UNILATERAL TRAINING

For most coaches, the main go-to strength exercises are things like back squats or barbell presses that train both sides of the body in the same way at the same time. However, there are benefits to using unilateral exercises, where each side of the body is trained separately.

In this paper, we will see how unilateral training differs from bilateral training and what benefits it can bring. We will also look at some examples of unilateral exercises and discuss some key coaching points to bear in mind.

After reading this paper, you should understand how unilateral exercises could benefit your clients and have some ideas for how you can introduce them into their programming.

UNILATERAL TRAINING

WHY UNILATERAL TRAINING?

Unilateral exercises challenge the body in a different way to bilateral exercises. They can be more challenging in terms of balance and stability, which can limit the loading that can be used. Given that, there need to be good reasons to use them. There is evidence for benefits in several areas:

- Specificity to sports performance
- Avoiding and correcting imbalances
- Stability and injury prevention
- Rehabilitation
- Neurological effects
- Limb and muscle isolation
- Specific populations

SPORTS PERFORMANCE

While a lot of strength training is performed bilaterally – typically with a barbell – many movements in sports load the body unilaterally. Any sport where participants are required to change direction quickly or apply force in a variety of directions will need to have good unilateral strength.

Some studies have shown that incorporating unilateral training in a program can lead to enhanced performance of key skills such as jumping or changing direction (Núñez et al., 2018; Bogdanis et al., 2019)

AVOIDING AND CORRECTING IMBALANCES

Everyone has some differences between the strength of their limbs. Studies have found that these imbalances can be significant (Luk et al., 2014).

When training bilaterally, there can be a tendency for the stronger limb to do more of the work, meaning that any existing strength imbalance will not be addressed and may even increase. Some studies have found that unilateral training can reduce these imbalances (Gonzalo-Skok et al., 2017; Pearce and Kidgell, 2010).

STABILITY AND INJURY PREVENTION

The risk of many training and sports injuries can be reduced by improving the ability of the athlete to stabilise their joints. There is evidence that unilateral exercises are more effective for training the core than bilateral exercises (Saeterbakken and Fimland, 2012).

REHABILITATION

If an injury means that a limb cannot be trained effectively, unilateral training can provide at least a partial solution. An effect known as cross education has been demonstrated in many studies in which training one side of the body can actually make the other side significantly stronger (Manca et al., 2017). There is also evidence that unilateral training of the opposite limb can prevent the loss of muscle strength while a limb is immobilised – the so-called sparing effect (Andrushko et al., 2018).

NEUROLOGICAL EFFECTS

The potential rehabilitation benefits of unilateral training are not limited to incapacitated limbs. Neurological recovery can also be enhanced with a unilateral approach. For example, studies have found that stroke victims can gain significant strength and neural plasticity on both sides by training just one (Sun et al., 2018).

LIMB AND MUSCLE ISOLATION

If an athlete or client has a specific weakness that needs to be addressed, unilateral exercises may enable just the limb or muscle group in question without heavy loading (and thus fatiguing) of other parts of the body. For example, a split squat can effectively load each leg individually with much less load on the back.

SPECIFIC POPULATIONS

For some, unilateral versions of exercises may be the only available option. For example, for people who lack the mobility to back squat to depth, split squats may be more effective in training the maximum joint angles possible.

When training bilaterally, there can be a tendency for the stronger limb to do more of the work.

Or, an existing shoulder injury may prevent a bilateral barbell press. As mentioned earlier, the cross-education effect will mean that there will be some strength benefit for the side not being trained.

EQUIPMENT

While many unilateral exercises can be performed using a barbell, in most cases it is safer and more convenient to use a dumbbell or kettlebell. For lower body exercises, where the weight will be held at the side of the client, it does not matter too much which is used although a dumbbell will probably provide better grip. For lifting the weight overhead, dumbbells will almost certainly be a better choice, at least for novices, who may not have the required grip strength to maintain control of a kettlebell.

As we will see later, some exercises can be performed much more safely with dumbbells which feature handles that can freely rotate. This will enable a tight grip to be maintained while enabling movement that will avoid stress on the joints, especially the wrist and elbow.

UNILATERAL EXERCISES

There are hundreds of exercises that can be used for unilateral training. Some of them are adaptations of exercises that are usually performed bilaterally while others are only possible unilaterally. We will look at some of the possibilities here.

