It's All in the Mind
Performance Anxiety and Sport Training
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Only in the last decade has the musician become interested in expanding his arsenal of practice and performance tools. Previously, the prime modus operandi of the musician had been: "if you can't play the piece -- practice. If you still can't play it -- then practice some more!" For some this might work, but usually it is not the most prudent use of time. This philosophy can also harm the musician both physically and psychologically.

With the publishing of Barry Green's *The Inner Game of Music* and Eloise Ristad's *A Soprano on Her Head*, musicians began to take notice of the "other" side of practicing and performing. This "other" side involves techniques and training that athletes have been using ten to twenty years before musicians adopted them. These techniques are the mental preparation and planning that athletes apply to perfect their art form.

A musician is an athlete. The only difference between the two "performers" is that musicians control micro muscles (fingers, embouchure, tongue) compared to the macro muscles (arms, legs, hands) controlled by athletes. Both music and sports involve the movement of body appendages in either a fast or slow motion and each activity is performed before an audience, which can also affect the performance of the participant. Athletics involves preparation, training, and coaching as does music performance. Since there is very little difference between the two activities, I believe that the mental training techniques used in athletic training can be applied with very little change, if any, to the practice of and performance of music.

First, I will look at the nature of performance anxiety and then present some of the primary mental training techniques used in sport training, which can alleviate anxiety and enhance music performance. Some of these sport techniques, primarily those dealing with relaxation, are now being incorporated by musicians because they lead to better performances and auditions. I will explain these sport techniques and try to interpolate them into a form that a musician could use in practicing or performing.

**Performance Anxiety**

Performance anxiety is one of the major problems for performing musicians. It is not limited to musicians, however, since athletes often have the same anxiety attacks. This curse might affect performers or athletes at any time in their careers. Some performers never are able to control their performance anxiety and, as a result, suffer from it for their entire careers. Frequently this can lead to other self abusive behaviors such as drug or alcohol abuse.

This condition is composed of four main components: the cognitive, the physiological, the behavioral, and the psychological (Ely 35). The cognitive element refers to concentration, worrying, and performance judgment in real time. The physiological problems, however, are the most apparent to a performer. Some of the symptoms include: an increase in heart rate and blood pressure, the tightening of muscles, dry mouth, cold hands, and indigestion. The behavioral aspects of performance anxiety make the person want to avoid public performance. And finally, the psychological component relates to the cognitive because it includes the fear of fear, fear of disapproval, perception of disaster, and other irrational beliefs.

There are two types of anxiety: trait anxiety and state anxiety. Trait anxiety is the normal everyday level of personal anxiety. State anxiety is the sensation experienced in a particular situation such as when performing publicly or when flying (Hamann, "The Other Side" 26). If a person has a high trait anxiety level, they will also
have a high state anxiety level. Some anxiety in a person is good as long as their task mastery skill level is high (Hamann, "The Other Side" 26). The person with a higher skill level (more years of playing experience) can handle a slight rise in anxiety and it might actually add to the performance quality.

In professional musicians, career stress can add to anxiety. An orchestra musician has a very high stress job. This can be demonstrated by the level of the "demand-control" ratio (Steptoe 6). "Demand" is the amount of work required and the amount of time allowed to prepare or complete the work. "Control" is the amount of job decision latitude involved in the job. This would include the level of freedom the musician has to decide how the job is done, the variety involved in a job, and how many new skills are learned. A study that was done in Sweden found that according to the "demand-control" scale, a musician has a higher score (meaning more demand and less control) than doctors, air traffic controllers, and waiters. Musicians have little time and many demands, and they have little job freedom, variety, or latitude. Steptoe found evidence in his studies that anxiety and career stress are interdependent (9).

Relaxation Techniques

The reduction of anxiety is essential to performing musicians and athletes at all levels. Some techniques which are used to reduce anxiety and enhance relaxation are: positive imagery, biofeedback, autogenic training, positive cognitive statements, and beta-blocker drugs. One aspect of mental practice which can help the musician to reduce anxiety is to mentally prepare for an event. This process is similar to the way athletes visualize the outcome of an event. By visualizing the concert or audition, the musician can help reduce or deal with anxiety and increase his chances of potential success. By mentally rehearsing a concert, a performer has had hundreds of "dress rehearsals" by the time of the actual performance.

