

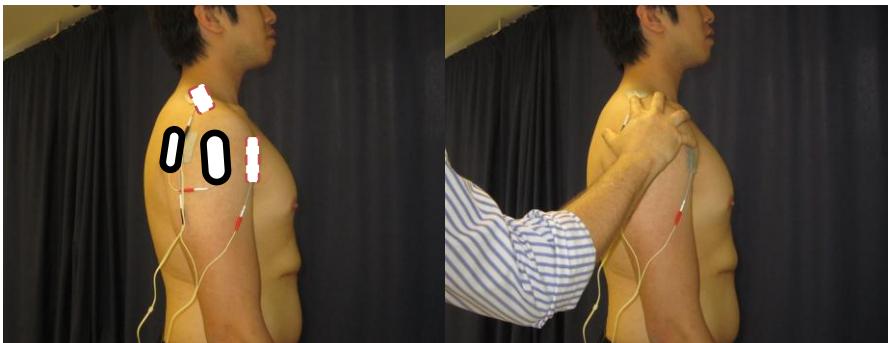
Please note that the polarity (red and black leads) can be altered according to your clinical reasoning. The area in which you want to gain the strongest effect should be connected to the black lead. The pictures below are examples and you should change as you feel is appropriate for your patient.

Most common electrode placements used in Salisbury clinic are:

1. Hemiplegic shoulder pain/shoulder subluxation (overlapping mode)
2. Forearm extensors +/- lumbricals (alternating mode)
3. Triceps +/- forearm extensors (simultaneous mode)

Hemiplegic shoulder pain/shoulder subluxation

An overlapping mode can be useful for this set-up as it reduces trauma on the rotator cuff by preventing the humerus moving into and out of the glenoid.



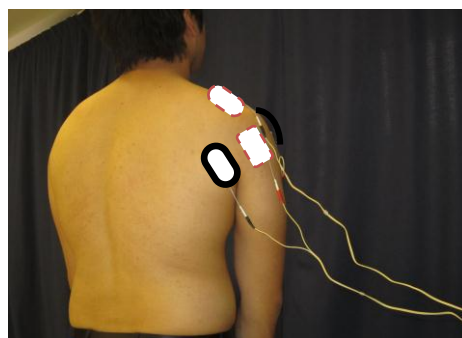
STANDARD SHOULDER SUBLUXATION

One pair with active electrode over middle deltoid with indifferent over supraspinatus. Second pair with active over posterior deltoid and indifferent over anterior deltoid.

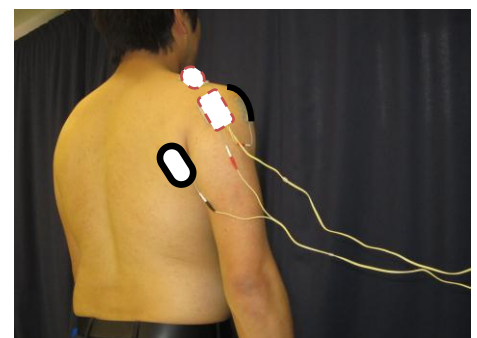
A useful teaching aid for placing these electrodes accurately- they should fit beneath a relaxed hand placed over the shoulder with your middle finger over supraspinatus, your thumb over the posterior deltoid electrode, palm over middle deltoid and 5th finger over anterior deltoid.

SHOULDER SUBLUXATION WITH EXTERNAL ROTATION

One pair of electrodes with indifferent electrode over supraspinatus and active electrode over middle deltoid. Second pair of electrodes with active electrode over teres minor and indifferent electrode over posterior deltoid.



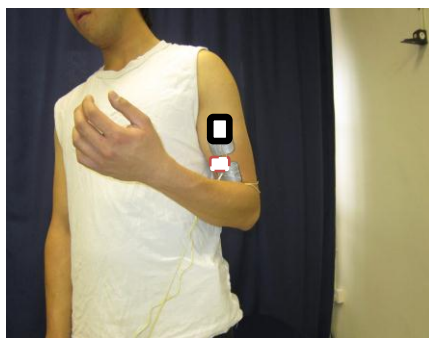
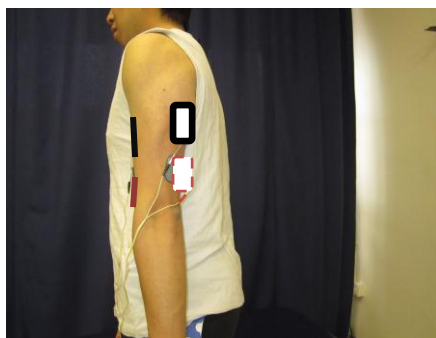
Stim OFF



