

5.4 SCORE Recommendations for Upper Limb and Shoulder Best Practice Recommendation 5.4.1 (SCORE, New for 2010)

Management of the Arm and Hand

Therapeutic Goal: Improved arm and hand skill for independence

- i. Exercise and functional training should be directed towards enhancing motor control for restoring sensorimotor and functional abilities. [Evidence Levels: Early – Level A; Late – Level A].
- ii. Engage in repetitive and intense use of novel tasks that challenge the patient to acquire necessary motor skills to use the involved limb during functional tasks and activities [Evidence Levels: Early – Level A; Late – Level A].
- iii. The Upper extremity program should include strength training to improve impairment and function after stroke for upper extremity. Spasticity is not a contra-indication to strength training³⁷⁴ [Evidence Levels: Early - Level A; Late - Level A].
- iv. Therapists should provide a graded repetitive arm supplementary program for patients to increase activity on ward and at home. This program should include strengthening of the arm and hand (small wrist weight, putty, hand gripper), range of motion (stretching, active exercises), and gross, fine motor skills (e.g., blocks, Lego, pegs), repetitive goal and task oriented activities designed to simulate partial or whole skill required in activities of daily living (e.g. folding, buttoning, pouring, and lifting). The GRASP protocol suggests one hour per day, six days per week³⁷⁵ [Evidence Levels: Early-Level A; Late-Level C].
- v. Following appropriate cognitive and physical assessment, mental imagery should be used to enhance sensory-motor recovery in the upper limb [Evidence Levels: Early-Level A; Late-Level B].
- vi. Functional Electrical Stimulation (FES) should be used for the wrist and forearm to reduce motor impairment and improve functional motor recovery [Evidence Levels: Early-Level A; Late-Level A].
- vii. Intensive Constraint Induced Movement Therapy (CIMT) should not be used for individuals in the first month post stroke until further research is completed [Evidence Levels: Early-Level A; Late-N/A].
- viii. Consider the use of intensive CIMT for a select group of patients who demonstrate at least 20 degrees of wrist extension and 10 degrees of finger extension, with minimal sensory or cognitive deficits. Intensive training should involve restraint of the unaffected arm for at least 90 percent of waking hours, and at least six hours a day of intense upper extremity training of the affected arm for two weeks [Evidence Level: Between 3 and 6 months-Level A; Late-Level A].
- ix. Consider the use of modified CIMT for a select group of patients who demonstrate at least 20 degrees of wrist extension and 10 degrees of finger extension, with minimal sensory or cognitive deficits. Modified CIMT consists of constraint of the unaffected arm with a padded mitt or arm sling for a minimum of six hours a day with two hours of therapy for fourteen days [Evidence Levels: Early- Level A; Late- Level A].
- x. EMG biofeedback systems should not be used on a routine basis. (adapted from RCP) [Evidence Levels: Early- Level A; Late- Level A].
- xi. For patients whose arm and hand are predicted to be less than stage three as measured by the Chedoke-McMaster Stroke Assessment,³⁷⁶ enhance sensory-motor recovery of the upper limb by using sensory motor stimulation [Evidence Levels: Early- Level B; Late- Level B]. This consists of passive and active-assisted range of movement that also includes placement of the upper limb in a variety of positions within the patient's visual field (Adapted from HSFah 1.2a) [Evidence Levels: Early-Level C; Late Level C].
- xii. There is insufficient evidence to recommend for or against neurodevelopmental treatment in comparison to other treatment approaches for motor retraining following an acute stroke [Evidence Levels: Early-Level B; Late Level B].

