



The BFS Dot Drill is taught at all BFS clinics and certifications.

Taking the BFS Dot Drill to the Next Level with OptoJump

Insight into another application of this great training tool

The BFS Dot Drill is a key exercise in the BFS program for all athletes. It is not only a great warm-up exercise for any activity, including weight training, it also develops balance and coordination. It's a versatile and simple exercise, and now working with Microgate USA, we've found a way to make it even better. But first, let's explore the history of the Dot Drill.

Besides its other purposes, a warm-up needs to increase your body temperature, breathing rate and heart rate to the level of the activity you will be performing. The Dot Drill will accomplish this, but it goes one step further because it improves coordination, foot speed and agility. It also strengthens the ankles, an area of the body that could be considered a weak link in athletes, as the ankles are frequently injured in athletics and are often frustrating to rehabilitate. And because an athlete who injures an ankle is five times as likely to injure it again, it makes sense to include exercises that will prevent the ankles from becoming injured in the first place.

The Dot Drill is performed on a 2-foot-by-3-foot surface with five dots, as shown in Figure 1. There are five exercises in the BFS Dot Drill, and the athlete performs each drill six times in the following sequence: Up and Back, Right Foot, Left Foot, Both Feet, and Turn Around. Detailed descriptions of each of these drills are included in Dr. Greg Shepard's book *Bigger Faster Stronger* and in all our set-rep log books. Our *BFS Dot Drill DVD* shows the Dot Drill in action.

When athletes first attempt the Dot Drill, they often

feel clumsy and find it extremely tiring. But these issues will pass, especially if the athlete commits to performing it six times a week. That may seem like a big commitment, but consider that the record for the Dot Drill is 33.37 seconds for boys and 37.77 seconds for girls. So, for most athletes, we're asking for less than 10 minutes of work per week – an investment well worth the time.

At BFS, we've found that if you're really serious about

THE DOT DRILL IS MADE UP OF FIVE DIFFERENT DRILLS, EACH DONE SIX TIMES.

DOT DRILL DIAGRAM

1. UP AND BACK
 A. Start with feet on A and B.
 B. Now jump quickly to C with both feet
 C. Then jump and split feet to D and E.
 D. Come back the same way jumping backward.
 E. Repeat 5 more times.

2. RIGHT FOOT
 A. Your feet from up-and-back should end on dots A and B.
 B. Now go to dot C with your right foot.
 C. Now go in order: Dot D, E, C, A, B.
 D. Repeat 5 more times.

3. LEFT FOOT
 A. You will end the right foot drill on Dot B.
 B. Now go to dot C with your left foot.
 C. Now go in order: Dot D, E, C, A, B.
 D. Repeat 5 more times.

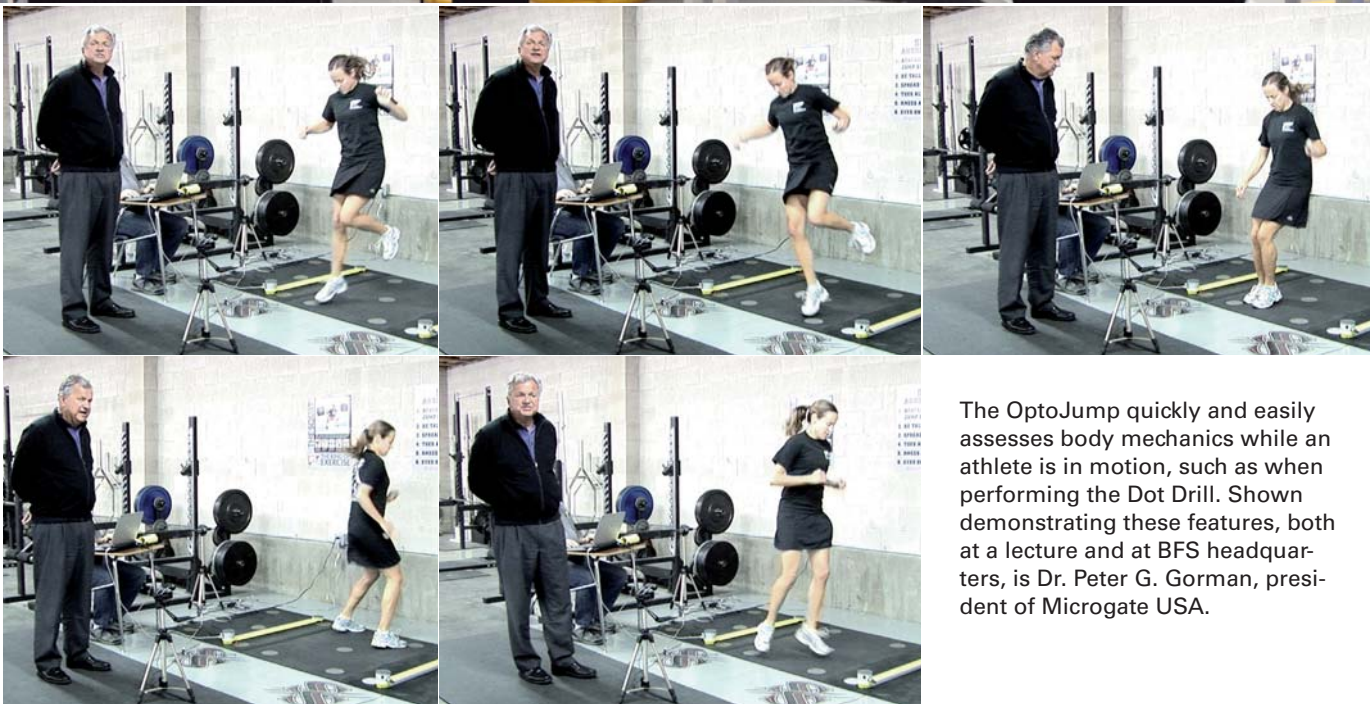
4. BOTH FEET
 A. You will end the left foot drill on Dot B.
 B. Now go to C with both feet.
 C. Now go in order with both feet: Dot D, E, C, A, B.
 D. Repeat 5 more times.

