

SPORT SPECIFIC OR PSEUDOSCIENTIFIC

By

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PSEUDOSCIENCE [soo-doh-**sa**hy-uh ns]: **any of various methods, theories, or systems, as astrology, psychokinesis, or clairvoyance, considered as having no scientific basis; A theory, methodology, or practice that is considered to be without scientific foundation.**

Walk into any gym or health/tennis club and you will see signs and advertisements for sport specific training or strength and conditioning for athletes. Pictures of athletes and fitness enthusiasts performing single leg kneeling Swiss ball exercises and Bosu trainer balancing acts fill the advertisement. Understanding that most sports consist of motions remotely similar to those in the pictures, the assumption must then be that these are sport specific. In reality though, most team sports take place on solid surfaces, with exceptional athletes able to generate large degrees of force over short periods of time or distances. For instance, in basketball, the first step and ability to jump higher are the result of greater abilities to generate force. In football, the athlete whom can generate greater amounts of force over the average play, may have the greater advantage over the athlete whom generates less force in that same time frame.

A healthy (assuming no deficiencies, toxicity, structural or hormonal imbalances) athlete's potential to generate force is based on the motor unit activation potential, neuromuscular efficiency, elastic components, and strength of the musculoskeletal and immune systems. Each of these factors plays a crucial role in the athlete's ability to succeed on the field. Athletes such as LeBron James, Dwight Freeney, and Usain Bolt have used their impressive levels of strength, reactive ability, and power to generate greater and greater levels of force to propel them past their counterparts. It is hard to imagine these levels of force were developed through high muscle endurance and balance training protocols alone. As a strength coach, it may be safe to assume, these athletes have put plenty of time in the weight room (it is safe to assume great genetics as well) working on developing greater levels of overall

strength and power through the use of Olympic lifts, modified strongman training methods, proper weight training protocols, maintenance of structural balance, proper nutrition, and adequate rest and recovery.

Just because a movement looks similar to what may be seen on the athletic field does not mean it is best suited for the development of transferable strength and power to the actual sporting field. Over the past 10 or 15 years there has been much emphasis on functional training, where movements are trained without proper strengthening of the muscles which are responsible for generating these movements. This movement training has gone to extremes with the emphasis now on unstable environments (which are typically not seen on the playing field) to challenge an athlete's proprioception and balance. The problem here lies in the lack of transfer due to low levels of neuromuscular stimulation, rate of force requirements, muscular activation patterns. Without exposure to greater levels of muscular stress/tension, how is an athlete supposed to gain strength, as the weights used in balance exercises are typically far less than on stable environments. With these factors in mind, let's look at some comparisons between Sport Specific Strength and Conditioning Methods and Pseudoscience.

I. Facility



Sport Specific

or



Pseudoscientific?

The two pictures on the left are of a facility designed specifically with the development of athletes in mind, whereas the picture on the right is an aerobics studio, a typical setting for “sport specific training” at the local gym or health/tennis club. The first facility has 6 heavy duty squat racks, 6 vertimaxes, 4 olympic platforms, supercat jump squat trainer, plyo boxes up to 48”, dumbbells up to 120, 30 yard turf, resisted sprint devices, bands and chains for accommodated resistance, strongman training protocols including atlas stones, sleds, super yoke, logs, prowler, kegs, and farmer carry handles. While an aerobics studio typically consists of reebok steps, Bosu Trainers, bodyblade bars, jump ropes, lots of mirrors, and a great sound-system. For those in the know, the first facility is the obvious choice for the development of athletes, whereas the second choice is more suited for aerobics classes and cardio kickboxing.

II. Functional Training



Sport Specific

or



Pseudoscientific?