¹Canadian Stroke Strategy. Canadian Best Practice Recommendations for Stroke Care Update 2010

Appendix A: Score Recommendations¹

<ul style="list-style-type: none"> xiii. Use adaptive devices for safety and function if other methods of performing specific tasks are not available or cannot be learned [Evidence Levels: Early- Level C; Late Level C]. xiv. Assess the need for special equipment on an individual basis. Once provided, equipment should be re-evaluated on a regular basis. [Evidence Levels: Early-Level C; Late-Level C].
<p>Best Practice Recommendation 5.4.2 SCORE, New for 2010 Range of Motion and Spasticity in the Shoulder, Arm and Hand</p>
<p><i>Therapeutic Goal: Maintain Range of Motion and Reduce Spasticity in the Shoulder, Arm and Hand</i></p> <ul style="list-style-type: none"> i. Spasticity and contractures should be treated or prevented by antispastic pattern positioning, range-of-motion exercises, stretching and/or splinting [Evidence Levels: Early-Level C; Late-Level C]. ii. For patients with focal and/or symptomatically distressing spasticity, consider use of chemodenervation using Botulinum toxin to increase range of motion and decrease pain [Evidence Levels: Early-Level C; Late-Level A]. iii. Consider use of tizanidine for spasticity in patients with generalized, disabling spasticity resulting in poor skin hygiene, poor positioning, increased caregiver burden or decreased function [Evidence Levels: Early-Level C; Late-Level B]. iv. Recommend against prescription of benzodiazepines during stroke recovery period due to possible deleterious effects on recovery, in addition to deleterious sedation side effects [Evidence Levels: Early-Level B; Late-Level B].
<p>Best Practice Recommendation 5.4.3 SCORE, New for 2010 Management of Shoulder Pain following Stroke</p>
<p><i>Therapeutic Goal: Maintain Pain Free Shoulder and Arm</i></p> <p>5.4.3.1 Assessment and Prevention of Shoulder Pain</p> <ul style="list-style-type: none"> i. The presence of pain and any exacerbating factors should be identified early and treated appropriately [Evidence Level C]. ii. Joint protection strategies include: <ul style="list-style-type: none"> a. Positioning and supporting the limb to minimize pain [Evidence Level B]. b. Protection and support for the limb to minimize pain during functional mobility tasks using slings, pocket, or by therapist and during wheelchair use by using hemi tray or arm troughs)[Evidence Level C]. c. Teaching patient to respect the pain. [Evidence Level C]. iii. Overhead pulleys should not be used [Evidence Level A]. iv. The shoulder should not be passively moved beyond 90 degrees of flexion and abduction unless the scapula is upwardly rotated and the humerus is laterally rotated [Evidence Level A]. v. Educate staff and caregivers about correct handling of the hemiplegic arm [Evidence Level A].
<p>5.4.3.2 Management of Shoulder Pain</p> <ul style="list-style-type: none"> i. Treat Shoulder pain and limitations in range of motion through gentle stretching and mobilization techniques focusing especially on external rotation and abduction [Evidence Level B]. ii. Reduce hand edema by: <ul style="list-style-type: none"> a. Active self-range of motion exercises in conjunction with elevation [Evidence Level C] to gain full range of movement of the fingers, thumb and wrist.

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Appendix A: Score Recommendations¹

