Stretching

The science, the myths, the truth!

Aims:

To provide a background of information in the theory and application of stretching; types of stretching and when they are used.

Learning Outcomes:

To understand the difference between static, dynamic and PNF stretching. How to apply these and assess stretching done within the training session.

Questions:

What do I already know about Stretching?
What's the relevance of learning about Stretching?
What new skills will I develop as a result of understanding about flexibility training?

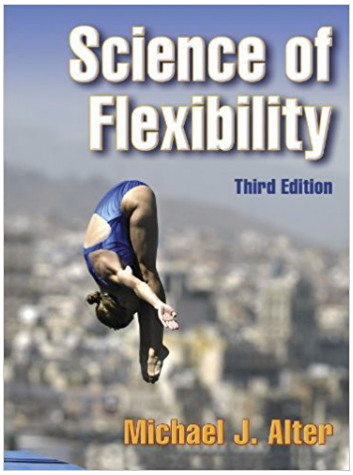
Important Point!

It is a controversial subject with many interpretations.

Remember!

We shall only cover the basics and allow the research scientists to continue to argue.

Recommended reading.



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Stretching is one of the components of **DESTRESS** which is one of the main themes within the sports injury seminar.

Key Concept!

Diet

Endurance

Strength

Technique

Recovery

Enjoyment

Suppleness

Speed

What is Flexibility?

Important Question!

Flexibility means different things to different people depending on their background.

To most sports persons it refers to the amount of stretch in their muscles and hence the range of movement at the joints.

To some it suggests freedom of movement, the ability of joints to move smoothly through their range of motion needed.

However, there is some disagreement as to what is the so-called "normal" range of movement.

As like strength we need to define flexibility according to the nature of how it needs to be used and hence it is specific to the sport involved.

I suggest that being flexible also means having an open mind!

Read this paper found on my site: http://www.pwoc.co.uk/eso/

BMJ 2002;325:468 (31 August) Effects of stretching before and after exercising on muscle soreness and risk of injury: systematic review. Rob D Herbert, senior lecturer, Michael Gabriel, physiotherapist.

School of Physiotherapy, University of Sydney, PO Box 170, Lidcombe, New South Wales 1825, Australia

Functional Flexibility:

Key Concept!

Depending upon the requirements of the sport, some people need an excessive amount of mobility from longer muscle, longer (less stable) ligaments, more elastic fascia and more glide of nerves. An example – gymnastics.

Other sports require more emphasis on support, and whilst some flexibility is required, retention of power is a far greater need. An example – rugby.

Some sports require both flexibility and strength.

When assessing the reason for an injury, take into consideration the person's flexibility and if it meets the needs of their sport or if it's something that needs to be developed.

So why Stretch?

Advantages of stretching:

Disadvantages to stretching:

https://www.inverse.com/mind-body/is-static-stretching-good

Types of Stretching:

Know the definitions of these!

Static stretching – Passive and Active *

Dynamic stretching – Ballistic Stretching *

Proprioceptive Neuromuscular Facilitation *

Facilitated Stretching

Yoga!

Muscle Energy Technique!

Neuro-physiology of Stretching!

It's not rocket science!

Reciprocal Inhibition:

Autogenic Inhibition:

Static Stretching:

The idea is to dampen down the firing of the muscle spindles and hence use autogenic inhibition.

Is used to lengthen muscles.

Can isolate muscles specifically.

By using the mind body link more relaxation can be incorporated.

Hold for a minimum of 30 seconds, repeat 3 to 6 times.

No further benefit of stretching beyond 90 seconds - for muscle tissue!

(Link to Yin Yoga where we stretch for up to 5 minutes!)

Dynamic Stretching:

The individual bounces at the end point of the stretch.

Can utilize the stretch reflex and cause muscle damage.

Can be very sport specific.

Maintains body temperature.

Maintains elastic storage of muscle power.

Is more fun and quicker.

Repeat stretches 6 to 10 times.

Proprioceptive Neuromuscular Facilitation:

Almost the same as MET, but no motion barrier.

Using both autogenic inhibition and reciprocal inhibition.

