

The effect of listening to music of different beats on sport performance

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INTRODUCTION

Elite athletes face intense physical and mental demands where stress can harm health and performance. Long term moderate or vigorous aerobic exercise supports physical and mental well-being, but an obsession with improvement can disrupt psychological balance (Hughes & Levy, 2012)

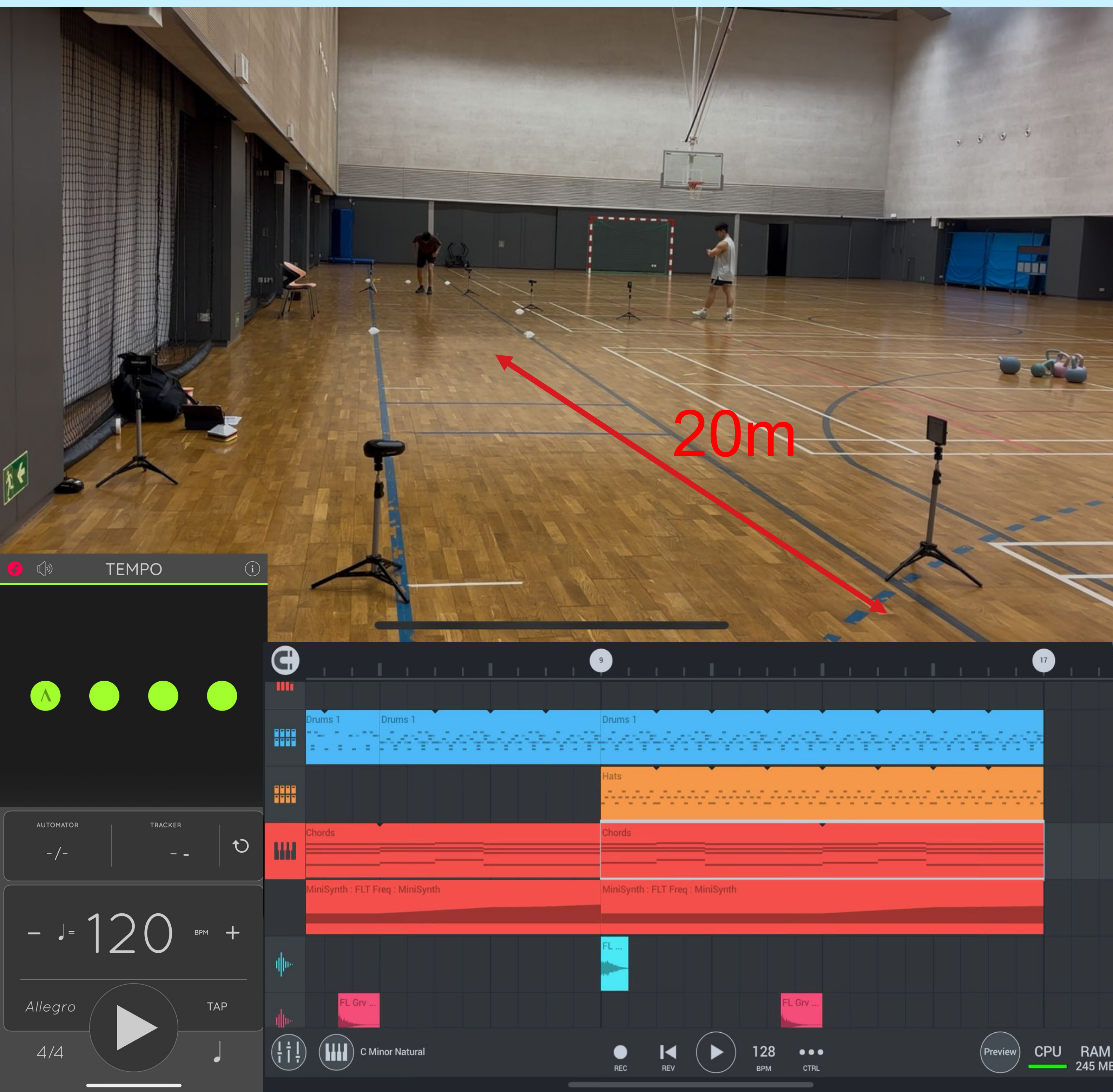
PURPOSE

This study aimed to explore how music tempo affects sprint performance in a repeated sprint sequence (RSS) test. It compared three conditions: No Music (NM), Fast Music (FM) at 120-140 beats per min (bpm), and Slow Music (SM) at 50-100 bpm, The focus was on four key measures: total sprint time (TSS), fastest sprint time (FT), fatigue level (FI), and perceived effort (RPE).

METHODOLOGY

It involved 8 participants split into three different test: NM, FM, and SM. Each group did a 5 x 20-meter RSS test, mimicking the intense, stop-and-go nature of sports like football or basketball. The test measured TSS, FT, FI, and RPE using the Borg scale. Participants sprinted 20 meters five times with 15-second rests between each sprint, in an indoor facility to avoid outside factors like wind or temperature affecting results.

Music tempo was carefully set using software “FL Studio” to ensure FM was at 120 bpm and SM at 50 bpm. Apps like a metronome app double checked the tempo in real time. Music played at a consistent volume through noise-canceling headphones during the test to keep conditions the same for everyone.



