

## Sports-Specific Training for the Vocal Athlete, Part 1:

### How exercise can support your vocal technique

Claudia Friedlander, DMus, CPT

If you are a classical singer, you are an elite athlete. Your art requires exceptional coordination, endurance and grace, exquisitely fine motor control, total mind/body integration, and the ability to perform highly skilled maneuvers in real time. You must remain calm but energized while delivering peak performances, often in competitive situations. You must maintain optimum physical health. The careers of singers and athletes have far more similarities than they have differences.

Articles abound recommending exercise to singers for stress reduction, weight management and overall wellness. However, we are usually encouraged to exercise only as a remedial process in our vocal training, rather than an essential part of it. We know that proper alignment is a prerequisite for full breathing and neck mobility, yet our techniques for achieving it are limited to verbal cues and a referral to an Alexander or Feldenkreis teacher. The ability to take a full breath and release air steadily is central to singing technique, but we lack practical means for creating flexibility in the ribcage and stabilizing the muscles of respiration. As a voice teacher, I was frustrated by my inability to help students just stand up straight and take a deep breath. I knew from personal experience that Alexander lessons improve alignment and breathing, but I also knew that without constant reinforcement the old problematic patterns of use would eventually return. So two years ago, I became certified as a personal trainer, with the goal of learning how to create the optimal physical foundation for meeting the demands of classical vocal technique.

Athletic trainers study human anatomy and physiology in great detail. They understand how the body responds to various stimuli and learns new motor skills. They know that the skeletal, muscular, and nervous systems are completely interdependent and that problems in one of these systems causes problems for the whole. And they know the importance of training fundamental movement skills before training the highly specialized skills of a given sport; for example, a golf player who can execute a spectacular drive but can't stabilize his spine, hips and legs while rotating his torso risks injuring his lower back.

This knowledge is of immense potential benefit to singers. Bringing our teaching and practice strategies in line with the way the brain learns new motor skills can accelerate technical progress. If we know how the various systems of the body and mind support one another, we will better appreciate the impact of alignment on vocal technique and the effect that breathing has on phonation and stamina. We will be able to trace most extraneous movement, unstable breath support and jaw tension back to deficits in the fundamental movement patterns that form the foundation for any athletic pursuit.

However, generations of voice professionals have warned singers against vigorous exercise. P. Mario Marafioti, Enrico Caruso's laryngologist, wrote that "While it is urgent for a boxer or a fencer to keep his muscles in continual training, it is hardly necessary for a thinker, a writer, or anybody who is devoted to a purely intellectual form of activity to overtax his physical strength. As singing belongs to this latter class of activities, all books and methods advocating physical training for singers seem to consider singing more as a muscular action than as an intellectual achievement...We would suggest that singers take care of their health just by following the normal rules of all intelligent people, without exerting themselves in any form of physical training."<sup>1</sup> Richard Miller assents to athletic activities that "ensure excellent, general physical

condition and if they are not strenuously carried out past the age when physical exercise should be cut back,” but comments that “Even in the prime years, it is questionable that muscular development, including those muscles directly related to singing, need attain special dimensions for singing.”<sup>2</sup> Barbara Doscher and Meribeth Bunch agree that light forms of exercise, particularly swimming, are beneficial, but heavy weight lifting should be discouraged. Pedagogy books typically include an entire chapter on the singer’s formant but devote a mere paragraph to exercise, and the tone is usually cautionary.

The truth is that the singer who exercises with good form will help, not hurt, the voice. Activities that improve alignment, coordination, and stamina are just as vital to our success as the things we do to train a clean onset and clear vowel definition. Our approach to singing technique should consider the needs of the whole body.

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## Exercise & Alignment

Proper alignment depends on optimal length/tension relationships between the muscle groups that operate each joint. An imbalance in any of these relationships will result in a postural distortion, which will have some sort of limiting impact on the voice - for example, by interfering with breathing or entangling the muscles that affect the head and neck.