Stim ON

KEY: Active =  Indifferent = 

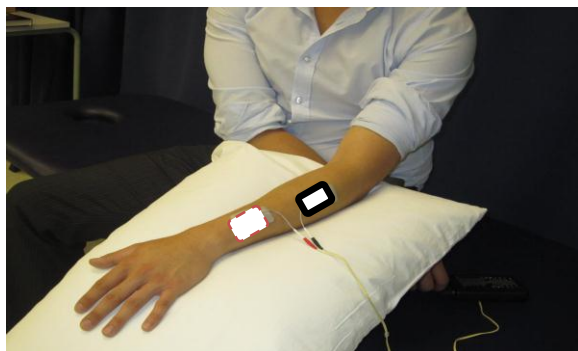
Spasticity/range of movement



Elbow

Option 1: triceps only to reduce biceps tone/improve range of movement.

Option 2: Activation of biceps and triceps on an alternating mode to reduce biceps tone (through reciprocal inhibition and principle of maximal contraction = maximal relaxation).



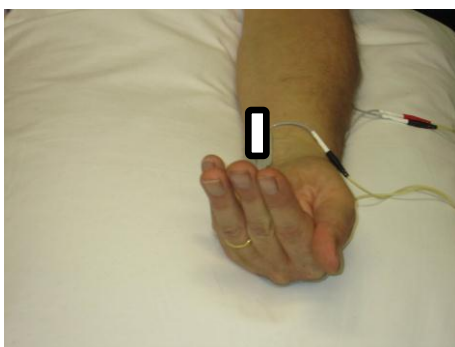
Forearm extensors

Activation of the radial nerve to produce extension of the wrist, fingers and thumb and stretch forearm flexors (this could be alternated with the forearm flexors with same principle as above to reduce spasticity in forearm flexors).

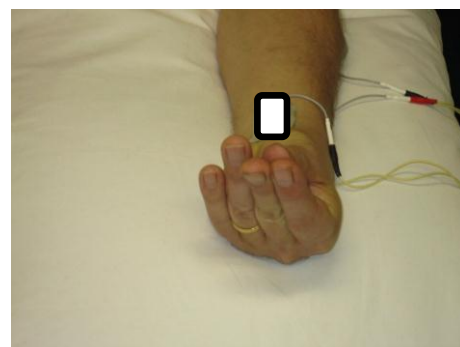
Alternating mode- activation of forearm extensors and lumbricals. This can be effective at reducing tone in the wrist and finger flexors and reducing oedema. Note 3 different options to activate the intrinsic muscles of the hand- keep indifferent on dorsal surface of hand, active on:



a)



b)



c)

a) dorsal surface of hand above indifferent (tends to activate most of lumbricals and interossei).

b) ulnar nerve by the wrist on palmar surface of wrist (bias 3rd and 4th lumbricals and also adductor pollicis, and flexor pollicis brevis).

c) median nerve on palmar surface of wrist (bias 1st- 2nd lumbricals with opponens pollicis, flexor pollicis brevis and abductor pollicis brevis).

KEY: Active = 

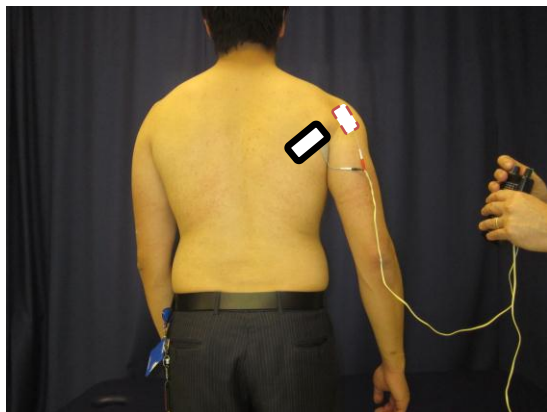
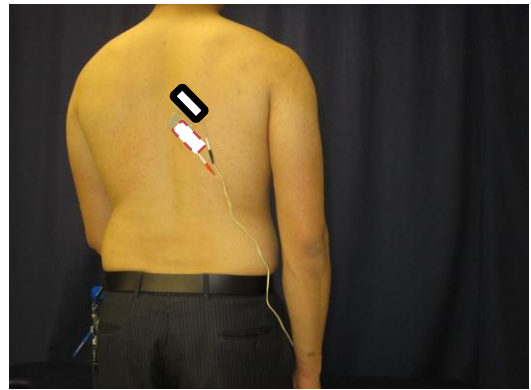
Indifferent = 

