Perceptions of required assistance involved with manual transfers

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Abstract

Background. Healthcare professionals engage in manual patient handling frequently, posing a great risk to these professionals. The task of manual patient handling also creates a risk to patients and creates issues to healthcare employers. While Europe and Canada have addressed safe patient handling, these issues have only recently been considered in the United States. It is important to recognize the high injury rates and multitude of other consequences caused by manual patient handling tasks.

Aims. The aim of this study is to report the subjectivity involved among physical therapy and occupational therapy practitioners when engaging in sit-to-stand transfers. It is also important to understand how this subjectivity effects manual patient handling tasks, communication among healthcare professionals, and patient care.

Methods. Participants performed 12 sit-to-stand transfers, with the patient changing the level of assist provided on each transfer. The participant then rated the level of perceived assist required by the patient. Testpoint software version 3.4 was used to randomize the assist level for the patient. The patient was able to see the computer screen, while the participant was blind to the screen during the transfer.

Conclusion. The results of this study indicate there is high subjectivity involved with the traditional method of grading manual transfers. Based on results of this study, it is important for occupational therapy practitioners, as well as all healthcare professionals to keep in mind subjectivity when treating patients and documenting results of their treatment.
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Manual patient handling can be defined as “the transporting or supporting of a patient by hand or bodily force, including pushing, pulling, carrying, holding, and supporting of the patient or a body part” (Nelson, & Baptiste, 2006). Manual patient handling is a common daily occupation for healthcare professionals. “The cumulative weight lifted by a nurse providing direct patient care in a typical 8-hour workday is estimated to be 1.8 tons” (Nelson, Collins, et al., 2007). As expected, this can cause great pain to nurses and other healthcare professionals. It has been estimated that 52% to 63% of nurses experience musculoskeletal pain lasting greater than two weeks (Nelson, Collins, et al., 2007). The Bureau of Labor Statistics reports the rate of nonfatal occupational injuries and illnesses for service providing hospitals to be 11.9 and for service providing nursing and residential care facilities to be 12.5 per 100 full time employees. The rate of nonfatal occupational injuries and illnesses for service providing hospitals exceeds the rate of all industries by 7.7 per 100 full time employees and for service providing nursing and residential care facilities by 8.3 per 100 full time employees ("Workplace injuries and," 2009).

The effects of these statistics can be quite costly to healthcare employers, with unscheduled employee absence costing an average of $755 per employee annually (Wallace, 2009). Sun, Paez, Lee, Salem, and Daraiseh (2006) described four types of cost employers deal with after work-related accidents or injuries; legal and administrative costs, productivity costs, costs involved with replacement of employees, and costs involved with investigating the accident. The stress put on healthcare professionals through manual patient handling can cause great consequences to the health of the professional, as well as large financial costs to employers. Along with high financial costs, employers often have a high turnover rate among healthcare employees due to burnout. Employees working in high-injury rate facilities had more negative
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perceptions of their job demands and workload pressures than employees in low injury facilities. While employees working at facilities with a low rate of injury believed their facility staffed enough employees to provide good quality care and they believed their facility offered good to excellent care to their patients (Yassi, & Hancock, 2005). Financial costs and high burnout rate among healthcare professionals are serious issues that need to be addressed in healthcare facilities.

The Occupational Safety and Health Administration (OSHA) recommends that “manual lifting of residents should be minimized in all cases and eliminated when possible. Minimizing and, where possible, eliminating resident lifting is the primary goal of the ergonomics process in the nursing home setting…” (Occupational Safety and Health Administration (OSHA), 2009). There are many methods used in the United States to improve the safety of the patient and the healthcare provider during manual patient handling. Training in proper body mechanics and lifting techniques are often used to decrease occupational injuries; however 35 years of research reveal that these training techniques have consistently failed in decreasing the number of occupational injuries in patient care settings (Nelson, & Baptiste, 2006). The use of back belts to protect the lower back during manual patient handling is believed by some to reduce the number of occupational injuries. However, there is no evidence to prove that the use of back belts is helpful and NIOSH states there is strong support that back belts are not successful in preventing work-related injuries (National Institute of Occupational Safety & Health (NIOSH), 1994).

