

Appendix A: Database search strings

The search engines from Pubmed, IEEExplore and Scopus were used to search for relevant articles. The search string was developed in Pubmed based on our defined participants, context, and outcome measures and then adapted to the other two search engines.

1. Pubmed

Search string

("fall" OR "fall risk") AND ("obstacle" OR "stair" OR "perturbation") AND ("age" OR "older" OR "elderly") NOT (diabetes[Title/Abstract]) NOT ("rheumatoid arthritis"[Title/Abstract] OR "osteoarthritis"[Title/Abstract]) NOT (Parkinson[Title/Abstract]) NOT (stroke[Title/Abstract])

Returns 385

2. IEEE

Search string

((("All Metadata":"fall" OR "All Metadata":"fall risk") AND ("All Metadata":"obstacle" OR "All Metadata":"stair" OR "All Metadata":"perturbation") AND ("All Metadata":"age" OR "All Metadata":"older" OR "All Metadata":"elderly") NOT ("Document Title":"age" OR "Document Title":"rheumatoid arthritis" OR "Document Title":"osteoarthritis" OR "Document Title":"Parkinson" OR "Document Title":"stroke"))

Returns 49

3. Scopus

Search string

("fall" OR "fall risk") AND ("obstacle" OR "stair" OR "perturbation") AND ("age" OR "older" OR "elderly") AND NOT TITLE-ABS ("diabetes") AND NOT TITLE-ABS ("rheumatoid arthritis" or "osteoarthritis") AND NOT TITLE-ABS ("Parkinson") AND NOT TITLE-ABS ("stroke")

Returns 23,050

To limit the number of articles, several modifications have been made to the search string. The different modification steps are given in paragraph 3.1 and the final Scopus search string in paragraph 3.2.

3.1. Modification of the search string for Scopus search

AND ("obstacle" OR "stair" OR "perturbation")

Replaced with AND TITLE-ABS ("obstacle" OR "stair" OR "perturbation")

Returns: 6,453

AND ("age" OR "older" OR "elderly")

Replaced with AND ("aging" OR "ageing" OR "older" OR "elderly")

Returns: 4,854

3.1.1. Domain restrictions

Relevant domains:

Limit to: *engineering, health professions, medicine, neuroscience, nursing*

AND (LIMIT-TO (SUBJAREA , "MEDI") OR LIMIT-TO (SUBJAREA , "ENGI") OR LIMIT-TO (SUBJAREA , "HEAL") OR LIMIT-TO (SUBJAREA , "NEUR") OR LIMIT-TO (SUBJAREA , "NURS"))

Returns: 3,738

Exclude: *social sciences; physics and astronomy; chemical engineering; materials science; environmental science; immunobiology and microbiology; chemistry; agricultural and biological sciences; pharmacology, toxicology and pharmaceuticals; business, management and accounting; arts and humanities; decision sciences; energy; earth and planetary sciences; economics, econometrics and finance; veterinary; dentistry*

AND (EXCLUDE (SUBJAREA,"SOCI") OR EXCLUDE (SUBJAREA,"PHYS") OR EXCLUDE (SUBJAREA,"CENG") OR EXCLUDE (SUBJAREA,"MATE") OR EXCLUDE (SUBJAREA,"ENVI") OR EXCLUDE (SUBJAREA,"IMMU") OR EXCLUDE (SUBJAREA,"CHEM") OR EXCLUDE (SUBJAREA,"AGRI") OR EXCLUDE (SUBJAREA,"PHAR") OR EXCLUDE (SUBJAREA,"BUSI") OR EXCLUDE (SUBJAREA,"ARTS") OR EXCLUDE (SUBJAREA,"DECI") OR EXCLUDE (SUBJAREA,"ENER") OR EXCLUDE (SUBJAREA,"EART") OR EXCLUDE (SUBJAREA,"ECON") OR EXCLUDE (SUBJAREA,"VETE") OR EXCLUDE (SUBJAREA,"DENT"))

Returns: 3,412

3.1.2. Language

Limit to: *English*

AND (LIMIT-TO (LANGUAGE , "English"))

Returns: 3,064

Exclude: *Portuguese, French, Spanish, Polish, German, Italian, Japanese, Persian, Turkish*

AND (EXCLUDE (LANGUAGE , "Portuguese") OR EXCLUDE (LANGUAGE , "French") OR EXCLUDE (LANGUAGE , "Spanish") OR EXCLUDE (LANGUAGE , "Polish") OR EXCLUDE (LANGUAGE , "German") OR EXCLUDE (LANGUAGE , "Italian") OR EXCLUDE (LANGUAGE , "Japanese") OR EXCLUDE (LANGUAGE , "Persian") OR EXCLUDE (LANGUAGE , "Turkish"))

Returns: 3,261

3.1.3. Article type

Exclude: reviews, books, book series

AND (EXCLUDE (DOCTYPE , "re")) AND NOT TITLE-ABS ("systematic review") AND (EXCLUDE (EXACTKEYWORD , " Review") AND (EXCLUDE (SRCTYPE , "b") OR EXCLUDE (SRCTYPE , "k"))

Returns: 2,786

3.1.4. Study design

Exclude: randomized control trials, clinical trials, interventions, training, treatment

AND NOT TITLE-ABS ("Randomized Controlled Trial ") AND NOT TITLE-ABS ("Clinical Trial ") AND NOT TITLE ("intervention" OR "training") AND EXCLUDE (EXACTKEYWORD , "Treatment Outcome") AND EXCLUDE (EXACTKEYWORD , "Controlled Clinical Trial") AND EXCLUDE (EXACTKEYWORD , "Randomized Controlled Trial")

