Review of “A thematic review on therapeutic toys and games for the elderly with Alzheimer’s disease” (You, 2024)

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Key highlights:

- This systematic review employs a data-driven method to categorize therapeutic toys and games for older adults with Alzheimer’s disease.
- Four themes were identified through a thematic analysis of 25 included articles: detection and evaluation, intervention, toy/game categories, and design characteristics.
- From 2018 to 2023, China was the leading country in focusing on studies of therapeutic toys and games for older adults with AD.
- During the same period, most therapeutic toys and games for older adults with AD focused on the assessment and intervention of cognitive functions.

This paper addresses the critical issue of an aging, global population and the consequent rise in neurodegenerative disorders, particularly Alzheimer’s disease (AD). AD significantly impacts cognitive and behavioral functions, severely diminishing the quality of life for the elderly. This research aims to (1) investigate the effectiveness of therapeutic toys or games for older adults with AD from 2018 to 2023 and (2) identify the key design factors of these inventions which may have contributed to the emotional, cognitive and well-being of the target population.

The researchers employed a thematic review framework to conduct a systematic review of the literature from two primary databases: Scopus and Web of Science. The selection criteria targeted publications between 2018 and 2023 that explored the role of therapeutic toys and games in managing Alzheimer’s disease. Using ATLAS.ti 23, the team performed a thematic analysis to extract key themes and patterns from the selected articles. Thematic analysis is a method for extracting meaningful categories by identifying patterns from qualitative data (Clarke & Braun, 2017). Twenty-five papers met the inclusion criteria and covered the four main themes:

Detection and Evaluation: Therapeutic toys and games play a pivotal role in the early detection and evaluation of Alzheimer's disease, focusing on assessing cognitive abilities like memory, attention, and problem-solving. Early detection facilitates timely interventions, crucial for managing disease progression.
Intervention: This includes a variety of toys and games designed to improve cognitive and emotional wellbeing among AD patients. These tools aim to maintain or improve cognitive functions and address neuropsychiatric symptoms through stimulating activities. The interventions have been shown to bolster cognitive function and emotional well-being.

Toy/Game Category: The study classifies the therapeutic toys and games into categories such as cognitive stimulation games, physical exercise games, and sensory stimulation toys, each designed to meet specific therapeutic needs including memory enhancement, sensory engagement, and physical activity.

Design Characteristics: Effective design of therapeutic toys and games for AD patients incorporates factors like ease of use, relevance to daily life, level of engagement, and potential to foster social interaction. The designs also prioritize sensory stimulation and emotional connection, essential for the well-being of AD patients.

Furthermore, the paper employs a metric based on word frequency analysis from the full texts of the twenty-five articles to determine the primary focus of the technology, with common terms including: “cognitive”, “game”, “test”, “training”, and “intervention”; the analysis also tracks trends across countries and journals.

The paper concludes that therapeutic toys and games hold significant potential to enhance the quality of life for individuals with Alzheimer's disease. From 2018 to 2023, China was the leading country in focusing on therapeutic toys and games for older adults with AD (Ge et al., 2021; Zheng, et al., 2022). Studies on these technologies are primarily published in the Journal of Clinical Medicine, followed by the Journal of Alzheimer’s Disease and Frontiers in Psychology. The study identifies a gap in the rehabilitation of neuropsychiatric symptoms and the comprehensive development of these tools, proposing a conceptual framework for future research aimed at designing and implementing therapeutic toys and games specifically for older adults with AD. The findings underscore the need for more targeted research into the use of therapeutic toys and games in rehabilitation settings, highlighting their potential role in the non-pharmacological management of Alzheimer's disease and their ability to enhance cognitive functions, manage neuropsychiatric symptoms, and improve patient engagement and emotional well-being.

This article explores and categorizes therapeutic toys and games for older adults with AD in recent years (2018-2023). Given the trend towards non-pharmacological interventions for individuals with AD, the topic is particularly relevant. The study introduces recent interventions on the cognitive dimensions of the target population and the global trend in developing such technologies, including high-tech interventions like virtual reality games (de Vries et al., 2018) and robotic pets (Zygouri et al., 2020). However, the quality of the article could be improved in several areas:

While the review used Scopus and Web of Science databases, considering the keyword relevance to assistive technology, inclusion of additional databases such as IEEE Xplore, PubMed, and CINAHL might provide a more comprehensive view. Also, it would be beneficial if the article provided the keyword string used in the literature search to assist other researchers.
interested in replicating this study. Furthermore, the study provided a detailed description about
the procedure, but could be strengthened by including a second reviewer and reporting the inter-
reviewer agreement to minimize any bias or errors during the screening process.

In terms of the results, the thematic analysis effectively categorized therapeutic toys and
games in a systematic manner. However, the omission of effect sizes for included studies might
diminish the utility of the systematic review for policymakers. Furthermore, while a metric based
on word frequency can be straightforward, it may present some issues. For instance, the top five
high-frequency words — “cognitive,” “game,” “intervention,” “test,” and “memory” — might not
effectively contribute to the categorization of the domains. The quality of the article could be
enhanced if a table with frequency of these words was provided.

In conclusion, the study conducted a systematic review with a data-driven method in
categorizing therapeutic toys and games for older adults with Alzheimer’s disease. The study
included 25 papers while summarizing recent trends and potential directions in assistive
technologies. However, readers should be cautious when interpreting the results due to the
potential quality issues mentioned above.

![Therapeutic toys/games for the elderly with AD](image)

The conceptual framework proposed by the authors (You et al., 2024)

**For further reading:**

297-298.

reality balance training for elderly: Similar skiing games elicit different challenges in

Ge, R., Wang, Z., Yuan, X., Li, Q., Gao, Y., Liu, H., ... & Bu, L. (2021). The effects of two
game interaction modes on cortical activation in subjects of different ages: A functional


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