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Work-related musculoskeletal disorders within the field of physical therapy

Dawn M. Leidholm

University of North Dakota

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WORK-RELATED MUSCULOSKELETAL DISORDERS
WITHIN THE FIELD OF PHYSICAL THERAPY

by

Dawn Marie Leidholm
Bachelor of Science in Physical Therapy
University of North Dakota, 1997

An Independent Study
Submitted to the Graduate Faculty of the
Department of Physical Therapy
School of Medicine
University of North Dakota
in partial fulfillment of the requirements
for the degree of
Master of Physical Therapy

Grand Forks, North Dakota
May
1998
This Independent Study, submitted by Dawn Marie Leidholm in partial fulfillment of the requirements for the Degree of Master of Physical Therapy from the University of North Dakota, has been read by the Faculty Preceptor, Advisor, and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.

Renee Malony
(Faculty Preceptor)

Renee Malony
Graduate School Advisor

(Chairperson, Physical Therapy)
PERMISSION

Title Work-Related Musculoskeletal Disorders within the Field of Physical Therapy

Department Physical Therapy

Degree Master of Physical Therapy

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Signature Dawn M. Keidhan

Date Dec. 15, 1997
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ABSTRACT

Musculoskeletal injuries are frequently reported in the health care industry; an increasing number of physical therapists are affected. The purpose of this study was to determine the incidence of work-related musculoskeletal disorders and job factors within the field of physical therapy. A four page questionnaire was sent to 418 randomly selected individuals who graduated from the University of North Dakota Physical Therapy Program between 1970 and 1996. The survey instrument was derived from a literature review and previously conducted studies. It consisted of three sections: general practice, occupational injury, and demographic information. The highest prevalence of work-related musculoskeletal disorders was found in the lumbar spine (34.5%), wrist/hands (20.7%), and cervical spine (18.4%). The most problematic job activity for physical therapists was “lifting and transferring dependent patients.” Further research is necessary to investigate the cause of work-related musculoskeletal disorders within the field of physical therapy in order to decrease future incidence.
CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

In 1992, the third largest employer in the United States was the health care industry.\textsuperscript{1} In fact, it employed over 8.5 million workers at that time.\textsuperscript{2,3} These numbers are steadily increasing as the need for health care programs continues to grow. In 1995, statistics showed that over 9.2 million people had occupations in health care.\textsuperscript{4} Incidentally, the United States Department of Labor estimates that over 10 million individuals will be employed in the health care service industry by the year 2000.\textsuperscript{1}

The health care industry encompasses a wide variety of work settings including hospitals, clinics, nursing homes, private offices, and home health. A majority of the employees within these settings are involved with direct patient care (physicians, nurses, therapists, etc.) Management and administrative personnel, housekeeping and maintenance workers, dieticians, groundskeepers, and food service workers are also employed in this industry. A wide variety of work settings exposes health care workers to a diverse number of health-related risks.

In addition to being one of the largest industries in the United States, the health care industry is also one of the most hazardous environments in which to work.\textsuperscript{1,5,6} Interestingly, work-related injuries and illnesses are higher in health care compared to many other industries. For example, in 1992, the incidence rate for occupational injuries and illnesses for all health care workers was 10.2 per 100 full time employees.\textsuperscript{2,3} Mining,
on the other hand, a highly dangerous and often life threatening occupation, had an incidence of 7.3 per 100 full time workers. Nursing and personal care attendants have been found to be at the highest risk of suffering work-related injuries among all health care employees in the United States. Specifically, the incidence rate for full time nurses and personal care attendants rose to an alarming 18.2 per 100 employees in 1992, which was greater than both the construction and manufacturing industries. Studies have shown that food service workers, housekeepers, maintenance workers, laboratory technicians, and laundry personnel are also at an increased risk of being injured on the job. Ironically, the industry that strives for good health in its patient population fails to provide a safe and healthy work environment for its own employees.

According to Lewy, occupational hazards within the health care environment are found in four categories: (1) occupational injuries; (2) infections; (3) toxicological hazards; and (4) stress. Various studies have discovered that most accidents among health care employees result in needlestick punctures, sprains and strains, cuts and lacerations, contusions, and fractures. Wilkinson et al discovered that the most common causes of injury are lifting and twisting, being struck by or against an object, slips and falls, being cut by glass and sharp objects, and needlestick injuries. In addition, Stout found that bodily reaction or overexertion and contact with radiation or toxic substances were also commonly reported.