5. TURN AROUND
 A. You will end the Both Feet drill on Dot B.
 Now go to C with both feet.
 B. Now go to dots D and E spread apart both feet as in the up-and-back (Drill #1).
 C. Now quickly jump 180° clockwise to face the other way. You should still be on D and E.
 D. Hit C with both feet and then A and B with feet split.
 E. Now turn quickly again with a 180 spin to the left with your feet still on A and B.
 F. Repeat 5 more times.

Figure 1. The BFS Dot Drill consists of five exercises performed six times.

improving performance in any aspect of strength and conditioning, you have to test it. Whether it's by how much you lift, how high you jump or how fast you run, you have to find a way to accurately measure performance so you can set

personal records and then break those records. This is also true with the Dot Drill, and we recommend that athletes get tested twice a month and record the results. To help the athlete determine how they are doing on the Dot Drill, BFS



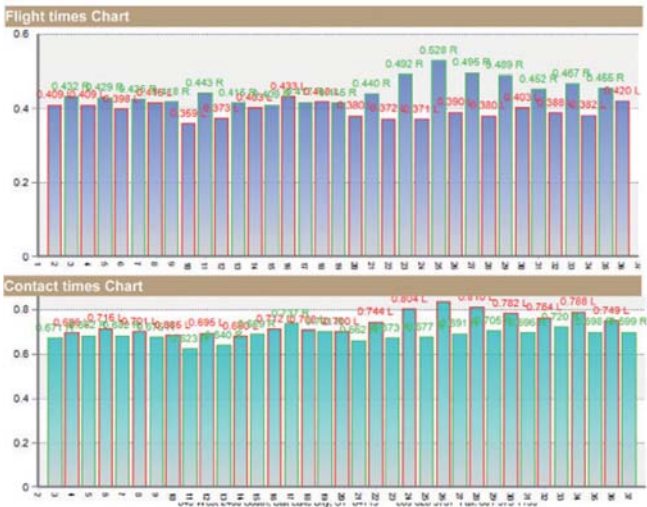
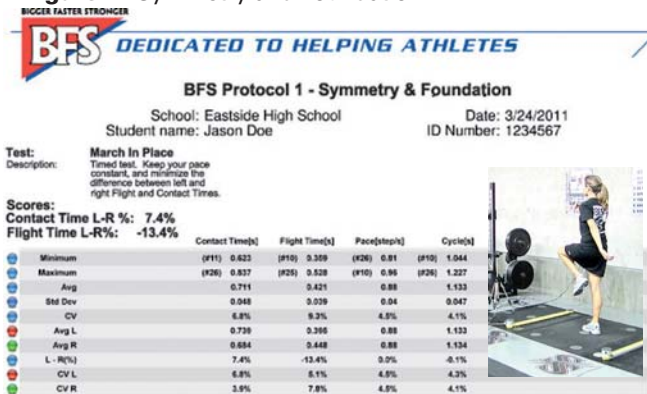
The OptoJump quickly and easily assesses body mechanics while an athlete is in motion, such as when performing the Dot Drill. Shown demonstrating these features, both at a lecture and at BFS headquarters, is Dr. Peter G. Gorman, president of Microgate USA.

