A case study report: treating a patient with a complex upper extremity diagnosis

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A Case Study Report:

Treating a Patient with a Complex Upper Extremity Diagnosis

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Elizabeth Dillard

Lynne Chapman

Note: This document describes a Capstone Dissemination project reflecting an individually planned experience conducted under faculty and site mentorship. The goal of the Capstone Experience is to provide occupational therapy doctoral students with unique experiences whereby they can demonstrate leadership and autonomous decision-making in preparation for enhanced future practice as occupational therapists. As such, the Capstone Dissemination is not formal research.
Abstract

This patient referred by a worker’s compensation doctor came to therapy with a diagnosis of right wrist and hand tendonitis, forearm myalgia, and possible carpal tunnel syndrome (CTS). Assessment results found that Kerrie had decreased ROM, decreased strength, decreased function, increased pain, increased edema and decreased sensation. Although assessments by the therapist during occupational therapy treatment indicated a more complex diagnosis, after three weeks of treatment the doctor updated the diagnosis to only include CTS.

The client, Kerrie, is a 35 year old nurse. She and her family enjoy going to her son’s basketball and baseball games, and hosting family gatherings in their new home. She works for a nurse helpline 25 to 30 hours a week, taking calls in her home. The models of practice (MOP) chosen for this case study are the biomechanical model of practice and the client-centered MOP.

Initial treatment focused on decreasing Kerrie’s pain level through guided breathing occupations, modalities, and active range of motion stretches. A work-station evaluation was done with Kerrie in her home. This identified and resolved several possible causes of biomechanical and repetitive stress and adapted the workstation to fit her needs. Kerrie indicated through conversations and behavior being perfectionist, a risk factor for developing an upper extremity disorder. Yoga has been shown to reduce stress and prevent injury at work, increase flexibility and hand strength and reduce pain. This occupation was intended to increase Kerrie’s flexibility, increase her grip strength, reduce her stress, reduce pain and carpal tunnel syndrome (CTS) symptoms, and improve body mechanics. A short yoga series from a highly respected work-out DVD was chosen to guide this occupation. At her final assessment Kerrie’s
neck and shoulder pain had resolved, she had no symptoms of CTS or other tendonitis of her wrist and forearm, and her strength and function had improved.

**Introduction**

**Background Information**

Kerrie’s initial evaluation was performed on January 28, 2008. Her diagnosis from the worker’s compensation doctor was right wrist and hand tendonitis, forearm myalgia, and possible carpal tunnel syndrome (CTS). After February 14th, Kerrie’s diagnosis was modified to only include CTS. She explained that in January of 2007, she began experiencing pain in her right arm. She delayed receiving treatment, stating that she “believed that the pain would just go away”. By October of 2007, her pain had worsened to include right hand pain, swelling, numbness, and tingling. When she recognized that this condition was not going away by itself, but only worsening, Kerrie sought treatment from her physician. Kerrie’s worker’s compensation doctor recommended that she take a 10 minute break every 30 minutes during working hours, prescribed her the medication, Relafin, and gave her a prescription for occupational therapy treatment.

Kerrie’s pain averaged 3/10, but would increase to 6/10. Her pain was concentrated on the dorsal aspect of her hand, but radiated up to her elbow and shoulder. Her hand and arm occasionally swelled. She complained of difficulty ironing, blow-drying her hair and cooking. She stated that she would occasionally drop heavy objects unexpectedly and that she had daily headaches. She had difficulty sleeping because of pain in her arm and hand. It would frequently wake her while she was sleeping. She stated she had difficulty falling asleep because of anxiety and pain.
Kerrie is a 35-year old nurse. She is married with a seven-year old son. She and her family enjoy going to her son’s basketball and baseball games, and hosting family gatherings in their new home. She works for a nurse helpline 25 to 30 hours a week, primarily during the night, taking calls in her home. Her pain increases when after working long hours and she thinks her work station set-up could be affecting her arm. Kerrie chose to take this job in the fall of 2006 because she believed it would help her to spend more quality time with her family and be available for her young son. She and her husband also would like to become pregnant, and she thought that this position could accommodate caring for an infant. She has previously worked as a pediatric nurse and home health nurse, which she felt were her “passions”. Although she says she liked this job because she thought it would “work for her family”, but it is not as fulfilling as her previous nursing positions were. She now feels that taking this position has not allowed her more quality time with son and family. She says she constantly feels tired and has little energy. She finds it difficult to sleep well during the morning when time allows. In the past year, her house has required numerous repairs. This has required Kerrie to be awake and overseeing repair workers when she should be sleeping. Her work schedule has been so stressful on her body and this job is not what she is passionate about, because of this she is considering other options working as a nurse.

Model of Practice

The models of practice (MOP) chosen for this case study are the biomechanical model of practice and the client-centered MOP. The biomechanical MOP is “used to treat individuals with activity limitations due to impairments in biomechanical body structures and functions, including structural instability, decreased strength, limited range of motion, and poor endurance.” (James, 2003) The domains of concern addressed through a biomechanical frame of reference [MOP] are
structural stability, strength, ROM, edema, and endurance including both cardiopulmonary and
muscle endurance. (Kielhofner, 1997) The biomechanical MOP is the most commonly used
model in the outpatient orthopedic setting. The client-centered model of practice (Law, 1998)
was chosen because the belief that meaningful and purposeful interventions will increase and
improve client function.

**Initial Evaluation**

Kerrie’s past medical history (PMH) was reviewed during the initial evaluation. It was
unremarkable for hypertension, diabetes, or cancer. In 1996, she was in a motor vehicle accident
where she sustained whiplash, no other treatment followed, and symptoms appeared to resolve.
In 2000, Kerrie was reaching overhead for heavy nursing equipment, and it slipped and fell on her
right shoulder. She reports that her shoulder hurt after that, and her doctor gave her a shot of
cortisone and symptoms resolved without further treatment. In 2005, Kerrie slipped while
leaving a home as part of her home health position. Since this incident, she has regular pain in her
left hip. Kerrie is currently being treated for polycystic ovarian cysts.

