

Before Pathology: Prevention for Performing Artists

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Abstract

The performing artist is at risk for occupationally derived illnesses and injuries. Under the assumption that prevention is preferable to allowing the occurrence of an injury that must be treated, an interdisciplinary prevention program that was developed at a Norwegian music conservatory is described. The courses combine the efforts of instrument teachers and scientifically trained personnel. Although the initial program is obligatory for entering students, subsequent courses are elective. The major effort is to motivate and instruct students so that they can monitor their own practice and playing habits. This is attained through a better understanding of their biological and psychological selves and their interactions with the musical instrument. The difficulties encountered in accomplishing this motivation are discussed with attention to the requisite skills of the interdisciplinary instructor. Details of the methods of the course will be provided in a subsequent article.

Frequent citing of the prevalence of occupationally related injury and syndromes in performing artists¹ and the establishment of specialized clinics for treating these disorders leave little doubt as to the degree of risk at which much of the performance population functions. The complexity and multifactorial etiologies of performance-related disorders are too great for either the medical or the artistic community to resolve alone. The development of an interdisciplinary approach is essential in order to provide effective treatment and to successfully reverse the current trend of illness in this treasured occupational group.

The evolution, scope, and application of interdisciplinary skills required for effective preventive and coping strategies for and education of performing artists—in this case musicians—are the subject of this paper. The focus is on helping music students identify specific criteria to enable them to avoid various musculoskeletal disorders, often referred to as “overuse.”² The assumptions, observations, and prevention paradigm presented derive from experience in directing what is perhaps the first prevention program within

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a music conservatory—that of the Trøndelag Musikkonservatorium (TMK), Trondheim, Norway. It is not possible to cover all aspects of the TMK endeavor in one article. The method of the prevention criteria requires a separate paper, and is only covered briefly here.

Reliable prevention and coping skills are not, in the author's experience, difficult for music students to acquire. The real challenge to the interdisciplinary instructor is in the art of making prevention-consciousness accessible to musicians in meaningful, applied, and supportive ways. The required interdisciplinary pedagogical synthesis, and “making prevention work,” are the focus of this article.

The introduction of formalized prevention concepts and educational programs at the level of music schools and conservatories represents an intrusion into the musician's “life cycle calendar,”³ and should not divert attention from addressing their primary educational needs. Common sense, supported by studies such as those of Sosniak⁴ and Pruett,³ points to families and early teachers as the truly appropriate allies of prevention. By whatever means are available, information and support should be afforded to teachers and parents, who play a critically important role in the growth and development of musicians during their learning years.

The contingency of habit is one obvious aspect of early training that is an underlying theme of the prevention paradigm. At TMK, most students enter at about age 19, with a three-year background as an applied major in one of Scandinavia's specialized music highschools. It is not uncommon that they bring with them considerable technical skill, a history of pain or periodic disability, and associated habits that may include the expectation and acceptance of pain as a part of playing. Since the start of the program in 1983, all but one student who participated regularly in prevention instruction, and who were 24 years of age or younger on

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admission, have successfully managed necessary self-regulatory habit changes, allowing them to establish and maintain pain-free playing to date. However, in every case older students with similar histories have demonstrated greater difficulty in executing the needed changes to free themselves from pain-producing patterns. Thus, although prevention skills can be learned at any age, "the earlier the better" is not a meaningless tautology to the late bloomer. After the mid-twenties habits in instrument playing are significantly more difficult to affect with the introduction of new prevention techniques.

Institutions responsible for nurturing and training adolescents and young adults with artistic talent are only one of many music milieus in need of prevention assistance. But as starting places, such institutions offer a fertile arena for the coming together of music teachers and others interested in task-applicable disciplines; in principle the resulting synergy can be applied to prevention education for all those involved in influencing the next generation of professional musicians. The help and wealth of expertise of TMK's music teachers have been indispensable to refinement of the prevention paradigm's avoidance-of-pain criteria for use at the conservatory. Our dependence on teachers in the task of prevention is clear—it is not a matter of diplomacy but of health.

Prevention Paradigm—Formulation for Effectiveness

TMK's program represents approximately four years of cooperative effort between the author, instrument and voice teachers, and an interested and supportive administration. Today all instrument departments and the voice department participate in the program, which has been gradually and carefully placed into the overall academic program, allowing for a natural evolution of auxiliary team teaching between the institution's teachers and the interdisciplinary instructor. Together we have confirmed that prevention does not lend itself to "quick-fix" solutions. If expected to be effective, prevention must become a skill of conscious awareness and habit, requiring time, practice, and constancy. Careful design and execution of a preventive program are the keys to success.

