

*excerpt from eMedicine.com*

Shoulder pain ranks as the third most common cause of musculoskeletal disability, following low back pain (LBP) and neck pain. Good shoulder function is a prerequisite for effective hand function, as well as for performing multiple tasks involving mobility, ambulation and activities of daily living (ADL). As the disease progresses, shoulder pain becomes more constant. Overhead and arm-length activities typically increase the pain. With time, the individual can notice some weakness during shoulder elevation. Crepitus also can be noted. With the evolution of the disease, shoulder pain can be accompanied by cervical and mid back pain.

- Shoulder pain associated with frozen shoulder is progressive in nature and initially tends to be felt most at night.
- Impingement of the rotator cuff beneath the coracoacromial arch is also an established cause of chronic shoulder pain.
- Pain located on the superior or lateral aspect of the shoulder suggests rotator cuff tendonitis.
- Pain on the anterior aspect of the shoulder may result from bicipital tendonitis, an acromioclavicular sprain, or anterior instability.
- Neck pain and recticular pain or paresthesias suggest a cervical spine disorder.

A systematic examination of the shoulder region includes:

- Palpation of the bones and soft tissue
- Passive and active ROM with certain combined movements of the shoulder, such as abduction and external rotation (e.g. doing ones hair, reaching for a seatbelt overhead) or extension and internal rotation (e.g. reaching for a back pocket or bra strap)
- Impingement (Neer and Hawkins-Kennedy) and topographic tests complemented, as needed, by instability tests, labrum tests and special tests.
- Cervical spine examination as well as neurologic and vascular examinations

### *Integrated Treatment Plan (Chronic)*

**Frequency: 2-3 visits/week**

Treatment approach is driven by the area of complaint and associated symptoms of pain and functional limitations. Therapists must determine diagnosis and overall treatment plan based upon patient observation and clinical judgment. This protocol addresses chronic upper limb complaint and the recommended frequency of treatment is 2-3 visits/week until function improves. Standard functional activities should be included. Perform activities while the 5002 electrode or the Flexible Array is attached to the patient.

**CPT Codes:** 97110/97530-Therapeutic procedure/activities; 97112-Neuromuscular reeducation; 97535-Self-care/home management; 97032- Attended Interactive neurostimulation;

*Refer to InterX Training Guides for further treatment frequency, duration and stimulation setting guidelines. Treatment approach will be modified for acute conditions.*

### *Interactive Therapy BASICS*

- Record patient history relating to the complaint, specifically seeking complicating and/or related chronic factors
- Stimulation intensity should remain **COMFORTABLY** strong
- **Vary the stimulation setting** throughout the Treatment Plan
- Pain AND **AS** will present in different locations throughout treatment and visits --- **follow the patient and body responses**

**AS** Low impedance  
"Active Sites"

**SCAN → TARGET → DYNAMIC**

### *Functional Measurement Tools*

The following measurement tools can be used to objectively demonstrate functional improvements in patient status and will enhance documentation requirements to support communication and reimbursement efforts.

DASH inventory  
SPADI (Shoulder Pain & Disability Index)

OPTIMAL (APTA)  
American Shoulder and Elbow Society Scoring System (ASES)

Brief Pain Questionnaire w/ Function

### *Similar or Related Conditions*




Cervical radiculopathy  
Shoulder peri-arthritis  
Heterotopic ossification


Rotator cuff tendonitis  
Adhesive capsulitis  
Hemiplegia Shoulder

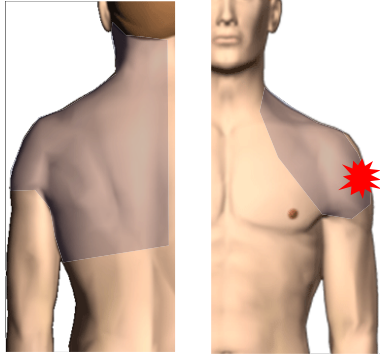
Subacromial impingement syndrome  
Thoracic outlet syndrome  
Traumatic Brachial Plexopathy



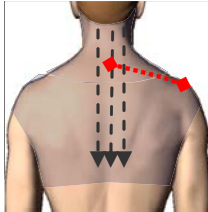
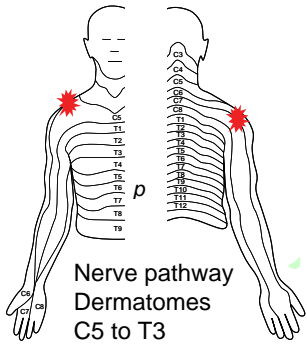
## InterX 5002 Protocol

**Setting:**  60  240\*   
**Duration:** 20 minutes

- 1 10 min** Slowly **SCAN** shoulder region related to complaint of pain and/or dysfunction. Notice the **SCAN** area is larger than the area of complaint, it is important to **SCAN** a large enough area to identify significant "Active" sites. (AR  value, drag, sound, patient sensation, redness)



**SCAN Options**  
 Vary **SCAN** area based upon treatment response and patient report at each visit

Cervico-thoracic Region and Spinal Root  
 Note: InterX stimulation can be applied directly over the spine


Nerve pathway Dermatomes C5 to T3

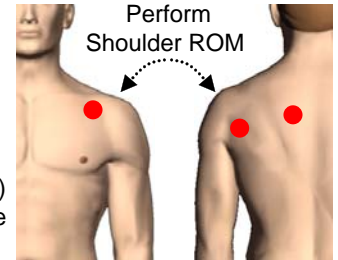
- 2 5 min** **TARGET** "Active" Sites  
 Typically body will respond more strongly to 3-5 sites  
 Focus on areas with greatest response.  
 Point-stim and paint in 4 directions.







- 3 5 min** **DYNAMIC**     **Setting:**  90-360   30-120

Direct patient through **range of motion and functional activities** observing the nerve and kinesthetic pathway(s) that elicit the pain and/or dysfunction

Treat any elicited points of discomfort () for 30 seconds and then re-test. Continue for 5 minutes total.



## Flexible Array Protocol

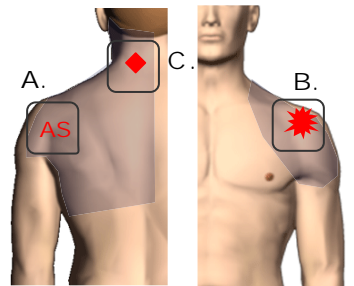
**Scan setting:**  60  240\*   
**Flex Array:**  Cyc 2   Cyc 3  
**Duration:** 20-30 minutes

- 1 5 min** **SCAN** related areas as described above. Identify primary "Active" sites for further treatment based upon greatest complaint or response to stimulation at rest or movement

- 2 20 min** InterX with the Flexible Array provides the ability to complete **TARGET & DYNAMIC** at the same time. Select one or two Flexible Array placements based upon therapy activities to be completed. Flexible Array can be used while performing exercise or therapist guided activities and/or interventions per the treatment plan. Recommended Flexible Array placements:




- A. Primary "Active" Sites identified during **SCAN**
- B. Primary **point of pain** at rest or functional activities
- C. Spinal root related to primary pain

Note: Secondary sites within the **SCAN** area that are related to the pain or limitation of function may also be treated.



Dual Flex Array may be placed anterior and posterior



- 3 5 min** **Finish** treated area(s) in **Setting:**  30-120. Slide the InterX 5002 electrodes in four directions  over the area treated under the Flexible Array. Finish  other key points where the patient reports continued pain or limitations.

**SCAN → TARGET → DYNAMIC**