Encouraging functional improvement

Improving shoulder girdle stability

RETRACTION

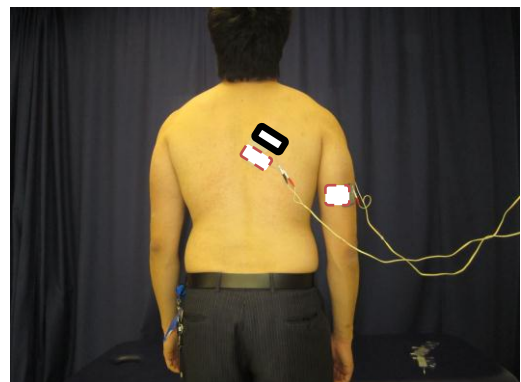
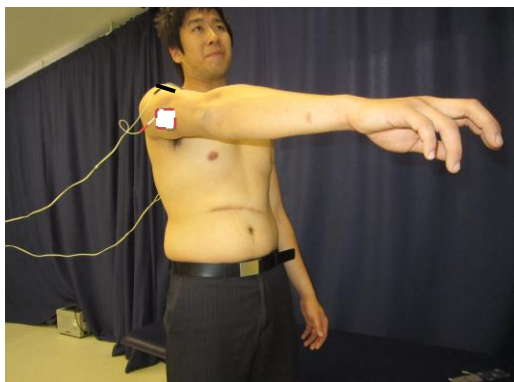
Activation of the rhomboids and trapezius muscles. Can be useful to improve stability of the scapula. Either unilateral or bilateral set-up.



EXTERNAL ROTATION OF HUMERUS

Activation of teres minor and posterior deltoid- can be useful if patient has internally rotated shoulder due to posture or over-activation of internal rotators. (If your active electrode is too low you will activate teres major, which causes internal rotation of the humerus).

Reaching



SHOULDER FLEXION WITH SCAPULA STABILISATION

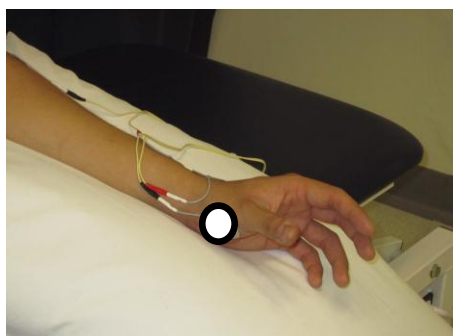
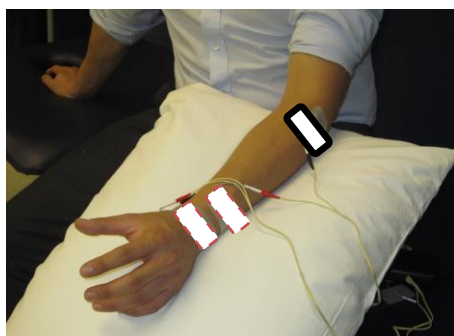
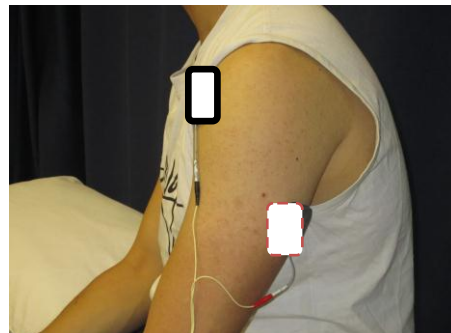
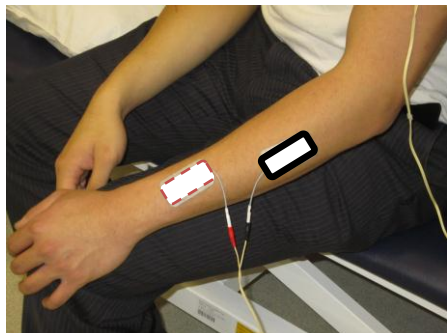
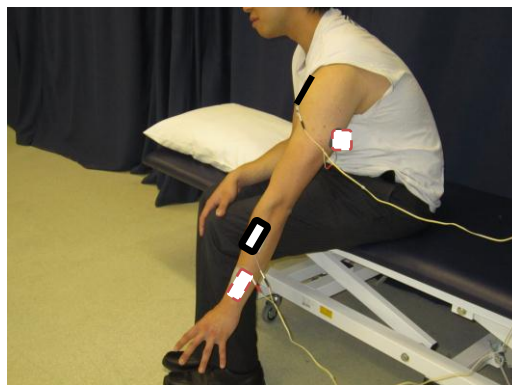
One pair of electrodes stabilising scapula over the rhomboids and trapezius muscles. Second pair with one electrode over anterior deltoid and one over triceps to achieve reaching movement. Simultaneous mode.

