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Metacarpal-Phalangeal Arthroplasty: A Post-Operative Approach

Lance Norman
University of North Dakota

Metacarpal-phalangeal Arthroplasty: A post-operative approach

By

Lance Norman, OTR/L, CHT

Janet Jedlicka, PhD, OTR/L: Advisor

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Janet A. Jedlicka

Faculty Advisor

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TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

Arthritis and its debilitating factors of pain and weakness affect 46 million Americans and limits activity in 17 million. It remains the leading cause of disability in the United States (National Center for Chronic Disease Prevention and Health Promotion, 2006). The disease further influences the function of the patient as it causes nearly one-third of those diagnosed to be unable to work after five years (Alderman, Chung, Kim, Fox & Ubel, 2003).

The primary categorization of arthritis is a systemic inflammation and disease that affects joints and surrounding tissues. It does not have a single factor regarding the cause however biological and genetic components are influential in its onset and progression. These changes occur at the cellular level including but not limited to the joint synovial lining and fluid. Degrading enzymes, synovial fibroblasts and lymphocytes also play into the degradation of the joint (Callahan, Mackin, Osterman, Skirven & Schneider, 2002).

The primary complaint of patient's suffering with arthritic changes are pain, loss of range of motion (ROM) and weakness all resulting in decreased function. Energy level also decreases further exacerbating the symptoms by decreasing active ROM capabilities. These multi-faceted aspects of arthritis are increased by the instability that results from the disease in the affected joints (Davidson, Doyle, Highton, & Markham, 2005).

The benefits of improving joint alignment, strength and decreasing pain are documented in many research and journal articles. The advancements in pharmaceutical and surgical techniques has also improved patients overall outcomes (Beckenbaugh, Cook, Klawitter, Linsheid & Redondo, 1999). The approach however from a therapy

standpoint has had little change in both the treatment and terminology used. The timelines and progression to active ROM and even more so function are limited to vague and generic terms that are antiquated. The most comprehensive treatment approach to date was developed by the Hand Rehabilitation Center of Indiana. This most likely relates to the influence and contributions of certified hand therapists and hand surgeons to the text (Beal et al., 2001; Callahan et, al., 2002). Thus the lack of a functionally based post-operative approach to joint replacement of the metacarpo-phalangeal (MCP) joint has prompted the need for further development of a program to address the limitations that currently exist.

The following scholarly project describes the Occupational Therapist's (OT) approach to the pre and post- operative treatment of the MCP joint replacement. The treatment protocol is based on the review of literature including pre-morbid deficits and function, wound and scar management and splinting. The program is designed to be integrated into the comprehensive treatment and education of the patient affected with arthritis involving the MCP's.

Chapter II

REVIEW OF THE LITERATURE

The diagnosis of arthritis and the pain associated with it create a challenge for the practicing OT and multidisciplinary team members who treat this destructive disease. The challenge is further exacerbated by the lack of consistent terminology and approach in the protocol language between the individual disciplines providing care to the patient. These discrepancies serve to limit the potential outcomes of the patient. The lack of occupation based terminology including activities of daily living create a barrier in instruction of exercise, precautions and contra-indications with the patient (Harkin, Kirwan, & Tooth, 2002). The vague use of the terms light, appropriate and moderate activity can evoke a variety of negative responses and non-compliance issues with the patient. This may also create an unconscious non-compliance with patients resulting in limited end ROM and functional performance of the limb (Alderman, Chung, Demonner, Hayward, & Spilson, 2002). Confusion over post-operative terminology and the need for clarity on what is meant by occupational based treatment in all aspects of rehabilitation is the focus of this scholarly project.

The following literature review describes the prevalence and etiology of the disease process of osteoarthritis (OA) and rheumatoid arthritis (RA). Aspects of rehabilitation and prevention are also described. It includes a discussion of current therapeutic and surgical interventions and specifically describes factors affecting recovery after surgery. These factors include the current approaches physicians and

therapists use in rehabilitation to describe functional outcomes and measure improvements.

According to the Center of Disease Control (2006) 20 million individuals in the United States are diagnosed with arthritis by their health-care provider. By 2030, 20 percent or 70 million people will pass their 65th birthday placing them at a greater risk for arthritis related deficits (Center for Disease Control, 2006). The incidence of arthritis is overall 0.3 to 1.5% in North America (Callahan et al., 2002). Arthritis in and of itself encompasses an array of statistical data and research that at times focuses heavily upon the pharmaceutical and surgical control of the disease while failing to address the occupational performance areas such as daily activity affected by the disease and the various interventions. Much has been learned from the standpoint of the disease process including its effects on the various tissue components including joint degradation, joint instability and pain (Callahan et al., 2002; Hills & Thomas, 1998).

The impact that arthritis has upon the patient is documented from a variety of factors. Studies have been completed to determine the effects including functional status (Aliabadi et al., 2002), compliance in hand therapy programs (Harkin et al., 2002), and a variety of post-operative responses. These studies have furthered the evidence that a uniform comprehensive approach to the post-operative care of the MCP is necessary.

The term arthritis encompasses many types of what are considered systemic diseases primarily affecting the articular cartilage and connective tissue (Hills & Thomas, 1998). These include lupus, gout, rheumatoid, osteo and psoriatic arthritis. For the

purposes of this scholarly project, the focus of the following post-operative metacarpal phalangeal (MCP) rehabilitation program will be limited to OA and RA. Pharmaceutical and surgical advances have greatly changed over the last 20 years yet the post-operative rehabilitation has changed very little (Hills & Thomas, 1998). This is also reflected in many articles of post-operative follow-up including the findings of Miehlke, Schmidt, Willburger, and Witt (1999) indicating a marginal overall increase in the active ROM in a ten year follow-up. The primary focus has been reduction of pain and addressing aspects of function has been secondary. This further exemplifies the need for a greater consistency in the post-operative approach to MCP arthroplasties.

Osteoarthritis is a disease based on changes in the joints of the body. Its primary effect is deterioration of the joint surface and new bone formation in the form of osteophytes. The joint changes are caused by metabolic, systemic, and traumatic influences. Hyper- mobility may serve as a catalyst to the onset of OA (Callahan et al., 2002). OA is more prevalent in females and research suggests that this may be associated with hormonal differences (Hallert, Hass, Skargen, Skogh, & Thyberg, 2003). Age factors also influence the disease, often with early signs and symptomology occurring in the distal interphalangeal joints (DIP's). The effects of OA are typically localized in and around the joints and this is termed intra and extra-articular. The primary disease has relatively little inflammation however a secondary peripheral inflammation can be found in surrounding tissue. The joint changes alter the axis and fulcrum biomechanics and create intra and extra-articular instability and pain that reduce strength, ROM, and functional performance (Callahan et al., 2002).

The diagnosis of OA is classified as primary and secondary. Primary OA is localized to the joint surface. The secondary form is more erosive in nature and affects the synovium and creates joint erosion. It often is a response to trauma, hyper mobility, infection and other diseases (Callahan et al., 2002). Also the ability to perform functional tasks such as self-feeding or vehicle operation by the individual with OA is limited secondary to crepitus (joint noise and pain), triggering or adherence of tendons, loss of active and passive joint range of motion (AROM/PROM) and overall pain usually localized to the joint.

Rheumatoid arthritis is chronic in nature and more systemic through the body than OA. Women have a greater incidence than men and the typical onset usually occurs between 20-60 years of age (Callahan et al., 2002). The deficits associated with RA affect 2.1 million Americans and hand deficits are present in 70% of the population (Alderman et al., 2002). The current etiology of RA indicates that the early effects include decreased blood supply to the synovium and swelling of the endothelium. Synovium is a 1-2 cell thick membrane that provides lining and protection to the joint capsule (Callahan et al., 2002). There are two types of cells that are present in the synovium. Type A cells are a derivative of bone marrow while type B cells have a synthetic function that creates a lubricating component to the joint. An increase in the joint size is associated with the increase in cell layers secondary to the infiltration of hypertrophic cells. Lymphocytes and neutraphils also invade the joint capsule and create a matrix of damaging enzymes (Callahan et al., 2002). Protoglycan concentration in the joints is reduced and creates depletion in the force absorbing ability of the joints leading to mechanical deformation.

Over time these effects worsen and eventually include bone, ligaments, tendon and muscle (Hills, & Thomas, 1998). Its overall effect on the synovium is the driving factor in it's debilitating effect on the patient and predominant ulnar drifting that occurs in the MCP's. Early signs and symptomology of RA include sudden onset of joint swelling and inflammation (Callahan et al., 2002). Typically these changes present in the MCP and proximal interphalangeal (PIP) joints of the hands. The signs are often symmetrical and the joints take on an enlarged appearance in the form of hypertrophic synovial lining called pannus. In RA histological changes occur primarily in the connective tissue but also have general musculoskeletal involvement. The primary inflammatory condition includes joint destruction and systemic break down of the connective tissue leading to pain, joint and soft tissue instability and loss of functional performance (Alderman et al., 2002).

Both OA and RA progress in stages. These stages are based on the level of joint involvement including instability and radiographic changes being the determining factors. The treatment options continue to rise including pharmacological and surgical interventions and research on arthritis tends to focus on the advancements in technique and pharmaceuticals from a physician standpoint (Kerschbaumer, Porch, Rittmeister, & Starker, 1999). Davidson, Dole, Highton, and Markham (2005) compared functional measurements to radiological findings and they found a strong association between the functional outcomes and degree of joint deformity on radiograph. These differences found were in correlation to an anatomical hand index that primarily focused on hand alignment and dimensions. This has been used to determine the relationship of the

severity of arthritis to outcomes. It however once again demonstrates the incongruence in the current research and lack of true functional outcomes and the understanding of their meaning (Davidson, Doyle, Highton & Markham, 2005).

The current two most researched and widely used MCP joint replacement protocols regarding operative approach are the Swanson and pyrolytic carbon implants. The criteria for each are documented in literature (Beckenbaugh, Cook, Klawitter, Linsheid & Redondo, 1999). The Swanson implant has been shown to have a greater failure rate based on findings of post-operative follow-up yet still is widely used in the general population (Miehlke, et al., 1999). The failure rate of the actual silicone joint is associated with reactivity and breakdown by surrounding tissue rather than the actual silicone integrity. Also taken into account is the perspective of variance in the pre-operative work-up of the rheumatologist and orthopeadic surgeon. It is noted the discrepancy that arises in what each physician sees as the most appropriate course of treatment (Alderman et al., 2002). This poses the question of performing less invasive or intensive surgeries such as a tenosynovectomy or removal of synovium, in lieu of the joint replacement. It is found that the orthopeadic surgeon has traditionally performed more invasive surgical intervention on women quite possibly due to the higher and earlier incidence of occupational deficits. The replacement of the MCP is typically based on the radiographic findings, joint stability and the patient's indicators of functional loss and pain.

The Swanson MCP joint arthroplasty in 1968 was the beginning of the research and treatment of MCP arthroplasty. This particular joint replacement introduced the use

of silicone joint replacement for the MCP joint and also initiated the discussion of the determining factors that would indicate the success of the joint replacement (Cooney, Meletiou, Sauerbier & Takigawa, 2004). The factors in the Swanson research focused only upon a subjective patient rating of good, fair and poor results along with radiographic and active/passive ROM. The term functional performance has been used in relationship to RA (Escalante, Haas, & Rincon, 2004) and measuring the outcome of function pre-operatively was addressed by (Machold, Ploner, Smolen, & Stamm, 2003). These findings focused on the use of the Moberg pick-up and Button Test with results indicating a greater relationship of the Moberg to the combined pinch and distal upper extremity function than the button test. Both however limited the scope of the patient's function to a minimally intensive and limiting task or tasks. The introduction of function tests was utilized to enhance the ability to measure the arthritic effects. These tests of function included standardized grip, walking velocity, and a timed button test. Also the Modified Health Assessment Questionnaire, SF-36 Physical Function Scales and the Steinbrocker Functional Classification were used (Escalante et al., 2004). The results were placed into a Global Functional Performance Scale and indicated that the poly-articular nature of the disease caused multiple impacts on function. This information also however limited the ability to correlate functional activities of daily living terminology to post-operative care of the MCP joint replacement.