Joints rely on their surrounding muscles for stability and movement. Consider the muscles that affect the elbow, a simple hinge joint. We flex, or bend the elbow by contracting the biceps, on the inside of the arm, and allowing the muscles on the outside of the arm - the triceps - to relax and lengthen. We extend, or straighten out the elbow by contracting the triceps and allowing the biceps to relax and lengthen. If the strength and flexibility in our biceps and triceps are well

balanced, then these muscles enjoy a good length/tension relationship. Our elbow will be stable and capable of a full range of motion. If, however, we have strong, inflexible biceps and weak, overstretched triceps, it will be difficult to straighten out our elbows and they will be slightly bent when at rest. The elbow is an easier joint to analyze than the complicated joints that determine overall alignment, like the hips and shoulders, but well-balanced length/tension relationships are even more important for the muscle groups surrounding these joints. A singer whose shoulders round forward and whose chest collapses as they exhale demonstrates an imbalance that probably includes tight chest muscles and weak back muscles. This is an oversimplification, as the joint and muscle relationships that create good alignment and movement through the torso are quite complex, but this is an example of how good posture depends on bringing these muscle groups into balanced relationships.

The only way to restore balance is to strengthen the weak muscles and stretch the tight ones. The whole-body movements required for swimming and yoga can move you towards this goal, but it may take a while because there is no way to focus on a specific imbalance for which you've been compensating for years. An Alexander teacher can stimulate the neuromuscular system to restore healthy joint function by releasing chronically contracted muscles, but while it is wonderfully liberating to feel these muscles lengthen this is only half of the equation. We must strengthen the weak, underused partner muscles whose job it is to help the newly released muscles maintain their length and mobility. A program of resistance and flexibility training tailored to an individual singer's body can retrain patterns of movement so that optimal alignment is established and reinforced daily.

Exercise & Breathing

All breathing strategies rely on the ability to inhale a substantial quantity of air and release it steadily. Singers may be concerned that building abdominal strength will restrict breath capacity and reinforce a tendency to “push” with the breath, so I would like to address both these concerns and discuss the ways that a well-designed exercise program promotes good breathing.

First, abdominal strength will not diminish breath capacity if it develops in a balanced fashion. As with the postural muscles, you need to build strength and flexibility throughout the torso so that your abs do not become chronically tight. Overstretched abs that let your belly pooch out do not help breath technique; on the contrary, excessive weakness in the abs leads to excessive tightness in the muscles of the spine and lower ribs, which will cause you to arch your lower back and restrict rib movement - and this *will* significantly decrease your breath capacity and create a plethora of other problems.

Second, abdominal strength will not by itself encourage “pushing”. Pushing results when the vocal folds are squeezed together with such force that only excessive breath pressure will get them to vibrate. If a singer tends to push, perhaps stronger abs will make it possible to push a little harder, but the increased neuromuscular control learned through exercise may give them the option not to engage the muscles involved in pushing. In my own teaching, I think of breath management as reactive; when the vocal folds are set to vibrate at the desired pitch and volume, a well-coordinated breathing system passively supplies precisely as much air as needed and there is no temptation to push additional breath through.

The more supple and resilient our muscles of respiration, the better they respond to the demands of singing. Core strength and stability is of tremendous benefit for breathing, as Pilates fans can testify. The muscles of the “core” go way beyond the the rectus abdominis, or “six pack”, that we usually think of when discussing abdominal exercise. The core encompasses all the muscles

that coordinate the joints of the lower spine, pelvis and hips and stabilize the lower torso, and most of these muscles also assist with respiration. Therefore, training the muscles involved in diaphragmatic or “low” breathing will also help singers maintain stability in the breathing mechanism during stage movement.

Establishing balanced length/tension relationships in the muscles of the upper body is also wonderful for breathing. When strength and flexibility is distributed appropriately among the chest, back, and shoulder muscles, the ribs are free to expand fully during inspiration and will be unlikely to collapse prematurely during expiration. The strength and coordination required to stabilize the shoulders for upper-body exercise usually removes any temptation to elevate the shoulders during inhalation, making strength training an effective way to cure a singer of clavicular breathing.

