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## New Training Methods

### Features

Speed Development in  
a 100-Meter Sprinter  
Using a Wetsuit

*Juan Gonzalez, PhD, CSCS  
and Shannon Beckwith*



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# Visualize Your Way to Success

As you'll recall, in the most recent Mind Games article, we addressed the challenge athletes face in the "doing" of mental skills. That is, while many sport psychology concepts are relatively easy to understand, these same skills are tough to implement effectively in training and competition. In that article, the how to's of goal setting were discussed. It has now been two months since the last issue of the *NSCA's Performance Training Journal* so you should be well on your way with a goal setting program. Next up—Imagery.

Like goal setting, imagery or visualization is a term that is familiar to most athletes. Imagery is creating or recreating an experience in your mind. Imagery has many benefits to performance ranging from:

- Building confidence by seeing success
- Learning and perfecting technical skills
- Preparing for a variety of competitive situations
- Managing anxiety and other emotions
- Maintaining or developing motivation

To bring this concept to life, read the following quote from Hank Aaron as he talked about his batting preparation:

"...I would start visualizing—like I'm standing at the plate with, say, runners at first and second, or second and third—how he's (the pitcher) going to pitch me in that given situation. Then, I would start visualizing, for example, if the bases were loaded, how he would try to get me out...I would put myself in all these different positions and put him in the same positions and try to figure out what is best for him and what I am going to be looking for." (1)

Imagery, however, is more than just random daydreaming or sporadic thoughts of an upcoming competition, as some athletes assume. It is focused, intentional thought performed with the intent of improving performance. Think about it, would you consider running across the street part of your physical training? Do you think that moving some boxes into your attic constitutes strength training for the day? Of course not. The same holds true with mental training. The skill of imagery needs to be

learned; it needs to be purposeful; it needs to be part of your training plan.

Following are some tips to help you learn the skill of imagery so you can use it purposefully and effectively to visualize your way to success.

Keys to imagery effectiveness are how well you control the image, the vividness or clarity of the image and your ability to incorporate all the senses to make the mental experience as real as possible. It is important, therefore, to develop these components that impact imagery effectiveness.

Find a quiet, relaxing environment to initially learn and practice imagery. Pick a 'non-sport' place or object (something non-threatening so as not to arouse emotion when learning the skill) such as a favorite vacation spot, your bedroom or food items in your refrigerator. Mentally place yourself in the given location or holding a specific object—what do you see, specifically? What do you feel (i.e., hot sand, sun, soft carpet)? What do you smell? Manipulate yourself in the environment (i.e., walk on the beach, sit on your bed) or manipulate the object you are visualizing—that is, work on controlling the image by seeing and feeling yourself doing what you want to do. Spend time each day developing your imaging abilities, spending time focusing on the event in the finest of details, before progressing to applying imagery to your sport.

Integrate the skill of imagery into your every day activities to provide yourself with opportunities to practice and further develop the skill. For example, in preparation for a meeting with your boss or coworker, visualize the encounter to prepare yourself. Or, take a minute to visualize details of the driving route before you get in the car to go to the store. Work on control, vividness and integrating all the senses.

Make imagery a planned and purposeful part of your training. Create or identify opportunities to integrate imagery into training. Doing so can enhance your practice performance as well as help you further develop your

imagery abilities. Some examples; when focusing on technique in training, visualize correct execution of the skill prior to physical execution; before practice, use imagery to get in the right mindset and arousal level; after a great interval, shot or repetition, mentally review that practice success.

Make imagery a planned and purposeful part of competition. Similar to Hank Aaron, you can use imagery to prepare for competition by imaging various scenarios and the desired response or you can experience success via imagery to build confidence. Once your imagery ability is well developed, it can be integrated into competition preparation to enhance your performance. ■

## References

1. Ravizza, K. and Hanson, T. Heads-up baseball: Playing the game one pitch at a time. Illinois: Masters Press, 1995



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## Does Game Based Training Enhance Fitness Greater Than High Intensity Intervals?