The incidence of both OA and RA are greater in women than men. Some attribute this to the greater complaint of occupational performance loss in women than men rather than actual physiological findings (Hallert et al., 2003). These researchers found men

and women initially had similar results following initial diagnosis on a health assessment questionnaire. It was after a timeframe of one year that women continued to regress with regard to performance and worsening pain. Age is an additional indicator in the effects of arthritis as evidenced by decreased grip strength and occupational performance. Also the results of the elderly findings included radiography and interviewer administered questionnaires (Aliabadi et al., 2002). The radiographic findings included osteophyte growth, joint narrowing, sclerosis and cystic changes occurring at the highest incidence in the DIP's. A scale of the above changes was further utilized to determine overall joint involvement. The questionnaires included assessment of six basic activities of daily living. These included carrying ten pounds, eating, drinking, dialing a phone, taking ones medication and dressing and demonstrated a 9% and 17% incidence of functional impairment respectively for men and women.

Many factors affect the post-operative care of OA and RA. These include pre-morbid function, occupational performance requirements and psycho-social/cognitive aspects (Miehlke et al, .1999) described the impact of the MCP joint replacement on function including turning a key, opening a bottle, doing a button, washing oneself, use of cutlery and writing. The concern of the results was the high incidence 28 of 102 implants had either mal-rotation or fracture indicative of the necessity of a structured post-operative program with greater physician and therapist convergence. The results also re-iterate the need to have functional education and terminology in the post-operative protocol. This certainly would enhance the outcomes and brings to the forefront the need for establishing a post-operative protocol for the (MCP) joint replacement that includes

timelines and functional-based activity and exercise that is shared by the physician, therapist as well as the patient. This is especially true of this arthroplasty secondary to the extensive and rigid post-operative protocol and complexity of the surgery techniques as well as the length of disease prior to the surgical intervention that many times is one decade or more (Miehlke et al., 1999).

Post-operative rehabilitation has significance in that the first 12-16 weeks it is crucial for establishing joint stability and congruity while promoting an increase in functional based performance (Beal et al., 2001; Beckenbaugh et al., 1999). This delicate balance requires greater consistency and a multi-disciplinary team approach for better functional outcomes. The OT and physician share the same goals yet the terminology and approach vary particularly post-operative. The vague use of the terms light use and appropriate activities of daily living are common among the current post-operative rehabilitation literature and further confuse the patient as to what the terms indicate. These approaches to early function are often implemented at four weeks post-operative but that also varies based on the literature (Burr, Pratt & Smith, 2002). The use of the above terminology places the OT in the position to educate the patient of all of the potential complications and precautions/contra-indications yet also promote early ROM and greater function (Brotzman et al., 2003). Prosthetic and donor tissue advances have allowed earlier engagement in functional performance activities. These advancements provide the ability to surgically treat at a younger age and timeline. This is primarily due to the advancements in prosthetic durability and surgical technique (Callahan et al., 2002). Historically physicians have determined the need for surgery based on a patient's

level of pain and loss of function associated with the disease. This has placed the patient in a precarious position in that pain is a subjective measure often resulting in delayed surgical intervention and longer periods of unnecessary pain and occupational loss.

Recent research has documented improvements in occupational tasks and pain relief associated with joint replacement in the arthritic patient (Goldfarb & Stern, 2003). The post-operative treatment of the MCP joint replacement is an excellent example of the significant advancements that are currently used. Noted improvements include increased strength and expedited function with patients. The improvements as a whole have allowed the OT to begin sooner, treat more aggressively and have greater involvement in the occupational outcomes of the patient. This however also places the OT in the position of educating the physician, patient and family of the necessity to follow a post-operative protocol. Performance is further complicated by the variability in the post-operative treatment protocols currently published (Beal et al., 2001; Brotzman & Wilk, 2003; Callahan, 2002). The lack of functional based terminology diffuses the physician and patient interaction and may result in a decrease in the final functional outcome (Alderman et al., 2003). The concept of implementing functional based intervention based on clinical evaluation findings have been and are the root of the OT approach to treatment.

Today as the outcome based approach to treatment is greater there exists the need to address the functional based aspects of OT. This being said the traditional OT intervention has been based on clinical evaluation findings and ideally focuses on outcomes of the patient's ability to engage in meaningful occupations. The difference in how a Physician prescribes treatment and how the therapist prescribes the program

creates an environment of great challenge as the post-operative pathways that are now implemented in many rehabilitation programs limit the individuality of the client-centered approach (Brotzman & Wilk, 2003). Each patient in this treatment approach has an expectation to recover in a timeframe established by a multi-disciplinary team to assure expedient discharge and fiscally responsible treatment.

The most current and widely used protocols of treatment post-operative of the MCP arthroplasty include the Rehabilitation of the Hand and Upper Extremity and also the Diagnosis and Treatment Manual for Physicians and Therapists (Beal et al., 2001;Callahan et al., 2002)..These collectively present with the most generic and conservative approach to treatment. The emphasis however is on the splinting, wound/scar care and therapeutic exercise. Therapy goals primarily are to obtain optimal performance of activities of daily living. These two protocols do not define range limitations, force and overall occupational performance demands.

The current post-operative protocol information highlights the implementation of an edema reduction and wound/scar management program at day 5-7 (Beal et al., 2001). This is preceded by the post-operative dressing removal with the patient in an anti-edema position and implementation of compression to reduce edema. This compression is best achieved by implementing one inch compressive wrap such as Coban. A patient may find the need to seek assistance in application and take into account the need to promote supination of the fingers. Also a dynamic forearm-based MCP extension splint is to be worn daily alternating with a resting hand splint or using the resting hand each night. The dynamic splint angle presentation is critical in that the wrist requires 15 degrees

extension and padding to the ulnar head and dorsal aspect of the hand/fingers. A radial bar also is important to limit distal migration of the splint during use. Importance also lies in the need to provide dynamic support of the digits two through five in order to allow passive only digit extension for the first four weeks. Supination of digit two with an outrigger is also important to facilitate strong joint healing and minimize subluxation.

It is advantageous to block interphalangeal (IP) motion as to direct forces on the MCP's (Upper Extremity Tech, update 2002). This further allows the collateral ligaments and surrounding tissue to mature through the inflammatory and fibroblastic stages as well as begin scar remodeling. Emphasis is placed on the need to provide a radial lateral pull to the digits to relieve the radial collateral ligament strain. This is due to ligaments being released and reattached in the Swanson implant. This angle of ulnar splinting is initiated immediately post-operative as well as at four weeks along with light prehensile activities and joint protection principles (Beal et al., 2001). These examples of post-operative rehabilitation are completed beginning in the first week post-operative.

Occupational therapy has its roots established in the analysis of activities of daily living and designing programs to increase occupational performance. Occupational therapists are involved in the establishment and direct treatment of the patient utilizing traditional and cutting edge techniques for intervention. The outcome measurements have shown that the interaction of the patient with their environment and engagement in occupation increase long-term performance (Cooney et al., 2004). The implementation of a comprehensive post-operative MCP program would serve to enhance the outcomes for the patient and create a better partnership between the therapists, patients and physicians.

Chapter two provided a review of current literature regarding the etiology and symptoms of OA and RA. In addition current therapeutic and surgical interventions were described. The chapter identifies the need for a more comprehensive functional rehabilitative and biomechanical approach. These areas are unique OT and provide an excellent framework in which to develop the post-operative protocol. Chapter three describes the methodology used to develop the post surgical protocol for MCP arthroplasties.

Chapter III

METHODOLOGY

Arthritis as a disease process affects many aspects of individual's daily activities (Brauer, et al., 2005). The reduction in independent performance and subsequent reliance upon a support system further progresses the reduction in range of motion and strength. It is these aspects that come into play and often serve as a catalyst to the decision making process of the MCP arthoplasty.

Current and recent approaches to post-operative treatment of MCP arthoplasties have focused on the traditional approach to increase ROM and strength without adequately defining the structured process of how to achieve the best outcomes (Goldfarb & Stern, 2003). This has brought about the need to converge the anatomical and biomechanical aspects of post-operative care with the outcome performance increase in patients (Kjeken, Kvien, Slatowsky-Christianson & Uhlig, 2004). The convergence of these approaches has been the concept of this scholarly project. Previously each area has been addressed in specific arenas of literature and research yet the melding of the two has been virtually absent in treatment.

The literature review for this scholarly project was completed to include information from various entities. These included clinical-based textbooks, research articles, therapist written treatment approaches and journal articles. These information sources have provided rationale and clarity to the evident need for a uniform approach to the MCP arthroplasty take into account the high incidence of pre-morbid factors that

come into play. The use of outcome-based evaluations has been well presented (Hallert et al., 2003; Kjeken et al., 2004) yet how best to establish a treatment protocol to reach this level is where the project rationale lies.

The focus of the scholarly project is to develop a post-operative treatment protocol. The goal was to create a structured yet adjustable approach to treatment that encourages patient compliance and also increases functional outcomes. Emphasis was placed on consistency in the use of post-operative terminology that allows patients to begin activities of daily living and yet perform only within the confines of the contra-indications and precautions the surgeon's protocol has indicated. The patient exercises were designed using the Tool RG Physiotools program (Higginbotham, 2003). This program is designed for the therapists to individualize the treatment program for each patient.

Chapter four provides a summery of the protocol. Included are guidelines for assessing individual patients, suggested evaluation measures and post-operative treatment interventions and recommendations for implementation.

CHAPTER IV

PRODUCTS

OCCUPATIONAL THERAPY MCP JOINT REPLACEMENT PROGRAM

Based on the current literature on arthritis and the current pre- and post-operative approach to the MCP arthroplasty a treatment protocol was developed. This was established to treat the patient with a comprehensive and individualized program to enhance the functional performance of the patient i.e. activities of daily living. The protocol was also developed to protect the joints, regain ROM and increase strength. It also takes into account the preference of completing a pre-operative evaluation of the individual patient. The patient will have immediate feedback available of their pre and post-operative function and pain level. This will further enhance the outcome as each individual will have a baseline to be post-operatively evaluated against to enhance future literature and evidence-based outcomes.

The diagnosis of arthritis and the common deficits associated with it create an excellent opportunity to establish an MCP post-operative treatment protocol. The symptomology includes pain at rest as well as during active ROM and also during activities of daily living, weakness, loss of active and passive ROM and cosmetic soft tissue and joint changes. It is these varying and complex aspects that created the need for a more comprehensive treatment program.

The approach to the patient begins pre-operatively with an OT evaluation. This includes a physician referral and scheduling the patient for 75 to 90 minutes. The patient's information assessed includes pain, active and passive range of motion, strength,

crepitus, activities of daily living, SF-36 health survey (Ware, 2000), and the patient's perception of their anticipated outcome of the MCP arthroplasty.

The pain component is assessing the patient's report of pain at rest, during active and passive ROM and while performing functional tasks. This may be completed with the verbal rating scale or visual analog scale (Callahan et al., 2001) (see Appendix A). Also the body image schematic may be used to further define the localized areas of pain (see Appendix A).

