

## A Beginners Guide to Getting Strong

By Jeff Conkle B.S.

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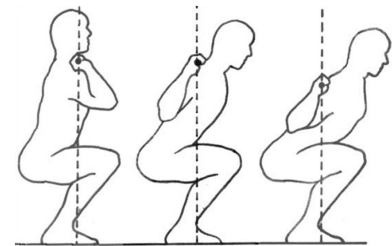
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Getting stronger starts with a plan; this plan needs to include a lifting program, a diet program, and a sleeping program. Yes that's right; to get strong you need to sleep. This is because your body repairs itself during sleep. The sleep recommendations for adults are 6-8 hours per night, when you add in resistance training, you need to give your body even more time to recover. My personal recommendation is that as you start weight training, see how 8 hours feels and keep increasing the amount of time until you actually feel refreshed when you step out of bed in the morning. I know many people will complain that they are just too busy to get 8 hours of sleep a night, but it really comes down priorities. What will be better in two years, that you have gotten much stronger and are now more energized throughout the day, or that you watched the news (or any TV show) every night for two years?

Next up is our diet plan. On this topic I will be brief; however, I hope to introduce you to the basics of an effective diet for resistance training. First we need to look at our total caloric needs. A good way is to calculate your basal metabolic rate (BMR) then multiply it by your activity index. The most convenient way to do this is internet calculators like this one <http://www.bmi-calculator.net/bmr-calculator>. To use this calculator type in your height, weight, sex, and age. Then take the resulting value and click on the link for the Harris Benedict Equation, find the level of exercise that you think best describes yourself, and multiply your BMR by the number (1.xxx) that is associated with your level of exercise. The final result is a good estimate of the number of calories you need per day to stay the same weight. If your goal is to change weight start by adding or subtracting 250 calories a day and see how that goes for a couple weeks, and then further tinker from there. Next is our protein intake; the ACSM recommendation for protein intake for resistance training is about .8 grams of protein for every pound of body weight. So to find your level of protein intake for the day you should multiply weight x .8 = grams of protein ÷ grams x 4 = calories from protein per day. Then we have carbs or carbohydrates; if your activity is mainly resistance training then having about 50% of your calories coming from carbohydrates is a good place to start. If you plan on lifting and running start with 60%. If you feel slow (and your sleep is good) then you probably need some more carbs, try bumping your value up by 5% and try again. Lastly we have fat. Fat should make up between 20 - 30% of your daily calories, and the focus should be on avoiding trans fats and balancing consumption of saturated and unsaturated fats. So when all is said and done a good place to start a lifting diet is about 50% carbs, your protein intake (probably around 20%), and the rest is fat (~30%).

Finally, we have the actual exercise. This can be broken down into exercise frequency, exercise selection, and exercise volume. Exercise frequency is how often you exercise. For someone who has absolutely no history of exercise, it is best to start with 1-2 lifting days per week

and 1-2 cardio days per week (walking for 30 min or so is probably enough cardio to start with). If you are physically active (i.e. lots of walking/aerobic/light activity in your daily life) then you can start with 3 lifting days per week. Lastly if you have been doing resistance training but haven't been seeing increases in your strength you may want to dial back to 3 or 4 lifting days per week. In all these groups building cardiovascular fitness is also important for health, but adding both heavy lifting and progressive cardio at the same time can overwhelm your body's recovery abilities. So to avoid this snafu, work to maintain your current abilities for now. To maintain your current abilities try to do a good amount of physical activity throughout the day and also try to incorporate 1-2 cardio exercise sessions per week in the 20-30 min time window at a moderate intensity. Again if you ever feel like you just aren't recovering from exercise (and your sleep and diet are solid) you probably need to tone it down some, in order to get better results.