Recent research suggests that high intensity interval training is very effective at improving maximal aerobic capacity. Even though run training is a very effective method for developing sport specific fitness it is often not well received by athletes who would prefer to perform more sport specific activities. One potential tool for developing sport specific fitness may be the use of small-sided games which provide an adequate physiological stimulus for the development of sport specific fitness, while also targeting the development of specific handball specific skills. While both methods of developing fitness appear effective, very little direct comparisons between methods of training have been performed. In order to compare the effects of small side hand ball games with those of high intensity interval training thirty eight female and male adolescents were recruited to participate in a 10 week training study. Females and male were equally divided into two groups which performed either handball specific small sided games (4 players per side) or high intensity interval training. Both groups performed two training sessions per week. The small side game group consisted of specific activities which utilized standard training methods for handball. The high intensity interval group performed intervals at 95% of the VIFT (~120% VO<sub>2</sub>max). Prior to and after the 10 week training program several variables were evaluated. Results indicated that both groups improved their 10 m sprint time, countermovement vertical jump performance, hand ball throw velocity, and time to exhaustion at 100% VIFT. When comparing the groups the only significant difference was a significant percent increase in VIFT which was noted by the high intensity interval group. Based upon this data it appears that both high intensity interval training and small-sided game activities provide adequate training stimulus necessary for developing handball specific fitness. However, the small-sided game model may be more effective because it integrates sport specific activities.

Buchheit M, Laursen PB, Kuhnle J, Ruch D, Renaud C, and Ahmaidi S. Game-based training in young elite handball players. *Int J Sports Med* 30:251 – 258. 2009.

## Yoga is an Effective Treatment for Anxiety Disorders.

Yoga has generally been categorized as an alternative medicine which is often used in order to manage stress related disorders. One possible use of Yoga is in the management of depression and anxiety disorders. In order to determine the effectiveness of Yoga on these disorders sixty-five women were randomly assigned into two groups; 1) an experimental group which performed two, ninety minute yoga classes per week or 2) a control group which was placed on a waiting list and performed no yoga. Prior to and after two months of participation in one of the two interventions the average prevalence of depression and anxiety were assessed. When examining the results of the instruments used to evaluate depression, yoga resulted in an insignificant decrease in the prevalence of depression. Conversely, it was determined that yoga training resulted in a significant reduction in state anxiety and trait anxiety. Based upon these results it was concluded that two days per week of Yoga training was a complementary or alternative therapy for individuals with anxiety disorders.

Javnbakht M, Hejazi Kenari R, and Ghasemi M. Effects of yoga on depression and anxiety of women. *Complement Ther Clin Pract* 15:102 – 104. 2009.

## Is Using Static Stretching as Part of a Warm-up Ever a Good Idea?

Contemporary sport science literature suggests that including a static stretching regime as part of a pre-event warm-up results in reductions in sports performance capacity. Specifically it appears that static stretching can result in a reduction in force production capacity, vertical jump height, sprint time and muscle activation. While these results appear very convincing there are very limited numbers of longitudinal studies which compare the performance of static stretching at various points throughout the training session. The present study randomly divided 48 students aged between 13 and 15 into two groups. The first group performed only sprint training, while the second group performed sprint training with static stretching placed at the beginning and in the middle of the training session. The study lasted six weeks and flexibility and sprint tests were performed before and after the training

interventions. Results of the study confirm that stretching prior to sprinting results in a reduction in sprint times at 10 and 30 m after six weeks of training, regardless of which exercise intervention was undertaken. However, the sprint group experienced significantly less reductions in sprint performance at 5, 10, and 30 m respectively. Based upon this data it appears that including stretching in the training plan prior to and in the middle of the training session will result in a reduction in the pre-sprint stretch induced performance impairment. However, the impairment still exists and if performance is of major importance static stretching should be avoided. At this time it is not known if a longer duration of training will result in an obviation of the decrements in performance created by pre-event stretching.

