Written & modelled by Nicole Seymour

PLYOMETRIC TRAINING

for performance

For many years finess coaches and professional athletes have been on a quest to try and improve their power, in order to enhance their sporting and athletic performance.

They have spent hours in the weight room trying to build power through strength training exercises, often neglecting a key aspect in the development of power... speed!

Plyometric training involves training the nerve cells to stimulate a specific pattern of muscle contraction, so the muscle generates as strong a contraction as possible in the shortest amount of time. A plyometric contraction initially involves a rapid muscle lengthening movement (eccentric phase), followed by a short resting phase (amortisation phase), then an explosive muscle shortening movement (concentric phase), which enables muscles to work together in executing the particular motion. Traditional weight training exercises do not always allow the athlete to use the explosive speed or the movements needed to develop sport specific power.

However, whether you're a competitive sportsperson or not, plyometrics can add a valuable dimension to your training programme, not to mention it is also great for you. It is good for your heart and circulation, and also helps to develop flexibility and speed. Another positive is that you can do it anywhere you are most comfortable - in your house or out on the lawn - as you don't need much equipment other than your workout gear and yourself.

WEEKS	DRILLS	SETS & REPS	INTERVAL
1 - 3	2 low intensity 2 medium intensity	2-3 sets x 10 reps 2 sets x 10 reps	2 - 3 min
4 - 6	4 medium intensity	2-3 sets x 10 reps	2 - 3 min
7 & 8	2 medium intensity 2 high intensity	2-3 sets x 10 reps 2 sets x 10 reps	2 - 3 min
9 &1 0	4 high intensity	2-3 sets x 10 reps	2 - 3 min

The programme that I have developed is for an athlete or gym-goer who has a good strength base and would like to start a plyometric programme to build increased power and explosive speed.

The number of sets, repetitions and rest intervals will all be dependent upon the intensity level of the drill, the sport you are training for, the time of the year and your fitness level.

squat jumps

A

Stand with your feet slightly wider than shoulder-width apart, your trunk flexed forward slightly and your back in a neutral position. Lower your body into a squat position until your thighs are parallel to the ground

B

Immediately explode upwards, keeping your arms outstretched in front of you. Do not hold the squat position before jumping upwards, i.e. keep the time between dipping down and jumping up to a minimum.

Land on both feet. Rest for one to two seconds and repeat.
Before takeoff, extend the ankles to their maximum range (full plantar flexion) to ensure proper mechanics.

The effectiveness of a plyometric training session depends on maximal effort and a high speed of movement for each repetition

split squat jumps

Stand with your feet hip width apart. With your left leg take a large step back, standing on the ball of your back foot. Your feet should now be in a lunge position with your head and back in a neutral position. Lower your body by bending your right hip and knee until your thigh is parallel to the floor.

A

B

Immediately explode upwards, switch your feet in the air so that the back foot lands forward and visa versa. Before takeoff, extend your ankles to their maximum range (full plantar flexion) to ensure proper mechanics.

getting ready for plyometrics

Plyometrics are a very high intensity form of training, placing a substantial amount of stress on the bones, joints and connective tissue. Prior to starting a programme there are several aspects you need to consider to ensure your training sessions are performed safely and effectively;

STRENGTH

It is important to have a good strength base and conditioning level before performing plyometrics. Without good lower body and core strength, one may be susceptible to an injury or possibly overtraining. It has been suggested that an athlete be able to squat twice their body weight before attempting depth jumps. However, less intensive plyometric exercises can be incorporated into general weight training during the early stages of a programme to progressively condition the individual.

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getting ready for plyometrics

WARM UP

It is essential that you warm up sufficiently before starting a plyometric training session, as your ligaments, tendons and muscles are placed under a lot of pressure during this type of training. Any mistake in the execution can result in an injury or sprain.

