



The Development of Post-Operative Rehabilitation Protocols for the Workers' Compensation Board of British Columbia

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Abstract:
Background: The Workers' Compensation Board of British Columbia (WCB of BC) spends over \$ 200 million annually on healthcare related payments for injured worker assessments, diagnostics, treatments and rehabilitation services. About 25% of this cost is rehabilitation related. These rehabilitation services have been contracted out to various external rehabilitation providers. In order to provide a standardized approach to post-operative rehabilitation treatment, the Evidence Based Practice Group at the Clinical Services Department of the WCB of BC has been developing post-operative rehabilitation guidelines.
Objectives: To provide involved practitioners and the WCB of BC staff with post-operative treatment plans and outcome evaluation.
Methods: The guideline topics are chosen based on the frequency of the operative procedure being undertaken on injured workers with an accepted claim at the WCB of BC. The development of the guidelines is undertaken using the systematic review principles of evidence based medicine. Draft guidelines are then distributed to medical/surgical specialists and rehabilitative professionals for evaluation of content validity. Professional associations are also asked for their input and endorsement. Final guidelines are posted on the WCBBC intranet and internet websites.
Results: To date 13 post-operative rehabilitation guidelines have been developed. All of these guidelines are considered as Level 3 - 5 evidence (Canadian Task Force on Periodic Health Examination). Four of the guidelines, including ankle ligament reconstruction, achilles tendon repair, calcaneal ligament repair with tendon grafts, single level discotomy, are still in the consultation process. Nine of the guidelines, including carpal tunnel release, rotator cuff repair, acromioplasty, simple and complex meniscectomy, wrist arthroscopy, open wrist capsule-ligamentous repair and simple hemiorthoplasty, have been disseminated. These nine guidelines will be presented at this meeting.

Background:
 •The Workers' Compensation Board of British Columbia (WCB of BC) spends over \$ 200 million annually on healthcare related payments for injured worker assessments, diagnostics, treatments and rehabilitation services.
 •About 25% of this cost is rehabilitation related. Recently, these rehabilitation services have been contracted out to various external rehabilitation providers.
 •In order to provide a standardized approach to post-operative rehabilitation treatment, the Evidence Based Practice Group at the Clinical Services Department, Program Design Division of the Workers' Compensation Board of British Columbia has been developing post-operative rehabilitation guidelines.

Methods: continued
 •Professional associations, such British Columbia Medical Association, Physiotherapy Association of BC, are also asked for their input and endorsement.
 • Final guidelines are posted on the WCBBC intranet and internet websites
 (http://www.worksafebc.com/for_health_care_providers/post-operative_rehabilitation_guidelines/Default.asp).

Results:
 •These guidelines are intended for Compensation Services and Clinical Staff as general guides for the direction, timing and expected outcomes for post-surgical rehabilitation injured workers seen through the Visiting Specialists Clinic at the (WCB of BC). However, deviations from these guidelines may occur based on the specifics of individual cases and surgeon preference.

Objectives:
 •To provide involved practitioners and the WCB of BC staffs with post-operative treatment plans and outcome evaluation.

Methods:
 •The guideline topics are chosen based on the frequency of the operative procedure being undertaken on injured workers with an accepted claim at the WCB of BC.
 •The development of the guidelines is undertaken using the standard systematic review principles of evidence based medicine.
 •Draft guidelines are then distributed to medical or surgical specialists and rehabilitative professionals for evaluation of content validity.

Phases	Rehabilitation	Goals	Notes
Phase 1: (Week 1) Immediate Post-op Or Initiation of Formal Therapy	Use Hand / Upper extremity in splint or post-dressing Suture removal – 7-10 days Patient Education Rest, Ice, Compression, Elevation Therapy Program – (Home exercises – x3 / day) •Full Active/Passive ROM Exercises Shoulder, Elbow •Cream, Finger and Thumb Active/Passive ROM and Tendon and Nerve Gliding exercises •Painfree Active wrist. Wrist splint to be worn at night and as required during the day.	Clinical Goals: Full Active / Passive ROM Limited swelling and no pain at rest Functional Goals: Endoscopic procedures may not require protective splinting during the day or night. do most clean, dry, personal care do light household activities	Caution with progressing wrist mobility exercises past functional limits and with introducing axial loading / gripping or pinching activities when the wrist is not in a neutral position.
Phase 2: (Weeks 2 and 3) Controlled Mobilization and Functional Re-activation	All painfree lifting (< 20 lbs.) Minimally gripping / pinching and carrying household activities as tolerated. Scar care as needed. Therapy Program – (Home exercises – x3 / day): •Active ROM Wrist only past functional limits as tolerated. •Gentle, passive painfree and client controlled ROM to functional limits •Light Resisted – Outer Range Grip and Pinch Strengthening Exercises as tolerated. •Progressive Resisted Isometric Wrist Strengthening Exercises •Pain and swelling control as needed •Initiate desensitization or sensory re-education Wrist Splint as needed	> 50% Contra-Lateral side or Pre-op wrist lift < 50% Contra-Lateral side or Pre-op wrist lift Grip and Pinch Strength Independent with light to moderate level (< 20 lbs) lift, grip with functional ROM. Tolerance likely limited to < 2 hours. Ready for early G/M RTW RTW secondary or light job CONTINUED	

