

Training for Soccer

By

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As a multi-sport strength coach, it may be safe to say that one of the team sports that strength training can have the greatest impact on is soccer. Most football teams incorporate some form of strength and conditioning into their off season preparation. As do hockey, baseball, basketball, and lacrosse. The differences in performance can be due to the athletic talent pool, coaching, mental attitude, dedication, nutrition, off season training modalities, and more. The majority of soccer players and teams I have come across occasionally dabble in weight training, incorporating low intensity, high repetition, exercises combined with “speed” and “agility” work. With this in mind, if soccer players would dedicate more time in their off-season to “increasing the horsepower of their motors” while creating optimal structural balance; they would have a tremendous leg up on the competition.

From what I have seen in my experiences as a strength coach, archetypical off-season preparation for a school age or even some college soccer players may look something like this:

1. **Skill work**
2. **Endurance training** usually in the form of long distance running outside if it is warm or on a treadmill if it is cold outside.
3. **Callisthenic exercises and “CORE” work**
4. **Agility ladder, cones, and hurdle training** (in other words, pre-determined movement patterns the brain creates learned motor responses to after multiple practice sessions. One of the best quotes I have ever heard/read was from quite possibly the best strength coach in the world, Charles Poliquin: “Agility ladders make you better at agility ladders”.



At APECS we have actually tested athletes in the 5-10-5 pro-agility test after they participated in group training SAQ center based agility work only (ladders, cones, hurdles) or our structural balance and functional strength based training modalities. The athletes who invested their time and money in the group training with ladders, cones, and hurdles got much better at those pre-determined

movement patterns, but did not get any better, in fact some got worse, in the 5-10-5 pro agility performance.

The athletes whom increased their strength and structural balance, thus increased their horsepower, increased their performance after only 6-8 weeks, some taking off as much as 4/10ths of a second. Why? Because they strengthened their legs, core, low back, and total body utilizing structurally balancing weight training methodology. With greater strength and muscular balance in both legs and the low back, they were able to absorb the eccentric deceleratory forces with greater efficiency and body control, allowing for greater “rebound” or elasticity when making the change of direction.

Also, with the increased horsepower in their motors, they were able to generate more force at the start and acceleratory components of the drill, making for an even faster run. **Bottom line:** *If you are looking to improve your on-field agility performance through off-field strength and conditioning, **you should not have to pay a strength and conditioning coach or performance specialist to watch you***



and a group of other kids run, jump, and shuffle through predetermined movement patterns on cones, low hurdles, and agility ladders. *That can be reserved for skill work sessions with a soccer coach. Remember, getting around the competition on the field is not a pre-determined movement pattern!!*

When looking at these methods of off-season preparation for soccer, the lack of strength and potential for exacerbation of structural imbalances becomes apparent. Oftentimes, it may be safe to assume that many soccer players whom prepare in this manner may be:

- Structurally imbalanced
- Functionally Weak
- Training the incorrect energy systems with regards to the demands of the sport
- Prone to Injury
- Have chronic joint inflammation of the knees and/or low back

APECS Methodology

1. Structural Balance Evaluation

When working with the soccer athlete in particular, it is highly important to perform a structural balance evaluation prior to training. Due to the unilateral dominance created by the skill sets required to



succeed, soccer players often demonstrate common structural imbalances. If time is short, the most effective test to determine the movement efficiency, especially if there is a whole team of athletes to be tested is the overhead squat. As the name implies, stand with feet in a squat position while holding a dowel rod straight overhead (with hands wider than shoulders). Squat straight down keeping arms straight overhead and heels in contact with the ground at all times. Common performance discrepancies in this test for soccer players include:

- Torso Lean
- Lack of squat depth with or without low back pain
- Valgus knee stress
- Weight shift onto dominant plant leg
- Externally rotated feet, with internal rotation of the heel

For a more comprehensive structural balance evaluation, it is highly recommended to find a Level II PICP coach [click here](#). Upon completion of the evaluation, the strength coach will have a map based on the needs of the individual athlete, rather than a cookie cutter approach that seems to have saturated the market today. Let's take a brief look at some of the strength training methodologies that could potentially increase the horsepower of a soccer athlete.