During the initial evaluation, information was gathered on Kerrie’s range of motion
(ROM), grip and pinch strength, sensation, edema measurements, and posture. Kerrie is right
hand dominant and right side affected. Special tests including resisted middle finger extension for
lateral epicondylitis and/or radial tunnel syndrome (or Maudsley’s test), the raised arm test for
CTS (Amirfeyz, 2005), Phalen’s test for CTS (LaJoie, 2005), and Finkelstein’s test for de
Quervain’s tendonitis (Finkelstein, 1930) were performed. Kerrie’s hand, elbow, and shoulder
ROM were within normal limits (WNL), although thumb opposition was performed with
difficulty and pain. The resisted middle finger extension was positive for possible lateral
epicondylitis. The raised arm test and the Phalen’s test for CTS were negative. Finkelstein’s test
for possible de Quervain’s tendonitis was positive. Volumetric readings measuring edema were 484 mL displaced for the right hand and 465 mL displaced for the left hand, a difference of 20 mL. Sensation was assessed using Semmes-Weinstein microfilaments (Bell-Krotoski, 1987). Sensation was within normal limits, but diminished in the 4th and 5th digits of the right hand. All other digits were in the normal threshold. The DASH (Jester, 2005) questionnaire was performed with a score of 36. A higher DASH score indicates greater daily living difficulties. Scores can range from 0 to 100. On the DASH questionnaire Kerrie indicated she had the most difficulty doing heavy household chores, gardening or doing yard work, washing/blow drying her hair, and recreational activities which required some force through her arm, shoulder, or hand. Her grip strength and pinch strengths were as follows:

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<tr>
<td>Grip</td>
<td>25#</td>
<td>50#</td>
</tr>
<tr>
<td>Lateral pinch</td>
<td>14# with pain</td>
<td>17#</td>
</tr>
<tr>
<td>Three-point pinch</td>
<td>7#</td>
<td>13#</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Strength norms for women (aged 35-39)</th>
<th>Right (low to high)</th>
<th>Right mean</th>
<th>Left (low to high)</th>
<th>Left mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grip</td>
<td>50#-99#</td>
<td>74#</td>
<td>49#-91#</td>
<td>66#</td>
</tr>
<tr>
<td>Lateral pinch</td>
<td>12#-21#</td>
<td>16.6#</td>
<td>12#-22#</td>
<td>16#</td>
</tr>
<tr>
<td>Three-point pinch</td>
<td>13#-29#</td>
<td>17.5#</td>
<td>12#-24#</td>
<td>17.1#</td>
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(Mathiowetz et. al, 1985)

Grip and pinch strengths were on the lower end of normative levels, but more pronounced on the right side. Grip strength was far below normative levels on the right side, left-sided strength was
within normative levels, but low. Left and right sided lateral pinch strengths were both within normative levels, but the right side was lower. Right-sided three-point pinch strength was far below normative data. Left-sided three-point pinch strength was on the low side of normative levels. Kerrie’s posture was visually assessed and noted to have a forwardly rounded or slightly kyphotic posture. Kyphotic posture is associated with frequent headaches. (Fernández-de-las-Peñas, et. al, 2006)

Seven questions addressing this patient’s social needs were assessed using a questionnaire. Through this handout and further discussions with the patient, the OT’s treating Kerrie were able to review, and gain additional insights to her social wellness. These questions included the availability of help/assistance at home, if needs with regard to obtaining and administering medications were being met, appetite, sleep, if barriers to mobility were unresolved, or if the patient had unresolved feelings toward current physical problems and if the patient believed that expectations of physical/occupational therapy would be met. The patient indicated that she was unable to sleep comfortably for 6 to 8 hours each night, and that she had unresolved feelings regarding her current physical problems (For example: anger, worry, depression, fear, etc.). Kerrie expressed frustration and guilt during the initial evaluation because she felt she was causing her co-workers to carry her workload.

Additionally, through conversations with the Kerrie, her social wellness was evaluated. Kerrie described herself as a “Type-A” personality, a perfectionist, and a people pleaser. She verbalized her inability to relax, and that she felt constant pressure from herself to perform occupations as she used too, even though she was weak or they caused pain. She would make frequent negative comments about her physical well-being such as, “I’m just falling apart.” “Why do I have all of these problems?” and “I’m such a klutz.” She expressed having “a lot” of
guilt about reducing her working hours because of her condition. She also frequently expressed that her family was struggling financially because of her reduced income. In the initial weeks of her OT treatment, she appeared overly anxious about her condition and whether she would be able to remain at this position. The OT’s treating Kerrie agreed that these worries were premature. Kerrie appeared to have an inability to initiate occupations that would allow her to relax, de-stress, and fully enjoy her life.

**Ongoing evaluation**

Manual therapy is defined as “skilled hand movements intended to improve tissue extensibility; increase range of motion; induce relaxation; mobilize or manipulate soft tissue and joints; modulate pain; and reduce soft tissue swelling, inflammation, or restriction.” (McMahon & Donatelli, 2004). Initially, Kerrie’s upper extremity (UE) appeared to have a highly developed soft-tissue restriction. These muscle adhesions appeared to have been causing pain and limitations in Kerrie’s ability to turn her head both directions, reach for items overhead, and sit in a comfortable position. Muscle palpation was performed on the patient to identify myofascial adhesions, muscle tenderness and pain. Myofascial pain syndrome is characterized by myofascial trigger points in a palpable taut band of skeletal muscle and referred pain to a remote location. (Hou, et. al, 2002) Myofascial adhesions were identified in the biceps, mid-deltoid, anconeus, triceps, scalenes, levator scapula, pectoralis major, deep upper trapezius, infra/supraspinatus attachments, rhomboids, latissimus dorsi, and subscapularis. Manual muscle testing was performed on this patient. Strength during shoulder flexion was 5/5, shoulder scaption was 5/5, internal rotation was 3/5, external rotation was 4/5, adduction was 4+/5, and abduction was 5/5.

**Assessment**
Assessment results from the initial evaluation indicated that Kerrie had numerous upper extremity conditions. These included possible lateral and medial epicondylitis, de Quervain’s tenosynovitis, possible nerve impingements, and abnormal muscle tone. Problems included decreased ROM, decreased strength, decreased function, increased pain, increased edema and decreased sensation. The plan of care (POC) requested that the patient receive occupational therapy three times per week for four weeks, this POC was later extended.

**Goal setting**

Goals set following the initial evaluation were as follows. Short-term goals: Originally set for 2 weeks, later extended to 4 weeks.

1. Patient will be independent with initial home exercise program to decrease edema, increase thumb opposition range of motion, increase strength, and improve sensation for increased ability to wash and blow dry hair.

2. Patient will verbalize 3 adaptations to be made to her work station to decrease repetitive stress.

3. Right-handed edema will decrease by 10 mL to improve opposition for patient to hold blow dryer and wash her hair.

Long term goals: To be completed in 4 weeks, later set for 8 weeks.