Musculoskeletal injuries constitute the largest percentage of health disorders today. In fact, according to research conducted by Smith et al, musculoskeletal disorders account for approximately two-thirds of all work-related injuries. Results from studies in Sweden were quite similar. Musculoskeletal disorders of the back and spine
have predominated the complaints and make up the greatest percentage of affected individuals.\textsuperscript{10,12} Impairments of the hips and lower extremities were next, followed by shoulders and upper extremity disorders. Kumar found that the fastest-growing work-related musculoskeletal disorders among working individuals in the United States were impairments of the upper extremity.\textsuperscript{13} Carpal tunnel syndrome is one example of a cumulative trauma disorder that has become detrimental to our workforce in recent years.

Among the working population in the United States, musculoskeletal impairments are the leading cause of disability.\textsuperscript{12} In 1995, musculoskeletal impairments resulted in about 300,000 lost work days or activity limitation on the job.\textsuperscript{4} In addition, occupational injuries account for greater than $70$ billion per year in medical expenses, lost earnings, and productivity in the United States.\textsuperscript{14} While pain and suffering cannot be measured objectively, the psychological functioning of a worker is also affected greatly upon injury.

In the past, the literature on occupational injuries and illnesses has focused primarily on the nursing profession, particularly the low back pain that has been abundant within this population. More recently, other health care professions, like physical therapy (PT), have been studied. Physical therapists are exposed to many of the same occupational stresses as nurses. They frequently lift and transfer patients, work in awkward positions, ambulate patients, carry equipment, and at times work without assistance. The literature supports that an increasing number of physical therapists are experiencing back pain. One study found that 29\% of a random sampling of physical therapists reported work-related low back pain within a 12-month time frame.\textsuperscript{15} The most
common mechanisms of injury were “lifting with sudden maximal effort,” “bending and twisting,” and “patient falling.”

Since research has been centered on injuries of the low back, little research has been done on the entire scope of musculoskeletal impairments among health care workers. The University of Iowa conducted a recent study of occupational musculoskeletal injuries among physical therapists by questioning alumni. An alarming 61% of the 928 physical therapists who responded to the survey experienced musculoskeletal symptoms in more than one of nine anatomical areas. In fact, the areas most frequently affected were the low back, wrist/hands, upper back, and neck.

The demand for physical therapists (PTs) and physical therapist assistants (PTAs) is rapidly growing due to the increased need for services in health care. The national American Physical Therapy Association (APTA) reports that there were 515 accredited and developing PT and PTA programs as of August 19, 1997. At this same time almost 7,000 new physical therapists entered the workforce as well as an estimated 5,000 physical therapist assistants. The number of academic institutions commencing new programs is multiplying at an enormous rate. As the number of schools increase, so do the number of new graduates. Consequently, as more therapists enter the health care industry, the number of occupational injuries also increases. Although therapists are quite knowledgeable in the musculoskeletal system, they are not exempt from experiencing injuries. Preventative measures must be taken to preserve the health of the physical therapist, so that he or she may help to restore the health of others.

According to physical therapists working for NovaCare, 56% of occupational injuries are preventable. So why are the number of injuries continuing to rise? The
literature states that common injury prevention strategies have centered on education and training in back care and lifting techniques. However, many studies show that these programs alone are ineffective.\textsuperscript{9,10,19} Better preventative strategies may be established by increasing awareness of occupational health problems, by researching hazards and their control, and even by developing government regulations in the workplace.\textsuperscript{20} In order to achieve this goal, more formal research needs to be conducted to identify the frequency of injury along with the risks in each distinct area.

Purpose

The purpose of this research study was to determine the incidence of work-related musculoskeletal disorders and related job factors within the field of physical therapy. Demographic characteristics, general information about the subjects’ practice, and specific occupational injury information was gathered and analyzed. By examining the frequency of these disorders, programs can be established to prevent such injuries from occurring in the future.