Tasks are assessed while completing various motions and positions. These include cylindrical grip, palmer, tip and lateral pinch. The weight is measured in ounces and pounds collaborating this with items of daily activity. The use of a force measurement gauge is implemented to assess the forces necessary to perform such tasks as pushing open doors, moving wheeled and no-wheeled furniture etc. This can be done in a structured format by always using the same door or doors, furniture and surfaces. Also tasks are completed utilizing the entire limb to lift and/or carry as well as isolating the wrist and hand. This can be done at various levels of work surface including floor, counter and overhead. To complement this portion of the evaluation the Jebson hand test, Minnesota Rate of Manipulation (Lafayette Instrument, 1998) and Purdue Pegboard (Lafayette Instrument, 1985) tests can be completed. These tests are an excellent approach to the fine two point pinch and overall functional deficits seen in the arthritic hand. A vast array of activities of daily living checklists or assessments is also available and provides additional support of pre-operative deficits.

The patient also participates in an arthritis program including instruction in energy conservation, joint protection and exercise. This includes the approach of joint neutral

function to limit joint stress as well as unloading the hand and arm as allowable to reduce stress. Enlarged or increased diameter handles are recommended to be used to decrease composite joint stress.

Assessment of ROM needs to specify the active and passive components of the entire upper extremity and in particular the ulnar drifting of the MCP's. The patient's verbal response as to their anticipated outcomes needs to be well documented. This will help decrease the discrepancy that at times occurs between the patient and multi-disciplinary team as to the post-operative protocol timelines and complexity (see Appendix A for evaluation outlines).

The patient is next scheduled five to seven days post-operative for the initiation of a comprehensive and time intensive initial visit. This may be scheduled over two to three visits as to allow the patient the ability to absorb and retain the program. The initial visit may be two to two and one-half hours. The visit is completed in a private one-on-one treatment area. The patient is asked if they have any further questions from the previous visit. The patient is then instructed in the necessity to perform no active ROM once the surgical dressing is removed. The patient is instructed in the anticipated look or nature of the wound. They are assured of the normal edematous nature and that the use of consistent compression will alleviate this. The surgical dressing is then removed utilizing the soft ulnar and radial aspect of the dressing to cut with a bandage scissor. The drainage noted at the surgical site is often significant and care is taken to remove the non-adherent without bleeding. A four by four dressing may be hydrated with sterile water or hydrogen peroxide to assist in dressing removal. The dressing at the proximal phalanges should be cut dorsally or volar to minimize abduction and decrease collateral ligament damage risk.

The need exists to re-iterate the complications that edema presents in the form of articular gelling and invasion of the joint area thus limiting ROM (Hills & Thomas, 1998). The wound is cleansed and the patient is instructed in daily dressing changes until the wound has no drainage. If the contra-lateral hand is also involved with regard to arthritic deficits the patient is encouraged to arrange daily assistance or is supplied with an adhesive one piece island dressing that can be applied one handed.

The dynamic MCP extension and static volar resting hand splints are now fabricated. Stockinet is placed onto the forearm and hand to protect the skin and absorb perspiration. The dynamic splint consists of the wrist placement in 15 degrees of extension using a one-eighth inch thermoplastic for strength. The dynamic extension pull is achieved with a number 18 rubber band to assure appropriate dynamic tension (Beal et al., 2001). The MCP should be placed in zero to ten degrees of extension and avoid hyper-extension. The radial pull of the outriggers are at 60 degrees to assure rest and healing of the radial collateral ligaments. Thermoplastic IP volar finger splints or two inch firm strapping may be implemented to assure focus on MCP flexion by placing the IP joints into extension. These are to be removed for IP flexion exercises four times per day.

The resting hand splint positions the wrist at 15 degrees extension and the digits in near full extension. This splint also is fabricated in one-eighth inch thermoplastic. Dividers are placed in each web space to assure alignment.

A splint home instruction sheet is supplied with specific physiological signs and symptoms to look for (see Appendix B). These include an increase in the dys-aesthesia that may already be present from edema or the incision site. Also monitoring redness of

the contact areas of every splint every two to four hours is explained. The wearing schedule is given and emphasis is placed on the need to decrease the strap tension especially on the dynamic splint as the propensity to create a line of congestion distal of the dorsal aspect of the splint is evident (see Appendix B). This line often corresponds with the MCP surgical site and adds to the difficulty with tolerance of splinting and MCP area healing. Each splint is applied and removed by the patient to assure compliance and understanding of the process (see Appendix B). A photo may be implemented to assist in the correct application as appropriate splint fitting is essential.

The exercise program consists of hourly active ROM in the dynamic splint completing MCP digit flexion. If the patient is unable to complete active ROM he/she may assist by reducing tension on the outrigger rubber bands with the contra-lateral hand. This can be achieved by pinching the rubber bands and reducing flexion tension during the active ROM. The outriggers are removed four times per day and full composite passive ROM is completed with emphasis on composite flexion 15 repetitions and a short duration hold of 3 to 10 seconds. Also the MCP's are isolated and passively stretched for the same duration. Active ROM is also completed with the IP joints to encourage musculo-tendinous excursion and limit adhesions. During ROM the patient is instructed to limit pain to a four or five of ten on a verbal rating scale of pain. The pain also should subside between each repetition and have overall minimal residual pain following the program.

During splint changing from the night-time resting to the day-time dynamic splint or visa-versa the patient is to complete elevation with the limb above the chest area and completing manual edema mobilization. This is completed proximal of the edema and

progresses distally (Callahan et al., 2002). Instructional sheets are supplied for this also (see Appendix B). The scar is mobilized pending closure in ten to fourteen days. The importance of mobilization cannot be overemphasized as the adherence of the musculo-tendinous unit and sub-cutaneous tissue greatly reduces the active ROM arc and subsequent functional capabilities (see Appendix B). The mobilization pattern is circular, perpendicular and parallel over a five to seven minute period four times per day. Gentle mobilization is important due to the common skin integrity issues with long-term cortisone medications and the geriatric population.

If the patient is demonstrating a flexion lag with the MCP's such as less than 50 degrees passively then a dynamic MCP flexion splint will be implemented to enhance the flexion arc. This is to be worn three to four times per day for 15 to 30 minutes. This splint is also fabricated of one-eight inch thermoplastic and is volar based. The outriggers are directly attached from the proximal phalanges to the volar aspect of the splint with a number eighteen rubber band force.

The initial program is completed through four weeks post-operative and if edema persists a partial fingered glove may be implemented to be worn at all times. Also at this time the dynamic extension splint is discontinued and a hand based ulnar deviation splint (Biese, J., 2002) is implemented. These are pre-fabricated in a neoprene but may also be fabricated from one inch soft strapping. Both provide a passive radial pull as well as volar support and are used consistently during the day for joint protection and pain control. Patients are instructed to complete pronated position palm down active radial abduction of the digits four times per day for 10 to 15 repetitions each time. It is at this point that the patient is also instructed in utilization of the ulnar deviation splint during sedentary

function (see Appendix B). Further instruction including verbal and therapeutic activities that encompass external force of one once to a few pounds during week four through eight is provided. These include performing functional activity such as handling grocery or miscellaneous items preferably in a forearm pronated or supinated position to limit ulnarward force on the MCP's. Limits are placed with examples being 14 ounce soup or vegetable cans, toothpaste tubes, dressing with the exception of tight fitting socks, shirts or hosiery, and data entry on a computer etcetera (see Appendix B). The patient is instructed to frequently unload the hand each few to several minutes during activity i.e. hand writing with a two to three inch built-up handle and putting it down when not actually writing.

In week eight through twelve the patient is instructed to complete sedentary function of one to a several pounds. These tasks include the ability to drive an automatic transmission vehicle with power steering, all dressing tasks and ability to stir food items and use of a broom or broom rake. Dynamic MCP flexion splinting continues through 10 to 12 weeks. Grip strengthening is implemented three times per day in a forearm neutral position to stabilize the MCP's and limits ulnar deviation for composite grip and opposition pinch at 10 to 15 repetitions. The force is limited to a few pounds based on the resistance of the foam block or putty.

The final phase of therapy is the 12 week period and beyond. The patient is progressed to sedentary activity of several to ten pounds. This includes handing of grocery items such as quarts of liquid, cookware using both limbs and laundry. A manual transmission vehicle may be utilized and the patient may complete light bilateral tasks

such as raking with a hard tooth rake, taking out garbage and carrying up to 10 pound items. (see Appendix B).

CHAPTER V

SUMMARY

This occupational therapy program was developed to treat the pre and post-operative MCP arthroplasty. It was designed to be implemented by the OT and/or certified OT assistant. It is meant to be an integral part of the treatment approach to the patient prior to and following the MCP joint replacement. This program will serve to supplement the rheumatologic and orthopeadic treatment process including the non-operative candidate with regard to implementing an arthritis exercise and joint protection program.

The post-operative program was developed through current literature regarding rehabilitation of the MCP's pre and post-operative. This included the approaches by the two primary Physicians who treat OA and RA, rheumatologists and orthopeadics (Alderman et al., 2002). It also addressed the post-operative rehabilitation protocols currently addressed (Callahan et al., 2002; Goldfarb & Stern, 2003; Harkin, 2002). Research has found there is a high frequency of joint failure and/or fracture with this replacement and a more systematic approach to the treatment is supported (Kerschbaumer et al., 1999; Miehlke, et al., 1999). The program was designed to increase patient compliance, functional outcomes and evidence of the efficacy that exists in the multi-disciplinary approach to the MCP arthroplasty.

The program is limited in that there is a need to have inter-rater reliability in the pre and post-operative assessment. Functional items tested such as those included in the Jebson test are used to enhance assessment consistency. Also use of the force measurement gauge, tensiometer and dynamometer need consistency as to the items used

or at least the same therapist pre and post-operative to correlate the measurements for comparison. This program is an adjunct to the many treatment options pre-operatively that are completed such as splinting, use of superficial thermal agents and direct clinical physician care.

The implementation of this program should focus on the capability of the OT to complete the pre and post-operative program and provide outcome based data (Burr et al., 2002). This would provide the therapist and the physician the educational data to help the patient in the difficult decision making regarding the surgical procedure. Also the direct treatment pre and post-operative would be completed by the OT providing seamless care and reassuring the patient of their progress. An entire simulation of the program would be available in written format along with examples of the wound/ scar management and splinting. Examples are presented of the joint protection techniques and adaptive equipment available.

It is recommended that further functional performance assessments along with the deficits of arthritis continue to be researched specifically in the realm of OT. The measurability of function allows for establishing a baseline to prove efficacy of the MCP joint replacement (Aliabadi et al., 2002; Kerschbaumer et al., 1999). Also needed is the concurrence of the multi-disciplinary team regarding the detailed use of functional terminology and post-operative splinting/strengthening.

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APPENDIX A

EVALUATION CONTENTS:

HISTORY AND PHYSICAL
PAIN RATING SCALES
ACTIVITIES OF DAILY LIVING CHECKLIST; SF-36

EVALUATION OUTLINES

The following is the evaluation completed pre-operatively to demonstrate efficacy with the implementation of a comprehensive post-operative rehabilitation MCP arthroplasty protocol. Each pre-operative visit is scheduled for one hour. A patient is instructed to bring any prior splinting and treatment instruction previously obtained. Also any previous OT or Physical Therapy (PT) is reviewed.

Pain Assessment is completed utilizing the verbal rating scale (Callahan et al., 2002) this is determined or assessed at rest, during active rom, and with loading of the hand and limb during activities of daily living. Also a body scheme image may be utilized to assist in determining the location and perhaps referred pain areas of the body. A schematic of this is available in the Schultz Pain Questionnaire (Callahan et al., 2002).

Joint ROM is assessed by measuring it both active and passive. Also the beginning ROM must be noted as there often is a lag or contracture in many of the surrounding joints as well as the affected. The drifting often noted particularly in the MCP joints requires measurement utilizing the metacarpal shaft as the long arm and the PCP joint as the axis. The end range feel also should be assessed using the uniform terminology of manual therapy and joint mobilization (Brotzman et al., 2003). Grip and pinch need assessment including the standard protocol established by the American Society of Hand Therapists Assessment and book. In particular the lateral pinch will be

of post-operative interest followed by grip as each has greater strength in the replaced joint (Beckenbaugh et. al., 1999). Three trials will be obtained for each of the grip and pinch measurements. The Minnesota Rate of Manipulation or Jebson test may be implemented along with one of many activities of daily living assessments including the SF-36.

