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Viable Strategies for Enhancing Golf Performance Through Music: A Mixed-Methods Systematic Review

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Preliminary searches.

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 30 April 2025 and was last updated on 30 April 2025.

INTRODUCTION

Review question / Objective This review adopts a mixed-methods systematic review approach, integrating quantitative data and qualitative insights to comprehensively understand the potential mechanisms and practical effects of music interventions on golf performance. The study not only examines the effectiveness of music interventions but also aims to distill feasible and actionable strategies that can provide evidence-based, directly applicable guidance for sport psychology consultants, golf coaches, and individual athletes. Through this research, we aim to fill existing gaps in the field of golf-related psychological regulation and lay the groundwork for future exploration of optimized music applications in high-level competitive settings.

Condition being studied During the long and high-intensity process of a golf tournament, golfers face significant physiological and psychological challenges. Existing research has shown that cortisol levels tend to rise during competition, while the testosterone-to-cortisol ratio decreases for most of the duration. This hormonal response may not only suppress immune function but also further impair subsequent athletic performance. Negative physiological and psychological states such as stress, anxiety, and fatigue are almost inevitable during golf competitions, and these factors have been shown to significantly affect skill execution and overall performance. Moreover, as a sport that heavily relies on concentration and fine motor control, golf makes athletes more susceptible to external environmental changes and emotional fluctuations compared to those in dynamic, fast-paced, and noisy sports such as football or basketball.

METHODS

Search strategy This study systematically searched multiple electronic databases, including

Web of Science, PubMed, Scopus, and EBSCOhost (covering SPORTDiscus and Psychology and Behavioral Sciences Collection), as well as PsycINFO. Additionally, Google Scholar was used to search for grey literature, aiming to include all relevant studies as comprehensively as possible.

Participant or population The participants were healthy golf athletes.

Intervention The intervention involved music, which could take the form of experimental music stimulation under laboratory conditions or non-experimental interventions in real-world settings (e.g., experiential or empirical applications).

Comparator The study included a control condition, which could be no music intervention under laboratory conditions, other types of interventions, or non-experimental comparisons in practical settings (e.g., experiential or empirical approaches).

Study designs to be included The outcomes reported included any indicators of golf performance, encompassing but not limited to physical, psychological, cognitive, technical, tactical, or decision-making aspects. The studies had to be empirical in nature, with original data reported, and could include quantitative, qualitative, or mixed-methods designs.

Eligibility criteria No restrictions were set on the publication date. Exclusion criteria included non-empirical publications (e.g., golf magazines, pictorials, news articles) and non-English literature.

Information sources Including Web of Science, PubMed, Scopus, EBSCOhost (covering SPORTDiscus and Psychology and Behavioral Sciences Collection), PsycINFO, and Google Scholar.

Main outcome(s) Current evidence indicates that music interventions have positive effects on alleviating fatigue, enhancing attention and motivation, maintaining positive emotions, and optimizing technical performance, with qualitative and quantitative studies reaching generally consistent core conclusions. The commonly used intervention approaches include music listening and music imagery, although only the effects of music listening have been sufficiently validated through quantitative research. Compared to personally preferred music, genres such as jazz and classical music show more stable positive effects during interventions. Interventions implemented either before or during the task can yield beneficial outcomes.

Data management All references in this review were imported into EndNote 20 for screening. During the data extraction process, Microsoft Excel spreadsheets were used to systematically extract data from the included studies.

Quality assessment / Risk of bias analysis This review used Crowe's Critical Appraisal Tool (CCAT) to systematically assess the quality of the included studies. The tool comprises eight evaluation domains: Preliminaries, Introduction, Design, Sampling, Data Collection, Ethical Matters, Results, and Discussion. Each domain has a maximum score of 5 points, for a total possible score of 40 points. To ensure the methodological quality of the included studies, a threshold of 60% of the total score (24/40) was set. Studies scoring below this threshold were considered methodologically inadequate and were excluded from the review.

Strategy of data synthesis The extracted information covered the following key variables: year of publication, research objectives, study participants (including sample size, gender, age, and level of expertise), intervention methods, control conditions, music type, duration of intervention, study design, outcomes, and main findings. Based on this table, data processing and synthesis were carried out in three main steps: First, identifying common trends and themes; Second, comparing evidence across quantitative studies; Third, validating qualitative findings with quantitative evidence.

Subgroup analysis By grouping the key variables of the studies, we identified trends in the effects of music interventions under different conditions. Based on the positive and null results from each group of studies, we summarized the effects of music listening on golf performance, particularly in terms of attention enhancement and emotion regulation.

Sensitivity analysis By excluding studies with lower methodological quality, small sample sizes, or missing data, we observed whether the overall conclusions changed significantly.

Language restriction Exclude non-English articles.

Country(ies) involved Malaysia and China.

Keywords Music; Pressure; Anxiety; Fatigue; Attention; Motivation; Golf skill.

Dissemination plans Published in journals.

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