Significance

The research study may be of great significance to all those involved. At the individual level, benefits include an increased awareness of the dangers within the health care industry, particularly in the field of physical therapy. The results of this study may affect the future education of physical therapists in both the clinical sites and at the academic level. By studying the incidence of musculoskeletal disorders in the PT field, injury prevention programs may be developed both in schools and in the workplace. As these injuries are minimized, physical therapists will become more effective and productive health care providers.
The results of this study will be shared with all interested individuals, the physical therapy community, and the University of North Dakota Physical Therapy (UND-PT) Program. The knowledge gained from this project will be especially useful in the UND-PT Program. It will be advantageous to include injury preventative strategies early on in the classroom, particularly in the massage, joint mobilization, and industrial medicine/occupational rehabilitation classes.
CHAPTER II

METHODOLOGY

Population and Sample

The research design was a cross-sectional survey. A four page self-administered questionnaire was mailed to a random sampling of individuals who graduated from the University of North Dakota Physical Therapy Program between 1970 and 1996. The University of North Dakota was chosen by the researcher because of personal interest and for the sake of convenience. The target sample was comprised of 418 alumni; the names and addresses were obtained from alumni records. Approval of this project was granted by the Institutional Review Board at the University of North Dakota. Informed consent was implied with the return of each completed questionnaire.

Questionnaire

The self-administered questionnaire was derived from a variety of standardized questionnaires, including the Nordic Questionnaire\(^{21}\) and one used by the University of Iowa\(^{16}\) in a similar research study. A pilot study was conducted to identify unclear areas and missing content. A group of eight physical therapists who neither graduated from UND nor were involved in the project participated in this pilot study.

The final questionnaire was divided into three sections. The first section contained both open and closed-ended questions to elicit general information about the subjects’ practice of physical therapy. Questions were asked regarding years of practice,
specialty area, work setting, and patient population. The second section asked subjects about specific occupational injuries they may have incurred in the past year within the field of physical therapy. Ten body areas were targeted in this section. Similar to the University of Iowa study, the first question asked, "Have you experienced any work-related injury, pain, or discomfort within the past year in the following areas?" (referring to the ten different body areas). If respondents answered "yes" to this particular question, they fit the criteria to have suffered a work-related musculoskeletal disorder. Continuing on, they were asked to answer "yes" or "no" to: "Has this condition prevented you from working in the past year?" and "Have you sought treatment for this condition, and if so, from whom?" For those who suffered occupational injuries or illnesses, several open-ended questions followed regarding the mechanism of injury, lost workdays, as well as changes they may have made in their practice of PT.

The job of a physical therapist is a physically demanding one. Many stresses are suffered by these providers on a daily basis, including working in awkward positions, lifting, applying manual therapy, transferring, and ambulating patients to list a few. Respondents were asked in the next portion of the questionnaire to rate sixteen of these activities according to how much of a problem they perceived each to be in their particular job. The scale utilized was divided into four categories: (1) Not a part of practice; (2) Minimal problem; (3) Moderate problem; and (4) Major problem.

Lastly, respondents were asked to rate their degree of satisfaction with their education in UND-PT regarding body mechanics, injury prevention, etc. The purpose of this particular question was to determine whether changes in the UND Physical Therapy Program are warranted in order to better educate future physical therapists in these areas.
The final section of the questionnaire focused on the demographic characteristics of selected subjects. Questions regarding age, sex, height, weight, year of PT School graduation, and current exercise program were investigated. A space for additional comments was included at the close of the survey. This gave respondents an opportunity to include pertinent information that was not addressed in earlier sections of the survey.

Procedure

On Friday July 18, 1997, the questionnaires were mailed with first class postage to all randomly selected subjects. A cover letter accompanied each questionnaire. It explained the purpose and significance of the study as well as assured the respondents that their questionnaire would remain confidential. In addition, pre-addressed and stamped reply envelopes were included to encourage responses. Subjects were requested to return the completed questionnaire within three weeks, by August 11, 1997. This date was printed both in the cover letter and at the conclusion of the questionnaire.

Follow-up postcards were mailed to every individual two weeks after the initial mailing. The postcard both thanked those who had already responded and served as a reminder to those who had yet to return the questionnaires.

Data collection was discontinued on September 12, 1997.

Data Analysis

Data entry for the 261 returned questionnaires was provided by staff at the office of Educational Foundations and Research at the University of North Dakota. All data were entered into the Statistical Package for the Social Sciences (SPSS) Release 4.0 for Macintosh, except for the narrative data from the open-ended questions. This information was combined and listed in a WordPerfect document.
Descriptive statistics were used to characterize the sample with respect to demographics. Chi-square analysis was utilized to determine significant differences in the prevalence of work-related musculoskeletal symptoms among physical therapists with various work settings and personal characteristics. One-way ANOVA were performed comparing injuries with years of experience and work setting. Multiple regression, including variables of sex, years of experience, patient population, and use of a regular exercise program, was also utilized to identify the greatest predictor of work-related musculoskeletal injuries within the field of physical therapy. All statistical tests were considered significant at the .05 level.

