

Strength and Conditioning for Soccer II: A Specific Metabolic Approach

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THE CONCEPT OF SPECIFIC metabolic conditioning (SMC) is centered on the established theory of training specificity. Specificity of training dictates that the adaptation to a training stimulus occurs in direct response to that training stimulus—you get what you train for. Since we are at the beginning of the soccer season, this article will address how specificity of training affects the SMC for the sport of soccer.

In order to design a soccer SMC program, it is necessary to look at some of the general demands of this very fast moving sport. Although well-published little league, high school, and college statistics are not readily available, one can use the professional data as a model for soccer SMC at any level. Remember, these statistics are just what the name implies, general averages! They will differ across various league levels, positions, and playing styles. However, these figures make the point of the intermittent nature of soccer, a game that is often trained for as if it were a cross-country running event.

Less than 2% of soccer is

played in possession of the ball; 98% of the time is spent trying to get in position to touch the ball. There are about 1,000–1,200 bouts of action per game, occurring every 5–6 seconds. These include rapid and frequent changes of pace and direction in addition to execution of game skills. Believe it or not, 17% of the game is spent standing, with another 40% walking! Jogging and low-speed running take up 35% of the game, while 8% is spent executing high-intensity running. Sprinting all out is less than 1% of the game, occurs every 90 seconds, and covers less than 15 m in length. A total of about 10,000–12,000 meters (6.25–7.5 miles) are covered per game. Goalkeeper data are slightly different. Goalkeepers cover about 1/3 of the distance of other players (i.e., ~4,000 m). They spend about 10% of the playing time in possession of the ball, stand for about 13 minutes per game and sprint between 1 and 12 m at a time (1).

If this data seems to deviate too far from your level of play and the athletes you work with, there is another route you can take.

Take a video of a typical game your athletes play and actually dissect it to get the information provided above. All it takes is a video of your game, a VCR, a watch, paper and pencil, and lots of time! At this point, you can focus on the specifics of each position/player if you like. To cut some time you don't have to analyze the whole game; you can do stats on a quarter of the game and then multiply appropriate numbers by 4. With this data at hand, now we can begin to address some metabolic demands. Let's take a look at the SMC design approach.

To create a training base for soccer, the best method of training is a simple interval program as part of a comprehensive conditioning program. However, I give this program a twist by combining simple skills as part of the sprinting protocol. This accomplishes several things. First, it conditions soccer players in a specific metabolic manner. Second, it improves their movement skills by teaching them to run and turn more efficiently. Third, it prevents injuries from the perspective of the enhanced coordination of muscles

and additional joint integrity. Fourth, by allowing players to condition themselves using various biomotor skills instead of just running, 2 training components, conditioning and skills development, are taken care of instead of just 1 component.

Here is a sample of an 8-week program that I have successfully used with junior high and high school soccer and lacrosse players. I will adjust the volume upward as much as 30% and change the difficulty of skills if I see the athletes can handle the increased demands. However, I always start with the minimum amount of work to assure proper metabolic adaptation and mastery of the skills assigned. Since many drills go by various names, I have followed them with a brief description to assist in their identification.

■ Base Metabolic Conditioning (6–8 weeks)

Perform the workout indicated 3 times per week. Run the drills listed in the drills menu below. Run each drill 3–6 times. The length of the run should be 20–30 m, followed by a brisk walk for 20–30 m, and then both the run and walk repeated.

Week 1–2

Thirty runs/workout—This gives 600–900 m running + 600–900 m walking = 1,200–1,800 m total.

Week 3–4

Forty runs/workout—This gives 800–1,200 m running + 800–1,200 m walking = 2,000–2,400 m total.

Week 4–6

Fifty runs/workout—This gives 1,000–1,500 m running + 1,000–3,000 m walking = 2,000–3,000 m total.

Week 6–8

Sixty runs/workout—This gives 1,200–1,800 m running + 1,200–1,800 m walking = 2,400–3,600 m total.

■ Drills Menu

1. Ankling (forward and backward)—jog (high frequency). Concentrate on fast feet!
2. Hopscotch step—feet together, jump forward, and land with feet 20" apart. Repeat.
3. Butt kicks (forward and backward)—run, leaving the upper leg pointing down, lifting heels to buttocks.
4. Straight leg shuffle (forward and backward)—run, keeping the legs straight and stiff.
5. Skipping (regular and power skipping forward, backward, and sideways)—regular, low-amplitude; power, for height and distance.
6. Tapiocca or carioccas—alternate crossover step for foot contacts and speed.
7. Diagonal skater drill—perform diagonal skating actions (lateral, 1 leg bounding) in a Z formation.
8. Falling starts (standing or from an athletic position)—allow yourself to begin to fall forward and recover at the last minute by accelerating forward.
9. Z runs—run in a Z shape, alternating the plant and cut leg.
10. Explosive move and sprint (3 vertical jumps and sprint, speed skate and sprint, or squat thrust and sprint)—combined.

Run 2–3 Mile Fartleks, 1–2 Per Week (Run 80%/Jog 50% Combo Runs)

As preseason training camp gets closer, I begin to combine various

soccer specific with the above skill drills. For example, I will create an obstacle course consisting of jumps, slides, rolls, and dribbling skills, lasting 7–10 seconds in duration, finishing with kicking the ball into the net. These obstacle courses will simulate live-play skills such as tackling, kicking, obstacle avoidance, etc. Between this type of training, functional strength training, and the technical and tactical aspects of the upcoming soccer practice, your athletes will be properly conditioned and ready for aggressive soccer competition. ▲

■ References

1. Reilly, T. Motion characteristics. In: *Football (Soccer)*. B. Ekblom, ed. Melbourne, Australia: Blackwell Scientific Publications, 1994. pp. 31–42.

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