A comparison of two joint protection educational methods and their effects on generalization and knowledge

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Abstract

This portion of the simple experiment examines the effects of two different methods of patient education on individuals' ability to generalize joint protection techniques to new occupations and individuals' knowledge of joint protection principles. The 42 participants (37 females and 5 males) were recruited from the Toledo Hospital Arthritis and Osteoporosis Center while receiving occupational therapy services for arthritis-related conditions. Following random assignment, 23 participants composed the standard treatment group (verbal teaching and demonstration), while the remaining 19 participants composed the experimental treatment group (verbal teaching, demonstration, and active practice). Prior to discharge, the participants were evaluated on their ability to apply learned joint protection principles to three new generalization tasks. Two to four weeks post discharge, the participants completed the modified Joint Protection Knowledge Assessment during a follow-up phone interview. Results indicated that there was not a statistically significant difference between the two groups in terms of level of knowledge, nor was there a significant difference in terms of generalization of joint protection techniques to new occupations. Thus, participants in both groups were able to gain a high level of knowledge, and members of both groups did fairly well generalizing joint protection principles to new tasks. While the difference for generalizability was not strong enough to be significant, the magnitude of the effect size was approaching the medium categorization, which may indicate the possibility of detecting significant differences with an increased sample size. Future research in this area may benefit from striving to achieve a larger sample size, to increase the robustness of the independent variable, to increase the sensitivity of the dependent variables, and to examine the feasibility of altering the study design.

A Comparison of Two Joint Protection Educational Methods and their Effects on Generalization and Knowledge

Increasingly, individuals with varying diagnoses, including rheumatoid arthritis, osteoarthritis, and other forms of arthritis, are being referred to occupational therapy to learn principles that will help to enhance daily functioning. In order to decrease the amount of stress on the body, occupational therapists are teaching numerous protective techniques, such as joint protection (Hammond & Lincoln, 1999b). Because joint protection techniques are frequently taught in occupational therapy, it is important to investigate the effectiveness of specific methods of patient education. Research in this area can contribute to occupational therapists' understanding of how certain patient education methods can influence the amount of knowledge gained, the ability to generalize principles to new tasks, and the compliance rate with regard to recommendations from the occupational therapist.

Thus, the purposes of this study were to examine the effects of two different methods of patient education on individuals' ability to generalize joint protection techniques to new occupations and individuals' knowledge of joint protection principles, as well as the degree to which individuals' implement therapist recommendations into the home and the relationship between the perceived interference of pain and the degree of recommendation implementation. Specifically, this larger study will be divided into two sections. This portion of the study primarily focused on generalization of joint protection techniques to new occupations and knowledge of joint protection principles. Prior to reviewing the current study, this literature review will define the scope of arthritis, identify the purpose of joint protection, describe various types of patient education, review pertinent principles of occupational therapy, and discuss important literature regarding the generalization of skills to new learning situations.

Scope of Arthritis

Arthritis is a common chronic condition of the joints that results in pain, loss of motion, deformity, and associated functional deficits. According to the Center for Disease Control (2005), arthritis is one of the most prevalent diseases in the United States. Specifically, arthritis and chronic joint symptoms affect nearly 70 million Americans, which translates into about one out of every three adults (Center for Disease Control, 2005). As the population ages, it is anticipated that this number will increase dramatically (Center for Disease Control, 2005).

Within the spectrum of arthritis and related conditions, there are approximately 100 different identified types of the disease (Arthritis Foundation, 2004a). Osteoarthritis and rheumatoid arthritis are two of the most common forms of arthritis (Arthritis Foundation, 2004b, 2004c). In the United States, 21 million people have been diagnosed with osteoarthritis (Arthritis Foundation, 2004b), and 2.1 million people have been diagnosed with rheumatoid arthritis (Arthritis Foundation, 2004c).

Osteoarthritis is a chronic condition that is characterized by the breakdown of joint cartilage (Arthritis Foundation, 2004b). Because cartilage cushions the end of bone and allows joints to move easily, breakdown causes the bones to rub against each other (Arthritis Foundation, 2004b). Subsequently, stiffness, pain, and loss of movement in the joint often result (Arthritis Foundation, 2004b). Osteoarthritis most commonly occurs in the weight-bearing joints of the hips, knees, and lower back; however, it also affects the neck, the big toe, the base of the thumb, and the small finger joints (Arthritis Foundation, 2004b). The most common signs and symptoms of osteoarthritis include: joint soreness after periods of overuse or inactivity; stiffness after periods of rest that goes away quickly when activity resumes; morning stiffness, which usually lasts no more than 30 minutes; pain caused by the weakening of muscles surrounding the

joint due to inactivity; pain that is less in the morning and worse in the evening; and deterioration of coordination, posture, and walking due to pain and stiffness (Arthritis Foundation, 2004b).

Rheumatoid arthritis is a chronic systemic disease that is characterized by the inflammation of the synovial lining of the joints (Arthritis Foundation, 2004c). In turn, rheumatoid arthritis leads to long-term joint damage, resulting in chronic pain, loss of function, and disability (Arthritis Foundation, 2004c). Rheumatoid arthritis can start in any joint; however, it most commonly begins in the smaller joints of the fingers, hands, and wrists (Arthritis Foundation, 2004c). Common symptoms include: fatigue; stiffness in the morning and after prolonged immobility; flu-like symptoms; pain associated with prolonged sitting; rheumatoid nodules (lumps of tissue under the skin); muscle pain; loss of appetite, weight loss, anemia, depression, cold and/or sweaty hands and feet; and involvement of the glands around the eyes and mouth, causing decreased production of tears and saliva (Arthritis Foundation, 2004c).

As is evident, many individuals who have arthritis live with a significant amount of pain. Furthermore, pain and other symptoms can largely interfere in the person's daily life. Individuals with arthritis pain and deformity may develop difficulties in completing basic occupations of daily living in response to changes in sensation, range of motion, and strength in the upper and lower extremities, as well as the trunk (Spencer, 2003, p. 802). In turn, decreased comfort, speed of movement, and endurance in daily task completion may result in physical dependence and loss of self-esteem (Spencer, 2003, p. 802). Additionally, instrumental occupations of daily living and work occupations are affected (Spencer, 2003, p. 802). Specifically, timely independent accomplishments of specific job tasks and responsibilities may be limited due to the problems of arthritis (Spencer, 2003, p. 802).

Therefore, it is important for the field of occupational therapy to recognize that the disease process is differentially influencing these areas of daily function. In turn, occupational therapists can help individuals identify ways to control some of the symptoms. In general, the goals of any treatment plan include controlling pain and other symptoms, improving ability to function in daily occupations, and slowing the disease process (Arthritis Foundation, 2004b). In addition to medications, most treatment plans also include elements of exercise, weight control, and joint protection (Arthritis Foundation, 2004b).

Purpose of Joint Protection

In general, joint protection is defined as "altering methods of performing daily activities to reduce stress on joints" (Hammond & Lincoln, 1999a). Principles of joint protection focus on reducing pain, inflammation, and risk of deformities (Hammond & Lincoln, 1999a). Preserving joint integrity (Hammond & Lincoln, 1999b) and reducing internal and external joint loading stresses (Hammond, 1994) are also key characteristics of joint protection. Specific principles include avoiding positions of deformity; using stronger, larger joints; using joints in their most stable and functional position; reducing the force and effort required to perform tasks; and distributing the load of objects over as many joints as possible (Hammond & Lincoln, 1999a). All of these joint protection principles can be linked to the larger goals of controlling pain and other symptoms, improving ability to function in daily occupations, and slowing the disease process. Thus, it is very important that occupational therapists know how to effectively address these issues in patient education sessions.

