



Shoulder Impingement Syndrome (SIS)

Healthshare Information for Guided Patient Management

Index

Introduction	2
About your shoulder	2
What is shoulder impingement syndrome (SIS)?	2
Why does it occur?	3
What are the symptoms?	3
How is it diagnosed?	4
What are your treatment options?	4
Subacromial Pain Syndrome Class	5
SPS Physiotherapy Led Exercise Class	5
Exercise Section	6

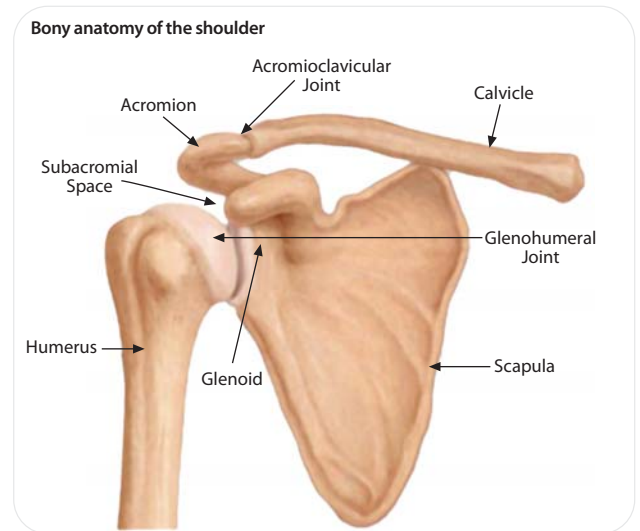
Introduction

The aim of this information booklet is to give you some understanding of the problem you may have with your shoulder. The leaflet has been divided into sections describing your shoulder, what we know about SIS, your treatment options and information regarding a free shoulder rehabilitation class we have developed.

About your shoulder

The shoulder joint is a ball and socket joint. It is formed from a ball on the top of your arm bone (humerus) and a shallow socket which is part of the shoulder blade (scapula). Picture a golf ball sat on a tee. Above the ball and socket joint there is a ligament attached to the bony prominences on the scapula on the top (acromion) and at the front (coracoid). This is called the coracoacromial ligament which forms an arch over the rotator cuff.

The space between the shoulder joint and the arch is known as the sub-acromial space which usually measures around 1- 1.5 cm. To move your shoulder and control the position of the ball on the socket you have a group of four muscles and tendons known as the rotator cuff. They attach from the shoulder blade onto the top of the arm bone passing through the sub-acromial space. A small fluid fill sac (bursa) cushions the tendons from the roof of the arch.



When you move your arm away from your side the rotator cuff works to keep the ball centred on the socket. When your arm reaches close to shoulder height (horizontal) the sub-acromial space is naturally narrowed where the bursa and tendons slide through. Above and below this horizontal plane the space is naturally wider.

What is shoulder impingement syndrome (SIS)?

SIS is compression of the soft tissue structures in the subacromial space. When the tendon or bursa is thickened due to inflammation (tendinitis / bursitis) the subacromial space becomes relatively smaller and starts to 'pinch' these structures when arm is at shoulder level or in an overhead position. It is the most common cause for shoulder pain. 20% of people from general population will have symptoms at some time in their life.

The rotator cuff is vulnerable to injury and/or degeneration (wear and tear) particularly affecting the supraspinatus tendon in the sub-acromial space. Unfortunately this is more likely as we get older. Damage to these tendons can range from inflammation (tendinopathy) to tears and there is no consensus why some people are susceptible to having these problems. The inflamed tendon (tendinopathy) is often thickened which increases the chance of the tendon and bursa becoming pinched.

Tears in the rotator cuff tendon can occur from sudden injuries such as falling or heavy lifting. More commonly they develop gradually through a wear and tear effect on the tendon. This is partly age related but may also result from long standing overuse. The tears can be partial or full thickness. Interestingly patients with pain free shoulders have been found to have tears, so a torn rotator cuff does not necessarily mean somebody will have a painful shoulder.