Patient lift or transfer teams are used by some facilities to reduce occupational injuries. There are often several problems in obtaining a patient lift team and the shortage of nurses often makes it difficult to hire team members. To be a member of the patient lift team, one must pass a physical exam, have a radiograph of their spine, and have no previous back injury. The duties of
this job may be considered unjust, and in several facilities the lift team must be available around the clock (Nelson, & Baptiste, 2006). Due to these factors, it is often difficult for facilities to organize a patient lift team. Another common method used in the United States for safe patient handling is the use of equipment and devices. There are several factors to consider when using equipment and devices for patient handling. Risks involved with manual patient handling are often contributed to the patient’s weight, transfer distance, limited workspace, erratic patient behavior, and awkward positions (Nelson, & Baptiste, 2006). Many of these risk related factors mentioned remain a concern for healthcare providers using mechanical lifts, because of confined space and awkward positions involved. A recent study has shown that floor-based lifts require considerably greater force and torque to manage than overhead-mounted (Rice, Woolley, & Waters, 2009). Christiana Care Health System is a large health care provider in the mid-Atlantic region. This not-for-profit health care system includes two hospitals, in which there are over 1,100 licensed hospital beds (“Christiana care homepage,”). Christiana Care chose to install ceiling-mounted lifts in their facilities and experienced a dramatic decrease in caregiver injuries, reducing transfer related injuries from 1,289 to 28 in the first year (Brumbeloe, 2006). On the international level, several countries have developed policies as a part of their national legislation to address occupational injuries involved with safe patient handling.

Healthcare facilities and corporations are always trying to decrease the number of employee and patient-related occupational injuries. The Canadian Centre for Occupational Health and Safety (Canadian Centre for Occupational Health and Safety, 2002) suggests the following for reducing injury to health care workers from manual handling tasks: ergonomic patient handling policies, needs analyses, client assessments, ergonomically well-designed care facilities, and taking the proper approach when performing a patient transfer or lift. Safety for
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healthcare professionals and for patients begins with these steps. An ergonomic patient handling policy should be set up on an individual basis and include all parties involved at the workplace. The policy should be put in place to increase the safety of the workplace through decreasing occupational injuries. A needs analysis should involve on-going documentation of injuries that occur during patient handling. The analysis contains details of the injury and also information from surveys filled out by employees involved in the injury. This information will help healthcare facilities better understand when, where, and how injuries are occurring. Having a better understanding of this information will help facilities individualize their safe patient handling plan. Client assessments should be performed on each client upon being admitted to the healthcare facility. The client assessment includes information on the proper method of transfer, the degree of the client’s mobility, and the degree of the client’s physical impairment. This assessment will help all healthcare professionals involved with the care of the client know the best and safest ways to assist the client. Ergonomically well-designed care facilities can play a big role in decreasing the amount of injuries in the workplace. Appropriate space and layout of the healthcare facility, especially in the patient’s room and bathroom is important to the safety of the healthcare worker and the patient. Taking the proper approach to a patient transfer or lift is also of utmost importance to decreasing injuries in the workplace. The healthcare professional should be aware of the level of assistance needed by the patient through reading the medical record and communicating with other healthcare professionals. Other important information to ascertain is, whether or not the patient has any aggressive tendencies, and whether the healthcare provider should be prepared for the patient to lose his or her balance. Being aware of these aspects of the patient prior to assisting with a transfer or a lift will not only increase the
healthcare professional’s confidence, but also increase the safety of the transfer or lift (Canadian Centre for Occupational Health and Safety, 2002).

In 1994, the Nordic Council (Denmark, Sweden, Norway and Finland) developed patient handling limits, stating the greatest patient weight to be lifted by a nurse is 54 pounds (Nelson, Collins, et al., 2007). Canada has banned the one-person low-pivot manual transfer and two person side-by-side transfer and England has banned dangerous manual lifts, including, the drag lift, cradle lift, and shoulder lift. The United Kingdom has a national manual handling policy in place, which states “proper equipment, adequately maintained and in sufficient numbers, will be available to care providers to reduce the risks associated with manual patient handling” (Nelson, & Baptiste, 2006).