1. Patient will have normalized tension, evaluated through OT manual therapy and patient perception, in the upper trapezius/neck to decrease headache frequency and improve sleep.

2. Patient will have adequate grip and pinch strength and active range of motion of her right hand to perform lifting, pinching and grasping for increased ability to perform heavy household task.
3. Patient’s pain will decrease to 1-2 on average to not interfere with her
   work/occupations of daily living.

4. Patient will have 0 to minimal edema to decrease pain and difficulty during
   opposition to improve grasping handheld objects.

5. Patient’s sensation will improve to normal thresholds by responding to sensation
   when evaluated by the Semmes Weinstein microfilaments (using the 2.83 evaluator).

6. Patient will be independent with a continued home exercise program for
   strengthening, pain management and improved endurance at work.

Goals identified by the client:

1. To have no pain while working or performing household tasks.

2. To increase in strength to open tight jars, heavy doors, and so as not to drop objects.

**Explanation of treatment interventions**

From 1/28/2008 to 2/19/2008 treatment focused on decreasing and localizing the source
of Kerrie’s pain by providing education, manual therapy and using modalities. Treatment
methods used were heat (hot packs, fluidotherapy), stretches (see computer/desk stretches) to
relieve tension and lengthen muscles, nerve glides, tendon glides, splinting, transcutaneous
electric nerve stimulation (TENS), manual therapy, and iontophoresis. These treatment methods
were chosen because there is evidence-based research supporting there ability to decrease pain
and resolve orthopedic conditions, their availability for use, and the site mentor, Liz’s experience
in using them has been positive. Strengthening with stretching has been shown to be effective in
the treatment of lateral epicondylitis. (Martinez-Silvestrini, 2005) According to the Mayo
Clinic (2007) There is evidence to support the benefits of a stretching program. These
benefits include, increasing flexibility, improving joint range of motion, improving
circulation, promoting correct posture, relieving stress, and possibly reducing injury. Current research has demonstrated the efficacy of splinting, ultrasound, nerve gliding exercises, carpal bone mobilization, and yoga for people with CTS. (Muller, 2004)

A variety of modalities were utilized for their various benefits. Hot packs were frequently used at the beginning of treatment on Kerrie’s neck/shoulder and/or forearm/hand. The effects of heat are well known and include pain relief, increased blood flow, increased extensibility of collagen tissue and decreased joint stiffness. (Cannon & Mullins, 1984) Fluidotherapy was used as another heat modality because higher temperatures can be obtained, and the grainy medium can be used to enhance the sensory component. Ultrasound was used as a modality to heat the deeper structures of the hand, decrease inflammation, decrease edema, and increase the elasticity of the transverse carpal ligament. Some of the thermal effects produced by ultrasound are and increased metabolic rate, alteration of nerve conduction, decreased pain, and assistance in the resolution of inflammation and edema. (Cannon & Mullins, 1984) TENS was also used as a modality to decrease pain. The main theory as to why TENS reduces pain is known as the gate theory of pain, postulated by Melzack and Wall in 1965. The gate theory postulates that if the larger, more easily excited sensory fibers are over stimulated, they can flood the pathways to the brain and close the gate to transmission of pain fibers, thereby diminishing awareness of painful stimuli. (Singer, et al, 1989) Iontophoresis is a non-invasive method for directing a medication transdermally using a small electronic charge. For our use, dexamethasone, an anti-inflammatory drug, was used occasionally over what appeared to be inflamed tendons in Kerrie’s extensor muscles of her forearm. Iontophoresis with dexamethasone sodium phosphate has been
shown to relieve pain in acute elbow tendonitis. (Anderson, 2003) Kerrie seemed to feel the least pain when a heat modality preceded manual therapy treatment, and usually requested this at the beginning of each treatment, either in her cervical spine, pectoralis attachment, rhomboids, or forearm.

**Overview of Kerrie’s treatment**

In the first treatment session, she was fitted with a custom-made thermoplastic volar thumb spica splint for rest. This splint was provided with the intention that the extensor muscles of the forearm could rest while Kerrie was not working. The reason for the thumb spica splint was to provide rest for the inflamed tendon which was causing possible de Quervain’s tenosynovitis. Education was provided along with handouts on, managing pain and promoting healing for lateral epicondylitis (See Appendix B), tendon gliding (See Appendix C), median nerve glides (See Appendix D), and computer/desk stretches and hand, shoulder and arm stretches (See Appendix E). The following treatment, which was three days later, the patient said she was in “a lot of pain up to a 6-7/10”. It seems that having her forearm supinated during the splint fitting had increased her symptoms. To reduce her pain, for this treatment session the patient’s forearm was placed in fluidotherapy, she was educated on tendon glides, and treated with the TENS unit. She was instructed to discontinue wear of splint as it could be causing an increase in symptoms of possible radial tunnel syndrome. Kerrie was provided an elastic stocking for edema reduction. Pain at the end of this treatment session had decreased to 2/10. As this treatment session, the site mentor, Liz, suggested that a possible diagnosis could be radial nerve entrapment.

There are three important signs in the differential diagnosis of tennis elbow and radial tunnel syndrome: tenderness over the posterior interosseous nerve; tenderness distal to the radial
head through the extensor muscle mass (in RTS); and tenderness over the lateral epicondyle in lateral epicondylitis. (BenEliyahu, 1995) Kerrie presented with each of these symptoms. A letter was written to the doctor suggesting this diagnosis as a possibility, as well as requesting approval for a TENS unit. The content of the letter stated the following,

Dr. (Dr’s name),

We have been working with (patient’s name), please see her initial evaluation attached. After working with her further, it appears that she may have a radial nerve entrapment at the forearm. She had pain with resisted middle finger extension. She also has exquisite tenderness with resisted supination. Splint use has actually aggravated her symptoms. She is doing best with moist heat, gentle stretches and TENS. We would like to order her a TENS unit for home use to decrease her pain and inflammation. We would also like to continue with her occupational therapy treatment 3x/week x 4 more weeks.

Please sign the enclosed prescription for a home TENS unit. Call if you have any questions or concerns.

Thank you, Liz Dillard, MS, OTR/L, CHT (signed)

The following treatment session on 2/5/2008, pain was decreased and primarily in dorsum of the hand and at the lateral epicondyle. Treatment provided was fluidotherapy, tendon glides, edema massage, manual therapy (muscle massage), TENS, and radial nerve glides. The treatment on 2/7, Kerrie complained of a feeling generalized pain and weakness in the arm and forearm. Manual muscle testing was administered, indicating numerous weaknesses. See evaluation results. Kerrie was shown a shoulder distraction occupation to relieve pain and UE tightness. This shoulder distraction occupation is commonly referred to as a sink pull. For the
occupation, the person holds onto a waist-high edge (often a sink), squats slightly, and leans back, using his or her body weight to aid in distraction. The patient stated that this “felt good” and implemented this into her daily routine.