Strongman training is an excellent method of building “Functional” or transferable strength for greater on field performances. Not to be confused with functional strength gimmicks such as balance boards, wobble boards, and various “Sport Specific” resisted movement patterns, functional strongman training builds muscles, tendons, joint strength, and increases bone density. Here are 10 of the benefits of strongman training for athletes. (Not too sure of the benefits of the pseudoscientific exercise, holding a med ball in one hand, while standing on the opposite leg on a rocker board? Perhaps that will get you better at.....holding a med ball while standing on a rocker board with the opposite leg.)

1. **Development of Lower Back Strength:** Try this. Have your workout partner or teammate stand at arm's length. Place your hand on your stomach and have your partner lightly push you from the front or side. Did you feel your abs powerfully contract? Possibly not. Now try the same with your hand on your low back. You should have felt a powerful contraction of the low back musculature. Not only will a strong low back keep your risk of injury to a minimum, but it will also help in balance, stabilization, and impact absorption, among other benefits.
2. **Strengthening of joints and tendons:** With stronger joints and tendons an athlete decreases the risk of injury while simultaneously increasing the ability to generate more force. With the neuromuscular system capable of generating more force, the athlete will notice increases in acceleration, deceleration, and power dominant sporting activities.
3. **Increased alactic power and capacity:** Talk about killing 2 birds with one stone. Strongman training increases both the ability to generate great levels of force as well as increasing an athlete's anaerobic energy system. Both are performance variables seen most all team sports. Rather than long slow distance cardio bouts which can be very damaging due to their repetitive nature, strongman training builds the energy system while preserving the body.
4. **Development of powerful hip extensors:** Jumping, accelerating, throwing, punching, kicking....you name it, powerful hip extensor muscles will increase the force production of these movements. In NFL and college recruiting combines, the scouts typically test a minimum of 3 hip extension dominant activities: the vertical jump, the 40 yard dash, and the pro agility. Each of these involves powerful hip extensor activity. Looking at most any sport, there is typically some degree of hip extensor power necessary optimal performance.
5. **Structural Balance:** What a great way to train the muscles that aren't seen in mirror. With so much time spent on bench pressing, curls, quads, and abs, strongman training places a great degree of emphasis on the posterior chain muscles (those not seen in the mirror). This will help to create balance between posterior and anterior antagonistic muscle groups. (There is still a need for structural balance weight training such as external rotator and mid trapezius).
6. **Increased ankle integrity:** Walking/jogging with an unbalanced or awkward load can place great amounts of compressive force on the ankle structure. Think of the HUMV commercials in which the vehicle's suspension is seen going over rocky obstacles, flexing and absorbing force in all directions to maintain stability. The human ankle works in the same fashion. Adding functional resistance from strongman apparatus' increases this compressive force, thus strengthening the musculature around the ankle and increasing the integrity of the joint.
7. **Strengthening the Core Musculature:** The core is not just the anterior section (abs) which can be seen in the mirror. It is made of the hip-pelvic-lumbo complex musculature. This includes the muscles of the front, side and back. To stabilize the torso during any of the strongman exercises, there needs to be great degree of core musculature activation. From tire flipping to farmer's carries, your core musculature will strengthen to a far greater functional capacity than typically performed sit-ups, crunches and planks.
8. **Increased muscular endurance:** Muscular endurance plays a role in many team sports. The ability to generate force over consecutive and non-consecutive bouts distinguishes which competitors succeed and which fail.

9. Grip Strength: From throwing a football or baseball to rebounding a basketball and tackling an opponent, the strength of one's grip plays an often overlooked, yet intricate part in the success of these events. The strength of one's grip has even been linked to one's overall strength and health.

10. Mental toughness: Pat Riley once said "if you are not getting better, you're getting worse". The only way to achieve success is the ability to endure no matter how difficult the activity. With this perseverance comes mental toughness. After one or two difficult strongman training sessions, an athlete quickly realizes it takes mental toughness to complete this type of workout

III. Vertical Jump Training



Sport Specific

or

Pseudoscientific?