### Oxygen Consumption & Vocal Stamina

“Cardiovascular fitness” means healthy heart and lungs - the efficient circulation of oxygen throughout the body and the ability to make good use of it. Cardiovascular training serves two major goals: higher “stroke volume” - the quantity of blood your heart pumps every time it beats - and increased oxygen consumption, because for average sedentary people, most of the oxygen we take in just gets exhaled again. If your heart pumps more blood, it won’t have to beat as frequently or work as hard, so you’ll feel more relaxed and calm. If you consume oxygen more efficiently, you’ll sleep soundly, feel more energetic, and enjoy a higher level of stamina. But the real benefit for your singing technique lies in the fact that if you consume oxygen more efficiently, you will be able to sustain longer phrases. If you’ve ever had the sensation that you were out of breath when there was still plenty of air in your lungs, this is why: you weren’t out of

breath, but you used up all the oxygen you were capable of consuming from your last breath, so your body sent you a desperate signal to inhale.

While any activity that temporarily elevates your heart rate improves your cardiovascular fitness, a skilled trainer can help you employ strategies that cause your body to make these desirable adaptations faster. By setting a pace for exercise that systematically elevates your heart rate, allows for brief recovery, and then repeats the process within as challenging a range as you can safely manage, a trainer can help you increase your stroke volume. Oxygen consumption will increase both as a result of improved muscle tone and increased cardio fitness.

### Exercise & Phonation

Free phonation also relies on balanced muscular development because tightness or over-activity in the chest and shoulders compromises mobility of the neck and larynx. Tension at the larynx creates resistance that requires “pushing” with the breath to create phonation, so strength training can indirectly help create a freer neck and larynx.

In *Dynamics of the Singing Voice*, Meribeth Bunch raises the concern that “Weightlifting could be detrimental because it tends to overdevelop the muscles of the neck and the adductors of the vocal folds. When closed the latter increase intra-thoracic pressure which is used to support the spine during initial phases of heavy lifting.”<sup>3</sup> This leads to the stereotypical grunting associated with weight-lifting. In the gym, this is known as the valsalva maneuver: The glottis is forcibly held shut by the vocal folds, creating a build-up of subglottic pressure and preventing exhalation. It’s a quick and dirty way to stabilize the torso, and it gives weight-lifters some extra leverage. This wreaks havoc on the vocal folds, and trainers now know that it is extremely bad for the rest of the body as well. The build-up of pressure caused by holding the breath this way is dangerous

for your heart, and the valsava maneuver is of limited use for strength training because it is far better for athletes to stabilize the torso by developing adequate strength in the muscles of the core. It may take constant harping for the first few weeks of training, but a responsible trainer will teach every client to lift without holding their breath like this. For singers, it is well worth taking the time to learn to stabilize the torso with the core muscles and not with the vocal folds because if this habit expresses itself in physical exercise, it is probably present in the studio as well; you may be stabilizing your voice by over-adducting your vocal folds rather than allowing a steady release of air modulated by the core musculature to do the work for you. If you over-adduct your vocal folds, you'll have to push with the breath to get them to vibrate. So while it is true that working out with poor form can exacerbate a tendency to push, learning to exercise with perfect form can help eliminate this tendency.

## Movement & The Singer

It is tricky enough to develop a singing technique that works reliably in the practice room. This technique must then be put to the test when you're burdened by a heavy costume, climbing stairs, fencing, carrying a 50 lb. child, or bending at the waist and shuffling around with a Rigoletto hump for hours. We need a sense of overall balance and coordination that will enable us to work our technique and express ourselves while extraordinary physical requirements are placed upon us. This year, the Metropolitan Opera asked Andrew Robinson, a full-time member of their dance corps, to offer movement classes to singers in the Lindemann Young Artist Development Program. Andrew emphasizes how small adjustments to their habitual posture and style of walking can have a powerful impact on their comfort and confidence with stage movement. By guiding them through stretching exercises and simple dance phrases, he helps the singers "create a shorter distance between the brain and the body, a greater awareness of what the body is doing and a stronger concept of movement, how it goes from being an idea to

getting the body to respond to that idea.” Andrew finds that singers frequently forget to breathe when they begin to focus on movement patterns. Among his goals for them is the ability to perform even movements that might look ugly or feel strange without feeling self-conscious about it: “Self-consciousness has dramatic negative consequences for movement because it immediately makes everything tighten up!”