Post-operative assessment retains much of the pre-operative except active ROM of the wrist and hand, and grip/ pinch strength, and end range feel assessment are not completed the first four weeks. The activities of daily living and Minnesota Rate of Manipulation as well as Jebson need post-operative completion as soon as protocol allows at four weeks.

Wound/scar assessment post-operative is paramount as the therapist is the primary discipline to follow the patient until week four. The use of the Marion Laboratory color chart is utilized (Callahan et al., 2002). The scale will use the terminology red, yellow and black. Also scar hypertrophy will be measured in comparison to the surrounding tissue. It is important that the wound is cleaned to assess the true base of epithelializing tissue along with what the need will be for the contact layer of dressing.

EVALUATION OUTLINES

PAIN VISUAL ANALOG SCALE

No pain Pain as bad it could be

How you feel right now: /----------/

When you feel the best: /----------/

When you feel the worst: /----------/

The worst pain you ever felt: /----------/

VERBAL RATING SCALE OF PAIN

0 /----------/ 10

No pain Worst pain

The visual analog scale is completed by the patient and may be done on each visit to track pain reduction treatment efficacy. The verbal rating scale is also completed on each visit with the results documented. As previously indicated the verbal scale is effective in obtaining a pain at rest, with active ROM and during function as the protocol post-operative allows.

AXIS

UPPER EXTREMITY CLINIC
Treating Shoulders, Arms & Hands

ry Lynn Berntson OTR/L, CHT — Lance Norman OTR/L, CHT

nt Name: (Last)_____ (First)_____ (Middle)_____

_____ Birthdate: (month/day/year) ____/____/_____ Sex: ☐ Male ☐ Female

ies: _____

e Phone: (_____) _____ - _____ Cell Phone: (_____) _____ - _____

ent Health History:

sure you receive a complete and thorough evaluation, please provide us with the important background information.
do not understand any of the information, your therapist will assist you. Thank you!

you EVER been diagnosed as having any of the following conditions? ((check all that apply)

- ☐ **ncer (if YES, what type:_____**
- ☐ **art problems**
- ☐ **thma**
- ☐ **nphysema**
- ☐ **iemial dependency (e.g., alcoholism)**
- ☐ **yroid problems**
- ☐ **abetes**
- ☐ **ultiple sclerosis**
- ☐ **ieumatoid arthritis**
- ☐ **her arthritic conditions**
- ☐ **pression**
- ☐ **Hepatitis**
- ☐ **Tuberculosis**
- ☐ **Stroke**
- ☐ **Kidney disease**
- ☐ **Anemia**
- ☐ **Epilepsy**
- ☐ **Osteoporosis**
- ☐ **Other:_____**
- ☐ **Other:_____**
- ☐ **Other:_____**
- ☐ **Other:_____**

e list any surgeries or other conditions for which you have been hospitalized, including the approximate date and reason e surgery or hospitalization:

:	Surgery / Hospitalization / Reason
_____	_____
_____	_____
_____	_____
_____	_____

e describe any injuries for which you have been treated (including fractures, dislocations, sprains) and the approximate of injury:

	Injury
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

e list any PRESCRIPTION medication you are currently taking (including pills, injections, skin patches, etc.):

_____

_____

_____

u smoke? ☐ NO ☐ YES:(How much per day)_____

u drink alcohol? ☐ NO ☐ YES:(How much per day)_____

Orthopedic History Form:

Name: _____ Age____ Date:_____

Any previous surgery at problem site? _____

Dates? _____

Location of Problem: _____ Onset Date: _____

If injury, describe briefly: _____

_____

(Please Circle)

Injury/Symptoms:

Did you feel a pop or tear?	Yes	No	Unsure
Did your joint pop out?	Yes	No	Unsure
Did you have weakness?	Yes	No	Unsure
Did you continue activity?	Yes	No	
Did it feel loose/unstable?	Yes	No	

Prior Treatment:

Did you see a physician?	Yes	No	MD Name:_____
Were X-Rays taken?	Yes	No	
Medication Prescribed:	Yes	No	RX Name: _____
Physical Therapy:	Yes	No	
Injection(s):	Yes	No	

*Other Treatment?:*_____

Symptoms/Complaints:

Pain- part of body: _____

Location	front	back	top	side	inside	outside
Severity (rate 1-10)	_____					
Type of pain:	sharp	aching	throbbing	burning		
Aggravated by:	pushing squatting	reaching kneeling	walking stairs	running overhead-use	twisting throwing	lifting

Stiffness:	None	Occasional	Frequent
Numbness/Tingling	None	Occasional	Frequent
Swelling:	None	Occasional	Frequent
Grinding/Grating:	None	Occasional	Frequent
Giving way/Buckling:	None	Occasional	Frequent
Nighttime Pain:	None	Occasional	Frequent
Locking:	None	Occasional	Frequent

Present Overall Function? _____% *How far can you walk?*_____

Can you climb stairs? _____*yes* _____ *no* _____ *with assistance* _____ *w/out assistance*

Are you currently working? YES NO (if no) last day worked? _____

EVALUATION OUTLINES

PAIN VISUAL ANALOG SCALE

No pain Pain as bad it could be

How you feel right now: /----------/

When you feel the best: /----------/

When you feel the worst: /----------/

The worst pain you ever felt: /----------/

VERBAL RATING SCALE OF PAIN

0 /----------/ 10

No pain Worst pain

The visual analog scale is completed by the patient and may be done on each visit to track pain reduction treatment efficacy. The verbal rating scale is also completed on each visit with the results documented. As previously indicated the verbal scale is effective in obtaining a pain at rest, with active ROM and during function as the protocol post-operative allows.

SF36 Health Survey

INSTRUCTIONS: This set of questions asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Answer every question by marking the answer as indicated. If you are unsure about how to answer a question please give the best answer you can.

1. In general; would you say your health is: (Please tick **one** box.)

Excellent	☐
Very Good	☐
Good	☐
Fair	☐
Poor	☐

2. Compared to one year ago, how would you rate your health in general now? (Please tick **one** box.)

Much better than one year ago	☐
Somewhat better now than one year ago	☐
About the same as one year ago	☐
Somewhat worse now than one year ago	☐
Much worse now than one year ago	☐

3. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much? **(Please circle one number on each line.)**

	Activities	Yes, Limited A Lot	Yes, Limited A Little	Not Limited At All
3(a)	**Vigorous activities**, such as running, lifting heavy objects, participating in strenuous sports	1	2	3
3(b)	**Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
3(c)	Lifting or carrying groceries	1	2	3
3(d)	Climbing **several** flights of stairs	1	2	3
3(e)	Climbing **one** flight of stairs	1	2	3
3(f)	Bending, kneeling, or stooping	1	2	3
3(g)	Waling **more than a mile**	1	2	3
3(h)	Walking **several blocks**	1	2	3
3(i)	Walking **one block**	1	2	3
3(j)	Bathing or dressing yourself	1	2	3

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	(Please circle one number on each line.)	Yes	No
4(a)	Cut down on the **amount of time** you spent on work or other activities	1	2
4(b)	Accomplished less than you would like	1	2
4(c)	Were **limited** in the **kind** of work or other activities	1	2
4(d)	Had **difficulty** performing the work or other activities (for example, it took extra effort)	1	2

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (e.g. feeling depressed or anxious)?

	(Please circle one number on each line.)	Yes	No
5(a)	Cut down on the **amount of time** you spent on work or other activities	1	2
5(b)	Accomplished less than you would like	1	2
5(c)	Didn't do work or other activities as **carefully** as usual	1	2

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups? (Please tick **one** box.)

- Not at all ☐
- Slightly ☐
- Moderately ☐
- Quite a bit ☐
- Extremely ☐

7. How much physical pain have you had during the past 4 weeks? (Please tick **one** box.)

- None ☐
- Very mild ☐
- Mild ☐
- Moderate ☐
- Severe ☐
- Very Severe ☐

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)? (Please tick **one** box.)

- Not at all ☐
- A little bit ☐
- Moderately ☐
- Quite a bit ☐
- Extremely ☐

9. These questions are about how you feel and how things have been with you during the past 4 weeks. Please give the one answer that is closest to the way you have been feeling for each item.

	(Please circle one number on each line.)	**All of the Time**	**Most of the Time**	**A Good Bit of the Time**	**Some of the Time**	**A Little of the Time**	**None of the Time**
9(a)	Did you feel full of life?	1	2	3	4	5	6
9(b)	Have you been a very nervous person?	1	2	3	4	5	6
9(c)	Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
9(d)	Have you felt calm and peaceful?	1	2	3	4	5	6
9(e)	Did you have a lot of energy?	1	2	3	4	5	6
9(f)	Have you felt downhearted and blue?	1	2	3	4	5	6
9(g)	Did you feel worn out?	1	2	3	4	5	6
9(h)	Have you been a happy person?	1	2	3	4	5	6
9(i)	Did you feel tired?	1	2	3	4	5	6

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives etc.) (Please tick **one** box.)

- All of the time ☐
- Most of the time ☐
- Some of the time ☐
- A little of the time ☐
- None of the time ☐

11. How TRUE or FALSE is each of the following statements for you?

	(Please circle one number on each line.)	**Definitely True**	**Mostly True**	**Don't Know**	**Mostly False**	**Definitely False**
11(a)	I seem to get sick a little easier than other people	1	2	3	4	5
11(b)	I am as healthy as anybody I know	1	2	3	4	5
11(c)	I expect my health to get worse	1	2	3	4	5
11(d)	My health is excellent	1	2	3	4	5

Thank You!

APPENDIX B

PATIENT EDUCATION MATERIALS AND EXERCISE PROGRAM

AXIS CLINIC
METACARPAL-PHALANGEAL
ARTHROPLASTY PROGRAM

TABLE OF CONTENTS

BJC HealthCare

'RINCIPLES OF JOINT PROTECTION ARE TO BE UTILIZED PRIOR TO YOUR SURGERY AND
LSO AT 4 WEEKS AFTER WHEN YOU ARE ABLE TO START TO USE THE HAND FOR ACTIVITY.

Use the strongest joint and largest muscle group possible for an activity.
Avoid using a tight grasp.
Enlarge handles on items used frequently.
Avoid prolonged periods of time being in the same position.
Maintain normal body weight. Excessive weight puts increased strain on weight bearing joints - back,
ips, knees, and ankle.
Respect pain. Modify activities and rest as needed.

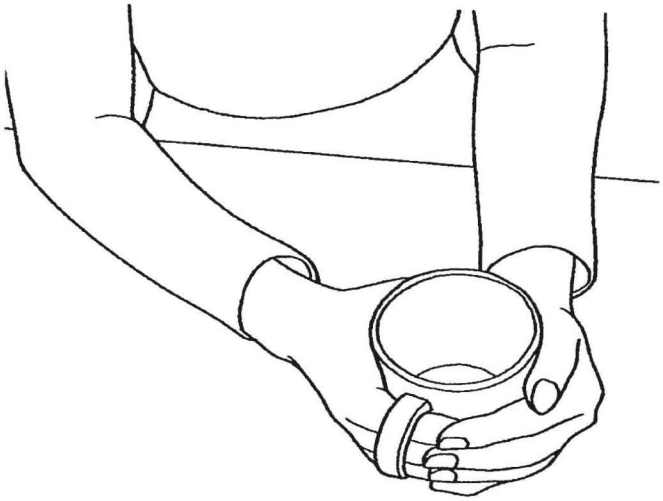
BJC HealthCare

'he next 5 pages are instructions that you may use prior to your surgery as well as when approved fter surgery to reduce injury to the joints.