has established a set of standards for both girls and boys, as follows:

GRADE	BOYS/MEN	GIRLS/WOMEN
All-American	Under 40 sec	Under 45 sec
Super Quick	40-49 sec	45-54 sec
Great	50-59 sec	55-64 sec
Average	60-70 sec	65-75 sec
Needs More Work	Over 70 sec	Over 75 sec

We believe the BFS Dot Drill is a perfect warm-up for any workout program, for any athlete at any age. There are certainly many additional ways to prepare the body for a workout, but for its simplicity and effectiveness, you can't beat the BFS Dot Drill. This great warm-up exercise should be a part of every workout program. Having said that, we have found a way to take the Dot Drill to an even higher level of testing and accuracy.

Figure 2. Symmetry and Foundation



BFS envisions three protocols using the OptoJump system that can be included in any physical education or sports performance setting: (1) Symmetry and Foundation, (2) Ability and Stability, and (3) Advanced Performance.

Figure 3. Ability and Stability

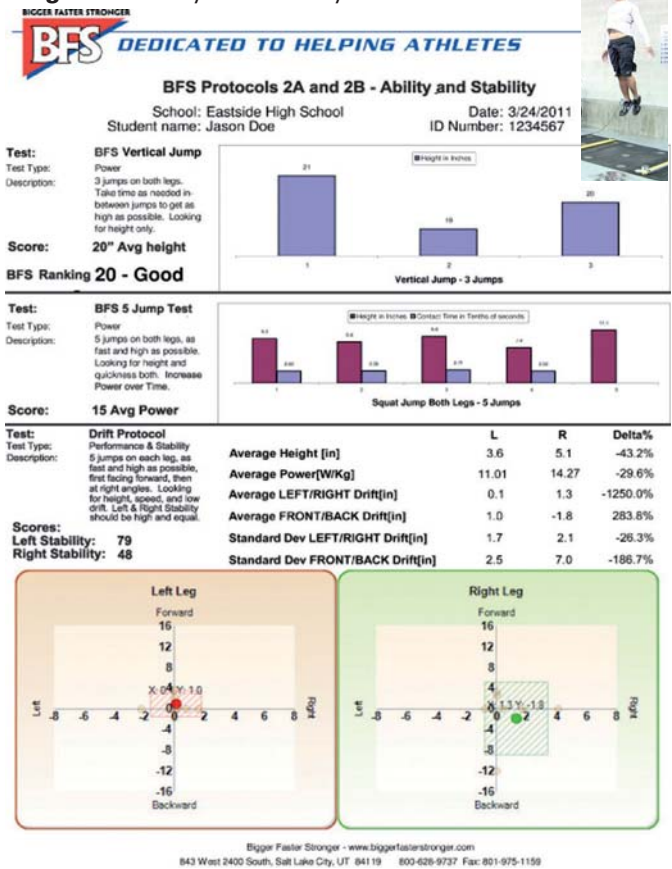
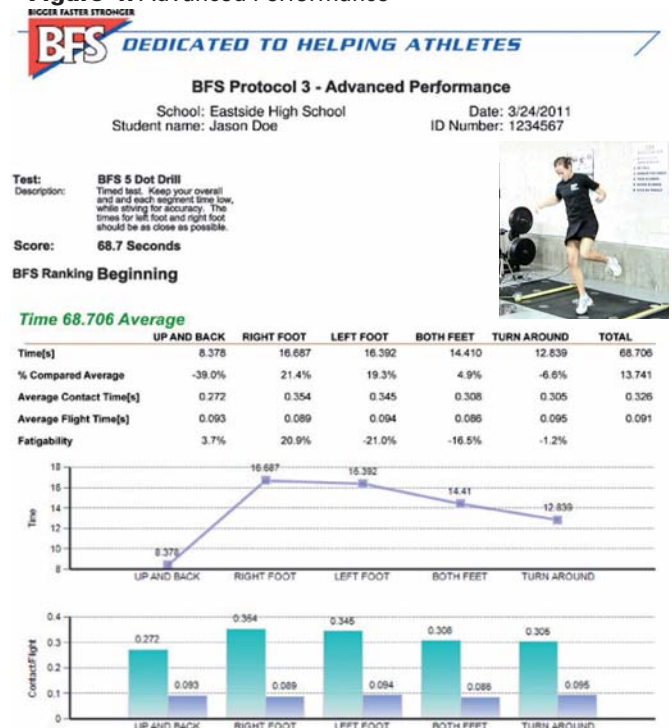


Figure 4. Advanced Performance



The Dot Drill Evolution

Two of the most basic qualities in physical activity are running and jumping. Physical fitness tests have been standardized over the years so that coaches and physical educators can assess these qualities in the athletes they work with. We would like to propose a more precise system of testing.

