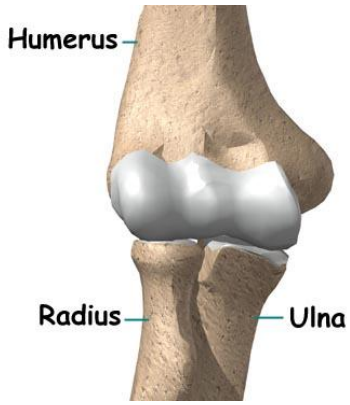
How to bend your Elbow

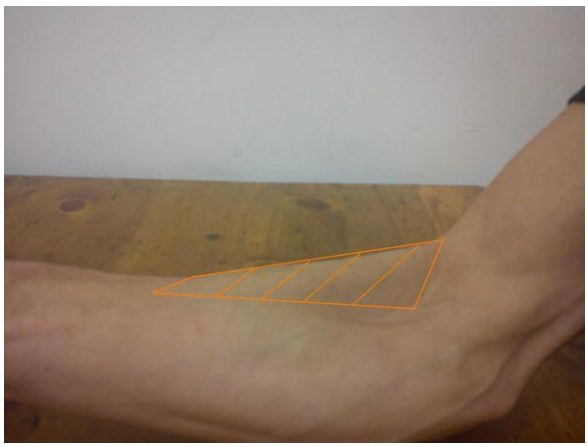
Short roping clients, hauling ropes, lugging sacks or even climbing the elbow is an extremely overused joint. Pain is unlikely to stop any of us working but it might stop us climbing hard – and that's not on.

The elbow is a hinge joint – the depth of the hinge makes it very strong and unlikely to dislocate. Within the elbow are 2 other joints that allow your forearm to twist. This article will focus on mainly the hinge as, for a climber the ability to *flex* at the elbow is essential and many climbers suffer from pain at the elbow which is aggravated by pulling hard.

The hinge is between the *humerus* and the *ulna.* However there is a close relationship with the *radius* which hinges alongside the *ulna* (Fig 1).To best understand which muscles are involved I suggest whilst reading this you expose your arm and hold onto a heavy-ish weight such as a litre bottle of water.



To begin with grasp the weight tightly as though holding a pint and hold your arm rigid. You will see across the top of your forearm a prominent band – this is your *Brachioradialis* or '*drinking muscle'* (Fig 2). It joins your *humerus* to the *radius* near the wrist. This muscle also *pronates* your forearm i.e. makes it twist from a palm up position to the 'drinking' position – very useful.



The next obvious one is your *bicep*. If you're still in the drinking position grasp your bicep with the other hand and twist your forearm:

- *pronate* = palm down
- *supinate* = palm up.

You will notice that this changes the size of your bicep – palm up makes it bigger. This is because your bicep *is the main supinator* of the forearm.

Stay in the drinking position and grasp your entire bicep (with the other hand) and turn your palm to face the floor – now hold your arm rigid. Under your finger tips you should feel the *Brachialis* (Fig 3). An overlooked muscle which is the only one that flexes and directly joins the two sides of the hinge – the humerus and the ulna.

It is important to be able to differentiate these muscles and feel for where they attach into your elbow as it will allow you to determine which muscles may be involved in your pain and avoid those movements. These muscles are large, strong and straightforward and if you do feel pain where these attach then you have probably done something quite bad.

The next collection of muscles that bend the elbow are frequently implicated in elbow pain – not only that there are quite a lot of them, so much so that we'll think of them only as your *finger flexors* and *finger extensors*.
The clue is in the name – they bend and straighten your fingers (and wrist) but the other end attaches across your elbow which means as well as having to pull (shorten) at one end they frequently have to lengthen at the other. To demonstrate how difficult this actually is adopt the 'drinking position' and tightly grip your weight then very slowly move your arm forward to straighten it – you should find your arm shakes significantly, Next, put down the weight and do it again – no shaking. It is easy to make see that your elbow pain is strongly related to grip strength and anecdotal studies have shown a higher incidence of elbow pain in people with grip strength higher than 65kgs.

Since I first wrote this article I have carried out further studies that support the 65kg threshold but surprisingly do not support a correlation with climbing grade. It would appear that people whose maximum grade is 7b suffer the most forearm/hand problems irrespective of 'crush strength'

Referred pain is a topic for another day but suffice to say that there are other factors and other muscles which can cause problems in your elbow for a whole host of different reasons so if in doubt – see a physio.

To expand on this section; referred pain is caused from the nerves transmitting pain from another site. This might be anywhere along the nerve pathway such as in sciatica where a pain down to the foot is caused by a nerve trapped in the back – normally by a 'slipped disc'. In the climber's arm there are many places where the nerve can be over stimulated from the neck down and if you're unsure you really should go see a physio.

Until then try asking yourself these questions:

- *Have I got similar symptoms on both sides?*
- *Are there other symptoms such as weakness, numbness, pins and needles?*
- *Can I make the pain go away by moving my arm in a particular way?*

So how do we reduce the incidence of overuse injuries to our elbows and manage any problems given how much we have to use them as professionals?

- Regular use of the elbow under light loads which take the muscles through their full range is a good first step and this, for full time instructors this is fairly easy to achieve – when coiling a rope for example. If you work in an office you will need to make more of an effort.
- Working out how to properly stretch all the muscles is also important. Muscles which only cross the elbow can only be stretched by massage but finger flexors/extensors and the bicep can be stretched yourself.
- Avoid high, static loads where there is a lot of force being put through one specific area of muscle. This shock loading can happen when arresting a client on a short rope for example. If this has happened massage out the muscle and apply ice that evening.

There is lots of good information on the web about managing elbows and recovery from injury but I find that avoidance is by far the best policy. Elbows *are* resilient and with a bit of knowledge it is possible to manage them without a visit to your local physiotherapist. Should you become injured make sure you follow any professional advice as there are many who do not and they generally suffer from a long term 'dodgy elbow' that doesn't seem to get better.

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