Ise a cart with wheels to carry heavy items such as a briefcase.

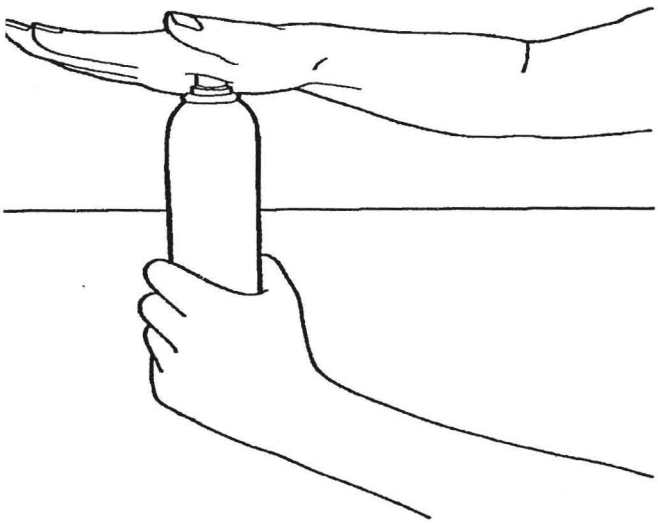
JC HealthCare

se larger joints. Carry your purse over your forearm, close to your elbow.



BJC HealthCare

lse a well insulated cup. Place both hands around the cup securely and press palms together to carry

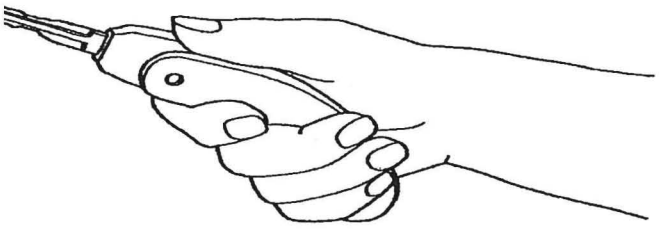


3JC HealthCare

lace an aerosol can in the palm of one hand and use the palm of the other to press the button on top.

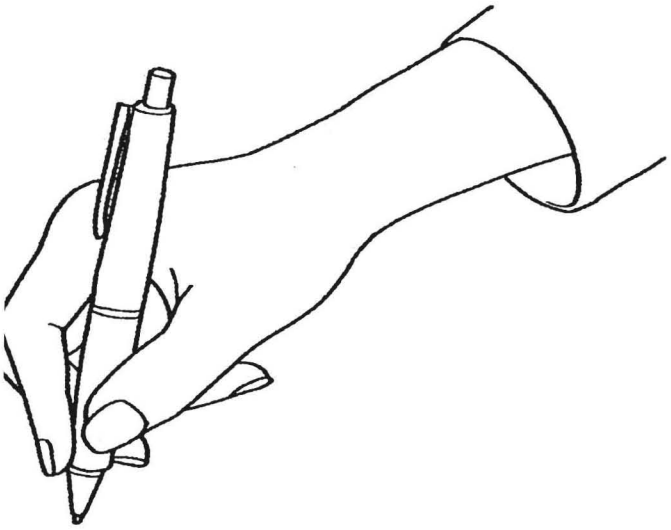
BJC HealthCare

Jse a butter knife and slide it through the ring of a soda can to provide more leverage to open it.



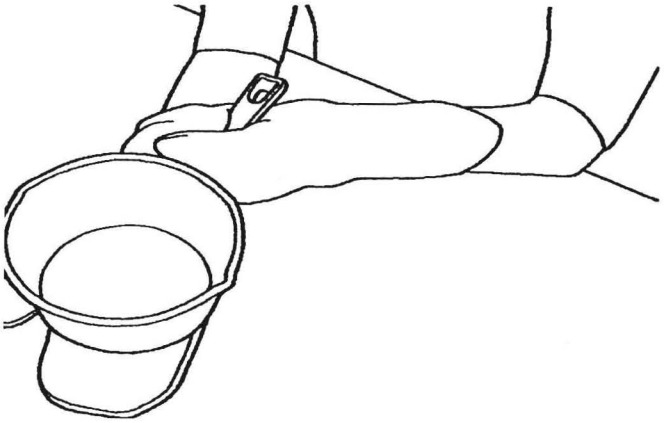
BJC HealthCare

se a key holder device or a built up handle on your keys to make locking and unlocking easier.



BJC HealthCare

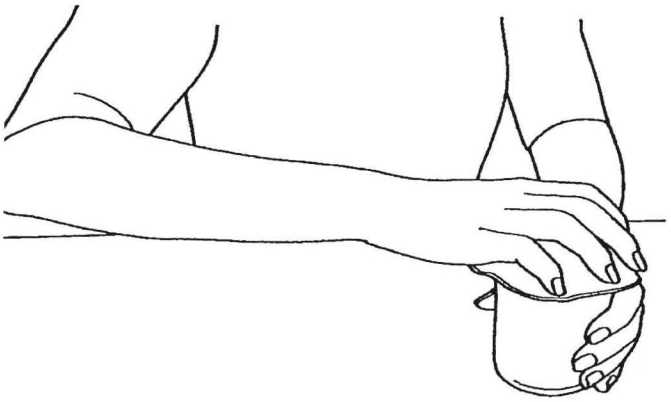
Use a built up handle or a larger, ergonomic type pen/pencil to make writing easier.



BJC HealthCare

se mitten type hot pads on both hands. Place one hand under the hot pan and one hand on the andle. This will decrease the force on the hand holding the handle.

eep the palms of both hands turned upwards.



BJC HealthCare

)pen jars with your right hand and close them with your left hand if possible. Do not overtighten jar lids. Use a piece of non-stick material to assist in opening the jar.

Running the jar under warm water or tapping the side of the lid with a butter knife may also help loosen ne lid.

OME PARAFFIN TREATMENT IS DONE FOLLOWING SUTURE REMOVAL AND WOUND EALING. THIS WILL BE PRESCIBED BY YOUR THERAPIST.

ATERIALS NEEDED:
hermostatically controlled units are also available for purchase.

araffin-approximately 3 lb (1,5 kg). Paraffin can be purchased in the canning section of the grocery ore.

ineral oil-approximately 1 cup. For each lb (0,5 kg) of paraffin, you will need 1/3 cup of mineral oil. ineral oil can be purchased at a pharmacy.

lote: Pre-mixed paraffin and oil are available at a medical supply store.)

andy thermometer. This is very important to check the temperature of the paraffin/oil mixture.

lastic bags-small sandwich size.

owels.

illows.

IRECTIONS:
eat paraffin and mineral oil mixture to 125 degrees Fahrenheit (52 degrees Celsius) and definitely no otter than 130 degrees Fahrenheit (54 degrees Celsius).
Continues...)

..Continues)

emove paraffin mixture from heat.

emove any jewelry from your hand and wrist.

p your hand and wrist into the paraffin and remove it immediately allowing the paraffin to form a thin at. When the paraffin loses its shine, dip your hand in again.

p your hand and wrist 12 to 15 times.

AUTION:
o not move hand and fingers while dipping to avoid cracking of the paraffin "glove". If there are cracks the glove the hot paraffin running through may cause a burn. Do not dip your hand and wrist into the araffin if you are wearing any jewelry or if you have an open sore.

rap hand and wrist in plastic bag and then with a towel to help retain the heat.

our hand should be elevated higher than your heart while the paraffin is on (rest it on a pillow). Keep e paraffin on about 20 minutes.

eel the wax off and replace it in the cooker. Turn off the cooker.

erform one or more times per day as needed to help control pain.

HERMOSTATICALLY CONTROLLED UNITS
araffin units that heat the paraffin/oil mixture and keep it at the proper temperature are available for urchase.
re-mixed paraffin and oil are also available for purchase.

ontact a local or catalog based medical supply store for details.

some cases, insurance may pay for this device if your physician recommends this as a medically ecessary device and writes a letter to the insurance company.

3JC HealthCare

XERCISE GUIDELINES FOR PATIENTS WITH ARTHRITIS

rthritis is a disorder which can cause significant pain and disability involving the joints and muscles. xercises is essential in arthritis with the main goals being to:

Decrease pain.
Help maintain normal joint movement, strength, endurance, and daily activities.

, proper program of exercise and rest can help prevent many of the restrictions which arthritis can ause. For exercise to be beneficial, the following guidelines must be followed:

Do exercises every day, including good days and bad days.
During exercise you may feel discomfort, even pain. A certain amount of pain is expected; however, if ain lasts more than one hour after finishing an exercise, decrease the number of repetitions erformed.
Decrease repetitions and avoid resistance when joints are severely inflamed.
Several short periods of exercise during the day are better than one long period.
Many of the exercises are stretching exercises. Always go through full range of motion to help prevent tiffness and loss of movement. Do exercises slowly and completely.
Do not substitute daily activities for exercise.
Alert your doctor or therapist if you develop new problems with movement in the future.

herapy may be able to help you with your arthritis in other areas as well:

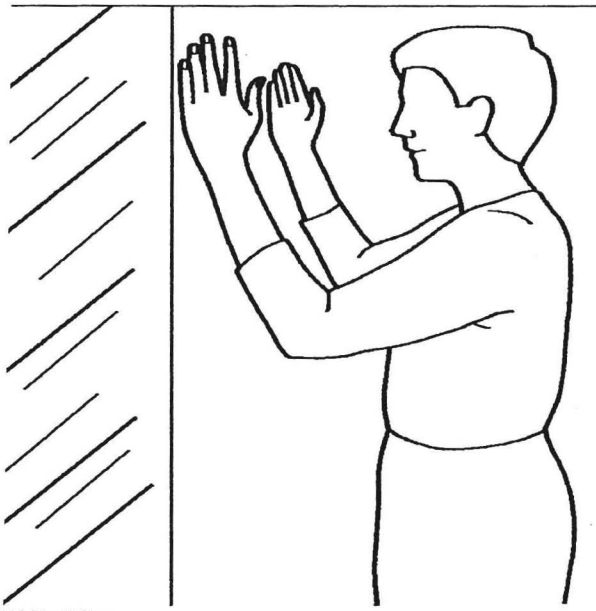
Instruction in posture, body mechanics.
Continues...)

.Continues)

Selecting appropriate assistive devices and splints to help protect your joints.

Use of physical modalities such as heat and cold.

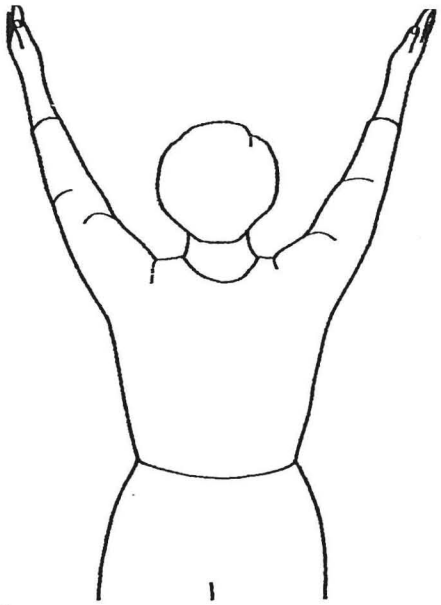
nstruction in need of balance between activity and rest.



he above shoulder exercise is to begin on your first therapy visit. The objective is to reduce the nance of stiffness due to lack of active range of motion.

tarting position

tand with your feet approximately one foot away from the wall. Start with your elbows bent. Place the nall finger side of both hands on the wall in front of you.



