



Flexibility Training

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Introduction

Flexibility is the ability to achieve maximum range of motion (ROM) around a joint. Full flexibility is imperative in sport. Without flexibility, we cannot move freely as sport and training for sport requires. Therefore movement patterns are compromised and are not optimal. Non-optimal movement patterns are not effective

Despite this, flexibility is often overlooked by an athlete in training as the benefits of flexibility are often not seen as direct performance gains – and therefore, to the athlete's mind, 'time could be better spent elsewhere'

This sections aims to show why flexibility is important and how flexibility can be improved

Flexibility training first

Taking a logical approach to improving human movement is important, therefore it should be broken down into stages:

1. Increase range of motion at the working joints, to allow a full and uncompromised movement pattern. Once uncompromised movement is possible, progress to the next stage
2. Train the movement pattern to build skill levels and make movement more 'autonomic' and natural
3. Add load to the movement pattern (turn it into a resisted exercise) to overload the physiological systems
4. Take away the load and perform the movement pattern as per the sport's requirements

Factors affecting flexibility

- Gender – Males generally less flexible than females
- Age – Flexibility generally decreases with age
- Musculature – Muscles and tendons have different elasticity
- Neurological adaptation – Flexibility increases with training
- Opposing bulk – More opposing bulk can cause less ROM
- Temperature – Hotter temperatures allow increased ROM
- Time of day – Individuals respond to training differently

Methods of stretching

Static stretching

- Controlled lengthening of the muscle tissue under tension, for a period of time.
- Low risk of muscle damage or soreness
- 2 categories:
 1. Active stretching
 2. Passive stretching

Active stretching

When the opposing muscle contracts and shortens to bring about a stretch

Eg, If you contract hamstrings to flex knee and stretch the quadriceps

These stretches can be held for 8-30 seconds and can be performed 2-3 times

Passive stretching

When an external force other than the opposing muscle brings about a stretch

Eg, another body part, a partner or an object

These stretches can be held for 8-30 seconds and can be performed 1-3 times

Ballistic stretching

Ballistic stretching involves a bouncing, bobbing or rhythmic movement. Momentum gained during the movement is used to take a muscle through and beyond its fullest ROM

- Results are usually positive – However the increased ROM can be caused by the lengthening of tendons and ligaments. This can cause destabilisation of joints.
- Possible contraindication for specific population groups
- May be considered for athletes whose sport demands ballistic movement

These stretches can be performed for 5-15 repetitions and for 1-3 sets

Dynamic stretching

Dynamic stretching involves moving in and out of a stretch in a controlled manner. The muscle is lengthened slowly to its end ROM and then back to the start position

- The process is repeated several times progressively and steadily
- Care should be taken not to move too quickly in order to avoid a ballistic stretch sensation
- Particularly suitable during a warm up

These stretches can be performed for 5-10 repetitions and for 1-3 sets

Muscle Energy Technique (MET)

PNF stretching originates in physiotherapy. Several versions of PNF exist, the most common of which are:

- Reciprocal Inhibition (RI)
- Post Isometric Relaxation (PIR)
- Proprioceptive Neuromuscular Facilitation (PNF)

Reciprocal inhibition stretching

RI is the process by which as one muscle contracts, the other 'switches off' in order to allow movement to occur. Therefore, opposing muscle groups can be targeted to cause an increased ROM in a stretch

Eg, contract the quadriceps as a hamstring stretch is performed

Muscles are taken to a point of 'bind', (not a 'full stretch')

The stretch can be held for any amount of time – usually 15-30 seconds and can be performed 2-3 times.

Communication, control and recognition of ROM are essential to avoid injury

Post isometric relaxation

PIR involves the isometric contraction of the target muscle, immediately prior to it being stretched.

Eg, the athlete's hamstrings are taken to a point of 'bind' by the coach. The athlete then contracts the hamstrings against the coach's resistance isometrically for 10 seconds. Upon relaxation, the hamstrings are taken to a new point of bind a few degrees (hip flexion) further than before and held for 20-30 seconds. The process is repeated 1-3 times.

Communication, control and recognition of ROM are essential to avoid injury

Proprioceptive neuromuscular facilitation

PNF stretching is an advanced form of PIR. It involves fully stretching a muscle prior and during the 'assisted stretch'

Eg, the athlete's hamstrings are taken to a point of 'full stretch' by the coach. The athlete then contracts the hamstrings against the coach's resistance isometrically for 10 seconds. Upon relaxation, the hamstrings are taken to a new point of full stretch a few degrees (hip flexion) further than before and held for 20-30 seconds. The process is repeated 1-3 times.

Communication, control and recognition of ROM are essential to avoid injury

This method of stretching is not suitable for dysfunctional or injured muscles

Sports-specific flexibility

To understand the flexibility requirements of an athlete, we must analyse his/her sport. We should consider:

- Muscles used
- Movement patterns used
- Injury prevention
- Environment

We can then use flexibility tests (see Flexibility tests lesson) to determine whether or not our athlete has the required ROM

Training guidelines

The most important considerations for training flexibility are:

- Stretch when warm at the end of training
- Progressive overload - Flexibility cannot be rushed! Small, gradual changes over a long period of time are best.
- Make stretching a habit