**Supplementary Material**

 **Supplementary Table S1.** Full search strategy: search strategy example (MEDLINE 1999 to
January 2023)

|  |  |  |
| --- | --- | --- |
|  | **Keywords** | **Combination** |
| Population | 1. (exp older people$/ or exp elder$/ or exp older adult$/ or exp age$/ or exp senior$/ or exp frail/) adj3 elderly/
2. exp geriatrics/ or exp older person$/ or exp older population$/
3. (older subject$ or older patient$ or older age$ or older adult$ or older man or older men or older male$ or older woman or older women or older female$ or older population$).mp. or older person$.tw.
 | 1. 1 or 2 or 3
 |
| Intervention | 1. (home safety or environment modification or housing improvement or person-environment fit).mp.
2. (environment design$ or person environment$ or housing adap?tion$).mp.
3. home hazard$/ or home modification$/ or home adaptation$/ or home environment$/
 | 1. 5 or 6 or 7
 |
| Studies | 1. Randomized Controlled Trials.tw.
2. random allocation/
3. Controlled Clinical Trial$.tw.
4. control group$/
5. clinical trials.tw.
6. double-blind method$/ or single-blind method$.mp
7. (random$ or RCT or RCTs).tw.
8. (controlled adj5 (trial$ or stud$)).tw.
9. (clinical$ adj5 trial$).tw.
10. ((control or treatment or experiment$ or intervention) adj5 (group$ or subject$ or patient$)).tw.
11. ((singl$ or doubl$ or tripl$ or trebl$) adj5 (blind$ or mask$)).tw.
12. (assign$ or allocat$).tw.
13. controls.tw.
 | 1. 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21
 |
| Outcome | 1. (risk of fall$ or fall$).mp.
2. exp Accidental Falls/
3. preventing fall$.mp.
4. fall$ prevention.mp.
5. exp Accidents, Home/mo, pc [Mortality, Prevention & Control]
 | 1. 23 or 24 or 25 or 26 or 27
 |
|  | 1. effectiveness.tw.
2. (evaluation or program$ evaluation).tw.
3. assessment.mp. or assess$.tw.
4. efficacy.mp. or efficiency.tw.
 | 1. 29 or 30 or 31 or 32
2. 4 and 8 and 22 and 28 and 33
 |

**Supplementary Table S2. Detail of the papers excluded after full text review.**

| **Reason for exclusion** | **study** |
| --- | --- |
| Not reported falling as primary outcome | 1. Greiman L, et al. 2022
2. Nguyen AT, et al. 2020
3. Wilson N, et al. 2017
4. M. D. Keall, et al. 2017
5. Pega F, et al. 2016
6. Wyman JF, et al. 2007
7. Gitlin LN, et al. 2006
8. Sweeney MA and Chiriboga DA. 2003
 |
| Not randomized controlled trials | 1. Ahmad Ainuddin H et al, 2023
2. Greiman L, et al. 2022
3. Nguyen AT, et al. 2020
 |
| Home modification program < 75%  | 1. Pip A Logan, et al. 2021
2. Tan PJ, et al. 2018
3. M. Palvanen, et al. 2013
4. M. R. Hendriks, et al. 2008
5. N. M. Sjosten, et al. 2007
6. M. R. Hendriks, et al. 2005
7. R. G. C. L. Clemson, et al. 2004
8. E. Lightbody, et al. 2002
9. L. Day, et al. 2002
10. N. Peel, et al. 2000
 |
| Not related to aging population | 1. M. D. Keall, et al. 2021
2. M. D. Keall, et al. 2015
 |
| No full paper in English version | 1. Jo, et al. 2018
 |

**References to studies excluded from this review.**

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2. Nguyen AT, Somerville EK, Espín-Tello SM, Keglovits M, Stark SL. A Mobile App Directory of Occupational Therapists Who Provide Home Modifications: Development and Preliminary Usability Evaluation. *JMIR Rehabil Assist Technol*. 2020;7(1):e14465. Published 2020 Mar 30. doi:10.2196/14465.
3. Wilson N, Kvizhinadze G, Pega F, Nair N, Blakely T. Home modification to reduce falls at a health district level: Modeling health gain, health inequalities and health costs. PLoS One. 2017;12(9):e0184538. Published 2017 Sep 14. doi:10.1371/journal.pone.0184538.
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8. Sweeney MA, Chiriboga DA. Evaluating the effectiveness of a multimedia program on home safety. Gerontologist. 2003;43(3):325-334. doi:10.1093/geront/43.3.325
9. Ahmad Ainuddin H, Romli MH, S. F. Salim M, Hamid TA, Mackenzie L (2023) A validity study to consult on a protocol of a home hazard management program for falls prevention among community dwelling stroke survivors. PLOS ONE 18(1): e0279657. <https://doi.org/10.1371/journal.pone.0279657>
10. Logan, P. A., Horne, J. C., Gladman, J. R. F., Gordon, A. L., Sach, T., Clark, A., Robinson, K., Armstrong, S., Stirling, S., Leighton, P., Darby, J., Allen, F., Irvine, L., Wilson, E. C. F., Fox, C., Conroy, S., Mountain, G., McCartney, K., Godfrey, M., & Sims, E. (2021). Multifactorial falls prevention programme compared with usual care in UK care homes for older people: multicentre cluster randomised controlled trial with economic evaluation. BMJ (Clinical research ed.), 375, e066991. <https://doi.org/10.1136/bmj-2021-066991>
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12. Palvanen M, Kannus P, Piirtola M, Niemi S, Parkkari J, Järvinen M. Effectiveness of the Chaos Falls Clinic in preventing falls and injuries of home-dwelling older adults: a randomised controlled trial. Injury. 2014;45(1):265-271. doi:10.1016/j.injury.2013.03.010
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**Supplementary Table S3. TIDieR table.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Brief name** | **Why** | **Material** | **Procedure** | **Who provide** | **How** | **Where** | **When and what** | **Tailoring** | **Modification** | **Planed** | **Actual** |
| **Author** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** | **E** | **C** |
| Susan stark, et al.2021 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗷 | 🗷 | 🗹 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | Y | 🗷 |
| Cockayne S, et al. 2021 | 🗹 | 🗹 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗷 | 🗹 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 |
| Chu MM, et al. 2017 | 🗹 | 🗷 | 🗷 | 🗷 | 🗹 | 🗹 | 🗹 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 |
| Tomoko K, et al. 2015 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗷 | 🗷 | 🗹 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 |
| Pighills AC, et al. 2011 | 🗷 | 🗷 | 🗹 | 🗹 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 |
| la Grow MRS, et al. 2006 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗹 | 🗷 | 🗷 | 🗹 | 🗹 | 🗹 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 |
| Campbell AJ, et al. 2005 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗹 | 🗷 | 🗷 | 🗹 | 🗹 | 🗹 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 |
| Nikolaus T and Bach M. 2003 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 |
| Pardessus V, et al. 2002 | 🗷 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗹 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 |
| Stevens M. 2001 | 🗷 | 🗷 | 🗹 | 🗷 | 🗹 | 🗹 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗹 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 |
| Gerson LW, et al. 2005 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗹 | 🗹 | 🗹 | 🗹 | 🗹 | 🗹 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 |
| Cumming RG, et al. 1999 | 🗷 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗷 | 🗹 | 🗷 | 🗷 | 🗷 |

E: Experimental group, C: Control group, 🗷 Not Achieving, 🗹 Achieving