In the United Kingdom, the Department of Health and the National Assembly requires that local authorities perform a needs assessment on those who may need community care services. The needs assessment evaluates risk to people’s independence. The needs assessment focuses on autonomy and freedom to make choices, health and safety of the person, the ability to manage personal and other daily routines, and involvement with family and the community. Local authorities that performed the needs assessment then grade any risks they found as critical, substantial, moderate, or low to a person’s independence. The local authorities then use the information obtained from the needs assessment to get people the help they need to remain as independent as they can in a safe way (Smith, 2005). Performing a needs assessment is a great way to help healthcare professionals understand the needs of their patients, and can help reduce injuries in healthcare workers and patients, due to having a greater understanding of the needs of the patient at the start of care.
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It is important to keep in mind that healthcare professionals begin their education of safe manual transfers as a part of their curricular experience. Traditionally, nursing school curriculum has focused on manual patient lifting techniques and using proper body mechanics as their primary education methods for safe patient handling, despite the fact that over 30 years of evidence documents these approaches are not safe and do not decrease work-related injuries (Nelson, Waters, et al., 2007). A study performed by Kneafsey in the United Kingdom found that nursing educators often feel as though their role of educating nursing students about safe patient handling is not a necessary component of their responsibility. The nursing educators also felt as though learning about safe patient handling was not a priority for students, and that it was perceived as a ‘boring’ topic. Nursing educators also explained that if students did not ask questions concerning patient handling, they would not offer explanations spontaneously (Kneafsey, 2007). Within occupational therapy, a common textbook written for occupational therapy education states, “A person who is too weak to move requires another person or persons to lift or move him or her in a dependent transfer” (Radomski, & Trombly Latham, 2008). Lacking is an explanation of alternative ways to manual patient handling, such as the use of mechanical devices. Safe patient handling by healthcare professionals begins during their education. Until safer techniques are taught during the curriculum of healthcare professionals, lifting/transferring behaviors will not change and occupational injuries will most likely not decrease.

The Minimum Data Set (MDS) is the foundation for the assessment process in all long-term-care facilities in the United States. The MDS is a resource for documenting the status of a resident, important geriatric conditions that may require further evaluation, creating management strategies for the resident’s care plan, and deciding the resident’s progress over a period of time.
Occupational therapists are often instrumental in documenting several MDS sections. A study conducted by Nelson and Glass (1999) found that occupational therapists are most involved with dressing, eating, personal hygiene, toilet use, activities of daily living, and functional rehabilitation potential in long-term-care facilities. Occupational therapists reported being neutrally involved with transfers, averaging a 4.0 on a 7-point Likert scale, with 1 meaning strongly disagree with having input and 7 meaning strongly agree with having input. Ninety percent of the 145 respondents reported contribution in completing the MDS (Nelson, & Glass, 1999). As mentioned above, the MDS codes self-performance and activity of daily living support. Self-performance is coded as 0 through 4. A score of ‘0’ is described as independent with no staff help or supervision or with staff assistance given only one or two times within the previous seven days. A score of ‘1’ is described as supervision with oversight, encouragement, or cues given three or more times within the previous seven days or oversight (three or more times) in addition to physical assistance given only one or two times within the previous seven days. A score of ‘2’ is described as limited assistance and the resident is highly active when engaging in the self-performance skill, but received physical assistance in maneuvering limbs or other non-bearing assistance on three or more occasions or limited assistance (three or more times) in addition to weight-bearing support given for only one or two times within the previous seven days. A score of ‘3’ is described as extensive assistance with weight-bearing support provided three or more times. A score of ‘3’ is also given if a staff member provided full help of an activity (three or more times) during part of the previous seven days. A score of ‘4’ is described as total dependence and full staff help of the self-performance activity was provided throughout the entire previous seven days. Activity of daily living support is coded as 0 through 3 and 8. A score of ‘0’ indicates there was no setup assistance or physical help from staff. A
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score of ‘1’ indicates staff only provided setup for the resident. A score of ‘2’ indicates physical assistance was provided by one staff member. A score of ‘3’ indicates physical assistance was provided by two or more staff members. A score of ‘8’ indicates the activity did not take place during the previous seven day period. The MDS assessment is one way nursing and therapy staff code the level of assistance they are providing to their patients in long term care facilities (Centers for Medicare, 2009).

Another method used to score the level of assistance healthcare professionals are providing to their patients is the Functional Independence Measure (FIM). The FIM is used to score the level of assistance for all types of transfers. (i.e. bed, chair, wheelchair, tub, toilet) The FIM is used in inpatient rehabilitation facilities throughout the United States. The FIM is scored on a scale from 1 to 7. A score of ‘1’ indicates total assistance provided and the patient is providing less than 25% of the effort needed to complete the task. A score of ‘2’ indicates maximal assistance and the patient is providing at least 25% of the effort needed, but less than 50% of the effort needed to complete the task. A score of ‘3’ indicates moderate assistance and the patient is providing at least 50% and less than 75% of the effort needed to complete the task. A score of ‘4’ indicates minimal contact assistance and the patient is providing at least 75% or more of the effort needed to complete the task. A score of ‘5’ indicates setup or supervision and the patient is provided with only setup assistance, but no physical assistance. A score of ‘6’ indicates modified independence, with the patient needing an assistive device to help them complete the task or needing an increased amount of time to complete the task. A score of ‘7’ indicates total independence and the patient needs no supervision, physical assistance, or assistive device to complete the task (“Guide for the,” 1993).
It is essential for occupational therapists, and other healthcare professionals to accurately document the effectiveness of their intervention. Turner, Fricke, and Darzins (2009) studied the interrater reliability of the Personal Care Participation Assessment and Resource Tool (PC-PART) in a rehabilitation setting. The PC-PART assesses the areas of clothing, hygiene, nutrition, mobility, safety, residence, and supports. The PC-PART is very compatible with the Canadian Model of Occupational Performance occupational therapy model, and assists in evaluating the personal care factor of participation. Data were collected to compare the level of agreement between rehabilitation team clinicians and occupational therapy researchers when assessing patients using the PC-PART. The results displayed high interrater reliability between the standard and research assessments. Agreement between the 43 items for assessment, under the 7 personal-care domains ranged between 72 and 100%. The overall observed agreement, attained through combining all of the scores was 92% (Turner, Fricke, & Darzins, 2009).

