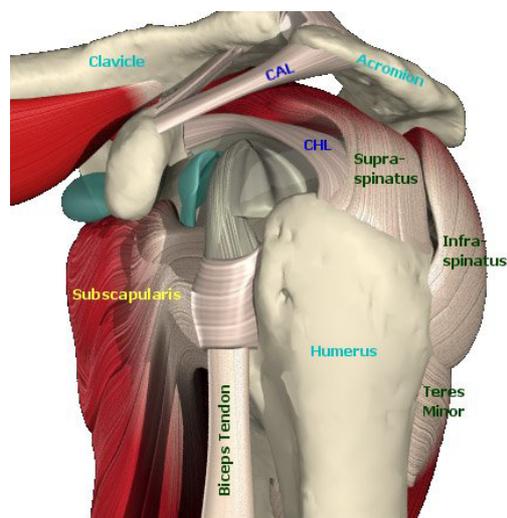


SHOULDER DISLOCATIONS & SUBLUXATIONS: A PATIENT'S GUIDE



(image kindly provided by www.shoulderdoc.co.uk)

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INTRODUCTION

This book has been written to help you after a shoulder dislocation. Patients usually have a lot of questions following a dislocation or subluxation and this book is designed to help you understand your injury and what your options are. There is a lot of medical and therapeutic literature discussing the management of patients after they have had a dislocation. However, most of this literature is written with very long words, and is difficult to understand if you are not a trained health professional. This book is designed to interpret all this information and produce the information in a digestible format so that everybody can understand what happens after a shoulder dislocation, and what the best course of action is.

I wish you well in your recovery.

Kind Regards

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SHOULDER ANATOMY. WHAT DOES A NORMAL HEALTHY SHOULDER LOOK LIKE?

The shoulder joint is made up of an arm bone (humerus) which is positioned in a socket (glenoid fossa). This socket/fossa is deepened by a ring of soft cartilage which is called a labrum (Figure 1). The labrum is triangular shaped when viewed from the side, thinner on the inside and thicker towards the outside. A capsule joins to the labrum to create a cylinder around the shoulder joint ensuring the fluid remains within the joint.

Where the bones are in contact with each other, they are lined with another type of cartilage called articular cartilage. This cartilage can become affected in osteoarthritis of the shoulder.

There are four key muscles which provide stability to your shoulder. These are called the rotator cuff muscles and each of them attach on the shoulder blade and then blend into the capsule to provide stability of the joint (Figure 2). These muscles either work together, or in symphony with other muscles to provide stability and movement of your shoulder.

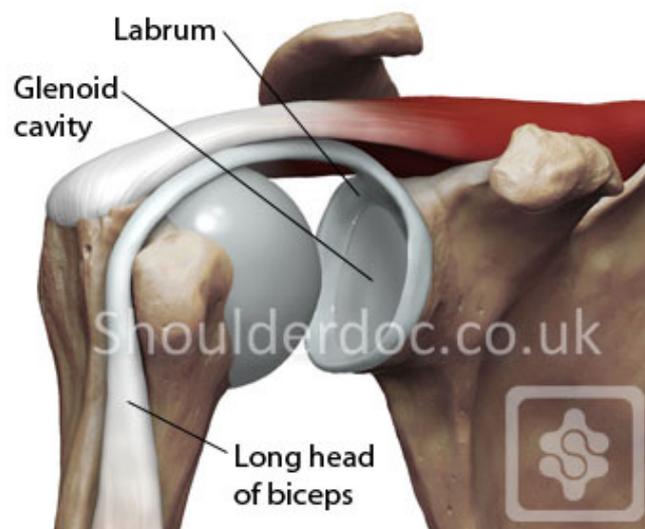


Figure 1: Right shoulder joint showing how the labrum deepens the glenoid fossa (kindly provided by www.shoulderdoc.co.uk)

