

COACH DEVELOPMENT WORKSHOP

BODY CONDITIONING FOR CRICKET

This session is designed to give only a taste of the many areas of body conditioning that can be applied when developing a young athlete for cricket.

The exercises I am using in this session are Plyometrics & Core Stability and are suited for the "Training to win" phase of LTAD and should not be used with younger age groups.

I am not recommending that all of these exercises should be used together but might be included in this phase of LTAD.

Before using Plyometric or Core Stability exercises please ensure that your athletes are fit and do not have any back, hip or knee injuries.

All body conditioning should be tailor-made for the individual and their requirements. There is no "one-size fits all" solution.

Most phases of body conditioning should last approximately 6 weeks with a minimum of 2 & maximum of 3 sessions per week. This gives time to record progress but avoids boredom.

CORE STRENGTH TRAINING

The core region consists of far more than just the abdominal muscles. In fact core strength training aims to target all the muscles groups that stabilize the spine and pelvis.

It's these muscle groups that are critical for the transfer of energy from large to small body parts during many sporting activities.

Muscles of The Core Region

Abdominals: rectus abdominis, transversus abdominis, internal and external abdominal obliques

Hip Musculature: iliopsoas; rectus femoris; sartorius; tensor fasciae latae; pectineus; gluteus maximus, medius and minimus; semitendinosus; semimembranosus; biceps femoris; adductor brevis, longus, and magnus; gemellus superior and inferior; obturator internus and externus; quadratus femoris; piriformis

Spinal Musculature: erector spinae; quadratus lumborum; paraspinals; trapezius; psoas major; quadratus lumborum; multifidus; iliocostalis lumborum and thoracis; rotatores; latissimus dorsi; and serratus anterior

Core Strength Training For Athletic Performance

The muscles of the trunk and torso act to stabilize the spine, pelvis and shoulder girdle. From this solid, balanced base the limbs can be moved powerfully and under control. In fact before rapid movements of the extremities can take place, the central nervous system stabilizes the spine in anticipation. The rate at which the core muscles stabilize the spine may have a direct effect on the power of limb movement.

Core strength training differs from many traditional weight training routines by working both the lower back and abdominals in unison. The same is true for the upper and lower body. All athletic movements incorporate the core in some way. Very few muscle groups are isolated. Instead the whole body works as a unit and core strength training endeavours to replicate this.

What are the benefits of core strength training to the athlete?

- Greater efficiency of movement
- Improved body control and balance
- Increased power output from both the core musculature and peripheral muscles such as the shoulders, arms and legs
- Reduced risk of injury (the core muscles act as shock absorbers for jumps and rebounds etc.)
- Improved balance and stability
- Improved athletic performance!

Core Strength Training for Reducing Back Problems

Weak or poorly controlled core muscles have been associated with low back pain. The back muscles are responsible for movements such as extension and flexion of the spine and rotation of the trunk.

Excessive or uneven shock on the spine may lead to back problems. This may be exaggerated because weak core muscles lead to improper positioning or a forward tilt. In many exercises that use the back muscles, the abdominal muscles contract isometrically stabilizing the body.

The stronger and more correctly balanced the core muscles are, the less the uneven strain on the spine.

Equipment Used For Core Strength Training

- [Medicine Balls](#)
- [Stability Balls](#)
- **Broom handles!**

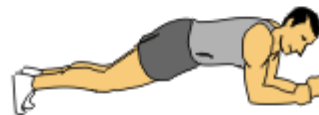
These simple pieces of equipment allow the coach or athlete to devise resisted sport-specific movements. Medicine balls are particular helpful for mimicking rotation movements for example that would be unpractical with free weights.

Of course even these pieces of equipment are not essential. There are many exercises that use bodyweight or partner resistance that strengthen the core effectively.

Popular Core Strength Training Exercises

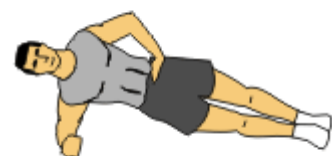
Prone Bridge

In a face down position, balance on the tips of your toes and elbows while attempting to maintain a straight line from heels to head. This exercise focuses on both the anterior and posterior muscle groups of the trunk and pelvis.



