SUPPLEMENTARY MATERIAL

**Appendix 1: Search Strategies**

The following are the search strategies run on June 8, 2016 for each of the online databases. Search strings are presented here exactly as they were entered into separate databases. Each database has a unique way of identifying subject headings and key word terms.

**ELECTRONIC DATA BASES**

*PSYCHINFO*

1. all(((su.Exact("walking" OR "gait" OR "motor skills") OR AB(parkinsonism OR tremor OR rigidity OR bradykinesia OR posture OR balance OR finger tapping OR manual dexterity OR upper limb motor change\* OR gait OR motor change\* OR motor dysfunction OR gait disorder\* OR walk\*)) AND (su.Exact("biological markers" OR "risk factors" OR "prognosis") OR AB(Predict\* OR risk factor\* OR biomarker OR biological marker OR assoc\*)) AND (su.Exact("alzheimers's disease" OR "dementia" OR "vascular dementia") OR AB(Dementia OR alzheimers\* OR vascular dementia))))

* Number of documents retrieved: 1396

1. Limited by Record type: NOT (Book AND Edited Book AND Comment/reply); Age group: (Aged (65 yers& older) OR Middle Age (40-64 yrs) OR Very Old (85 yrs & older)) NOT Thirties (30-39 yrs) AND Young Adulthood (18-29 yrs) AND Adolescence (13-17 yrs) AND Childhood (birth-12 yrs) AND School Age (6-12 yrs)); Language: (English) NOT (French AND German AND Spanish AND Dutch AND Japanese AND Portuguese)

* **Total Number of Documents Uploaded into EndNote: 581**

CINAHL

1. (MH “Gait Disorders, Neurologic”) OR (MH “Gait Analysis”) OR (MH “Walking”) OR (MH “Motor Skills”)
   * Limiters – Language: English; Human; Age Groups: Middle Aged: 45-64 years, Aged: 65+ years, Aged, 80 and over
   * Search modes – Boolean/Phrase
   * Number of Studies Retrieved: 6,938
2. (“Parkinsonism or tremor or bradykinesia or rigidity or posture or upper limb motor change\* or gait or motor change\* or motor dysfunction\* or motor function or gait disorder\* or balance or walk\*”) OR (S1)
   * Limiters – Language: English; Human; Age Groups: Middle Aged: 45-64 years, Aged: 65+ years, Aged, 80 and over
   * Search modes – Boolean/Phrase
   * Number of Studies Retrieved: 9,176
3. (MH “Prognosis/AE/CL/CT/EV/HI/MT/MO/PF/ST/SN/TD/UT”) OR (MH “Risk Factors/AE/AN/CL/EP/ES/ET/EV/HI/MT/PC/PF/RF/ST/TD/UT”) OR (MH “Biological Markers/AE/AN/CF/CT/DU/HI/LJ/ME/PD/PH/ST/TU”)
   * Search modes – Boolean/Phrase
   * Limiters – Language: English; Human; Age Groups: Middle Aged: 45-64 years, Aged: 65+ years, Aged, 80 and over
   * Number of Studies Retrieved: 1,400
4. (Predict\* OR risk factor\* OR biomarker OR biological marker OR assoc\*) OR (S3)
   * Search modes – Boolean/Phrase
   * Limiters – Language: English; Human; Age Groups: Middle Aged: 45-64 years, Aged: 65+ years, Aged, 80 and over
   * Number of Studies Retrieved: 90,747
5. (MH “Alzheimer’s Disease”) OR (MH “Dementia”) OR (MH “Vascular Dementia”)
   * Search modes – Boolean/Phrase
   * Limiters – Language: English; Human; Age Groups: Middle Aged: 45-64 years, Aged: 65+ years, Aged, 80 and over
   * Number of Studies Retrieved: 10, 930
6. (Dementia OR Alzheimer\* OR Vascular Dementia) OR (S5)
7. S2 AND S4 AND S6
   * Search modes – Boolean/Phrase
   * Limiters – Language: English; Human; Age Groups: Middle Aged: 45-64 years, Aged: 65+ years, Aged, 80 and over
   * **Total Number of Documents Uploaded into EndNote: 90**