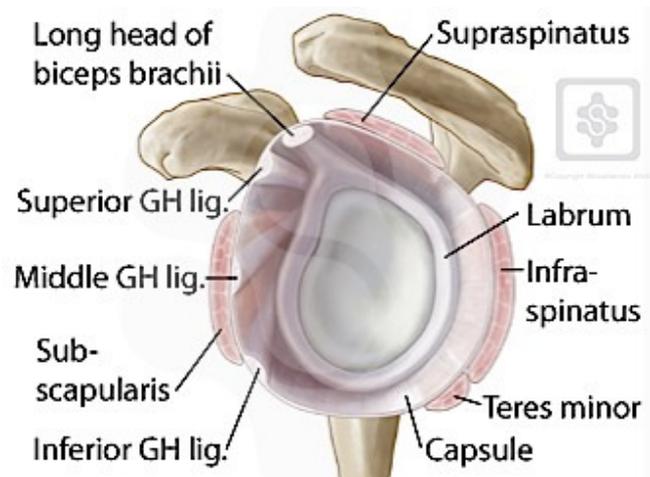


Figure 2: Anatomy of a the shoulder showing ligament and muscle attachments (kindly provided by www.shoulderdoc.co.uk)

INJURIES OF SHOULDER INSTABILITY. WHAT HAPPENS WHEN YOUR SHOULDER SLIPS OUT OF ITS SOCKET?

Any movement of the humeral head out of the socket can result in damage to your shoulder joint. Younger people tend to damage the labrum, while people over the age of 40 years tend to tear a rotator cuff muscle. Below are some common presentations and injuries that can occur when you dislocate or sublux your shoulder.

PRESENTATION AFTER A DISLOCATION

I HAVE PAIN IN MY SHOULDER. WHEN WILL THIS GO AWAY?

Many patients experience pain in the front of their shoulder and lateral arm for 2-3 weeks after a dislocation or subluxation. Some patients also experience tightness in their upper shoulder, neck or back due to wearing the sling. This is all very normal after a dislocation but the initial pain should wear off within 4-5 weeks. If your pain is persistent or you think you are having more pain than you expect, you should seek medical advice

I HAVE A PATCH OF NUMBNESS ON MY ARM. IS THIS NORMAL?

This patch of numbness is commonly called the 'badge sign' (due to the positioning of a regimental military badge)(Figure 3) and results from damage to the axillary nerve. This numbness is not associated with any risk of recurrent instability and commonly will resolve with 3-4 months.

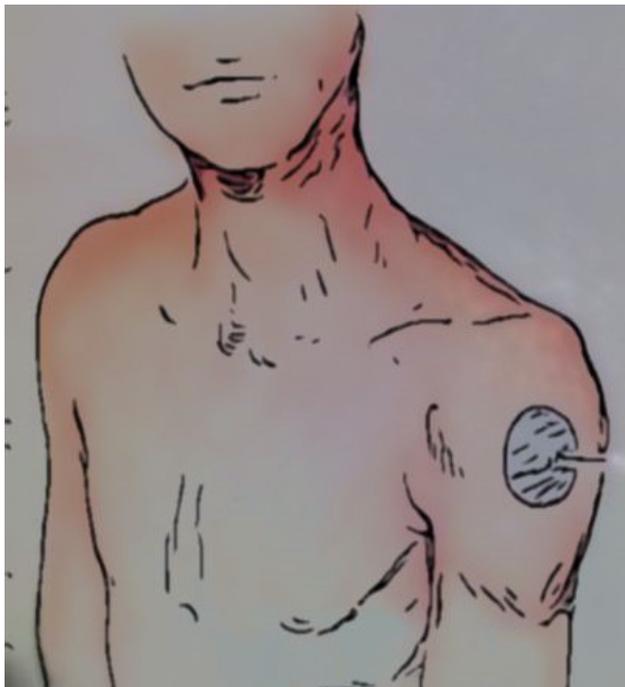


Figure 3: Patch of numbness on the outside of the arm caused by damage to the axillary nerve