Despite advances in research tendinopathy is still not fully understood. It is generally accepted that complex changes occur within the tendon at a cellular level reducing their ability to withstand the loads of daily activities. This can result in pain and reduced shoulder function. New research implicates smoking, poor diet, (and) glucosamine sulphate tablets and steroid over-use/abuse as factors which can contribute to poor tendon health.

Why does it occur?

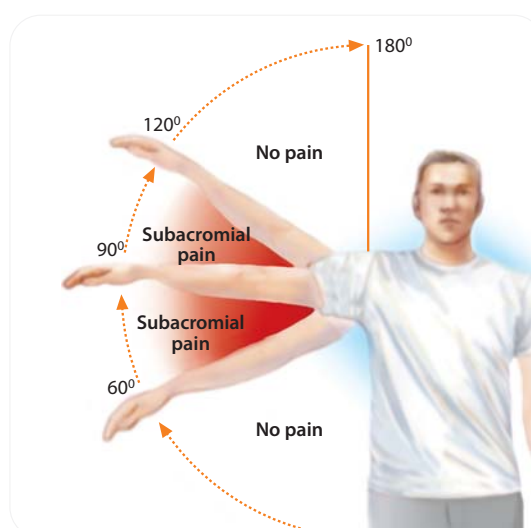
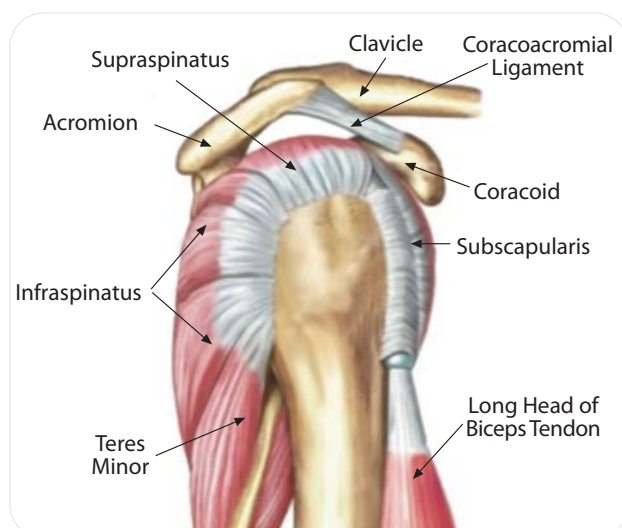
There are number factors associated with SIS and these factors are either directly or indirectly related to narrowing of the subacromial space. This narrowing of the space combined with either trauma or repetitive activity can commonly lead to pain. Often these factors are also seen in individuals with no shoulder pain. The following are the commonly reported factors:

Anatomical	Abnormally shaped acromion or congenitally narrowed subacromial space.
Biomechanical	Functional narrowing of subacromial space due to poor rotator cuff strength .
Posture	Poor posture involving your neck, spine and shoulders causing an excessive forward shoulder position e.g. rounded shoulders, slouched sitting posture.
Occupational factors	Sustained / repetitive overhead activities (e.g. joiners, decorators) or forwarded shoulder position (e.g. use of mouse or typing).
Leisure activities	Activities related to repetitive overhead or shoulder level activities (e.g. badminton, hedge trimming, DIY).
Excessive loading	This leads to increasing thickness of rotator cuff tendons which in turn leads to compression within the subacromial space (e.g. weight training, heavy lifting at work) .
Rotator cuff	Degenerative and/or traumatic rotator cuff tears associated with thickening or build-up of calcific deposits (tendinopathy).
Osteoarthritis	Arthritic changes of the acromioclavicular joint associated with osteophytes (bony growths) into the subacromial space.

Often there is a triggering event that causes the shoulder pain. For example over-use, a new overhead arm activity such as DIY, hedge trimming in the garden, or lifting luggage. Younger people can also be affected often those who undertake gym programmes involving heavy overhead lifting such as the shoulder press.

What are the symptoms?

- Pain often felt on the outside of the upper arm is the common complaint.
- A classic presentation is of a painful arc on movement when the arm is lifted out to the side and up to your ear. This corresponds with the narrowing of the sub-acromial space.
- You may get delayed pain where the pain increases following activity, often when resting or at night.
- Pain is also commonly felt on twisting movements such as putting jackets and coats on.
- When the inflammation is active you may experience pain at night and when your arm is resting.
- Sometimes you might have sensation of locking with certain movements.