Types of Patient Education

In order for individuals to understand joint protection and integrate it into their everyday lives, it is vitally important that they receive proper instruction. Without intervention, it is likely

that many individuals will not know that they are putting further stress on their joints by the way that they are performing tasks. Thus, it is necessary for occupational therapists to apply teaching-learning methods that will be more likely to lead to behavioral changes on behalf of the clients. Judging from the importance of patient education, it is evident that it is not advisable for occupational therapists to address issues of joint protection without evidenced-based support. Rather, patient education methods should be substantiated by research in order to provide the highest quality of care. Specifically, it is necessary to determine what types of patient education lead to the most effective integration and application of joint protection principles in individuals' everyday lifestyle.

In past research, large emphasis has been placed on assessing the effectiveness of patient education on health status. Specifically, a meta-analysis by Riemsma, Kirwan, Rasker, and Taal (2003) analyzed 31 randomized controlled trials, which included studies that evaluated rheumatoid arthritis patient education methods using an instructional component and a non-intervention control group. Results indicated significant effects for patient education at first follow-up on scores of disability, joint counts, patient global assessment, psychological status, and depression (Riemsma et al., 2003). However, the meta-analysis showed that no significant effects of patient education were found at final follow-up (Riemsma et al., 2003). The study concluded that patient education in these 31 randomized controlled trials had small short-term effects, but there was no evidence of long-term benefits of patient education in adults with rheumatoid arthritis (Riemsma et al., 2003). Thus, from this research, it can be inferred that simple patient education alone is not the only factor that may contribute to the potential long-term carryover of joint protection principles. Rather, it is necessary to examine specific types of patient education as well.

To this regard, a significant amount of research has been conducted concerning the positive effects of psycho-educational interventions in the treatment of arthritis (Hawley, 1995; Hammond, Lincoln, & Sutcliffe, 1999; Hammond, Jefferson, N. Jones, Gallagher, & T. Jones, 2002). Specifically, psycho-educational interventions encompass both traditional educational teaching and psychological interventions (Hawley, 1995). Examples of educational or psycho-educational interventions include self-management/self-help programs, cognitive behavioral therapy, educational programs, materials-based programs, individual instructional programs, psychotherapy, support programs, and total rehabilitation programs (Hawley, 1995). These types of approaches were analyzed in a meta-analysis of 34 studies (Hawley, 1995). Results indicated that although psycho-educational interventions are difficult to evaluate due to differences in interventions, method of assessment, and follow-up time, there was still evidence of overall improvement in pain, depressive symptoms, self-efficacy, coping abilities, and self-management behaviors following psycho-educational interventions (Hawley, 1995). This is important to the effectiveness of patient education methods because it shows that cognitive and psychological components in addition to behavioral interventions can be beneficial to individuals.

It is important to note that several studies have not been able to document significant effects of educational programs, including cognitive-behavioral programs (Hammond, 1994; Hammond & Lincoln, 1999b; Freeman, Hammond, & Lincoln, 2002). One suggestion infers that individuals were able to change their attitudes regarding joint protection but were unable to change their actual behaviors (Hammond, 1994). This may indicate that behavioral change requires longer and more targeted input than was provided (two sessions, 3.25 hours) (Hammond, 1994). Another suggestion infers that reasons for not changing behavior include problems recalling information, difficulties changing habits, and joint protection being

considered "inappropriate" in the clients' view (Hammond & Lincoln, 1999b). Thus, from these inferences, it can be postulated that another component (e.g. hands-on practice) in addition to education might need to be considered. Furthermore, hands-on methods are consistent with the fundamental principles of occupational therapy.

Principles of Occupational Therapy

Active, hands-on "doing" is highly regarded as one of the cornerstones on which the foundation of occupational therapy was built. For instance, Adolf Meyer, an early figure of influence on the field of occupational therapy, stated that "actual doing, actual practice" was the only way to attain balance as the basis of wholesome living, feeling, and thinking (Meyer, 1922). Furthermore, Meyer (1922) declared,

> Direct *experience* and performance were everywhere acknowledged as the fullest type of life. Thought, reason, and fancy were more and more recognized as merely a *step to action*, and mental life in general as the integrator of *time*, giving us the fullest sense of past, present, and future, but after all the best type of reality and actuality only in real *performance*.

Additionally, John Dewey, an influential philosopher and educator, influenced a number of the founders of occupational therapy. Dewey (1916) promoted the use of active occupations, including play and work (p. 205).

In line with the core of occupational therapy, it seems very appropriate to apply Deweyan educational philosophy to the realm of patient education. To this regard, it can be inferred that educational experiences, as well as subsequent recall and application, might be enhanced if the individual has the opportunity to practice the skill in a hands-on fashion. For example, numerous studies have documented that learning can be more effective when using hands-on occupations

(Warner, 1989; Buddlemeyer, 1995; Hartman, Kopp Miller, & Nelson, 2000; Eakman & Nelson, 2001). In all of these studies, results indicated that participants in the "hands-on" group had higher memory retention about the occupation and more accurate memory recall than participants in the "demonstration"/"verbal training" group (Warner, 1989; Buddlemeyer, 1995; Hartman, Kopp Miller, & Nelson, 2000; Eakman & Nelson, 2001). Similarly, other studies have analyzed the differences between "performed" and "nonperformed" items (Earles, 1996), the differences between "active" and "passive" procedural learning (Vakil, Hoffman, & Myzliek, 1998), and the differences between "active patient participation" and "structured verbal persuasion" (Thomas, 1993). Results indicated that "performed brief actions" were recalled significantly more than "verbal action commands" (Earles, 1996), "active training" led to a better performance than "passive training" (Vakil, Hoffman, & Myzliek, 1998), and "active patient participation" increased confidence and self-efficacy more than "verbal persuasion" (Thomas, 1993). Thus, from this literature review, it is implied that active, hands-on practice can influence subsequent recall, performance, and feelings of self-efficacy. In turn, it can be postulated that active doing may influence actual application and generalization of skills to new learning situations.

Generalization of Skills to New Learning

To date, there is not a solid base of literature to provide broad-spectrum information on the topic of generalization of skills to new learning situations. Rather, research regarding generalizability has taken a few relatively specific routes. For instance, some research focuses on the generalization of self-efficacy. Specifically, Wise (1999) used Bandura's four processes through which mastery experiences or performance accomplishments can generalize beliefs of personal efficacy across domains (Bandura, 1997) to study self-efficacy generalization from

weight training exercises to occupations of daily living in adults with spinal cord injury and spina bifida. For example, generalization is more likely to occur when different occupations share similar sub-skills (Wise, 1999). Furthermore, learning two occupations at the same time can promote generalization of efficacy between the two occupations (Wise, 1999). This is important to patient education of joint protection techniques because generalizability could potentially be enhanced if the underlying principles are taught in the context of similar sub-skills and at the same point in time.

Another major direction that research in this area has taken is within the realm of motor learning and skill transfer. For example, Ferguson and Rice (2001) examined whether an enhanced level of contextual relevancy would improve transfer of learning in a complex task. Results indicated that the degree of similarity during acquisition of a dressing skill may influence the rate of performance improvement in a similar dressing skill during a transfer phase (Ferguson & Rice, 2001). Similarly, Ma, Trombly, and Robinson-Podolski (1999) found that a natural contextual condition elicited a significantly larger improvement of success rate in the acquisition and transfer phases than did a simulated context. From the above results, it can be inferred that naturalistic contexts are more beneficial than simulated contexts in promoting transfer of skill to a new learning situation. This relates to the current study because active practice of joint protection techniques may be a more naturalistic way to learn principles as opposed to simply listening to a teaching lesson or observing a demonstration.