RESULTS

Table 1. Sprint Performance Across Groups

Treatment	N	Mean +SD	Std. Error	95% CL Lower Bound	95% CL Upper Bound
NM	8	3.53+0.30	0.10	3.28	3.78
FM	8	3.84+0.41	0.14	3.49	4.19
SM	8	3.82+0.23	0.08	3.62	4.02
Total	24	3.73+0.34	0.07	3.58	3.88
RPE_NM	8	13.75+0.81	0.81	11.81	15.68
RPE_FM	8	14.62+0.65	0.65	13.08	16.16
RPE_SM	8	15.75+0.79	0.79	13.86	17.63
Total	24	14.70+0.45	0.45	13.77	15.64

Note. Sample size(N), No music(NM), Fast music(FM), Slow music(SM), Standard Deviation(SD)

- TSS: FM significantly faster than NM ($p = 0.006$, $d = 0.93$).
- FT: FM also results in a significantly faster sprint time than NM ($p = 0.003$, $d = 0.67$).
- RPE are similar across conditions (NM = 13.75; FM = 14.62; SM = 15.75) with no significant differences.

Table 2. ANOVA results

Compare with different test group

Treatment(A)	Treatment(B)	Mean Difference (I-J)	Std. Error	Sig.	95% CL Lower Bound	95% CL Upper Bound
NM	FM	0.28	0.16	0.283	-0.1392	0.7142
	SM	-0.01	0.16	1.000	-0.4454	0.4079
FM	NM	-0.28	0.16	0.283	-0.7142	0.1392
	SM	-0.30	0.16	0.228	-0.7329	0.1204
SM	NM	0.01	0.16	1.000	-0.4079	0.4454
	FM	0.30	0.16	0.228	-0.1204	0.7329

Note. Sample size(N), No music(NM), Fast music(FM), Slow music(SM), Std. Deviation, Standard Deviation(SD), p-value or significance level (sig.)

- FM shows a significant difference in sprint performance vs NM
- SM vs NM and FM vs SM show no significant differences ($p > 0.05$)