Chaouachi A, Chamari K, Wong P, Castagna C, Chaouachi M, Moussa-Chamari I, and Behm DG. Stretch and sprint training reduces stretch-induced sprint performance deficits in 13- to 15-year-old youth. *Eur J Appl Physiol* 104:515 – 522. 2008.

## What Type of Dynamic Warm-up Best Improves Performance in High School Athletes?

The composition of an appropriate warm-up appears to be under question. Classically static stretching has been incorporated in the warm-up protocols of athletes of various ages. Contemporary literature has begun to question this practice and recommend that dynamic activities be used if improving performance is the major goal. While it is not commonly accepted that dynamic warm-ups are crucial components of an athlete's training program there is little data on the actual optimal make-up on

this type of pre-event intervention. In order to address this deficit in the scientific literature, researchers from the College of New Jersey examined the effects of four different warm-up protocols with eighteen healthy high school athletes. The four warm-up interventions included; 1) five static stretches (2 x 30 s)(SS), 2) nine moderate-intensity high-intensity exercises (DY), 3) the same nine dynamic warm-up exercises coupled with the use of a vest which weighed 2% of body mass (DY2), and 4) the same nine dynamic warm-up exercises plus a vest which weighed 9% of body mass (DY6). Performance assessments included the vertical jump, long jump, seated medicine ball toss, and 10-yd sprint. Vertical jump performance was the greatest after performing the DY and DY2 warm-up protocols. Additionally the DY2 protocol resulted in a significantly greater long jump distance when compared to the SS protocol. When looking at the result the SS group consistently produced the lowest performance responses, while the dynamic exercises produced superior results. Based upon this study it appears that a dynamic warm-up while wearing a vest which weights 2% of body mass optimizes performance. ■

Faigenbaum AD, McFarland JE, Schwerdtman JA, Ratamess NA, Kang J, and Hoffman JR. Dynamic warm-up protocols, with and without a weighted vest, and fitness performance in high school female athletes. *J Athl Train* 41:357 – 363. 2006.



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# Speed Development in a 100-Meter Sprinter Using a Wetsuit

Juan Gonzalez, PhD, CSCS and Shannon Beckwith

Developing speed in any athlete is a challenge. Track coaches, strength and conditioning specialists, and sport scientists have been contemplating how to provide the right amount of resistance without negatively affecting the sprint mechanics of a sprinter for years. Current resistance exercises and investigations have been limited to sled pulling, harness oriented sprinting, and running up inclined slopes (1,2,3,4,6). One specific form of contemporary resistance training is the use of compression garments to enhance muscle temperature and improve peak power generation (5,7). The use of a wet suit takes this concept one step further by providing the following: 1) Optimal resistance, which allows for specific upper and lower body recruitment of muscle fibers and, 2) Optimal increase in temperature of the muscles specific to sprinting. This article aims to identify a new method for enhancing a sprinter's acceleration and speed in a 100-meter sprint through the use of stored elastic energy transfer.

## Wetsuit Design

There are many types of wetsuits out on the market. Wetsuits are made from neoprene rubber ranging in thickness from 3mm to 6mm in order to fit individual need. Normally, wetsuits are worn by divers to help maintain body temperatures in extremely cold water. The pressure changes underwater force a thin layer of water between your body and the wetsuit, hence the name wetsuit. The body then heats this layer, while the neoprene insulates from the outside cold. In this article, a full body 3mm size 6 wetsuit manufactured by Parkway Scuba is used. This particular wetsuit was selected because the thickness provides enough resistance and/or restriction in the sprinter's movement to be effective, and ensures the sprinter's normal range of movement



Figure 1. Putting on the wetsuit indoors

pattern remains unchanged. The weight of the suit used in this training program was measured at 2.26 lbs.

## Training Methodology

During training the wetsuit was initially used indoors in a climate controlled room. On these days the athlete should warm up for five minutes on a Monark Ergometer followed by stretching. The stretches include the modified hurdlers stretch, sit and reach, gastrocnemius stretch, followed by foot drills. Wetsuit training consists of two phases, an indoor and an outdoor phase. Once the sprinter completes her warm up routines, the wetsuit should be put on (figure 1).