Current Study

As previously indicated, occupational therapists are being increasingly called upon to teach joint protection principles that will provide concrete techniques to help enhance the daily functioning of individuals living with arthritis. Therefore, it is extremely important to know the

effectiveness of specific methods of patient education regarding these techniques. In accordance with the literature review above, the present study seeks to examine the effects of two different methods of patient education (verbal instruction and demonstration versus verbal instruction, demonstration, and active practice) on individuals' ability to generalize joint protection techniques to new occupations and individuals' knowledge of joint protection principles, as well as and the degree to which individuals' implement therapist recommendations into the home and the relationship between the perceived interference of pain and the degree of recommendation implementation. All four of these areas will be analyzed as a part of a larger study. For this portion of the study, analyses will focus on generalization of joint protection principles to new occupations and knowledge of joint protection techniques. Upon comparison of the standard treatment group (verbal instruction and demonstration) and the experimental treatment group (verbal instruction, demonstration, and active practice), it was hypothesized that there would be a difference in participants' ability to generalize joint protection techniques to new tasks, and there would be a difference in participants' level of knowledge on the modified Joint Protection Knowledge Assessment (Hammond & Lincoln, 1999c).

Methods

Study Design

In order to address a possible cause-and-effect relationship, a simple experimental design was chosen for the current study. However, a pretest-posttest experimental design was not utilized because it was anticipated that pre-testing sensitivity might influence participants' scores and responses regarding joint protection techniques. Using a computer generated random number sequence, participants were allocated into two groups: a standard treatment group, which included verbal teaching and demonstration of joint protection techniques, or an

experimental treatment group, which included verbal teaching, demonstration, and active practice of joint protection techniques.

Participants

The participants in this study consisted of adults who received occupational therapy services from The Toledo Hospital's Arthritis and Osteoporosis Center. A flyer was posted in the waiting area to help recruit participants (See Appendix A). To be included in this study, participants had to be diagnosed with arthritis that affects the hands. In addition, joint protection education had to be part of each participant's occupational therapy plan of treatment. Participants were required to be at least 18 years of age, to demonstrate the ability to speak and understand English, and to present no deficits in cognitive ability that would hinder understanding of patient education content. Upon evaluation, the occupational therapist determined if each participant met the requirements to be included in the study. If the participant met inclusion criteria requirements, the occupational therapist proceeded with recruitment procedures, including informed consent and random assignment for those who indicated a willingness to participate in the study. Demographic information was collected for each participant, including age, gender, and race; however, gender and race were not part of the inclusion criteria for this study. To conduct a follow-up interview, it was necessary to collect each participant's name and telephone number.

Instruments & Measures

Prior to initial evaluation, participants completed the SF-36v2 Health Survey (Ware, 2000) or the Modified SF-36v2 Health Survey, as well as the Total Rehab Patient Intake form. The SF-36v2 Health Survey (Ware, 2000) included questions regarding participants' general physical health, current, recent, and past occupational function, pain, and interference of pain on

occupational function (See Appendix B). The Modified SF-36v2 (See Appendix C) consisted of two questions regarding pain taken from the original SF-36v2. The Total Rehab Patient Intake form, a facility-specific internal document (See Appendix D), included questions regarding therapy referral information, medical history, pain history, social/work history, functional status, living environment, learning style, therapeutic goals, and economic, religious, and cultural backgrounds that may affect care.

A form was provided for the occupational therapist to document each participant's occupational performance on three generalizability tasks (See Appendix E). This form included a short script to describe each task, as well as a place to document each participant's score (i.e., correct = two points, incorrect = zero points, intermediate = one point).

Two to four weeks post discharge from occupational therapy services, each participant received a follow-up interview via telephone. The initial portion of this interview asked participants about the degree to which they implemented the therapist's recommendations into their home routine. Information about this instrument can be found in the manuscript for the supplementary portion of this research study. The second portion of the phone interview included modified questions taken from the Joint Protection Knowledge Assessment (JPKA) (Hammond & Lincoln, 1999b). Using a multiple choice questionnaire format, the Modified JPKA (See Appendix F) included questions regarding knowledge of joint protection principles as applied to everyday tasks, such as cooking, cleaning, and shopping (Hammond & Lincoln, 1999b). Three questions were modified for clarity of content. For example, one of the answer options for question two on the original JPKA was changed to make a more clear difference between it and another answer option for the same question on the Modified JPKA. The answer option reading "grip the handle of a squeegee or grip a sponge" was changed to "grip the handle

of a squeegee" to make it more different from the answer option "grip a cloth in fingers and thumb." For other questions, it was necessary to make grammatical changes due to differences in British and American English. For example, the word "hoovering" on the original JPKA was changed to "vacuuming" on the Modified JPKA.

Face validity, content validity, inter-rater reliability, and test-retest reliability were all established for the original JPKA (Hammond & Lincoln, 1999b). Internal consistency of the Modified JPKA was assessed using Cronbach's alpha (Cronbach, 1970). The coefficient alpha of .86 indicated that the instrument is homogeneous to the extent that all of the subparts appear to be measuring the same characteristic.

Procedures

As previously stated, participants completed the SF-36v2 Health Survey (or the Modified SF-36v2 Health Survey) and the Total Rehab Patient Intake form upon admission to therapy. The occupational therapist began standard occupational therapy services, including an initial evaluation and patient education regarding disease process, medications, and therapy procedures. Following the initial evaluation, the occupational therapist proceeded with informed consent if the patient met the inclusion criteria requirements. Then, using a computer generated random number sequence, participants were randomly assigned to a standard treatment group or an experimental treatment group. The standard treatment group received verbal teaching and demonstration while the experimental treatment group received verbal teaching, demonstration, and active practice of joint protection techniques. For example, participants in the standard group received an explanation and were showed how to use various types of assistive devices; whereas, participants in the experimental group received an explanation, were showed how to use the devices, and were able to try them via active practice. Specific joint protection principles

included avoiding positions of deformity, using stronger, larger joints, using joints in their most stable and functional positions, reducing the force and effort required to perform tasks, and distributing the load of objects over as many joints as possible (Hammond & Lincoln, 1999a). Occupations used to teach, demonstrate, and/or practice joint protection techniques included squeezing toothpaste tubes or lotion bottles, opening jars, pushing buttons on a microwave, turning keys, cooking, turning lamp switches, using scissors, opening mail, turning door knobs, opening medicine bottles, wringing out washcloths or sponges, opening food packages, and doing laundry. All teaching occupations were individualized for each participant. For example, if there were only three problem areas identified from the above occupations, those three areas were the only areas focused on in therapy. Similarly, if there were additional occupations that were relevant in the participant's life but were not listed in the above occupations, joint protection techniques regarding those occupations were also included as a part of therapy.

On the last therapy session, the participants' ability to generalize joint protection techniques was tested using occupations that were not addressed during intervention. Before beginning the generalization tasks, the therapist explained the procedure to the participant by stating, "Before you are discharged from therapy, I would like to give you a few situations that you might encounter at home. You will be asked to do three separate tasks, and I will give you instructions before beginning each task. Do you have any questions?" The therapist scored participants on each of three tasks: pushing buttons on a telephone; carrying a paper bag of groceries; and filling, lifting, and pouring a coffee pot of water. There were three possible scores for each task: "correct" (two points), "incorrect" (zero points), or "intermediate" (one point). If the participant performed the entire task correctly, he or she received two points. If the

participant performed the task incorrectly, he or she did not receive any points. If the participant performed the task partially correctly, he or she received one point.

