

## ***Drill, Baby Drill***

The use of drill (exercises) may be a small or significant part of your studio. When you employ exercises, they are best assigned to achieve a specified outcome. Never assign drill out of habit or some scripted routine because you are not considering the unique needs of the student. Always ask yourself, “What is this drill developing and how does it help this student?” If you can’t find an answer, then you can’t assign it to your student.

You have most likely discovered that some drill is essential, others, not so much. The best drill has measurable results (“Hey, I can synchronize my hands now!”), has a positive physiological aspect that removes barriers to future advancement (“Maestro, thanks for teaching me to use left-hand anticipation way back when. It made a big difference later.”), and is supported by solid research or replicated in the experience of other teachers.

Some drills work a single mechanic, others combine mechanics into technics. Some have secondary and tertiary benefits. Some, unfortunately, waste our time and deaden the soul.

In the strictest sense, a discussion of drill should include scale and arpeggio practices. Since there is considerable polemic, not to mention invective, in the literature, they will receive their own discourse. We will reserve the terms drill and exercise for all those bits that are not strict scales or arpeggios.

For example, below is a right-hand exercise that drills a single mechanic (found in *The Conservatory Tutor*, McDonald, pg.98), presented with its supporting modern research.

To begin development of muscle fibers for quick right-hand finger alternation, the student is coached to return to the ready position before playing the next note. Its adoption assumes that ballistic motion is desirable and that the fast-twitch and super-fast-twitch muscle fiber bundles can be accessed, trained, and grown. Fast twitch muscle fibers are 5X faster than slow type, and super-fast are 10x faster. There is much evidence that this is indeed so. See <http://fitnessspotlight.com/wp-content/uploads/2009/03/muscle-genes-and-athletic-performance.pdf>

The following chart shows that while there are differences in muscle fiber composition, muscle types can be developed based on the way they are trained.

### **Muscle Fiber Composition**

<b>Muscle fiber type</b>	<b>Average person</b>	<b>Sprint trained</b>	<b>Aerobic trained</b>
<b>Slow</b> (type I)	<b>40%</b>	<b>40%</b>	<b>55%</b>
<b>Fast</b> (IIa)	<b>50%</b>	<b>20%</b>	<b>40%</b>
<b>Super-fast</b> (IIx)	<b>10%</b>	<b>40%</b>	<b>5%</b>



“slip through the cracks”. For more on this topic, see Eduardo Fernandez’ *Technique, Mechanism, Learning*.

There are several publications that list types of drill. These are quite useful, and give a path to acquiring a solid core mechanism. However, they are not a guaranty; otherwise the planet would be populated with guitar virtuosi. Here is a partial list of the more recent collections –in no particular order:

- Kitharologus*, Ricardo Iznaola
- Guitar Technique Rationalized*, Julian Byzantine
- Reaching the Next Level*, Martha Masters
- Pumping Nylon*, Scott Tennant
- Technique, Mechanism, Learning*, Eduardo Fernandez
- Classical Guitar 2000*, Charles Duncan
- The Christopher Parkening Guitar Method, Vol.2*
- Mastering Guitar Technique; Process and Essence*, Christopher Berg

It will often take two or more drills to fix a single problem. For example, if the student needs to tighten up the synchronicity between the hands, a “string walking” exercise (Tennant, pg.37) in conjunction with a left-hand tremolando chromatic scale might be necessary.

Notice in the chromatic tremolando fragment below how the right-hand “i and m” fingers are alternating three times for each new finger in the left. This 3:1 ratio drills the faster alternation from the end of each triplet to the first note of the next, while allowing time for more precise synchronization between the hands. In the last part of the exercise, the alternation between the hands is 1:1, a much harder prospect.

This chromatic tremolando exercise does not address string changes, hence the inclusion of the string walking exercise. The creative teacher could combine them into one exercise after the student has some mastery over the separate parts.

String Walking

Continue with (2nd & 4th) and (3rd and 4th) fingers

Some instructors over prescribe drill. Regardless of the field of study, we know that one commonality between expert performance is the duration of their rehearsal, which is surprisingly only a few hours of study each day (Harvard Business Review, *The Making of an Expert*, Prof. K Anders Ericsson, et alli, pg. 3), dependent upon the length of the advanced student’s attention span. Assigning drill, etudes, repertoire, and memorization

study beyond their attention span will result in poorer results than expected. Keep the drill portion of the rehearsal time in proportion to the other activities. The old dogma of “Do your scales for 2 hours a day and all will be fine” would deplete the “concentration reserve” needed for other study. Consider the following from the Ericsson article cited above:

*“The famous violinist Nathan Milstein wrote: “Practice as much as you feel you can accomplish with concentration. Once when I became concerned because others around me practiced all day long, I asked [my mentor] Professor Auer how many hours I should practice, and he said, ‘It really doesn’t matter how long. If you practice with your fingers, no amount is enough. If you practice with your head, two hours is plenty.’”*

Individual drills lose their effectiveness over time. The brain will begin to group larger and larger chunks into increasingly rigid automatic reflexes. There is some evidence that advanced students who drill to excess have difficulty breaking apart these automatic reflexes and that excessive drill use at this level makes the learning process slower. This next quote is from Christopher Berg in *The Re-Imagination of Guitar Pedagogy*, Winter/Spring Soundboard of 2000, where he quotes Harvard Psychologist Ellen J. Langer.

*“...when people overlearn a task so that they can perform it by rote, the individual steps that that make up the skill come together in larger and larger units. As a consequence, the smaller components of the activity are essentially lost, yet it is by adjusting and varying these pieces that we can improve our performance.”*

-Ellen Langer, *The Power of Mindful Learning*, Reading, Massachusetts:  
Addison-Wesley Publishing company, Inc. 1997, 18-23.

Lastly, I believe that every drill should be discontinued at some point. It makes no sense to diligently practice a drill that has returned all of its benefits. Rehearsing the music to which it was directed is true rehearsal indeed.

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