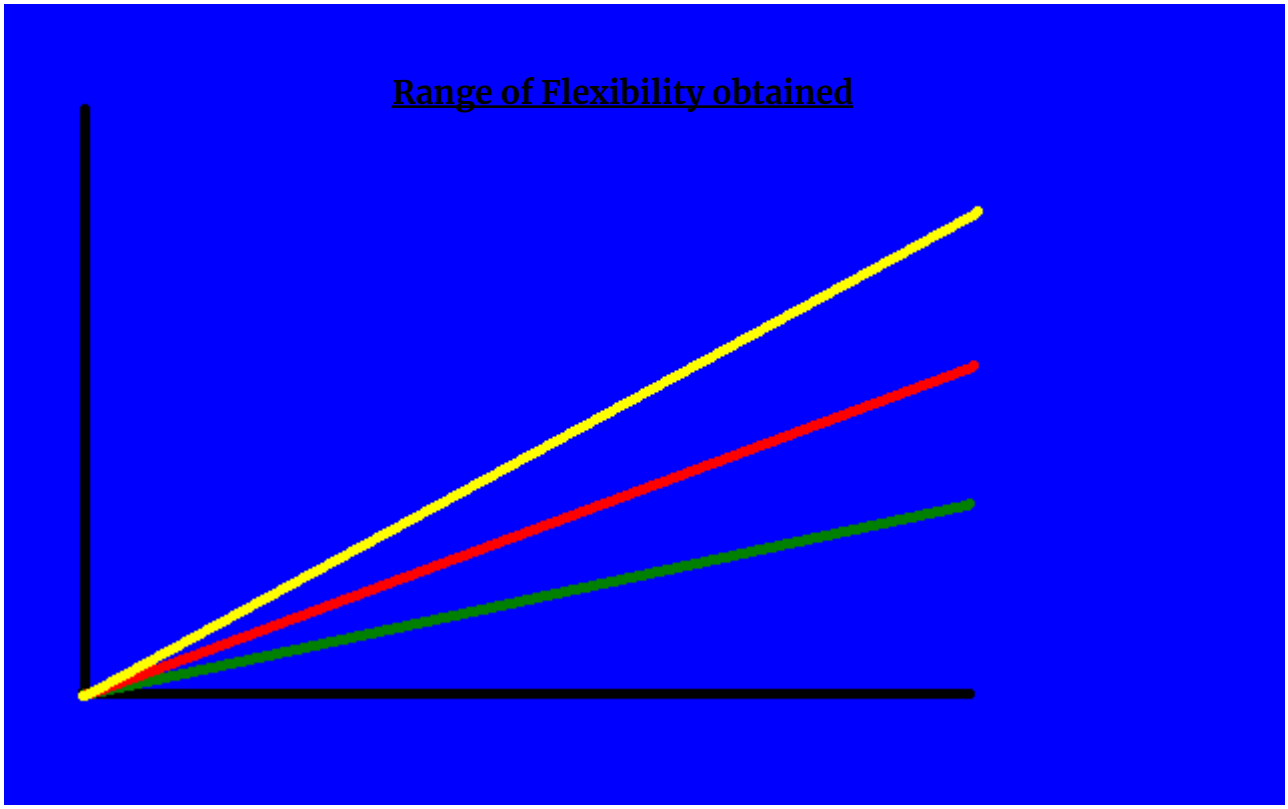
It is often done incorrectly.

It is the quickest way to improve flexibility.

PNF has also been claimed to improve muscle endurance and blood circulation, to enhance coordination and can result in superior relaxation of muscles.

Apply 3 to 5 series of contracts and stretches.

If a graph of types of stretching is plotted which type gives the greatest flexibility and which the least?



Some basic concepts for Stretching:

Stretch your mind to allow for new theories.

Static stretching for safety and novices. Allows increased resting length of muscle. Loses muscle's storage of power! Needed for scar tissue realignment.

Dynamic stretching for retention of muscle power and speed of movement. Quick and fun, more sport specific.

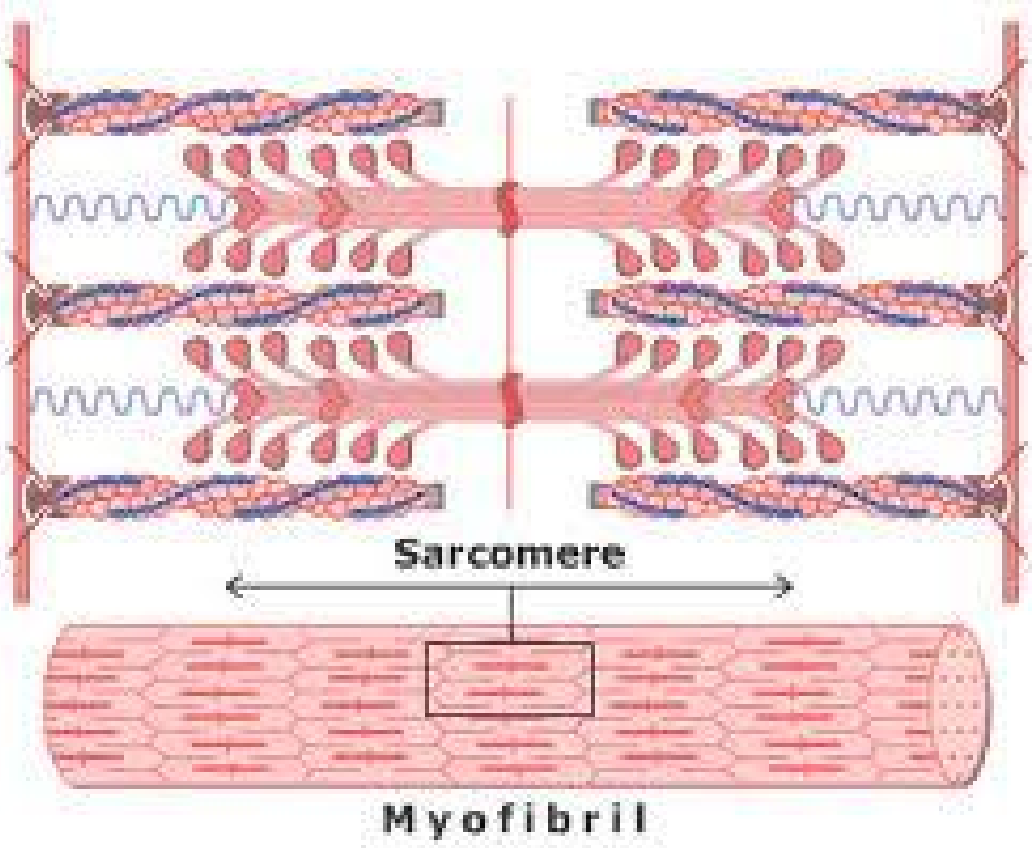
P.N.F. stretching for best overall improvement; to be used when taught correctly.

Ten myths and facts about stretching:

https://blog.runningcoach.me/en/2021/03/31/1954/

You can reflect on these yourself!

Name the three muscle filaments!



With static stretching the titin filament unravels first losing some of the springiness of the filament and hence muscle power (approximately 10%) for up to about 90 minutes before it returns to its starting form. With dynamic stretching the titin filament does not unravel.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6895680/

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3273886/

When we stretch to increase the resting length of a muscle over a period of time (mesocycles) the number of sacomeres increases in series within the muscle.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4352121/