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The Merging of Science and Art in Conservatories

Health is the subject of prevention, and health cannot be achieved at any phase of life without consideration of the central role of the individual's perceptions, fears, and aspirations. Given the often insensitive technologically-dominated world in which musicians find themselves, learning prevention skills requires support and an environment that respects and recognizes the artist's pursuit as a valued contribution to society. From the outset, the interdisciplinary instructor in artistic institutions would do well to have a working understanding of the evolution of science, and an overview of art and science as equally important albeit different expressions of human thought and pursuit. Acknowledging and honoring art—music—as a partner of science supports the musician's sense of self-worth. It can also set the tone for needed truth-telling and myth-dispelling (i.e., that scientific facts are superior to facts in other scholarly disciplines). Artists and all people need reminding that every field of science is incomplete, that most are in stages of infancy, and that the "facts" of today may be subject to reversal tomorrow. Humility and clarification regarding the role of science as provisional and tentative broaden both the perspective of the educational goals of prevention and the artist's perception of his chosen work. It helps toward mainstreaming rather than isolating the artist, and fosters a learning environment in which students look forward with interest rather than skepticism or dread to the prospect of integrating knowledge of "science" with the playing of instruments.

For many musicians, courses in prevention may represent the first opportunity to encounter selected areas of science such as physiology, ergonomics, kinesiology, and the fascinating emerging field of psychoimmunology. In introductory meetings, rather than telling musicians how useful science is going to be to them, the author has found it more effective to let musicians know about the wonder of their bodies and how they have evolved (e.g., the development of the capacity to hold and play instruments). By establishing credibility and relevance in these ways, the instructor of prevention supports and paves the way for the important linking of two motivations in the student: the motivation to pursue his or her artistic potential with the motivation to remain healthy while doing so.

Artistic Technique and Health

The prevention paradigm has a much greater chance of workability if provided within a framework of philosophical and pedagogical unity. This affords means of avoiding either a one-method or a superficial "smorgasbord" employment of various available therapies or disciplines, etc. By the same educational token, students will be better prepared to make an intelligent decision when selecting one or another of these schools of thought for their own use.

Regardless of the varying etiologies attributed to the disorders in question, they share the commonality of taking time to develop. Inherent in schemes to prevent disorders is the assumption that the prior-to-disorder period can be used to alter the developmental process toward health rather

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than disability. A second assumption is that the act of playing instruments at relatively high levels of technical proficiency is in principle "natural," i.e., that there is a reasonable expectation that this activity falls within the scope of adaptive capacity attributed to human beings across a wide spectrum of species variability. The development of disorders related to this activity represents the interaction of several causal factors—some known and some unknown—components of which derive from the musician's total interaction with his or her environment, the relationship with the instrument being only one part. Any responsible proposal for preventing the potential interaction of causal factors must address the existence of unknown variables in the musician's total "process" and aim at helping the musician to develop skills to deal with and integrate the mental and physical ramifications of these variables.

The employment of a psychophysiologic construct and the view of health as adaptive—i.e., the ongoing interaction of a unique individual with an ever-changing environment—has proved of great practical and unifying value. Among its many advantages is its discouragement of single-factor thinking, allowing for a wide causal base for disorder-development. The view of health as adaptive permits a view of the act of playing instruments as adaptive. Postural principles become less boring when they grow out of the gravity/development of upright posture/creativity "connection." The musician's curiosity about himself, his origins, and his environment are aroused; his perception of technique is thereby more easily led in the direction of prevention awareness.

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The interdisciplinary instructor must be a skilled observer of the musician-in-action. While it is unnecessary to know the multiplicity of "techniques" with which musicians are naturally preoccupied, the instructor should have sufficient knowledge of issues surrounding technique to be able to supply meaningful answers to questions regarding it. To the experienced and observant eye, technique reveals itself as highly personalized. The degree to which this is so makes it difficult not to conclude that every musician plays his or her instrument uniquely, which is as it should be. The view of the musician as an adaptor gives permission to the individual to modify his technique within broader, perhaps more comfortable, parameters. The Dubosian analogy of health as a "mirage"⁵ is a useful parallel to draw to tech-

nique: both artistic technique and the phenomenon we call health are moving targets. An approach that treats both phenomena as dynamic entities is important to conveying the understanding of mechanisms underlying their inter-relationship. The conceptual linking of health and technique in the ways mentioned helps to secure the student's interest in his own biology as it relates to playing instruments. This opens the door to primary prevention activities: exploration of self and of one's environment.

Motivation and Prevention

The notion of prevention in risk-factor and health-maintenance education carries with it the fundamental requirement that the individual accept responsibility for active participation in managing his or her health. Failure to achieve this criterion for validity is a weakness in the prevention scheme as a whole, and is often cited by skeptics of prevention approaches, with good reason. No matter how sophisticated the theoretical underpinnings and the demonstrable practical applications of methods, "prevention" must be performed by the individual before it becomes a valuable reality. Securing and supporting participants' willingness to take responsibility for their health management thus become the central concern around which the structure and content of the prevention program will revolve.