Brueilly, Alexander, and James (2008) performed a study on physical therapy students and their ability to accurately evaluate the level of assistance provided in a sit-to-stand manual transfer. Thirteen physical therapy students at Texas Tech University Health Sciences Center were assessed in this study. Prior to engaging in the study these students received typical instruction in their curriculum, psychomotor skill training in patient assessment, training in treatment of ability, safety and lifting principles, and training in the assessment of mobility. Subjects used as patients to be transferred in this study were also physical therapy students and were instructed to simulate a certain percentage of active participation. The raters, or students performing the manual transfer, placed a gait belt on their patient and then positioned him or herself for a sit-to-stand transfer. Patients were sitting in a chair with arm rests and sat with their feet resting on a force plate. Raters were assessed for accuracy of perceived assistance and the
amount of actual patient assistance provided. Results from this study demonstrated strong, positive correlations among estimated and measured amounts of patient assistance in manual sit-to-stand transfers by physical therapy students (Brueilly, Alexander, & James, 2008).

As mentioned above, client assessments upon admission to a healthcare facility are an important step to making sure all healthcare professionals understand the proper method of transfer, the degree of the client’s mobility, and the degree of the client’s physical impairment (Canadian Centre for Occupational Health and Safety, 2002). Due to the fact these assessments are so important in documenting patients’ status and are so widely used, it is important for the documented assistance levels to have high reliability and validity with the level of assistance that is actually required. Therefore, the research question for this study is: How strong of a role does subjectivity play during manual transfers performed by healthcare professionals? The purpose is to investigate the level of agreement between the perceived amount of assistance and the actual level of required assistance during manual transfers. It is therefore hypothesized that caregivers will differentiate the level of assistance required during manual transfers.
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Methods

Participants

Participants included 12 healthy adult male and females aged between 18 and 55 years. There were three male participants and nine female participants total. The average number of years practicing among participants was 18.3 years, with a standard deviation of 9.8 years. The average age of participants was 41.3 years, with a standard deviation of 9.8 years. Additional information on participants can be found in Table 1. Inclusion criteria included being either a licensed physical therapy practitioner or registered/certified occupational therapy practitioner, having experience, and being deemed competent in performing pivot transfers. This was ensured by providing a screening assessment that is normally used in The University of Toledo’s Occupational Therapy Doctorate curriculum as a practical examination for performing pivot transfers. The screening assessment was comprised of a questionnaire, as well as an observation of a sit-to-stand transfer by the researcher. The questionnaire was used to confirm that the participant had not experienced any musculoskeletal injuries of the back and the observation was used to ensure that the participant was comfortable and proficient at performing the transfer. Exclusion criteria included any history of back injury or other orthopedic or neurological condition that would adversely interfere with performing a pivot transfer. Recruitment of participants was done through advertisement posters on The University of Toledo campuses, as well as student recruitment through word of mouth. Data for this study were collected from November 2010 through May 2011.

Apparatus

A four camera Qualisys 3-dimensional motion capture system collected kinematic data at 240 HZ (Qualisys AB, Packhusgatan 6, S-411 13 Gothenburg, Sweden). Two force places
captured ground reaction forces. Also, two Imada digital push/pull gauges (model # DPS220, Imada, Northbrook, IL) were used to collect force data at the hands. The force plates and the push/pull gauges were integrated with the Qualisys system using an analog to digital board. This force data was collected at 960 Hz. A Philips computer camera (Philips Accessories and Computer Peripherals, North America, Ledgewood, NJ 07852, U.S.A.) collected video of the transfers. The force plates were embedded into a wooden platform. The wooden platform was 6 meters by 9 meters and was constructed with supports approximately 46 cm on center. A computer with a custom software program using Testpoint software version 3.4 (Capital Equipment Corporation, 900 Middlesex Turnpike Building 2, Billerica, Massachusetts 01821) was used to deliver the independent variable (randomized assistance level for the ‘patient’).

