**Supplemental Material**

**Table S1.** Logic grids for database searches

|  |  |  |  |
| --- | --- | --- | --- |
| **Database** | **Motivational Interviewing** | **AND** | **Multiple Sclerosis** |
| PubMed | “motivational interviewing” [mh] OR“motivation” [mh:noexp] OR motivational interview\* [tw] OR motivational enhance\* [tw] OR motivational intervention\* [tw] OR motivational training [tw] OR motivation interview\* [tw] OR motivation enhance\* [tw] OR motivation intervention\* [tw] ORmotivation training [tw]  |  | “multiple sclerosis”[mh] OR multiple sclerosis[tw] OR disseminated sclerosis[tw] |
| PsycINFO | exp motivational interviewing/ OR motivation training.sh OR motivation.sh OR motivat\* interview\*.tw OR motivat\* enhance\*.tw OR motivat\* intervention\*.tw ORmotivat\* training.tw |  | multiple sclerosis.sh OR multiple sclerosis.tw OR disseminated sclerosis.tw |
| Embase | “motivational interviewing”:de OR motivation:de OR  “motivational interviewing” OR “motivational enhancement” OR “motivational intervention” OR “motivational training” OR “motivation interviewing” OR “motivation enhancement” OR  “motivation intervention” OR“motivation training” |  | “multiple sclerosis”:de OR“multiple sclerosis” OR“disseminated sclerosis” |
| Cochrane | Mesh: “motivational interviewing” OR Motivation OR“motivational interview” OR “motivational enhancement” OR “motivational intervention” OR “motivational training” |  | Mesh: “multiple sclerosis” OR “multiple sclerosis” OR “disseminated sclerosis”  |

**Figure S1.** Risk of bias across studies based on RoB 2.0 [23]

**Table S2** Risk of bias within individual studies based on RoB 2.0 [23]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Lead author (date) | Randomisation process (selection bias) | Deviations from intended interventions *assignment to intervention* (performance bias) | Deviations from intended interventions *adhering to intervention* (performance bias | Missing outcome data (attrition bias) | Measurement of outcomes (detection bias) | Selection of the reported results (reporting bias) |
| Berger (2005) |  |  |  |  |  |  |
| Bombardier (2008) |  |  |  |  |  |  |
| Bombardier (2013) |  |  |  |  |  |  |
| Borji (2018) |  |  |  |  |  |  |
| Bruce (2016) |  |  |  |  |  |  |
| Dashti (2016) |  |  |  |  |  |  |
| Hanssen (2016) |  |  |  |  |  |  |
| Smith (2012) |  |  |  |  |  |  |
| Turner (2014) |  |  |  |  |  |  |
| Turner (2016) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Low risk of bias |  |  |  |  |  |  |
| Some concerns |  |  |  |  |  |  |