2. Strength Training Exercises For Soccer Players

Front Foot Elevated Cable Split Squats: Not the potentially knee damaging ninety degree angle, back knee straight to the ground split squats that are commonly taught throughout the personal training community. These are split squats in the form of the way they were initially taught in the Eastern Bloc, before the research scientists and functional training “experts” got their hands on it. Before delving into technique, walk down a stair case and monitor what your knee is doing. Next read these two articles [Deep Squats](#) and [Can the Knee Go Over the Toe](#) for some insight on how the muscles actually protect the knee in deep knee flexion. For example, one of the major muscles that has an active role in regulation of proper knee tracking is the VMO. The VMO is most active at the top of knee extension, and.....at the bottom 15 degrees of knee flexion. If the knees are only allowed to go to 90 degrees knee problems can eventually arise due to:

- Lack of strengthening/activation of one of the major stabilizers of the knee
- Knee ligament laxity is increased at 90 degrees
- Decreased hamstring, adductor and glute activation at 90 degrees
- Minimal contact between the femur and tibia at 90 degrees
- Anterior tensile stress at the front knee
- Recruitment of the knee extensor musculature of the back knee while in a mechanically disadvantageous position.

After personal conversations with some of the best Olympic Weightlifting coaches in the world, it is safe to say that deep knee flexion in squats, lunges, and split squats are not only more effective with regards to greater recruitment of muscle fibers, but they are also much **less**



damaging on the

knees.

The best information on proper split squat technique comes from the blog of the world’s premiere strength coach, Charles Poliquin. [Click here](#) for an education on split squats and their proper technical execution.

This is the split squat technique the above athlete used and continues to use to rehabilitate after ACL tear. Notice the knee flexion, constant torso position and position of the knee relative to the toe at the bottom.

Unilateral Hamstring Curls: Training the hamstrings while isolated as flexors of the knee is an often overlooked element critical to knee health. Utilizing unilateral hamstring curls can ensure correction of imbalances between dominant and non-dominant leg. Inverting or everting the foot can recruit a greater degree of muscle fibers from the medial or lateral hamstring musculature. Plantar flexing can isolate the hamstring to a greater degree by decreasing the firing of the gastroc as a flexor of the knee.

Front Squats: Ideally, squat to the grass, where the hamstring comes in contact with the calf musculature. Feet hip width apart with toes pointing out slightly, utilizing Olympic clean grip, with upper arms parallel to the floor. Bend at the knees first, descending straight down, while keeping the torso as upright as possible, upper arms parallel to the floor, weight on the heels, and knees pointing in the same direction as the toes. Once your hamstrings come in contact with your calves or you have gone as low as you can go, begin the ascent maintaining previously mentioned postural checklist. If your heels come off the ground, Olympic weightlifting shoes are highly recommended, or you can place .25-1.25" heel elevations below your heels only. Six reps should be the max reps as the musculature about the scapula can fatigue, increasing the potential for the elbow dropping, which can then lead to low, mid back, shoulder, or wrist injury.



Romanian Deadlifts: Standing in front of a barbell with your feet parallel, shoulder width apart; bend your knees roughly 25 degrees with the hips higher than your knees. Keeping your back arched, stick your butt back and lift the barbell, focusing on maintaining the same knee bend throughout the entire movement. Extend your torso until it is near perpendicular to the floor without changing the knee angle at all. Once at the top position, slowly lower the barbell maintaining the exact same knee flexion angle and back arch. Lower to mid shin level or to the point where your hamstrings are feeling a good stretch. Remember, the knee angle remains the same throughout the movement.