In this example, a 60 foot 3/8th inch rubberized indoor runway was set up with the blocks to the individual sprinter's specifications. The sprinter then takes three consecutive block starts on the indoor runway (figure 2).

Voice commands are given to simulate actual race start conditions, e.g., runners to your mark, set, and go. Since these drills are done indoors no starter's pistol is used. The average time between the completion of one block





Figure 2. Indoor block start

start, a 20-meter sprint, and the next block start is set at three minutes. If this schedule is followed the total time the runner spends in the wetsuit is 12 minutes. After the completion of the last block start, the wetsuit is taken off.

Taking off the wetsuit is typically faster and requires approximately only one minute unassisted. The sprinter proceeds to the blocks again, and the same start procedures are implemented. Only three minutes should be allowed between block starts just as before. The sprinter now experiences more explosive power; they should feel lighter, and faster. Initially, there will also be a period of synchronization as the sprinter makes finite adjustments in speed. This training procedure should be used once a week to develop timing and to take advantage of motor recruitment patterns as they relate to the 100 meter sprint and block starts.

The use of the wetsuit during the outdoor phase includes:

- 800-meter jog
- Static stretching (quadriceps, hamstrings, calves, back, hips, etc)
- Leg drills (rear heel kicks, etc)
- Put the wetsuit on
- Three 40-meter stride-outs, or build-ups on the grass.
- Put spikes on
- Three practice block starts (20 meters)



Figure 3. Putting on the wetsuit outdoors

The wetsuit is now used late in the evening when the outdoor temperatures are typically cooler. Since the wetsuit retains heat, use of the wetsuit in temperatures over 85 degrees Fahrenheit should not be used. Once the sprinter completes about 80% of her warm up routines, the wetsuit is put on (figure 3).

The sprinter now performs three to four 40 meter build ups or accelerations. After completing this, the sprinter puts on her track spikes, and proceeds to set the blocks on the track to their appropriate settings. Next, the sprinter takes three practice starts approximately 20 to 25 meters (figure 4).

If used during the warm up for a race, the sprinter now waits for the starter to call runners to their blocks. While waiting the sprinter removes her spikes (to prevent wetsuit damage) and then the wetsuit itself. Taking off the suit should take about 60 seconds. The sprinter now puts on her spikes and waits to be called to her blocks.

The quest for speed in most sports is endless; we are always searching for more effective ways to improve speed in sprinters. There is documentation of various training methods to improve speed. However, no documentation in the review of literature includes the use of a wetsuit as a form of resistance training for the 100-meter sprinter. A harness and parachute have typically



Figure 4. Outdoor block start

been used in the past, but these devices have their own inherent limitation(s). Pulling on a harness if the load is too heavy changes a sprinter's mechanics. Using an incline that is too big turns the sprinter into a climber, changing the sprint mechanics as well. The use of 3mm 2.26 lb wetsuit during the late phase of warm up clearly demonstrates movement specific muscle fiber recruitment and results in power synchronization while maintaining the sprint mechanics of the athlete. Using a 3mm wetsuit to create the transfer of stored elastic energy will greatly enhance muscle recruitment, increasing the production of power required to generate an explosive 100 meter sprint block start, while simultaneously maintaining optimal muscle temperature. ■

## References

1. Costello, F. Training for speed using resisted and assisted methods. *NSCA Journal*. 7:74 – 75. 1985.
2. Eiser, L. Sprint training: Resistance running. *Rugby League Coaching Magazine* 11:24 – 25. 1999.
3. Faccioni, A. Assisted and resisted methods for speed development: Part 2. *Modern Athlete and Coach* 32:8 – 12. 1994.
4. Jakalski, K. Parachutes, tubing and towing. *Track Coach* 144:4285 – 4589, 4612. 1998.
5. Kraemer, W.J., Bush, J.A., Bauer, J.A., Triplett-McBride, N., Paxton, N.J., Clemson, A., Koziris, P.L., Mangino, L.C., Fry, A.C., Newton, R.U. Influence of compressive garments on vertical jump performance in NCAA Division I Volleyball Players. *Sports Medicine, Training and Rehabilitation*. 8, 163 – 184. 1998.
6. Letzelter, M., G. Sauerwein, and Burger R. Resistance runs in speed development. *Modern Athlete and Coach* 33:7 – 12. 1995.
7. Shim J., Doan B.K., Newton R.U., Kwon Young-Hoo. Effects of a Lower Body Compression Garment on Warm up Time and Jump Performance. Proceedings (II): 2001 Seoul International Sport Science Congress, Seoul, Korea, August 23 – 25, pp. 305 – 309, 2001.