Because this is the first year that such classes have been offered to the Young Artists, it is too soon to predict the impact this training will have on their overall performance, but it may lead to benefits for their singing as well as for their movement skills. Training the body to be more coordinated stimulates the nervous system and enhances our ability to make fine movement changes with greater speed and specificity. Most of us have had the experience of figuring out how to do something years after a teacher first suggested it to us. It’s possible to understand a direction intellectually without having adequate neuromuscular control to put it into effect. Strength and coordination training improve your overall kinesthetic sense in a way that complements Alexander lessons. By becoming accustomed to making frequent global adaptations, the body and mind develop a greater sense of malleability. Like Andrew Robinson’s work with the Met Young Artists, athletic training enhances your ability to focus on physical movement and deepens your understanding of how new habits are formed and new skills mastered.

Enhanced physical coordination has a profound impact on vocal technical work. The skill of adaptation - the ability observe and analyze movement and establish a new movement pattern - is a primary skill of learning to sing. I believe that this is the single biggest reason that some singers make faster progress than others. This skill is independent of any natural vocal talent. It can be globally cultivated through athletic training and then accessed in the studio. Mastering large movement patterns that are easy to see and feel is a lot easier than mastering the fine adjustments

we want to make with the aspects of our voice that are nearly impossible to monitor. Building skill in movement makes it easier to make those fine adjustments to the muscles that control the movement of our vocal folds and the shape of our resonating spaces.

The right exercise program can perfect our alignment, enhance our breath support and stamina, and improve our motor skills so that we learn technique faster - and it can also help us to feel and look our best. Part 2 of this article will discuss components of an exercise regimen, collaborating with a trainer, and aesthetic and dietary issues.

Dr. Friedlander maintains a voice studio and personal training practice in New York City. She welcomes questions relating to exercise and singing. [clfl@jhu.edu](mailto:clfl@jhu.edu)

1. P. Mario Marafioti, *Caruso's Method of Voice Production* (New York: Dover Publications, 1922), 305-306.
2. Richard Miller, *The Structure of Singing: System and Art in Vocal Technique* (New York: Schirmer Books, 1996), 238.
3. Meribeth Bunch, *Dynamics of the Singing Voice*, 4th ed. (New York: Springer-Verlag, 1997), 124.

## Sports-Specific Training for the Vocal Athlete, Part 2:

How to design the ideal exercise regimen for your lifestyle and art

Claudia Friedlander, DMus, CPT

In Part 1 of this article, I described the many ways a well-planned exercise regimen contributes to vocal technique and help singers meet the demands of performance. A program of strength, flexibility, coordination and cardiovascular training can improve alignment, breath management, stamina, and phonation. Fitness programs that challenge the neuromuscular system can enhance fine motor control so that we acquire new vocal skills faster and learn stage movement with greater ease. In this part, I will discuss components of an exercise regimen, collaboration with a trainer, and aesthetic and dietary issues.

### The First Step: Fitness Assessments and Goals

An effective exercise regimen begins with a complete assessment of your fitness and abilities and a detailed description of your goals. While everyone should assess general health and wellness before beginning an exercise program, the vocal athlete should monitor data related to the physical skills and qualities essential for singing. These assessments include:

**Blood Pressure and Resting Heart Rate.** If your blood pressure is excessively high or low, consult a physician to ensure your safety during exercise. Your resting heart rate is used to determine your target heart rate range to create an effective cardio program.

**Body Composition.** Assess your ratio of lean muscle mass to body fat every six weeks to track your progress. Your body fat percentage reveals more than your weight because muscle is much heavier than fat. A pound of fat takes up three times as much space as a pound of muscle! As your overall body fat drops by significant percentage points, you may lose inches and notice visible muscle definition but see little change in your weight.

**VO<sub>2</sub> Max.** A trainer or a physician can measure your oxygen consumption and help set a goal for your VO<sub>2</sub> Max. This is a crucial aspect of your exercise regimen, as oxygen consumption directly impacts your ability to sustain long phrases and perform energetic movements while singing.