For the task of pushing buttons on a telephone, the therapist had a push-button telephone, pad of paper, and a pencil or pen on a counter in the occupational therapy area. The therapist instructed the participant by stating, "Imagine that you need to contact ten family members or friends within a short time frame. Using the telephone on the counter, please dial the phone number of the first person on your list." A score of "correct" (two points) was received if the participant used an object, such as a writing utensil, to push the buttons on the telephone. The participant received a score of "incorrect" (zero points) if he or she used the tip or pad of his or her finger to push the telephone buttons. If the participant bent his or her finger to use the proximal interphalangeal (PIP) joint to push the telephone buttons, he or she received a score of "intermediate" (one point). It was possible to score a maximum of two points on this task.

For the task of carrying a paper bag of groceries, a paper bag with handles was on a counter in the occupational therapy area. The bag contained three cans of soup, two boxes of instant potatoes, one box of cereal, one bag of noodles, and one large jar of peanut butter. The therapist instructed the participant by stating, "Carry the bag of groceries from the counter to the table." A score of "correct" was received if the participant held the bag of groceries close to his or her body using both arms and hands. The participant received a score of "incorrect" if he or she used only one hand to carry the bag of groceries. If the participant carried the bag with the handle over the forearm or in the elbow crease, or carried the bag of groceries close to the body using only one arm and hand, he or she received a score of "intermediate." It was possible to score a maximum of two points on this task.

The task of filling, lifting, and pouring a coffee pot of water consisted of three sub-tasks, allowing a maximum of six points (two points per sub-task) to be scored. For the entire task, an empty coffee pot was placed on a countertop approximately eight inches from a sink. A coffeemaker was placed on the countertop approximately three feet from the sink. When set-up was complete, the therapist instructed the participant by stating, "Fill the coffee pot with water, bring it to the coffeemaker, and fill the coffeemaker with water."

For the sub-task of filling, a score of "correct" was received if the participant placed the pot in the sink to fill it with water or if the participant held the pot by the handle with one hand and propped it on the partition at the center of the sink. The participant received a score of "incorrect" if he or she held the pot, unsupported, by the handle with one hand while filling it with water. If the participant held the pot with two hands while filling it with water, he or she received a score of "intermediate." For the sub-task of lifting, a score of "correct" was received if the participant lifted the pot with one hand on the handle and one hand on the bottom of the pot. The participant received a score of "incorrect" if he or she lifted the pot, unsupported, by the handle using one hand. If the participant lifted the pot using two hands, but his or her hands were incorrectly placed on each side of the pot, he or she received a score of "intermediate." For the sub-task of pouring, a score of "correct" was received if the participant poured water into the coffeemaker using one hand on the handle of the coffee pot and one hand to support the bottom of the pot or if the participant rested the pot on top of the coffeemaker with one hand on the handle of the pot while tipping it to pour water into the coffeemaker. The participant received a score of "incorrect" if he or she poured the water using one hand on the handle without the support of the other hand. If the participant poured the water using two hands on the sides of the coffee pot, he or she received a score of "intermediate."

Two to four weeks post discharge from occupational therapy services, each participant received a follow-up interview via telephone. The first portion of this interview included questions regarding the number of therapist's recommendations incorporated into the participant's home. Information regarding the extent to which the participant implemented recommendations (e.g., not at all, some of the time, most of the time, all of the time) was documented for each participant. Recommendations were specific to each participant. For example, one participant received 12 recommendations including home and job-specific techniques; whereas, another participant received seven recommendations specifically targeting home modifications. In the second portion of this interview, participants were asked questions on the modified Joint Protection Knowledge Assessment (Hammond & Lincoln, 1999b).

Data Analysis

Because the scores collected from the modified Joint Protection Knowledge Assessment and the generalization tasks were ordinal in nature and because there were two conditions to the independent variable in this study, Mann-Whitney U tests, with an alpha level of .05, were performed. As for the demographic and descriptive statistics, chi-square and t-tests were conducted to determine whether or not there was a significant difference between groups in terms of age, gender, and race. Data from participants who did not complete all occupational therapy treatment sessions was not included in data analysis.

Results

Demographic and Descriptive Statistics

For this study, reported diagnoses for participants included arthritis and related disorders, such as osteoarthritis, rheumatoid arthritis, psoriatic arthritis, inflammatory arthritis, fibromyalgia, tenosynovitis, tendonitis, carpal tunnel syndrome, connective tissue disorder,

cervical degenerative disk disease, and cervical trapezius strain. The original sample included 49 participants that agreed to participate and met the inclusion criteria. Of this sample, 42 participants completed the study in its entirety. The other seven were excluded from data analysis because six of them stopped attending therapy sessions and one decided not to complete the follow-up phone interview. After random assignment, 23 participants composed the standard group, while the remaining 19 participants composed the experimental group. In total, these participants ranged in age from 32 to 85 with a mean age of 59.04 (SD = 9.47) for the standard group and 60.74 (SD = 13.02) for the experimental group indicating that there was no significant difference between the two groups in terms of age ($t = -.49$, $p = .63$). Overall, there were 37 females and 5 males that participated in the study. The statistic for gender distribution ($\chi = .50$, $p = .48$) indicated that there was no difference between the two groups in terms of the ratio of men and women. As for racial distribution, 32 participants of the sample were Caucasian/White, eight participants were African American/Black, one participant was Hispanic/Latino, and one participant chose not to answer this question. Descriptive statistics indicated that there was no significant difference between the two groups in terms of racial distribution ($\chi = 2.43$, $p = .30$). Thus, findings showed that the two groups were comparable in age, gender, and race following the randomization process.

Hypothesis Testing

The first hypothesis for this portion of the study postulated that there would be a difference between the standard and experimental groups in terms of knowledge of joint protection principles as measured by the Modified Joint Protection Knowledge Assessment (Modified JPKA). In comparison to a maximum of 40 possible points on the Modified JPKA, the mean score for the 23 participants in the standard group was 34.26 (SD = 3.22) and the mean

score for the 19 participants in the experimental group was 34.63 (SD = 3.13). At the alpha level of .05, the Mann-Whitney U test results (U = 210.00, p = .83) indicated that there was not a significant difference between the two groups in terms of level of knowledge. Furthermore, the calculation for the effect size for the Modified JPKA (Cohen's d = .13) classified the magnitude of the effect as small (i.e., .20 or less) (Cohen, 1988, pp. 24-27).

The second hypothesis for this portion of the study postulated that there would be a difference between the standard and experimental groups in terms of ability to generalize joint protection techniques to new occupations. For this statistical analysis, data from 39 participants were able to be utilized. Due to researcher error during administration of the protocol, three participants did not complete the generalization tasks and were unable to be included in the analysis. In comparison to a maximum of 10 possible points on the generalization task scoring sheet, the mean score for the 20 participants in the standard group was 6.60 (SD = 1.79) and the mean score for the 19 participants in the experimental group was 7.21 (SD = 1.93). At the alpha level of .05, the Mann-Whitney U test results (U = 138.00, p = .13) indicated that there was not a significant difference between the two groups in terms of generalization of joint protection techniques to new occupations. Additionally, the calculation for the effect size for the generalization tasks (Cohen's d = .33) classified the magnitude of the effect as small to medium (i.e., .20 to .50) (Cohen, 1988, pp. 24-27).

Discussion

Objectives

The overall purposes of this study were to examine the effects of two different methods of patient education on individuals' ability to generalize joint protection techniques to new occupations and individuals' knowledge of joint protection principles, as well as the degree to

which individuals' implement therapist recommendations into the home and the relationship between the perceived interference of pain and the degree of recommendation implementation. This portion of the study focused on level of knowledge and ability to generalize to new tasks.