How is it diagnosed?

- Usually SIS is diagnosed through a thorough patient history and a physical examination of the shoulder.
- A thorough assessment involves taking a thorough history including questions about pain, sleep, activity and previous problems.
- Your physiotherapist will then examine your shoulder to check movements, strength of the shoulder muscles as well as back and neck posture.
- Other diagnostic investigations such as ultrasound or MRI scans are only considered if your symptoms fail to improve with conservative measures including Physiotherapy.

What are your treatment options?

Conservative Care (non-surgical):

The vast majority of people find that their symptoms settle without the need for an operation.

1 – Physiotherapy

- The aim of treatment is to reduce the stress on the tendon(s) by offloading them and allowing healing to occur.
- Your physiotherapist will give an individual exercise program specific to your problem following assessment.
- This may include exercises to strengthen the muscles in your arm and shoulder, exercises to improve posture which may also include stretching exercises.
- These exercises may feel slightly uncomfortable but **MUST BE PAIN FREE**.
- Your physiotherapist may offer advice regarding changing your activity, sleeping position and how to manage your pain. This helps to break the pain cycle.
- The rotator cuff tendons can take **UP TO 1-2 YEARS** to fully repair with conservative treatment. The current evidence shows that 81% of patients significantly improved after 6 weeks of regular physiotherapy.

2 – Self management ideas/activity modification

- If possible, stop the activity that causes pain
- Find an alternative way of doing it that reduces pain
- Take pain medications adequately which helps to reduce the inflammation and swelling of the tendons and bursa.
- If you are involved in a sport or activity using repetitive movements seek expert advice on your technique. A Physiotherapist may be able to give you advice on your movement patterns as well as appropriate stretching and progressive strengthening/loading exercises.

3 – Injections

- Steroid medications mixed with local anaesthetics injected into the sub-acromial space helps to reduce the inflammation and related pain.
- Physiotherapy following steroid injections are important to achieve long term pain relief.
- An ultrasound guided injection may be considered if your symptoms fail to improve with blind sub-acromial injections.

Surgical treatment

- If your symptoms do not improve with conservative measures you may benefit from keyhole surgery.
- This usually involves removal of the bony prominence impinges on the tendon and/or repairing the torn tendons.
- This is usually done under the day care surgery.
- You may need physiotherapy up to 9 months following surgery and you are not guaranteed to have a pain free shoulder. Hence it is important to try conservative management in the first instance.

Subacromial Pain Syndrome Class

The aim of the sub acromial pain syndrome class is to re-educate normal movement patterns of the shoulder complex by exercising the muscles of the rotator cuff. By restoring normal movement of the shoulder the causes of impingement pain should be reduced. Progressive loading of the rotator cuff tendons will help improve the muscle and tendons capacity to manage load.

SPS Physiotherapy Led Exercise Class

- A Physiotherapy led circuit of specific shoulder exercises which will be progressed as you improve.
- A soft tissue station where you may be offered manual therapy or specific soft tissue work.
- 6 once weekly sessions. You may not have to attend each session. This can be discussed with the physiotherapists in the class.
- After 6 weeks you will be reviewed for onward management or discharge as appropriate
- It is extremely important you comply with the exercises given to you. You will be expected to perform these exercises a minimum of 3 times per week at home.
- You should wear appropriate footwear i.e. soft soles/trainers, and comfortable clothing. Females should wear a vest top as the shoulder will need to be visible to the Physiotherapist.
- This is an extremely popular class with over 45 patients per week attending. If you fail to attend and make no contact within 48 hours we will assume you no longer require treatment and you will be discharged from the service back to your GP. Of course we can make arrangements as necessary if you are unable to attend a session. Phone our admin team to make them aware of your situation.

Your referring Physiotherapist will book you in for your 6 weekly sessions and provide you with the start date to begin your programme.