LANDING

Don't jump if you don't know how to land! A good landing involves the knees remaining aligned over the toes, the trunk inclined forward slightly, the head up and the back flat. You need to focus on landing softly on your toes and rolling onto your heels. This is done by using the whole foot for landing, which will help dissipate the impact of the forces on the joints. When you are learning to do plyometrics for the first time you should spend the first two to three weeks focused on the landing and learning how to safely move out of it before moving on to more intense drills.

tuck jumps

Stand with your feet shoulder-width apart, knees slightly bent and your arms at your sides.

A

Jump up as high as possible bringing your knees up to your chest. Land on the balls of your feet and repeat immediately. It is important to remember to reduce your ground contact time by landing softly on your feet and then spring into the air again as soon as possible.

B

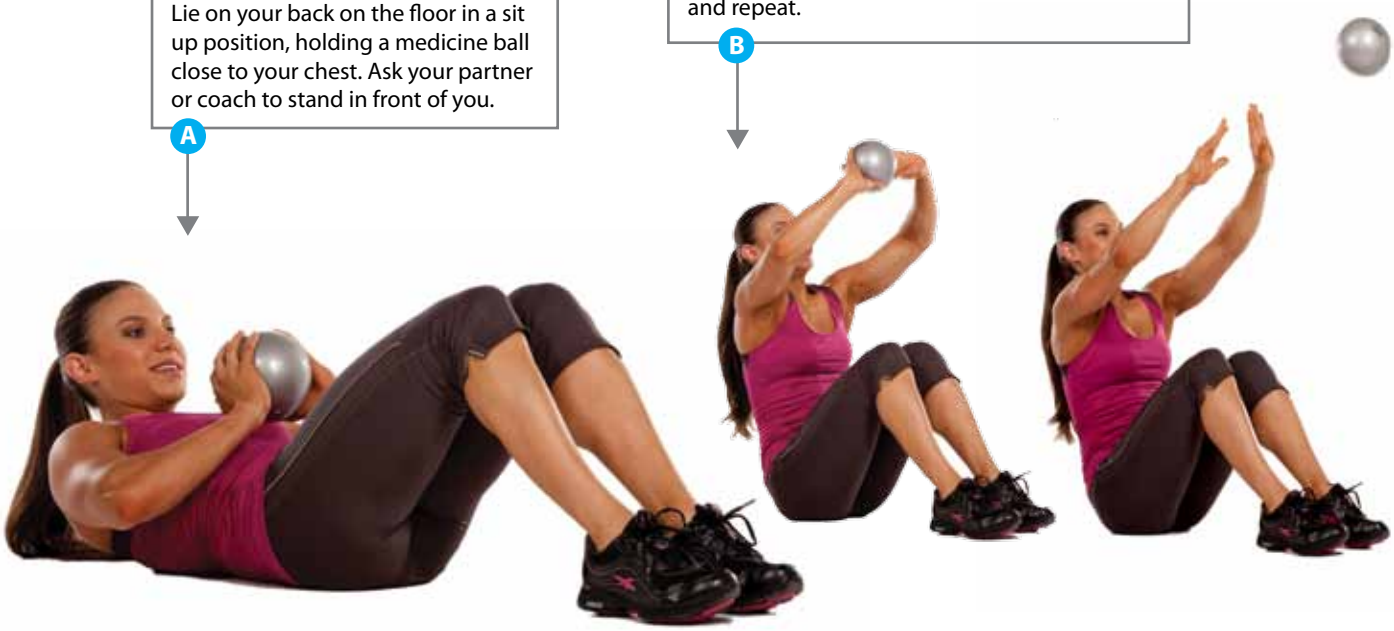
medicine ball sit ups

Lie on your back on the floor in a sit up position, holding a medicine ball close to your chest. Ask your partner or coach to stand in front of you.

A

As you perform a sit up, throw the medicine ball as far forward as possible to your coach or partner and then get them to chuck the ball back to you as you go back to the start position and repeat.

B



A Start by getting into a push-up position. Lower yourself to the ground

plyometric push ups

B Explosively push up so that your hands leave the ground (clap if possible). Catch your fall with your hands and immediately lower yourself into a push-up again and repeat.

overhead backward throw

A Stand with your feet slightly wider than hip-width apart. Have a partner or trainer stand behind you. Hold a medicine ball and lower your body into a semi-squat position.