Bio-feedback relaxation techniques originated in 1962 and are defined as any mechanism that externally verifies controlled, physical changes occurring within the body (Alexander 170). A number of body characteristics can be monitored by a wide range of bio-feedback systems such as: electromylograph (EMG) for monitoring muscle tension; thermometers for skin temperature; galvanic skin response meters (GSR) for monitoring electrical resistance of the skin; and electroencephalograph (EEG) in monitoring electrocortical responses of the brain (Alexander 170, 177).

A typical bio-feedback experiment to train a person to reduce stress levels would have the subject wired to a measuring system. The subject would receive either a visual (lights, gauge) or auditory (pitch, volume) feedback signal related to their stress level. The person then tries to relax a muscle or area of the body in order to lower a pitch or turn off some lights on the measuring device. This technique helps the subject learn how to relax and eliminate tension by means of a feedback loop. The loop consists of body reaction, monitor detection, and the subject's reaction (relaxation).

One natural bio-feedback technique used by many athletes is autogenic training. The process was developed by Dr. Johann Schultz and Wolfgang Luthe in the 1930's and consists of six standard exercises (Alexander 176). In the 1970's, A.G. Odessky, a Soviet physician, published a guide to autogenics for the general public (Garfield 114). Odessky wrote:

Our training develops people's abilities to control consciously their various physiological processes - for example, to control digestion, breathing, blood circulation, metabolism, and also to control emotions, moods, and to sharpen attention (Garfield 114).

In addition, Odessky describes his system as "psychological gymnastics through which a person can attain a complete control of his psyche" (Garfield 114).

The six exercises in Odessky's system are meant to teach an individual how to create at will sensations of: heaviness, warmth, heart rate reduction, change in respiration, apparent warming of the solar plexus, and cooling of the forehead (Alexander 176). A person can perform the exercises in either a sitting position or lying on one's
Each exercise begins with deep diaphragmatic breathing and then, through self talk, the athlete envisions a particular sensation in a certain body area. An example of this would be the exercise for warmth which will increase blood flow to a certain area. In this exercise the athlete would repeat to themselves:

"My right arm is getting limp and warm." [Repeat four to six times.]
"My right arm is getting warmer and warmer." [Repeat four to six times.]
"My right arm is completely warm." [Repeat four to six times.]
"I feel supremely calm and warm." [Repeat one time.]

(from Garfield 119)

After warming one arm, the athlete would proceed to warm the other arm and the legs. Each of the six exercises would be done for approximately two weeks.

Regarding the use of drugs to combat performance anxiety, one family of drugs more commonly taken are beta-adrenergic blocking agents or beta-blockers. The most widely used is Inderal which is normally used to treat high blood pressure, angina, certain heart conditions, and migraines (Dunkel 122). Beta-blockers can reduce sweating and slow down a racing heart beat and alleviate overall anxiety. There are some side effects that vary from person to person such as: short-term memory loss, unusually slow pulse, cold hands and feet, dizziness or lightheadedness (Dunkel 122). In addition the drugs can be psychologically addictive while only helping the physical problems of anxiety. They may also affect the musician's perception of dynamic intensity and rhythm control when performing (Lehrer 146). The previously outlined natural techniques are more beneficial and do not have any side effects.

Goal Setting

Goal setting is the first step to initiate athletic training. This process involves: defining a "mission statement", setting long term goals, and setting short term goals. In setting goals the athlete forms a target towards which he can aim. Without this target, the athlete does not have any check points to gauge progress toward that goal. Goal setting helps the athlete form a solid commitment to fulfill the "mission statement".

The "mission statement" is the formulation of a sense of mission, as defined by, "a passionate belief in a personal philosophy that establishes the basis for setting goals, (so that) you can control your own energies and generate that special drive essential for excelling in your sport" (Garfield 61). The mission statement should be a subjective statement as opposed to an objective statement and should be one's private reasons for wanting to accomplish a major goal. Some research which can be related to the idea of mission statements was carried out by Georgi Lozanov, a Bulgarian psychiatrist, who showed that suggestions in the form of words or phrases could initiate conditioned responses in people (Garfield 63). Lozanov used Pavlov's earlier work which involved conditioned reflex responses in dogs. Another important pioneer in self-regulation training was Alexander Romen. Romen included both physical and mental response conditioning in his experiments (Garfield 63). He refined the techniques used for shaping behavior through words and mental imagery.