Returns: 2,482

3.1.5. Study population

Exclude diseases and injuries: Alzheimer, Dementia, depression, injury, orthotics, fracture, knee osteoarthritis, sarcopenia

AND NOT TITLE-ABS ("Alzheimer") AND NOT TITLE-ABS ("brain injury") AND NOT TITLE-ABS ("Dementia ") AND NOT TITLE-ABS ("depression ") AND NOT TITLE-ABS ("orthotics") AND NOT TITLE ("injury") AND NOT TITLE ("fracture") AND EXCLUDE (EXACTKEYWORD , "Knee osteoarthritis") AND EXCLUDE (EXACTKEYWORD , "Knee Osteoarthritis") AND EXCLUDE (EXACTKEYWORD , "Sarcopenia")

Returns: 2,132

Exclude study populations: non-human animals, pregnancy, children, amputees, obesity

AND EXCLUDE (EXACTKEYWORD , "Nonhuman") AND NOT TITLE-ABS ("pregnancy " OR "pregnant") AND NOT TITLE-ABS ("child " OR "children" OR "infant" OR "adolescent") AND EXCLUDE (EXACTKEYWORD , "Adolescent") AND NOT TITLE-ABS ("amputation " OR "amputee") AND EXCLUDE (EXACTKEYWORD , "Obesity")

Returns: 2,027

3.1.6. Task

Exclude: dual task, virtual reality

AND NOT TITLE-ABS ("dual task") AND (EXCLUDE (EXACTKEYWORD , "Virtual Reality")

Returns: 1,835

3.2. Final search string for Scopus

("fall" OR "fall risk") AND TITLE-ABS ("obstacle" OR "stair" OR "perturbation") AND ("aging" OR "ageing" OR "older" OR "elderly") AND NOT TITLE-ABS ("diabetes") AND NOT TITLE-ABS ("rheumatoid arthritis" OR "osteoarthritis") AND NOT TITLE-ABS ("Parkinson") AND NOT TITLE-ABS ("stroke") AND NOT TITLE-ABS ("systematic review") AND NOT TITLE-ABS ("Randomized Controlled Trial") AND NOT TITLE-ABS ("Clinical Trial") AND NOT TITLE ("intervention" OR "training") AND NOT TITLE-ABS ("Alzheimer") AND NOT TITLE-ABS ("brain injury") AND NOT TITLE-ABS ("Dementia ") AND NOT TITLE-ABS ("depression ") AND NOT TITLE-ABS ("orthotics") AND NOT TITLE ("injury") AND NOT TITLE ("fracture") AND NOT TITLE-ABS ("dual task") AND (LIMIT-TO (SUBJAREA,"MEDI") OR LIMIT-TO (SUBJAREA,"ENGI") OR LIMIT-TO (SUBJAREA,"HEAL") OR LIMIT-TO (SUBJAREA,"NEUR") OR LIMIT-TO (SUBJAREA,"NURS") OR EXCLUDE (SUBJAREA,"SOCI") OR EXCLUDE (SUBJAREA,"PHYS") OR EXCLUDE (SUBJAREA,"CENG") OR EXCLUDE (SUBJAREA,"MATE") OR EXCLUDE (SUBJAREA,"ENVI") OR EXCLUDE (SUBJAREA,"IMMU") OR EXCLUDE (SUBJAREA,"CHEM") OR EXCLUDE (SUBJAREA,"AGRI") OR EXCLUDE (SUBJAREA,"PHAR") OR EXCLUDE (SUBJAREA,"BUSI") OR EXCLUDE (SUBJAREA,"ARTS") OR EXCLUDE (SUBJAREA,"DECI") OR EXCLUDE (SUBJAREA,"ENER") OR EXCLUDE (SUBJAREA,"EART") OR EXCLUDE (SUBJAREA,"ECON") OR EXCLUDE (SUBJAREA,"VETE") OR EXCLUDE (SUBJAREA,"DENT")) AND (EXCLUDE (DOCTYPE,"re")) AND (LIMIT-TO (LANGUAGE,"English") OR EXCLUDE (LANGUAGE,"Portuguese") OR EXCLUDE (LANGUAGE,"French") OR EXCLUDE (LANGUAGE,"Spanish") OR EXCLUDE (LANGUAGE,"Polish") OR EXCLUDE (LANGUAGE,"German") OR EXCLUDE (LANGUAGE,"Italian") OR EXCLUDE (LANGUAGE,"Japanese") OR EXCLUDE (LANGUAGE,"Persian") OR EXCLUDE (LANGUAGE,"Turkish")) AND (EXCLUDE (EXACTKEYWORD,"Review") OR EXCLUDE (EXACTKEYWORD,"b OR EXCLUDE SRCTYPE") OR EXCLUDE (EXACTKEYWORD,"Treatment Outcome") OR EXCLUDE (EXACTKEYWORD,"Controlled Clinical Trial") OR EXCLUDE (EXACTKEYWORD,"Randomized Controlled Trial") OR EXCLUDE (EXACTKEYWORD,"Knee osteoarthritis") OR EXCLUDE (EXACTKEYWORD,"Knee Osteoarthritis") OR EXCLUDE (EXACTKEYWORD,"Sarcopenia") OR EXCLUDE (EXACTKEYWORD,"Nonhuman") OR EXCLUDE (EXACTKEYWORD,"f NOT TITLE-ABSchild ORchildren ORinfant ORadolescent") OR EXCLUDE (EXACTKEYWORD,"Adolescent") OR EXCLUDE (EXACTKEYWORD,"f EXCLUDE EXACTKEYWORD") OR EXCLUDE (EXACTKEYWORD,"Virtual Reality"))