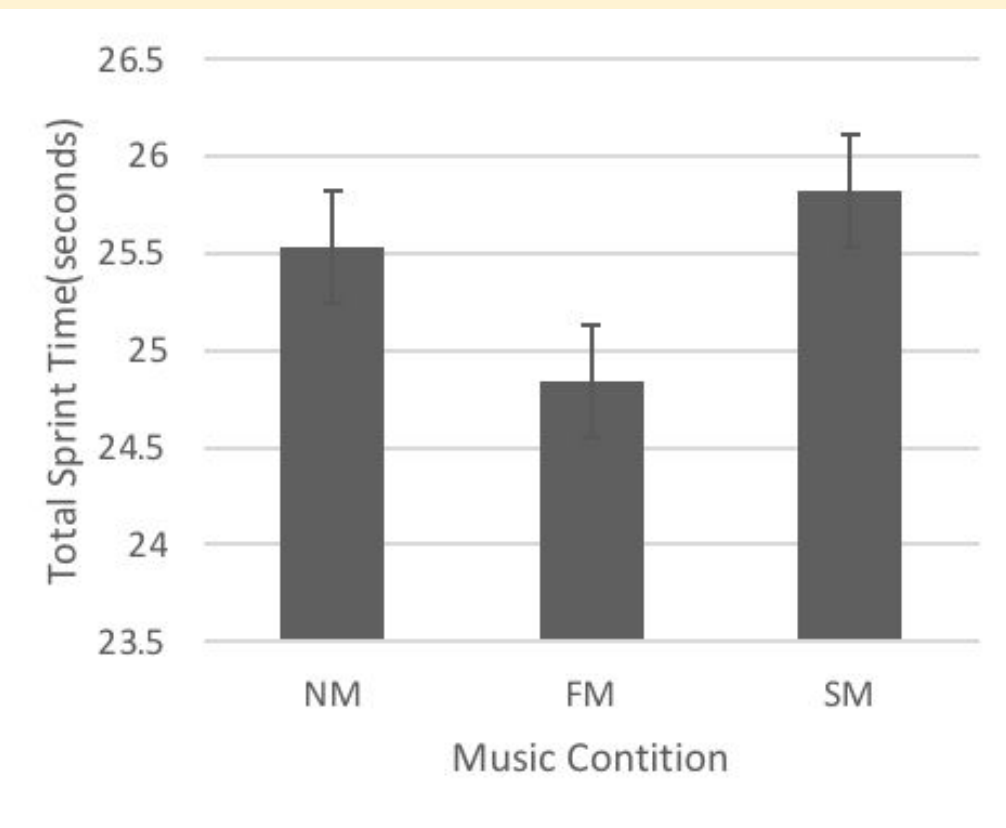


Figure 1. Total Sprint Time

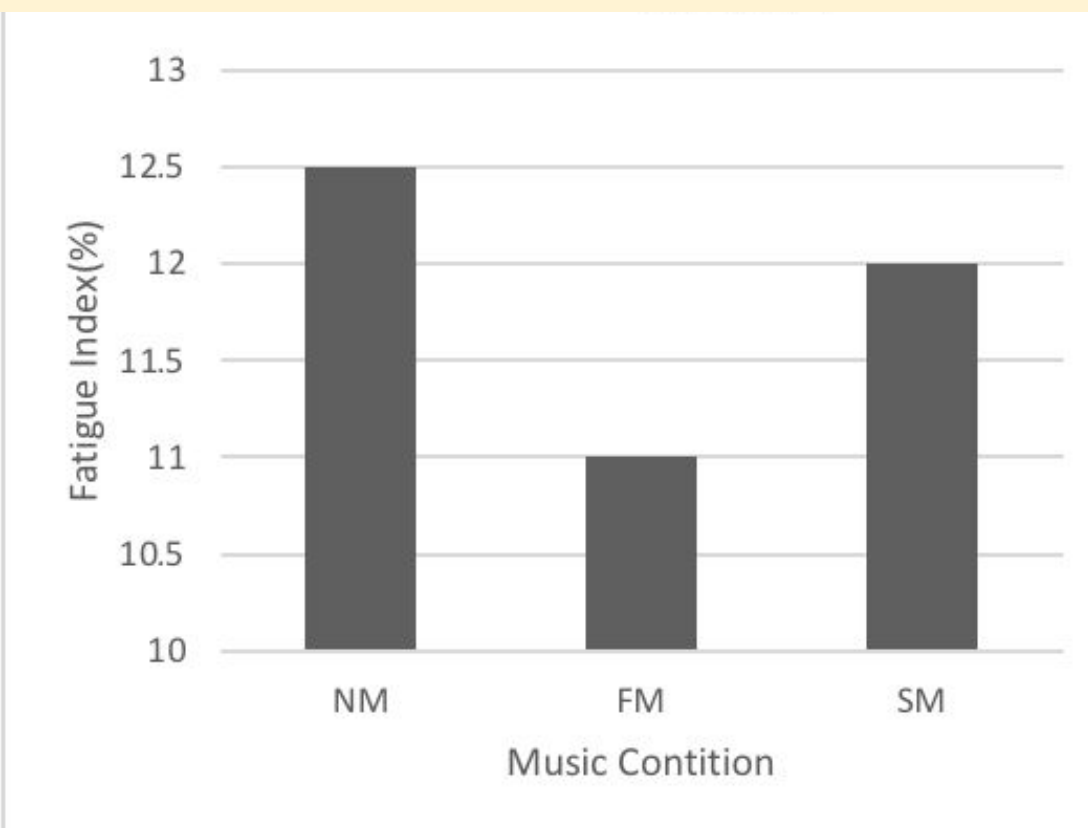


Figure 2. Fatigue Index

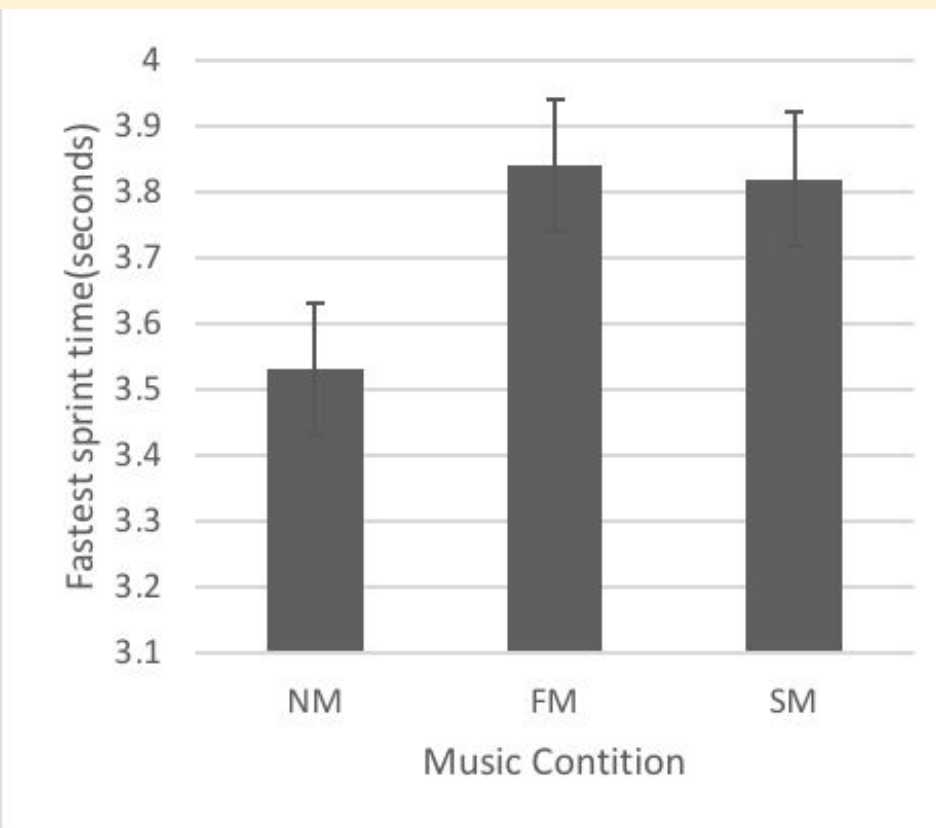


Figure 3. Fastest Sprint Time

CONCLUSION

This study underscores the significant potential of fast tempo music as a practical and accessible tool for boosting high-intensity anaerobic performance, while highlighting the need for comprehensive investigations to fully elucidate its physiological, psychological, and contextual dimensions, ensuring its effective application across the spectrum of athletic endeavors.