Interpretations

The results of this portion of the study did not support the hypotheses for differences between the standard and experimental groups in regards to knowledge level or ability to generalize joint protection techniques. For the level of knowledge measured by the Modified Joint Protection Knowledge Assessment, relatively high scores for participants in the standard condition (verbal instruction and demonstration) and experimental condition (verbal instruction, demonstration, and active practice) indicated that both groups demonstrated similar levels of basic understanding in terms of application of joint protection principles to the provided scenarios of the Modified JPKA. In other words, participants in both groups were able to gain a high level of knowledge regardless of whether or not they received the additional component of hands-on practice. Considering the small effect size, these findings seem to indicate that even if a larger sample was included, the results for knowledge levels may not have been different for the two groups.

As for the generalization of joint protection principles to new occupations, relatively high scores indicated that both groups did fairly well on average. However, the mean score for the experimental group ($M = 7.21$) was higher than the mean score for the standard group ($M = 6.60$). While the difference was not strong enough to be significant, the magnitude of the effect size was approaching the medium categorization. Thus, with a larger sample size, a significant effect may have been able to be detected.

Although the findings in this portion of the study did not reach statistically significant levels, it is important to consider the results in context with previous literature. Several studies have found mixed results of psycho-educational and cognitive-behavioral approaches to patient education. Specifically, some indicate positive effects on behavior following interventions (Hawley, 1995; Hammond, Lincoln, & Sutcliffe, 1999; Hammond, Jefferson, N. Jones, Gallagher, & T. Jones, 2002), whereas others suggest that longer and more targeted input is required for changing habits and recalling techniques (Hammond, 1994; Hammond & Lincoln, 1999b; Freeman, Hammond, & Lincoln, 2002). Regardless of the end results, all of these studies seem to support the use of detailed types of educational approaches over a sustained period of time to increase the likelihood of influencing the outcome of learned behaviors. Thus, the current study still aligns with this concept even though the results did not reach significance.

Additionally, the subject of hands-on practice has been well-substantiated by past research (Warner, 1989; Thomas, 1993; Buddlemeyer, 1995; Earles, 1996; Vakil, Hoffman, & Myzliek, 1998; Hartman, Kopp Miller, & Nelson, 2000; Eakman & Nelson, 2001). These studies have found that active hands-on practice can influence subsequent recall, performance, and feelings of self-efficacy. Furthermore, the area of study on generalization supports the use of naturalistic environments rather than simulated contexts in promoting transfer of skill to new learning situations (Ma, Trombly, & Robinson-Podolski, 1999; Ferguson & Rice, 2001). Thus, the importance of these topics persists even though the current study did not conclude with significant findings. Additional study is needed to clarify best practice in joint protection patient education.

Limitations

Due to the lack of statistically significant findings, the possibility of Type II error must be considered. As indicated previously, the small sample size was a significant limitation. If more participants were able to be recruited, there may have been a higher likelihood of determining a difference. Due to the low numbers at the original site, it may have been advantageous to pursue additional research sites. However, the Arthritis and Osteoporosis Center at the Toledo Hospital is the primary site in the Toledo area for pursuing this type of research. Furthermore, involving other sites may have lead to issues with protocol delivery and interrater reliability. Another option would have been to extend the study for a longer period of time to increase the number of participants. However, this possibility was limited due to the time constraints for graduate student research deadlines.

Another limitation that could have affected the outcome of significance was the degree of similarity of the conditions of the independent variable. Specifically, there was a lack of control over the amount of hands-on practice that participants in the experimental condition actually received. It is possible that the added practice component was subtle in the fact that participants may have only been able to practice the techniques for brief periods of time or try assistive devices only once. To make the differentiation between groups more robust, the intensity of the hands-on practice component could be increased. For example, specified amounts of practice time could be set in order to ensure that participants were receiving the added component over a certain duration of time. However, this still would have been difficult to control for due to the individualized nature of participants' therapeutic needs.

In addition to the potential subtleness of the independent variable conditions, the dependent variables may have lacked sensitivity. If there were more levels or scoring gradations

for the generalization tasks and the questions on the Modified JPKA, there may have been an increased possibility for variability to be detected. If the generalization task rating system was categorized more finely, there may have been less room for interpretational error in terms of scoring participants' actions. For example, the "intermediate" category could have been further broken down into separate gradation levels. This might have allowed for increased sensitivity for the outcome measures.

Lastly, it is necessary to consider the study design as a potential limitation. As discussed previously, the simple experimental design was chosen because it was speculated that a pretest-posttest design could be influenced by the possibility of learning effects from the pre-test phase. Considering the availability of resources, the simple experimental design was the most feasible option. However, if given more resources and an adequate number of participants, the Soloman Four group design could offer advantages in terms of comparing the standard and experimental groups while still being able to address the issue of pre-testing as completed by two of the four groups.

Implications

Hands-on practice in relation to retention of knowledge and application of techniques is an important topic of research for the subject of joint protection patient education. Although current findings of this study did not reach predicted levels of significance, this type of research is vital to the pursuit of evidence-based practice in the field of occupational therapy. Considering the previously outlined limitations, future research in this area may benefit from striving to achieve a higher sample size, to increase the robustness of the independent variable, to increase the sensitivity of the dependent variables, and to examine the feasibility of altering the study design.

Conclusions

This study sought to investigate the impact of added hands-on practice on participants' ability to recall joint protection principles as measured by a knowledge questionnaire and participants' ability to generalize joint protection techniques to new occupations. In terms of knowledge, participants in both groups appeared to demonstrate similar levels of understanding. As for generalization to new tasks, significant differences were not detected; however, an effect size approaching medium classification may indicate the possibility of significance with an increased sample size. Although additional issues need to be addressed during further investigation, incorporation of hands-on practice methods is recommended to potentially aid in the generalization of joint protection principles.

References

Arthritis Foundation. (2004a). *Disease center.* Retrieved May 12, 2005 from http://www.arthritis.org/conditions/diseasecenter/default.asp

Arthritis Foundation. (2004b). *Osteoarthritis.* Retrieved May 12, 2005 from http://www.arthritis.org/conditions/diseasecenter/oa.asp

Arthritis Foundation (2004c). *Rheumatoid arthritis.* Retrieved May 12, 2005 from http://www.arthritis.org/conditions/diseasecenter/ra.asp

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: W. H. Freeman.

Buttlemeyer, S. L. (1995). *Hands-on versus verbal occupation: The effect on free recall in learning disabled children.* Unpublished master's thesis, Medical College of Ohio, Toledo, Ohio.

Center for Disease Control. (2005, January 3). *Arthritis.* Retrieved May 12, 2005, from http://www.cdc.gov/nccdphp/arthritis/index.htm

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Cronbach, L. J. (1970). *Essentials of psychological testing* (3rd ed.). New York: Harper & Row.

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education.* New York: The Free Press.

Eakman, A. M., & Nelson, D. L. (2001). The effect of hands-on occupation on recall memory in men with traumatic brain injuries. *Occupational Therapy Journal of Research, 21*, 109-114.

Earles, J. L. (1996). Adult age differences in recall of performed and nonperformed items. *Psychology and Aging, 11*, 638-648.

Ferguson, M. C., & Rice, M. S. (2001). The effect of contextual relevance on motor skill transfer. *The American Journal of Occupational Therapy, 55*, 558-565.

Freeman, K., Hammond, A., & Lincoln, N. B. (2003). Use of cognitive-behavioural arthritis education programmes in newly diagnosed rheumatoid arthritis. *Clinical Rehabilitation, 16*, 828-836.

Hammond, A. (1994). Joint protection behavior in patients with rheumatoid arthritis following an education program: A pilot study. *Arthritis Care and Research, 7*, 5-9.

Hammond, A., Jefferson, P., Jones, N., Gallagher, J., & Jones, T. (2002). Clinical applicability of an educational-behavioural joint protection programme for people with rheumatoid arthritis. *British Journal of Occupational Therapy, 65*, 405-412.

