

## Rehabilitation Protocol

### Neurolysis of Long Thoracic Nerve for Scapular Winging

<b>Phase 1</b>	Regaining range phase (1 – 3 weeks)
<b>Aims</b>	Restore shoulder range of motion Restore normal scapulothoracic joint range Restore normal posture Restore normal breathing patterns
<b>Precautions</b>	ROM exercises are gentle active or active assisted. Avoid strenuous activity No sling required Respect wound healing
<b>Treatment</b>	<ul style="list-style-type: none"> <li>• Introduce postural awareness</li> <li>• Deep breathing exercises</li> <li>• Active range of shoulder motion if no scapular dyskinesis (Use active assisted if scapular dyskinesis present)</li> <li>• Techniques can be used to restore normal flexibility of tissues/joints causing structural limitations (for example SC and ACJ mobilisation, release of subclavius etc. if necessary)</li> <li>• Early kinetic stability exercises without resistance. Closed chain can be used in non-(arm)-weight bearing positions.</li> </ul>

<b>Phase 2</b>	Early strengthening phase (3-6 weeks)
<b>Aims</b>	Regain and improve scapular muscular strength Scar tissue management and scar mobility Kinetic chain stability Maintain proper shoulder alignment
<b>Precaution</b>	Guard against pathogenic activity
<b>Treatment</b>	<ul style="list-style-type: none"> <li>• Active scapular stabilisation exercises</li> <li>• Kinetic chain stability work</li> <li>• Restore scar mobility</li> <li>• If scar sensitive – desensitise program</li> <li>• Progress shoulder program strength</li> <li>• Proprioception and neuromuscular control</li> <li>• Electrotherapeutic modalities: biofeedback electromyography or NMES can be introduced depending on therapist and patient choice</li> </ul>

<b>Phase 3</b>	Progressive scapular strengthening Phase (6 weeks onwards)
<b>Aims</b>	Increase strength power and endurance of scapular musculature and kinetic chain Gradually initiate sport activity
<b>Treatment</b>	<ul style="list-style-type: none"> <li>• Proprioception and neuromuscular control drills</li> <li>• Scapular muscle function</li> <li>• Diagonal PNF patterns, with proximal stabilization</li> <li>• Scapular retractors, posterior tilt, and upward rotation with resistance.</li> <li>• Introduce upper limb weight bearing</li> <li>• Introduction of weights to upper limb strength program if indicated</li> </ul>
<b>Other</b>	Sport specific or work simulated rehabilitation program