

Balance of Power

How the OptoJump is transforming athletic and physical fitness

BY **BOB ROWBOTHAM, PRESIDENT, BFS**

Balance of power” is an expression often used to describe political and military struggles, but it is also the perfect term to describe a vital key to athletic performance.

In team sports, the coach wants every member of the team to be able to obtain optimal performance. This means we strive to make poor athletes good, good athletes great, and great athletes even better. This formula is especially effective at the high school level because every school usually has a few great athletes on any team, and therefore success is determined by how well the coach can improve the abilities of the less gifted players. This is why efficient and effective training is so important.

Although there are many components of optimal performance, among the most commonly cited by coaches and sport scientists alike are speed, power, quickness, agility and stability. Most of the attention in strength and conditioning programs is focused on the first four of these components, which is a mistake. Without stability, you do not have the ability to display the other components. Let me give you an example.

Let's say you have the strength to perform a parallel squat with 300 pounds. If you were to spin yourself around several times to make yourself dizzy and then try to squat, you might be able to squat only 100 pounds. Why? You don't have balance and control, and this deficiency does not allow you to display your strength. This brings us to the question of how much balance and control is necessary.

Well, if we're talking about walking from your bed to the kitchen to make yourself a cup of coffee in

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the morning, only a small amount of stability is necessary to keep you from falling down. But if we're talking about a basketball player trying to make a fake and drive to the basket or a fullback trying to bust through a defensive line, now we're talking about a much higher stability requirement. Further, those requirements become greater as a high school athlete progresses to college and professional levels. In other words, as an athlete moves to higher levels of competition, their balance and control also need to be improving to higher levels. If they are not improving, or even worse, if they are regressing, that raises a red flag and we need to figure out the cause.

This is why BFS has teamed with Dr. Peter G. Gorman, president of Microgate USA, the company that created OptoJump™.

A Simple Plan

OptoJump is an advanced testing and training system that is unsurpassed for assessing body mechanics. It's a system that goes beyond simplistic graphic programs that analyze body positions, because OptoJump also measures functionality. Take the example of the lunge, a BFS auxiliary exercise designed to improve symmetry, power and execution of power if done perfectly.

Let's have an athlete perform a lunge with just bodyweight, one repetition with each leg. With a graphic program we can measure body angles and assess the athlete's technique – but that's all. With the OptoJump, we can determine how long it takes for the athlete to plant their front leg, how long their foot remains on the floor, and how long it takes for them to return to the start – and we can measure the difference between both legs. Now, for the first time, all high school coaches, teachers and trainers have access to the same scientific data that was once restricted



Dr. Peter G. Gorman, president of Microgate USA, shows some of the immediate, practical data that can be generated by OptoJump.

to sports science labs and limited to the elite few that had access to it.

Due to OptoJump's ease of use and portability, multiple tests can be easily performed. For example, with the lunge let's say we perform 5 reps with each leg, and see how the additional stress affects symmetry; and then 15 reps, when muscular endurance becomes a factor. The idea is to get away from the old-school idea of determining that an athlete is simply ready to start playing the game to the new idea that they are ready to play hard with balance and control throughout the entire game. Can you see now how the lunge has gone from simply being a training tool to being an

athletic assessment tool as well, because the critical components of failure have been addressed and corrected under the influence of stress and fatigue? That is possible with the OptoJump.

In working with Dr. Gorman, BFS has come up with a balance control protocol that enables us to assess any athlete quickly and easily. Such testing is not without precedent and has been used by different agencies over the years. The difference is that we are using balance control as an indicator of athletic training and performance ability.

The BFS balance protocol starts with a progressive series of five static balance tests. Each test builds upon the previous one, such that the athlete must master the previous test before moving on to the more advanced one.

The tests are performed on a flat surface in stocking feet. Shoes are removed because they can affect the results of the tests, sometimes improving the outcome and sometimes making the outcome worse. For example, a weightlifting shoe helps align the foot with the ankle and provides a stable platform for the athlete, providing increased stability



Being able to squat heavy weights will improve athletic performance, but such strength must be preceded by an appropriate level of balance and control.

for exercises such as squats. If that same athlete were to lift in running shoes, which are designed to encourage pronation of the foot, their stability would be decreased. For these reasons, we prefer that the tests be performed without any additional outside variables, such as an athletic shoe.

The protocol is as follows:

- Stand on both legs, facing forward, and with eyes open.
- Stand on both legs, facing forward, and with eyes closed.
- Stand on one leg for 15 seconds, with eyes open. If you do not complete the full 15 seconds, note the duration you are able to complete.
- Repeat on opposite leg.
- Repeat steps 3 and 4 with eyes closed.

Let's look at a practical application of this test, although consider that with balance tests, nothing is absolute. There is a lot of talk these days about the risks of having young athletes participate in contact sports because of the risk of head injury. Even soccer falls into this category, as soccer athletes often use the head to alter the trajectory of the ball.

If an athlete is continually improving on these balance tests, then there is probably nothing to worry about. But what happens if an athlete who could easily complete steps 4 and 5 can now maintain their balance for only 5 seconds – or not at all? This *might* suggest they are compensating for some type of injury, such as an ankle or knee injury. Perhaps, if the athlete is a football player, it also could be a result of being hit on the head a little too hard or simply too many times. The point is we have a red flag that suggests this athlete needs to be referred to an appropriate health care professional who can determine the anatomical, neurological or metabolic reason or reasons for the regression of



The BFS balance protocol is performed without shoes because an outside variable can affect the outcome. Shown here is an athlete performing the single-leg squat in bare feet and with weightlifting shoes; note that she can easily do a full squat with the shoes. This is followed by a high school athlete who can easily perform a full single-leg squat with tennis shoes.

this athlete's stability. That being said, consider that *this matter requires much more study and investigation.*

There you have a simple static test to determine balance and control. The next level would be with the OptoJump, as it can give more precise data about how the individual is performing these tests – information that cannot be detected or recorded with the human eye. The OptoJump can then be used for more advanced testing to ensure that the athlete is continuing to progress and to determine weaknesses that could adversely affect performance.

Sports should be fun, and one way to keep the fun going is to implement testing protocols that give coaches and athletes valuable feedback on how their athletes are performing. The protocols I've shared in this article will

Elite ski and snowboard athletes can train using the OptoJump at the training facility in Park City, Utah.

enable them to do just that!

(In our next issue we will talk about BFS protocol 1a. This is a march-in-place test that is designed to look at dynamic stability and overall rhythmical execution of movement.) **BFS**





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BFS SCIENCE LAB

BFS is committed to advancing every coaches and teacher's ability to track the improvement of their students and athletes. On November 1, 2011, BFS opened the "BFS Science Lab" with Dr. Peter Gorman, President of MicroGait USA, at his facility in New York. "This will be a great addition to the BFS organization," says BFS President Bob Rowbotham. Look for more details about this exciting facility in future issues of BFS and on our website, www.biggerfasterstronger.com

Using top quality BFS equipment and the Optojump system the BFS Science Lab is developing systems and protocols to continue the advancement of youth training and performance!

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