PATHOLOGY OF THE SHOULDER FOLLOWING A DISLOCATION OR SUBLUXATION

BANKART LESIONS

When a shoulder dislocates or subluxes the cartilage (labrum) that deepens the socket can be torn (Figure 4). This typically happens in the front and bottom of the socket. The tear that occurs in the labrum is called a Bankart lesion. Sometimes Bankart lesions are described as if the glenoid fossa socket is a clock face, with 12 at the top of the circle and 6 at the bottom. Thus this image shows a lesion from 2 to 6. If your shoulder dislocates out the back (posteriorly) then you may get damage in the posterior labrum, from 7-10 o'clock for example.



Figure 4: Tear in the glenoid labrum can be described as using a clock face, with 3 o'clock in the front of your shoulder and 9 o'clock in the back. Labral tears from an anterior dislocation are commonly in the 4-5 o'clock position and may extend around the clock face. (kindly provided by www.shoulderdoc.co.uk)

Sometimes the bone can also be damaged. It is known as a bony Bankart lesion (Figure 5).



Figure 5: Bony Bankart lesion where a chip of bone has been fractured from the glenoid fossa (kindly provided by www.shoulderdoc.co.uk)

HILL SACHS LESIONS

A Hill Sachs lesion can occur when your humerus comes out of its socket. The bone of the humeral head is softer than the bone of the glenoid socket (fossa) (Figure 6). This causes an indentation in the bone in the humeral head. Typically in an anterior dislocation this occurs in the top of the humeral head at the back. In a posterior dislocation, you may get damage in the top of the humeral head at the front. This is called a reverse Hill Sachs lesion.

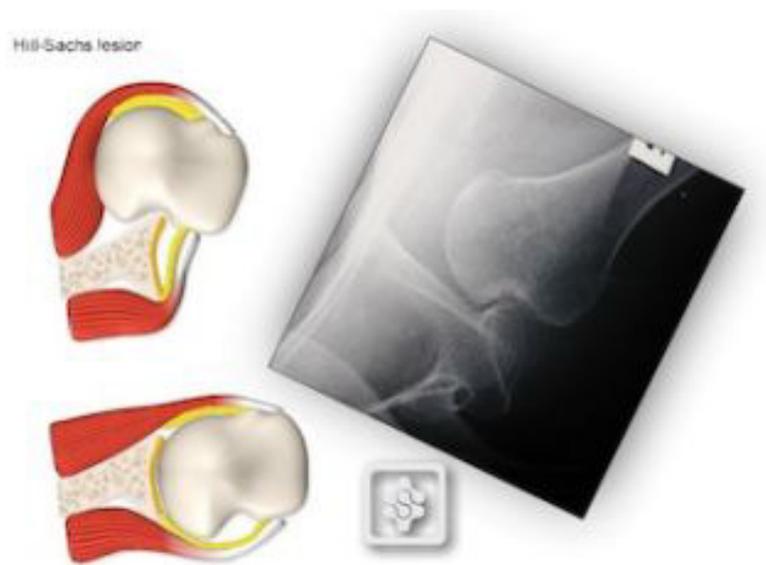


Figure 6: Hill Sachs lesions occur when the softer bone of the humerus is indented against the harder bone of the glenoid fossa when your shoulder is out of its socket. (kindly provided by www.shoulderdoc.co.uk)

Hill Sachs lesions are definitive proof that your shoulder has come out of its socket. Small Hill Sachs lesions are often not a problem. Large Hill Sachs lesions (around 40% of the humeral head) can affect the ongoing stability of the shoulder as the smooth contact surface of the bone is affected. Large lesions may get wedged on the glenoid fossa and get stuck. These are called engaging lesions, as opposed to lesions that do not get stuck (non-engaging) (Figure 7).