*MEDLINE*

1. Gait/ or Gait Disorders, neurologic/ or walking/ or motor skills/
   * Number of Studies Retrieved: 60625
2. Limit to English and Humans
   * Number of Studies Retrieved: 50464
3. Parkinsonism or tremor or bradykinesia or rigidity or posture or upper limb motor change\* or gait or motor change\* or motor dysfunction\* or motor function or gait disorder\* or balance or walk\* or manual dexterity
4. Limit 3 to (abstracts and English language and Human)
5. 2 OR 4
   * Number of Studies Retrieved: 69210
6. Prognosis/ OR Risk Factors/ OR Biological Markers/
   * Number of Studies Retrieved: 1123158
7. Limit 6 to (English language and humans)
   * Number of Studies Retrieved: 904146
8. Predict\* OR risk factor\* OR biomarker OR biological marker OR assoc\*
   * Number of Studies Retrieved: 1868813
9. Limit 8 to (abstracts and English language and humans)
   * Number of Studies Retrieved: 1220816
10. 7 or 9
    * Number of Studies Retrieved: 1553632
11. Alzheimer disease/ OR Dementia/ OR Vascular Dementia/
    * Number of Studies Retrieved: 108689
12. Limit 11 to (English language and humans)
    * Number of Studies Retrieved: 90497
13. Dementia OR Alzheimer\* OR Vascular Dementia
    * Number of Studies Retrieved: 190255
14. Limit 13 to (abstracts and English language)
    * Number of Studies Retrieved: 115059
15. 12 or 14
    * Number of Studies Retrieved: 133469
16. Aged/ OR Aged, 80 and over/ OR Middle aged/
    * Number of Studies Retrieved: 3571914
17. Limit 16 to English language and humans
    * Number of Studies Retrieved: 2842554
18. Aged OR older adult\* OR elder\*
    * Number of Studies Retrieved: 4408162
19. Limit 18 to (abstracts and English language and humans)
    * Number of studies retrieved: 2850105
20. 17 OR 19
    * Number of Studies Retrieved: 3281145
21. 5 and 10 and 15 and 20
    * **Total Number of Documents Uploaded into EndNote: 1406**

*EMBASE*

1. Gait/ or Gait Disorders, neurologic/ or walking/ or motor skills/
   * Number of Studies Retrieved: 60625
2. Limit to English and Humans
   * Number of Studies Retrieved: 50464
3. Parkinsonism or tremor or bradykinesia or rigidity or posture or upper limb motor change\* or gait or motor change\* or motor dysfunction\* or motor function or gait disorder\* or balance or walk\* or manual dexterity
4. Limit 3 to (abstracts and English language and Human)
5. 2 OR 4
   * Number of Studies Retrieved: 69210
6. Prognosis/ OR Risk Factors/ OR Biological Markers/
   * Number of Studies Retrieved: 1123158
7. Limit 6 to (English language and humans)
   * Number of Studies Retrieved: 904146
8. Predict\* OR risk factor\* OR biomarker OR biological marker OR assoc\*
   * Number of Studies Retrieved: 1868813
9. Limit 8 to (abstracts and English language and humans)
   * Number of Studies Retrieved: 1220816
10. 7 or 9
    * Number of Studies Retrieved: 1553632
11. Alzheimer disease/ OR Dementia/ OR Vascular Dementia/
    * Number of Studies Retrieved: 108689
12. Limit 11 to (English language and humans)
    * Number of Studies Retrieved: 90497
13. Dementia OR Alzheimer\* OR Vascular Dementia
    * Number of Studies Retrieved: 190255
14. Limit 13 to (abstracts and English language)
    * Number of Studies Retrieved: 115059
15. 12 or 14
    * Number of Studies Retrieved: 133469
16. Aged/ OR Aged, 80 and over/ OR Middle aged/
    * Number of Studies Retrieved: 3571914
17. Limit 16 to English language and humans
    * Number of Studies Retrieved: 2842554
18. Aged OR older adult\* OR elder\*
    * Number of Studies Retrieved: 4408162
19. Limit 18 to (abstracts and English language and humans)
    * Number of studies retrieved: 2850105
20. 17 OR 19
    * Number of Studies Retrieved: 3281145
21. 5 and 10 and 15 and 20
    * **Total Number of Documents Uploaded into EndNote: 2584**

