

You can take a break from practice—but not for too long, study shows

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Common wisdom says that you learn better if you study or practice over a period of time, with breaks between study periods, rather than trying to cram everything into a marathon session. New research from a Johns Hopkins postdoctoral fellow suggests that for certain types of learning, success depends on the length of your breaks.

David F. Little, a post-doctoral fellow in the Whiting School of Engineering, led a scientific team publishing results in *Current Biology* that do not contradict the consensus view, but they suggest limits on how much information the brain retains if [practice](#) sessions are too short and interrupted.

Little is a specialist in psychophysics, the study of human perception. He said this study contains the first evidence of the significance of practice breaks in perceptual learning—in this case, learning to hear differences in sound—as opposed to learning a subject such as science or history. The study involved about 40 people learning to distinguish between the pitches of two tones or to hear differences in speech syllables that are indistinguishable to English speakers but

meaningful in several other languages, such as the combination labeled as "mba," which appears in Thai and Hindi and can sound like "ba" to monolingual English speakers.

The results of the research, which was conducted at Northwestern University while Little completed his doctorate, show that for subjects to retain what they learn in a given day, they need sufficient practice without breaks that are too long.

"When learning a new skill, you can waste a lot of time and effort, to little benefit, if you take even a 30-minute break before you have practiced enough," Little said.

The researchers wrote that the work suggests that the brain has a holding spot for transient perceptual memories that, after a certain threshold of practice, are "sent en masse into a memory that lasts across days."

To conduct the experiment on hearing pitch, the researchers divided their subjects into groups of about eight people each to perform tasks under four different conditions. One group practiced the task for 40 minutes without a break, one for 40 minutes with a 30-minute break after the first 20 minutes. A third group practiced for 20 minutes only and the fourth practiced for 40 minutes with five breaks of six-minutes each.

The experiment showed that the most effective learning took place for those who practiced for 40 minutes straight and those whose practice was interrupted by five six-minute breaks. It also showed that subjects did not retain what they learned in a 40-minute practice session if that session was interrupted in the middle by a 30-minute [break](#).

In each case, the subjects were given hundreds of rounds, or "trials" in the skill. As subjects improved, they were able to hear smaller and smaller

difference in pitch between the two tones. The trials went from seven to nine days, Little said.

Little said the results contribute to understanding how best to learn a perceptual skill, such as ear-training for musicians and visual training for clinicians who read the results of diagnostic tests such as X-rays or MRIs. He also hopes that further work on ear training can help people learn to better use their hearing aids or recover from procedures to repair their hearing, such as cochlear implant surgery.

More information: David F. Little et al. Disruption of Perceptual Learning by a Brief Practice Break, *Current Biology* (2017). DOI: [10.1016/j.cub.2017.10.032](https://doi.org/10.1016/j.cub.2017.10.032)

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