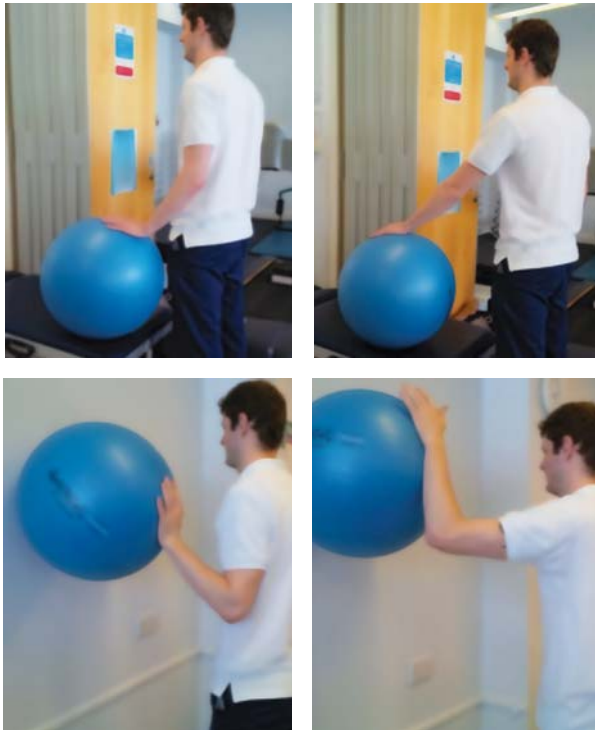
Exercise Section

Irritable Rotator Cuff Tendinopathy (reactive tendinopathy)

- Features of this phase include constant resting pain, night pain, latent or lingering pain.
- Treatment strategies to reduce pain in this stage: relative rest (activity modification not complete rest), isometric exercises, graduated exercise programme. Avoid high load elastic exercises.
- Lifestyle management: smoking cessation, nutritional changes and reduce hours per day sitting (sedentary lifestyle changes).
- Effective anti-inflammatory pain relief as tolerated.

Fitball slow short lever and long lever flexion

- Use a fitball or a football on a wall
- Start with 10-20 repetitions and build to 30
- Progress height and incline of surface as dictated by pain



Static external rotation

- 50% maximal voluntary contraction (MVC)
- Start with 3 x 30 seconds static contractions
- Progress to 5 x 30 seconds holds and 70% MVC



Hand resistance

Wall resistance

Static external rotation with active shoulder elevation

- 50% maximal voluntary contraction (MVC)
- Start with 3 x 10 repetitions
- Progress to 3 x 20 repetitions and 70% MVC
- PAIN FREE



Static external rotation with active shoulder abduction

- 50% maximal voluntary contraction (MVC)
- Start with 3 x 10 repetitions
- Progress to 3 x 20 repetitions and 70% MVC
- PAIN FREE



Non-irritable Rotator Cuff Tendinopathy (regress to irritable cuff work if unable to complete this section)

- Symptoms involve mechanical pain that eases with rest, minimal night pain and movement limiting
- (Directed at involving the tendons usually supraspinatus and infraspinatus ,trying to treat tendon in just the right way to create Type 1 collagen)
- When progressing exercises make small incremental changes, tendons don't like big changes. Not no pain no gain!
- Think of this phase of tendon rehabilitation like turning an oil tanker, it will take time.
- (6 weeks rehabilitation in class or numerous 1-1 sessions followed by 1-2 years of self-managed exercise.)

Repetitions and sets progression

- Heavy slow resistance 5 seconds out and in. 8-12 repetitions. 2-4 sets, monitor response
- Progress to endurance 15-30 repetitions. 2-3 sets, monitor response
- PAIN FREE. Monitor response, progress slowly

Posterior cuff resistance section

External rotation

- Rotate forearm outwards against resistance
- No need to take forearm all the way out
- PAIN FREE