Examples of a good front squat and two back squats with slightly different bar placements from <http://crossfitmildenhall.blogspot.com>

Next we get to choose what exercises we do. The goal (especially for beginners) is to choose exercises that demand the body to recruit multiple different muscles and joints to accomplish the work. Typical examples of these types of exercises include the squat, deadlift, forward presses, pullup, row, clean, snatch, and the multitude of variations on these exercises. The issue with these exercises is that they are easy to do with incorrect form; fortunately you are involved in the FSFP and have access to our knowledgeable staff during the open gym hours. So this problem is easy to overcome; all you have to do is ask. Now from the list of exercises above we want to make a balanced full body selection. In my opinion the simplest way to go about this is to balance push and pull exercises for both the upper and lower body. For example, an exercise selection for a 3 day/week plan (my preferred beginner frequency) could look like this:

Monday - Back Squat, Bench Press, Power clean (or Straight leg deadlift)

Wednesday - Deadlift, Weighted Pullup, Overhead Press

Friday - Front Squat, Bent Row, Weighted Dips

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Edited by Miguel Class

The rationale used to come up with this is again balancing push and pull exercises throughout the week. For the legs we have 2 pushes: Squats and 2 pulls: deadlift varieties and the clean. For the upper body we have 3 pushes: bench, overhead press, and dips and 4 pulls: bent row, pull-ups, deadlifts, and/or cleans. You will also notice that there are only three exercises per day. The reason is that these exercises are very taxing and if you are doing them correctly, as a beginner, you will not be able to add more work and still be able to recover from it fast enough to be ready to lift next time.

Now that we have that nailed down, all we have left to figure out is how much we should do. This is a very complex determination based upon your goals (strength vs. looking stronger) and genetics, sex and age. A good place to start is the goals. If you purely want to get stronger or more “toned” for already thin females, stay in the 1-6 rep range per set, or how many times you lift the weight before pausing to take a break. It is also important to know how many sets to do. To determine this I like to calculate the total reps of that exercise per day and make sure it falls between 10 and 30 reps. For example you could be doing ten sets of 2 reps or 4 sets of 6 reps and be in this zone. As with most things you will want to vary where you fall in this total rep zone so you are including some higher rep days with a slightly lighter weight and some low rep days with a weight that is near maximal. Conversely if you have interest in growing bulky bodybuilder type muscles you will want to spend most of your time in the 5-12 rep range. You will also want to achieve more reps per workout, so your total rep goal window will be more towards 25-60 reps/exercise/workout. So use your goals to determine what rep range and total reps you should be doing. Then divide your total reps by your selected rep number to determine your overall amount of sets. Another factor which determines your total rep number and amount of sets is your age, sex, and genetics. You can't change these so just listen to your body if you feel fresh every day, then you are not lifting heavy enough. Lifting appropriately will make you slightly sore for a day or 2 post lift. On the other hand if you wake up every day and feel like you can't get out of bed sore, you may want to dial down how heavy you are going or how many sets you are doing. This takes time and practice, but it sounds more complicated than it really is.

A note about the reps numbers, if you are to do 4 reps in a set ideally you will choose a weight that you can accomplish 4 reps with full range of motion and perfect form, but if you had to do 5 reps with that same weight you would either not be able to do it with good form, or you might fail entirely. I would recommend that beginners underestimate their abilities slightly to ensure proper form is maintained and injuries are avoided. Also these rep goal ranges do not consider a warm up set(s) which are **necessary!** To warm-up for an exercise do a lighter weight than you will work with for more reps than you eventually want to do. Once you feel like the muscle is filling with blood and is warm it is time to move on to work sets.

Now that your workout plan is set for one week, we need to talk a little about progression. Simply put, as a beginner you should progress every time you walk into the weight room (if diet and sleep are good). It is not wise to try to progress all your lifts each session, so instead shoot to improve one lift's weight (5-10lbs) at the same number of reps and sets, improve one lift's number of reps/set (1-2 reps) with the same weight and sets, and keep one lift maintained. This pattern when rotated around every week will keep your gains coming consistently and for a long while. Eventually you will no longer be capable of continuing this pattern, when this occurs reset that lift by 10% of the weight you are supposed to lift and restart the whole process over again.