B Explode up by extending your entire body and throw the medicine ball up and over your body. The goal is to throw the ball behind you as far as you can by generating most of the power from your legs.

getting ready for plyometrics

LANDING SURFACE

To prevent injuries, the landing surface should possess good shock-absorbing properties. The best surface is a grass field, or a good alternative would be a wrestling mat or a sprung aerobics floor.

SAFETY

There are a number of aspects that need to be taken into account to ensure a safe and effective plyometric programme. Proper equipment and an adequately sized training area should be used. Your footwear should be well cushioned, as well as provide sufficient ankle and arch support to prevent an injury. Running shoes should be avoided due to their narrow sole and poor upper support. Cross-training shoes are therefore a better option for plyometrics.

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getting ready for plyometrics

MODEL PROGRAMME

Your plyometric training should progress gradually, from lower intensity to higher intensity drills (especially for 'newbies') and incorporate the principles of progressive overload. Generally, as intensity increases volume will decrease.

Increasing the load by adding additional weight through weighted vests or ankle weights is not recommended. Too much weight can reduce the speed and quality of movement, thus losing the effects of plyometrics.

Recovery time between sessions should be 48 to 72 hours, otherwise two to three sessions of plyometrics can be done in a week.

The effectiveness of a plyometric training session depends on maximal effort and a high speed of movement for each repetition. Rest intervals between repetitions and sets should be long enough to allow almost complete recovery. As much as 5 to 10 seconds may be required between some jumps.

vertical jumps

A Stand with your feet approximately shoulder width apart and arms at your side.

B Bend your knees slightly and forcefully throw your arms up as you jump straight up as high as possible. Land softly by cushioning your landing.
> Repeat.

Plyometric training involves training the nerve cells to stimulate a specific pattern of muscle contraction

multiple box jumps

Place four step boxes in a row about a metre apart. Stand with your feet slightly wider than shoulder width apart behind the first step box.

A

Hop over the first step box, cushioning your landing and immediately jumping over the next box. Continue over all four boxes.

B

Remember to keep your ground contact time between bounds to a minimum.
The box may be low in height to start off with then gradually increase the difficulty by increasing the height.

A typical plyometric programme will take place over 8 to 10 weeks, with two training sessions per week. Proper progression into a plyometric programme is essential. Here is a table of plyometric exercises that have been classified into low intensity, medium intensity and high intensity.

