

In adult humans with peripheral musculoskeletal injury (who have not had previous repair) is the length of time of sustained active or passive stretching more effective than other aspects of stretching for increasing return to work function and activity.

### **Clinical bottom line** **Updated April 2011**

There was insufficient evidence to answer the question. An updated review of the literature in April 2011 revealed no new quality evidence to inform this question

There is some evidence about the positive effect of stretching in increasing flexibility and joint range of movement in healthy and previously injured adult subjects.

Mason et al (2007) undertook a systematic review of rehabilitation strategies for hamstring rehabilitation. They suggested there is limited evidence that the rate of recovery can be improved by daily hamstring stretching exercises.

A later systematic review explored the concept that stretching may reduced work related musculoskeletal disorders (da Costa and Vieira 2008). There are some beneficial effect of stretching to prevent work related disorder, but trials included are of poor quality.

#### **Criteria for Critically appraised Topic**

<b>Population</b>	Adult Humans with peripheral musculoskeletal injury
<b>Intervention</b>	Sustained stretching
<b>Comparison</b>	Passive/Active stretching, Duration and Frequency of stretch
<b>Outcome</b>	Return to normal function/Range of movement

## Search Terms used

### The following databases were searched:

(Sports discis, MANTIS (Chiropractor/Osteopath),Cochrane, Pedro, NHS Library for Health, Medline, Cinahl, Embase, Psycinfo,Clinical Evidence, Bandolier, NELH, Professional websites, guidelines, NICE. HTA)

### The following types of study were used:

Systematic reviews.  
Randomised controlled trials.

### Key words searched:

Population, musculoskeletal, soft tissue injuries, muscle stretch, stretching, stretches, sustained, length of stretch, duration, frequency, intensity, type(active/passive) NICE, HAT

### Exclude

Children, surgery

Search for the past 10 years i.e. 1995 – 2005

First updated search was undertake between 2005-2009

Second updated search 2009-2011

### Available Evidence

Database ( Specific to your CAT)	Number of relevant abstracts	Relevant abstract 2005-2009	Relevant abstract 2009-2011
Clinical evidence	0		
PsychInfo	0		
AMED/ CINAHL/ Embase	3		
PEDRO	0		
Medline	(1 repeated in CINAHL) 4		
Cochrane	0		
<b>Total</b>	<b>6</b>	<b>4</b>	<b>117</b>

**1995-2005** Six papers were highlighted that could potentially answer the CAT. Three (3) clinicians reviewed the abstracts and assessed their relevance to the questions, we decided to obtain all 6 articles and appraised them using the critical appraisal skills programme (CASP), and group discussion consultation.

**2005-2009** For the updated review, the librarian re ran the search and one clinician evaluated the papers

**2009-2011** None of the 117 abstracts specifically answered this question

### **Results from 2009 review**

None of the following studies directly answered our question, however there are some interesting findings.

K O Sullivan et al (2009) examined pre injured and healthy control subjects. They were recruited from a University campus in Ireland and were between 18-40 years of age. Random allocation by envelope resulted in 18 subjects in each group. Main outcome was change in knee extension. Trial reported increased flexibility after warm up and with dynamic stretching. Limitations were small numbers, short follow up and potentially ungeneralisable population.

Da costa and Ramos (2008) undertook a systematic review to explore 'stretching to reduce work related musculoskeletal disorders'. They report the physiological effect of stretching to be ROM gain, pain relief, visco-elastic changes. From 9 databases 7 articles were retrieved. They highlight some beneficial effects of stretching in work related musculoskeletal problems. Limitations were related to poor quality of the trials including small numbers, lack of control groups, non randomisation.

Some interesting points from the review

- Stretches of 30 seconds increases muscle compliance, increasing duration and frequency doesn't appear to affect outcome
- Stretching before power performance maybe detrimental and there is lack of evidence concerning its ability to prevent injury
- In myofascial pain syndrome where blood flow can be reduced to muscle groups, sustained stretches may help workers who undertake sustained isometric contraction e.g. data entry, computer panel assembly work
- Stretching may be of benefit for some occupational groups and not others
- Describe 3 types of stretching Ballistic, PNF and static- PNF most effective but most time consuming. Ballistic stretching should not be used in the work place as it may cause muscle soreness

Mason et al (2007) undertook a review of rehabilitation strategies for hamstring rehabilitation. They suggest there is limited evidence that the rate of recovery can be improved by daily hamstring stretching exercises. Included RCTs or randomised comparative trials. Outcomes of interest were return to full strength, ROM, function. 3 trials included in the review, 2 included athletes, 1 non athletes. One trial involving 80 athletes found stretching 4 times a day more effective than once a day in the speed of recovery. A second trial involving 24 participants from a diverse sporting background found no difference in return to function in different rehabilitation strategies including stretching. Finally a trial of 20 non athletes found no effect of manual therapy on soft tissue length.

## **Implications for practice**

The key to improvement in joint range of movement is that stretching is beneficial.

Total combined daily stretching is more important than single time of hold, a minimum of 2 minutes combined daily stretch. Although 30 seconds appears to be the most well supported in the literature

Clinicians may wish to consider what type of stretching is appropriate for different circumstances e.g. sporting activity versus occupation situation

## **Research questions**

1. What is the most effective type and length of stretching?
2. In adult humans with peripheral musculoskeletal disease is the length of time of sustained active or passive stretch more effective than other aspects of stretching for increasing return to work, function and activity?
3. Do static stretches or ballistic stretches decrease the risk of musculoskeletal injury, if performed prior to sporting activities?

## **References**

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