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Exercise as Medicine for Your Music

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by: *Patrick Gannon, PhD*

We all know that exercise is good for you. But you may not know *all* that exercise is good for.

Besides promoting general fitness, musicians need exercise to strengthen their legs, core, and upper body to meet the physical demands of daily practice and performance. This is particularly important because musicians are vulnerable to performance-related injuries. Exercise promotes muscle balance that offsets the physical asymmetries that commonly occur among instrumentalists. And it offers the added benefit of reducing stress.

Now, a broader recognition of how exercise impacts the mind and body is emerging. The American College of Sports Medicine, in concert with the American Medical Association, promote the idea that “exercise is medicine” to reduce risk factors for aging, diabetes, dementia, mood disorders, and sleep. Think of it as a longevity pill that is free, readily available, and has no side effects.

Beyond being a medicine, exercise can also be a tool. The trick is to prescribe exercise purposefully to activate certain brain functions. For example, by varying the type of exercise (cardio/aerobic or weight training), as well as the intensity level (high/moderate), frequency, and timing of exercise (before practicing or performing), you can prime the brain to help with anxiety, learning, memory, mood—even creativity.

Anxiety Management

Cardio exercise may be the best natural treatment for performance anxiety, including state (situational) and trait (dispositional) anxiety. Exercise reduces anxiety by discharging muscle tension, increasing cardiovascular capacity, and disrupting negative thoughts. Physiologically, cardio stimulates the production of calming neurotransmitters such as serotonin, dopamine, and gamma-Aminobutyric acid (GABA), which dampen anxiety.

Two ways to use exercise to reduce anxiety:

- 1) Thirty minutes of vigorous cardio exercise will immediately reduce anxiety. Although musicians are often discouraged from exercising before performing, it can be helpful. However, the exercise must be completed at least three hours before stepping on stage, allowing sufficient time for rest.
- 2) For trait anxiety, ongoing exercise several times per week, for 30-45 minutes, will lower the resting heart rate.

Learning

Who would have thought that exercise could also be a learning tool? Several studies have shown that exercise improves working memory, attention, and processing speed. Exercise stimulates neurogenesis—the creation of new neurons in the hippocampus that builds capacity for learning. It also stimulates long-term potentiation (LTP) by binding neural cells together that encode learning.

Two ways to apply exercise to learning:

- 1) High intensity exercise (at 60% to 80% of maximum heart rate) redirects blood flow away from the prefrontal cortex (PFC), thereby inhibiting learning (recall how hard it is to think straight when pushing your physical limit). But blood flow to the PFC is gradually restored, which then optimizes brain functions for several hours afterwards. This is why exercising before practicing makes sense.
- 2) Combine moderate exercise (at a 120-130 bpm heart rate) with mental rehearsal of the material that you want to learn. Because exercise stimulates the brain-derived neurotrophic factor (BDNF), new neural circuits are created that encode learning. This is essentially self-directed neuroplasticity in action.

Try these exercises to promote learning and memory:

- Do 30 minutes of moderate cardio exercise while listening to the music that you want to learn or 30 minutes of high intensity exercise an hour before practicing that music.
- Divide the music up into sections and create associations to each section with your own memories, feelings, and images. These narrative links will serve as cues for memory retrieval.
- Follow up with moderate exercise while mentally rehearsing the music with the narrative imagery included. Repeat this process on alternating days until fully memorized.

Creativity

Studies show that creativity is stimulated by the interplay between the hippocampus, amygdala, and PFC. Creativity happens by holding diverse concepts in mind through working memory, using cognitive flexibility (and tolerance for uncertainty) to play with these concepts, and then focusing attention on the generation of new ideas.

Because exercise lowers the activation of the dorsolateral part of the PFC, old ideas are held back somewhat, allowing new ideas to emerge. But you must keep your mind open—and be patient with the process—until a new idea streams into consciousness.

Here's how to exercise to stimulate creativity:

- Do 20-30 minutes of moderate cardio exercise on an elliptical trainer or stationary bike while mentally rehearsing the music you plan to practice that day. Allow new ideas to pop into awareness and then track the ideas as they unfold.
- The same technique can be applied to problem solving, procrastination, and planning. By holding the question or issue in mind while exercising, new ideas will emerge. Remember, listening to your intuition and “going with the flow” are what generates creativity.

Patrick Gannon, PhD is a clinical and performance psychologist working in San Francisco and nationally via Skype. He is a member of the Performing Arts Medicine Association and a national presenter on performance psychology. He welcomes comments and inquiries on this article. Visit his website (PeakPerformance101.com) or email him (drpatrickgannon@gmail.com (<http://drpatrickgannon@gmail.com>)).

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