**GREY LITERATURE**

*WEB OF SCIENCE*

The following collections of terms were each searched separately and the title and abstract screened for relevance by the primary reviewer. Only documents deemed to be relevant were uploaded into EndNote.

* Motor function and Incident Dementia
  + Number of documents retrieved: 7
* Incident dementia and gait
  + Number of documents retrieved: 89
* Dementia and neurologic gait
  + Number of documents retrieved: 5
* Incident dementia and parkinsonism
  + Number of documents retrieved: 8
* Incident dementia and balance
  + Number of documents retrieved: 11
* Dementia and dexterity
  + Number of documents retrieved: 52
* “Incident Dementia” and (tremor OR bradykinesia OR rigidity OR PIGD)
  + Number of documents retrieved: 29
* **Total Number of Documents Uploaded into EndNote: 25**

*OPEN GREY*

The following collections of terms were each searched separately and the title and abstract screened for relevance by the primary reviewer. Only documents deemed to be relevant were uploaded into EndNote.

* Motor and dementia
  + Number of documents retrieved: 21
* Parkinsonism and dementia
  + Number of documents retrieved: 6
* Gait and dementia
  + Number of documents retrieved: 2
* Motor and AD
  + Number of documents retrieved: 24
* **Total Uploaded into End Note: 0**

*GREY MATTERS*

The following collections of terms were each searched separately and the title and abstract screened for relevance by the primary reviewer. Only documents deemed to be relevant were uploaded into EndNote.

* Motor and dementia
  + Number of documents retrieved: 25
* Parkinsonism and dementia
  + Number of documents retrieved: 6
* Gait and dementia
  + Number of documents retrieved: 10
* Motor and Alzheimer
  + Number of documents retrieved: 10
* **Total Number of Documents Uploaded into EndNote: 0**

*GOOGLE SCHOLAR*

The primary reviewer searched through the first 10 pages of search results and uploaded documents which looked relevant to EndNote:

* Motor function and incident dementia
  + **Total Number of Documents Uploaded into EndNote: 17**
* Two additional documents were located through additional searches conducted throughout the writing of the review.

**HAND SEARCHING**

The primary reviewer performed hand searching of the following academic journals, including conference proceedings if available:

* The Journals of Gerontology 2014-2016
  + Number of documents retrieved: 3
* Parkinsonism & Related Disorders 2014-2016
  + Number of documents retrieved: 1
* Age & Ageing Jan 2014 – July 2016
  + Number of documents retrieved: 0
* **Total Number of Documents Uploaded into EndNote: 4**

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** | **Number of Documents Retrieved** | **Number uploaded into EndNote** | **Total number of documents** |
| Electronic Databases | | | |
| PsychINFO | 581 | 581 | 4661 |
| CINAHL | 90 | 90 |
| MEDLINE | 1406 | 1406 |
| EMBASE | 2584 | 2584 |
| Grey Literature | | | |
| Web of Science | 201 | 25 | 44 |
| Open Grey | 53 | 0 |
| Grey Matters | 51 | 0 |
| Google Scholar | 100 | 19 |
| Hand Searching | | | |
| The Journals of Gerontology 2014-2016 | N/A | 3 | 4 |
| Parkinsonism & Related Disorders 2014-2016 | N/A | 1 |
| Age & Ageing Jan 2014 – July 2016 | N/A | 0 |
| 4709 | | | |

**Table 1S. Summary of systematic review document sources.**