Returning for a moment to the subject of technique, it is easy for musicians and teachers to misinterpret the need to prevent musculoskeletal disorders that may result from playing as being related to "doing something wrong" or engaging in "bad technique." This shadow over the recent attention generated by disorders in artists is as familiar as it is incoherent and unnecessary. It is the responsibility of the interdisciplinary instructor to avoid such a pitfall by providing reassurance that the potential development of disorders seldom can be attributed to a single factor, and that the interaction of many causal factors, resulting in pain or a disorder, is not to be confused with what is ordinarily termed "technique." The employed prevention method addresses the development of artistic technique but does not fault a moving target as the sole causal factor.

Design-related aids to instruments or to furnishings that affect the musician's ergonomic process when playing can be of great assistance to the preventive endeavor. An excellent example is the oboist's post (Australia). It is important that no claim be made that the use of a design-aid will put the instrumentalist "in the clear" of a specific problem. Such a claim would suggest a single-factor cause, and would be incompatible with effective preventive recommendations.

The interdisciplinary instructor must avoid misleading statements that imply intrinsic "hazards" in playing certain instruments. One example is in the well-meaning ergonomist's opinion that pain from playing "is scarcely surprising, since the ergonomics of most musical instruments is unchanged for the past two centuries."⁶ Faulting instruments and furniture may lead to the innovative creation of design-aids but has limited value in assigning the musician

prevention tools on which he can begin to rely. The ergonomic relationship of musician to instrument is unquestionably important and can be approached in a variety of ways to help the musician to reduce muscle tension. Good prevention education places primary responsibility on the individual as chief adaptor in the situation. It emphasizes a wide causal base for disorders and places the student's awareness of potential risk factors into a more holistic perspective. Underlining the challenge rather than the hazards of pursuing technical proficiency, and arming the musicians with a variety of ways to remain healthy help to plant the seeds of prevention where their germination will count most. A no-fault policy at the outset is a truthful one and the only one conducive to accomplishing prevention.

Conceptual Separation of Treatment from Prevention

Rampant confusion about the role of medical services and their personnel in relation to health, as opposed to illness, ought not be underestimated. The learned response of submission to treatment, just like expecting pain from playing and waiting passively for disorders to develop, can seriously undermine the essential requirement for individual volition. Those in charge of prevention education must be conceptually clear on this issue, regularly imparting reminders to participants about the difference between "receiving" prevention and "doing" prevention. Clarity as to the fundamental functional differences between treatment and prevention is not only for the benefit of participants of a prevention program. It also reduces pressure on clinicians who by right and training may choose to focus their expertise on the clinical evaluation and treatment of disorders, with the knowledge that their patients can be referred to others for prevention education.

Elective Prevention

Making courses in prevention obligatory, or in some other way attempting to coerce or inspire motivation, is not fruitful. Elective participation works better. For that reason, only one phase of TMK's program is obligatory, the rationale being the need to monitor the effectiveness of the program, to establish a baseline of exposure of all incoming students to the presently employed preventive method, and to provide for early history-taking, evaluation, and direction at an individual level. After completing the early intensive course, the student's follow-up participation in continuing phases of the program is purposely left elective.

Pressure to attach academic credit to part, or all, of the prevention program may arise, owing to the time required

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to learn and successfully integrate prevention-consciousness while meeting other strenuous academic demands. The prospect of receiving credit can affect the motivation of students to include prevention work in their studies, and care should be taken to ensure that they do so with the nobler of possible reasons. At TMK, course credit is reserved for upper-level prevention courses, for which previous participation in the program is a prerequisite to enrollment.

Enrollment in prevention education will never automatically guarantee personal commitment to practicing prevention. Close interaction of the instrument teacher, student, and interdisciplinary instructor is of primary importance in accomplishing the goals of the program. In-house availability of the instructor is essential, at least during the early stages of the program's development. Although the program may come to be identified with the school's physiologist, the preventive work disperses to practice rooms and corridors, and the subtler corners of daily life at conservatory. The role of the major instrument teacher in supporting the student's participation in preventive classes and promoting health awareness makes a vast difference in the student's attitude toward taking the time to make prevention work.

Structure and Method: A Brief Overview

TMK's five-week, roughly 25-hour intensive course introduces incoming students to the prevention scheme. Instruction takes place in small instrument-specific groups around a teaching skeleton, and includes active movement classes and lectures. Physiology sessions for musicians are designed to engage students in practical aspects of postural balance, ergonomics of playing instruments, and relaxing. Strong emphasis is placed on stress management and understanding the role of the reaction to stress in suppression of the immune response. Videotaping is used to help the student examine his or her playing process, and to learn what their desirable, and possibly vulnerable, unique qualities are. Students learn how to observe the school's "healthy use of practice room" rules, and a sequential physical warm-up to be used each day prior to technical warm-up with instrument. Those students in need of particular attention are identified early and receive joint help from the physiologist and their major instrument teacher.

