale for cohort studies.

| Author/year | Selection 1 | Selection 2 | Selection 3 | Selection 4 | Comparability 1 | Comparability 2 | Outcome 1 | Outcome 2 | Outcome 3 | total |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ortola et al. | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 8/9 |
| Etman et al. | 1 | 1 | 0 | n/a | 1 | 1 | 1 | 1 | 0 | 6/8 |
| Seematter-Bagnoud et al.. | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 7/9 |
| Woods et al. | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 5/9 |

**Selection**

1) Representativeness of the exposed cohort

a) truly representative of the average middle-aged or older population in the community **\***

b) somewhat representative of the average middle-aged or older population in the community **\***

c) selected group of users eg nurses, volunteers

d) no description of the derivation of the cohort

2) Selection of the non exposed cohort

a) drawn from the same community as the exposed cohort **\***

b) drawn from a different source

c) no description of the derivation of the non exposed cohort

3) Ascertainment of exposure

a) secure record (eg surgical records) **\***

b) structured interview **\***

c) written self report

d) no description

4) Demonstration that outcome of interest was not present at start of study

a) yes **\***

b) no

**Comparability**

1) Comparability of cohorts on the basis of the design or analysis

a) study controls for age and gender **\***

b) study controls for any additional factor **\*** (such as education, socioeconomic status and smoking)

**Outcome**

1) Assessment of outcome

a) independent blind assessment **\***

b) record linkage **\***

c) self report

d) no description

2) Was follow-up long enough for outcomes to occur

a) yes (select an adequate follow up period for outcome of interest) **\***

b) no

3) Adequacy of follow up of cohorts

a) complete follow up - all subjects accounted for **\***

b) subjects lost to follow up unlikely to introduce bias - small number lost - > 10 % follow up, or description provided of those lost) **\***

c) follow up rate < 10% and no description of those lost

d) no statement