Hammond, A., & Lincoln, N. (1999a). Development of the Joint Protection Behavior Assessment. *Arthritis Care and Research, 12*, 200-207.

Hammond, A., & Lincoln, N. (1999b). The effect of a joint protection education programme for people with rheumatoid arthritis. *Clinical Rehabilitation, 13*, 392-400.

Hammond, A., & Lincoln, N. (1999c). The Joint Protection Knowledge Assessment (JPKA): Reliability and validity. *British Journal of Occupational Therapy, 62*, 117-122.

Hammond, A., Lincoln, N., & Sutcliffe, L. (1999). A crossover trial evaluating an educational-behavioural joint protection programme for people with rheumatoid arthritis. *Patient Education and Counseling, 37*, 19-32.

Hartman, B. A., Kopp Miller, B., & Nelson, D. L. (2000). The effects of hands-on occupation versus demonstration on children's recall memory. *The American Journal of Occupational Therapy, 54*, 477-483.

Hawley, D. J. (1995). Psycho-educational interventions in the treatment of arthritis. *Bailliere's Clinical Rheumatology, 9*, 803-823.

Ma, H., Trombly, C. A., & Robinson-Podolski, C. (1999). The effect of context on skill acquisition and transfer. *The American Journal of Occupational Therapy, 53*, 138-144.

Meyer, A. (1922). The philosophy of occupation therapy. *Archives of Occupational Therapy, 1*, 1-10.

Riemsma, R. P., Kirwan, J., Rasker, J., & Taal, E. (2003). Patient education for adults with rheumatoid arthritis (Review). *The Cochrane Database of Systematic Reviews, 2*, 1-19.

Spencer, E. A. (2003). Occupational therapy: Diagnostic considerations in adult and older adult practice; Section II: Upper extremity musculoskeletal impairments. In E. B. Crepeau, E. S. Cohn, & B. A. Boyt Schell (Eds.), *Willard & Spackman's occupational therapy* (pp. 796-805). Philadelphia: Lippincott Williams & Wilkins.

Thomas, J. J. (1993). Cardiac inpatient education: The impact of educational methodology on self-efficacy. *Journal of Cardiopulmonary Rehabilitation, 13*, 398-405.

Vakil, E., Hoffman, Y., & Myzliek, D. (1998). Active versus passive procedural learning in older and younger adults. *Neuropsychological Rehabilitation, 8*, 31-41.

Ware, J.E. (2000). Short Form-36 Health Survey (SF-36). *SPINE, 25*, 3130-3139.

Warner, D. A. (1989). *Hands-on purposeful activity and short-term memory retention in elderly patients with cognitive deficits.* Unpublished master's thesis, Western Michigan University, Kalamazoo, Michigan.

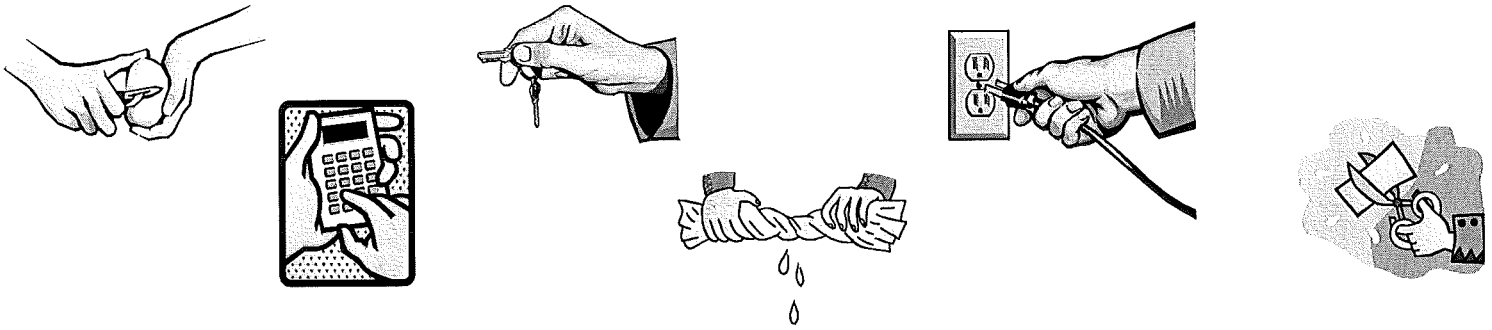
Wise, J. B. (1999). Effects of a curriculum to generalize self-efficacy from weight training exercises to activities of daily living in adults with spinal cord injuries or spina bifida. *Dissertation Abstracts International, 60 (3-B)*, 1353. (UMI No. 9921307).

Appendix A

Do you have arthritis?

Are you at least 18 years of age?

Do you have a referral for occupational therapy?



If you answered YES to all of these questions…

You are invited to be a part of a research study to compare two different methods of occupational therapy patient education.

The study requires:

- Completing occupational therapy visits for patient education on joint protection
- Answering questions regarding your amount of pain
- Participating in one follow-up phone call 2-4 weeks after completion of occupational therapy. The phone call will last approximately 20 minutes and will be done by students in the occupational therapy program at the Medical University of Ohio.

- Upon completion of the study, you will receive a $10 gift certificate to Kroger.

Appendix B

56210

The SF-36v2 Health Surv
Arthritis & Osteoporosis Care Center

Name_____

Instructions for Completing the Questionnaire

Please answer every question. Some questions may look like others, but each one is different. Fill in the bubble that best represents your response. If you are unsure about how to answer a question, please give the best answer you can. Please use a black or blue ink pen.

1. In general, would you say your health is:

Excellent	Very Good	Good	Fair	Poor
○	○	○	○	○

2. **Compared to one year ago,** how would you rate your health in general now?

- ○ **Much better now 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?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a. **Vigorous activities,** such as running, lifting heavy objects, participating in strenuous sports	○	○	○
b. **Moderate activities,** such as moving a table, pushing a vacuum cleaner, bowling or playing golf	○	○	○
c. Lifting or carrying groceries	○	○	○
d. Climbing **several** flights of stairs	○	○	○
e. Climbing **one** flight of stairs	○	○	○
f. Bending, kneeling, or stooping	○	○	○
g. Walking **more than a mile**	○	○	○
h. Walking **several hundred yards**	○	○	○
i. Walking **one hundred yards**	○	○	○
j. Bathing or dressing yourself	○	○	○

STAFFUSEONLY

☐ Low back pain	☐ Osteoarthritis	☐ Fibromyalgia	☐ Lumbar Degen Disk Dx
☐ Degen joint Dx	☐ Rheumatoid Arthritis	☐ Arthralgias/Myalgias	☐ Total joint Replacement
	☐ Cervical Degen Disk Dx	☐ Myofascial Pain	☐ Other

MRN

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56210

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

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a. Cut down on the **amount of time** you spent on work or other activities	○	○	○	○	○
b. **Accomplished less** than you would like	○	○	○	○	○
c. Were limited in the **kind** of work or other activities	○	○	○	○	○
d. Had **difficulty** performing the work or other activities (for example, it took extra effort)	○	○	○	○	○

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

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a. Cut down on the **amount of time** you spent on work or other activities	○	○	○	○	○
b. **Accomplished less** than you would like	○	○	○	○	○
c. Did work or other activities **less carefully than usual**	○	○	○	○	○

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, neighbors, or groups?