In conclusion, it is very important to remember that getting strong is more of a marathon than a sprint, and changes should be gradual and hard earned. This outlook will help keep you motivated by the little gains (like hitting one more rep than last week), and keep you from being disappointed that after 8 weeks of hard work you still don't look like superman. It is also important to work hard at your plan, but to reevaluate it every month or two and make changes based on how you felt as you went through it. This helps keep your plan dialed into your individual recovery abilities. Good luck on your strength training journey, and I look forward to seeing you lifting hard during our FSFP gym hours.

*(For further reading on the topic check out Mark Rippetoe's books Starting Strength and Practical Programming for Strength Training.)*

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## Myth Busters

*By Nate Saunders, M.A.*

As exercise physiologists, one of our unwritten obligations is to remain current on popular literature that addresses exercise, nutrition, weight management, and obesity associated diseases. Unfortunately, it is all too easy to be lead astray as there is little legislation to regulate the claims companies can make about their products. As a result, we have products that are marketed to give you ripped abs, burn fat, improve your energy, lower your core temperature, and improve your overall health. While it would be nice to assume that these claims are founded in hardcore research, it simply is not the case much of the time. One of my all-time favorite myths is that eating low-fat foods will lead to a decrease in your total body fat. Even if your diet consisted solely of carbohydrate you would still store excess energy as fat. Ultimately, the thing that leads to a decrease in total body fat is a chronic energy deficit (burning more calories than you consume). Myths like this can burn money instead of fat and may even lead to adverse health effects. Therefore, even when information seems to be coming from a fairly credible source; please take the time to discuss it with your friendly exercise physiologist. It may save you money and time.



<http://blogs.wsj.com/health/2008/04/24/does-this-pill-make-me-look-fat/>

## Focus on Current Research

By Mike Smith, M.S.

The American College of Sports Medicine has specific recommendations for time, type and intensity of exercise. For aerobic training, the ACSM specifies 3-5 days per week of moderate to high intensity exercise for 30-60 minutes per day. Resistance training is also recommended, but for 2-3 days per week so that 2-4 sets of each major muscle group is completed per day at varying percentages of an individual's 1 repetition maximum weight, depending on their ability. These recommendations were specifically and deliberately chosen by experts in the field to promote a healthy cardiorespiratory and musculoskeletal system and a desirable body composition in normal adults. While these recommendations are a good fit for those who exercise for general wellness, those who are training for aerobic or power sports rarely follow the time, type and frequency set forth by these guidelines. They also often train specifically for their sport and neglect the other components of fitness. For example, those who train for marathons will rarely if ever set foot in the weight room during their training season and those who compete in weightlifting competitions see anything more than 5 repetitions as aerobic exercise and avoid this type of work.

What happens to these athletes who are so focused on one specific goal they neglect the other components of fitness? Are they at higher risk to be the fittest body at the morgue? Research being conducted in our program has the specific aim of discovering if these focused training programs are deleterious to cardiovascular health. For example, there was a case study published in 2001 that found a physician with no other risk factors for heart disease may have suffered a heart attack due to elevated oxidative stress associated with exercise<sup>1</sup>. Reactive oxygen species (ROS), also called free radicals, are normally generated from metabolism of food, exposure to sunlight and even from exercise. With exercise training, the human body can up-regulate free radical scavengers so that trained individuals are better able to cope with increased production of ROS. It is only when ROS production exceeds the ability of pathways that turn these ROS into benign substances that there is a problem. These oxidants can interfere with normal blood vessel function and can promote processes like plaque formation in arteries.

This isn't to say weightlifters are off the hook. Previously published literature has demonstrated what could be a deleterious change to blood vessel stiffness in those who only exercise using weightlifting without any aerobic exercise<sup>2</sup>. Researchers found that after only 6 weeks of this type of training, blood vessels became stiffer, which increases the work of the heart to move a given amount of blood. This condition could essentially mimic high blood pressure and the heart could grow larger and irreversibly weaker.