Single arm external rotation



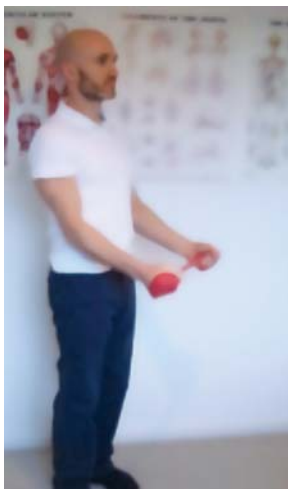
Double arm external rotation



External rotation unsupported abduction

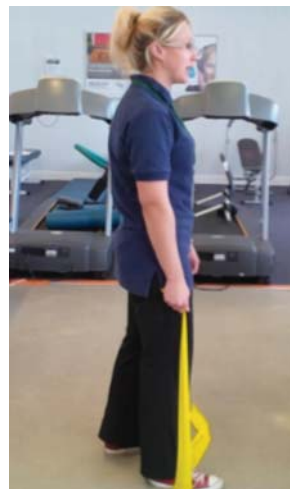
External rotation and arm elevation with and without lunge

- Maintain an outward pressure with hands on band
- Progress to stepping forward whilst raising the arms
- PAIN FREE

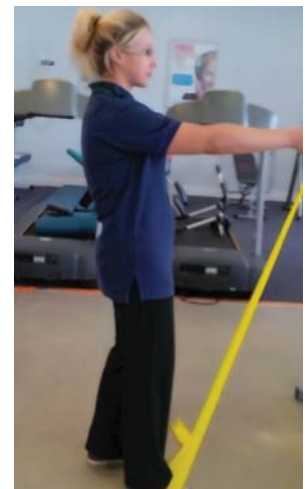


Shoulder elevation

- Use light dumbbell or Theraband
- Stand on Theraband or tie off to low secure fixing
- Raise band to front in slow and controlled movement
- PAIN FREE



Start



Finish

Posterior cuff resistance section/continued

Shoulder abduction

- Use light dumbbell or Theraband
- Stand on Theraband or tie off to low secure fixing
- Lead with thumb up
- Raise band to side in slow and controlled movement
- Only raise band in PAIN FREE range



Start



Finish

Side laying dumbbell external rotation

- Lay on side
- Rotate right forearm outwards
- Use light dumbbell 1-4kgs



Prone external rotation on ball or side of bed

- Try variations of raising shoulder to side
- Rotate forearm backwards
- Use light dumbbells 1-4 kgs



Latissimus dorsi & humeral head depressor resistance section

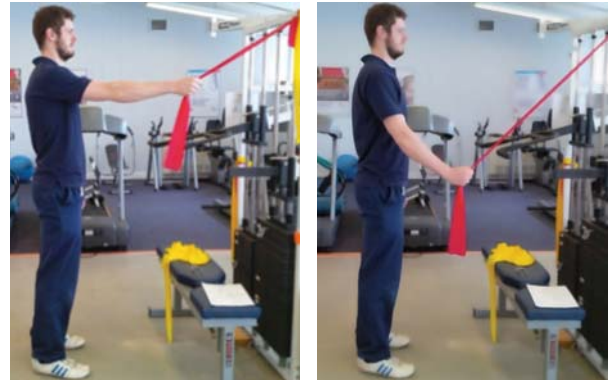
Static shoulder extension

- Push elbow down into hand or onto kitchen worktop sat on low seat
- 10 second contraction x 4-5 reps
- If painful at 90 degrees shoulder elevation then lower arm until able to complete pain free



Assisted elevation in flexion with band

- Raise hand just before symptoms start
- Tension band with unaffected hand/arm
- Pull band down half way and return as high as possible pain free
- Progress by reaching hand up higher and higher



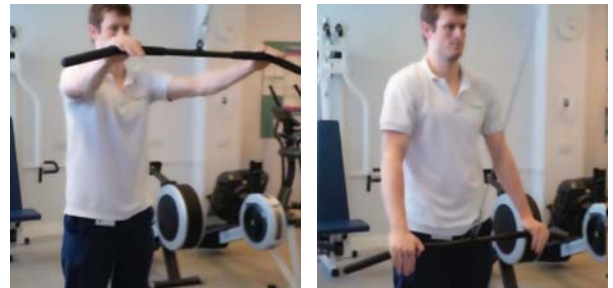
Assisted elevation in abduction

- Raise arm sideways just before symptoms start
- Tension band with unaffected hand/arm
- Pull band down half way and return as high as possible pain free
- Progress by reaching arm up higher and higher



