

APPENDIX 1.

Post – Hydrodilataion Treatment Plan

Rehabilitation Guidelines

1. Application of moist heat prior to massage.
2. Stretching: The duration of stretching varies depending on the joint response and the ratio of capsular versus muscular restriction. Stretching is commenced as a five second hold. It may be progress up to holds of 60 seconds if there is no aggravation of symptoms. Each stretch is repeated 10 times. Stretching is ceased if symptoms are aggravated.
3. Joint mobilisation aims to centre the humeral head whilst the physiological motion is applied⁵¹. Mobilisation are performed at the end range of each movement. They are sustained from between five to 60 seconds depending on the patient's response.
4. Strengthening commences with isometric scapula setting and is progressed to isotonic concentric and eccentric scapula and rotator cuff exercises, as appropriate. Endurance repetitions are usually utilized (20 repetitions / up to three sets) but the dosage is determined by muscle fatigue and scapula and humeral head positional control. Care is taken to ensure that loading does not exacerbate rotator cuff or joint symptoms.
5. A home exercise program is performed multiple times daily: three times a day for stretching exercises and two times a day for strengthening

Hands on physiotherapy guidelines

Time post Hydrodilataion	Type of technique	Details of technique
3 days post HD	<ul style="list-style-type: none">○ Heat○ Massage○ Mobilisation	<ul style="list-style-type: none">○ Hot pack applied to the shoulder○ Massage to Supraspinatus, Infraspinatus, Teres Minor, Subscapularis & Biceps muscle bellies○ Posterioinferior or posterior glides of the glenohumeral joint
1 week post HD	<ul style="list-style-type: none">○ Mobilisation	<ul style="list-style-type: none">○ Progress posterior glides by concurrently stretching into physiological range○ Into external rotation at 0° abduction and progress into higher ranges as tolerated
2-3 weeks post HD	<ul style="list-style-type: none">○ Mobilisation	<ul style="list-style-type: none">○ Into extension
3-4 weeks post HD	<ul style="list-style-type: none">○ Mobilisation	<ul style="list-style-type: none">○ Into horizontal flexion in lower rages (0-45°), in combination with posterior glide
4 weeks onwards	<ul style="list-style-type: none">○ Stretches○ Mobilisation	<ul style="list-style-type: none">○ Posterior capsular stretch○ Into horizontal flexion at 90°○ Into internal rotation at varying degrees of abduction with posterior glide○ Into hand behind back position
6 weeks onwards	<ul style="list-style-type: none">○ Stretches	<ul style="list-style-type: none">○ Inferior capsular stretch with scapula stabilised
	Individual programs modified and continued until maximum range of motion is achieved or plateaued, functional strength requirements are achieved, depending on the individual's functional, occupational and sporting requirements	

Home exercise guidelines

Time post Hydrodilataion	Type of exercise	Details of exercise
3 days post HD	<ul style="list-style-type: none"> ○ Mobilising ○ Strengthening 	<ul style="list-style-type: none"> ○ Assisted flexion and external rotation with a stick at 0° (in supine) ○ Extension with a stick (in standing) ○ Progress into horizontal adduction behind the back and hand up the back (in standing) ○ Isometric scapular stabilising exercises according to individual pattern of scapular asymmetry
1 week post HD	<ul style="list-style-type: none"> ○ Mobilising 	<ul style="list-style-type: none"> ○ External rotation into greater degrees of abduction (supine) ○ Assisted flexion, extension, horizontal adduction in front or behind the back in the lower ranges of flexion and extension (in standing)
2-3 weeks post HD	<ul style="list-style-type: none"> ○ Mobilising ○ Strengthening 	<ul style="list-style-type: none"> ○ Assisted hand behind back (standing) ○ Resisted extension, external rotation, shoulder shrugs in lower ranges of abduction (in standing or sidelie) ○ Wall push-ups (in standing)
3-4 weeks post HD	<ul style="list-style-type: none"> ○ Stretches ○ Strengthening ○ Stretches 	<ul style="list-style-type: none"> ○ Into horizontal flexion at 0 and 45° of flexion ○ Progress resistance of external rotation strength work ○ Incorporate deltoid and internal rotation strength work
4 weeks onwards	<ul style="list-style-type: none"> ○ Stretches ○ Strengthening 	<ul style="list-style-type: none"> ○ Posterior capsule in higher ranges of flexion ○ Internal rotation in 45° and 90° abduction ○ External rotation, horizontal extension and scapular stabilising progressed into higher, more functional ranges of abduction

3 days post HD

Supine – assisted active flexion & external rotation with a stick at 0 degrees.

Standing – extension with a stick, progress into horizontal adduction behind the back & hand up the back (only as tolerated, do not sustain the hold).

Isometric scapula stabilising exercises according to individual pattern of scapula asymmetry (usually depression, but may require elevation or medial glide).

1 week post HD

Supine – external rotation into greater degrees of abduction (as tolerated)

Standing – flexion, extension, horizontal adduction in front & behind the back in lower ranges of flexion & extension (as tolerated) either with a stick or with assistance of the other arm.

2-3 weeks post HD

Standing – assisted hand behind back (watch for any increase in biceps pain).

Strengthening – resisted extension, external rotation, shoulder shrugs in lower ranges of abduction (usually performed in standing or sidelying). Wall push ups may commence.

3 – 4 weeks post HD

Supine – horizontal flexion stretches at 0 and 45 degrees of flexion.

Strengthening – progress resistance of external rotation strength work, incorporate anterior deltoid and internal rotation strength work as assessment determines deficit.

4 weeks onwards

Supine – stretches for posterior capsule in higher ranges of flexion and for internal rotation in 45 and 90 degrees of abduction.

Strengthening – external rotation, horizontal extension and scapula stabilization progressed into higher more functional ranges of abduction.