# A Systematic Review of the Effect of Music on Sprinting

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## INTRODUCTION

Music is recognised as a tool to enhance athletic performance, including sprinting, a high-intensity, anaerobic sport relying on the phosphagen system, in contrast to aerobic endurance activities (Kenney et al., 2022). Music has been observed to modulate arousal, reduce fatigue, and boost motivation, potentially optimising performance through rhythmic alignment(Ballmann, 2021). Synchronous music, matching stride cadence, could improve biomechanical efficiency and sprint performance (Simpson & Karageorghis, 2006). Arousal Regulation Theory suggests music achieves optimal arousal for sprinting, while attentional focus theory indicates it distracts from fatigue (Goul & Udry, 1994). However, some studies found music demonstrate no significant on anaerobic performance (Atan, 2013). With 88.7% of collegiate athletes using music precompetition, underscoring a widespread integration of music into pre-performance routines (Ellingson, 2003). This systematic review aims to evaluate the effects of music versus no-music conditions on sprinting performance, physiological responses, and psychological outcomes.



Study	Sample size	Age Height	Music condition	Sprint Distance	Rating of Perceived Exertion	Heart Rate	Fastest Sprint Time
Eliakim et al.	N=12 (6f <i>,</i> 6m)	16±0.5 185.9 ±0.9 cm	Listening to motivational music during the repeated Sprint Ability Test, no Music during the repeated Sprint Ability Test	Participants completed twelve sprint trials each 20 meters long.	Motivational Music: 7.1±0.7 No Music: 7.0± 1.0	Heart Rate max: Music 179.9±8.5, No Music 181.4±6.3	Motivational Music: 3.17 No music control: 3.23s
				Participants completed	No Music: 12.41 ± 1.97, Music During Sprint: 11.82 ± 2.22, Music During Warm-up: 11.73 ± 2.43	Heart Rate max	Preferred music during sprint: 3.28s
Jebabli et al.	N=19 f	22.1± 1.2 1.8 ± 0.1 m	Listening to preferred music during the sprint test, listening to preferred music during the warm-up of the sprint test	five sprint trials, each 20 meters long.		Sprint Music 183.5 ± 10.5, Warm-Up Music 180.4 ± 7.4, No Music 178.7 ± 7.5	Preferred music during Warm-Up: 3.45s No Music control: 3.93s

### METHODOLOGY

#### CONCLUSIONS

An electronic search of CINAHL Plus, PubMed and Google scholar was performed to April 2025. Studies were excluded if they: (1) involved animal subjects; (2) were abstracts, books, letters, case reports, or review articles; (3) lacked sufficient methodological information; (4) were not published in English; or (5) did not compare sprinting performance under music and no-music conditions at any stage of the trial. Data extracted from studies included sprint times ,blood lactate ,heart rate, rated perceived exertion, and psychological responses. The Downs and Black (1998) checklist was used to assess the risk of bias within included studies. Statistical pooling of the data was not undertaken due to the nature of the research question and the systematic review approach.

Music may enhance sprint performance, reduce exertion, and improve mood, especially when self-selected or motivational. Effects of music are more evident in repeated or longer sprints but vary due to inconsistent methods and limited physiological data. Overall, music shows a modest effect on sprinting performance, but its effects will depend on sprint type, participant fitness, and methodological quality.

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