Resistance machine double arm pushdowns

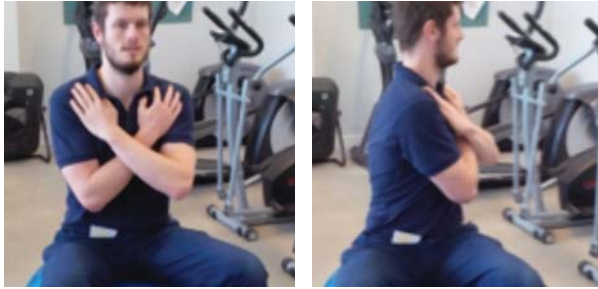
- Take hold of bar hands at hip width
- Keep arms locked out minimal bend at elbows
- Pull bar downwards ensuring your back is kept straight
- Use light weight



Thoracic mobility & resistance section

Thoracic rotations on ball or seat

- Sit on a fitball or seat
- Rotate upper spine from side to side pushing into end range
- Complete 40-50 reps



Thoracic rotations on floor

- On all fours place one hand on back of head
- Rotate upper body upwards and downwards
- Complete 40-50 reps



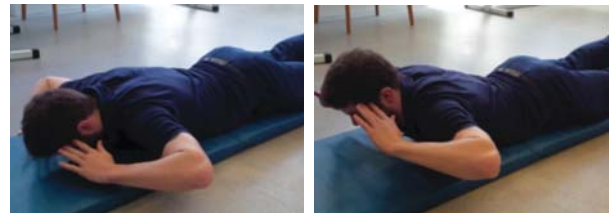
Fitball, foam roller or towel thoracic

- Adopt either one of the extension positions
- Try holding the position for 2-3 minutes
- Alternatively fold your arms across your chest



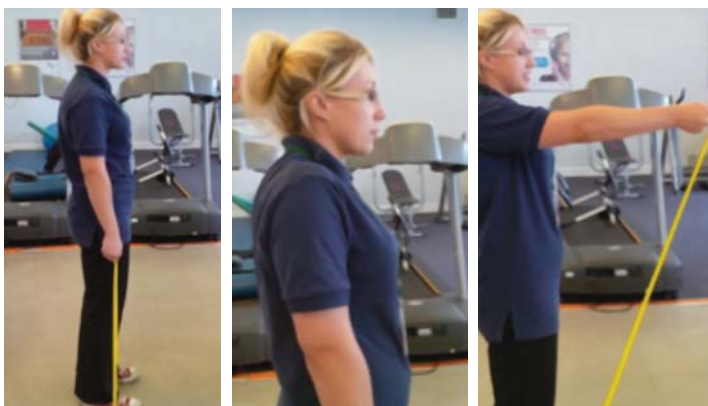
Prone thoracic extension

- Start in a prone position
- Fingertips on temples
- Raise your head and chest off the mat



Shoulder elevation with sternal lift

- Start with band under foot with arm by side
- Using your finger lift your sternum up to extend your upper thoracic spine
- Combine sternal lifts with raising your arm to the front



Scapula stability & winging section: Scapula - Retraction category

Single arm rows

- Bend forwards and grip Theraband
- Pull band backwards keeping elbow to side of body
- Return to start position



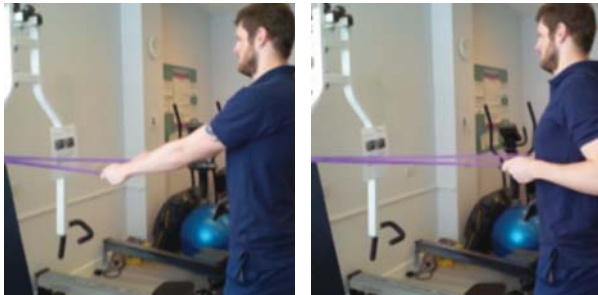
Bent over dumbbell/band rows

- Use band or a dumbbell
- Lean on a bench, chair, side of bed
- Hang arm to side and grip band
- Pull upwards to side of body keeping elbow in