Goal setting lays out a mental blueprint that someone can use in order to fulfill their mission. Long and short term goals should be the actualization of one's personal philosophy and should help to fulfill the mission statement. All goal setting should include a timetable which would allow the athlete/performer to focus on where one is now and where one wants to be some period of time from now. Garfield quotes sports psychologist Dimitrova as saying "the more clear and detailed the goal, the greater is the athlete's tolerance of fatigue and distractions." (Garfield 70)

Long term goals should be clearly defined and take into account the athlete/performer's present capabilities. Without accounting for present capabilities, the goal could be too hard or too easy. If the target goals are too hard it can lead to frustration in one's efforts and if they are too easy, one might not be challenged to expand physical capabilities (Garfield 71). Long term goals could span time periods from several months to a year or two.

Once the long term goals are formalized, one should then try to visualize the attainment of that goal. In 1978, Swedish sports psychologist Lars-Eric Unestahl studied a group of champion downhill skiers and found that the
best achieveurs visualized their performance goals before every run, and had highly developed skills in goal setting (Garfield 81). Unestahl found that the best skiers had a better ability to visually experience the actual course. The visualization should contain clear pictures of how the victory would feel including the athlete's actions, emotions, and senses.

Together with long term goals there should be short term goals with specific steps to be attained in working towards the ultimate goal. These steps should be measurable and achievable within a short time period. It is helpful to develop a progress chart which would include all short term goals and the mechanisms by which they will be achieved. You can find an example of a program training plan sheet in Charles Garfield's book *Peak Performance: Mental Training Techniques of the World's Greatest Athletes*.

Mission statements and long and short term goals can be used successfully in music. A musician must determine exactly what the mission is in performing on an instrument. One's mission could be: to entertain, to be a vehicle for great composers, to achieve personal perfection, or to hand down an art form to a new generation through teaching. Only the musician knows this answer and the answer is unique to each person.

Long term goals should be based on this mission statement and should take into account the player's present achievements, as well as being within the realm of possibility for that player's present abilities. Short term goals should be specific and measurable. One can keep track of both by writing them down in a notebook. Personally, I write down long and short term goals in a reporter's notebook which is small enough to fit into my case. In this notebook I maintain a daily log of my practice material, my daily goals (such as tempos), and my plans for practice strategies. This record keeping allows me to look back at my progress and also to plan future progress.

By having goals, forming a mission statement, and visualizing the attainment of those goals a musician can see what plans have worked and what course corrections are needed to stay on track. In contrast, if one does not clearly define goals, a player goes from lesson to lesson, or concert to concert, with no real overall direction for what he is doing or why he is doing it.

**Visualization**

Visualization or mental practice has been used in various athletic peak performance programs for the last two decades. It consists of the cognitive rehearsal of a skill without any physical movement. As Jack Nicklaus has said, "I never hit a shot, not even in practice, without having a very sharp, in-focus picture of it in my head." In various studies of Olympic athletes, those who made the team were the ones who employed various forms of mental preparation. The use of mental images to produce distinct and measurable differences in performance can be traced back to ancient India in the practice of Yoga in a religious context (Hinshaw 4).

The primary theories which explain how visualization works are: symbolic learning, psychoneuromuscular, "psyching up," and mental muscle movement nodes.

Symbolic learning is defined as the mastering of a sequence of movements that together form the components of a task. It is a mental blueprint with the components broken down into small sections. This theory is limited to skills that are represented by movements. There is some question regarding the effectiveness of symbolic learning for enhancing a skill that a performer has already perfected (Hecker 364).

The psychoneuromuscular theory developed from the measurement of the slight electrical impulses in the muscles and tendons which occur when one visualizes. Jacobson and McGuigan discovered that very small contractions occurred in muscles when a subject was mentally rehearsing a particular skill that involved those muscles (Grouios 45). When visualizing a motor pattern everything in the supplementary motor area was active except for the main motor cortex (Grouios 45). This finding indicated that everything in the brain was primed and ready to execute an action and the only thing left to do was to physically move the muscles.

