

## LECTURE 5

# Warm-up, Cool-downs & Flexibility

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LECTURE **5**

# Warmup, Cooldowns & Flexibility

Warm-ups and cool-downs are an often-neglected aspect of a training session. The preparation you undertake prior to training and the return to pre-exercise state following training are paramount to the effectiveness of, and the recovery from the workout.

Warm-ups are designed to prepare the body for the exercise session to come, increasing temperature, blood flow and synovial fluid production ahead of the work to come. We will cover all o the aspects of a comprehensive warm-up in the following content before moving onto the cool-down.



## Dynamic Stretching

**A warm-up should incorporate a range of activities that will:**

- Raise your body temperature.
- Increase your heart rate, and breathing rate.
- Mobilise your joints, particularly those to be used in the upcoming session.
- Stretch your muscles dynamically, which pushes them through a functional range of motion.
- Increase neural activation.
- Ensure the neuromuscular system is prepared for the session ahead.

### **So What Are The Benefits?**

- Cardiovascular system preparation and vasodilation.
- Enhanced metabolic processes and energy-system preparation.
- Enhanced range of movement (ROM) in muscles and tissue.
- Improved joint lubrication in preparation for movement.
- Warmer muscles and overall body temperature.
- Smoother movement through neural recruitment.
- Enhanced nervous-system impulses.
- Higher-force production based on preparatory recruitment.
- Mental and physical preparation.
- Increased elasticity of muscle tissue.

# Various Types of Warm-up

## General



This type of warm-up includes the use of general pulse-raising movement. You might choose to perform 5-10 minute progressive row or a bout on the elliptical. It will raise the heart rate without raising specific joint lubrication and muscle preparedness, which can be taken care of in the specific warmup.

## Specific



This type of warmup will involve the use of similar movements that are to follow in the main workout. This 'movement prep' will enhance the neuromuscular pathways and prepare for the specific ROM needed to perform well. It also ensures the movement patterns have been practised by the muscles and the nervous system prior to being loaded with weight.

## Dynamic



There is a difference to observe here.

- Dynamic stretches are more targeted at putting the muscles through a full and specific ROM based on the demands of the session ahead. Examples are squats and lunges.
- Mobility exercises are more targeted at ensuring the joints have adequate ROM and enhanced synovial fluid production ahead of the workout. Examples include shoulder rolls and arm swings.

One thing to always be aware of is that the warmup should follow a graduated approach in terms of intensity. You should progress as appropriate with your client to ensure they are warm and ready to exercise...

## Cool-downs



A cool-down is the complete opposite of a warm-up in terms of its purpose, however they share some similarities. As a warm-up is performed with gradually-increasing intensity so a cool-down features a gradual reduction in intensity. You should avoid simply stopping exercise. This can leave the client feeling a little dizzy and potentially nauseous.

The purpose of the cool-down is to return the body to its pre-exercise state in terms of heart rate, breathing rate and prevention of blood pooling and possible DOMS. We can achieve this through pulse-lowering exercise and stretching.

## Pulse Lowering



You may choose to perform a 'pulse-lowering' exercise, particularly if the exercise has been intense. This will allow you to initially halt any potential blood pooling issues, but also to start to flush away any by-products created from the bout of training.

You can perform your pulse-lowering exercise on a piece of CV equipment or just in some space on the gym floor. It should include gradually-lowered intensity to return the heart rate and breathing rate to normal.

## Post Workout Stretch



Stretches performed post-exercise are generally static and are held for around 10 seconds. They are often repeated more than once to ensure the muscle achieves the elongation required following exercise-induced shortening. Also, they may assist in the prevention of delayed onset muscle soreness (DOMS).

You may choose to also include developmental stretching which is similar to standard static stretching but is held for longer and repeated efforts are taken to a further point of stretch.

One of the key reasons to take your clients through a good cool-down process is that they may suffer from blood pooling if not. When you are at the peak of a training session, particularly when doing CV (cardiovascular), your heart rate will be elevated substantially. If the exercise stops suddenly with the heart rate elevated there is more risk of blood pooling. The risk here is based on the lack of muscular contraction, meaning less opportunity to push blood back to the heart. Flexibility is defined as the 'Range of Movement at or around a Joint'.

It is significant for us to understand due to the potential impact flexibility can have on our clients' lives, health and wellbeing, as well as how a lack of flexibility can adversely affect them. For example, severely limited flexibility can be debilitating to people in terms of posture and muscular compensation. It is very easy for us to suffer with issues such as adaptive shortening of muscles based on sedentary lifestyle and desk-based posture, which in turn can lead to pain and poor function. If we can recognise these things early enough we can hope to improve them.



# Benefits of Flexibility & Stretching

The recognised benefits to enhanced flexibility and stretching in general are as follows:

- **Improved posture** - we can see improvements in posture based on increased range of motion in muscles that are susceptible to adaptive shortening.
- **Possible decreased injury risk** - there is no definitive answer as to exactly how much it is a risk. However, it is one of the stated benefits and as such is the reason it is included in so many athletic pursuits.
- **Increased relaxation** - lots of practices such as yoga include stretching as large parts of their practice.
- **Reduction in symptoms of back pain** - from increased flexibility around the shoulder and pelvic girdles.
- **Helps reduce DOMS** - stretching post-exercise can help to elongate the muscles following the shortening effect of exercise leading to a reduction in DOMS.
- **Improved circulation** - stretching can improve blood supply to your muscles, leading to an increase in the transportation of nutrients.
- **Increased range of movement** - this can be as part of a static stretch or through improved dynamic posture. Increase range of movement can lessen your likelihood of injury and pain.

