

Q: What prompted this research?

A: I noticed a pattern in my running performance. The performance was dependent on whether I had music on or not and also how I shuffled the music. I noticed that if I had music on while running then

- 1.) I don't have to hear myself die (breathing hard)
- 2.) More consistent pace
- 2.) Stay on pace for a longer duration of time
- 3.) and a better workout experience overall.

So I wanted to know if this pattern could be translated to my cubing hobby.

Background:

Speed cubing is my hobby. I will usually do 100 solves in one session as I believe this many solves reveal my true ability... stats. It takes me more than an hour to do 100 solves because I'm scrambling 100 times for those 100 solves! So I find music to be a great motivator. For this research, I have two questions.

1. Is it helpful to cube and listen to music? Helpful is defined as music being the pace setter for cubing → consistency in cubing performance
2. If so, then are there any particular types of music that help more than others?

Methodology:

For control I did a cubing session with no music. Instead of 100 trials I reduced it just 5 trials. Then I calculated the average of 5 (AO5).¹ The AO5 result (as highlighted in pink on page 2) then became my standard for good and bad. Anything faster than 23.38 is coded as good. Anything slower than 23.38 is coded as bad. Everything will be measured in seconds.

Control: no music, AO5 = 23.38 seconds

Good: $X \leq 23.38$

Bad: $X \geq 23.38$

Constants:

- Cuber= me!
- Same cube: Weilong GTS 3M
- Same environment: at my desk in my room
- Scrambles are randomized and each scramble consists of 15 permutations
- Music volume kept at 70%

Experiment:

I did AO5 with every genre of music on my Spotify playlist. In my data (refer to page 2) you will see the playlist name in one column, the genre in the next, and the AO5 in the last column. The last row is a special case where I chose a random song from my "What a bop" playlist, mixture of pop and EDM playlist, and played that song on repeat.

¹ How I do the calculations is by omitting the outliers (best and worst singles) and averaged the remaining three singles in the AO5 session.

Interpretation of data:

Empirically, the *C-pop* and the *one song on repeat* gave me the best outcome. I think the reason for Chinese music is because most of the C-pop has a slower tempo compared to the contemporary American pop music. The slower tempo then causes me to slow down my finger tricks and hand movements while cubing. By slowing down I can actually be more efficient and deliberative. It's counterintuitive but think of it like this. Slower movements → more time to process and encode the cases of the cube → more efficient routes to complete the cube.

As for the one song on repeat, I theorize there are multiple components. The first of which is the music when transitioning between songs takes less time to render when it's just one song on a loop. Another competent is my familiarity with the music. Since the song is being played over and over I can anticipate and predict the next segment of the song. As a result of the predictability, I can quickly sync my cubing (processing, encoding, an executing cases and algorithms to complete the cube). The last component is the tempo (115 beats per minute) of that song. 115 to 130 bpm is typically characteristic of house music, my favorite genre!!² Not only do I find pleasure in this genre, but it also fits my cubing speed!

Another fun observation—my time range was wider without music compared to with music on. This says My self pacing mechanism is not nearly as good as music.

² House is a subtype of electronic genre.

Q: For cubing training does music help?

Help: keep me on pace? (def)

Q: What genre helps me the most?

IV
music
on/off
on

DV
performance (AOS)
Good/bad
Good

but not all music was good

Control: no music

23.38

	playlist	genre	AOS	
①	"Halsey straight fire"	electropop	(17.62) 26.90 (53.28) 29.87 21.77	
			26.18 > 23.38	
②	"한쪽 of"	Kpop	(31.46) 25.47 (23.92) 28.65 26.60	
			26.91 > 23.38	
③	"中文"	cpop	(17.65) (31.13) 22.86 19.87 25.75	
			22.83 < 23.38	
④	one song on repeat		23.56 (20.75) (21.17) 22.84 10.87	
	↓		22.40 < 23.38	
	"Lovely" by Billie Eilish			
	↳ 11:53 PM			

Constants: cuber = me :)

- scramble was always consisting of 15 notations/permutations
- volume level kept at 70%