Here in our lab we are investigating if athletes who focus solely on one type of exercise or the other are at higher risk for these negative changes. We incorporate non-invasive measures of how efficiently the heart and the aorta work together to move blood through the system by direct physiological measurements and some really fancy math and physics. We also have methods in place to determine if any changes we do find are a result of a central mechanism in the brain or a local change in substances released by blood vessels. We are currently recruiting male research volunteers who are between 18-39 years old, between 5'8"-6'2", not overweight, do not have a history of high blood pressure, do not use tobacco products and who have trained using only aerobic exercise OR only resistance exercise for 2 or more years. Personally, I'd like to believe that exercise could never be bad for you, but a Hindu proverb details that, "Even nectar is poison if taken to excess."

1. Mastaloudis A, Leonard SW, and Traber MG. Oxidative stress in athletes during extreme endurance exercise. *Free Radic Biol Med* 31: 911-922, 2001.

2. Miyachi M, Kawano H, Sugawara J, Takahashi K, Hayashi K, Yamazaki K, Tabata I, and Tanaka H. Unfavorable effects of resistance training on central arterial compliance: a randomized intervention study. *Circulation* 110: 2858-2863, 2004.



# COREtastic – Finding core work using exercise equipment

By Ali Ianni, B.S.

Ever noticed the half-resistance ball device in the closet of the FSFP gym? Wondering how to use the resistance bands for something other than bicep curls? Longing to hop onto the pull-up bar, but not ready to conquer pull ups? COREtastic is a group fitness class I taught as part of the Buck-I-Robics program and the idea of the class is finding core work via different exercise modalities while avoiding basic crunches. In the context of this article, core refers to the front and back of the torso (abdominals and spinal stabilizers) as well as the gluteal muscles.

## The BOSU

The BOSU trainer is a fitness device meant to force instability. It can be used with the inflated, blue hemisphere OR the black platform facing up. Typically, having the BOSU situated so the blue hemisphere is exposed is more stable than the black platform, therefore the blue side up is a great place to start as a beginner. Generally, any free weight exercise that can be properly executed on stable ground can be translated to the BOSU – i.e. performing free weight bicep curls while standing on top of the BOSU.

The split squat is an exercise that focuses on the three major muscle groups of the leg ( Quadriceps, Hamstrings, and Calves) as well as the Gluteal muscles. The abdominals and spinal stabilizers would receive secondary work regardless of the use of the BOSU, but the addition adds more stress and therefore more work for these muscle groups. To begin, take a large step forward landing the front foot squarely on the BOSU (for all exercises on the BOSU, center the foot/feet in reference to left/right as well as front/back) into a “Lunge” position as shown. Bending the ankle, knee, and hip of the back leg, lower to the ground until the front thigh is parallel to the floor. Straighten the hip, knee, and ankle to return to the starting position to complete one rep. All reps could be completed on one leg before moving onto the other side or reps can be alternated from side to side. Be sure to keep the chest up and maintain your best posture throughout the range of motion.



Split Squat

<http://www.exercise.wsu.edu/resistance/display.aspx?id=294>

The plank is a posture adapted from yoga and Pilates that incorporates full body stabilization. As with the split squat, by performing the exercise with the unstable BOSU trainer these stabilizers are required to perform more work. The image above is a full incline plank. The demonstrator has his hand on the BOSU, with his wrist joint placed directly under his shoulder. He is contracting his shoulder blades together and attempting to form a straight line from his head to shoulder to hip to ankle. There are many other variations, such as a modified plank with either the forearms on the BOSU instead of hands or being the second point of contact instead of toes. Also, a decline plank could be performed by placing the hand/forearms on the ground and elevating the toes onto the BOSU. From either plank, you are in a perfect position to perform push ups.



Plank/Push Up

<http://www.exercise.wsu.edu/resistance/display.aspx?id=319>

## Resistance Bands

By anchoring a resistance band to a stable surface (such as a post), one can inexpensively recreate the hallmark of the COREtastic class – the Core Pole. Most exercises that can be done with a cable system can be done on a Core Pole or our recreated Core Pole. i.e. Triceps Pushdown.