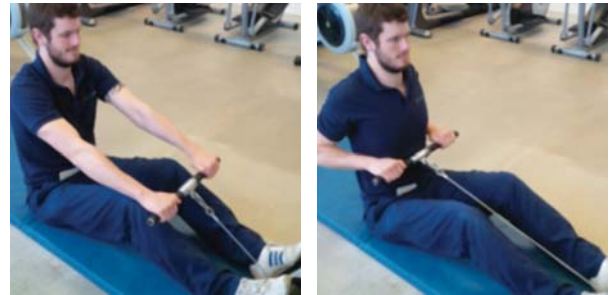
Standing band compound row

- Fix band at shoulder height
- Use variations of grip hip and shoulder width
- Pull band backwards using shoulders
- Squeeze shoulder blades together



Resistance machine sitting compound row

- Sit on a mat
- Take an overhand grip of the bar
- Pull arms back squeezing shoulder blades together
- Return to start position



Scapula stability & winging section: Scapula - Protraction category

Serratus punches

- Wrap band under armpits
- Punch band forwards with both hands
- Return to starting position



Push ups plus four point kneeling & against wall

- On all fours arch shoulder blades up and down
- Try the same movement against a wall



Fitball clock face

- With a fitball or football against a wall
- Push your shoulder forwards and backwards against the ball
- Try lying on your back pushing the ball up and back down
- You can use a kettle bell for this as well



Scapula stability & winging section: Scapula - Depressors category

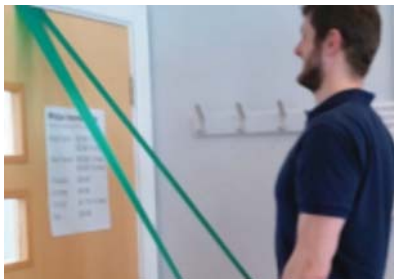
I's, Y's, and T's mat or fitball

- Lay on your front
- Start with arms by side and raise them upwards
- Progress to arms out in a T shape and then to a Y position
- Advanced version - use fitball and dumbbells



Double arm pushdown

- Tie a knot in a length of Theraband and trap at top of door
- Grip band with both hands at a height just shy of pain
- Pull downwards and return to start position



Seated pushups

- Use a chair with arm supports.
- Start with fixed arms no bend at elbow
- Keep arms locked out and dip shoulder down
- Shrug upwards to start position



Scapula stability & winging section: Scapula - Depressors category

Side laying flexion dumbbell

- Side laying with light dumbbell 1-4kgs
- Start with dumbbell at side
- Progress to taking shoulder straight forwards
- Return to start position



Prone extension

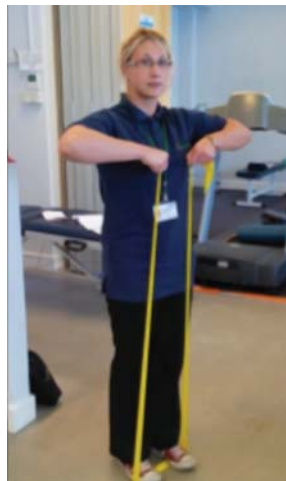
- Lay on front
- Hold light dumbbells by side
- Raise arms backwards



Scapula stability & winging section: Scapula - Elevation category

Upright rows

- Fix band under feet
- Pull upwards using both hands to sternum
- Return to start position



Shoulder shrugs

- Fix band under feet
- Hold with both hands
- Shrug shoulders upwards and backwards
- Return to start position



Scapula stability & winging section: Scapula - Elevation category/continued

Shoulder elevation with band flexion

- Side laying with light dumbbell 1-4kgs
- Start with dumbbell at side
- Progress to taking shoulder straight forwards
- Return to start position



Scapula stability & winging section: Scapula - Pec minor stretching category

Pec minor stretches

- Stand with forearm resting on door frame
- Rotate body away from arm
- Try positioning your forearm up and down the door frame
- Alternatively stand in corner of room rest forearms against wall and push forwards



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