Dumbbell Row

This exercise is very commonly seen in bodybuilding gyms but is also a valuable exercise for anyone training for strength and power. A greater range of motion is enabled compared to the bent-over barbell row and the athlete will need to activate their core to maintain stability.

Dumbbell Press

If a weightlifter struggles with their lockout on one side more than the other or if a strength imbalance is an issue for any athlete, pressing on each side separately is a good way to tackle the problem. Two dumbbells can be used together, or lateral stability can be challenged by training one side at a time.

As well as each arm having to put the same work in, they will also have to stabilise the weight overhead in a way that is much more challenging than pressing with a barbell. Like the barbell press, a push variation can be used to add some leg drive to the movement, enabling heavier loads to be used.

Bulgarian Split Squat

While a lunge or standard split squat can be a useful way to put the focus on each leg in turn, elevating the back foot enables the front leg to be targeted through a great range of motion. Dumbbells or kettlebells can be used. This exercise can be done with a barbell on the shoulders but holding weights down to the side makes it much easier to maintain balance, which is important for safety, especially for those new to this exercise.

Single-Leg Romanian Deadlift

This exercise can sometimes be as much of a balance challenge as a strength one but it is well worth introducing to ensure that hamstring strength is balanced. Make sure the movement is performed slowly – time under tension is the key thing for this exercise.

Single Leg Squat
The so-called pistol squat is an impressive movement that works a greater range of motion at the knee and hips than just about any other exercise. Most people find that, at least to start with, they need to hold some dumbbells or a kettlebell in their outstretched arms to assist their balance.

The pistol squat is extremely challenging in terms of mobility, balance, stability and strength, so it will take time to learn. Clients who are not able to perform a pistol squat can get most of the benefit by performing single-leg squats from an elevated position. The non-engaged leg is given more space so that mobility does not limit the movement.

Step Up
The simple step up movement is sometimes underrated as a training movement. In fact, it can be valuable, especially in its terminal knee extension (TKE) form, where a band is used to challenge the vastus medialis oblique muscle, which can be a source of problems if it is not developed properly. Standard step ups can also be used as an alternative for single leg squats for those who struggle with balance.

Single Arm Snatch
There is a long history of one-handed weightlifting. The very first modern Olympic games featured both one and two-handed lifts which were similar to the snatch today. Nowadays, the one-handed snatch is not used in competition but it can be a fun movement to practice that will force an athlete to focus on control, stability and speed.

By far the best equipment to use for this movement is a dumbbell with rotating handles, which will enable the dumbbell to be gripped firmly while allowing the freedom to move around the weight during the exercise.

Turkish Getups
Another skill-based unilateral exercise that benefits from using dumbbells with rotating handles is the Turkish getup. The sequence of movements in the Turkish getup challenges every part of the body and also provides a sense of accomplishment, even when performed with a light implement.

Suitcase Deadlift
Lifting a weight to one side challenges the client to maintain their lateral position and particularly targets the oblique muscles that are critical to success in many other movements, such as the squat and deadlift in powerlifting. The suitcase deadlift can naturally progress into a unilateral farmers walk, further adding to the challenge.

COACHING TIPS
The key thing to focus on with unilateral training is control. Unilateral movements are inherently unbalanced and less stable than their bilateral equivalents, so it is vital to ensure that your client treats them with respect.

As with any new exercise, a light load should be used until the movement pattern has been established. For most exercises, encourage your client to move slowly, focussing on staying in control of how the weight moves and keeping the rest of their body tight to provide stability. The obvious exception to this in the example exercises we looked at earlier is the one-handed snatch – that will need to be done at speed but the point about control remains.

PROGRAMMING
It is important to understand that unilateral training should supplement rather than completely replace bilateral strength exercises. Most studies that have compared the two approaches have concluded that a combination of the two is the most effective way to train.

A common approach is to use bilateral exercises as the main high-intensity strength builders and then to add unilateral exercises as accessory exercises, usually with relatively lower intensity and higher volume. Sets of eight reps are often prescribed for exercises such as dumbbell presses or single-leg Romanian deadlift.

SUMMARY
In this paper, we have seen that unilateral training can add value in addition to bilateral strength training. A wide variety of exercises are available that can be used for many different purposes. Remember that introducing unilateral exercises can be used for sports performance, correcting imbalances, rehabilitation, isolating specific muscle groups and more. When coaching unilateral exercises, keep the focus on control and a low tempo. You should now have some ideas about how to incorporate some unilateral exercises into your programming.

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