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When most people look at Westside training protocols, they automatically think of powerlifting. But the truth is the Westside system is used in track and field and in football at all levels. I am very proud to have a picture of Johnny Parker of the Patriots and Kent Johnston of the Packers on the Super Bowl field when they played each other in 1997. They both had spent a week at Westside to learn to implement some of our methods in their programs. Johnny Parker is now with the 49ers and recently spent a week again with the Westside guys.

Five major rugby teams from Europe have visited us and have had great results. Pro boxers, MMA fighters, wrestlers, and more have used our system. Why? If nothing else, it was to produce stronger and more explosive leg strength.

Absolute strength controls all strength gains. Analysis of Hill's equation shows that speed of movement is dependent on absolute muscular strength: $v = Ft/m$. This can be found in Fundamentals of Special Strength- Training in Sport (Verkhoshansky, 1986). Thomas Kurz, in Science of Sports Training, reported many ways to become more explosive, but the simplest is to increase absolute strength.

One must constantly raise one's work capacity. This is a must for jumping and squatting. Bompa (1996) states that it can take 4 years to perform high-intensity plyometrics. Many books talk about methods and theories but do not talk about results. I love to read those books too, but more importantly, I love increasing results.

So, how do you build explosive leg strength? This can be accomplished through the reactive method, jumping off hard and soft surfaces, overspeed eccentrics, box squatting, which causes a virtual force effect, and accommodating resistance. There are two major components of explosive power: a fast rate of force development and increasing velocity. This applies to light objects, for example, a shot put, or a heavy object, for example, a max deadlift. Common sense and science tell us speed of movement is controlled by the amount of external resistance used. So light weight looks fast. But can light weight alone move a 320-pound lineman backward? No. Lifting light weight will always produce a deceleration phase.

We have extremely strong squatters at Westside: 1141 at SHW, 1118 at 275, 1025 at 220, 905 at 181, and 575 by a female at 148, the latter four being world records. We are also very explosive: 50-inch box jumps, a box jump of 35 inches holding a pair of 70-pound dumbbells at 290 pounds, a jump from a kneeling position to the feet with 255 pounds on the back at a body weight of 255. How is this done?

The dynamic method is essential. This will not increase maximal strength, but will increase the rate of force development and explosive strength. Here, box squatting is used for all squats. The box

makes it possible to break the eccentric/concentric chain. The box height is just below parallel. The interval method is used. The rest between sets is 45-75 seconds. A 3-week pendulum wave is used. The percents used are 75, 80, and 85% of a max box squat record. Then wave back to 75% on the fourth week. As noted in *Managing the Training of Weightlifters* (Laputin and Oleshko), almost 50% of all lifts are at this percent for the snatch and clean/jerk and, for us, the squat.

To accommodate resistance, Jump-Stretch bands must be attached to the bar. A large load of bands will eliminate bar deceleration. They also increase the speed in the eccentric phase. An increase in velocity has an exponential effect on kinetic energy.

We ran a test on Matt Smith, a SHW who at the time had a 930 squat. Matt box squatted 550 pounds consisting of all barbell weight in roughly 0.9 second, both eccentrically and concentrically. Then Jump- Stretch bands were attached to the bar in addition to weight. The realized weight was 750 pounds at the top and 550 on the box. Because the bands pull the bar downward, the eccentric phase decreased to 0.5 second. The concentric phase was the same, 0.5 second. How did Matt do this with the added 200 pounds of band tension? Overspeed eccentrics. Matt has now squatted an official 1141 pounds. How's that for results?

Not only did bands increase kinetic energy but the actual collision that occurs when contacting the box also produces kinetic energy. The same process occurs when a sprinter comes in contact with the track at full speed.