Figure 7: Hills Sachs lesions from a superior view (kindly provided by www.shoulderdoc.co.uk)

HUMERAL AVULSION OF THE GLENOHUMERAL LIGAMENT (HAGL)

A HAGL lesion is when the shoulder capsule is torn from the end that attaches to the humerus (Figure 8). This is lesion occurs at the opposite end of the capsule than a Bankart lesion (which occurs on the glenoid side). They commonly occur when the arm is over extended backwards. It is a common injury in rugby players, and men are much more likely than women to have this kind of lesion. Although some authors have documented that HAGL are usually associated with higher levels of recurrence than Bankart lesions, other authors have reported that they recover well without surgery.

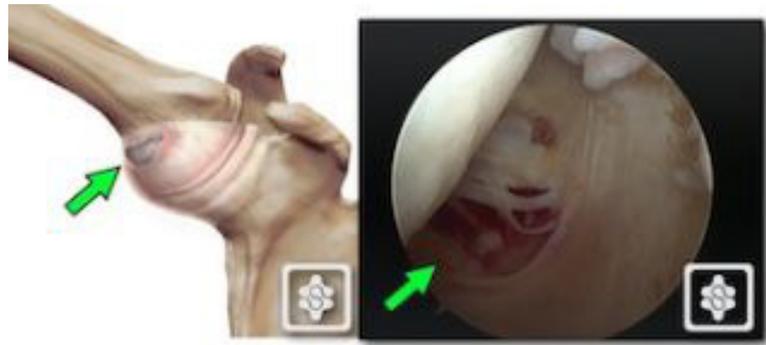


Figure 8: Location of a HAGL lesion on the humeral side of the capsule

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PARTIAL ARTICULAR SUPRASPINATUS TENDON AVULSION (PASTA)

PASTA is an acronym for partial articular supraspinatus tendon avulsion. It means that there is a partial tear (i.e. not a complete tear) that has damaged part of the tendon. The word articular means the 'joint' so it means that the part of the tendon which is on the joint side (underneath) has been damaged. This is to show that it is different from damage to the tendon that has happened on the top. The supraspinatus is one of four rotator cuff muscles that support and control your shoulder joint in the socket. It is situated at the top of the shoulder and is one of the most commonly injured rotator cuff muscles. The word avulsion means 'pulled off the bone' so in total this phrase means that the bottom part of one of the rotator cuff tendons has been pulled off the bone (Figure 9).

This type of injury commonly happens in athletes who are under the age of 45 and usually occurs as a result of a pulling or twisting of the arm. It can be repaired during keyhole surgery, or strengthened around so that the other muscles work harder to compensate for this tearing.

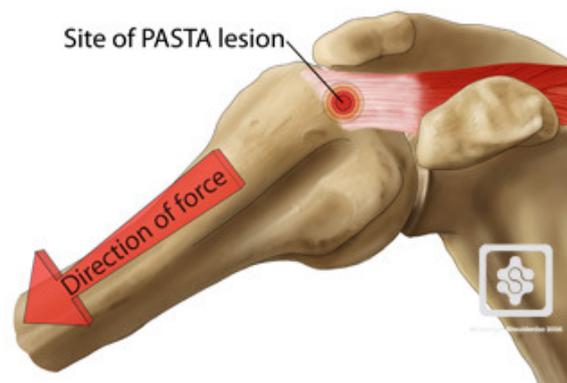


Figure 9: PASTA lesion. (kindly provided by www.shoulderdoc.co.uk)

CLASSIFICATION OF SHOULDER INSTABILITY. WHAT TYPE OF PROBLEM DO I HAVE?

Shoulder instability is classified in four different categories

1: MECHANISM- TRAUMA VS. NO TRAUMA.

The way on which the dislocation occurs is an important feature in the classification of shoulder injuries. The mechanism of injury may be either traumatic (as a result of external force) or atraumatic (resulting from no external force). Atraumatic injuries are more common in those who are hypermobile, or have increased laxity in their shoulder joints. This type of injury may not present with any other pathology other than increased shoulder capsule and muscle laxity.