During the following three treatment sessions, Kerrie complained of pain between 6-7/10. The location of the pain varied from the pectoralis attachment (infraclavicular region), the dorsum of the hand and the cervical spine/upper trapezius area. Kerrie was treated with TENS, manual therapy of the neck, shoulder, and arm, and shown a variety of stretches to be performed as a home exercise program. Kerrie presented with a variety of symptoms and increased pain during this time period. Kerrie was to meet with her doctor on 2/14/08, so a letter was faxed to the doctor explaining some of the findings of our treatments and suggesting the possibility of a diagnosis of thoracic outlet syndrome (TOS). The content of the letter dated 2/13/08 stated:

Dr. (Dr’s name),

(Patient’s name) has been attending O.T. since 1/28/08. She came in with a diagnosis of right wrist/hand tendonitis, forearm myalgia and possible CTS. We suspected that she might also have a radial nerve entrapment in the forearm due to pain with resisted middle finger extension, c/o pain at the radial tunnel, and pain with resisted supination. Now it seems like she may actually have some compression at the right brachial plexus. She is c/o her arm feeling extremely tired and heavy. She has pain at the insertion of her pecs. She has posterior shoulder muscle tightness and spasms. Her symptoms increased when the weight of a moist hot pack was applied to her shoulder, and after doing some breathing exercises. She has a forward rounded posture and her head is forward flexed as well. She may be having symptoms of TOS. (Patient’s name) is coming in to your office on Thursday 2/14/08 for an EMG. We have scheduled her for continued therapy next week. Please advise us of any finding that will help us with her therapy. Thank you for this referral!! Signed, Liz Dillard.
At Kerrie’s 2/14/08 doctor’s visit, an electromyography (EMG) was performed. An electromyographic study records the electrical activity produced by a contracting muscle. When a muscle is at rest, no electrical activity is recorded. As the muscle contracts, the electrical activity, as measured by the EMG, increases proportionately. (Trombley, 2002) The doctor who performed this procedure found an abnormality in the electrical conductance of the median nerve, and officially diagnosed Kerrie with CTS. Near the end of Kerrie’s OT treatment, the Dr. reported to us that this was a very mild case of CTS, which is consistent with findings in therapy. Kerrie did not have complaints of numbness or tingling in digits 1-3, as normally seen in CTS. She did not have symptoms present during Phalen’s test, Tinel’s sign, or the raised arm test, all common diagnostic tests for CTS. The doctor ordered Kerrie to be treated for CTS and requested that myofascial release and massage be performed on her neck, shoulder and UE. The site mentor, Liz, has received training in these techniques through numerous book, articles, and years of practice as a certified hand therapist. The student, Carrie, observed Liz perform these techniques for over 6 weeks on Kerrie and other patients. She also read articles and textbooks related to these techniques before treating using these treatment techniques independently.

Unfortunately, the doctor assigned to Kerrie never addressed either of the letters sent to her from the therapist’s. After visits to the doctor, Kerrie stated that although the doctor was friendly, and talked to her about CTS, the doctor never “touched her” or completed a hands-on evaluation. There is a possibility that Kerrie’s diagnosis included either thoracic outlet syndrome, radial tunnel syndrome, or some other diagnosis, but cannot be confirmed. As for further Kerrie was treated for CTS, with myofacial release, and began a strengthening program. Kerrie was not diagnosed with radial tunnel syndrome or TOS by the physician, treatment focused on her given diagnosis of CTS.
On 2/19/2008 a worksite evaluation was performed in Kerrie’s office, located in her home. Kerrie’s job required her to answer the telephone, type in caller information, including name, address and phone number, and then use the mouse to click on relevant information. The information that she “clicks on” is expanded in an information tree on the computer screen. This is how she determines what information is necessary to communicate with the caller. Only in the beginning of the call is she using the keyboard, thereafter it is through the use of a mouse. See picture of office set-up in Appendix F. She had several pieces of adaptive equipment in place which decreased repetitive stress. She had a leather adjustable chair with a high back and armrests, she used a headset to talk on the phone, she had a footstool to rest her feet, she had a gel pad to rest her wrists on while using her keyboard or her mouse and she had a large computer screen. Together, we went thorough the Work Station design handout (See Appendix G) and modified the set-up as able. We discussed modifying the sensitivity of the mouse so her wrist would not have to perform radial or ulnar deviation as frequently. We increased the chair height so the computer screen was eye level. We recognized that she was sitting with her shoulders forward and in front of her hips, with a forwardly rounded posture. We found that she could comfortably sit back and take advantage of her tall-backed chair with lumbar support. We addressed the importance of good posture, including sitting with the back straight, shoulders back, and using a lumbar roll or towel to accentuate the normal curve of her back. It is important to have correct sitting posture because it helps prevent strain and repetitive use problems (including Kerrie’s CTS and UE pain), keeps bones and joints in the correct alignment so muscles are used more efficiently, and decreases the stress on the joints and ligaments holding the spine together. We set-up her workstation so that she could sit back in her chair, with her feet on her footstool, and bring the mouse and mouse pad closer to her body so that her arm was not remaining in
extension for long periods of time. Recommendations were made to use a mouse with a thumb button to click instead of an index button and also to adjust the drawer which the keyboard was used. Kerrie thought the recommended changes were helping along with taking more frequent breaks and performing her computer/desk stretches.

Following the doctor’s diagnosis of CTS and request for manual therapy, including myofascial release, treatment focused on intensive and prolonged manual therapy (often lasting over one hour) and CTS protocol. The purpose of myofascial release is to move superficial tissues over the underlying structures to improve their mobility and to relieve the subcutaneous tightness. (Hou, et. al, 2002) Pain in Kerrie’s neck and shoulder significantly decreased following these treatments sessions. A few examples of what she said are, “I felt so much better since Friday’s treatment, and I even slept better.” And “I can’t believe how much better I feel.” Kerrie appeared to have a greater understanding of positions of deformity which were causing an increase in myofascial adhesions and pain. She was issued a pre-fabricated Futuro wrist brace to wear at rest, although it later needed to be reordered for a different size.