JC HealthCare

ıding position

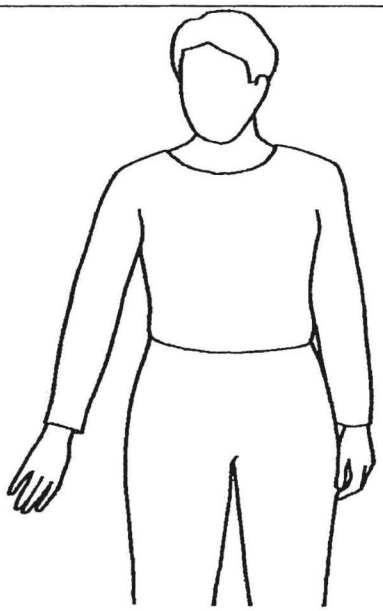
ide both of your arms up the wall to a V position. Be careful not to shrug your shoulders too much.

't both of your arms to the same level on the wall. Move up only as far up the wall as your affected m will go.

your therapist suggests, lift your arms off of the wall slightly, tightening your shoulder blade muscles. ɔ not let your elbows bend or your back arch. Tighten your stomach muscles to help keep your body ɔm moving.

___ seconds, _____ repetitions, _____ times per day

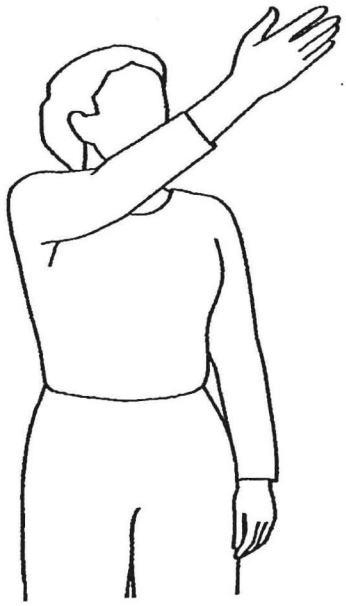
'ter each repetition of the exercise, slide your arms back down the wall and relax.



he above shoulder exercises are to begin on your first therapy visit. The objective is to reduce the nance of stiffness due to lack of active range of motion.

1 starting position

tart with your affected arm slightly away from your side. Turn your arm so your palm faces backwards.



3JC HealthCare

1 ending position

ring your affected arm up and across your body. As you move your arm, turn your arm so that your alm now faces your body. Keep the rest of your body from rotating.

our therapist may suggest that you add a light weight or exercise band.

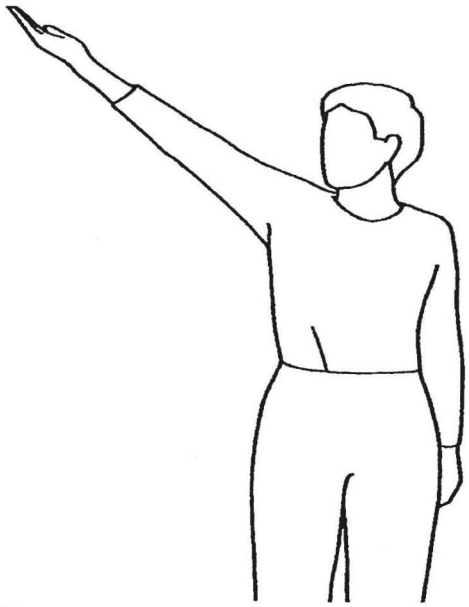
___ seconds, ____ repetitions, ____ times per day

BJC HealthCare

)2 starting position

;tart with your affected arm turned inwards with your hand in front of your other pocket (as though you vere trying to get something out of your pocket).

Keep your upper body straight.



JC HealthCare

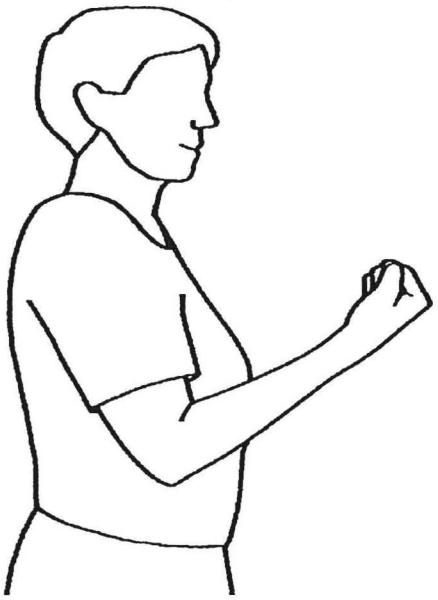
2 ending position

ing your arm up and out away from the side of your body. Turn your palm so it now faces you as you ove your arm.

eep your body from rotating.

our therapist may suggest that you add a light weight or exercise band.

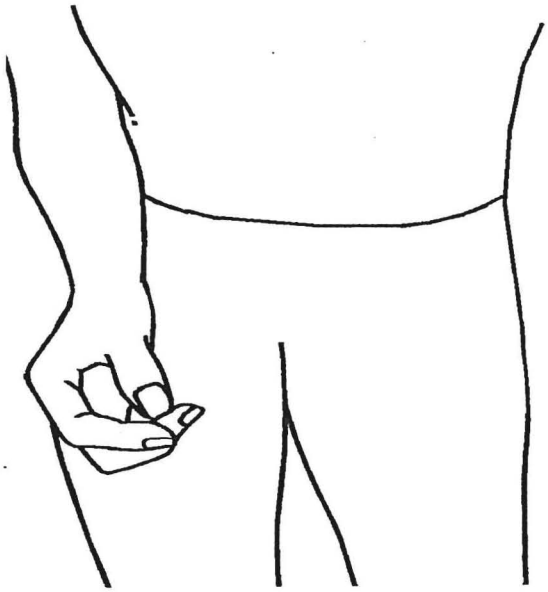
___ seconds, _____ repetitions, _____ times per day



he above elbow exercise is to begin on your first therapy visit. The objective is to reduce the chance of iffness due to lack of range of motion.

tand with your arm by your side. Bend your elbow as far as you can with your palm facing upwards. eep your forearm in line with your upper arm and not turned outwards or inwards as you bend your lbow.

___ seconds, ____ repetitions, ____ times per day

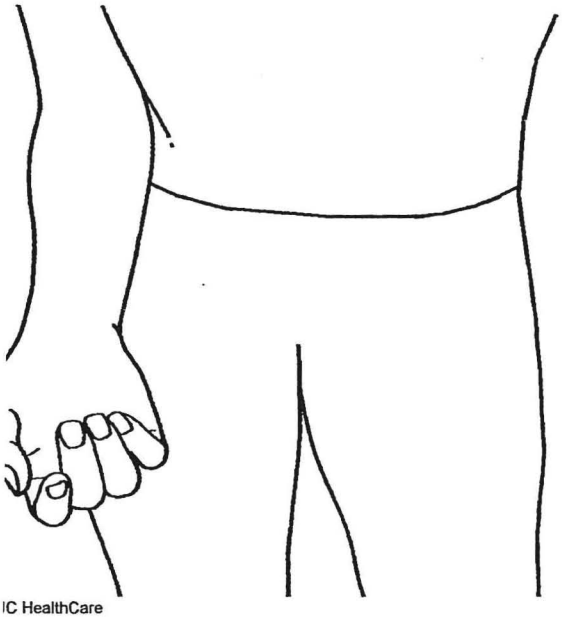


JC HealthCare

ıe above forearm exercises are to begin on your first therapy visit. The objective is to reduce the ıance of stiffness due to the lack of active range of motion.

:arting position

:art with your arm by your side and your elbow bent to a 90 degree (right) angle.

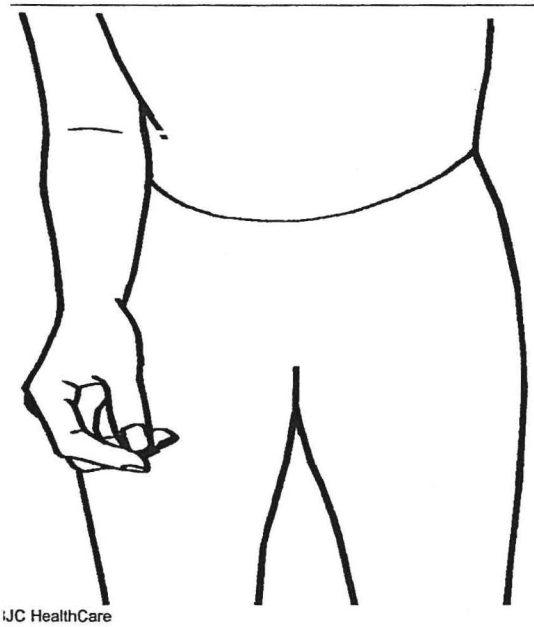


IC HealthCare

ıding position

ırn your palm upwards as far as possible. Keep your elbow next to your chest and do not let it move ross the front of your body.

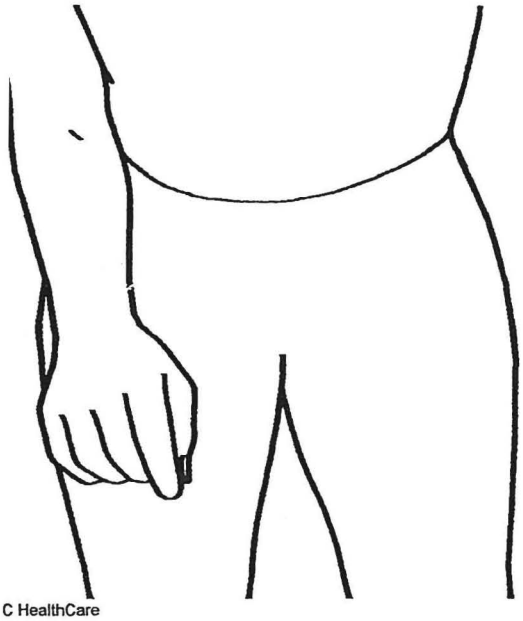
__ seconds, ____ repetitions, ____ times per day



JC HealthCare

tarting position

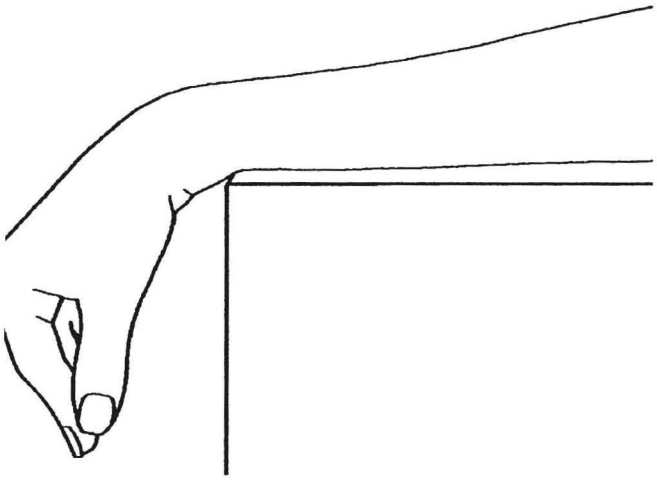
tart with your arm by your side and your elbow bent to a 90 degree (right) angle.



ding position

rn your palm downwards as far as possible. Hold your arm tightly by your side, and do not let your ›ow move away from your body.

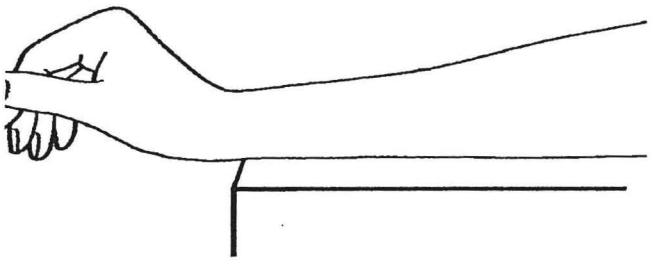
__ seconds, _____ repetitions, _____ times per day



ıe above wrist exercises are to begin on your first therapy visit. The objective is to reduce the chance
: stiffness due to the lack of active range of motion.