The Vertimax (www.vertimax.com) has been shown in third party laboratory testing to **increase athlete's lower body power by 217.14 watts** over a 12 week training period (Rhea et al 2008). This training tool has been advocated as a must have by strength coaches and head coaches in many of the top professional and collegiate teams across the country. As for the Bosu trainer jumps, it is very hard to find any scientific evidence on the benefits of jumping on the Bosu trainer for increases in vertical jump or markers of on field athletic performance.

iv. Weight Training



Sport Specific

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Pseudoscientific?

The squat picture on the left is an excellent example of activation of high threshold muscle fibers due to the stimulus/tension placed on them, especially when compared to the light weight, low threshold fiber recruitment training on an unstable surface picture on the right. The benefits of the barbell back squat (when done correctly) with accommodating resistance are numerous including activation of high threshold fibers, resistance accommodating the strength curve, low back strengthening, VMO strengthening (deep squats), adductor, glute, and hamstring strengthening, and total body compressive loading with all its structural and skeletal benefits. Compare these benefits to the standing on the Swiss ball barbell squats. Besides the medical bill from Blue Cross Blue Shield for the torn ACL, the benefits might include activation and strengthening of stabilizers with low load, ankle strengthening, and improvement in bilateral squat specific balance. One look at these two exercises and one can easily see the benefits of stable surface back squat far outweighs the risks of the unstable surface Swiss ball barbell back squats and its variations.

V. Core Training



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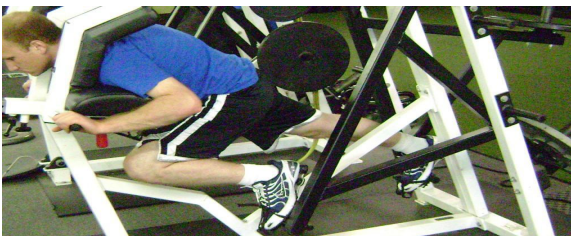


Pseudoscientific?

A recent study (Hamlyn, Behm and Young 2007) examined the activation of trunk musculature in 16 subjects performing squats and deadlifts with 80%1RM and compared this to the musculature activation of those same subjects during bodyweight unstable callisthenic exercises. The researchers concluded that “Individuals performing upright, resisted dynamic exercises can achieve high trunk muscle activation and thus may not need to add instability device exercises to augment core stability training (1).”

1. Hamlyn N, Behm D, Young W. **Trunk muscle activation during dynamic weight-training exercises and isometric instability activities.** *Journal of Strength and Conditioning Research.* 21(4); Pp 1108-1112. 2007

VI. Agility



Sport Specific

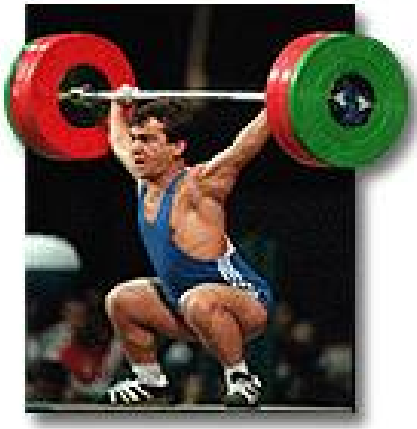
or



Pseudoscientific?

Strength coach extraordinaire Charles Poliquin said it best in his article Speed and Agility Training Gimmicks when he wrote, “getting better at a predetermined movement pattern such as used on a speed ladder will not transfer to skills for such sports as soccer or lacrosse, in which the athlete must react to the environment. The only thing it can get you better at is using an agility ladder, which, the last time I checked, is not an Olympic event.+For a complete overview on agility and agility training click [Here](#) .

VII. Rate of Force Development (Power)



Sport Specific

or



Pseudoscientific?

Besides the load, rate of force development requirements and activation of the highest threshold muscle fibers, the injury profile alone for the two exercises should deter any athlete from participating in.....Pseudoscientific sports training methods.