

## Running Reps: What's Really Happening?

Your brain is a vast network of neural pathways. Some of these pathways are necessary to playing the guitar. Others aren't. The difference between a guitarist's brain and a non-guitarist's brain is that certain pathways are selectively favored. In a skilled guitarist's brain, the neural pathways necessary to playing are insulated from the pathways that aren't necessary to playing.

So what? Well, without these insulated pathways, it's unlikely that you could play much of anything. To understand why, here's a brief explanation.

Imagine a length of bare wire connecting a battery to a light bulb. As long as the wire doesn't touch anything else, it can conduct an electrical current to the light bulb. (Some current is lost to the air around the wire, but enough gets through to light the bulb.) Now imagine this single bare wire is run through a tangled mass of other bare wires, none of which are connected to the light bulb. It's easy to guess what happens. The electrical current is sidetracked in many directions, none of them leading to the light bulb. The current flowing from the battery—originally strong enough to light the bulb—is now so dissipated that the bulb remains dark.

Now take this scenario a step further. Imagine again the wire connecting the battery and light bulb is run through a tangled mass of bare wires. But this time, imagine the connecting wire is insulated along its entire length. Thus, the electrical current stays within the single wire connecting the battery and light bulb. It's not sidetracked by the mass of other wires. All the current flows to the light bulb. And so we have light.

In the brain, this insulation is a substance called myelin. Myelin forms a protective sheath around nerve fibers, increasing the speed of nerve impulses. Whenever you repeat an action, myelin gradually builds up around the neural pathways necessary to this action. The more you repeat, the better insulated the necessary neural pathways become. And bear in mind that this myelin formation responds exactly to what you do. If you repeat something badly, then your brain insulates the neural pathways for doing it badly. No part of your brain will step back and say: "wait, this isn't right, so I won't insulate those pathways." Instead, myelin formation inevitably happens according to exactly what you repeat, good or bad. Thus, your repetitions should be as consistently correct as possible. If you play something well one time and badly the next, then you're not efficiently selecting good neural pathways. Because your reps fluctuate from good to bad, your result will be unreliable.

Bear in mind also that myelin formation isn't limited to physical actions. It also applies to the quality of your thought process. If you're confused or nervous as you run repetitions, then confusion and nervousness are selectively insulated. So you literally can practice yourself into permanent performance anxiety.

Clearly you must take very seriously the repetitions you do in practice. Always remember that each and every rep gets you a bit closer to locking in whatever you're repeating. If you repeat confident accuracy, then you're getting ever closer to playing with confident accuracy. If you repeat nervous inaccuracy, then you're getting ever closer to playing with nervous inaccuracy.

At this point, let's address a common misconception. Running reps doesn't have to turn us into drones who merely hit notes with mechanical precision but sans artistry. In fact, running reps can be done in a way that expands creativity. As you get closer to playing a passage with the desired accuracy, begin expressively tinkering with each rep. Do one louder. Do one softer. Try crescendo. Try decrescendo. Experiment with color, vibrato, articulation, and phrasing. The idea here is that, as you get closer to consistent accuracy, you also get more comfortable with expressive flexibility. The ideal goal of running reps isn't to lock yourself into a narrow way of playing. Rather, it's to condition yourself to accurately and confidently respond to any flash of inspiration you hit on in the moment of performing.

No one advocates mindless repetition. All reps are evaluated as they're done—we refine as we repeat. In a perfect world, perhaps we'd make every rep exactly what we desire in an actual performance. We don't, however, live in a perfect world. So our reps inevitably vary. And that's not a bad thing. Indeed, we don't want invariable performances. Variability is a vital element of great performances. We crave uncertainty. Of course, this uncertainty must stay in the bounds of high artistry. But it's this uncertainty that keeps listeners in a delicious state of anticipation. "What," they wonder, "will happen next?" So ideally, our reps needn't attain rigid perfection. What we want is for all our reps, varied as they'll inevitably be, to stay at a high level.

Part of the highest artistry is the ability to embrace opposites. Accepting uncertainty while cultivating reliable accuracy is one such example. And that's the happy irony of running reps: in its deceptively plodding way, you can meticulously train yourself to be creatively spontaneous. Such is the immense power of steady and incremental improvement.