## Other Factors To Consider

- **Age** - it is generally accepted that young people have the flexibility advantage over older people. As we age our joints can stiffen, and our muscle elasticity decreases, restricting our range of movement.
- **Temperature** - flexibility tends to increase with heat. This can be direct heat such as a massage to increase blood flow, or indirect heat such as environmental temperature.
- **Gender** - women tend to be naturally more flexible than men.
- **Exercise** – a person's history of training will affect their flexibility and mobility. If they have spent a lot of time in a flexed position on a bike for example, it is likely that their hip flexors and hamstrings may have shortened over time, while their lower back muscles and glutes may have some incidental elongation. Equally someone who spends a lot of time weight training may find that if their programme isn't well balanced, they may create some postural adaptations based on having too much focus on certain muscles over others.
- **Hereditary factors** - genetics play a major role in all our exercise potential and it is no different with flexibility. Some people have greater flexibility and mobility than others.
- **Joint structure** - some joints have lower ranges of motion than others, and sometimes we might find that we have particular tightness simply based on our own personal structure.
- **Clothing** - our muscles and structures can suffer, based on fashion. Footwear is often to blame for adaptive shortening of certain muscles and connective tissue.
- **Connective tissue** - with injury, age or other factors we can lose some of the elasticity that we have in our connective tissue causing there to be more restrictive range of movement at certain joints.

# Types of Stretching - Revisited

So what are the various types of stretching? We briefly touched on these earlier, but they are worth revisiting. Neither of these training styles are suitable for new exercisers and we will discuss more around these training styles in further lectures.

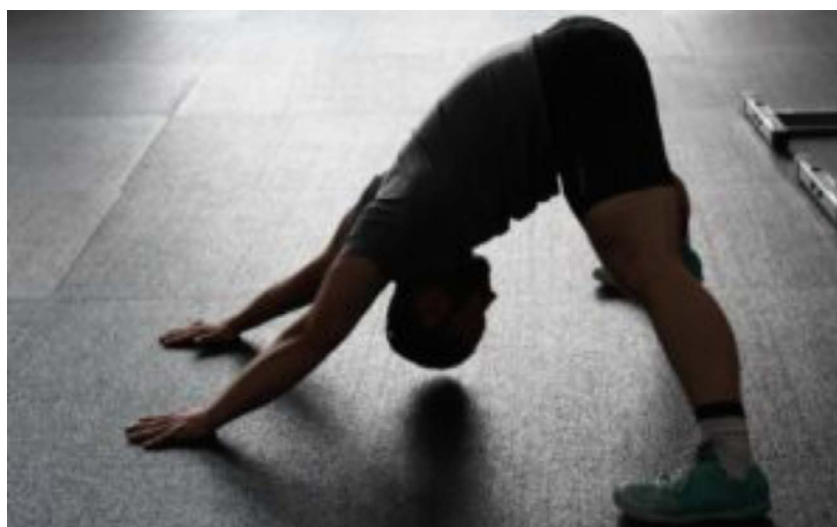
## Static



To achieve a static stretch the client is advised to stretch to the point of mild discomfort. Here, they hold for between 10-15 seconds for a maintenance stretch, or you could hold for longer and repeat the efforts with greater ROM for a developmental stretch.

These types of stretches are best performed post-exercise when the muscles are warm.

## Dynamic



Dynamic stretching features at the beginning of a training session, during the warm-up. It raises the heart rate, 'practises' the movements to follow in the workout and also offers a chance for the nervous system to open up the neural pathways necessary for the exercises to come.

## Ballistic



This form of stretching involves using powerful movements, counter-movements and momentum. It can help prepare you for a session that requires explosive activity, power production and plyometrics. However, there is an increased risk of injury due to the higher intensity so is best reserved for more athletic populations.

## Let's look at the sub-types of static stretching...

### Active



This type of stretching can be static, dynamic or ballistic. The thing that makes it active is your effort and involvement in making the stretch happen. An example would be to move into a position of stretch and actively seek to increase the ROM for a few seconds through muscular contraction of the opposing muscle. This activity causes a reflex relaxation (reciprocal inhibition) in the stretching muscle.



## Passive



The effort to produce the stretching effect comes from someone (or something) else such as a partner, or a wall. This can be maintenance (maintaining ROM or **developmental** (increasing ROM), but the theme here is that you are in a relaxed state in terms of muscular effort.

## Safety Considerations

For most people, stretching will be safe to perform as a part of their regular exercise programme. For some populations however, you will want to take more care and potentially eliminate stretching from their regular routine.

Consider the following...

- Avoid stretching the site of an injury.
- Do not force stretches.
- Avoid stretching areas that are experiencing inflammation.
- Don't stretch through pain.
- Pregnancy poses an increased risk of over stretching.
- Avoid stretching any muscles that support a joint that has issues.

**You should now have all the tools you need to be able to effectively warm up and cool down your clients.**