**Posture and Movement Screens.** A comprehensive alignment analysis requires the assistance of an experienced athletic professional. Trainers vary in their methods and ability to assess alignment. I use a series of observations developed by the National Association of Sports Medicine (NASM) and a functional movement screen developed by physical therapist Gray Cook (see [http://www.functionalmovement.com/SITE/the\\_screen/index.html](http://www.functionalmovement.com/SITE/the_screen/index.html) for more information). Alignment is dynamic, so while it is important to observe static posture, you should also assess basic movement patterns. An experienced trainer can analyze the length/tension relationships of your skeletal muscles and design a program of movement, stretches and exercises to bring everything into balance.

Use this data to establish measurable goals for blood pressure, body fat percentage, VO<sub>2</sub> Max, and alignment. Set a date by which your goals can be attained and choose dates to re-assess performance along the way. Singers may enjoy this process of setting and working towards tangible fitness goals, as it can be much easier than setting goals for technical and career development! While vocal progress and performance careers sometimes develop along wildly unpredictable paths, you can collect data and monitor your progress in terms of these objective

measurements. You are now ready to set up a cardio program that will enhance your oxygen consumption and a strength and flexibility program designed to perfect your alignment and stabilize your core. Your assessment data will also make it easy to incorporate general wellness and aesthetic goals into your program.

### Sports-Specific Program Design

Athletes all need exercise regimens designed to help them accomplish the tasks specific to their sport, address their weaknesses, and build on their strengths. With this in mind, I consulted Rob Kram, a trainer with experience in sport-specific program design, to inquire what sort of regimen he would recommend for an opera singer. Currently Fitness Manager at the Reebok Club in New York City, Rob has designed exercise programs for Division I basketball players, as well as soccer, tennis, and baseball players. These athletes require a level of flexibility, power, balance and control far beyond the average person, qualities that are also essential for singers. To the best of my ability, I described the opera singer's job in purely physiological terms and asked how he would design a program to prepare a singer's body to meet the demands of our art form.

In sport-specific training of any kind, a program must be built upon the functional requirements of the sport. Rob expressed the importance of first-hand experience of a client's sport: "I'd have to go to whatever you would consider practice or rehearsals and observe what you do and note the length of time, the voice exercises that you do and take that into consideration for whatever program I would design...if I've never even tried the vocal exercises, it takes away from my effectiveness. I would try to mimic what you're doing to get the feeling of what is actually going on in my throat, what's going on in my diaphragm, what's going on with my core, how I am controlling that breath."

All elite athletes need to begin by resolving postural distortions. In addition to structuring a strength training program around the requirements of good posture, Rob would also assign 15 to 30 minutes of daily stretches and exercises to be performed at home: “For someone for whom posture and appearance is important for their profession, this will be the most important aspect of their program. A few hours a week with a trainer isn’t going to fix anything - it will be better than nothing, but it will not correct postural deviations. It has to be an ongoing, every day thing with exercises in a specific order so that each day you’re building on progress from the day before.” While he would prescribe a cardio program around building breath endurance, he feels that Pilates sessions are ideal for the kind of breath work that singers need: “With its focus on the core, Pilates really gets you to feel the breath going to places where most people normally don’t feel it - into the lats, into the obliques, and this is where the singers are going to need it the most...The more conscious you become of moving the breath to all different parts of the body, the easier it becomes, and then you’re building muscle evenly in all the different muscle groups that impact the breath.” He also expressed the importance of addressing skills vital to different kinds of singers, in the same way that athletes who play different positions on a basketball team train in different ways. While yoga is extremely beneficial to develop breath control, a kundalini yoga class would be particularly useful for the vocal gestures that coloraturas must execute, while a deeper, slower form of yoga would be a better choice for dramatic voices.

For ideal overall program design, an opera singer’s training schedule would therefore be just as intense as the ones Rob laid out for his Division I athletes, comprising a five- or six-day weekly regimen including two to three sessions with a trainer; one or two sessions with a private Pilates instructor using their special apparatus; yoga and cardio classes; and daily homework assignments to develop optimum alignment. “But that’s ideal, and not a lot of people will do that, so you start with ideal and then break it down to what the person can actually fit in with rehearsal schedule, family, travel, which may really cut down the ideal program to maybe two or three days

a week. There will still be results, but it will extend the length of time that it will take to get those results.”