On Kerrie’s re-evaluation dated 3/12/08, she showed significant improvement. Her pain had decreased, her strength had increased, and she was sleeping better. She said she had decreased pain with writing, turning a key, and felt that her hand strength had improved. Her DASH score was lowered to a 26. Her grip strength, lateral pinch and 3-point pinches were comparable from right to left side. The strength results were:

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<tr>
<td>Grip</td>
<td>51#</td>
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<tr>
<td>Lateral pinch</td>
<td>19# with pain</td>
<td>18#</td>
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Her STG’s 1-3 were met. Her LTG’s were 50% met. LTG’s number two, four, and five were met. LTG number 1 was partially met, her neck/upper trapezius had decreased an increase in soft-tissue mobilization, but she continued to have headaches. LTG number 3 was partially met. Kerrie felt that her overall pain had decreased, but was still 3/10 most of the time, mainly in her forearm extensors and pectoralis minor muscle attachment. LTG number 6 was partially met. She had not been issued a full home exercise program for discharge. Overall, Kerrie had increased in strength, edema had decreased, and function had improved. Her office space had been adapted to reduce repetitive stress. A short phone discussion with the doctor was held after her re-evaluation. The doctor agreed that three additional weeks of therapy would be beneficial to Kerrie, and that a strengthening program should be implemented.

Kerrie began a strengthening program to “make her an athlete for her job” and maintain her gain. These treatments included occupations such as in-clinic volleyball games, the rebounder with weighted balls, the UBE (upper bike ergometer) and theraband exercise for her upper back, shoulders, and forearms. She was also instructed in occupations to relax, including deep breathing exercises. Her home exercise program consisted of theraband exercises, outdoor games with her son, like basketball or frisbee, tendon and nerve glides, and deep breathing/relaxation exercises.

A frequent concern Kerrie expressed was her inability to relax. She said things such as, “Even when I’m sitting and watching TV I’m noticing how tight I keep my shoulders.”, and “Life never seems to slow down, there are always things going on.” And “I know I hold a lot of tension and stress in my neck/shoulders.” Kerrie regularly expressed that she had difficulty taking time
for herself and that she took on extra work not required of her. For example, Kerrie was
scheduled to be off of work during her son’s spring break and the following week, she filled in
several times for co-workers and did not take the time to relax as planned. Financial concerns
also seemed to be a factor in taking more hours. She verbalized concern when her job cut her
hours due to her diagnosis and began looking for another job to supplement her income. During
the final weeks of therapy Kerrie had decided to take another job to supplement her family’s
income. This decision was discouraged by the treating therapist due to Kerrie being treated for a
work injury. Later Kerrie decided to postpone taking an additional job until her UE improved.

Yoga, group exercise, and/or regular massages were suggested to Kerrie numerous times.
It appeared though that she needed guidance to initiate an occupation such as yoga in her life. We
believed that this would help her to decrease her stress, possibly improve soft-tissue mobility,
increase her strength and decrease pain in her UE. Kerrie had expressed interest in beginning a
yoga program. She had discussed how flexible she had been in high school as a cheerleader, and
wanted to be more flexible now. Yoga has also shown numerous health benefits. Yoga has been
shown to reduce stress and prevent injury at work (Taytor-Gura, 2002), increase flexibility and
hand strength (Tran, Holly, Lashbrook & Amsterdam, 2001). Most relevant to this case is a study
in the yoga groups had significant improvement in grip strength, pain reduction, and a reduction
in symptoms during Phalen’s test. Therefore, a beginner yoga DVD was chosen called, *Yoga for
Inflexible People*, (Wohl, 2002) to introduce Kerrie to a yoga program. “*Yoga for Inflexible
People*” presents modifications and props to make traditional poses accessible to people who
could not otherwise perform them comfortably or correctly.” (Price, 2002)

**Occupational Analysis of One Occupational Treatment Session**
Initial Occupational form

- Medium/small therapy gym with wall length/height mirrors to the right, gym equipment at our rear, and a bookcase in front of us with a flat-screen TV above.

- A mat in the middle of the floor with a therapy belt, towel, and blanket available for assistance with poses.

- Kerrie seated on the mat on the right hand side, and Carrie, the OTS, seated to her left.

- The DVD, *Yoga for Inflexible People* playing on the flat-screen TV.

- Relaxing, gentle yoga music playing from the speakers.

Occupational Performance

This occupation took place in the therapy gym at Mariposa Hand and Rehab. The yoga occupation was scheduled to be at a time when no other patient’s were present so that the most relaxing occupational form could be utilized. There are over 35 different 15 to 75 minute “series” to choose from on the yoga DVD, including chapters focusing on the hips, back, shoulder, or for relaxing or energizing. The Basic shoulder series was chosen which lasted about 20 minutes. This series was chosen because, after viewing several, it was determined by the treating therapist to be the “just-right” challenge for Kerrie. It also focused on an area in which Kerrie had pain and muscle adhesions, her shoulders, arms, and chest. The poses were a “just-right” challenge because they were poses that the treating therapist believed she could successfully perform, and feel capable and empowered when completed.

There are seven different yoga poses during the basic shoulder series occupation. They are the “Chest Opener with the Sticky Mat”, the “Lying Down Mountain Pose”, the “Lying Down Upward Hands Pose”, the “Lying Down Eagle Pose”, the “Turned Around Belly Pose”, the “Hero Pose”, and the “Child’s Pose”. Each pose was demonstrated by an advanced
practitioner and yoga teacher. A voice-over with instructions on how to complete the pose, including tips on breathing, relaxing, modifying and stretching was provided by a yoga practitioner. See pictures of yoga poses in Appendix H.

