

Developing a Progressive Core Stability Program

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COLEG POWYS IS AN EDUCATIONAL establishment in the United Kingdom catering to student athletes predominantly between the ages of 16 and 19 (essentially the last 2 years of U.S. high school). The majority of student athletes are with us for 2–3 years, and optimally developing these athletes within the small time scale available clearly presents a challenge. This is further hampered by the lack of strength and conditioning training in U.K. high schools and thus the lack of preparation undergone by athletes before joining us. Our screening process has shown that a vast majority of our athletes are deficient in basic strength and conditioning on arrival. Indeed, within the U.K. we are one of the few establishments committed to a strength and conditioning program.

In our screening process over the last few years what is evident is the lack of core strength and stability in our athletes. Therefore, our strength program takes an inside out approach, with the primary focus being on developing the muscles of the trunk area.

This involves traditional resistance training sessions, where the focus is on the principal mobilizing muscles for sports performance and in addition, sessions where attention is focused on developing the core muscles of the trunk, especially the underlying stabilizing muscles. To develop what I term the core stabilizing muscles (transverse abdominus, internal obliques, pelvic floor, and multifidus), I have set up a core stability program that consists of 2 dedicated half-hour sessions every week for all athletes.

Our initial screening for core stability and control involves a simple double leg-lowering test. Athletes lying on their back are required to raise both legs off the floor with knees to chest, they then have to contract the transverse abdominus and slowly lower and slide both legs out to a straight position, with feet remaining off the floor at all times. I gauge the point at which the athlete loses control of the transverse contraction, which normally manifests itself as an increase in muscle activity in the lower back or a

“softening” of the lower abdominal area (or both). I consider a quarter out poor, half average, three-quarters good, and full out excellent. In our experience the vast majority of our athletes only achieve poor to average scores emphasizing the need for this work. This lack of core strength and stability can manifest itself in inefficient sports techniques and also predisposes the athlete to injury.

With the increasing number of core stability exercises being introduced, one of the challenges is to apply the appropriate exercise to the athlete depending upon his or her own ability and experience. To facilitate this, our program is based on 5 levels, each one built upon the previous stage; this provides us with a model on which all program development and application can be based. Because of this sequential nature of the program, athletes are not allowed to move to the next level until they have mastered the previous level. This 5-level approach allows us to classify exercises and to structure progressive programs for our athletes built on the firm basis of a

successful performance at the previous level.

- Level 1 Mastery of core contraction.
- Level 2 Static holds and slow movements in a stable environment.
- Level 3 Static holds in an unstable environment and dynamic movement in a stable environment.
- Level 4 Dynamic movements in an unstable environment.
- Level 5 Resisted, dynamic movement in an unstable environment.

Level One. This requires the athletes to master the contraction of the core muscles, and athletes are required to actively master contracting and holding the core contraction. The use of ropes around the waist, small discs placed on the naval, etc. allows athletes to gain a visual focus to illustrate the contraction. In addition, we encourage the contraction to become a natural part of the athlete's routine by encouraging the athletes to contract the core muscles at trigger points during the day, such as the ringing of any bell, etc. Only when we feel the athlete has mastered the basic contraction do they move onto level two. This phase has the bonus of raising the athlete's awareness of the core muscles and helps in isolating the contraction during the later stages.

Level Two. This requires the athletes to take up and hold stat-

ic positions, together with slow, controlled movements, such as squats, one-legged squats, cross-steps, etc. The aim of all of these exercises is to maintain stability by controlling the muscular contractions of the core muscles. Toward the end of this stage, light resistance is added in the form of partner pressure to test the stability of the held positions.

Level Three. Only when the athletes enter level three is the unstable environment brought in using a stability ball, etc. This approach in delaying the introduction of the unstable environment ensures that the athletes are (a) aware of the aims of the equipment, and (b) adept at performing the required movement control to obtain maximum benefit from the equipment. Here, progressive practices are setup where athletes are asked to statically hold progressively challenging positions. In addition, dynamic work is carried out in a stable environment, e.g., in-place knee lifts, etc., while contracting the core muscles, with the aim of enhancing movement control.

Level Four. This level involves the incorporation of movement into the unstable environment with exercises, such as twists, etc. on the stability ball. Exercises in the stable environment become dynamic and more sport specific, e.g., high knee drills, etc., while contracting the core muscles.

Level Five. This level involves the utilization of methods of resistance to the unstable environ-

ment, such as medicine balls, rubber tubing, etc., to add another more dynamic stimulus to the exercises and to make them more sport specific. Stable environment exercise will be very sport specific and dynamic, incorporating resistance, e.g., high knee drills with rubber tubing. This allows me to develop very functional power within our athletes while maximizing their core stability and control.

Within the session structure, exercises from previous levels will be included, e.g., a level-5 athlete will not solely work with level-5 exercises. These allow for reinforcement of the basic core contractions and can also serve as a warm up to the more dynamic advanced exercises.

At all times, focus is on the form. If this breaks down, athletes are advised to return to the previous level or to less challenging exercises within the level. "Neutral" body position is emphasized at all times, and any deviations from this are corrected immediately.▲

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