Not at all	Slightly	Moderately	Quite a bit	Extremely
○	○	○	○	○

7. How much bodily pain have you had during the **past 4 weeks**?

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)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
○	○	○	○	○

Today's Date ☐☐ / ☐☐ / ☐☐ MRN ☐☐☐☐☐☐☐☐☐☐

FFG
56210

9.These questions are about how you feel and how things have been with you during the **past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the **past 4 weeks**...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a. did you feel full of life?	○	○	○	○	○
b. have you been very nervous?	○	○	○	○	○
c. have you felt so down in the dumps nothing could cheer you up?	○	○	○	○	○
d. have you felt calm and peaceful?	○	○	○	○	○
e. did you have a lot of energy?	○	○	○	○	○
f. have you felt downhearted and depressed?	○	○	○	○	○
g. did you feel worn out?	○	○	○	○	○
h. have you been happy?	○	○	○	○	○
i. did you feel tired?	○	○	○	○	○

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 friends, relatives, etc.)?

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?

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
a. I seem to get sick a little easier than other people	○	○	○	○	○
b. I am as healthy as anybody I know	○	○	○	○	○
c. I expect my health to get worse	○	○	○	○	○
d. My health is excellent	○	○	○	○	○

Thank you for completing this survey.

STAFF USE ONLY

GENDER
○ Male
○ Female

TIMEFRAME
○ Pre Survey
○ Post Survey

AGE

MRN

Appendix C

_____IRB Number
_____Participant Number

Modified SF-36v2 Health Survey

1. How much bodily pain have you had during the **past 4 weeks**?
    a. None
    b. Very mild
    c. Mild
    d. Moderate
    e. Severe
    f. Very severe

2. During the **past 4 weeks**, how much did pain interfere with your normal work (including both work outside the home and housework)?
    a. Not at all
    b. A little bit
    c. Moderately
    d. Quite a bit
    e. Extremely

* Taken from SF-36v2 Health Survey® copyright 2000.

Researcher Use Only
□ Intake
□ Follow-up

Appendix D

Total Rehab Patient Intake

Therapy Referral Information

List current problem that brought you to therapy:_____

Area(s) Affected: _____

When Occurred: _____ How Occurred:_____

Has this occurred before? ☐ Yes ☐ No When?: _____How:_____

Special tests for current problem: ☐ X-Ray ☐ MRI ☐ Other:_____

Surgery patients only: Date of surgery for current problem:_____

Have you previously had therapy or other treatment for current problem? ☐ No ☐ Yes Explain_____

Have you used a brace, splint, etc: ☐ Yes ☐ No Are you sensitive to heat or cold? ☐ Yes ☐ No

Please rate your health status: ☐ Excellent ☐ Good ☐ Fair ☐ Poor

Medical History: Please check if you have had any of the following:

☐ Heart Prob.	☐ Asthma	☐ Thyroid	☐ Depression/mental	☐ Pacemaker
☐ Stroke	☐ Epilepsy	☐ Diabetes	☐ Weight gain/loss	☐ Lymphodema
☐ Arthritis	☐ Cancer	☐ Hi/Low BP	☐ Bipolar/ADHD	☐ Recent surgery
☐ Osteoporosis	☐ Recent Pregnancy		☐ Change bowe/bladder function	☐ Other:_____

List Known **Allergies:** ☐ None ☐ Latex ☐ Cortisone ☐ Bee stings ☐ Tape ☐ Other_____

List **current medications** taking or ☐ Check box if list provided ☐ None: _____

_____

Are you taking Coumadin or other blood thinner? ☐ Yes ☐ No Do you smoke: ☐ Yes ☐ No

Do you usually exercise/work out beyond normal daily activity ☐ Yes ☐ No

Are you: ☐ Right Handed ☐ Left Handed ☐ Use Both Easily

Social/Work History

Are you currently working? ☐ Yes ☐ No ☐ Student If yes: ☐ Regular Duty ☐Light Duty

List employer/work site:_____ Occupation:_____

List Last date worked:_____ If off work: list return to work date: ☐ Unknown : _____

Job duties: ☐ Sit ☐ Stand ☐ Reach ☐ Lift ☐ Repetitive ☐ Fingering/Handling ☐ Other _____

Indicate maximum lifting requirements:_____

Please describe your living environment

Number of floors in home ☐ B ☐ 1 ☐ 2 ☐ 3	Stairs outside home? ☐ Yes ☐ No	Live: ☐ Alone ☐ With spouse ☐ With Family ☐ Other
Bath ☐ B ☐ 1 ☐ 2 ☐ 3	Railings? ☐ No ☐ Yes: # ☐ 1 ☐ 2	Do you have throw rugs? ☐ Yes ☐ No
Bedroom: ☐ B ☐ 1 ☐ 2 ☐ 3	Stairs inside home: ☐ Yes ☐ No	Have history of falls? ☐Yes ☐ No
Laundry: ☐ B ☐ 1 ☐ 2 ☐ 3	Railings? ☐ No ☐ Yes: # ☐ 1 ☐ 2	

Please answer the following to help us know if you have other issues you may need help with:

Any financial barriers that might affect your care: ☐ No ☐ Yes: Explain: _____

Any Cultural or Religious beliefs or wishes that might affect care? ☐ No ☐ Yes: Explain:_____

What is the easiest way for you to learn? ☐ Discussion ☐ Reading ☐ Seeing (pictures) ☐ Practice

Anyone besides you that we should be teaching: ☐ No ☐ Yes: Explain: _____

Is it ok to share medical information with family/friends? ☐ Yes ☐ No: Exceptions:

Phone number where it is ok to leave messages:

TH-6500 R5/03

(OVER)

Pain History

Do you have Pain? ☐ No ☐ Yes If No: Skip to Goal Section

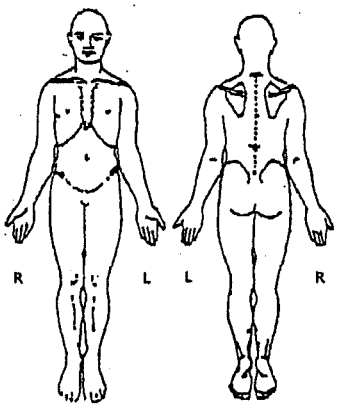
If Yes: Please complete the following questions:
Use the following scale to rate the level of your pain by selecting the appropriate number:
Pain level: NOW_____ BEST_____ (since onset) WORST_____ (since onset)

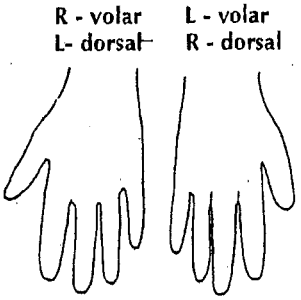
None	Mild	Moderate	Severe	Worst Possible
0 1 2	3 4 5	6 7	8 9	10

Please answer the following to describe your pain:

Type of pain: ☐ Dull ☐ Sharp ☐ Burning ☐ Other	Is Pain worse in : ☐ Morning ☐ End of Day ☐ Night
Is the pain: ☐ Constant ☐ Comes and Goes	Does it wake you from sleep: ☐ Yes ☐ No
Any: ☐ Numbness ☐ Tingling ☐ Pins and Needles Where?	Does it change if you: ☐ Cough ☐ Sneeze ☐ Have a Bowel Movement

Is your pain/symptoms: ☐ Stable ☐ Improving ☐ Worsening
Please **indicate** on the body below **where** you **currently experience pain/symptoms:**





What makes your pain worse?_____
What makes your pain better?_____

Functional Status and Goals

Please list three to five **activities** that you now have **difficulty** doing **or** are **unable** to do. Pick ones that are **important** to you:

_____
_____

My Goals(s) from therapy is/are:(Please indicate specific activities you would like to improve or work on)

_____
_____

Patient Signature:_____ Date:_____

Appendix E

_____IRB Number
_____Participant Number

Generalization Tasks Script & Score Sheet

Therapist: "Before you are discharged from therapy, I would like to give you a few simulations of situations that you might encounter at home. You will be asked to do three separate tasks, and I will give you instructions before beginning each task. Do you have any questions?"