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Kyle Brown is a health and fitness expert whose portfolio includes everything from leading workshops for Fortune 500 companies and publishing nutrition articles in top ranked fitness journals, to training celebrity clientele—from pro athletes to CEOs to multiplatinum recording artists. Kyle's unique approach to health and fitness emphasizes nutrition and supplementation as the foundation for optimal wellness. After playing water polo for Indiana University, as well as in London, Kyle became involved in bodybuilding and fitness for sport specific training. Kyle is the creator and Chief Operating Officer for FIT 365—Complete Nutritional Shake ([www.fit365.com](http://www.fit365.com)).

# The Bulgarian Bag: Extreme Training for the Next Fitness Generation

Personal Trainers and athletes alike are always searching for new fitness tools to incorporate into our training regimen—either to elevate our fitness training or our clients' conditioning to the next level. Ideally, we search for fitness tools that are versatile; meaning that we can utilize these tools in multiple ways for both upper body and lower body training as well as for different results. The Bulgarian Bag is a perfect tool for developing muscular endurance as well as for increased power and strength.

The Bulgarian Training Bag is made with toughened leather and stuffed with wool and sand. It comes in 5 sizes, ranging from 11 to 50 pounds (figure 1). The bag's shape allows for both upper and lower body training while emphasizing grip strength. The three different types of handles allow athletes to execute a variety of exercises by using different grips.

According to Bulgarian bag expert Steve Nave, "The Bulgarian bag is a fitness tool of the next generation." Being a movement based piece of equipment, Nave states, "it incorporates all primal movement patterns that mimic natural movements. What makes the bag unique is that it's one of only a few exercise tools that cover all planes of movement under load (figure 2). It's a functional training tool that creates power and neurological integration." (1)

While the Bulgarian Bag is a new tool, it has already been validated by Olympic caliber athletes. However, it needs to become part of your training program not a replacement. Many products are marketed as the only fitness tool you need to get results. Yet incorporating Bulgarian Bag training into your existing resistance training program can help you overcome plateaus and elevate your fitness to the next level.



Figure 1. Bulgarian Training Bags

## Sample Bulgarian Bag Workout

Perform the Bulgarian Bag exercises in the following 30 to 45 second series without rest for optimal results:

15 spins right and left followed by 15 power snatches followed by 10 arm throws right and left. Rest then repeat the set.

### Spin

Grab the bag by the main handle with the label facing away from you and your feet roughly wider than shoulder width apart. Spin or rotate the bag up and around your head in a dynamic fashion at a rapid pace with your arms slightly bent (must use momentum and speed to perform correctly).

### Power Snatch

Set feet wide enough to fit bag between legs. In an explosive manor, pull the bag up and overhead and have it slightly tap the back of your shoulders as you explosively pull the bag back overhead and go through your legs. Keep your back flat as you decelerate the bag and repeat movement.



Figure 2. Bulgarian Training Bag Movement

### Arm Throw (Wood Chop) With a Side Lunge

Grab the bag by main handles like you have a sack of potatoes over your right shoulder, ensuring your palms are together. Side lunge to your right with the weight dispersed on your right leg. Pull the bag off your shoulder and swing it in front of you and side lunge left decelerating the bag as your arms straighten. Once straight, accelerate the bag in a powerful fashion back to starting position. Repeat on left side. ■

### References

1. Nave, Steve. [www.bulgariantrainingbags.com](http://www.bulgariantrainingbags.com) Personal Interview. 04 May 2009.



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# Are Supplements a True Substitute for Real Food?

