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Impact of pickleball on the mental health of middle-aged and older adults: A systematic review protocol

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 3 February 2026 and was last updated on 3 February 2026.

INTRODUCTION

Review question / Objective The primary objective of this systematic review is to evaluate the impact of pickleball participation on the mental health outcomes of middle-aged and older adults. Specifically, the review aims to: (1) assess the effects on clinical psychological indicators (e.g., depression, anxiety), positive psychological indicators (e.g., life satisfaction, well-being), and social psychological indicators (e.g., loneliness, social capital); (2) analyze the internal mechanisms, such as serious leisure and social capital, by which pickleball improves mental health; and (3) assess the quality of existing evidence to inform future public health interventions.

Rationale Global population aging presents profound challenges for mental health. While

physical exercise is a recognized intervention, adherence among older adults is often limited by physical barriers or lack of peer support. Pickleball has emerged as a low-intensity, highly social sport with rapid growth. However, existing research on its mental health impacts is fragmented across diverse disciplines (sports psychology, geriatrics, public health), and previous reviews have failed to fully synthesize the unique sociopsychological attributes (e.g., serious leisure, social capital) relevant to aging populations. This review is necessary to integrate these scattered findings and provide a scientific basis for promoting pickleball as a "healthy aging" intervention.

Condition being studied Mental health conditions and psychological well-being in the aging population, specifically focusing on depression, anxiety, loneliness, life satisfaction, and social connectedness.

METHODS

Participant or population Middle-aged and older adults, defined as individuals with an average age or age range ≥ 50 years. The review includes both community-dwelling healthy older adults and those with specific chronic conditions (e.g., cancer survivors), provided the study focuses on the relevant age demographic. Studies focusing solely on adolescents, college students, or cross-age groups without subgroup data for older adults are excluded.

Intervention Participation in pickleball. This encompasses various forms of engagement, including leisure play, recreational competition, structured exercise programs, or competitive tournaments. Both acute (single session) and chronic (long-term participation) interventions are included.

Comparator The review considers studies with various comparator groups, including non-active controls (sedentary lifestyle), wait-list controls, or groups participating in other forms of physical activity (e.g., walking, tennis, yoga). Single-arm studies (pre-post design) without a specific control group are also eligible for inclusion to assess feasibility and pre-post changes.

Study designs to be included Peer-reviewed journal research papers utilizing the following designs: Randomized Controlled Trials (RCTs), quasi-experimental studies, cohort studies, cross-sectional surveys, mixed-methods studies, and feasibility/pilot studies. Reviews, editorials, commentaries, and conference abstracts are excluded.

Eligibility criteria (1) Language: Articles must be published in English; (2) Outcomes: Must report at least one quantitative or qualitative indicator related to mental health; (3) Exclusions: Studies solely focusing on physiological metrics or injury mechanisms without psychological correlates; studies on other racket sports where pickleball data cannot be isolated.

Information sources Electronic databases (PubMed, Web of Science, Scopus) and manual screening of reference lists from included articles and relevant systematic reviews.

Main outcome(s) Subjective Well-being and Life Satisfaction (measured by scales such as SWLS, WHO-5); Depression and Anxiety levels (measured by CES-D, GAD-7, etc.); and Loneliness (measured by UCLA Loneliness Scale). Outcomes are

assessed either at a single time point (cross-sectional) or pre-and post-intervention.

Quality assessment / Risk of bias analysis Methodological quality will be assessed using tools appropriate for each study design: (1) For observational/cross-sectional studies, the modified Newcastle-Ottawa Scale (NOS) will be used to assess selection, comparability, and outcome; (2) For Randomized Controlled Trials (RCTs), the Cochrane Risk of Bias 2.0 (RoB 2) tool will be used to assess bias across five domains. Studies will be categorized as high, fair, or low quality based on these assessments.

Strategy of data synthesis Due to the expected heterogeneity in study designs (predominantly cross-sectional) and measurement tools, a meta-analysis is not planned. Instead, a narrative synthesis will be conducted. Findings will be tabulated and synthesized according to key themes: (1) Impact on positive mental health (well-being, satisfaction); (2) Mitigation of negative symptoms (depression, loneliness); and (3) Social mechanisms (social capital, serious leisure). Effect sizes (correlation coefficients, regression betas) will be reported where available to indicate the strength of associations.

Subgroup analysis Subgroup analyses will be conducted based on: (1) Age groups (e.g., middle-aged vs. oldest-old); (2) Gender (male vs. female social integration); and (3) Participation level (casual vs. serious/tournament players), as data permits.

Sensitivity analysis Not applicable, as a meta-analysis is not planned.

Language restriction English.

Country(ies) involved China.

Keywords Pickleball; Middle-aged and older adults; Mental health; Systematic review; Serious Leisure; Social Capital; Healthy Aging.

Contributions of each author

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