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See page 9 for more details

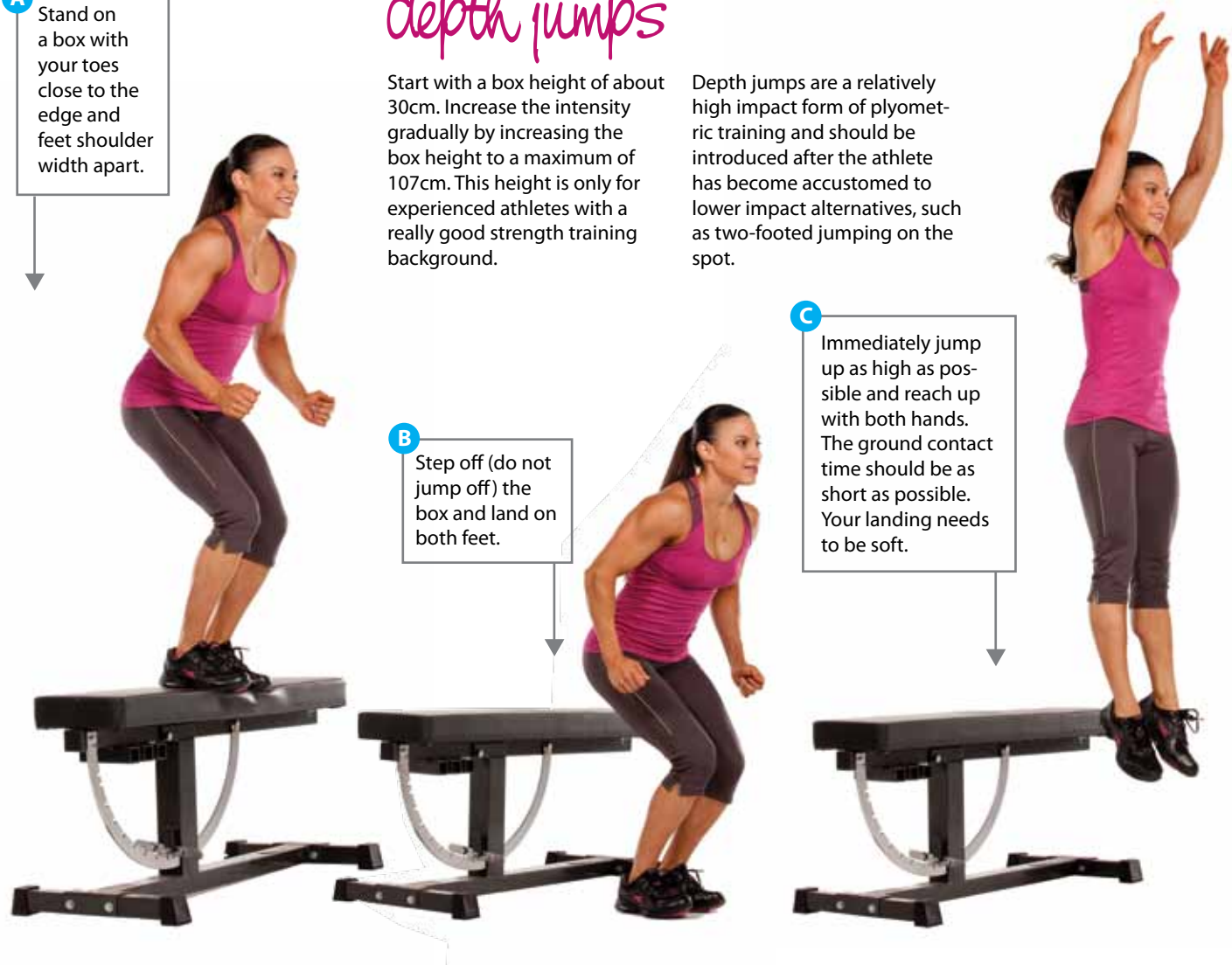
TONE YOUR BUTT AND LEGS

LOWER BODY POLYMETRICS	LOW INTENSITY	MEDIUM INTENSITY	HIGH INTENSITY
Place Jumps	Squat Jump Split Squat Jump	Tuck jump	Vertical jump
Quick Response Jumps		Double leg zig-zag hop over step box Multiple box jumps	Single leg zig-zag hop over step box
Box Jumps		Box Jump	Depth Jump
UPPER BODY POLYMETRICS	Medicine Ball sit-up	Overhead backward throw Plyometric Push up	

depth jumps

Start with a box height of about 30cm. Increase the intensity gradually by increasing the box height to a maximum of 107cm. This height is only for experienced athletes with a really good strength training background.

Depth jumps are a relatively high impact form of plyometric training and should be introduced after the athlete has become accustomed to lower impact alternatives, such as two-footed jumping on the spot.



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single leg lateral hops

A Start by standing on one leg with your hands at your sides.

B Perform the movement by hopping to the side, over the chosen object, while maintaining your balance and then hopping back to the starting position.

The object can be small in size and height to start off, like a rope, then gradually increase the difficulty by increasing the size and height. Repeat continuously.

double leg zig zag hops over step box

A Stand with your feet slightly wider than hip-width apart on the one side of a step box.

B Keeping your feet together, jump upwards and over the step box to land on the other side. Immediately hop back to the side you started on.

Try not to pause between jumps or sink down into a squat position. Remember to keep ground contact time between bounds to a minimum.