While some may have predicted that the day would come when we no longer needed to eat food and could derive the nutrients our bodies needed from taking a pill, that day is not yet here. And the more we learn about food and nutrients, their roles and interactions, the more scientists realize that this day may never come. Through decades of research, we have learned that foods provide far more than just calories, vitamins and minerals. Food provides other important nutrients like antioxidants, phytochemicals and fiber which reduce the risk of a number of chronic diseases including cancer, cardiovascular disease, diabetes and age-related macular degeneration (1,6). Supplements have yet to offer these “ingredients” or even this same protection (3).

In light of the possible limitations of supplements, does anyone really need to take one? While it is hard to make a blanket statement such as “all children” or “all pregnant women” require a supplement, there are certain categories and instances where we can make certain generalizations. See Sidebar for those groups of individuals who may benefit from supplements.

Supplements are a multi-billion dollar industry with people under the false impression that taking supplements is improving their health and/or performance (4). Can we rely on supplements to provide us with additional vitamins and minerals not found in a well balanced diet? Perhaps. But supplements are not regulated as drugs; they are regulated as food, in accordance with the Dietary Supplement Health and Education Act (DSHEA) passed by Congress in 1994. The result is that the FDA has very little regulation over the supplements sold in this country—

they do not analyze the content of dietary supplements nor do they approve the labels on the bottle. Additionally, the FDA can only remove a product from the market after it has been proven unsafe. Usually a supplement is proven unsafe and removed from the market after people taking it get sick or even die.

So what can athletes and individuals who are interested in taking a supplement do to protect themselves? Fortunately, there are two tools available to help consumers choose a safe supplement. One is to look for the U.S. Pharmacopeia or “USP” seal. The “USP” seal means that the product has been independently tested and reviewed by USP to verify ingredient and product integrity, purity, and potency for the manufacturers who choose to participate (7). However, it does not mean that this supplement has been tested for safety or effectiveness. Another option is to search the supplement reviews available on ConsumerLab.com, which is an independent, non-profit testing agency. This organization selects products and tests for accuracy of content (e.g., a supplement that says it contains 400 IU of vitamin D actually contains that amount) and also for contaminants in the supplement. For example, supplements may be found to contain unacceptable amounts of lead, which is a health hazard, especially to children.

## Bottom Line

Choose food first and, supplement, only as needed. ■



## People Who May Benefit From Supplements

- Fluoride supplements should be given to children not drinking fluoridated water.
- Children with poor eating habits and those using weight-reduction diets can be given a multivitamin-mineral supplement containing nutrients not exceeding RDA levels.
- Children on strict vegetarian diets may need supplementation, particularly of vitamin B12.
- Pregnant teenagers are likely to need supplementary iron and folic acid.
- Women who might become pregnant may take a daily multivitamin or multivitamin/mineral supplement that contains 0.4 mg of folic acid in order to reduce the risk of birth defects in their offspring.
- Individuals using prolonged weight-reduction diets, particularly diets that are below 1200 calories per day or are nutritionally unbalanced, may benefit from a multivitamin-mineral supplement.
- People recovering from surgery or serious illnesses that have disrupted normal eating habits may also benefit from supplementation.
- Elderly individuals who become sedentary or lose interest in eating may not get sufficient nutrients; they too may benefit from multivitamin-mineral supplementation.
- Vegans should probably take B12 supplements prescribed by a physician.
- Vegan children not exposed to sunlight are at risk for vitamin D deficiency and should take a supplement.