**Procedure**

This is a descriptive study in terms of the ground reaction forces generated when performing a series of pivot transfers. Two people were involved in this study during any given data collection session; one took on the role of a ‘client’ and the other person took on the role of a ‘caregiver’ who transferred the ‘client’ from one seated surface to another seated surface. There were four conditions to this study involving varying levels of help that the client contributed to their own weight bearing. There were four levels based upon the definitions given by the Functional Independence Measure (FIM) as described above. The ‘caregiver’ manually transferred the ‘client’ with the ‘client’ grading his or her own weight bearing by watching a computer screen during the transfer so that, the percentage of his or her weight that he or she was bearing was within the above stated percentage bands. Each ‘client’ was given practice trials so that he or she became accustomed to bearing the correct amount of weight. Each ‘caregiver’ was blind to the computer screen reading the weight bearing status of the ‘client’ due to the fact that
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‘caregivers’ were asked to grade the level of assist he or she provided during the manual pivot transfer. The ‘client’ was given practice trials so that she became accustomed to bearing the correct amount of weight. The ‘client’ was randomly assigned assist levels prior to the manual pivot transfer being performed. The ‘client’/‘caregiver’ team practiced so that the ‘client’ performed at the appropriate level of weight bearing they have been randomly assigned. There was a break between each trial and it lasted as long as the ‘client’ and/or the ‘caregiver’ chose. The ‘caregiver’ donned reflective markers at: C3, T10, right and left anterior superior iliac spine, right and left lateral epicondyles, right and left ulnar tuberosities, right and left 3rd MCP’s, right and left greater tubercles, right and left femoral condyles, right and left lateral malleolus, right and left greater tuberosities, and right and left fifth phalanges. During the trials, the participants stood on their own respective force plates. The pivot transfers were performed in a manner such that each participant’s feet remained on his or her own force plate. Data on participant height, mass, age, gender, ethnicity, and limb dominance was recorded in a custom computer software program. Twelve pivot transfers were performed by each ‘caregiver’, with the ‘caregiver’ grading the level of perceived assistance provided by the ‘client’ on a scale from 0% to 100%. See the Appendix for an example of the scale used.

Statistical Analyses

Pearson correlations were calculated between the respective dependent variables with the subject’s perceived level of required assistance from the client. Included in the data set were all trials. An argument can be made that each transfer was its own entity. Each transfer was independently rated. This reflects practice in that each transfer is often evaluated as its own entity. Furthermore, the concatenated data were split into two sections and were subsequently analyzed using a Pearson’s correlation. All of the correlations were not significant; however all
of the $r$-values were less than 0.5 except for the movement in time variable which was 0.54. See Table 2.

**Results**

The Pearson correlation analyses revealed no relationship between the perceived amount of required assistance and any of the dependent variables. Specifically, for movement in time the $r(112) = .129, p = .176$. For peak hand force the $r(112) = .09, p = .347$. For maximum ground reaction forces the $r(112) = .001, p = .993$. For mean ground reaction forces the $r(112) = .001, p = .994$.

Figures 1 through 4 illustrate these results in scattered plot diagrams. Figure 1 represents the correlation between the movement time in seconds of the sit-to-stand transfer and the perceived amount of assistance required by the ‘client.’ The figure demonstrates that there is no true pattern among the amount of movement time and the perceived assistance required for the transfer. The trend line in Figure 1 has an R-square of .0048; demonstrating that essentially no variance can be explained by the caregiver’s perception of the required assistance. In other words, there is no relationship between the perceived amount of required assistance and the amount of time required to complete the transfers.

Figure 2 represents the correlation between the peak hand force in pounds exerted during the transfer and the perceived amount of assistance required by the ‘client.’ This figure also demonstrates no correlation between the amount of hand force exerted and the perceived assistance required. This data reveals that just because one perceived they were assisting more with a transfer, they were not necessarily exerting more force through their hands. The trend line in Figure 2 is nearly flat with an R-square of .0003. Once again, relatively little of the variance can be explained by the caregiver’s perception of the required assistance and there is no true
relationship between the perceived amount of required assistance and the amount of peak force required to complete the transfers.

Figure 3 represents the correlation between the maximum ground reaction force during the transfer in pounds and the perceived amount of assistance required by the ‘client.’ This figure displays no correlation between the highest ground reaction force and the perceived assistance required. Similarly to Figure 2, in Figure 3 the trend line is almost flat with an R-square of .0008. Relatively little of the variance can be explained by the caregiver’s perception of the required assistance. This results in no relationship between the perceived amount of required assistance and the associated maximum ground reaction forces required to complete the transfers.