<http://www.sportandhealth.com/NewsArticle.aspx?id=5102>

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Single Arm Row Twist  
<http://agfnews.com/?p=581>

The exercise in the image (left) is nearly identical to the one that will be described, with the exception that the image uses two resistance bands and the movement is performed in an alternating fashion. If you wish to perform the exercise in this way, simply set up two bands instead of one. To begin, attach the resistance band to a sturdy post around waist height. Do this by looping one end of the resistance band through the handle and carefully pull until snug. Begin in a soft squat with feet slightly wider than shoulder height. Make sure that you are sitting up tall trying to maintain a straight back. Grasp the handle in your right hand. Bending the elbow, pull the band back to so your fist end at about your shoulder. As you are rowing the band closer to your body, simultaneously twist from the waist toward the right, trying to turn the body from the waist up toward the right. Once you have reached the desired reps, repeat to the left.

To begin, attach the resistance band to the bottom of a sturdy post. Loop the handle of the resistance band over the foot farthest away from the post. With a slight bend in the knee of the supporting leg (the leg closest to the post), slowly raise the leg attached to the resistance band away from the supporting leg and to the side. When you have reached the top of the range of motion, SLOWLY bring the leg back to the beginning position. In this way, at the beginning of the movement you are pushing against the resistance of the band and as you return to the starting position you are actively opposing the resistance of the band. Again, make sure the upper body is staying tall, trying to maintain a flat back.



Lateral Hip Isolations  
<http://bienda.lesaude.com/images/aerobicyfitness/>

### The Pull Up Rack

Although I did not have access to pull up bars in the scope of my COREtastic class, it is an exercise modality that can be used for many things other than pull ups and is featured in the FSFP gym. **NOTE:** the hanging knee raise and its variation the rotational knee raise can also be performed on the FSFP's new vertical knee raise machine.

To begin, grasp the pull up bar just wider than shoulder width. If you are not able to reach the bar from tiptoes, you may want to jump onto the bar or use one of the plyo boxes to get there. Once hanging onto the bar, pull the shoulder blades together behind you and pull the belly button in and up, tightening the abdominals. Without swinging the legs (although this is a good beginners "cheat" to begin the motion), use the lower portion of the abdominals to tuck the knees into the chest, as is shown in the image above. At first, you may not be able to achieve this range of motion and that is fine just keep working toward a more tucked position. Since you are hanging and therefore at gravity's mercy, you will noticed that you also have to activate the muscles in the low back to prevent it from rounding too much during the exercise.



Hanging Knee Raises  
<http://sulfababy.tumblr.com/>



Hanging Rotational Knee Raise  
<http://www.criticalbench.com/exercises/full-rotation-knee-raise.htm>

The rotational knee raise is very similar to the regular hanging knee raise, with the exception that instead of tucking the knees into the chest the goal is to keep the upper torso square and stable and lift to the knees as maximally as you can to the left/right. This will require more work for the side of the abdominals (the obliques).

Of course you can always still use the BOSU for crunches and the pull up bar for pull ups, but hopefully this article has sparked some interested in trying some new exercises on these pieces of equipment. Remember to attempt to keep the spine as long as possible (straight back) and pull the belly button in and up to engage the abdominals. As you progress through these exercises, feel free to try different variations to challenge yourself. When you're ready you can even begin to perform exercises with multiple pieces of equipment!

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# Bike Commuting

By Allan Sommer, M.S.

Have you considered commuting to school or work on a bicycle? Are you an experienced veteran of bicycle commuting? Regardless of which category you fall into, it's likely that you could use some tips from other commuters, and are willing to provide some of your own. What works, what doesn't? What should be avoided at all costs, what are the essentials? If you asked 10 different commuters for their top 10 tips, you would likely see some overlap in responses. Additionally, there are likely to be those that you would have never thought of. As the seasons are starting to change, the tips and essentials will also change.

I have put together 10 of my top tips that I most often offer to bicycle commuters. This list is by no means comprehensive, though it should give you some things to think about. Also included are several websites where you can go for more information, and hear from novice and experienced commuters alike. The most important thing is to be safe and have fun. Keep the rubber side down!

