

Research Topic: The fundamental constraints of Rubik's cubes

Research Question: What is the physical limit for a human Rubik's cube Ao5 (average of 5)?

Key terms: Rubik's cube, constraint, CFOP, Roux, algorithm, TPS (turns per second), reaction time

Potential sources: I'd like to lay out my argument in three main parts: after an introduction to the history of cubing discussion about fundamental constraints, I'll shift to the human physical and perceptual limits on single times to create a clearer picture of the elements at play in a single solve. I'd then like to end with a more statistical focus on how exactly using Ao5 further limits the limit proposed in the first part. The first part of this argument requires use of primary source discussions from cubing forums and blogs to establish historical context. The second part will use psychological and physiological evidence regarding human vision, reaction times, and dexterity from journals such as the journal "Ergonomics" and "The Journal of Vision." The last part will use the World Cube Association's extensive database of solves from top competitors to analyse the time distribution among past world record Ao5's as well as statistical journal databases like MathSciNet to utilize correct statistical methods in generalizing from single solve limitations to Ao5 limitations.

Citation Sources: APA is standard for sciences and there is not a standard citation method for mathematics, I will be using APA.