Data Reporting

This research project was conducted to fulfill the requirements of a Master of Physical Therapy degree at the University of North Dakota. The results will be shared with the faculty of the UND-PT program and may be incorporated into classes such as industrial rehabilitation/occupational medicine. The results will also be dispersed among all interested individuals.
CHAPTER III

RESULTS

Demographic Characteristics

Of the 418 mailed questionnaires, 7 were returned undelivered due to incorrect addresses. Of the 411 remaining questionnaires, 277 were returned by the cut-off date, for an overall response rate of 67.4%. Sixteen of these questionnaires were eliminated from the study as they did not fit the inclusion criteria; these respondents changed professions, were not employed in the past 12 months, or had left the field of physical therapy for various reasons. This left 261 questionnaires for statistical analysis.

The majority of the respondents were females (n=188), representing 72% of the sample. Men, on the other hand, represented only 28% of the sampling (n=73). The average age of the respondents was 35.90 years (SD=6.66; Range=31). In addition, 75% (n=195) of the respondents were under 40 years of age. Physical therapists in this sample practiced a mean of 11.42 years (SD=7.02; Range=27).

The number of work settings was narrowed down from 10 categories to 5 for analyzing data due to limited numbers in cells. Most respondents were employed in the outpatient/sports medicine/industrial rehab category (n=94; 36.0%) The next most common work setting was in an acute care hospital (n=63; 24.1%). The number of hours a physical therapist spent in direct patient care was 29.11 hours per week, although each work setting varied (Table 1). Therapists employed in the outpatient/sports medicine/
Table 1. -- Distribution and Practice Demographics of Respondents by Work Setting

<table>
<thead>
<tr>
<th>Work Setting</th>
<th>n</th>
<th>%</th>
<th>Age (years)</th>
<th>Hours/Week in Direct Pt Care</th>
<th>Year Practicing as a PT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SD</td>
<td>SD</td>
<td>SD</td>
</tr>
<tr>
<td>Acute Care Hospital</td>
<td>63</td>
<td>24.1</td>
<td>36.30</td>
<td>28.73</td>
<td>11.97</td>
</tr>
<tr>
<td>Rehabilitation/Extended Care</td>
<td>46</td>
<td>17.6</td>
<td>35.74</td>
<td>26.85</td>
<td>10.24</td>
</tr>
<tr>
<td>Outpatient/Sports/Industrial Rehab</td>
<td>94</td>
<td>36.0</td>
<td>33.84</td>
<td>33.77</td>
<td>9.53</td>
</tr>
<tr>
<td>Home Health/School System</td>
<td>35</td>
<td>13.4</td>
<td>39.89</td>
<td>25.97</td>
<td>16.14</td>
</tr>
<tr>
<td>Academia and Other</td>
<td>23</td>
<td>8.8</td>
<td>37.52</td>
<td>20.48</td>
<td>12.73</td>
</tr>
<tr>
<td>All Respondents</td>
<td>261</td>
<td>100.0</td>
<td>35.90</td>
<td>29.11</td>
<td>11.42</td>
</tr>
</tbody>
</table>


industrial rehab category spent the most time in direct patient care (Mean=33.77; SD=8.71), while those in academia spent the least amount of time treating patients (Mean=20.48; SD=18.72).

In addition, the majority (n=209; 80.1%) of respondents were employed full time, which was defined as working more than 30 hours per week. Clinical physical therapy staff represented the largest number of respondents (n=169; 65.5%), followed by clinical administrators (n=69; 26.8%), and other positions, such as academic administrators and faculty members (n=20; 7.7%). Three respondents neglected to report their primary position on the questionnaire. As a result, the sample size was 258 for this particular analysis.

Occupational Injuries

Of the 261 physical therapists surveyed, 53.3% reported experiencing pain and discomfort in at least one of the ten anatomical areas within the past 12 months. The highest prevalence rates were found in the lumbar spine (34.5%), wrist and hands (20.7%), cervical spine (18.4%), thoracic spine (17.2%), and the sacroiliac joint (16.9%). Musculoskeletal disorders in these same areas caused numerous respondents to seek treatment from various health care professionals (physicians, other PTs, PTAs, and chiropractors). Lumbar spine pain was the most commonly treated disorder in this particular sample (13.0%) (Table 2).