2: DIRECTION.

Typically this is anterior, posterior, inferior. It is also possible to have a combination such as antero-inferior. Some people also use the term 'multi directional' to indicate that the shoulder is unstable in more than one direction. Authors differing their opinions as to whether this may be two different directions, or three .

ANTERIOR dislocations occur when the humeral head (top of the arm bone) is forced anterior to the glenoid fossa (socket). This commonly happens when the arm is flung out to the side and either pushed behind the body (hyper extended), or twisted with the hand forced behind the elbow (externally rotated) (Figure 10). Antero-inferior dislocations tend to occur when the arm is raised overhead and twisted backwards or hyper-extended. These two directions make up 95% of all traumatic shoulder dislocations.



Figure 10: A common mechanism for an anterior shoulder dislocation (and the mechanism for many Bankart tears) is when the arm is away from the body and the hand is twisted behind the elbow (Abduction & External Rotation (ABER)) (kindly provided by www.shoulderdoc.co.uk)

POSTERIOR dislocations occur when the humeral head (top of the arm bone) is forced posterior to the glenoid fossa (socket). This commonly happens when the arm is forced across the body, or the arm is in front of the body and force is directed through the length of the arm.

INFERIOR dislocations commonly present with people who are unstable in many directions. While they can be caused by trauma, they are much more common in those that present with an atraumatic mechanism of injury.

3: FREQUENCY.

Shoulder instability is also classified according to the number of times the shoulder has had a instability event . First time dislocators are commonly called primary dislocators. Once it has happened more than two or three times, it is called recurrent instability.

4. SEVERITY

Shoulder dislocations are according to the severity of the injury. A **DISLOCATION** is when there is a separation of the humerus and glenoid fossa (socket) and requires manual force to relocate the shoulder. A **SUBLUXATION** is when there is a momentary or transitory separation of the humeral head from the glenoid fossa and slips back without requiring any external force. Sometimes instability also results in increased movement of the humeral head which results in impingement and pain. There is no separation in this situation, but rather increased movement of the humeral head which results in pain.

WHAT WERE THE CHANCES OF THIS HAPPENING TO ME?

Risk of dislocation in general population is 1-2%, mostly due to trauma.

The most common sector of the population is young men (primarily due to a fall or sporting activity) and elderly women (primarily because of a fall.)

IS THIS GOING TO HAPPEN TO ME AGAIN (AFTER I HAVE ALREADY HAD A DISLOCATION)?

Recurrence rate in the younger population (aged 14-40 years) is around 50% (although there are some studies showing a 80% recurrence rate, there are also others showing a 26% rate). In the older population (more than 40 years), recurrent instability is not so much of a problem (around 4%). In this population however the likelihood of rotator cuff tear is higher, and this can lead to other complications.

There is a significant amount of research which indicates that those who are younger than 20 years old when they have their first dislocation are at significant risk of having another dislocation or subluxation. Some authors would say 80%, whereas others have reported 25%. This appears to especially be a problem for young men who play contact sport. Women appear to be less affected than men, although your age is the most significant factor. If you are over the age of 40 years, then the chances of having another event is as low as 4%. It is thought that this is related to how stretchy your tissue is and how stiff the cartilage and capsule is in your shoulder.

Other factors that may affect your likelihood include the stretchiness of your tissue. Some people have more mobile/flexible tissue than others. Stretchy tissue does not hold onto the humeral head as tightly and these people are more likely to have another episode of instability.

People who have a fracture of their greater tuberosity (Figure 11) or damage their axillary nerve (Figure 3) are less likely to have another episode of recurrence.



Figure 101: greater tuberosity fracture
(kindly provided by
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WHAT SHOULD I DO AFTER A DISLOCATION?