Phase 3: (Weeks 4 to 8)	Phase 4: (Weeks 9 to 14)	Phase 5: (14 weeks – 9 months)
Graduated Strengthening and Functional Reactivation Just L2x Early G/M RTW	Transfer to Other WCB of BC Sponsored Rehabilitation Program	Maximal Medical Improvement
Splint – As required at night only Use Hand and Upper extremity lifting (up to 40 lbs.) gripping / pinching and carrying household activities Therapy Program – (Home exercises – x3 / day): •Progressive Passive ROM Wrist beyond Functional Mobility only as tolerated. •Progressive Resisted – Inner Range Grip and Pinch Strengthening Exercises •Progressive Resisted Isometric and Eccentric Wrist Strengthening Exercises. •Progressive Workplace Specific Functional Re-activation	•Ongoing local treatment in therapy for the hand / wrist / upper extremity is usually not indicated after 8 weeks of therapy. Client should be able to continue with a home therapy program for regional tissue strengthening, ROM, desensitization, sensory re-education and self-management of symptoms and / or integrate their exercise program into a G/M RTW plan or Activity-related Soft Tissue Disorder treatment program or an Occupational Rehabilitation Program.	Further improvements depend on the client's ongoing compliance with home exercises and ongoing functional use of the affected upper extremity.
Clinical Goals: ROM – 75% contralateral side or pre-op wrist – 50 - 75% contralateral side Grip and Pinch Strength Functional Goals: Moderate level (< 40 lbs) lifting, gripping & carrying with functional wrist ROM Tolerance likely limited to < 4 hours Ready for G/M RTW if moderate level job demands. (If heavy job or workplace not able to accommodate, consider Occ Rehabilitation or Activity-related Soft Tissue Disorder treatment program)	Clinical Goals: – 75 – 100% contra-lateral side or pre-op wrist ROM > 75% contra-lateral side grip and pinch strength Functional Goals: Moderate or heavy level (> 40 lbs.) lifting, gripping and carrying activities Tolerance likely limited to < 6 hours Likely able to meet most workplace critical job demands	Not already within normal limits further limited improvements could be expected up until – 9 months post-surgery.
Caution with inner range gripping activities when the wrist is at extreme of mobility, pushing passive motion beyond functional / painfree limits, and introducing vibration and impact.	Gripping of hard objects, and exposure to significant vibration or high impact may continue to be specifically irritable for the recovering tissues / median nerve during this time period.	

Phases	Rehabilitation	Goals
Weeks 0-3:	•Arm sling x 3-7 days •Pendulum exercises immediately •Modalities for management of inflammation (as needed) •Educate re: anatomy, surgical technique, rehabilitation phases •Postural education and exercises •Active ROM elbow, wrist, hand •Pulley – Flexion •Passive ROM – in available ranges •By the end of 3 rd week: light resisted elbow, wrist, hand exercises	•Passive ROM: •90° flexion •30° External rotation
Weeks 4-6:	•Active Assisted ROM: External rotation, Flexion •Continue with Passive ROM •Start stretches, mobilizations •Modalities for management of inflammation, as needed •Scapular / humeral head stabilization •Light isometric Internal/External rotation exercises – progress later in phase to Theraband for Internal/External rotation •Progress to Active ROM (shoulder) •Propriceptive exercises (weight bearing through arm) •By week 6: progress to isotonic (in available range)	•Active ROM: •90° (with no compensation) •Passive ROM: •Full
Weeks 7-12:	•Continue with stretches, mobilizations •Progress isotonic exercises: •Internal/External rotation, scapular exercises, flexion, abduction, proprioceptive neuromuscular facilitation, general upper extremity strength exercises •NO military press, NO empty can exercises (supraspinatus) •Progress resisted exercises through ROM •Continue/progress resisted exercises •Start work simulation – carry, lift, push, pull •Focus on overhead strengthening and scapular stabilization	•Full Active/Passive ROM •Grade 4/5 strength •Near full function
Weeks 12-16:	•Further conditioning is required, consider referral to Occupational Rehabilitation Program	Full strength, maximize function
Weeks 16+:		

Special considerations:
 •Protocol is designed for a small rotator cuff repair
 •Pain splint will be longer for rotator repairs (24-48 weeks)
 •If recovery and progress is slow, keep exercises activities at or below shoulder level for a longer time
 •If Physiotherapy visit at 7-10 days post-op

