Trunk and Balance Training for Soccer
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Presented by:
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Trunk Anatomy and Physiology

The session described how trunk strength and control affects balance, which ultimately affects game performance, and how a coach can help develop these areas in an athlete. Many of these activities have been developed and used by Oscar Pisano, the assistant coach of the Columbus Crew and Montreal Impact. Oscar was not able to attend the session as was originally planned.

Jeff's first statement was that Americans, in general, do not have enough trunk strength and trunk control. Their movement is too upright and rigid. Jeff gave us a quick lesson in the anatomy of the abdominals and the back, explaining functions of the prime muscles in those areas.

Jeff explained that most muscles work from their origin to their insertion (uni-functional and directional); however the abdominals work both ways. They give the players stability. Without stability a player can control the movement of the pelvis, and therefore cannot be as effective in soccer.

There are 64 muscles in the back. Long back injury recovery periods are generally because of one of the tiny back muscles. The human anatomy was designed the be all fours. Being upright, the muscles have a tendency to get shorter. One footed players often have trunk weakness and imbalances.

The National Strength & Conditioning Association had an article in 1991 on the anatomy of kicking. It detailed the large number of back, abdominal, and trunk muscles that were involved in the kicking process. At the point of impact with ball, the trunk muscles are contracted.

When kicking a ball, a good support stance is key. Weak abdominals affect the stance . Therefore, one can assume by improving weak abdominals, the player has a better chance to be strong on both sides of the ball.

Chronic groin pain and injury which is due to repetitive use, such as kicking, shooting and sprinting is an abdominal problem. The treatment is to rehabilitate the abdominals, do proper stretching and be sure the player has a very good warm-up (at least 10-15 minutes) be participation. One area some coaches fail to address, is to warm their substitutes up properly prior to their entry into the game.

Several abdominal and back exercises were described with training examples using the individual, a partner, a soccer ball and/or medicine ball:

- Individual
- crunches with the soccer ball held between knees; crunches work the abdominals.
- traditional sit-ups (going all the way up) which work the hip flexors; perhaps coaches need to do more of these because of the hip flexor strengthening.
- crunches with holding the soccer ball; this is better than putting the hands behind the head.
- rotational crunches or sit-ups. Most players don't do enough work on muscles that control rotation - they need more rotational strength.

- Partner
- while lying on the back with a ball between the feet and holding the ankles of the partner, the legs (and ball) are up. The standing player throw the feet of the prone player or resist the movement in several directions of the prone player. If the prone player is strong, then he should not hold the ankles.
- back to back crab tug of war(looked more like backwards shoving match); move the exercise to not using the hands on ground.
- on backs, foot to foot - with one player resisting the other, do resistance bike pedaling; resistance leg spread and closing; change the distance (and the knee bend) between the players.

- Medicine Ball
- back to back tug of war with the ball.
- throw the ball backward over head to another player; throw the ball from a prone position.

The medicine ball can be used as progressive resistance, in functional, fun movements and is excellent for all players to develop general trunk and upper body strength. A 2-4 pound medicine ball is usually sufficient, it is more important to do repetitions with the heavy ball.

- Bench (with partner)
- Reverse setups; while facing down, hands behind the head, with waist at the end of the bench and partner holding feet, raise up.
- While face down on bench, do reverse leg lifts.

One of the ways to judge trunk strength is by assessing the player's throw-in distance.

Anatomy and Physiology of Balance

Jeff made the comment that coaches and trainers do a good job of getting rid of swelling; however, this may be done a little too fast for the injured player's best interest. The proprioceptors are nerves that tell inform the brain where the body parts are in space at a given point in time. They are like the dashboard instruments on a car, to let the driver know how fast he is going and how much gas is left. Without a odometer, the driver may not be able to judge his speed.

The proprioceptors are part of our balance. There are two types of balance, static (stationary) and dynamic (during movement). Soccer coaches want to train the player to be stable with the dynamic kind..

After an injury, the proprioceptors in the injured and swelled area cease to work. It is this sensation that keeps us from trying to use the injured area. When the swelling goes down too soon, the proprioceptors, could give a false signal of wellness. For instance, a player may think he can jump off of an injured ankle, but only re-injures himself. The proprioceptors work on their own time-table.

Vestibular balance is located in the inner ear. It is inter-connected with eye muscles and movement, head movement and trunk position. A head cold can have a big effect on player's balance. Vision is also very important to balance.

When training for balance, the player and coach should understand that there is a difference in training with or without shoes or with different style of shoes. A slight difference in the thickness of the sole, could cause the player to have to readjust.

A balance board (18 in square of plywood with thin vertical board underneath) training is very good. For instance a player recovering from an injury can measure (against himself) the number of touches of the ends of the board to the ground in a certain time period going front to back. Or he could measure the length of time with no touch.

Other balancing objects would be a 2x4 or a broom handle. A min-tramp can also be used. While on these objects, the player should do certain skills like heading or volley kicking a tossed ball. Goalkeeper specific catching can also be done. Sit on a ball and do heading. Juggling a soccer ball is another balance activity, along with balancing a ball on the foot or head. Closing the eyes will also assist in balance training.

Test the static balance by standing on one foot and move the other to different positions; or kick a tethered ball. Roll a ball with one foot around the standing leg, change radius of the circle. Roll the ball to a mark in front and a mark behind.

While standing on one foot, holding your partner's hands, try to touch the toes of your partner's other foot; or try to push your partner off balance.

Summary

In order to be an effective soccer player, the body must be able to change direction quickly. The range of movement is the result of strength and control in the trunk and body balance. Trunk stability is needed for mobility in the legs. The stance leg stability is needed for power, accuracy and distance. The stance leg is directly related to trunk strength, leg strength and dynamic balance.

Make abdominal and trunk training as specific to soccer as possible by using a ball whenever possible and mimicking motions used in the game (e.g., heading, throw-ins and kicking). Trunk training can be used in the warm-up, in the cool-down and as "consequences" during training. It should be part of a home exercise program.

<Ed: You must have (well developed) guts to play soccer.>

This session report submitted by Gary Rue [grue@mail.state.ky.us].