The first pose, the “Chest Opener with the Sticky Mat”, begins by sitting erect and extending the legs in front. A rolled up towel was behind each of the participants instead of the sticky mat. Both participants reclined, lying with shoulders rested on the towel roll, then rolled toward our heads until the towel roll was below the scapulas. Instructions were given to “open the chest”, “extend the legs”, “soften the throat”, and “observe your breath”. The second pose, the “Lying down Mountain Pose”, was performed lying down with knees flexed, feet on the floor and a blanket folded under our heads. Instructions were given to “straighten the legs”, “extend the leg through the big toes”, “elongate the body”, “relax the abdomen”, “let go in the jaw”, “relax the throat”, “soften the eyes and breathe”. The third pose, the “Lying Down Upward Hands Pose”, was begun lying on the back. A belt was at her left side. Instructions were given to “reach for the belt with the hands”, “hold with both hands a little more than shoulder width apart”, “extend the elbows”, followed by, “extend the arms above the head while inhaling”. This pose was held for about 90 seconds, with instructions given to “extend the legs and elongate the body”, followed a return to the original position. The forth pose, the “Lying Down Eagle Pose”, was begun by lying on our backs, with knees bent, and arms abducted to 90°. Instructions were given to “cross your left thigh over the right, then left foot under right leg”. Then to, “cross the arms in front of torso so that the right arm is above the left, bend the elbows and snug the right elbow into the crook of the left, the backs of your hands should be facing each other”. This pose is most simply described as twisting the legs around one another, then twisting the arms around one another. Kerrie and the therapist began to laugh during this exercise, and Kerrie said, “I can’t do
After that both participants waited until the fifth pose began, the “Turned Around Belly Pose”, to resume the yoga occupation. This pose begins with participants lying on their backs, with knees flexed, feet on the floor, arms abducted at sides and a blanket under head. Instructions were given to “bend the hips and bring the knees above the chest, then to slowly roll to the right, back to center, and roll to the left”. Further instructions given to say, “Only go as far as can comfortably be done with out strain or losing your arm contact with the ground”. The sixth pose, the “Hero Pose”, begins by sitting upright on bent legs, and placing a block, or in the participant’s case two large towels, between the ankles. Instructions were given to “spread the calf muscles apart”, “extend through the waist, chest, and ribs”, and to “interlace fingers and extend arms upward, placing the palms upward”. Other instructions were to “extend the chest and torso”, and to “soften the throat”. The final pose was the “Child’s Pose”. When Kerrie saw what the pose was she said, “I love this one.” This pose began by sitting on the legs with knees bent. Instructions were given to lean the body forward, while extending the arms in front. Further instructions guided the participants to “be aware of the vertical length of the body”, “allow breath to be soft and natural”, “soften the abdomen”, “let go in the shoulder, neck, and head”, and “relax the throat and jaw”.

Although for most of the occupation, Kerrie and the OTS were silently following the instructions it appeared that the client experienced meaning in several different ways. Kerrie, who is normally talkative and animated, was very relaxed and quiet during the occupation. At the end of the occupation, she said, “I really liked this; I think it would be something that I would do at home to start my day.”, “I liked all the instruction on where to relax, and the reminders to breath, I didn’t realize until the DVD said “relax your jaw”, that I was clenching my jaw.” and “I felt like I could do those poses, except for that one (the eagle pose), whereas sometimes when I do
this kind of thing, I don’t feel like I can move that way.” Impacts during this occupation were less obvious, but were present. Impacts were in the changing occupational form with that of Kerrie’s body. Adaptation appeared to take place during the occupation in the form of learning. Kerrie learned that she was able to practice yoga, even though she does not consider herself fit or flexible. It appeared as if Kelly benefited from this occupation, and continued participation in yoga would be beneficial to her. An appropriate re-synthesis of this occupation would be to so the next more prolonged shoulder series on the yoga DVD. This series is called “Shoulder Basics II” and lasted 30 minutes. Kerrie was given the DVD to take home with her, and encouraged to use the DVD for her home exercise program.

This occupation was intended to increase Kerrie’s flexibility, increase her grip strength, reduce her stress, reduce pain, improve body mechanics and a reduce CTS symptoms. Improved body mechanics are important in improving her posture and countering her forward rounded posture. This will aide in decreasing repetitive stress at work, improving function, and reducing pain. Since stress appears to be a contributing factor in Kerrie’s UE pain and muscle discomfort, the occupation intended to help reduce Kerrie’s headache’s and improve her sleeping schedule. Although Kerrie appeared to have a relatively mild case of CTS because there is evidence that a yoga routine decreases CTS symptoms, it is hoped that Kerrie’s symptoms will improve. The intension of this occupation was to begin Kerrie on a yoga routine to contribute to her long term well-being.

**Changes on Standardized Assessments**

During Kerrie’s final assessment, the following changes were documented on standardized assessments. Her ROM was full. Opposition was able to be performed without pain. Edema of the right hand was decreased to 455 mL. Client’s score on the DASH had
increased somewhat from her re-evaluation to a 32. Her strength was improved from the initial
evaluation, but decreased from her last re-evaluation. Kerrie no longer had pain during the special
tests including Finkelstein’s, the resisted middle finger extension, or Phalen’s test. The result of
her strength testing was:

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<th>Right</th>
<th>Left</th>
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<tbody>
<tr>
<td>Grip</td>
<td>44#</td>
<td>55#</td>
</tr>
<tr>
<td>Lateral pinch</td>
<td>12# with pain</td>
<td>19#</td>
</tr>
<tr>
<td>3-pt pinch</td>
<td>11#</td>
<td>16#</td>
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At this report, 33% of Kerrie’s LTG’s had been met. LTG 1, was partially met due to decreased
tension in the neck and shoulder girdle, but Kerrie continued to have daily headaches. LTG 2
was partially met. Kerrie reported that she no longer dropped things, but some grasps/pinches
caus ed pain. LTG 3 was partially met. Pain was not constant, but was still interfering with daily
living. LTG 4 was partially met. Edema was less frequent and decreased, but still re-occurred.
LTG’s 5 and 6 were met.

Client’s Report on Progress

At discharge, Kerrie reported that she had good and bad days. Some days her swelling
seemed to increase and strength decrease, while other days were fine. She reported that these
symptoms were inconsistent with her working schedule. She reported that she had done several
more series on the yoga DVD and that she “really liked it.” She said her son often had to open
new or tight jars for her. She said she had difficulty vacuuming, mixing food for cooking, and
pushing open heavy doors. She said that she was considering a membership to a spa, which
would provide massages, steam rooms, and whirlpools. She believes that her neck and shoulder pain has been resolved in therapy.

Discharge Recommendations

On 4/3/2008 this letter was written to the doctor, summarizing Kerrie’s treatment and providing discharge recommendations.

Dr. __________,

(Patient’s name) has been attending O.T. treatment since 1/28/2007. Her treatments have included hot packs, fluidotherapy, TENS, IFC, ultrasound, manual therapy (including massage of neck, shoulder, biceps, and forearm), therapeutic activity, therapeutic exercise and workspace modifications. She has been given a HEP that includes stretching, UE exercises, and yoga. (Patient’s name) condition has improved in the following areas, her sensation is improved, muscle tightness and swelling have somewhat decreased. (Patient’s name) continues to have daily headaches, difficulty opening new/tight jars, vacuuming, and continues to have pain in her forearm extensor muscles and at the dorsum of her hand. She also occasionally has hand swelling. (Patient’s name) seems to have plateaued with her therapy. Her strength and ROM are comparable from side to side. She continues to c/o proximal shoulder and neck pain. Our recommendations are to d/c (Patient’s name) with a HEP and we recommend a community based stress-reduction/exercise program. A physical therapy evaluation might be beneficial to examine her neck/spine. We will see (Patient’s name) for one more visit to finalize her HEP per your request.

