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## CLINIC

# Enhancing Athletic Performance

by

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**A**thletes, or performers of any type for that matter, are constantly seeking techniques that will aid performances. Every competitive sport requires (1) individual physical attributes such as speed, agility, endurance; (2) a repertoire of fundamental and advanced skills and techniques; (3) knowledge of strategies appropriate to the particular sport; and (4) strategies such as formations, systems, and "plays".

Besides the aforementioned, optimal performance requires control of the athlete's emotional experience, that is, control of anxiety levels, regulation of concentration, stimulation of aggressive behavior when appropriate, enhances motivation, instillation of confidence and pride, and inhibition of the psychological factors that often serve to limit physical performances.

Attention may be directed to the team as a unit or to an

individual's particular needs. Essentially there are two areas that are important and helpful to address: (1) control of arousal level and (2) neuromotor facilitation. The control of arousal is important because, no matter how skillful one is or how well one uses any technique, it can all be lost if the arousal level is too low or too high. Secondly, the facilitation of neuromotor pathways is very important to enhance the actual performance of a particular skill. Beyond the Xs and Os of

# Strength Training Q & A #15

by

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**S**hould I wear a belt to protect my lower back while I'm lifting weights?

My opinion is that most weightlifting enthusiasts actually wear a belt merely because their thinking is so heavily influenced by the so-called "muscle mags." Keep in mind that many recreational lifters aspire to have physiques just like the male and female bodybuilders glorified in those publications. The recreational population will do anything and everything that the current physique champs do as part of their bodybuilding lifestyle. This includes following the same training programs, eating the same nutritional supplements and even wearing the same clothing. Since most of the photos in the magazines depict bodybuilders wearing belts, it follows that most people feel the need to wear them as well. Because of this "celebrity influence," lifting belts have become firmly entrenched as part of the traditional weightlifting garb.

Weightlifting belts -- and weightlifting gloves -- help propagate individual fantasies of being macho and warrior-like while presenting an image to others that the wearer is making supreme, gladiatorial efforts in the weightroom. However, ask people why they wear a belt and I'll bet they tell you it's to protect their lower backs. Well, if you need a belt to protect your lower back in an exercise what does that tell you about the exercise? It tells me that

maybe you shouldn't do that exercise. In short, the average person has no need to wear a belt while lifting weights.

**How many calories should I be eating to keep my bodyweight right where it is?**

An individual's need for calories -- or energy -- is determined by several factors including age, gender, body condition, body composition, metabolic rate and activity level. Your caloric needs can be determined precisely by both direct and indirect calorimetry. However, these methods can be costly and impractical for most people. For a quick, reasonable accurate estimate of your daily energy needs, the U.S. Department of Agriculture suggests multiplying your bodyweight in pounds by a factor that is determined by your level of activity. For females, the value is 18 if you're moderately active and 22 if you're very active; for males, the factors are 21 and 26. As an example, a 200 pound male who is very active requires about 5,200 calories per day to meet his energy needs ( $200 \times 26 = 5,200$ .)

Also keep in mind that your calories should be at least 60% carbohydrate, about 20% protein and, at most, 20% fat. Staying with the previous example, 5,200 calories per day would consist of about 3,120 calories from carbohydrates, 1,040 calories from proteins and 1,040 calories from fats.

**Doesn't a candy bar give you an energy boost before competition?**

Consumption of large amounts of sugar or sweets -- like candy or soda -- less than one hour before activity or competition should be avoided. Sugar consumption causes a sharp increase in your blood glucose levels. Your body will respond to this by increasing its blood insulin levels to maintain a stable internal environment. As a result of this chemical balancing, your blood glucose is sharply reduced leading to hypoglycemia (low blood sugar), which decreases the availability of blood glucose as a fuel and causes a feeling of severe fatigue.

**How much recovery time should I give my athletes between sprints?**

It's important for an athlete to receive sufficient recovery time between sprints. This allows the athlete's depleted energy systems to replenish themselves so that an all-out effort may be given. The duration of the recovery period is related to the distance of the sprint and the time that it takes to complete it. The rest interval is usually expressed in relation to the work interval. This is known as the "work:rest ratio" and is most often designated as 1:1, 1:2, or 1:3. These ratios state that an athlete will rest either one, two or three times the duration that it takes to perform the sprint. As a general rule, the shorter the sprint time -- and the higher the intensity -- the greater the

work:rest ratio. Because of the high level of intensity, any sprint if less than 30 seconds requires a 1:3 work:rest ratio. As an example, a twenty second sprint should receive a rest interval of about 60 seconds. Sprints from 30 to 90 seconds have between a 1:3 and 1:2 work:rest ratio. Finally, sprints from 90 to 180 seconds need between a 1:2 and 1:1 work:rest ratio.

**Is it true that boron will increase muscular size and strength?**

One of the latest in a long line of "miracle" nutritional supplements is boron. Because of gross exaggerations by the supplement industry, this trace mineral has been used by individuals who want to increase their muscular

size and strength. One study frequently cited by the industry showed that boron supplementation increased serum testosterone concentration up to 300 percent. What the industry didn't mention was that these eye-opening increases were experienced by postmenopausal women whose testosterone levels were quite low. In fact, these women hadn't received adequate boron intake for the previous 119 days prior to the supplementation! Another study by Ferrando and Green (published in the *International Journal of Sport Nutrition* 3, no. 2) concluded that boron supplementation had little effect on total testosterone, lean body mass and strength in a group of 19 male bodybuilders aged 20 to 27 years.

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**About The Author**

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Matt Brzycki is the Coordinator of Health Fitness, Strength and Conditioning Programs at Princeton University. Coach Brzycki has authored more than 120 articles on strength and fitness and a book, *A Practical Approach to Strength Training*, which is in its second edition. He has also coauthored the book *Conditioning for Basketball* with Shaun Brown, Strength Coach for the University of Kentucky basketball team.

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# Articulating The Educational Value Of Athletic Programs

by  
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**F**or many years the topic of whether athletic programs truly contribute to the education of our students has been openly debated by board members, administrators, faculty, and coaches. Coaches and Athletic Directors are frequently called upon to articulate the value and worth of athletic programs within educational institutions. From these debates remains a persistent belief held by most persons that athletic participation has positive benefits for those involved. The United States is one of the few countries that feels strongly

that athletic programs should be a part of the educational system. In reality, athletic participation produces both positive and negative outcomes. The purpose of this paper will be to investigate the positive and negative characteristics associated with athletic participation so that athletic professionals can better articulate the purpose of their programs.

**Positive Attributes of Participation in Athletic Programs**

1) **Building of Character:** Many believe athletics to be a kind of miniature model of life. Participation in athletics is often considered to be an important part of the process of maturation, being a kind of trial period in which the individual develops character and learns to handle stress. For many students, there will be no greater stress placed upon them in their academic life than to exhibit their abilities on the athletic field before his/her peers, as well as before a viewing audience. To the well trained athlete, this pressure is utilized to fine-tune his/her performance; to sort