

# Getting out of the Practice Rut:



3 Strategies to Increase Learning, Retention and Rate of  
Improvement

Utah State University \* Special Topics 2020

Have you ever...



# The Science: New Theory of Disuse

Storage Strength--how entrenched or well ingrained information is in our long-term memory.

Retrieval Strength--how accessible that information is *right now*.

# The Science: New Theory of Disuse

1. Storage strength determines how quickly retrieval strength is lost or regained.
1. Relationship between storage and retrieval strength is **inverse!**

Letting yourself “forget” creates opportunity to reach greater levels of learning.

# Two Ways of Practicing:

## Blocked Practice:

Focusing exclusively on continuous repetition of one task or skill.

Results: high current retrieval strength, low long-term storage strength.

## Interleaved Practice:

Alternating between repetitions of two or more related tasks or skills.

Results: low current retrieval strength, high long-term storage strength.



## Practicing Baseball:

- 3 pitches, 15 times in a row (blocked)
- 3 pitches, mixed randomly (interleaved)



Blocked: increased by 25%

Random: increased by 57%

# In the Practice Room

15	Debussy section 9
15	Bartok section 12
15	Chamber Piece

# In the Practice Room

	Round 1:	Round 2:	Round 3:
5 min	Debussy section 9	Debussy section 9	Debussy section 9
5 min	Bartok section 12	Bartok section 12	Bartok section 12
5 min	Collaborate piano	Collaborate piano	Collaborate piano

# It's Not How Much, It's How

(University of Texas)

- 17 pianists were asked to practice a passage from a Shostakovich concerto and perform at set tempo (120 bpm) the next day



- They were given a pencil and metronome and could practice as long as it took
- The next day they were asked to play through the excerpt 15 times at the target tempo without stopping during each performance

# Results

- After their performances, the pianists were ranked according to different practice strategies and actions they took during the practice session
- The top three highest ranked students all had something in common: how they dealt with errors.

# Dealing with Errors

#1: The precise location and source of each error was identified accurately, rehearsed, and corrected.

#2: Tempo of individual performance trials was varied systematically; logically understandable changes in tempo occurred between trials (slowed down enough; didn't speed up too much).

#3: Target passages were repeated until the error was corrected and the passage was stabilized, as evidenced by the error's absence in subsequent trials.

# The Importance of Pause

- In a 2005 study done by the Experimental Brain Research journal, 35 people were split into 6 groups and given one practice session and 25 practice attempts to learn a challenging motor task
- The difference between each group was the amount of time allowed in between practice attempts (inter-trial interval)
- The first group was given 1 second between attempts, while the others were given 5, 10, 15, 20, or 40 seconds
- 24 - 36 hours later the same participants were then tested on their ability to accurately retain and perform the skills they developed previously

# The Results

- While everyone improved with practice, those with only 1 second in between attempts consistently performed worse than the others, with the 5, 10, 15, 20, and 40-second groups performing close to the same level
- After 24 - 36 hours, the retention of the previously learned skills were best shown with everyone except the 1-second group

# The Why

- Learning is dependent on adaptation, and given only 1 second in between practice attempts, we are unable to re-calibrate properly
- Even though the 1-second group had the same task, they kept themselves from progressing by never taking a sufficient break and ultimately overwhelming the brain

# Pick one and try it out!

Each will help you practice with more care and intention.  
Which, at the end of the day, is the only way we can  
really hope to practice better!

## Sources:

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