Some people after a shoulder dislocation are at high risk of having another dislocation or subluxation. There is no conclusive evidence that wearing a sling for three of six weeks makes any difference to whether it is going to happen again. There is some evidence that wearing a brace that keeps you shoulder turned out may result in less chance of this happening. However this research was only undertaken in people who have had their first dislocation in an anterior direction and who were immobilised immediately. Other studies have also replicated this with people wearing a brace which turns their arm out and found no difference, so while there may be some difference, the jury is still out on this one.

So you should keep your arm comfortable and try to limit the pain. This can be achieved through limiting the amount of activity that you do with your arm. Movement of the arm is often limited so try not to over reach with your arm as that will be painful. Visit your local therapist and discuss how you can get back to full function with a programme that is specific to your type of injury.

SHOULD I HAVE PHYSIOTHERAPY AFTER A DISLOCATION?

Following a dislocation, patients commonly present with decreased strength, limited range of movement and altered awareness of joint position (proprioception) in the affected shoulder. Physiotherapy helps people restore strength, range of movement and proprioception to the shoulder after a dislocation. This can take several weeks and usually involves strengthening exercises which can be done at home. As your shoulder becomes stronger, you should expect to do some exercises with heavier weights and faster speeds in a gym.

The general guide for exercises is that they would start by strengthening the muscle but not moving the arm (this is called isometric exercise). Beginning exercises also typically work on building up an endurance base in the muscle. This can be done by holding the arm/ shoulder in a fixed position for an extended period of time. The progression is then to strengthening while moving and to increase the weight. Finally your therapist should advise you of more dynamic, reactive exercises which can fine tune your responsiveness and get you ready to return to full levels of activity.

SHOULD I CONSIDER SURGERY?

The current research shows that around 50% of people who have a dislocation may end up having another one. However if you do all your exercises and work on your strength, limit your exposure to contact sport for the first few months and wear protective braces when you are most at risk, you may not suffer from recurrent instability. The research would also show that you are most at risk in the first 6 months after your first dislocation, and are at moderate to high levels of risk in the first two years following your dislocation. So, early caution is recommended. Some surgeons advocate immediate surgery for those following a dislocation if they are returning to contact sport, but there really isn't the research which supports this stance at the minute.

However after a person has had 2-3 episodes of recurrent instability they are at even more risk of further problems. It is a good idea to consult a surgeon for an opinion at this stage to see if they think that you are a good surgical candidate. It is a good idea to explore non-surgical options first as there really is no going back after surgery!

WHAT TYPES OF SURGERY ARE AVAILABLE?

The type of surgery that is most appropriate really depends on the amount and the type of damage in your shoulder. Below are outlined the three most common types of surgery.

ARTHROSCOPIC SURGERY

This procedure results in minimal scarring and is known as 'keyhole' surgery. Your surgeon will use a camera to see inside your shoulder and use other instruments through portals into your shoulder. They will then operate on your shoulder using a TV screen to see inside your shoulder. The damage to other muscles and ligaments is minimal with this type of surgery. However there is still usually considerable pain and disability following the surgery. Some research has shown that proprioception (your ability to be aware of your arm position and movement) is still as affected by this type of surgery as with open capsular repairs (Figure 12).



OPEN CAPSULAR REPAIR

This type of surgery will result in a scar in the front of your shoulder that usually approaches the tip of your armpit. Your surgeon will usually cut through muscles (subscapularis) and then will tighten your capsule and/or repair the Bankart lesion around the front of your socket. Many patients do well under this surgery despite the fact that it is more invasive. Sometimes the rehabilitation is also longer than arthroscopic surgery and this is because of the muscles that have been cut to open the shoulder. Sometimes a fold is made in the capsule (inferior capsular shift) to tighten a loose baggy capsule (Figure 13).



