

The Problem With Time and Repetition-Based Practice Goals (And What to Do Instead)

Description

Whether it's learning how to play the oboe, hit a backhand slice, or type with all ten of your fingers [and not just your thumbs](#)), one of the most common ways to set goals for the practice room is to do so in units of time or a certain number of repetitions.

Something like:

"I'm going to practice scales and arpeggios for 20 minutes every morning."

"I'm going to do five repetitions of each shift between first and fourth position in the Yost shifting book.¹"

On the surface, they both *seem* pretty similar. But could they have different effects on learning?

Let's say you had to pick one approach for structuring your music practice for the week. Or for assigning practice homework to a student you teach.

Which do you think would lead to higher-quality practice? And result in more practice room gains over the course of the week?

Or, is there an even better alternative option?

A study of med students

A study which looked at surgical training ([Willis et al., 2012](#)) provides some answers on which approach might be best.

Thirty first and second-year medical students were tasked with learning a surgical knot-tying procedure².

Three ways to practice

They all started by watching a video of the procedure. Then, they tried to put what they just saw into practice without any instruction or guidance. This was their "pre-test," and established a baseline level of performance.

Next, the students were randomly assigned to one of three different groups. Each of which used a different approach to practice.

1. The **time group** was told to practice the procedure for *90 minutes*.
2. The **repetition group** was instructed to complete *12 repetitions* of the procedure.
3. And a third group – the **proficiency group** – was told to practice until they could successfully a) complete the procedure within 3 minutes, b) place the stitch within 1mm of the marked target, and c) tie a secure knot – on two consecutive repetitions.

After practicing, everyone performed the task one last time, to see how much improvement they made over the course of their practice session (the post-test).

So which group improved the most?

Learning differences

All three groups improved their scores – but one group improved significantly more than the others!

The **time group** improved by **394.49** points from pre-test to post-test, going from an initial score of 70.51 to 465³.

And the **repetition group** improved by **316.6** points (150.2 before practice to 466.8 after practice).

But the **proficiency group** improved by a whopping **496.1** points – from 47.6 to 543.7. A much bigger, and statistically significant increase in performance relative to the other two groups.

And there was another interesting benefit of the proficiency-based approach to learning too.

Performance was more uniform

Specifically, the standard deviation of the proficiency group's scores was much lower than that of the other groups. The proficiency group had a standard deviation of **47.89**, while the repetition group's standard deviation was 111.10, and the time group's standard deviation was 125.72.

And why is that cool?

Well, this is basically a fancy way of saying that everyone's final performances in the **proficiency group** were pretty even. And that despite everyone's initial scores being pretty spread out (the SD of the proficiency group's initial practice attempt was 130.91), by the end of practice, they were all able to perform at a pretty similar level.

Meanwhile, post-practice scores in the other groups were all over the place. Some students got to a high level of performance, while other students struggled and performed poorly, and some were in the middle.

In other words, there was a lot more variation in the final performance scores of the students in the time and repetition groups.

How much variation was there in their practice?

Of course, this would only be a fair comparison if the three groups spent about the same amount of time practicing and completed a similar number of repetitions, right?

Fortunately, all three groups' practice metrics were pretty much the same.

The **time group** practiced for **90 minutes** and averaged **10.6 practice repetitions** within that time.

The **repetition group** did **12 repetitions**, which took them **98.6 minutes** on average to complete.

And the **proficiency group** completed an average of **11.9 repetitions** and spent **88.7 minutes** practicing.

So how can we apply this to our own practicing?

Takeways for the practice room

It's really easy – and tempting – to plan out our daily practice sessions around a target number of minutes or repetitions.

And it's not like time and repetition goals are a terrible, horrible, no good, very bad way to assign practice homework. After all, the groups that practiced for time and repetition did improve too.

But it does make sense that practicing for proficiency would lead to greater skill development than focusing on the clock. Having to focus on specific improvements and aiming for clearer goals does tend to lend itself more naturally to thoughtful, focused, [deliberate practice](#).

Because if it turns out that shifting from first to fourth position on the A string is a breeze, you might get bored, and end up going through the motions and practicing mindlessly. Better to stop when you've hit your proficiency goal and bank that time for something else on your practice to-do list.

How to define a proficiency goal?

But...how do you establish a proficiency goal? Like, how do you know when a passage is good enough that you can stop practicing and move on?

The authors describe a process for establishing a set of “mastery criteria” that might work in music settings too. Essentially, the idea is to observe experts performing a task, analyze the task, and then identify the most important aspects of the task that are indicators of a high-level of performance.

In music, this might involve listening to recordings or working with your teacher to establish an [intonation goal](#), or a particular quality of sound to aim for, or a [certain tempo](#) to work at. You could even set a goal for yourself to [memorize](#) a certain number of bars to a particular degree of fluidity and confidence in a span of time. All of which could also include more high-level, yet integral aspects of musical performance, like phrasing, character, and so on.

Proficiency, not perfection

Ultimately, there are a ton of criteria could be used as proficiency measures. But using them **all** could be a bit paralyzing too. So I suspect the idea is to pick just a few to aim for. And to get those down first, after which you can continue to refine and include increasingly challenging criteria over time.

Which is another way of saying that I think it's important to be mindful that the goal is to aim for **proficiency** as you've defined it *for this moment in time* – and not ultimate perfection (whatever that is anyway). Because if the goal was **perfection**-oriented practice, heck, we might never be able to stop and move on to the next passage! ?

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Reference

Willis, R. E., Richa, J., Oppeltz, R., Nguyen, P., Wagner, K., Van Sickle, K. R., & Dent, D. L. (2012, January). Comparing three pedagogical approaches to psychomotor skills acquisition. *The American Journal of Surgery*, 203(1), 8–13. <https://doi.org/10.1016/j.amjsurg.2011.07.002>

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