### Choosing a Personal Trainer

Just like voice teachers, personal trainers vary in their qualifications and experience, and there is currently no federally regulated standard for personal training certification. As a result, certification programs range from extremely rigorous to some that are completed in a weekend. Your trainer should possess an excellent national personal training certification, current CPR certification and several years’ experience. Reputable certifications include the American College of Sports Medicine (ACSM); the National Association of Sports Medicine (NASM); the International Sports Scientists Association (ISSA); the National Federation of Professional Trainers (NFPT); and the American Council on Exercise (ACE). The NASM paradigm is ideal for singers because it teaches alignment, balance and coordination before training strength and power and proposes a system of exercise progression adaptable to the specific requirements of any sport.

I asked Rob Kram what qualifications a singer should seek in a trainer. Under ideal circumstances, “The best thing to look for would be someone who has experience training singers. In an ideal world, I would give you a trainer that has a college degree in the field, has been a singer, knows what it takes to do the vocal exercises personally, obviously one of the better private trainer certifications, like NASM or ACSM, and real success in training a singer in the past as well as training themselves. You could get even more ideal by finding a trainer who has a Pilates or a yoga certification at the same time, along with the singing background.” While this would be difficult to find, you should at the very least seek a trainer who respects the athletic nature of our art form and is intrigued by the challenges of designing a sports-specific program

for voice performance. Any trainer on Rob's staff would want to observe a voice lesson and perhaps even take a lesson themselves prior to designing a singer's exercise program, and we should seek this level of commitment. We need trainers with experience in sport-specific program design who are interested in our sport.

Trainers work as private contractors or as employees of a health club. If you hire a private trainer, they should provide proof of their credentials, references, and information about insurance coverage. All trainers should carry liability insurance against the unlikely event that a client is injured. Don't feel bad about asking for this. Your trainer will also ask you to sign a waiver before you work together. If you prefer to work with a member of the training staff at your gym, meet with the fitness manager and ask their recommendation, but be clear about your goals and what you are looking for in a trainer, including the quality of their certification and years of experience. It might be a good idea to show them this article. While there will hopefully be someone staff who will meet your needs, some large gym franchises unfortunately experience a high level of turnover among the training staff and hire trainers without certification or experience. Try to engage a trainer who has been with the club for a while and looks like they will stick around. A more experienced member of their staff may charge a higher rate, but this is preferable to building a relationship with a less expensive trainer only to lose them after a month or two.

### Exercise and the Beautiful Singer

Amidst the increasing pressure on opera singers to cultivate an attractive physique, I propose that we vocal athletes regard our physical appearance in much the same way that other athletes do: it will be the natural result of our training. Swimmers, basketball players and gymnasts develop

their physiques as a natural consequence of their sport; while they train movements, not aesthetics, the result is often very beautiful. If we cultivate strength, coordination, flexibility and stamina in the service of our art form, the likely result is that the grace and beauty of our singing will be reflected in our physical appearance. An exercise regimen that promotes optimum alignment, dynamic breath management, ease of movement and vocal stamina will usually have the happy side effect of aesthetic weight management and muscle tone.

Conversely, weight management or body-building undertaken for the sake of appearance without consideration for vocal health will have unexpected and possibly undesirable results for the voice. Men who develop massive chest and abdominal muscles without a balanced overall strength-training plan risk a lopsided development of the torso, compromising breath capacity and restricting range of motion of the strap muscles that anchor the larynx in the clavicles and sternum, a disastrous development for vocal technique. Woman who sculpt their arms and shoulders but do not train the large, less aesthetically interesting muscles of the chest, back and core can end up with debilitating low back and neck pain, leading to problems of breathing and phonation.

If you plan to lose a significant amount of weight, realize that this can affect your instrument in unpredictable ways. Achieving a healthy weight will do wonders for your level of energy and the longevity of your career - not to mention your life! - but great care must be taken. While the old myth that excess weight contributes to resonance has long been laid to rest, excessive abdominal weight plays a non-zero role in one's overall technique and I believe this needs to be investigated more seriously. Because abdominal weight can exert a significant downward pull on the lower ribs and diaphragm, this mass is integrated into whatever strategy a singer uses to modulate the release of air. Eliminating this aspect of the functional breathing anatomy will have an impact. You should gradually compensate for the loss of abdominal weight by building core and

abdominal strength. Weight loss should be undertaken slowly, carefully monitored by both your doctor and your voice teacher.