Off Bench Oblique: More than just an oblique exercise, this exercise strengthens the powerful Quadratus Lumborum muscles of the low back. When strong, these muscles provide the soccer athlete with the upright stability necessary for maintaining possession or knocking the opponent off the ball. Lay down on your side on a bench, with the upper body hanging off the bench and heels/legs anchored under an immovable bar. Fold your arms across your chest and lower your torso/shoulder toward the ground keeping your shoulders/torso perpendicular to floor and parallel to the walls. Once the eccentric component is complete, pull your torso up as high as you can, maintaining the same perpendicular to the floor and parallel to the wall posture. Variations to this exercise include feet stacked on top of each other, one foot in front of the other, isometric hold at the top of concentric contraction, or holding a weight in your arms across the chest.

Dumbbell Bench Press: Utilize a neutral grip or semi-supinated grip, with elbows at 45 degrees or less away from the body, for greater pectoral muscle fiber activation, while decreasing the stress on the shoulder musculature. Full range of motion is critical for avoidance of structural imbalances and shortening of the pectoral and internal rotator musculature.

Pull Ups: Pronated grip, slightly wider than the shoulders. Begin in full extension, with arms completely straight. Using muscle, not momentum or kipping, pull straight up to the bar, trying to keep torso perpendicular to the floor. As you pull up, focus on pulling down the elbows while retracting and depressing the scapula. Try to pull the top of your sternum to the bar while keeping shoulder blades retracted. Once full range of motion has been achieved, lower slowly back down to complete full extension. To reduce shortening of the latissimus dorsi musculature, always ensure full range of motion. Also, do not allow the shoulder blades to round forward as you are ascending or at the top of the range of motion.

Lean Away Lateral Raises: While holding a dumbbell or cable pulley handle in the right hand, the trainee positions their feet directly next to a power rack, and holds onto the rack about shoulder height with the left hand. While holding the rack tightly, lean away from the rack, holding yourself up with the left hand. Keeping this leaning position, abduct the slightly bent right arm (raise the right arm out to the side and up) until the dumbbell/cable handle is shoulder height. Then slowly lower.

Windshield Wipers: Lay on your back with your leg straight up and roughly 90 degree angle at the hips (less advanced keeps the knees bent). Anchor your arms straight out to your sides by holding dumbbells or immovable objects. Keeping the shoulders and low back in contact with the ground, let your feet/legs drop to one side, then raise and lower to the other side, trying to maintain 90 degree hip angle throughout. The movement of the legs is similar to that of the windshield wipers of a car.

OLYMPIC WEIGHTLIFTING: Lost in Translation?

Coaches often try to teach the Olympic lifts, specifically the power clean from the hang, to their athletes. The problem lies in the fact that the interpretation of what they are trying to teach, and what is actually learned can oftentimes be lost in translation. This may be due to time constraints and excessive athlete to coach ratios.

Common Errors may include:

The forced stomp technique: Be cautious of the forced stomping technique. Here is the rationale. One of the major purposes of Olympic lifting, especially for athletes, is to teach and increase power in the triple extension movement. Triple extension consists of extension of the hips, knees, and ankles. Similar to jumping or accelerating during a sprint, the ability to powerfully perform this movement can lead to enhanced acceleration, and thus, increased performance on the field.

The problem with the stomping technique is it minimizes the third extension, ankle plantar flexion. Former German Olympic training center sport scientist Klaus Bartonietz, has expressed that plantar flexion is a critical necessity in the generation of vertical acceleration of the bar (1). Citing research by Weide, Bartonietz explains how this “opening” of the ankles actually contributes roughly 10% of the total velocity of the movement (1). In fact, according to Weide’s research, the power demand of the ankles was shown to be only 10% less than the power demands of the knees (2). A practical example of this would be trying to jump as high as you could without plantar flexing your ankles.

Incomplete hip extension: The aim of Olympic lifting is to generate powerful triple extension. The hips are the primary power generators in triple extension. Without extending the hips completely, the training effect is lost. In a seminar under the tutelage of world renowned Canadian Olympic Weightlifting coach Pierre Roy, he compared the Olympic lifts to jumps. It is nearly impossible to achieve maximal jump height if you are not fully extending your hips! The same goes for the Olympic Lifts.

