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Why not try a home-based exercise? a bibliometric analysis

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Zhou, T; Zhang, SN; Liu, SQ; Yu, JE.

Corresponding author:
Tong ZHOU

zhou941002@korea.ac.kr

Author Affiliation:
Korea University.

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INTRODUCTION

Review question / Objective 1) What is the developmental trajectory of home-based exercise, including key words, authors, countries, and timelines? 2) What are the hot research topics in home-based exercise? 3) What factors influence the cognition and participation of home-based exercise? 4) What are the advantages and prospects of home-based exercise?

Background Given the increasing importance of home-based exercise in improving public health, it is crucial to understand its role in reducing the public health burden, a key indicator of healthcare costs. Research has shown that physical inactivity has directly cost the global healthcare system \$53.8 billion since 2013 (Ding et al., 2016). More alarmingly, the global health burden due to severe physical inactivity continues to rise (Katzmarzyk et al., 2022), with a prevalence of 27.5% among adults attributed to physical inactivity in 2016 (Guthold et al., 2018). The consequences of this trend, if left unaddressed, are projected to be

severe. It is estimated that if the global prevalence of physical inactivity does not significantly improve, nearly 500 million new cases of preventable non-communicable diseases (NCDs) and \$520 billion in associated healthcare costs will be incurred between 2020 and 2030 (Santos et al., 2023). These staggering figures underscore the urgency of increasing physical activity levels. In this context, home-based exercise, as an easily accessible form of fitness, demonstrates enormous potential. It not only effectively improves the health of the entire population but also significantly reduces healthcare costs. The advantage of home-based exercise lies in its convenience and accessibility, allowing more people to easily incorporate physical activity into their daily lives, thereby reducing health problems caused by lack of exercise.

Rationale Bibliometrics is a commonly used methodological tool in research fields, enabling scholars to quickly grasp the existing research on home-based exercise. Bibliometrics employs clustering algorithms and normalization algorithms

to reveal trends, topics, and keyword information within a research domain (Donthu et al., 2021). By analyzing citations, authors, journals, and other bibliographic information, it helps researchers understand the developmental trajectories and academic contributions in a given field (Zhou, 2023). Unlike systematic reviews and meta-analyses, bibliometrics does not need to consider the potential adverse effects of heterogeneity and publication bias in existing studies (Junni et al., 2013). Through the analysis of a large body of literature, bibliometrics employs quantitative methods to summarize the bibliometric and knowledge structure of a field by examining the social and structural relationships between its components, overcoming the limitations of systematic reviews (Donthu et al., 2021).

METHODS

Strategy of data synthesis This study is a scoping literature review, and the studies included were identified through searches of publicly available literature. Based on the research objectives, we searched the core database Web of Science (WOS). As a comprehensive platform containing high-quality literature, WOS helps ensure the reliability and credibility of the articles.

Eligibility criteria None reported.

Source of evidence screening and selection Subsequently, two researchers independently confirmed the inclusion and exclusion criteria for each study. The inter-coder consistency was 100%.

Data management No data.

Reporting results / Analysis of the evidence This study systematically explored the multidisciplinary field of home-based exercise, encompassing sports medicine, rehabilitation medicine, behavioral sciences, and public health. Key research hotspots identified include fall risk prevention for the elderly, rehabilitation for chronic disease patients, and the impact of exercise on mental health. The United States, Australia, Canada, and the United Kingdom host the most active and influential research institutions in this field, reflecting the high importance these countries place on home-based exercise in public health. Through keyword clustering and burst detection, emerging hotspots such as "digital monitoring of home-based exercise" and "alleviation of chemotherapy side effects" were identified, guiding future directions in this field. The main factors influencing the perception and participation

in home-based exercise involve personal factors, social environment, economic conditions, healthcare systems, and exercise program design, indicating that a multi-faceted approach is needed to increase public participation.

Language restriction English.

Country(ies) involved Korea.

Keywords home-based exercise; bibliometric; physical activity; quality of life; rehabilitation; public health.

Contributions of each author

Author 1 - Tong Zhou - T.Z, contributed to conception and design of the study. T.Z reviewed the literature and wrote the first draft of the manuscript. T.Z contributed to manuscript revision, read, and approved the submitted version.

Email: zhou941002@korea.ac.kr

Author 2 - Shunan Zhang - S.N.Z T.Z, contributed to conception and design of the study. S.N.Z contributed to manuscript revision, read, and approved the submitted version.

Author 3 - Siqi Liu - S.Q.L contributed to conception and design of the study. S.Q.L contributed to manuscript revision, read, and approved the submitted version.

Author 4 - Jieun Yu - J.E.Y contributed to conception and design of the study. J.E.Y contributed to manuscript revision, read, and approved the submitted version.