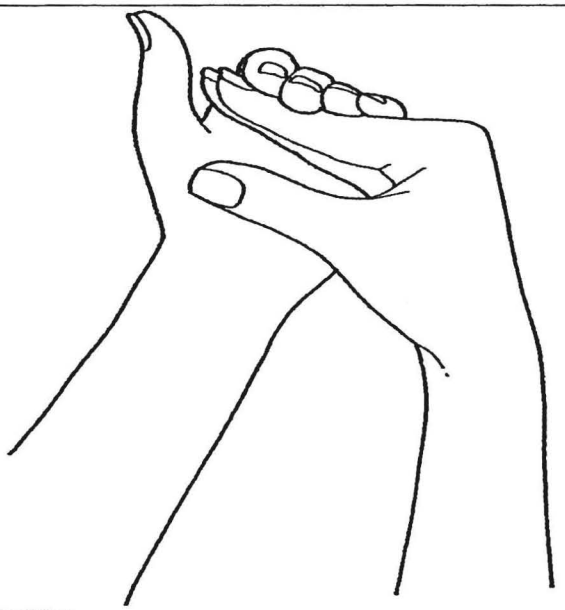
est affected hand and wrist off the table. Keep the arm on the table. Move your hand down as far as
ɔssible bending at your wrist yet allowing your fingers to straighten.

___ seconds, _____ repetitions, _____ times per day



est the affected hand and wrist off of the table. Keep the arm on the table. Move your hand up as far possible bending at your wrist and letting your fingers relax. Your fingers will naturally stay in a bent sition if they are relaxed.

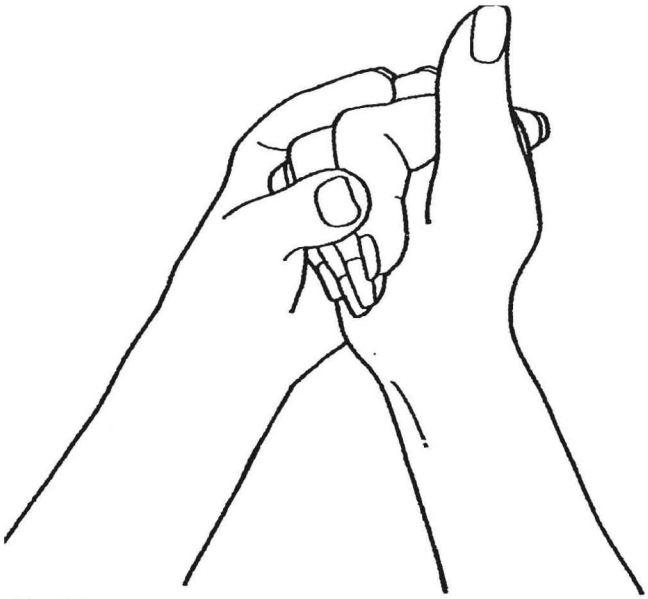
___ seconds, _____ repetitions, _____ times per day



he above finger exercises are to begin on your first therapy visit. The objective is to reduce the chance
: stiffness due to the lack of passive range of motion. These will continue for the first 4 weeks.

end your knuckles as far down as you can with your unaffected hand.

___ seconds, _____ repetitions, _____ times per day



JC HealthCare

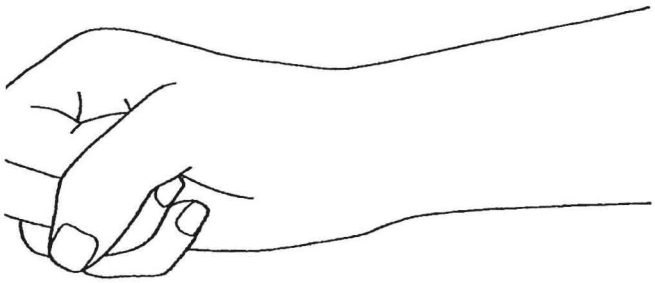
se your other hand to help position your hand as shown. Try to bend the top and middle knuckles, tting the end knuckles (those closest to the nails) stay straight.

___ seconds, ____ repetitions, ____ times per day

BJC HealthCare

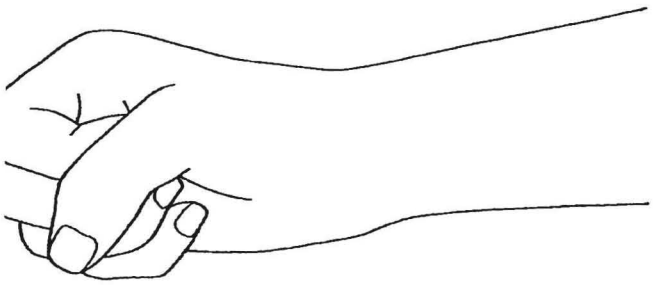
/ith your unaffected hand assist in making as tight a fist as possible.

___ seconds, ____ repetitions, ____ times per day



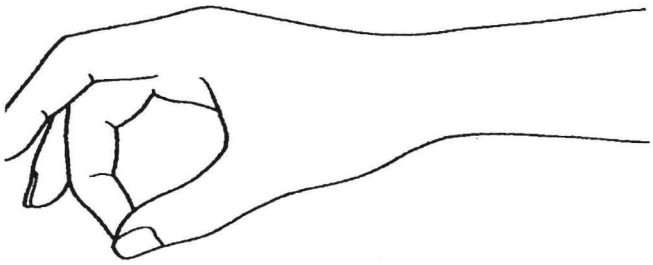
ake a fist only in the dynamic splint for the first 4 weeks being sure each joint bends as much as ssible. Allow the dynamic splint to straighten the fingers.

___ seconds, _____ repetitions, _____ times per day



ake a fist, being sure each joint bends as much as possible. Only do this in the neoprene splint fitted the 4 week mark after surgery. Remember prior to this time only make a fist in the dynamic splint that u receive on your first therapy visit.

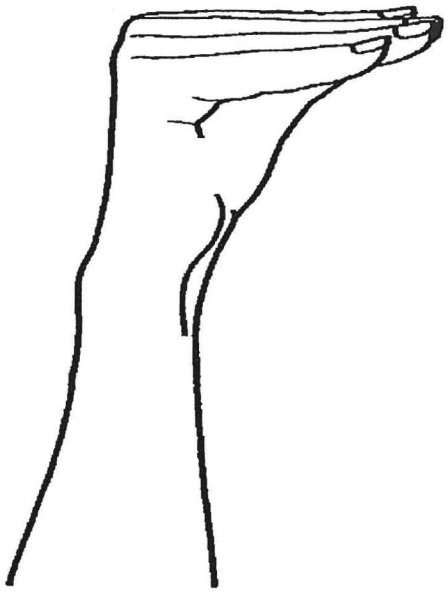
___ seconds, _____ repetitions, _____ times per day



JC HealthCare

ake an "O" by touching thumb to fingertips one at a time. This exercise is to be done only in the
:oprene splint at 4 weeks after surgery.

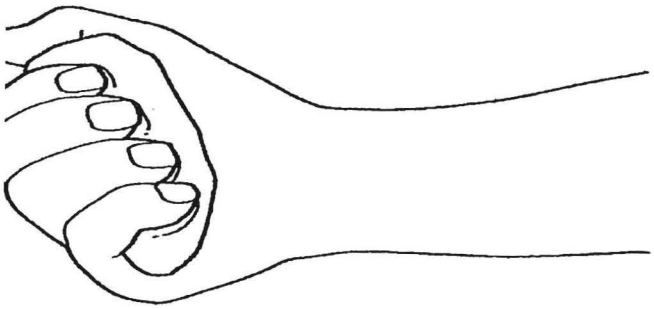
___ seconds, _____ repetitions, _____ times per day



JC HealthCare

ake a "tabletop" with fingers by keeping the wrist and the end and middle joints of the fingers straight
ıd bending only at large knuckles (closest to the wrist). This exercise is to be done only in the
ɜoprene splint at 4 weeks after surgery.

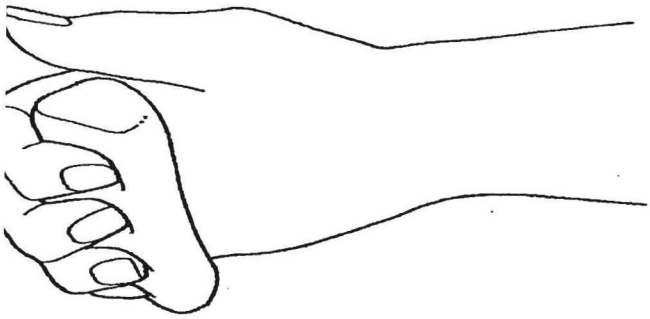
___ seconds, _____ repetitions, _____ times per day



JC HealthCare

ace putty in the palm of the hand and dig the fingers into the putty until they press through to the ılm. These exercises are to be done with a soft exercise putty only in the neoprene splint at 4 weeks ter surgery.

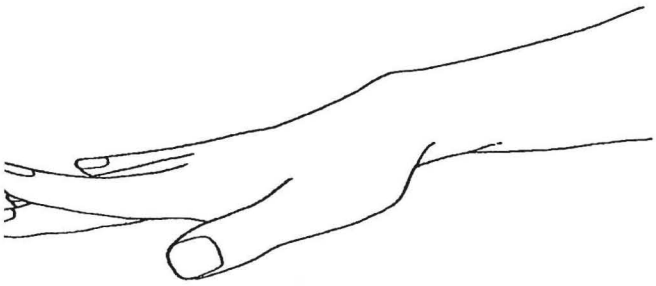
___ seconds, _____ repetitions, _____ times per day



IC HealthCare

ace putty at base of the fingers and squeeze only with the fingertips while keeping the palm of the nd open.

__ seconds, ____ repetitions, ____ times per day



JC HealthCare

ith palm flat on table, raise and lower fingers one by one. This exercise is to be done in the neoprene ılint at 4 weeks after surgery. This is an important exercise in that it strengthens the tendons that were ⁄olved in the surgery.

___ seconds, _____ repetitions, _____ times per day

PLINT INSTRUCTIONS-STATIC (THERMOPLASTIC) THIS IS THE SPLINT YOU WEAR AT NIGHT

URPOSE
__ Protect ___ Protect and immobilize

/EAR
___ At all times, remove for hygiene/exercise ___ times per day
___ All night only
___ All night and during the day as necessary
___ Wear ___ times per day for ___ minutes, and gradually increase wearing time to ____ minutes.
___ Other: _____

RECAUTIONS:
the splint causes any of the following problems, contact your therapist so the splint can be adjusted.

Pressure areas/red areas or skin problems
Increased pain
Increased swelling

Vhile wearing your splint, adjust the straps. The straps on your splint should be snug but not tight.

'o reduce swelling, keep arm elevated as much as possible, above the level of your heart is ideal, use illows.

:xercise ___shoulder ___elbow ___wrist ___fingers as directed by your therapist.
Continues...)

.Continues)

)erspiration is a problem you can wear stockinette over your arm, or apply powder/cornstarch to your
n or the splint before putting it on. NEVER use powder/cornstarch if an open wound/incision is
:sent. If you use stockinette, wash it daily by hand with a mild soap and let it dry flat. Do not put the
)ckinette in the washer or dryer.

\RE:
:an the splint with warm water and a mild soap and wipe inside with rubbing alcohol daily. This will
lp decrease any odor.