Figure 13: Scar from open capsular surgery

LATARJET /BRISTOW PROCEDURE

This procedure involves transferring the tip of your coracoid process with the attached conjoined tendon to the anterior part of your scapula neck through an opening in the subscapularis muscle. The bone is then screwed onto the front of the scapular neck so that it rests just next to/under the glenoid fossa. It is thought that this surgery is so successful because of the following reasons:

- 1: the bone which has been moved blocks the humerus from coming forward and redislocating,
- 2: when the arm is lifted out to the side and overhead, the tightening of the structures restrains the humeral head from sliding forward,
- 3; the new position of the subscapularis stops it from rolling over the humeral head as the arm is lifted and so it restrains the humeral head.

This surgery has been used widely for those with bony chips in the glenoid fossa as it restores the congruency of the joint. It is also commonly used in people who play contact sport as it seems to be a very robust type of surgery. The fact that the bone has been screwed in place

can allow for quicker return to sport as there is not as long a time delay waiting for the tendons and ligaments to heal. However this type of surgery is not advised in throwing athletes as they may not regain full external rotation range of motion. Some research has also found higher rates of osteoarthritis in this kind of surgery (Figure 14).

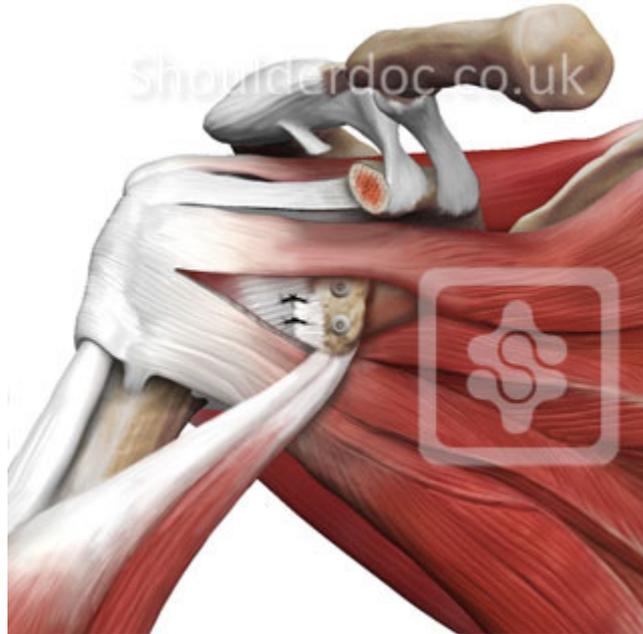


Figure 14: The tip of the coracoid bone is removed and placed as a bony block in front of the glenoid fossa, through the subscapularis muscle (kindly provided by www.shoulderdoc.co.uk)

WILL WEARING A SHOULDER BRACE MAKE ANY DIFFERENCE?

Shoulder braces are thought to assist after injury in a variety of ways. These include supporting the shoulder, as well as compression of the surrounding skin and tissues. Neoprene braces are also thought to offer some protection to the skin and superficial tendons due to the thickness of the neoprene. Additionally it is thought that some braces which limit the range of motion of the limb may decrease the risk of dislocation by preventing the shoulder from moving into vulnerable areas. Wearing a brace may also affect your confidence by feeling more supported and comfortable.

SUPPORT of an injured limb can be vital and can speed up the recovery process following injury. Some braces work to compress swollen joints and aid in the recovery of inflammation. Braces can also take the support of injured muscles, allowing them to rest and recover quicker. An ideal brace will have a close fit and will be sized in several sizes and right or left sides to enable a snug fit. Some braces are custom made to fit the individual which increase the support. However these types of brace can be very expensive.