Figure 4 represents the correlation between the average ground reaction force during the transfer in pounds and the perceived amount of assistance required by the ‘client.’ Once again, this figure demonstrates no correlation between the average ground reaction force and the perceived assistance required by the client. Nearly identical to the trend line for maximum force, this trend line is also flat with an R-square of .0008. Subsequently, there is essentially no variance that can be explained by the independent variable and there is no relationship between the perceived amount of required assistance and the associated average ground reaction forces required to complete the transfers.

Based on this study, these four figures delineate that no correlation can be found between the amount of perceived assistance a ‘client’ requires by a physical therapy practitioner or occupational therapy practitioner and movement of time, peak hand force, maximum ground reaction force, and mean ground reaction force.
Discussion

Results of this study indicate that perceptions of occupational therapy practitioners and physical therapy practitioners during manual transfers show no correlation between the perceived amount of assistance the ‘client’ needs and the amount of time required for the transfer, the peak force at the hands during the transfer, the maximum ground reaction force, and the mean ground reaction force. Occupational therapy practitioners and physical therapy practitioners, as well as other healthcare professionals are often expected to document the amount of assistance their clients require during manual transfers. The findings in this study suggest that grading manual transfers as minimal assist, moderate assist, maximum assist, and total dependence is a very subjective way of measuring the level of assist the client needs.

According to results of this study, subjectivity plays a strong role when manual transfers are performed by healthcare professionals. Data collected from the twelve participants showed no agreement between the perceived level of assist of the client and the actual level of assist required. There are many factors to take into consideration why minimum assist or maximum assist is not necessarily consistent among participants in this study or among healthcare professionals working in the field.

Factors that may affect consistency among participants in this study, as well as healthcare professionals include: weight of the individual, height of the individual, age of the individual, strength of the individual, experience of the individual, and /or education received in the area of manual patient transfers. The hypothesis for this study does not hold true, caregivers did not systematically differentiate their perception of the level of assistance required during manual transfers. It is possible that these results were found, because of the many factors that were ‘out of the researcher’s hands.’ The weight, height, age, strength, clinical experience, and
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educational experiences of participants all varied substantially. This allowed for results that
differentiated greatly.

The weight of the participant may have affected results, because some participants may have weighed more than the client, while other may have weighed less. It is typically easier to transfer an individual who is of less weight than yourself and more difficult to transfer an individual who is of more weight. The height of the participant may have also been a contributing factor. It is often easier to transfer an individual who is of similar or shorter height, while it is more difficult to transfer an individual who is taller. The age of the participant is another factor that may have made a difference in the results of the study. Age may be related to more experience, making the participant more knowledgeable in the area of transfers. Age may also be related to a higher number of musculoskeletal disorders, specifically of the back, due to many years of performing physically challenging work. Strength is another factor to consider when reviewing results of this study. It makes sense that the stronger the participant, the easier the transfer was to perform. The weaker the participant, the more difficult the transfer was to perform. Clinical experience and educational experience are also factors that varied greatly among participants and could definitely strongly contribute to results. Participants, who had many years of clinical experience transferring clients, were presumably most likely to feel more at ease during this study. Participants who had little to no clinical experience transferring clients may have felt uncomfortable and more challenged during this study. Educational experience could have also been a contributing factor to results of the study. Many physical therapy programs and occupational therapy programs around the country may have limited curricular content geared towards transfers and body mechanics in their curriculum (Slusser, Rice, and Kopp Miller, In Press). Depending upon where and how the participants of this study were
educated in regards to this information could have affected the way in which they performed the transfer and graded the transfer during the study.

This study demonstrates how ineffective grading manual transfers, as well as use of the MDS and FIM may be. What minimum assist is to one healthcare professional is not necessarily minimum assist to the next healthcare professional. The FIM is more descriptive than the MDS; however on the FIM, a score of ‘3’ or moderate assist is given if the patient assists between 50% and 74% to complete the task, but if it is perceived that the patient assist 75% to complete the task then a score of ‘4’ or minimum assist is given. Once again, one healthcare professional may interpret a client’s level of assist as 76% and the next healthcare professional may interpret the client’s level of assist as 72%. This is only a 4% difference; however they are given a completely different score on the FIM. This score may affect the client’s ability to work on higher level goals or maybe even affect when or if the client returns home.