Thank you for this referral!!
After sending this letter, this doctor discharged Kerrie from OT and referred her to an orthopedic surgeon for further consultation.

Discussion of Outcomes in Terms of Literature:

A case study report by Povlsen & Rose, 2008 examined three people with work related upper extremity disorders that had an unclear cause. The participants remained at work while being receiving conservative treatment by an occupational therapist in an orthopedic hand therapy setting. Treatment methods included education, ergonomic adaptation, joint mobilization, nerve and tendon glides, muscle stretching, a graded strengthening program, and modalities. Splinting was not a part of treatment. Each of the patients was treated between 5 and 6 months, but only seen for up to 13 treatment sessions. All the patients continued to work during the five- to six month treatment program and achieved normal resting pain levels. During the same period, they also achieved a 48% to 129% increase in their typing productivity. The authors concluded that, although this was a small case series, the described case reports suggest that it is possible with a conservative treatment program to both normalize resting pain and improve work capacity with relatively few outpatient appointments. Although the treatment provided to Kerrie was intensive, perhaps a more prolonged treatment period, as seen in this study would have been or still could be more effective.

A Cochrane review by Verhagen, Bierma-Zeinstra, and Feleus (2003) analyzed conservative interventions for work-related complaints of the arm, neck or shoulder. This review found evidence about the positive effect of exercise when compared to massage, adding breaks during computer work, massage as add-on treatment on manual therapy, manual therapy
as add-on treatment on exercises. Overall the authors concluded that the overall research methods were poor. Still this review provides evidence based research for the treatment methods used with Kerrie.

A study by van Eijsden-Besseling, Peeters, Reijnen, & de Bie (2004) both physical and psychosocial work-related factors are major causes of non-specific work related upper limb disorders (WRULD). This study is a case-control study with two control groups. The sample was taken from personal computer (PC) workers working at the computer for >20 hours a week and for at least 4 hours a day, and from chronic pain patients with generalized pain above and below trunk level. The sample consisted of men and women aged 18–65. The case group consisted of PC workers diagnosed with non-specific WRULD a clinic. This study was carried out because observations from our non-specific WRULD clinic pointed to personality traits—particularly neurotic perfectionism—as additional risk factors for developing non-specific WRULD. Patients with non-specific WRULD were significantly more neurotic perfectionist than other chronic pain patients. Kerrie has admitted to being a perfectionist. It is possible that Kerrie’s personality contributed to her complex and frequently changing UE pain.

**Conclusions**

Although the outcomes for this patient were not as pronounced as hoped for, the author is hopeful that if the patient continues to adhere to the home exercise program and use the concepts learned in therapy that over the long term her condition and function will improve. At the time of this writing Kerrie reported having done the yoga video several times and continuing her home exercise program.
While treating patient’s with complex UE disorders, it is important that the treating therapist educate his or herself on appropriate assessments, treatment modalities, and therapeutic techniques to locate the source of the pain and provide relief. In addition, experts and fellow therapists should be consulted to provide additional experience, insight and guidance. Continuing to educate oneself through continuing education units, journal articles, and textbooks is essential to understand the clinical skills necessary and gain insight.

Doctors have a tremendous amount of knowledge of diagnoses to understand, especially among general practitioners. Carpal tunnel syndrome is a common diagnosis among people who work at a computer for long periods of time. It is not surprising that a doctor would initially think that carpal tunnel syndrome as a likely diagnosis. Unfortunately, this patient’s complaints were not examined further by this doctor to investigate if another diagnosis exists. Obviously, having an incomplete diagnosis is a limitation which persons working in occupational therapy may encounter. Fortunately, this does not appear to be common. In this instance, everything within reason was done to address this concern. As a student, this was an eye-opening experience to discover that the set system in place does not always work smoothly.
References


Fernández-de-las-Peñas, C., Alonso-Blanco, C., Luz Cuadrado, M., Gerwin, R. D., Pareja J. A. (2006) Trigger points in the suboccipital muscles and
forward head posture in tension-type headache. The Journal of Head and Face Pain, 46, 3,454-460.


Appendix A
Disabilities of Arm, Shoulder and Hand (DASH)

Please rate your ability to do the following activities in the last week by circling the number below the appropriate response.

1 No difficulty 2 Mild Difficulty 3 Moderate Difficulty 4 Severe Difficulty 5 UNABLE

1. Open a tight or new jar. 1 2 3 4 5
2. Write. 1 2 3 4 5
3. Turn a key. 1 2 3 4 5
4. Prepare a meal. 1 2 3 4 5
5. Push open a heavy door. 1 2 3 4 5
6. Place an object on a shelf above your head. 1 2 3 4 5
7. Do heavy household chores (e.g., wash walls, wash floors). 1 2 3 4 5
8. Garden or do yard work. 1 2 3 4 5
9. Make a bed. 1 2 3 4 5
10. Carry a shopping bag or briefcase. 1 2 3 4 5
11. Carry a heavy object (over 10 lbs). 1 2 3 4 5
12. Change a lightbulb overhead. 1 2 3 4 5
13. Wash or blow dry your hair. 1 2 3 4 5
14. Wash your back. 1 2 3 4 5
15. Put on a pullover sweater. 1 2 3 4 5
16. Use a knife to cut food. 1 2 3 4 5
17. Recreational activities which require little effort (e.g., cardplaying, knitting, etc.). 1 2 3 4 5
18. Recreational activities in which you take some force or impact through your arm, shoulder or hand (e.g., golf, hammering, tennis, etc.). 1 2 3 4 5
19. Recreational activities in which you move your arm freely (e.g., playing frisbee, badminton, etc.). 1 2 3 4 5
20. Manage transportation needs (getting from one place to another). 1 2 3 4 5
21. Sexual activities. 1 2 3 4 5

1 Not limited at all 2 Slightly limited 3 Moderately limited 4 Severely limited 5 Unable

22. During the past week, to what extent has your arm, shoulder or hand problem interfered with your normal social activities with family, friends, neighbors or groups? (circle number) 1 2 3 4 5

2 Not limited at all 2 Slightly limited 3 Moderately limited 4 Severely limited 5 Unable

23. During the past week, were you limited in your work or other regular daily activities as a result of your arm, shoulder or hand problem? (circle number) 1 2 3 4 5

Please rate the severity of the following symptoms in the last week.