Figure 15: [Flawless Motion Women's Shoulder Brace](#)

COMPRESSION of the shoulder is thought to enhance the receptors in your skin by sending messages to your brain about the position of your shoulder. Research studies [1, 2, 3] have shown that people who have suffered from instability in their shoulder (such as a subluxation or a dislocation) have a decreased sense of awareness in their unstable shoulder. This awareness is termed proprioception and includes knowledge about the position of your arm, the amount of force your muscles are applying, as well as the coordination with other muscles. Other research [4] has shown that wearing a brace is able to improve the proprioception in unstable shoulders. These authors proposed that the

beneficial effects of wearing a brace are due to the increased compression on the receptors in the skin. This allows the skin receptors to compensate for the damaged receptors in your shoulder capsule or muscle.

PROTECTION of the skin may also be offered by wearing a neoprene brace. Many of the tendons in the shoulder are quite superficial and the wearing of a brace can protect the skin and superficial tendons from bumps and knocks.

Wearing a shoulder brace may also **DECREASE THE RISK OF DISLOCATION** by limiting the range that the shoulder is able to move into. Nearly 95% of dislocations occur in an anterior direction [5] and most of these are with the arm stretched away from the body with the hand turned up to the sky. dislocations in this position cause damage to the inferior glenohumeral ligament and labrum (the cartilage that increases the support in the shoulder). Some authors [6] have thought that if you limit the range of motion that the arm can move into, people will be less likely to have another dislocation. The flawless motion brace is unique in that it allows wearers to lift their arm up forwards in front of them without allowing them to move into riskier positions such as abduction. Thus players are still able to perform overhead activities but are limited from moving into risky positions.



Figure 16: [Flawless Motion Multi:Directional Shoulder Brace](#)

STRENGTHENING of the shoulder is also possible while wearing a shoulder brace. Some braces have neoprene straps which offer more resistance as they are taken into more stretch. Every time the arm is moved, the muscles have to work harder to resist against the straps. Because some research [7] has shown that shoulder injuries often result in, or are accompanied by, decreased strength of the shoulder muscles,

many physiotherapists and surgeons recommend strengthening the shoulder joint after injury. Wearing a shoulder brace can therefore facilitate the strengthening process of the injured shoulder. Offering increased resistance to movement of the limb will also have the effect of slowing down the speed that the arm can move into risky positions. Research [8] has shown that muscles of unstable shoulders take longer to become active than the muscles of normal healthy shoulders. Therefore slowing down or decelerating the limb gives the muscles on the unstable shoulder more time to react, and therefore more time to get ready to provide more support and resistance to knocks and force from the external environment.



Figure 17: [Flawless Motion Anterior Shoulder Brace](#)

Some braces also work to **HEAT THE TISSUES** under the brace and propose that this will help with healing. Because there is no firm evidence to support this and because flawless motion braces are designed to be worn during sporting activity, great care has been taken to decrease the heat that is stored under the brace. Lightweight versions are available with mesh inserted in place of neoprene where support is not required. All braces are made of the thinnest breathable neoprene available, with holes spaced in the fabric to allow the sweat to escape away from the body. Research has shown that increased heat of the body has negative effects on performance [9] and therefore keeping the body cool, or limiting the heat retention is ideal in sporting braces. This is one of the key differences between sporting shoulder braces and braces which are made to wear in general everyday use by the non-sporting patient. Keeping cool is also more comfortable for the wearer and means they can wear it longer and have the increased benefit due to the other beneficial factors.

Some research [10] has proposed that the benefits of wearing a brace

are due to a **PLACEBO EFFECT** where the wearers simply feel better because they are doing something to help their injury. This may in fact be true and the positive psychological effects of wearing the brace should not be underestimated. Wearers not only feel that they are actively doing something to support their shoulder and prevent further injury, they also feel more protected from knocks and blows from others around them. This encourages injured players to partake more readily in activities and therefore maintain their fitness and social interaction with their team members and others.

Thus there are several reasons why wearing a shoulder brace can be beneficial. Initially in the early stages following injury they can be used for support and protection to aid the healing process. Later on in rehabilitation process, shoulder braces can be used to increase proprioception and muscle control, as well as limiting the chance of further injury by limiting range of motions and strengthening the shoulder muscles.

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