Lateral Bridge

Start on your side and press up with your right arm. Form a bridge maintaining a straight line from your hand to your foot. Rest on your elbow to increase the difficulty. This exercise focuses on the abdominal obliques and transversus abdominus



Supine Bridge

Lying on your back, raise your hips so that only your head, shoulders, and feet are touching the floor. The supine bridge focuses on the gluteal muscles. Stronger gluteals help maintain pelvic control



Pelvic Thrusts

Lie on your back with your legs bent 90 degrees at the hip. Slowly lift your hips off the floor and towards the ceiling. Lower your hips to the floor and repeat for the prescribed number of repetitions.

Russian Twists

1. Start by sitting on the floor with hips and knees flexed to approximately 90 degree angles.
2. Grasp a medicine ball or small dumbbell and swing it to the right and left as you keep the hips from rotating with the shoulders.
3. The arms are not perpendicular to the torso, but instead, kept low, near the thighs, as the medicine ball is swung to each side.



Good Mornings

- 1) Stand with feet shoulder width apart with knees slightly bent (at 20°).
- 2) Start position: Grasp bar with overhand grip shoulder width apart. Back should be straight in a neutral position.
- 3) Bending at the hips, lower bar to approximately knee height. Keep knees bent at 20° throughout movement.
- 4) Return to start position.
- 5) Remember to keep back straight - movement should occur at the hip. To facilitate this, shift glutes back as if ready to sit down. Knees should not move forward beyond the toes.





Dumbbell Lunges with Crossover

- 1) Start position: Stand with feet hip width apart. Grasp DB's and hold out in front of body.
- 2) Step forward 2-3 feet forming a 90° bend at the front hip and knee. DO NOT allow front knee to extend past the big toe - may cause injury. As you are lunging swing dumbbells across body towards the hip.
- 3) Pushing off front foot, return to start position with legs and dumbbells.
- 4) Remember to keep head and back upright in a neutral position. Shoulders and hips should remain squared at all times.
- 5) Watch for proper knee alignment - do not let front knee extend past big toe or deviate laterally or medially. Back knee should not come in contact with floor.

THE PHYSIOLOGY OF PLYOMETRICS

Plyometrics refers to exercise that enables a muscle to reach maximum force in the shortest possible time. The muscle is loaded with an eccentric (lengthening) action, followed immediately by a concentric (shortening) action.

HOW PLYOMETRICS WORKS

A muscle that is stretched before a concentric contraction, will contract more forcefully and more rapidly. A classic example is a "dip" just prior to a vertical jump. By lowering the centre of gravity quickly, the muscles involved in the jump are momentarily stretched producing a more powerful movement. But why does this occur?

Mechanical Model

In this model, elastic energy is created in the muscles and tendons and stored as a result of a rapid stretch. This stored energy is then released when the stretch is followed **immediately** by a concentric muscle action. The effect is like that of stretching a spring, which wants to return to its natural length. The spring in this case is a component of the muscles and tendons called the **series elastic component**.

Neurophysical Model

When a quick stretch is detected in the muscles, an involuntary, protective response occurs to prevent overstretching and injury. This response is known as the **stretch reflex**. The stretch reflex increases the activity in the muscles undergoing the stretch or eccentric muscle action, allowing it to act much more forcefully. The result is a powerful braking effect and the potential for a powerful concentric muscle action.

If the concentric muscle action does not occur immediately after the pre-stretch, the potential energy produced by the stretch reflex response is lost. (i.e. if there is a delay between dipping down and then jumping up, the effect of the counter-dip is lost).

It is thought that both the mechanical model (series elastic component) and the neurophysical model (stretch reflex) increase the rate of force production during plyometrics exercises.

The Stretch-Shortening Cycle

All plyometric movements involve **three** phases. The first phase is the pre-stretch or eccentric muscle action. Here, elastic energy is generated and stored.