1 NONE 2 MILD 3 MODERATE 4 SEVERE 5 EXTREME

24. Arm, shoulder or hand pain. 1 2 3 4 5
25. Arm, shoulder or hand pain when you performed any specific activity. 1 2 3 4 5
26. Tingling (pins and needles) in your arm, shoulder or hand. 1 2 3 4 5
27. Weakness in your arm, shoulder or hand. 1 2 3 4 5
28. Stiffness in your arm, shoulder or hand. 1 2 3 4 5

1 None 2 Mild 3 Moderate 4 Severe 5 So much difficulty that I can’t sleep

29. During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder or hand? (circle number) 1 2 3 4 5

1 Strongly Disagree 2 Disagree 3 Neither agree nor disagree 4 Agree 5 Strongly agree

30. I feel less capable, less confident or less useful because of my arm, shoulder or hand problem. (circle number) 1 2 3 4 5

A DASH score may not be calculated if there are greater than 3 missing items.
LATERAL EPICONDYLITIS

Your therapy program has been custom-designed based on the acute nature and duration of your tennis elbow. Outlined below is the therapy program your doctor and therapist recommend you follow to conservatively manage your tennis elbow and facilitate recovery.

**PHASE I – MANAGING PAIN & PROMOTING HEALING**

**SPLINTS**
- Wear the wrist immobilization splint ... at all times
- Wear the Aircast tennis elbow band ... at all times

The splints are effective in supporting/protecting the muscles and quieting the pain.

**MANUAL MASSAGE**
- Massage the area surrounding elbow for 5 minutes, 2 times a day. Refer to the illustration below. The massage will help enhance circulation, promote healing, and dampen the pain.

Clockwise  Counter-clockwise  Length of the muscle  Perpendicular to the muscle

**MOIST HEAT**
- Apply moist heat [e.g. moist heat heating pad] to the elbow for 10 minute sessions 2 times a day. The moist heat will promote soft tissue healing and increase the flexibility of the muscles surrounding your elbow.

**ADDITIONAL SUGGESTIONS**
- Maintain a general conditioning program [e.g. treadmill, sit-ups, etc.] 2-3 times a week.
- Begin strengthening your shoulder and trunk muscles. Refer to the patient handout.
- Review the patient education list of activities/movements to avoid or be careful performing.

**Comments:**
**LATERAL EPICONDYLIITIS**

**PHASE II — RESTORING FLEXIBILITY: ACTIVE STRETCHING EXERCISES**

To varying degrees, the muscles involved with tennis elbow lose some flexibility/elasticity. Exercises, in specific positions, are recommended to gradually stretch or elongate the muscle-tendon fibers surrounding your elbow. This will help reduce the discomfort you are experiencing and restore flexibility to the muscles.

**MOIST HEAT**

Prior to beginning your active stretching exercises, apply moist heat [e.g. moist heat heating pad] to the elbow for 10 minutes. The moist heat will promote soft tissue healing and increase the flexibility of the muscles surrounding the elbow.

**ACTIVE STRETCHING EXERCISES**

Perform the following active stretching exercises [on your own muscle power] 2-3 times a day, 10 repetitions. Actively position the wrist in flexion to a count of 15 before resting and repeating the stretch. DO NOT progress to the next exercise until the exercise can be completed without pain. It is fine to feel “stretching”, but not pain.

1st

With your elbow bent, bend your wrist toward your body.

2nd

With your elbow bent and palm down, bend your wrist toward the floor.

3rd

With your elbow straight, forearm neutral, bend your wrist toward your body.

4th

With your elbow straight and palm down, bend your wrist toward the floor.

**Comments:**

Feel free to call if you have any questions.
Appendix C
Tendon Glides
Appendix D
Median Nerve gliding

A
B
C
D
E
F
Appendix E

Computer/desk Stretches
Hands, Arms, Shoulder Stretches
Stretches for the
**Hands, Arms & Shoulders**

*Approximately 4 Minutes*

This series of stretches works for repetitive stress problems in the hands and arms. Breathe naturally, stay comfortable, and be relaxed as you stretch.

1. Rotate 8-10 times each direction (page 88)

2. 5-6 seconds 2 times (page 88)

3. 10 seconds 2 times (page 88)

4. 10 seconds each position (page 88)

5. 5-5 seconds 3 times (page 46)

6. 5-6 seconds 2 times (page 28)

7. 5-10 seconds each side (page 92)

8. 15 seconds each arm (page 45)

9. 15 seconds each arm (page 47)

10. 20 seconds (page 46)

11. 10-15 seconds (page 47)

12. 15 seconds (page 46)
Appendix F
Office picture
Work Station Design

Proper body positioning at each workstation is extremely important to maintain good physical health. To ensure each individual's work station is ergonomically correct please check the following:

1. ☐ Monitor screen is at eye level
2. ☐ Elbows rest at the side
3. ☐ Elbows are bent at a 90° angle
4. ☐ Wrists are in a neutral (straight) position
5. ☐ Wrists rest on a rounded tabletop edge
6. ☐ Knees are level or slightly lower than hips
7. ☐ Soft seat edge (by knees)
8. ☐ Feet rest on the floor or on a footrest
9. ☐ Low and middle back support is provided
10. ☐ Seat width 18”
11. ☐ Seat depth 15” - 17”
12. ☐ Chair height (see chart)
13. ☐ Desk height (see chart)

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<th>Proper desk/chair height relationship based on an individual's height</th>
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<td>If you are:</td>
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<td>4 ft 11 inches</td>
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<td>5 ft 4 inches</td>
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<td>5 ft 6 inches</td>
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<td>5 ft 9 inches</td>
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<td>6 ft 2 inches</td>
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If you have questions regarding your work station, please inform your office.

Liz Dillard, MS, OTR/L, CHT
Clinic Director/Certified Hand Therapist

Mariposa
Hand & Rehab Specialists

4411 Western Pkwy NW, Suite 1
Troy, MI 48098-8510
Appendix H
Yoga Poses

Pose 1 Chest opener with sticky mat
Pose 2 Lying down mountain pose

Pose 3 Lying down upward hands pose
Pose 4 Lying down eagle pose
Pose 5 Turned down around belly pose  

Pose 6 Hero Pose

Pose 7 Child’s pose