References:
 •American Orthopaedic Association (Academy of Sports Medicine and Exercise Physiology Services), Bismark, North Dakota
 •Clinical Orthopaedic Rehabilitation, Ed. S. Brent Bratzman, Mosby-Year Book, Inc., 1996

Phases 00	Rehabilitation	Goals
Immediate motion phase (Post-op to 1 week):	•Sling w/ 4-7 days (as directed by the surgeon) •Slow wrist, hand ROM •Pendulum exercises •Modalities for inflammation, as needed •Education (re: anatomy, surgical procedure, rehabilitation phases, posture)	Rest, initiate movement, pain control
Intermediate phase (Weeks 2-6):	•Passive ROM •Active-assisted ROM: flexion, extension, Internal/External Rotation (at 0° abduction) •Active ROM •Strength: isometric (early) –> progress to submax isotonic •Scapular stabilizing exercises •Start proprioceptive neuromuscular facilitation •Modalities for inflammation, as needed	Active ROM: 130° elevation; 40° ER (at 0° abduction)
Dynamic strengthening phase (Weeks 7-12):	•Continue with Active, Active-assisted, Passive ROM, stretching •Work on Internal/External Rotation at 45° abduction –> progressing to 90° abduction •Continue with scapular stabilizing exercises	Full ROM, near normal strength (4/5)
Return to activity phase (Weeks 12-16):	•Functional activities / Return to work activities	•Full ROM, normal strength
Weeks 16+:	•If further conditioning is required, consider referral to Occupational Rehabilitation Program	•Maximize function

Phases	Rehabilitation	Goals
0-Week 1: •Maximum protection	•Weight bearing as tolerated (with crutches) x 3-4 days •Active and passive ROM (limit flexion up to 90°) •Petalar mobilizations •Foot and ankle exercises •Straight leg raise •Electrical muscle stimulation •Isometric quads, hamstrings, calf muscles •Modalities for inflammation, as needed •Educate re: anatomy, surgical procedure, rehabilitation phases •At 10 days, start pool – once wound is healed	•Control inflammation •Active and passive ROM: •Full extension •Flexion to 90°
Weeks 1-2: •Moderate protection	•By 7-10 days: Full weight bearing, no aids •Straight leg raise – all planes •Stretches/flexibility exercises •Closed kinetic chain exercises – lower extremity (up to 90° knee flex) •Start with support and progress to no support •Start resisted lower extremity exercise •Balance and proprioception – start weight bearing as tolerated •Cycling – no tension; gradually increase time •Once off crutches, start treadmill	•Full weight bearing •Full active ROM
Weeks 2-3: Minimum protection	•Continue with flexibility exercises: avoid extreme of flexion (i.e. crouch, squat) •Continue Closed kinetic chain for lower extremity: in weight bearing •Continue with Lower extremity resisted exercises •start mini squats (up to 90° flexion) •Balance, Bilateral, progress to unilateral •Stairmaster, Nordic Track •Precautions: no running, jumping, twisting, breast stroke	•Normal gait pattern •Strength 4/5
Weeks 3-4: Return to work/sport activities	•Continue with strength, functional, proprioceptive and endurance training •By 3-4 weeks – start jumping, light running •By 4-6 weeks: •If further conditioning and attention to functional capabilities/job demands is required, consider referral to Occupational Rehabilitation Program	Full strength Maximize function
Special Considerations: Brace to be worn at the surgeon's discretion		
References: Vander Scholten, J.L. Clinical Orthopaedics and Related Research, 262: 79-9, March 1990 Fritz, M., Frango, J.J., Heron, C.B. Rehabilitation following anterior medical transposition: a review of the literature and case study. J Orthop Sports Phys Ther, 24(2): 98-106, Aug 1996 Shorewood KD, Patel DV. Arthroscopic Rehabilitation after Meniscal Repair. Clin Sports Med, 14(3): 659-612, July 1996 Shim HJ, Binkiewicz RA, van Meesterhousen HF. Weight bearing time to step non-contrast of strength deficits after meniscectomy. Arch Phys Med Rehabil, 74: 271-6, March 1993 O'Donoghue DH. Meniscectomy: indicators and management. Phys Ther, 60(12): 1617-23, Dec 1980 Google 21: Post-operative management of meniscal tears. Physiotherapy 91(10): 109-110, Oct 1991 Leonard MA. Evaluation of Two post-meniscectomy regimes. Physiotherapy 6(14): 110-1, April 1975		

Copies of complete and other post-operative rehabilitation guidelines are available separately on this board. Please feel free to take it with you. These and subsequent guidelines can also be downloaded from:
http://www.worksafebc.com/for_health_care_providers/post-operative_rehabilitation_guidelines/Default.asp