KEY: Active =  Indifferent = 

SHOULDER FLEXION, ELBOW EXTENSION WITH HAND OPENING

Activation of anterior deltoid, triceps + radial nerve for hand opening. Simultaneous mode.

Consider reducing gravity by reaching to the floor in early stages of treatment (as shown).



WRIST AND FINGER EXTENSION AND THUMB ABDUCTION

One pair of electrodes with active over common wrist extensor insertion and indifferent just proximal of wrist. Second pair of electrodes with active small round electrode over thear eminence to pick up abductor pollicis brevis and indifferent over dorsal surface of hand. Simultaneous mode.

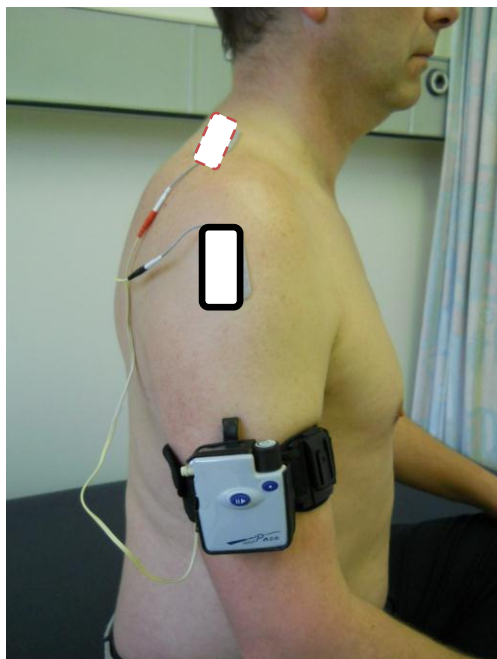
KEY: Active = 

Indifferent = 

Use of the ODFS® Pace in the Upper limb

As the ODFS® Pace can be worn around the arm, it may be appropriate to use this stimulator instead of the Microstim, as it can be worn for longer periods of the day. Using the exercise mode you also have more scope to change the parameters and timings, e.g. the current, pulse width, frequency, ramps, on/off period. However, as it is only a single channel stimulator you will only be able to use one pair of electrodes.

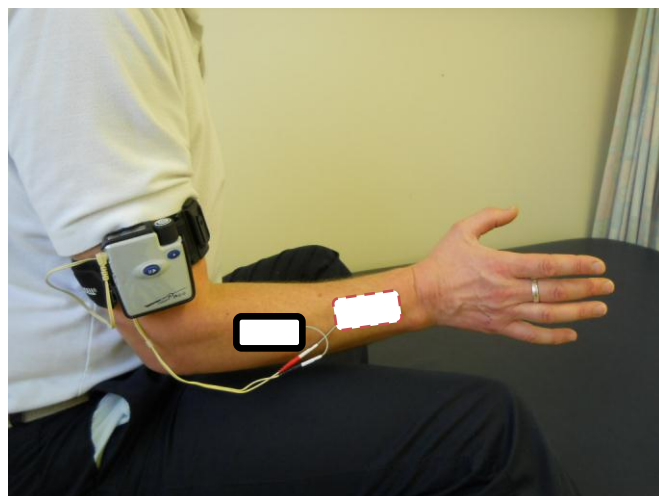
Hemiplegic shoulder pain



Active electrode over middle deltoid with indifferent over supraspinatus.

Spasticity in the forearm

One pair of electrodes activating the radial nerve to get extension of the wrist, fingers and thumb and therefore reducing tone in the flexors.



KEY: Active = 

Indifferent = 