- Wear a helmet! - Worrying about messy hair is no excuse. Protect that noggin. Also remember, a bicycle is a vehicle. Follow the rules of the road and don't ride on sidewalks.
- Be visible. Wear bright colors in daylight hours. At night, wear something reflective – or – at least wear something white. Use front and rear lights and reflectors.
- Be predictable. Make eye contact. Ride on the correct side of the road, not against traffic. Look behind you before you make a turn or lane change, that lets drivers know you're up to something. Use hand signals and don't wobble around. Don't weave in and out of the lane when parked cars are spread out.
- Check your bike every weekend – regular riding will cause wear on the consumable parts of your bike and you'll want to make sure you catch any problems early (If you are just starting out have you bike checked over by a local bike mechanic):
  - Tire pressure
  - Tire wear and damage
  - Tightness of quick releases and other fastenings
  - Brakes for wear and stopping power
  - Chain for stiff links, rust and dryness
- Always carry flat repair materials – be sure to have an extra tube, tire levers, patch kit, pump and hex wrenches and always keep it on your bike or in your bags.
- Check the weather nightly – Keep an eye on your local weather so you can plan to dress for the temperature and precipitation. With winter coming, be sure to pay extra attention to the temperature and chances and type of precipitation (see the cold weather link below for more tips)
- Pack the night before – By packing your clothes and lunch the night before you'll reduce your stress the next morning. You'll also be in a better state of mind so not to forget something.
- Store hygienic necessities at the office –Keep an extra of everything you need to clean up from your commute (deodorant, towels, wipes, etc.) at your office. This is essential, especially if you do not have access to a shower at work.
- Take the lane: Don't be afraid to get out in the middle of the lane in stop-and-go traffic. Just remember to follow all traffic laws! You WILL be tempted to blow past a line of cars queued up at a stop light; don't, just take your place in the middle of the lane and take your turn.
- Ditch the headphones: It is essential to hear what is happening around you. You might not think so, but cars can sometimes sneak up on you. This will keep you from being startled and making erratic movements.



<http://www.bicyclesigns.com/Share-the-Road/Share-Road-Sign-Graphic/SKU-K-4296.aspx>

## Additional Resources

<http://www.commutebybike.com/>

<http://yaybikes.com/>

[http://www.morpc.org/transportation/bicycle\\_pedestrian/BikeUserMap.asp](http://www.morpc.org/transportation/bicycle_pedestrian/BikeUserMap.asp)

<http://howwerollosu.com/>

## Cold Weather and Commuting in the Dark Tips

<http://www.commutebybike.com/2006/11/01/how-to-dress-for-cold-weather/>

<http://www.commutebybike.com/2007/09/10/commuting-101-lights-at-night/>



## **Ask the Expert**

***“I have read and heard a lot about if it is good or not to have caffeine before running. Will it help me run better? How much should I have if I am going to drink it before running?”***

Thanks for your question, and I appreciate you wanting to do the right thing with something you are putting into your body. This is a question I have been asked many times over the last few years, and it is one that deserves some clarity as there is a lot of misinformation out there about caffeine as a performance enhancing substance.

There is little question that caffeine is the most widely consumed drug in the world. Indeed nearly 100 percent of adult men and (non-pregnant or lactating) women report some level of caffeine consumption. Due to both the widespread availability and use of caffeine, both socially and as a performance enhancer, in 2005 it was removed from the list of banned substances by both the United States Olympic Committee and the International Olympic Committee.

It is true that many, though not all, endurance and strength athletes utilize caffeine as a performance enhancer. However, many athletes believe that as the thermometer rises caffeine consumption becomes more of a handicap than a performance enhancer. This belief has also been reported widely in the popular media. But the negative or poor influence of caffeine on a.) your hydration status; b.) your bodies ability to thermoregulate; and c.) your overall heat tolerance is not supported at all by carefully controlled and published scientific studies.