This study is the first of its kind and demonstrates a need for further research in this area. Turner, Fricke, and Darzins (2009) were also interested in interrater reliability. They used the Personal Care Participation Assessment and Resource Tool (PC-PART), and found a high interrater reliability between 72% and 100% among the 7 personal-care domains. This study demonstrates the importance of rater reliability in the healthcare setting. However, this study does show high interrater reliability, unlike the current study on perceptions of required assistance during manual transfers.

Brueilly, Alexander, and James (2008) conducted a similar study on physical therapy students and their ability to accurately evaluate the level of assistance provided in a sit-to-stand manual transfer. This study also evaluated raters’ accuracy of perceived assistance and the amount of actual patient assistance provided. One major difference of this study was that all
participants were students from the same university who underwent the same training in patient handling. Also, results of this study demonstrated strong, positive correlations among estimated and measured amounts of patient assistance in manual sit-to-stand transfers by physical therapy students.

In the United Kingdom, a needs assessment is performed on all individuals who require community care services. Local authorities who perform the needs assessment grade any risks they find as critical, substantial, moderate, or low to a person’s independence. This information is obtained from the needs assessment to get people the help they need to remain as independent as they can in a safe way (Smith, 2005). Similar to the study on perceptions of required assistance, authorities in the UK grade the independence level of individuals engaging in personal and daily routine activities. Due to the subjectivity involved with grading these activities, the expected outcome of using this method is similar to the results of this study. It is anticipated that just because a local authority perceives than an individual performs at a certain level of independence, it does not mean the individual is in fact performing at that level.

A study by Kneafsey in the United Kingdom discovered that nursing educators often feel as though their role of educating nursing students about safe patient handling is not a necessary component of their responsibility. It was also reported that nursing educators would not explain issues regarding patient handling if not asked so by students (Kneafsey, 2007). The type of education one receives during school may affect his or her ability to be more accurate at grading manual transfers. The subjectivity involved with education in patient handling in nursing and other healthcare curriculum demonstrates another set of issues. These issues include: inconsistent levels of patient care, potential increase for falls, and inaccuracy with documentation
among shifts for nursing and therapy personnel. This variance among curricula may have had an impact on the study of perceptions of required assistance.

This study reflects the need for studies of subjectivity. Many aspects of healthcare are comprised of objective measures; therefore it is important to understand how subjective measures affect day to day decisions in healthcare. Safe patient handling is receiving increased attention due to the demand to raise awareness with the rapidly aging population and amount of risk involved. Patient handling and the subjectivity that often goes along with grading patient handling tasks is something all healthcare practitioners need to remember on a daily basis. Raising awareness of the importance of safe patient handling can raise standards in the healthcare setting, decrease injuries among healthcare practitioners, decrease injuries among patients, and decrease costs for corporations.

This study has great implications to the field of occupational therapy. “Occupational therapy services are provided for habilitation, rehabilitation, and the promotion of health and wellness to those who have or are at risk for developing an illness, injury, disease, disorder, condition, impairment, disability, activity limitation, or participation restriction” (AOTA Model Practice Act, 2011). In order to provide the highest quality of occupational therapy service and consistent care during a client’s stay in a rehabilitation setting, it is important to keep the subjectivity of assessments to a minimum. It is a common occurrence in multiple settings that, clients receive care from various occupational therapy practitioners, not the same practitioner every day. The subjectivity found in this study demonstrates how this may become a problem in the rehabilitation setting. Consistent care and consistent documentation may be hard to accomplish with subjective tests and subjectively grading the level of assist perceived during
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manual transfers. It is important for occupational therapy practitioners, and other healthcare practitioners to be conscientious of the subjectivity involved with many of their daily tasks.

There are other factors that may affect why one occupational therapy practitioner may grade one task differently than another occupational therapy practitioner. At times, patients are more willing to participate with one individual over another for a variety of reasons. If a patient is more familiar with a certain practitioner, then they may be more willing to participate with a higher level of independence that they are with a practitioner who is new to them. If a practitioner has built a strong rapport with a patient, then once again the patient may be more likely to engage with a higher level of independence. If a patient feels more comfortable and safe with one practitioner over another, then they also may be more willing to participate with greater independence. On the other hand, if a patient feels they can rely on a certain practitioner more than another, they may demonstrate more dependence with tasks the practitioner is asking them to achieve.

Limitations/Future Directions

One limitation of the study was the small sample size. Based on time constraints and being unable to move the lab to locations of convenience for practitioners, it was difficult to get more than 12 subjects to participate. In the future, it may be beneficial to have a lab that is more mobile. This would allow the researchers to bring the lab to a clinical setting where data could be gathered on many therapists in a short period of time.