1.) Pushing buttons on telephone:

Instructions:

Therapist: "Using the telephone on the table, please dial your home phone number."

	Circle Score
Correct: using an object, such as a writing utensil, to push buttons on telephone (2 points)	**2**
Incorrect: using tip of finger to push buttons on telephone (0 points)	**0**
Intermediate: bending finger to use proximal interphalangeal (PIP) joint to push buttons on telephone (1 point)	**1**

2.) **Carrying paper bag (with handles) of groceries**

Instructions:

Therapist: "Carry the bag of groceries from the table to the counter."

	Circle Score
Correct: holding bag close to body using both arms and hands (2 points)	**2**
Incorrect: using only one hand to carry bag of groceries (0 points)	**0**
Intermediate: carrying bag with handle over forearm/elbow crease; holding bag in one arm (1 ponit)	**1**

3.) **Filling, lifting, and pouring a pot of water**

Instructions:

Therapist: "Fill the coffee pot with water, bring it to the coffeemaker and fill the coffeemaker with water."

	Circle Score
Filling	
Correct: placing pot in sink while filling it with water; holding pot by handle with one hand and propping pot on partition at center of sink (2 points)	**2**
Incorrect: holding pot, unsupported, by handle with hand while filling it with water (0 points)	**0**
Intermediate: holding pot with two hands while filling it with water (1 point)	**1**
Lifting	
Correct: lifting pot with one hand on handle and one hand on bottom of pot (2 points)	**2**
Incorrect: lifting pot, unsupported, by handle using one hand (0 points)	**0**
Intermediate: lifting pot with two hands; hands are incorrectly placed on each side of pot (1 point)	**1**
Pouring	
Correct: pouring water using one hand on handle and one hand to support bottom of pot; with one hand on handle of pot, resting pot on top of coffeemaker while tipping to pour water into coffeemaker (2 points)	**2**
Incorrect: pouring water using one hand on handle without support of the other hand (0 points)	**0**
Intermediate: pouring pot using two hands on sides of pot (1 ponit)	**1**

Appendix F

05-045 IRB Number
_____Participant Number

Joint Protection Knowledge Assessment

Directions:
"The following questions are about what you *think* are good and not so good ways of using your hands in a variety of everyday tasks. Each question has THREE possible ways of doing the task. I will read you the question and its three options. Please choose the answer that you think is the best method, that is, the method that puts the least strain on hand joints. The answer that you think is best may not be the same as the method you actually use. Do you have any questions before we begin?"

JPKA Questions:

1) While taking a cake pan out of the oven (using oven mitts) and across to the dining table, you should....
    a. Firmly grip sides of the pan between fingers and thumbs, lift out, and carry to the table (0 points)
    b. Slide pan out between palms of hands, lift out to the top of the stove, and serve there (2 points)
    c. Firmly grip sides of pan between fingers and thumbs, lift out, put on top of the stove, and serve there (1 point)

2) When cleaning the inside of windows, you should....
    a. Grip the handle of a squeegee (1 point)
    b. Use a cloth in the flat of the hand with circular movements (2 points)
    c. Grip a cloth in fingers and thumb (0 points)

3) While carrying a basket of laundry, you should....
    a. Wrap your arms around the sides of the basket and hold it close to your chest (2 points)
    b. Grip the edges firmly with both hands (1 point)
    c. Hold it on your hip using one arm (0 points)

4) While writing a long letter, you should....
    a. Hold the pen normally and stop occasionally to stretch out your hand and fingers (1 point)
    b. Hold the pen normally and write the letter without stopping (0 points)
    c. Wrap some foam around an ordinary pen and stretch your fingers occasionally (2 points)

5) When vacuuming, you should....
   a. Push the vacuum with one hand and clean all of the rooms in the same day (0 points)
   b. Grip the vacuum with two hands and clean all of the rooms in the same day (1 point)
   c. Vacuum one room per day, pushing with two hands (2 points)

6) Getting up from an arm chair, you should....
   a. Grip the front edge of the chair with palms of hands to help get up (1 point)
   b. Push up with your knuckles to help get up (0 points)
   c. Use your leg muscles to do the work, while using the palms of your hands as little as needed (2 points)

7) When organizing the household chores, you should....
   a. Switch between doing heavier and lighter tasks (1 point)
   b. Get as many chores as possible done at once (0 points)
   c. Make sure to give your hands a few minutes rest every 10-15 minutes (2 points)

8) When getting the weekly groceries home or unloading them from the car, you should....
   a. Carry as many bags as possible to make the fewest trips (0 point)
   b. Carry bags of perishable items in first, one bag at a time, and then carry other bags in, one at a time, each time you use the car (2 points)
   c. Carry the bags one at a time by yourself (1 points)

9) When preparing potatoes for several people, you should....
   a. Use an ordinary peeler (0 points)
   b. Use a wide-grip peeler (1 point)
   c. Buy ready-washed potatoes, cook them in their skins, and remove peel after if you wish (2 points)

10) When turning off a water faucet, you should....
   a. Use a faucet turner (2 points)
   b. Press down on top of the faucet and turn, using the palm of your hand (1 point)
   c. Grip the faucet firmly with fingers and tighten (0 points)

11) While serving from a one-handled saucepan, you should....
   a. Hold the saucepan in one hand, while spooning out the contents with the other (0 points)
   b. Leave the saucepan on the top of the stove and spoon contents out from there (2 points)
   c. Grip the handle of the saucepan with both hands and allow the contents to pour out slowly (1 point)

12) When closing a drawer, you should....
   a. Push it closed with your palm (1 point)
   b. Push it closed with your fingers (0 points)
   c. Push is closed with your hip or thigh (2 points)

13) When carrying a bag of groceries, you should....
   a. Hold it using both arms and hands, holding it close to your body (2 points)
   b. Carry it with the handle over your forearm (1 point)
   c. Hold it with a firm grip in one hand (0 points)

14) When carrying a tray, you should....
   a. Take a firm grip on the edges of the tray with both hands (0 points)
   b. Grip the tray edge with one hand to steady and support the weight on you forearm beneath (1 point)
   c. Slide the tray onto your palms and forearms to carry it (2 points)

15) When opening a new jar, you should....
   a. Use the palm of the hand pressing down on the lid to turn, rather than the fingers (1 point)
   b. Use a jar opener (2 points)
   c. Firmly grip the lid with the fingers and twist off (0 points)

16) When moving a full saucepan across the stove, you should....
   a. Slide the saucepan as much as possible (2 points)
   b. Lift the saucepan by the handle, using one hand (0 points)
   c. Use two hands, one on the handle of the saucepan and one supporting underneath (1 point)

17) When reading a book, you should....
   a. Hold it with the weight resting on your palms (1 point)
   b. Rest the book on a cushion on your lap (2 points)
   c. Hold the edges of the book (0 points)

18) If your household jobs are often causing aching or painful hands, you should....
   a. Stop, look at how you do tasks, and alter the activities that cause pain (2 points)
   b. Continue as usual and work through the pain (0 points)
   c. Stop, wait until the pain eases, and then continue (1 point)

19) When inviting family or friends over for a meal, you should....
   a. Plan in advance and do some preparation the day before the meal (2 points)
   b. Plan in advance, but prepare the same day as the meal (1 point)
   c. Plan and prepare on the same day as the meal (0 points)

20) When you feel your arthritis is worse, you should....

a. Go to bed and get up at your normal time (0 points)
b. Go to bed for a longer period of time and take extra rest breaks during the day (2 points)
c. Go to bed for longer (resting for 8-9 hours) (1 point)