OptoJump™ is an advanced testing and training system that quickly and easily assesses body mechanics while an athlete is in motion. The program presents real-time feedback in three formats: video, graphical and numerical. We envision three BFS protocols using the OptoJump system that can be included in any physical education or sports performance setting: (1) Symmetry and Foundation, (2) Ability and Stability, and (3) Advanced Performance.

Symmetry and Foundation. The basic test is the March in Place. An alternate protocol would be walking on a treadmill at three miles per hour without shoes. A sample report is shown in Figure 2.

With a simple, 30-second march-in-place test, OptoJump can measure the contact time of each foot, the flight time of each foot, and the athlete's ability to hold their center of mass constant. An athlete's biomechanical baseline, or "gait print," can then be tracked over time, allowing physical educators, coaches and trainers to objectively measure biomechanical development and ensure effectiveness of training.


Ability and Stability. The basic tests are the vertical jump, (three jumps as high as possible), BFS 5 Jump Test (five jumps as fast and high as possible) and the Drift Protocol (five jumps on each leg, as fast and high as possible, once facing forward, once facing sideways). A sample report is shown in Figure 3.

The vertical jump provides information about an athlete's power and their ability to start movement. With the OptoJump, multiple jumps can be evaluated, determining the height of each jump and calculating the average of a set of jumps.

The Drift Protocol assesses an athlete's "stability dynamics" by measuring the displacement (drift) axis in terms of vertical and horizontal. Such information can provide important information for a coach to determine faults in biomechanics that affect performance – for example, if an athlete has stability issues

that give them a "favorite side." Further, this information will be helpful in preventing injury or determining if an injured athlete is ready to play again and at what level.

Advanced Performance. With the OptoJump, each phase of an athlete's Dot Drill performance can be evaluated, helping to determine weaknesses that could affect performance and put them at a higher risk of injury. A sample report is shown in Figure 4.

The BFS Dot Drill is a proven, effective testing and training tool for athletes. Now, with the addition of the high-tech science of OptoJump, the Dot Drill is an even better tool for helping young athletes to fulfill their physical potential. 

Wir machen mobil
Die Schulthess Klinik ist
Swiss Olympic Medical Center und
FIFA Medical Centre of Excellence

 **SCHULTHESS KLINIK**
Orthopädie Untere Extremitäten

Zurich, 29 November 2011

To whom it may concern

Dear Sir/Madame,

The aim of this letter is to certify the validity of the Optogait system (Microgate, Bolzano, Italy) for the assessment of spatiotemporal gait parameters in humans.

I am currently the Director of the Neuromuscular Research Laboratory at the Schulthess Clinic in Zurich (Switzerland), whose main research focus is the combined evaluation of muscle function and physical function in healthy and pathological subjects.

We recently conducted a methodological study in which the main spatiotemporal parameters of walking (such as speed, step length and swing time) were concomitantly recorded by a valid electronic mat (Gaitrite, CIR system inc., Clifton, NJ, USA) and the Optogait photoelectric cells. Thirty elderly subjects (orthopedic patients and healthy matched controls) were asked to walk at three different velocities along a 10-meter walkway. Optogait data were compared to the valid tool using intraclass correlation coefficients for concurrent criterion-related validity. The intraclass correlation coefficient is a general measurement of agreement between two series of data, and is usually interpreted as follows: 0.5-0.69 indicates moderate agreement, 0.7-0.89 indicates high agreement, and >0.9 indicates excellent agreement. We obtained intraclass correlation coefficients ranging between 0.933 (swing time) and 0.999 (speed and cadence), that confirmed the validity of spatiotemporal gait parameters provided by Optogait.

The results of this study certify the validity of the Optogait system for the assessment of spatiotemporal walking variables, and therefore attest that its use is legitimate for quantitative gait evaluation inside and outside the clinic.

Should you need any further information, please do not hesitate to contact me.

Sincerely,


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The accuracy of the OptoJump system has been extensively evaluated by research centers across the globe, such as Neuromuscular Research Laboratory in Zurich, Switzerland.