**Table S3.** Immediate (baseline to post-intervention) effects associated with motivational interviewing

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Domain | Outcome Measure | Subscale | N | *g* |  95% CI  | N*fs* | Format | Medium |  | Citation |
| Fatigue | Fatigue Impact Scale | 60 | **2.68\*** | 1.99 | 3.37 | 12 | Group  | Face |  | [35] |
| Mental and Physical Fatigue Scale  | Physical | 1313 | **1.59\*** | .41 | 2.78 | 7 | Individual | Face |  | [11] |
| Mental | .59 | -.44 | 1.64 | 2 | Individual | Face |  | [11] |
| Modified Fatigue Impact Scale | Physical | 130 | **.36\*** | .01 | .71 | 1 | Individual | Face + Phone |  | [10] |
|  |  | Cognitive | 127 | .23 | -.12 | .57 | 0 | Individual | Face + Phone |  | [10] |
|  |  | Psychosocial | 130 | .12 | -.22 | .47 | 0 | Individual | Face + Phone |  | [10] |
|  |  | Total | 126 | .32 | -.03 | .67 | 1 | Individual | Face + Phone |  | [10] |
|  |  |  |  |  |  |  |  |  |  |  |
| Activity & exercise | Rating of Perceived Exertion Scale | 13 | **1.23\*** | .11 | 2.35 | 5 | Individual | Face |  | [11] |
| The Feeling Scale | 13 | 1.11 | .01 | 2.21 | 5 | Individual | Face |  | [11] |
| Health Promoting Lifestyle Profile II | Physical activity | 51 | **.66\*** | .10 | 1.22 | 2 | Group | Some |  | [19] |
| 129 | **.62\*** | .27 | .98 | 2 | Individual | Some |  | [10] |
| 7-Day Physical Activity Recall | 92 | **.46\*** | .05 | .87 | 1 | Individual | Face + Phone |  | [16] |
| The Enjoyment Scale | 13 | .36 | -.66 | 1.39 | 1 | Individual | Face |  | [11] |
| Self-selected Walking Speed | 130 | .31 | -.03 | .66 | 1 | Individual | Face + Phone |  | [10] |
| Leg Ergometer Time | 124 | .23 | -.12 | .58 | 0 | Individual | Face + Phone |  | [10] |
| Isokinetic Dynamometer | Flexion  | 116 | .11 | -.26 | .47 | 0 | Individual | Face + Phone |  | [10] |
| Extension | 116 | .05 | -.32 | .41 | 0 | Individual | Face + Phone |  | [10] |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Diet | Health Promoting Lifestyle Profile II | Nutrition | 51 | **.74\*** | .18 | 1.29 | 3 | Group | Face |  | [19] |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Depression | Hamilton Depression Rating Scale | 929292 | **1.12\*** | .69 | 1.56 | 5 | Individual | Face + Phone |  | [16] |
| Structured Clinical Interview for DSM-IV | **.65\*** | .24 | 1.06 | 2 | Individual | Face + Phone |  | [16] |
| Hopkins Symptom Checklist-20 | **.53\*** | .12 | .94 | 2 | Individual | Face + Phone |  | [16] |
| Hopkins Symptom Checklist-25 | 119 | **.37\*** | .01 | .73 | 1 | Individual | Face + Phone |  | [20] |
|  |  |  |  |  |  |  |  |  |  |  |
| Motivation  | Motivation for Behaviour Change | 71 | **.92\*** | .44 | 1.41 | 4 | Individual | Phone |  | [32] |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Self-efficacy | Adherence Self-efficacy | 19 | .91 | -.03 | 1.85 | 4 | Individual | Phone |  | [21] |
| Health Promoting Lifestyle Profile II | Responsibility | 51 | **.64\*** | .09 | 1.19 | 2 | Group | Face |  | [19] |
| 129 | .26 | -.09 | .61 | 0 | Individual | Face + Phone |  | [10] |
| Confidence in Behaviour Change | 71 | -.24 | -.70 | .22 | 0 | Individual | Phone |  | [32] |
|  |  |  |  |  |  |  |  |  |  |  |
| Coping | Health Promoting Lifestyle Profile II | Stress management | 51 | **.70\*** | .14 | 1.25 | 3 | Group | Face |  | [19] |
| 129 | **.41\*** | .07 | .76 | 1 | Individual | Face + Phone |  | [10] |
| Spiritual growth | 51 | .23 | -.31 | .77 | 0 | Group | Face |  | [19] |
|  | 129 | **.50\*** | .15 | .85 | 2 | Individual | Face + Phone |  | [10] |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Relationships | Health Promoting Lifestyle Profile II | Interpersonal  | 51 | **.57\*** | .02 | 1.13 | 2 | Group | Face |  | [19] |
| 129 | .11 | -.23 | .46 | 0 | Individual | Face + Phone |  | [10] |
| Modified Social Support Scale | 130 | .26 | -.08 | .60 | 0 | Individual | Face + Phone |  | [10] |

**Table S3.** (cont.)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Domain | Outcome Measure  | Subscale | N | *g* |  95% CI | N*fs* | Format | Medium |  | Citation |
| Cognition | Trail Making Test | Part A | 130 | -.24 | -.58 | .11 | 0 | Individual | Face + Phone |  | [10] |
| Part B | 130 | .23 | -.12 | .57 | 0 | Individual | Face + Phone |  | [10] |
| Behaviour Rating Inventory of Executive Function | Executive function | 119119 | .02 | -.34 | .38 | 0 | Individual | Face + Phone |  | [20] |
| Metacognition index | .01 | -.35 | .37 | 0 | Individual | Face + Phone |  | [20] |
|  |  |  |  |  |  |  |  |  |  |  |
| Treatment engagement | Re-initiation of disease modifying therapies  | 71 | .45 | -.01 | .92 | 1 | Individual | Phone |  | [32] |
| Medication Adherence  | 366 | **.34\*** | .14 | .55 | 1 | Individual | Phone |  | [15] |
| Medication Adherence  | 19 | .21 | -.68 | 1.10 | 0 | Individual | Phone |  | [21] |
| Healthcare Engagement  | 71 | .17 | -.38 | .73 | 0 | Individual | Phone |  | [32] |
| Exercise Adherence  | 13 | -.16 | -1.17 | .86 | 0 | Individual | Face |  | [11] |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Global  | Medical Outcomes Study SF-36 | Mental | 130 | .32 | -.02 | .67 | 1 | Individual | Face + Phone |  | [10] |
| Physical  | 130 | .23 | .58 | .11 | 0 | Individual | Face + Phone |  | [10] |
| Health Promoting Lifestyle Profile II | Total | 51 | **1.03\*** | .45 | 1.60 | 4 | Group | Face |  | [19] |
| 129 | **.59\*** | .24 | .95 | 2 | Individual | Face + Phone |  | [10] |
| MS-Related Symptom Checklist | 92 | **.48\*** | .07 | .89 | 2 | Individual | Face + Phone |  | [16] |
| Multiple Sclerosis Impact Scale-29  | Psychological | 119 | .33 | -.03 | .69 | 1 | Individual | Face + Phone |  | [20] |
| Craig Handicap Assessment and Reporting Technique |  | 130 | .13 | -.21 | .47 | 0 | Individual | Face + Phone |  | [10] |
| MS Functional Composite | 127 | .13 | -.27 | .48 | 0 | Individual | Face + Phone |  | [10] |
|  |  |  |  |  |  |  |  |  |  |  |

N= number of participants providing this data; *g* = standardised mean difference (Hedges’ g),CI = 95% confidence interval (lower and upper limits), N*fs*= fail safe N.