Caffeine is accepted by nearly all exercise physiologists as an effective and positive performance enhancing aid, and it has been studied extensively over the past 50 years in relation to athletic performance. We know caffeine has a stimulating effect on the central nervous system, which serves to lower your perception of how hard you are training or racing, reduce the sensation of fatigue one has while exercising, and even diminish feelings of pain. Caffeine has also been shown to enhance fat as a fuel source during exercise, and to increase the time to exhaustion for endurance athletes while training and racing. Finally, caffeine has been shown to improve the ability to focus and perform technical skills both during and after strenuous activity or fatigue.

The level of athletic performance enhancement you might expect to gain from caffeine consumption depends on a number of factors, which include: a.) the duration and level of intensity of the activity you are engaged in; b.) what amount of caffeine you typically ingest on a daily basis; c.) when you consume the caffeine in relation to your training or scheduled race; and d.) if you are someone that uses caffeine daily.

When taking all of the current available published scientific literature into account, and making the assumption you are already someone that has caffeine regularly, the following three recommendations should be followed to obtain the maximum endurance performance benefit:

- 1.) Caffeine should be consumed no more than 60 minutes prior to training or racing, and using it during training or a race appears to make it the most effective. Consumption during training or racing can be accomplished by utilizing performance beverages with caffeine, or gel packs/blocks/beans with added caffeine;
- 2.) The most effective amount of caffeine for performance enhancement appears to be 3 – 6 milligrams of caffeine per kilogram of body weight. An 8 ounce cup of Starbucks coffee has approximately 150 milligrams of caffeine, and a 12 ounce Pepsi has approximately 40 milligrams of caffeine;
- 3.) Athletes that ingest caffeine regularly will see the greatest performance benefit by not having any caffeine for 5 -7 days prior to a race.

The often publicized belief that caffeine acts as a diuretic and serves to dehydrate athletes has prompted many to advise against consuming caffeinated products prior to exercise, especially when the environmental conditions are hot and/or humid. Inherent in this recommendation is a belief that the diuretic effect of caffeine will decrease the ability of your body to thermoregulate. Once again, a careful review of the available published scientific literature does not support this recommendation. There is simply no data to back up this belief.

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A recent review of the caffeine and diuretic literature concluded that caffeinated drinks may comprise a large portion of your daily intake of fluids, and that caffeinated beverages appear no more significantly diuretic than tap water. Several recent exercise studies that utilized dosages of caffeine as high as 600 milligrams per day (approximately four 8 ounce cups of Starbucks coffee), demonstrated that caffeine had no detrimental diuretic effect either at rest or during endurance exercise. With respect to the caffeine-induced loss of sodium and potassium while exercising, the data shows that caffeine can increase excretion of these electrolytes. However, based on the latest nutritional intake data from the U.S. Academy of Sciences, the average American consumes more than enough sodium and potassium in their typical diets to compensate for the caffeine-induced losses of these two electrolytes.

As an exercise physiologist and endurance athlete, I am frequently questioned about numerous training and nutritional plans for performance. It is clear to me whether beginning or well seasoned, amateur or elite, endurance athletes are searching for aids that will improve their performances during training and racing situations. Unfortunately, the line between what is scientifically known and what is hearsay and hype is often blurred. With regard to caffeine, based on the available published scientific literature and my own experience, I believe caffeine can be a very effective performance aid in both training and competition. Be advised though, it is the individual athletes responsibility to determine how they respond to any performance or nutritional aid, and then develop the most effective plan for themselves and their sport.

-Steven T. Devor, Ph.D., FACSM

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## Autumn Schedule

Morning General Conditioning	Monday - Friday	6:30-8:30am
Noon General Conditioning	Monday - Friday	11:30-1:25pm
Evening General Conditioning	Monday - Thursday	4:30-6:30pm
Water Aerobics/Lap Swim	Monday, Wednesdays, and Friday	12:30-1:30pm
Boot Camp	Monday	12:30-1:30pm
Yoga	Tuesday and Thursday	12:30-1:30pm