## Nutrition and Exercise

Aesthetic weight loss or gain can be integrated into your training program, as both will result from improved body composition - the ratio of lean muscle mass to fat. Regardless of diet fads and trends, the rules governing weight management remain simple: weight loss results when you expend more calories than you consume. Personal training certifications require us to refer clients to FDA guidelines for creating a balanced diet, with calories well-distributed over the various food groups; the FDA food pyramid can be found at <http://www.nal.usda.gov/fnic/Fpyr/pyramid.gif>, and you can refer to “Dietary Guidelines for Americans,” a useful government-issued document, at <http://198.102.218.57/dietaryguidelines/dga2000/document/frontcover.htm>. Trainers generally recommend consumption of carbohydrates prior to working out and protein afterwards, as carbohydrates fuel exercise and protein assists with repair and enhancement of muscle. We also encourage “grazing”, or the consumption of frequent, smaller meals throughout the day to keep the metabolism stoked and prevent the intense hunger pangs that signal slowing down of the metabolism. Unless a personal trainer holds a nutrition degree or a related advanced certification, this is the limit of their nutrition expertise. Recommending dietary supplements or prescribing a diet plan that falls outside of FDA guidelines beyond the scope of our practice. Nevertheless, many health clubs sell supplements and enlist their trainers in this process. While I would never say that all supplements should be avoided, do consult a qualified medical professional before trying them out.

Trainers generally advise against following the Atkins diet or other extreme high protein, low carbohydrate diet plans. Sports nutritionists recommend that 55-65% of an athlete's daily caloric intake come from carbohydrates. While we all know people who swear by these diets, a significant, peer-reviewed scientific study of their long-term effects has yet to be conducted. High protein diets create a sense of satiety that may keep you from eating as much as you normally would, but they can also make you extremely dehydrated. Water is retained in the muscle as part of the process of storing glycogen from carbohydrates, so eliminating carbohydrates will result in an immediate, extreme loss of water weight, which is thought to be the reason that people lose weight so quickly. However, you cannot participate well in an exercise program on a strict low-carb diet, because the glycogen stored in your muscles is the very fuel needed for strength training of any kind - not to mention the energy you need to sustain an opera role. Singers should obviously avoid diets that cause dehydration or compromise physical stamina. If you're reluctant to give up your low-carb diet but want to start exercising, I recommend that you cheat a little bit and consume a good-sized portion of carbs before your workout.

In Conclusion -

A well-designed exercise program holds such immense potential benefit for classical singers that we really should avail ourselves of the means that athletes use to prepare their bodies for optimal performance. The athletic training paradigm could so easily be adapted to provide excellent training to singers as an integral component of a college voice curriculum, particularly at institutions that host Division I or II sports teams where outstanding faculty and resources are already in place. Many voice departments have already begun to support our physical needs by providing classes in movement and Alexander Technique, and the sport-specific conditioning I

have described would be a fabulous addition to these programs. Meanwhile, the young singer who already feels financially overextended and pressed for leisure time may consider hiring a trainer and committing to an exercise program an unreasonable luxury, but this investment of time and money can lead to invaluable growth for your technique and career.

Most postural distortions can be completely resolved within six months. Massive improvements in oxygen consumption can be achieved with just two or three months of targeted cardio work. Optimal alignment, breath coordination, and stamina are essential components of a singer's technique, and we can all benefit from the enhanced neuromuscular coordination, stress relief, and comfort of movement that exercise provides. I encourage all singers to take advantage of the knowledge and skills that athletic trainers possess for the achievement of these skills.

Dr. Friedlander maintains a voice studio and personal training practice in New York City. She welcomes questions relating to exercise and singing. [clfl@jhu.edu](mailto:clfl@jhu.edu),  
<http://www.claudiafriedlander.com>