\* denotes a significant group difference (*p* < .05). Positive values indicate greater gains (improvement) in motivational interviewing group.

**Table S4.** Sustained (baseline to follow-up) effects associated with motivational interviewing

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Domain | Outcome Measure | Subscale | N | Time | *g* |  95% CI | N*fs* | Format | Medium |  | Citation |
| Fatigue | Modified Fatigue Impact Scale | 6363 | 12 | **.72\*** | .22 | 1.23 | 3 | IndividualIndividual | PhonePhone |  | [36][36] |
| 24 | **.78\*** | .27 | 1.28 | 3 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Activity & exercise | Health Promoting Lifestyle Profile II | Physical activity | 51 | 4 | **.60\*** | .05 | 1.15 | 2 | Group | Face |  | [19] |
| Godin Leisure-Time Exercise Questionnaire | 6363 | 12 | **.54\*** | .04 | 1.03 | 2 | IndividualIndividual | PhonePhone |  | [36][36] |
| 24 | **.97\*** | .45 | 1.48 | 4 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Diet | Health Promoting Lifestyle Profile II | Nutrition | 51 | 4 | **.72\*** | .16 | 1.28 | 3 | Group | Face |  | [19] |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Depression | Hopkins Symptom Checklist-25 | 119 | 28 | .10 | -.25 | .46 | 0 | Individual | Face + Phone |  | [20] |
| Patient Health Questionnaire-9 | 63 | 12 | .48 | -.02 | .98 | 1 | Individual | Phone |  | [36] |
| 63 | 24 | **.87\*** | .36 | 1.39 | 3 | Individual | Phone |  | [36] |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Motivation | Motivation for Behaviour Change | 7171 | 1010 | **.84\*** | .36 | 1.33 | 3 | IndividualIndividual | PhonePhone |  | [32][32] |
| Brief Motivation Scale | **.67\*** | .20 | 1.15 | 2 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Self-efficacy | Treatment self-efficacy | 1919 | 12 | **1.11\*** | .15 | 2.06 | 5 | IndividualIndividual | PhonePhone |  | [21][21] |
| 24 | .70 | -.22 | 1.62 | 3 |  |
| Health Promoting Lifestyle Profile II | Health responsibility | 51 | 4 | **.61\*** | .06 | 1.17 | 2 | Group | Face |  | [19] |
| Confidence in Behaviour Change | 71 | 10 | -.41 | -.87 | .06 | 1 | Individual | Phone |  | [32] |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Coping | Health Promoting Lifestyle Profile II | Stress management | 5151 | 44 | **.65\*** | .09 | 1.20 | 2 | GroupGroup | FaceFace |  | [19][19] |
| Spiritual growth | .47 | -.08 | 1.02 | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Relationships | Health Promoting Lifestyle Profile II | Interpersonal  | 51 | 4 | **.60\*** | .05 | 1.15 | 2 | Group | Face |  | [19] |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cognition | Behaviour Rating Inventory of Executive Function | Executive function | 119 | 28 | .15 | -.21 | .50 | 0 | Individual | Face + Phone |  | [20] |
| Metacognition index | 119 | 28 | .05 | -.31 | .40 | 0 | Individual | Face + Phone |  | [20] |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Treatment engagement | Re-initiation of disease modifying therapies Medication Adherence Healthcare Engagement | 71 | 10 | .45 | -.01 | .92 | 1 | Individual | Phone |  | [32] |
| 19 | 12 | .36 | -.54 | 1.25 | 1 | Individual | Phone |  | [21] |
| 19 | 24 | .61 | -.30 | 1.52 | 2 | Individual | Phone |  | [21] |
| 71 | 10 | 17 | -.38 | .73 | 0 | Individual | Phone |  | [32] |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Global  | Health Promoting Lifestyle Profile II  | Total | 51 | 4 | **.81\*** | .25 | 1.37 | 3 | Group | Face |  | [19] |  |
|  | Multiple Sclerosis Impact Scale-29  | Psychological | 119 | 28 | **.41\*** | .05 | .77 | 1 | Individual | Face + Phone |  | [20] |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

N= number of participants providing this data; Time = assessment time point (in weeks), *g* = standardised mean difference (Hedges’ g),CI = 95% confidence interval (lower and upper limits), N*fs* = fail safe N.

\* denotes a significant group difference (*p* < .05). Positive values indicate greater gains (improvement) in motivational interviewing group.