When comparing the number of injuries between genders, women complained of involvement in more regions of the body. Descriptive statistics showed that male physical therapists reported suffering pain in a mean of 1.04 anatomical areas (SD=1.53), while females reported pain in a mean of 1.50 anatomical areas (SD=1.80). According to
Table 2.— Number and Percentages of Physical Therapists Reporting Symptoms, Missing Work, and Seeking Treatment for Work-Related Musculoskeletal Disorders

<table>
<thead>
<tr>
<th>Anatomical Area</th>
<th>Respondents With Symptoms</th>
<th>Respondents Missing Work</th>
<th>Respondents Seeking Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Cervical Spine</td>
<td>48</td>
<td>18.4</td>
<td>1</td>
</tr>
<tr>
<td>Thoracic Spine</td>
<td>45</td>
<td>17.2</td>
<td>0</td>
</tr>
<tr>
<td>Lumbar Spine</td>
<td>90</td>
<td>34.5</td>
<td>7</td>
</tr>
<tr>
<td>Sacroiliac Joint</td>
<td>44</td>
<td>16.9</td>
<td>3</td>
</tr>
<tr>
<td>Shoulder</td>
<td>26</td>
<td>10.0</td>
<td>1</td>
</tr>
<tr>
<td>Elbow</td>
<td>13</td>
<td>5.0</td>
<td>1</td>
</tr>
<tr>
<td>Wrist/Hand</td>
<td>54</td>
<td>20.7</td>
<td>2</td>
</tr>
<tr>
<td>Hips</td>
<td>7</td>
<td>2.7</td>
<td>0</td>
</tr>
<tr>
<td>Knees</td>
<td>18</td>
<td>6.9</td>
<td>1</td>
</tr>
<tr>
<td>Foot/Ankles</td>
<td>13</td>
<td>5.0</td>
<td>1</td>
</tr>
</tbody>
</table>
a chi square crosstabulation, the percentage of females reporting injuries were compared to the percentage of males. A higher percentage of males reported injuries in the cervical spine (20.5% compared to 17.6%), although this was not significant. Wrist and hand injuries were found to occur more frequently among females (24.5% compared to 11.0%). This difference, however, was significant \( \chi^2 (1, n=261)=5.85, p<.05 \).

The greatest percentage of physical therapists who missed work were individuals with lumbar spine and sacroiliac joint dysfunctions (n=7; 2.7% and n=3; 1.1% respectively). No lost work time or productivity was reported because of thoracic spine and hip disorders. For all other groups, two or fewer individuals missed work secondary to work-related musculoskeletal disorders (Table 2).

Of all the respondents described as having suffered a musculoskeletal injury while practicing as a physical therapist, 93.9% filed an incident report. At the same time, 85.7% filed a worker’s compensation claim for the injuries which they incurred on the job. As a result of their injuries, a majority of physical therapists reported changing their activities on the job. The adaptation that was most commonly made was “becoming more aware of body mechanics and alternating working positions frequently.”

The types of injuries differed among the various work settings (Table 3). For example, lumbar spine disorders most frequently occurred in the acute care setting and cervical spine disorders in academia. However, chi square crosstabulation revealed that none were significant with the exception of wrist/hand injuries \( \chi^2 (4, n=261)=17.12, p<.05 \). The majority of wrist and hand injuries occurred in the outpatient/sports medicine/industrial rehab work setting.
Table 3.—Percentage of Total Reported Injuries in Specific Anatomical Areas Distributed Among Work Settings

<table>
<thead>
<tr>
<th>Anatomical Area</th>
<th>Acute Care</th>
<th>Rehab/Extended Care</th>
<th>Outpatient/ Sports Medicine/ Industrial Rehab</th>
<th>Home Health Care/ Schools</th>
<th>Academia/Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical Spine</td>
<td>17.5</td>
<td>10.9</td>
<td>24.5</td>
<td>8.6</td>
<td>26.1</td>
</tr>
<tr>
<td>Thoracic Spine</td>
<td>19.0</td>
<td>17.4</td>
<td>23.4</td>
<td>2.9</td>
<td>8.7</td>
</tr>
<tr>
<td>Lumbar Spine</td>
<td>39.7</td>
<td>37.0</td>
<td>35.1</td>
<td>20.0</td>
<td>34.8</td>
</tr>
<tr>
<td>Sacroiliac Spine</td>
<td>17.5</td>
<td>21.7</td>
<td>16.0</td>
<td>8.6</td>
<td>21.7</td>
</tr>
<tr>
<td>Shoulder</td>
<td>11.1</td>
<td>15.2</td>
<td>10.6</td>
<td>5.7</td>
<td>0</td>
</tr>
<tr>
<td>Elbow</td>
<td>4.8</td>
<td>10.9</td>
<td>3.2</td>
<td>2.9</td>
<td>4.3</td>
</tr>
<tr>
<td>Wrist/Hand*</td>
<td>15.9</td>
<td>8.7</td>
<td>34.0</td>
<td>11.4</td>
<td>17.4</td>
</tr>
<tr>
<td>Hip</td>
<td>4.8</td>
<td>4.3</td>
<td>1.1</td>
<td>0</td>
<td>4.3</td>
</tr>
<tr>
<td>Knee</td>
<td>11.1</td>
<td>6.5</td>
<td>6.4</td>
<td>5.7</td>
<td>0</td>
</tr>
<tr>
<td>Foot/Ankle</td>
<td>7.9</td>
<td>4.3</td>
<td>4.3</td>
<td>2.9</td>
<td>4.3</td>
</tr>
</tbody>
</table>