Bar Trajectory away from the bar (the power reverse curl): When the bar trajectory is not close to the body during the power clean, not only does it look like a power version of the reverse curl, but the potential for injury is increased. The bar remains close to the body, as the body works it’s way under the bar. Here are a couple of pointers to ensure the bar stays relatively close to the body:

- Elbows rotated outward with wrists flexed in start position.
- This one from highly regarded USAW Olympic Weight Lifting Coach Dr. Ellyn Robinson. If you are wearing shorts, focus on pulling the legs of the shorts upward with the bar. This ensures the bar has contact with the upper thighs.

Incorrect start position: Rule of thumb: the start position of any exercise has to be correct to ensure proper muscle recruitment patterns, decreased potential for injury, and optimal loading leverage. When starting from the hang position just above the knee, in order to properly recruit the powerful hip extensors, the shoulders and chest have to be out over the bar. Too often, high school and college athletes begin this movement in the “sit back” position, where the weight can basically rest on their lower quadriceps musculature. In this position, due to the upright positioning of the torso, with the shoulder almost behind the bar, the hip extensors have minimal leverage to pull the bar upward, leading to excessive forces on the low back and shoulders, as well as a dependency on the quads to power the movement. From this position the trainee is forced to stomp due to the lack of hip extensor activation.

Elbows dropping in the catch: The elbows down catch technique can lead injuries about the wrist, shoulders, and low/mid back. If you watch the catch technique of Olympic competitors in the clean and jerk, they always catch the bar with their upper arms roughly parallel to the floor, as the bar is then caught on the clavicular region of the anterior deltoid/pectoral attachment, minimizing excessive pressure on the wrists, elbows, and shoulders.

Keeping this in mind and using a little common sense, sprint intervals consisting of varying distances, durations, change of direction, and running surface angles (i.e.; hills) would be effective. *For the greatest transfer of training effect, it is wise to ensure that training does not occur on a treadmill. Word to the wise: treadmills can decrease the activation of the hamstrings as an extensor of the hip. This because the tread is moving below the trainee, minimizing the need for the hamstrings to “pull” the body forward over the ground, as is the case when running on the ground.*

Remember, when it comes to energy systems and speed work: QUALITY OVER QUANTITY!!!!!! Below are 2 sample Energy System programs for the Soccer athlete (only performed if structural balance is optimal and proper warm up is adhered to):

Energy Systems Workout Sample 1

A: Autoregulatory Change of Direction Sprints for Time: Athletes start at goal line. They sprint out 5 and back 5 for a set time. If they do not achieve set time, they have to do it over and over again until they have achieved a positive result. Next they move onto 10 yard down and back. Same rules apply for successful completion. Next they sprint to 5yd line and back, then 10 yard line and back. Adjustments and modifications are made depending on the success rates of the athletes. Change of direction work is typically no longer than 10 yards to minimize potential for fatigue induced injury.

B: Autoregulatory Timed 30's: the trainee performs as many 30 yard sprints as they can, adhering to the following guidelines:

- Each sprint under 4.5 seconds
- Rest interval for soccer athlete is exactly 30 seconds
- Once the athlete goes over 4.5 seconds in the sprint or 30 seconds in the rest interval they are done with 30's for the day.

C: Timed 80's: First week the athletes run four 80 yard sprints with 60 seconds of recovery. Each week they increase the number of 80's by two (i.e.; second week six 80's, 3rd week eight 80's) etc, until they reach 20-26 total. Here's the catch: the 80's are completed in under 9 seconds for advanced athletes and 10-12 seconds for intermediate. Times can be modified as needed.

Energy Systems Sample Workout II:

A: 6s on 20s off Fartlek Training: The athlete sprints for 6s, then jogs for 20s. Duration of the workout is dependent on the conditioning level of the athlete.