<ul style="list-style-type: none">b. Retrograde massage [Evidence Level C].c. Gentle grade 1-2 mobilizations for accessory movements of the hand and fingers [Evidence Level C].d. Cold water immersion (Level B) or contrast baths [Evidence Level C]. <ul style="list-style-type: none">iii. Consider using FES to increase pain free range of motion of lateral rotation of the shoulder [Evidence Level A].iv. Consider use of acetaminophen or other analgesics for pain relief [Evidence Level C].v. Consider the use of botulinum toxin injections into subscapularis and pectoralis muscles for individual with hemiplegic shoulder pain [Evidence Level C].
<p>5.4.3.3. Assessment and Management of Complex regional pain syndrome (Also known as shoulder-hand syndrome, Reflex sympathetic Dystrophy, Sudecks atrophy)</p> <ul style="list-style-type: none">i. A bone scan may be used to assist diagnosis of this condition [Evidence Level C].ii. Oral corticosteroids in tapering doses may be used to reduce swelling and pain due to this condition [Evidence Level B].
<p>5.5 SCORE Recommendations for Lower Limb and Gait Best Practice Recommendation 5.5.1 SCORE, New for 2010 Lower Limb Mobility and Transfer Skills</p>
<p><i>Therapeutic Goal: Improve Basic Mobility and Transfer Skills</i></p> <ul style="list-style-type: none">i. Task-oriented Training (i.e. Training that is progressively adapted, salient, and involves active participation) is recommended to improve transfer skills and mobility [Evidence Levels: Early-Level C; Late-Level C].ii. Task-oriented training consisting of an extra 11 to 13 reps/days of sit-to-stand practice with eyes open and minimal use of arm support should be included in the patient's therapy program [Evidence Levels: Early-Level A; Late-Level C].iii. Spasticity should not limit the use of strength training in the leg [Evidence Levels: Early-Level C; Late-Level C].iv. Assess the need for special equipment on an individual basis. Once provided, equipment should be evaluated on a regular basis [Evidence Levels: Early-Level C; Late-Level C].v. Ankle foot orthoses may help some patients with foot drop; they should not be used routinely without proper assessment prior to prescription and follow-up to establish their effectiveness in the individual [Evidence Levels: Early-Level A; Late-Level A].vi. Lower extremity orthotic devices may be helpful if ankle or knee stabilization is needed to help the patient walk. Prefabricated bracing can be used initially, and more expensive customized bracing reserved for patients who demonstrate a long-term need [Evidence Levels: Early-Level C; Late-Level C].vii. Functional electrical stimulation (FES) should be considered for use in improving muscle force, strength and function (gait) in selected patients. Functional electrical stimulation must not be assumed to have sustained effects [Evidence Levels: Early-Level A; Late-Level A].viii. There is insufficient evidence to recommend for or against neurodevelopmental therapy (NDT) in comparison to other treatment approaches for motor retraining following an acute stroke [Evidence Levels: Early-Level B; Late-Level B].ix. Recommend that wheelchair prescriptions be based on careful assessment of the patient and the environment in which the wheelchair will be used [Evidence Levels: Early-Level C; Late-Level C].

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**Best Practice Recommendation 5.5.2 SCORE, New for 2010
Lower Limb Spasticity Following Stroke**

Therapeutic Goal: Maintain Range of Motion and Reduce Spasticity of the Leg

- i. Spasticity and contractures should be treated or prevented by antispastic pattern positioning, range-of-motion exercises, stretching and/or splinting. (SCORE) [Evidence Levels: Early-Level C; Late-Level C].
- ii. For post-acute stroke patients with focal and symptomatically distressing spasticity consider use of chemodenervation using botulinum toxin injection to increase range of motion. [Evidence Levels: Early-Level C; Late-Level A].
- iii. Consider use of tizanidine in patients with generalized spasticity. [Evidence Levels: Early-Level B; Late-Level B].
- iv. Recommend against prescription of benzodiazepines during stroke recovery period due to possible deleterious effects on recovery, in addition to deleterious sedation side effects. [Evidence Levels: Early-Level C; Late-Level C].

**Best Practice Recommendation 5.5.3 SCORE, New for 2010
Lower Limb Gait following Stroke**

Therapeutic Goal: Improve Walking Ability and Speed

- i. Task-specific training is recommended to improve performance of selected tasks for the lower extremity [Evidence Levels: Early-Level B; Late-Level B].
- ii. Consider Treadmill based Gait training (without body support) to enhance walking speed, endurance, and walking distance in persons post stroke. Treadmill training is suggested for 30 min, five days per week for two to three weeks [Evidence Levels: Early-Level C; Late-Level B].
- iii. There is no conclusive evidence that body weight supported treadmill training (BWSTT) is superior to over ground training to enhance walking abilities. BWSTT could be considered when other strategies for walking practice are unsuccessful in those patients with low ambulatory function [Evidence Levels: Early-Level B; Late-Level B].
- iv. Following appropriate medical evaluation, patients should participate regularly in an aerobic exercise program that takes into consideration the patient's co-morbidities and functional limitations, to improve gait speed, endurance, stroke risk factor profile, mood and possibly cognitive abilities [Evidence Levels: Early-Level B; Late-Level B].

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