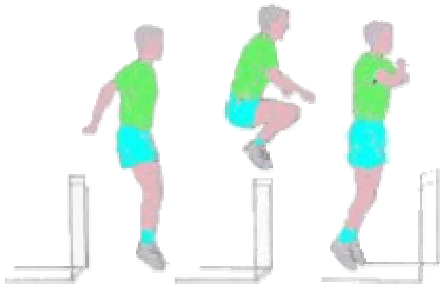
The second phase is the time between the end of the pre-stretch and the start of the concentric muscle action. This brief transition period from stretching to contracting is known as the **amortization** phase. The shorter this phase is, the more powerful the subsequent muscle contraction will be.

The third and final phase is the actual muscle contraction. In practice, this is the movement the athlete desires – the powerful jump or throw.

This sequence of three phases is called the **stretch-shortening cycle**. In fact, plyometrics could also be called stretch-shortening cycle exercise.

EXAMPLES OF PLYOMETRIC EXERCISE

Hurdle Hopping (medium intensity)



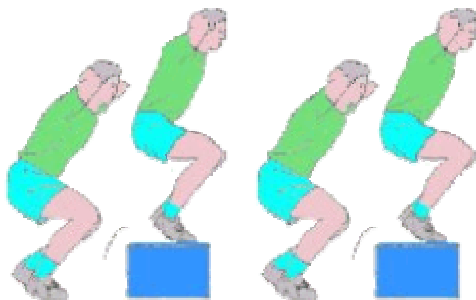
How to perform the drill

- Jump forward over the barriers with your feet together
- The movement should come from your hips and knees
- keep your body vertical and straight, and do not let your knees move apart or to either side
- Tuck both knees to your chest
- Use a double arm swing to maintain balance and gain height
- You should land on the balls of the feet, allowing energy to be stored by the elastic components of the leg muscles, and immediately take off again
- Keep the feet touch down time between hurdles to the shortest time possible

How much

- One to three sets using 6 to 8 hurdles
- Allow a full recovery between each set
- Hurdles should set up in a row, spaced according to ability
- The height of the hurdles should be in the region of 12 and 36 inches high
- Quality of hurdle hopping is far more important than quantity

Box Jumps (high intensity)



How to perform the drill

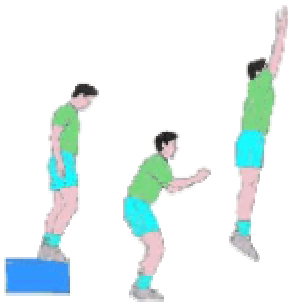
- Assume a deep squat position with your feet shoulder width apart at the end of the row of boxes
- Keep your hands on your hips or behind your head
- Jump onto the box, landing softly in a squat position on the balls of the feet

- Maintaining the squat position, jump off the box onto the ground, landing softly in a squat position on the balls of the feet
- Jump onto the next box and so on
- Keep the feet touch down time on the ground to the shortest time possible

How much

- One to three sets using 6 to 8 boxes
- Allow a full recovery between each set
- The height of the box should be in the region of 30-80 cm
- Quality of box jumping is far more important than quantity

Depth Jumps (high intensity)



How to perform the drill

- Stand on the box with your toes close to the front edge
- Step from the box and drop to land on then balls of both feet
- Try to anticipate the landing and spring up as quickly as you can
- Keep the feet touch down time on the ground to the shortest time possible


How much

- One to three sets using 6 to 8 boxes
- Allow a full recovery between each set
- The height of the box should be in the region of 30-80 cm
- Quality of depth jumping is far more important than quantity

SOURCE MATERIAL – “JUMPING INTO PLYOMETRICS” – DONALD A CHU Ph D.

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Sports Performance Enhancement & Physical Therapy Consultant



Donald A. Chu, Ph.D.
PT, ATC, CSCS, NSCA-CPT

Dr. Chu has developed an extensive reputation in the field of sports rehabilitation and in the areas of fitness and conditioning. He has been credited with bringing "Plyometric Training" to the attention of the athletic world through his application of theoretical knowledge into practical demonstrations. Dr. Chu has published six books, (including "Jumping into Plyometrics", now in its 2nd edition), written articles in referred journals and contributed chapters in many other books. His lectures on Plyometrics and other topics in Sports Medicine have been heard throughout virtually every state and many foreign countries over the past decade.