For speed strength work, 75% of the total load should be from bands and 25% from weight. The concentric speed should be 1.0 to 1.3 meters/second. This will work regardless of your strength level. For strength speed, the ratio of weight to band tension is 50/50. The bar speed will be about 0.4 to 0.5 meters/second. This is where one becomes incredibly powerful, after removing the bands. Using a large amount of bands creates an overspeed eccentric phase, causing tremendous reversal strength. Note: band strength must be great at the bottom of the lift.

To become more explosive, one must constantly become stronger. This is exemplified by the famous weight lifter Naim Suleymanoglu. His best clean/jerk was about 407 pounds, in comparison to his front squat of 518. Weight lifters are very explosive, yet to become more explosive, Naim became very strong, having a surplus of 20% in the front squat to his clean/jerk.

Another example is the throwing events. The object being thrown is constant in weight, yet the thrower is always trying to become faster and stronger. My friend Jud Logan, a four-time Olympian in the hammer throw, was very strong and very explosive. His stats were as follows: 478 raw bench, 770 squat, 550 x 5 and 600 x 1 front squat, and 440 power clean. Like myself, in the 1980s his top strength grew but his throws stagnated. Some of his East German friends suggested he push his box jumps up. As he improved to 5 jumps on a 52-inch box and a single jump on a 56-inch box at about 275 pounds body weight, his throws began increasing. I experienced the same type of progress after I started to use the dynamic method in 1983.

Not only does concentric speed has to be increased, but so does the eccentric phase, which is the most important, as has already been discussed. Speed has to do with external resistance. That may be why Olympic lifts are popular for building explosive strength. But if you do jumping, Olympic lifts are not needed. Many coaches will argue with me, but I've done it their way. They haven't tried my way. At a Beat training center in Cincinnati, Matt Weiderman trained James Taylor, a pro football player, to jump onto a 59-inch box at 6' 2" and 205 pounds. J.T. also ran a 4.33 40-yard. J.T.'s best box squat is 550 and moves 315 at 0.8 meters/second. John Harper can jump on a 51-inch box at 270 pounds; he is ranked 11th nationally in the discus.

One end of the spectrum is moving very heavy weights very slowly. The other end is to move the body as fast as possible. How? Jumping! A 42-inch box jump is the minimum height to reach an adequate amount of explosive power. We use the optimal number of jumps based on a maximum jump.

We use the formula as presented in Prelepin's lift table. For example, if your best jump is 40 inches, a 75% jump would be 30 inches, 80% would be 32 inches, and 85% would be 34 inches. When doing jumps in the 80% range, do 15 jumps per workout. This holds also for jumping with dumbbells, ankle weights, or a weighted vest, or a combination of any of the above.

At Westside we do a lot of squats and jumps off soft surfaces. This causes the muscles to do more of the work and not limit it to the ligaments and tendons. In two out of three workouts we step down off the box onto other boxes. On the third workout, and highest box, we do a depth jump down onto a soft gym mat. We don't do an immediate jump upon landing, just stick it with legs slightly bent, landing on the balls of the feet.

Our goal is to jump as high as possible and, therefore, squat as much as possible. We do it the same way: off a box. We duplicate the same procedure as box squatting. Before jumping onto a box, we first sit on a box, relax, and then jump. This produces a much greater effort.

The forces that produce movement are external, internal, and reactive strengths. This was established by Bernstein (Verkhoshansky, 1986). When lowering onto a box, a greater amount of kinetic energy is expressed because mass as well as speed contribute to kinetic energy. Landing on the biggest part of the lower body will yield an increase in kinetic energy. In addition, by lifting the feet and slamming them on the floor an overspeed eccentric phase occurs. This combination very effectively increases jumping power. I have had veteran NFL linemen long jump their best in one or two sessions.

The stretch (eccentric) and shortening (concentric) phases cause reversible muscular action. If you do very heavy slow squats with the aid of overspeed eccentrics by using bands with weight and move the fastest with no resistance (box jumps), the sky's the limit. Remember, explosive strength is somewhere between strength and speed. By using these two elements, you will reach your desired results.