

Augmented Reality, Pervasive, and Location-Based Game Approaches for Older Adults: A Scoping Review

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01. REVIEW SNAPSHOT



This scoping review maps a growing but fragmented evidence base, with stronger findings for movement-related and feasibility outcomes than for validated HRQoL and loneliness outcomes.

02. BACKGROUND

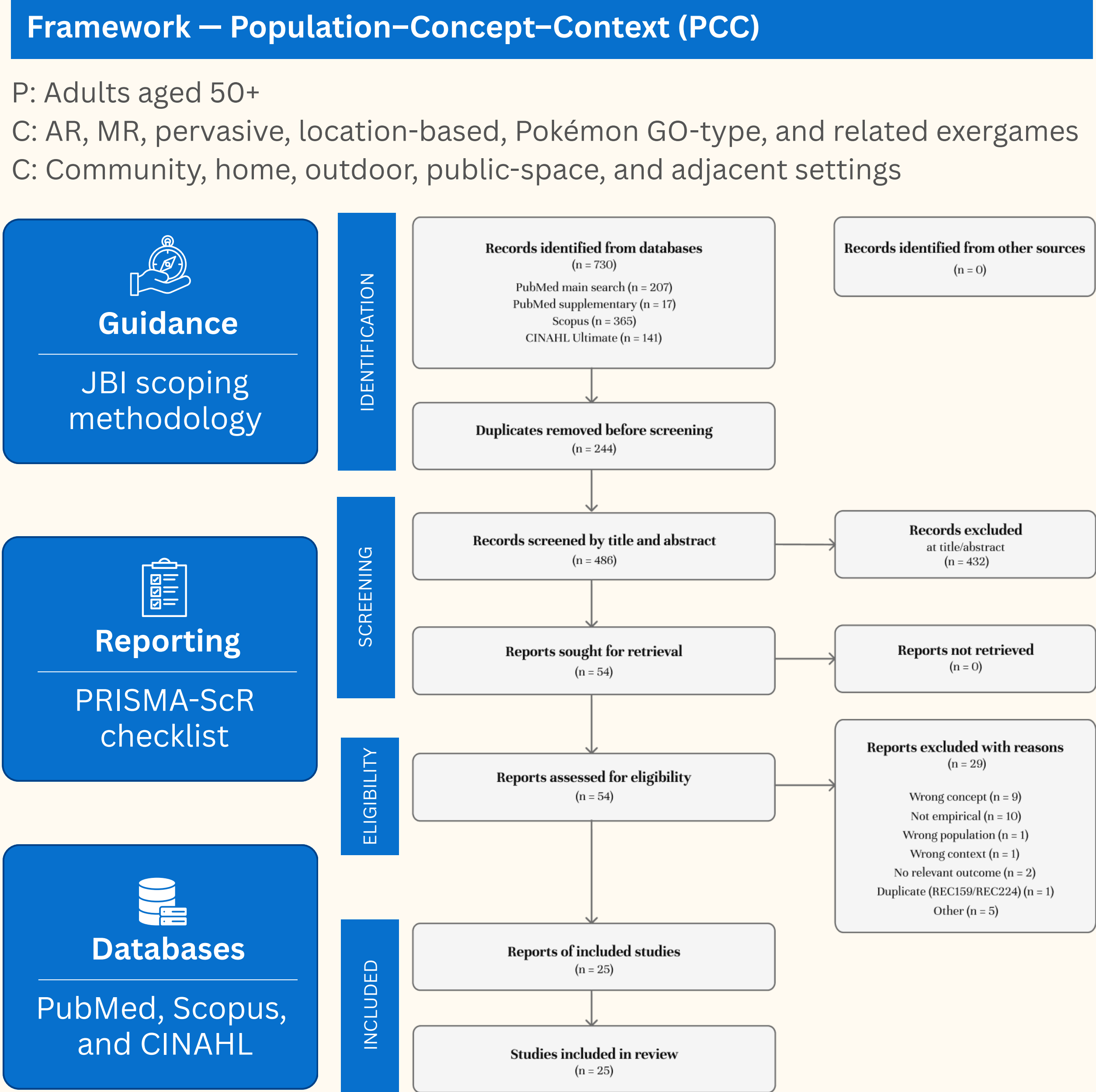
Older adults need accessible ways to remain physically active and socially connected. AR, mixed reality, pervasive games, and location-based games may support real-world movement, familiar places, and social interaction.