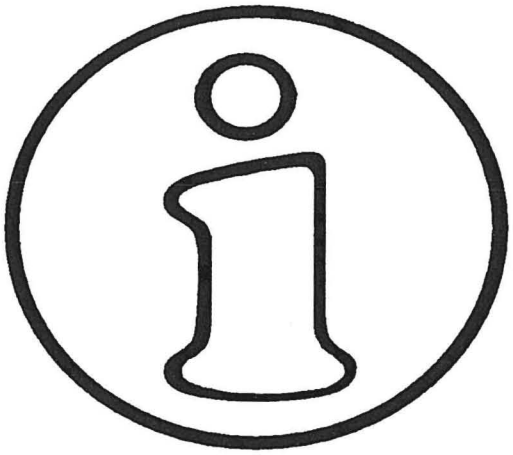
:an the outside of the splint as needed with warm soapy water and rinse or use a cleaner (such as
mple Green'). Wash the straps as needed with warm soapy water, rinse them out, and dry flat.

:ver leave the splint in a hot place, like a dashboard of a car, or on a radiator, as it can melt.

ing your splint(s) EVERY time you come to therapy.

) NOT try to modify the splint by yourself at home.

there are problems or questions regarding your splint or splint program, contact your therapist.



JC HealthCare

PLINT INSTRUCTIONS - DYNAMIC, THIS IS THE SPLINT YOU WEAR DURING THE DAY

JRPOSE
__ Increase motion

/EAR
/ear ___ times per day for ___ minutes, and gradually increase wearing time to ____ minutes.
ther: _____

RECAUTIONS:
the splint causes any of the following problems, contact your therapist so the splint can be adjusted.

Pressure areas/red areas or skin problems
Increased pain
Increased swelling

ome increased soreness is to be expected with wearing a dynamic splint, but it should not be severe.
ontact your therapist if questions.

/hile wearing your splint, adjust the straps. The straps on your splint should be snug but not tight.

o reduce swelling, keep arm elevated as much as possible.

xercise ___shoulder ___elbow ___wrist ___fingers as directed by your therapist.

Continues...)

Continues)

erspiration is a problem you can wear stockinette over your arm, or apply powder/cornstarch to your n or the splint before putting it on. NEVER use powder/cornstarch if an open wound/incision is sent. If you use stockinette, wash it daily by hand with a mild soap and let it dry flat. Do not put the ckinette in the washer or dryer.

RE:

ean the splint with warm water and a mild soap and wipe inside with rubbing alcohol daily. This will lp decrease any odor.

ean the outside of the splint as needed with warm soapy water and rinse or use a cleaner (such as mple Green'). Wash the straps as needed with warm soapy water, rinse them out, and dry flat.

ver leave the splint in a hot place, like a dashboard of a car, or on a radiator, as it can melt.

ing your splint(s) EVERY time you come to therapy.

NOT try to modify the splint by yourself at home.

here are problems or questions regarding your splint or splint program, contact your therapist.

IC HealthCare

PLINT INSTRUCTIONS STATIC, PRE-FABRICATED THIS IS THE SPLINT YOU WILL WEAR AT 4 EEKS AFTER SURGERY. IT IS TO BE WORN DURING ALL ACTIVITY PRESCRIBED BY YOUR IERAPIST.

JRPOSE
_ Protect ___ Protect and immobilize

EAR
___ At all times, remove for hygiene/exercise ___ times per day
___ All night only
___ All night and during the day as necessary
___ Wear ___ times per day for ___ minutes, and gradually increase wearing time to____ minutes.
___ Other: _____

RECAUTIONS:
the splint causes any of the following problems, contact your therapist so the splint can be adjusted.

Pressure areas/red areas or skin problems
ncreased pain
ncreased swelling

/hile wearing your splint, adjust the straps. The straps on your splint should be snug but not tight.

o reduce swelling, keep arm elevated as much as possible, above the level of your heart is ideal, use llows.
Continues...)

Continues)

ercise ___shoulder ___elbow ___wrist ___fingers as directed by your therapist.

erspiration is a problem you can wear stockinette over your arm, or apply powder/cornstarch to your n or the splint before putting it on. NEVER use powder/cornstarch if an open wound/incision is sent. If you use stockinette, wash it daily by hand with a mild soap and let it dry flat. Do not put the ckinette in the washer or dryer.

RE:
our splint has a metal bar, remove it before washing the splint.

ash the splint by hand (not in the washing machine) in the sink using warm soapy water. Rinse with ter and dry the splint on a flat surface. Replace the metal bar after the splint dries.

ng your splint(s) EVERY time you come to therapy.

NOT try to modify the splint by yourself at home.

here are problems or questions regarding your splint or splint program, contact your therapist.

JC HealthCare

ANAGEMENT OF EDEMA/SWELLING WILL BEGIN AT YOUR FIRST THERAPY VISIT AFTER URGERY.

welling can cause pain and decrease your ability to move your hand as easily as is normal. Swelling an make you form more scar tissue. You have some control over the amount of swelling you have in our hand.

/AYS TO HELP CONTROL SWELLING:
levation: Keep your hand elevated above the level of your heart as much as possible. Swelling is like ater. It runs downhill. It takes two hours of holding your hand up to decrease the edema caused by ve minutes of having your hand down.

lilking Massage: You can help decrease swelling with massage -- like pushing toothpaste out of a tube f toothpaste. Massage from the fingertips towards the wrist. Keep your hand elevated while you assage it.
lassage for at least 10 minutes, ___ times per day.

ompression: Your therapist may provide you with an compressive glove, self adherent wrap (such as oban or Roflex type), an elastic bandage (such as Ace wrap), or elastic finger compression sleeve to elp decrease swelling. These compression devices apply pressure to the outside to prevent build up of uids. These should be worn as directed by your therapist.
Vear _____.

CAR MASSAGE

e scar massage is to begin after your stitches are removed and the wound heals to a scar. Your erapist will instruct you as to whenyou should begin.

your body heals, following an injury or surgery, it forms scar tissue. Scarring is good in that it closes unds, but heavy, binding scar can prevent normal hand function. To gain a soft, supple scar that ows good movement of the hand, the scar must be stressed. You can stress and remodel your scar performing a variety of scar massage techniques. The following should be done frequently during e day.

ub scar with thumb or one or two fingers using circular, up and down and sideways motion with firm, ep pressure. Perform massage slowly, allowing tissues to stretch. Do not just slide over the skin.

eparate skin from tissue below by pinching skin between fingers and thumb. Roll skin between fingers.

ub scar with golf ball, twisting the ball to really grip the skin.

se vibration on scar. Any small electric appliance that vibrates, such as the handle of an electric aver or an electric toothbrush can be used on the scar.

etrograde massage. As you straighten your fingers, rub the scar towards your _____ . As you bend ur fingers, rub the scar towards your _____.

o scar massage for ____ minutes, ____ times per day.

JC HealthCare

EDENTARY ACTIVITY GUIDELINES AT FOUR WEEKS FOLLOWING SURGERY

ou are now allowed to perform these activities with your affected arm. Beginning these activities will ow you to start using the hand. The first time you use your arm for a new activity you may have some ght soreness. If you have pain for more than one hour after performing an activity or the pain is vere, you are not yet ready to perform that activity.

KAMPLES:

'ASHING AND DRESSING
ou are allowed to:
wash your hair
apply lotion
shave
oull on loose clothing

ou are not allowed to:
put on heavy boots
put on jeans or tight pants
put on pantyhose

RIVING
ou are not allowed to:
drive a car
change a tire
Continues...)

Continues)
rform repairs on a car

OPPING
I are allowed to:
ck up items weighing less than one pound (0,5 kg)

I are not allowed to:
ck up items weighing one pound or more
eer the cart
rry the grocery bags

OKING AND EATING
I are allowed to:
ash and dry cups, utensils and small plates, bowls etc.
se a fork to eat

I are not allowed to:
ash plates, pots and pans
se a knife to cut difficult-to-cut foods
arry pots and casserole dishes
erform heavy chopping

UNDRY
u are allowed to:
ad clothes into the washing machine
ld laundry that is dry
ut laundry away

u are not allowed to:
ke wet laundry out of the washer
ring out wet laundry
arry the laundry basket

RD WORK
u are allowed to:
erform sedentary tasks less than one pound of force

u are not allowed to:
ake
hovel, dirt or snow
se shears
se the lawn mower or weed eater

EANING
u are allowed to:
ust
ut small items away less than one pound

u are not allowed to:
acuum
nove heavy items
nove furniture
se a scrub brush
ft a pail of water

: HealthCare

DENTARY ACTIVITY GUIDELINES AT EIGHT WEEKS FOLLOWING SURGERY

u are now allowed to perform these activities with your affected arm. Remember that these activities : only completed with the ulnar drift splint that has been fitted at four weeks post-operative. The first e you use your arm for a new activity you may have some slight soreness. If you have pain for more ın one hour after performing an activity or the pain is severe, you are not yet ready to perform that :ivity.

:AMPLES:

ASHING AND DRESSING

u are allowed to:
/ash your hair
pply lotion
have
ull on loose clothing
ut on panty hose

)u are not allowed to:
)ut on heavy boots
)ut on jeans or tight pants

RIVING

)u are allowed to:
lrive an automatic transmission car with power steering

Continues...)

Continues)

I are not allowed to:
ive a stick-shift car or one without power steering
ange a tire
erform repairs on a car

OPPING
I are allowed to:
ck up items weighing less than three to five pounds (1.5 to 3 kg)

I are not allowed to:
ck up items weighing five pound or more
eer the cart
rry the grocery bags over five pounds

OKING AND EATING
I are allowed to:
ash and dry cups, utensils and small plates, bowls etc.
se a fork to eat
ash plates, pots and pans

u are not allowed to:
se a knife to cut difficult-to-cut foods
arry pots and casserole dishes
erform heavy chopping

UNDRY
u are allowed to:
ad clothes into the washing machine
ld laundry that is dry
ut laundry away

u are not allowed to:
ke wet laundry out of the washer
ring out wet laundry
arry the laundry basket

RD WORK
u are allowed to:
erform sedentary three to five pound tasks

u are not allowed to:
ake, hard tooth
hovel, dirt or snow
se shears
se the lawn mower or weed eater

EANING
u are allowed to:
lust
ut small items away
acuum

u are not allowed to:
Continues...)

Continues)
ove heavy items
ove furniture
e a scrub brush
: a pail of water

HealthCare

ɔENTARY ACTIVITY GUIDELINES AT 12 WEEKS FOLLOWING SURGERY AND BEYOND

ɹ are now allowed to perform these activities with your affected arm. The ulnar drift splint will be ıtinued to be used. The first time you use your arm for a new activity you may have some slight eness. If you have pain for more than one hour after performing an activity or the pain is severe, you not yet ready to perform that activity.

AMPLES:

\SHING AND DRESSING

ɹ are allowed to:
ash your hair
ɔply lotion
ıave
ɹll on loose clothing

.IVING

ɹ are allowed to:
·ive an automatic or manual transmission car with power steering

ɹ are not allowed to:
ıange a tire
erform repairs on a car over ten pounds
ontinues...)

Continues)

OPPING
are allowed to:
k up items weighing less than seven to ten pounds (3.5 to 6.5 kg)

are not allowed to:
k up items weighing ten pounds or more
rry the grocery bags over ten pounds

OKING AND EATING
are allowed to:
ash and dry cups, utensils and small plates, bowls etc.
e a fork to eat

are not allowed to:
rry industrial level cookware or large family meal food items

JNDRY
are allowed to:
ad clothes into the washing machine
ld laundry that is dry
t laundry away

u are not allowed to:
arry the laundry basket over ten pounds

RD WORK
u are allowed to:
erform all sedentary tasks ten pounds or less

u are not allowed to:
ake in hard soil
hovel, dirt or snow over ten pounds
se shears only on small branches
se the lawn mower on incline or declined surfaces

EANING
u are allowed to:
lust
ut small items away

u are not allowed to:
nove heavy items
nove furniture
ft a pail of water over ten pounds