"Psyching up" is a traditional mental preparation used mainly by athletes. A person is "psyched up" when the person places his mind and body in an overall highly aroused state. In a study by Harris & Harris, it was found
that when the athlete was psyched up, they were then "set" for competition with an optimal energy level in the body (Ungerleider & Golding 1008). Positive self-talk and relaxation are involved in this mental practice such as when a person recalls past successes and accomplishments. This technique is primarily used before a competition or performance.

The theory of mental muscle movement nodes deals with the brain and neuron connections. A sequence of uniquely interconnected neurons is formed when a specific action is executed (Grouios 45-46). It was found that as the frequency of practicing a particular action increased, the rate of priming the neuron connections, and the rate of transmitter release and pickup at the juncture points increased in speed (Grouios 46). This is similar to a person walking through a field and always taking a particular route. After a number of times through the field, a path will begin to form. As the path forms, the person's pace will become faster since one knows where to go and consequently the grass has worn down under one's steps. In the same manner, by practicing a task mentally or physically, a neuron path for that task will begin to form. After a period of time, the task will become second nature because the neuron connections that make up that task have been conditioned to set up that particular route when executing that sequence.

Through the use of mental rehearsal techniques, an athlete's reaction times could be accelerated as shown by the research of Alexander Romen of the Soviet Union. For a musician, a fast reaction time would be important in sight-reading music and in playing fast technical passages.

Negative as well as positive imagery may shape the athlete's actions. Even though an action is mentally practiced hundreds of times, it does not guarantee that there will be success. As the saying goes, "perfect practice only makes perfect." Visualizing only the correct physical action will enhance performance, otherwise you are only cementing a bad habit or technique (Garfield 133).

With visualization as with any skill there are optimum procedures to follow for insuring a high degree of success. When athletes visualize an action they should take an "internal" viewpoint for the best success (Murphy 165). This viewpoint looks at an action from a person's normal field of sight, compared to an "external" viewpoint from which one sees themselves as if viewing a home video. The internal perspective should be as clear and vivid as one can imagine and the performer should try to feel the movement as well as to involve visual, auditory, and kinesthetic senses (Ungerleider 1016). In addition, only the muscles that are used in the task should be involved in the visualization.

The ideal visualization session should only be about five minutes long and mental practice should be combined with physical practice (Hinshaw 16). In athletics this combination was found to be equal in outcome to total physical practice. When visualizing a physical movement, it is best if one views the skill in slow motion and gradually speeds up the motion until it is at the normal executing speed. When visualizing an event or concert, the most effective visualization will occur if the scene for that event is personally relevant to you.

Your emotional state also has an effect on the success of your mental practice. The visualizer should be in a positive success-oriented state of mind which leads to high self-confidence and high self-control. An athlete might form an image bank which would include past successes as well as numerous options for completing a task, even with possible pitfalls (Allman 54).

Visualization becomes better the more one practices its application. Mental practice should be implemented on a long term basis and the performer should not expect results overnight. With any skill, one must first master the techniques in order to reap the benefits. The athlete does need a basic level of proficiency in the task in order to gain the most benefit from mental practice (Romero & Silvestri 220). Mental practice is an important tool for athletes and musicians. With expanding repertoires and restrictive time frames, a musician too must find ways to physically cope with performance and practice demands.
Conclusions

There are a number of books related to both music and athletics that cover some or all of the techniques that I have described. *The Inner Game of Music* by Barry Green, *SyberVision* by Steven and Greggory DeVore, and *Peak Performance* by Charles Garfield are three very detailed programs for enhancing performance through the use of goal setting, relaxation, and visualization or mental practice. In each book the authors do not suggest immediate solutions but present a program that would take several months to complete.

Since a musician is physically limited to the amount of time he or she can perform or practice, that time should be used judiciously. By employing the various techniques that I have presented a musician/athlete can maximize performance without degrading physical condition through abnormally long practice or workout sessions. The athlete of the 21st century must possess a fit mind as well as body. This last statement can hold true for the musician as well, since the number of employment opportunities in performance have diminished while the number of qualified applicants has remained the same. A player can help turn the odds in his or her favor by having an edge in overall practice time (mental and physical), developing a coping mechanism for dealing with performance anxiety, and forming a strategy for arriving at one's goals.

Works Cited and Consulted


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