B: Autoregulatory 400's: The athlete has to sprint 400 meters in pre-determined set time. After completion of sprint, the athlete walks/jogs around the track back to the start position. The athlete will

run as many 400's in the predetermined time as they can. Once they are slower than the predetermined time, they are done for the day.

4. Recovery, Recuperation and Injury Prevention

Post Weight Training Workout Recovery Shake: High glycemic, high antioxidant fruit juice with whey protein as soon as possible after a workout. If budget allows, glutamine and high quality greens drink may add to the recovery.

Adequate Rest: Sleep is when your body recovers. 8 hours should be a priority.

Post Workout Contrast Shower: Contrast showers are known to alleviate muscle soreness. When taking a hot shower the blood rushes to the skin, and when taking a cold shower the blood rushes away from the skin.

Active Release Technique (ART): Quite possibly the best manual therapy treatment for breaking up adhesions in soft tissue. The brainchild of Dr. Michael Leahy, ART has fast become the soft tissue manual therapy modality of choice for many elite level athletes. To find an ART practitioner, [click here](#).

Joint Task Force: A natural supplement consisting of proteolytic enzymes that are known to eat away at inflammation. If taking any of the over the counter NSAIDS and worried about negative side effects, this supplement is very effective for acute and chronic pains and inflammation.

The Miracle Treatment (*don't want to give away all our secrets*): At APECs we pride ourselves in keeping up with the most cutting edge tools on the market today. One of the modalities we currently utilize is quite possibly one of the most effective tools for blood flow to and through the mechanical soft tissue of the body. Once adhesions occur in the soft tissue, particularly the fascia, not only are the length/tension ratios compromised, but the neurological feedback loop between the brain and working muscles is impaired. Signals to the brain from mechanoreceptors throughout the body or vice versa become altered, leading to decreases in muscle activation, motor unit recruitment, strength, and movement.

Not only does it aid in boosting nitric oxide and increasing vasodilation, but it is also extremely effective at shuttling nutrients into the fascia of the human body, thus leading to minimal if any muscle soreness. As an example, the first time I tried it, I performed a density legs workout with calf raise mechanical drop set at the end of workout. Excellent workout as my body warmed up very rapidly and the "mind/muscle" connection was much greater. Typically a 5 day debilitating soreness in the calves is the result. Very minimal soreness the day after and that was it.

5. Nutrition

Athlete A weights 185lbs with 20% body fat, while athlete B weighs 185lbs with 10% body fat. Athlete A has 37 pounds of extra fat to lug around on their frame while out on the soccer field. Athlete B only has 18.5 pounds of fat, meaning he also has 166.5 pounds of lean body weight on his frame. The

extra 18.5 pounds of body fat is like running around with a weight vest on the soccer field. The closer to optimal levels of leanness, the better.

Getting lean is not as simple as working out. Nutrition plays a critical role in adding muscle and decreasing body fat. For many individuals, roughly 70-80 percent of their ability to get lean depends on dietary changes. Hormones also play a key role. As do vitamin and mineral deficiencies, toxic burden, PH balance, hydration, etc... This is where Biosignature Modulation comes in. Biosignature Modulation is not only an extremely accurate body fat measurement tool, but a comprehensive, individualized blueprint for fat loss. [Read here](#) for more information on this truly cutting edge approach to optimizing body composition.

If interested in getting lean, eating healthy and optimizing health, 3 must read books are:

1. **The 150 Healthiest Foods on Earth** by Dr. Jonny Bowden
2. **The Paleo Diet** by Dr. Loren Cordain
3. **Cereal Killer** by Alan Watson

Enjoy, Work, and.....Succeed!

References

1. Bartonietz , K. E. **Biomechanics of the snatch: toward a higher training efficiency.** *Journal of Strength and Conditioning* 18:24-31, 1996
2. Weide, U. **Mathematical modeling and movement simulation in weightlifting - toward the further improvement of the aim technique for the Olympic snatch.** *Leipzig:Research Institute for Physical Culture and Sport (Dissertation)* - Cited in Bartonietz, K. 1996.