This course is followed by elective "body classes" scheduled at convenient times each week, and by ongoing departmental workshops with teachers, their students, and the interdisciplinary instructor. An upper-level course called Concert Preparation provides students with a theoretical background related to the various practical preventive skills learned in earlier phases of the program. This course requires written and practical examinations in musicians' physiology and its applications to teaching and performance, and a

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thesis paper on some aspect of stress management and/or the multifaceted musician's process.

Comprehensive discussion of TMK's prevention method is reserved for another article. In order to provide the reader a sense of the method's combined somatic and cognitive elements, two of the method's components are briefly outlined here:

1. Comfort Criterion. Detecting early signals of discomfort is a skill of paramount importance in avoiding musculoskeletal problems associated with the playing of instruments. This includes discomfort of either physical or mental origin. Developing alertness-to-discomfort skills in both realms is given high priority in the prevention method. Self-observation, a supporting skill for the comfort criterion, is reinforced by various means, such as the keeping of a daily log, and reporting to oneself about practice progress and goals, practice/sleep/nutrition patterns, effective use of time, resolution of personal problems, etc. The student is encouraged to assess existing coping patterns, and to take advantage of his surrounding support system of friends, family, and teachers when help with changes is needed, in order to achieve comfort. Self-care is emphasized, as is the use of a "quiet time,"⁷ for structured mental and physical pauses in a busy schedule.

Kinesthetic sense is a basic underlying tool in the search of comfort, and is not foreign to theories of technique which emphasizes "touch"⁸ and utilize kinesthetically-oriented expressions such as "cazzando." Our concept of kinesthetic awareness extends to more total body awareness when playing—"the feel" is not limited to that of strings, keys, or bow swing, but includes the search for comfort in relation to supporting surfaces, inherent natural body sway, and other more peripheral kinesthetic aspects of playing. This attitude, when habitual, is intended to provide the musician latitude in adaptive response to the concert situation, which is characterized by elevated stress arousal and the necessity to attend fully to the artistic endeavor.

2. Resilience Criterion. The student is encouraged to view his changing environment and its challenges as a welcome and stimulating fact of life. The criterion of resilience espouses an attitude of embracing change, and represents a significant departure from most stress management models⁹ by its de-emphasis of "control" of oneself, body, or environment. Improvisational skills of all sorts are encouraged.

Musical improvisation is an applied example and can provide excellent opportunity for classical instrumentalists to break tension patterns that may have developed while studying scored music. It can be used to help solve "trouble spots" in scored passages, and bring the habit of breath-holding and associated tensions into the student's awareness. TMK's students are urged to compose for their own pleasure as part of their daily technical warm-up. This activity helps to develop the skill of resilience, which is seen as essential both to facilitating the meeting of technical demands involved in playing a wide classical repertoire, and to avoiding pain when playing.

Establishing the habit of actively seeking comfort and resilience in living and playing broadens the musician's coping capacity in both the short- and long-term health continuum. It extends the artist's adaptive "elbow room"¹⁰ in the interplay between the unexploited resources of his unique human endowment and an environment wherein he has discovered a particular source of change and inspiration: music and its instruments of expression. Practitioners and educators interested in bringing effective prevention education to artists will find this innovation challenging but not insurmountable.

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References

1. Lederman RJ, Calbrese LH: Overuse syndromes in instrumentalists. *Med Probl Perform Art* 1:7-11, 1986.
2. Fry HJH: Overuse syndrome of upperlimb in symp. orch., *Med Probl Perform Art* 2:51-55, 1986.
3. Pruett K: Coping with life on a pedestal. *Biology of Music Making Conference*. Denver, Colorado, 1987.
4. Sosniak LA: Learning to be a pianist. In Bloom BS: *Developing Talent in Young People*. New York, Ballantine, 1985.
5. Dubos R: *The Mirage of Health—Utopias, Progress, and Biological Change*. New York, Harper & Row, 1959.
6. Edwards RHT: Hypotheses of peripheral and central mechanisms underlying occupational muscle pain and injury. *J Appl Pathol* 57:275-281, 1988.
7. Brown B: *Between Health and Illness—New Notions on Stress and the Nature of Well Being*. Boston, Houghton Mifflin, 1983.
8. Gerig RR: *Famous Pianists and Their Technique*. Connecticut, Robert Luce, Inc., 1974.
9. Woolfolk RL, Lehrer PM: *Principles and Practice of Stress Management*. New York, Guilford Press, 1984.
10. Dennett DC: *Elbow Room—The Varieties of Free Will Worth Wanting*. Cambridge, MA, MIT Press/Bradford Book, 1984.