03. OBJECTIVE AND RESEARCH QUESTIONS

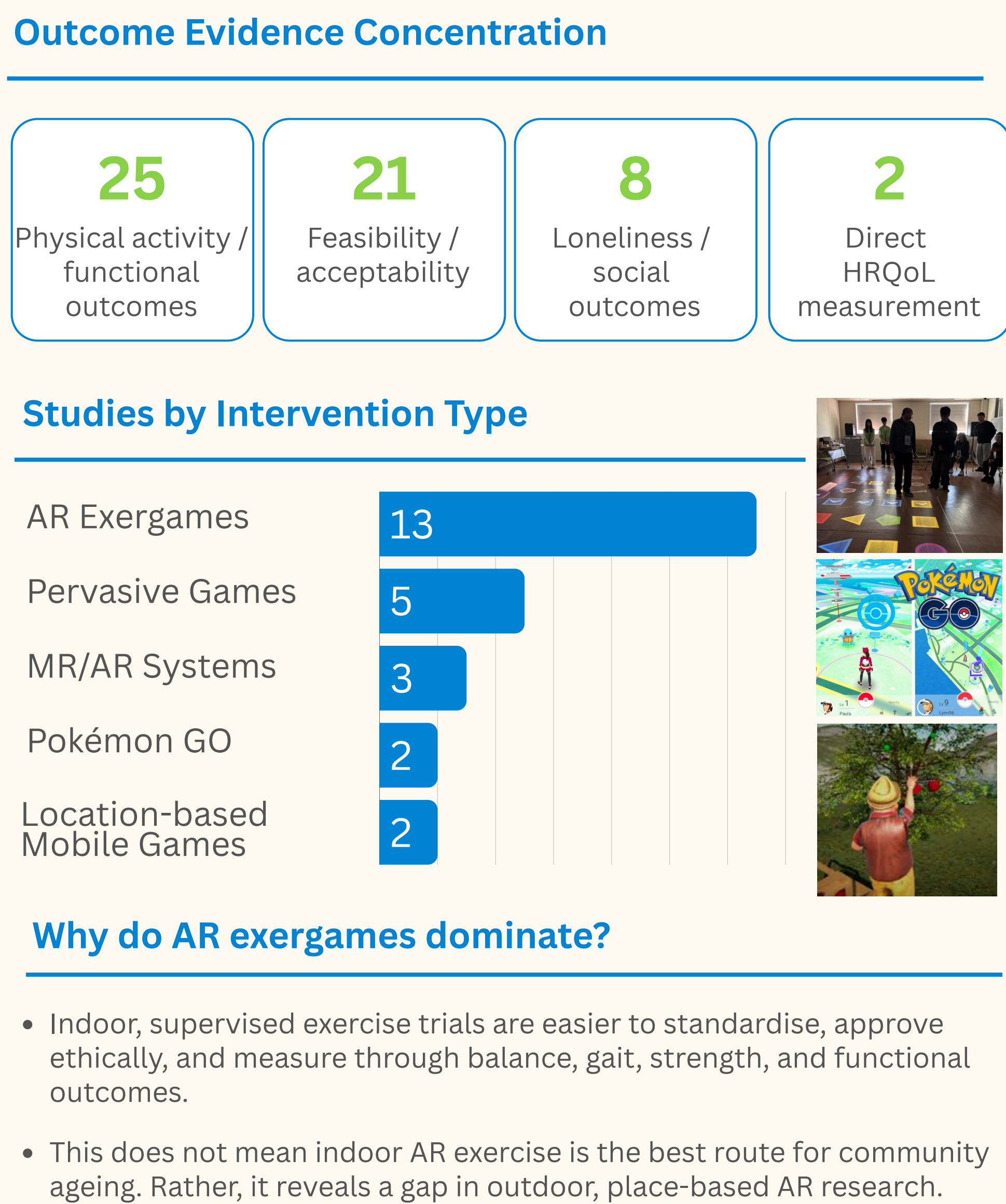
To map empirical evidence on AR, MR, pervasive, location-based, Pokémon GO-type, and related exergame approaches involving older adults, and to identify implications for future community-based AR intervention design.

- RQ1 | Intervention types & design features**
What intervention types and design features have been studied?
- RQ2 | Reported outcomes**
What outcomes have been reported regarding physical activity, HRQoL, loneliness, feasibility, acceptability, and user experience?
- RQ3 | Methodological gaps & implications**
What are the methodological characteristics, evidence gaps, and implications for designing future community-based AR interventions, feasibility testing, and controlled trials?

04. METHODOLOGY



05. EVIDENCE MAP



06. KEY FINDINGS

- AR exergames dominate**, mainly targeting balance, gait, fitness, and exercise acceptability.
- Community transfer is limited**, as many studies were conducted in supervised or indoor settings.
- Place-based games better reflect participation**, through walking and community engagement.
- Social benefits are mostly indirect**, with few validated loneliness measures.
- Acceptability is conditional**, shaped by comfort, calibration, cognitive load, and support.
- Long-term effects remain unclear**, due to short follow-up and pilot designs.

07. DESIGN IMPLICATIONS



08. LIMITATIONS

- High study heterogeneity
- Adjacent settings included for design relevance
- Single-reviewer screening with AI-assisted support
- No formal risk-of-bias appraisal or effect-size synthesis

09. CONCLUSION

AR, pervasive, and location-based game approaches show promise for supporting older adults' movement and engagement, but current evidence remains uneven. Findings are strongest for feasibility and physical outcomes, while validated HRQoL and loneliness evidence remains limited.

- Design lesson:** Prioritise safety, simplicity, familiar places, adaptable intensity, and optional social interaction.
- Next step:** Test whether place-based AR can sustain physical activity, social connection, and HRQoL beyond the novelty period.