Another limitation of this study was that the permanent lab had to relocate from The University of Toledo, Scott Park campus to The University of Toledo, main campus in the middle of data collection. Hence, not all participants engaged in the study in the same lab. In addition, the mother board on the data collection computer failed approximately half way
PERCEPTIONS OF REQUIRED ASSISTANCE

through data collection. This required changing computers which could have potentially introduced more statistical error.

Use of reflective markers caused limitations in data collection. The reflective markers created problems at times, because they frequently fell off participants as they were performing manual transfers. If this study were to be performed again, it would be beneficial to use durable reflective stickers with strong adhesive, rather than larger reflective balls.

Lastly, the hand held gauges were uniaxial, meaning they only measured force in the z-axis of the gauge. Therefore, any force involving the x or y-axes of the force gauge would have not been part of the recorded measurement at the hands.

In the future, it would be beneficial to collect more information on the participants involved in the study prior to beginning the study. It would be helpful to have information regarding the participant’s weight, height, age, strength, clinical experience, and educational experience. Comparing this data may give the researcher a better picture of why participants differentiate the level of assist perceived during manual transfers.

In conclusion, it is important for all healthcare practitioners to take into consideration the subjectivity involved with grading manual patient transfers. Manual patient handling can be defined as “the transporting or supporting of a patient by hand or bodily force, including pushing, pulling, carrying, holding, and supporting of the patient or a body part” (Nelson, & Baptiste, 2006). Due to the nature of many tasks healthcare practitioners engage in, it is vital for healthcare practitioners to understand what encompasses manual patient handling and the risks involved. Risks with manual patient handling are so great that OSHA recommends, “manual lifting of residents should be minimized in all cases and eliminated when possible (Occupational Safety and Health Administration (OSHA), 2009). Many safe lifting methods, such as proper
body mechanics, use of back belts, and lift teams have been used for many years with poor outcomes. These methods have not demonstrated decreased numbers of occupational injuries in the healthcare setting, yet the United States continues to use them. Denmark, Sweden, Norway, Finland, Canada, England, and the United Kingdom all have national patient lifting laws, while the United States does not.

When investigating the importance of safe patient handling, it is imperative to keep in mind the number of healthcare practitioners involved with manual patient handling and the number of times manual transfers occur on a daily basis. The research question for this study was, how strong of a role does subjectivity play during manual transfers performed by healthcare professionals? The hypothesis was that caregivers will differentiate the level of assistance required during manual transfers. This hypothesis was not supported by the results of this study. This continues to reflect the importance of healthcare practitioners being on the same page with one another for increased safety with manual lifting of patients. The subjectivity of the traditional method of grading levels of assist has shown to be very high. Perhaps there are other more objective measures that should be taken to communicate the amount of assist provided during patient handling tasks. Upon completion of this research study, the importance of safety among both healthcare practitioners and patients is viewed as an essential component of basic practice in occupational therapy and all healthcare fields.
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References


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Acknowledgments

I would like to thank Dr. Rice for his guidance, assistance, and leadership with this study. I would like to thank Katelin Rudolph for her assistance with participant recruitment, data collection, and ongoing support. Finally, thanks to all the faculty, staff, and students at The University of Toledo and all of the participants who contributed to this study.
Appendix

Please indicate the amount of assistance you perceived that the 'patient' required for each pivot transfer by making a mark on the lines below.

<table>
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PERCEPTIONS OF REQUIRED ASSISTANCE

Table 1.

*Discipline of Participants*

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PERCEPTIONS OF REQUIRED ASSISTANCE

Table 2.

*Pearson Intra-correlations for the Dependent Variables of Peak Hand Force (PHF), Movement Time (MT), Average Ground Reaction Force (Ave GRF1), and Maximum Ground Reaction Force (Max GRF1).*

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<th>Ave GRF1</th>
<th>Max GRF1</th>
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Note: Dependent variables followed by the number 1 indicate the top half of the data column whereas those followed by the number 2 indicate the bottom half of the data column. PHF = peak hand force, MT = movement time, Ave GRF = average ground reaction force of the client, and Max GRF = maximum ground reaction force of the client.
Figure 1. Correlation between the movement time in seconds of the transfer and the perceived amount of assistance required by the ‘client.’

\[ y = 2.2292x + 36.742 \]

\[ R^2 = 0.0048 \]
Figure 2. Correlation between the peak hand force in pounds exerted during the transfer and the perceived amount of assistance required by the ‘client.’
Figure 3. Correlation between the maximum ground reaction force during the transfer in pounds and the perceived amount of assistance required by the ‘client.’
Figure 4. Correlation between the average ground reaction force during the transfer in pounds and the perceived amount of assistance required by the ‘client.’