Sources: 2,5,6

## References

1. Kawasaki B, Hurt E, Mistree T, Farrar W. Targeting cancer stem cells with phytochemicals. *Mol Interv.* 8(4):174 – 184, 2008.
2. Kreider R, Rasmussen C, Melton C, et al. Long-term creatine supplementation does not adversely affect clinical markers of health. Proceedings of the American College of Sports Medicine 2000 Annual Scientific Meeting; 2000 May 31 – June 3: Indianapolis (IN).
3. Lin J, Cook N, Albert C, Zaharris E, Gaziano M, Buring J, Manson J. Vitamins C and E and Beta Carotene Supplementation and Cancer Risk: A Randomized Controlled Trial. *J Natl Cancer Inst.* 101:14 – 23, 2009.
4. Market Research Web site (Internet). North Adams (MA): Market Research; (Retrieved 2009, May 1). Available from: <http://www.marketresearch.com>.
5. Nishino H, Murakoshi M, Mou X, Wada S, Masuda M, Ohsaka Y, Satomi Y,
6. Jinno K. Cancer prevention by phytochemicals. *Oncology.* 1:38 – 40, 2005.
7. Parry GJ, Bredesen DE. Sensory neuropathy with low-dose pyridoxine. *Neurology.* 35:1466 – 1468, 1985.
8. U.S. Pharmacopeia Web site (Internet). Rockville (MD): U.S. Pharmacopeia; (Retrieved 2009, May 1). Available from: <http://www.usp.org>.

about the  
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# A New Functional Test Promoted to Measure Core Strength



Figure 1. Posterior Power Line



Figure 2. Anterior Stabilizing Line

An injury to the competitive athlete may significantly impact their physical and mental well-being, disrupt their life with medical appointments, and affect their team's success. Administering a test, or a series of tests, during the off-season or preseason that identifies functional weakness may help the strength training professional intervene with an injury prevention training program.

## The “Bunkie” Test

There is a growing awareness that a dysfunctional core may contribute to the onset of injury or limit one's functional performance during competition. Many tests, such as the squat, the lunge, the lateral endurance test, and back extensor test have been used to assess core function (1). When assessing core function in high level athletes, de Witt suggests a new test should be administered—the “Bunkie” test (2).

The “Bunkie” test consists of five testing positions. It has been suggested that these tests will assess the function of all the core muscles along various fascia lines (2). The tests require minimal equipment: an adjustable bench and a mat. As can be seen in each figure, the bench is required to rest the legs and the mat is placed to cushion the up-

per extremities. The bench should be adjustable allowing a height of approximately 25 to 30 cm in height (2). de Witt recommends for smaller individuals, a lower height may be necessary so that the extremities can support the body in a straight line.

The five testing positions are the posterior power line (figure 1), the anterior power line (figure 2), the posterior stabilizing line (figure 3), the lateral stabilizing line (figure 4), and the medial stabilizing line (figure 5).

In each testing position, both feet are initially supported on the bench with the upper extremities (palms and forearms) supporting the upper body. Once positioned, the athlete will raise one leg/foot a few inches off of the table/bench. It is suggested that athletes should be able to hold this position between 20 to 40 seconds (1). Athletes who are unable to hold a test position for the desired period of time should then be prescribed corrective exercises. For example, an individual who is unable to perform the lateral stabilizing line for 40 seconds should be prescribed the side plank and side plank with hip abduction exercises. The tests should also be performed bilaterally. This will help one identify asymmetrical strength differences.



Figure 3. Posterior Stabilizing Line



Figure 4. Lateral Stabilizing Line



Figure 5. Medial Stabilizing Line

## Conclusion

There is paucity in the literature regarding the efficacy of administering a functional test for the purpose of identifying at risk athletes. The “Bunkie” test is a novel and challenging approach to athletic functional testing. Further testing is necessary by researchers in order to demonstrate its overall reliability and validity. ■

## Reference

1. Reiman MP, Manske RC. Functional Testing in Human Performance. Champaign, IL: Human Kinetics; 2009.
2. de Witt B, Venter R. The ‘bunkie’ test: assessing functional strength to restore function through fascia manipulation. *J Bodyw Move Ther.* 13(1):81 – 88, 2009



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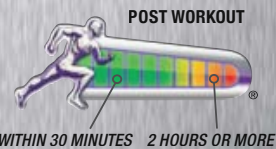
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