*Pearson chi square test revealed significance in number of wrist/hand injuries between work settings.

\[ \chi^2(4, n = 261) = 17.12, p < .05. \]
Multiple regression was used to identify predictors of musculoskeletal injuries within the field of physical therapy; regression analysis included variables of sex, years of experience, patient population, and use of a regular exercise program. The results revealed that years practicing as a physical therapist was a strong indicator of musculoskeletal injuries (Table 4). However, the practical significance is very low, almost non-existent; only 1.86% of injuries can be predicted by years of experience.

A one-way ANOVA was also utilized to compare the number of injuries with years of PT experience. For this purpose, four groups based on years of PT experience were defined. A Tukey B post hoc analysis demonstrated a significant difference between physical therapists practicing 5 years or less and those practicing 16 years or more (Table 5 and Table 6).

Because the lumbar spine was the most frequently injured body part, a chi square crosstabulation comparing age and symptoms in the lumbar spine area was performed. The results of this analysis are displayed in Table 7. Pearson chi square test revealed a significant difference in lumbar spine symptoms between the three chosen age groups. Interestingly, the youngest age group (23-30 years of age) reported the greatest percentage of problems in this area.

**Occupational Activities**

Of the sixteen activities that may contribute to work-related injuries in physical therapy, “lifting and transferring dependent patients” was the most problematic activity reported by respondents. Other activities with a high frequency included “bending or twisting the body in an awkward way” and “maintaining the same position for long periods of time.” “Inadequate education on body mechanics and injury prevention” was
Table 4. -- ANOVA of Prediction of Injuries Against Years of Practice as a Physical Therapist*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>P</th>
<th>adj ( r^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year: Regression</td>
<td>17.59</td>
<td>1</td>
<td>17.59</td>
<td>5.92</td>
<td>.016</td>
<td>.0186</td>
</tr>
<tr>
<td>Year: Residual</td>
<td>769.36</td>
<td>259</td>
<td>2.97</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>786.95</td>
<td>260</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Multiple regression revealed that years was a significant predictor of injuries.
Table 5.-- ANOVA Summary Table: Number of Injuries by Years of Practice, in Categories

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F Ratio</th>
<th>F Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>26.972</td>
<td>3</td>
<td>8.991</td>
<td>3.040</td>
<td>.030</td>
</tr>
<tr>
<td>Within Groups</td>
<td>759.978</td>
<td>257</td>
<td>2.957</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>786.950</td>
<td>260</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6. -- Number of Injuries by Years of Practice, in Categories

<table>
<thead>
<tr>
<th>Years Practicing as a PT</th>
<th>n</th>
<th>x</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 years or less</td>
<td>58</td>
<td>1.90*</td>
<td>1.66</td>
</tr>
<tr>
<td>6-10 years</td>
<td>75</td>
<td>1.25</td>
<td>1.66</td>
</tr>
<tr>
<td>11-15 years</td>
<td>54</td>
<td>1.46</td>
<td>2.07</td>
</tr>
<tr>
<td>16 years or more</td>
<td>74</td>
<td>1.01</td>
<td>1.53</td>
</tr>
</tbody>
</table>

*According to Tukey B procedure, a significant difference was observed between physical therapists practicing < 5 years and those practicing for > 16 years (p < .05).
Table 7. -- Percentage of Respondents, Characterized by Age, Reporting Symptoms in the Lumbar Spine*

<table>
<thead>
<tr>
<th>Age Group</th>
<th>n</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>23-30</td>
<td>33</td>
<td>69</td>
<td>47.8%</td>
</tr>
<tr>
<td>31-40</td>
<td>40</td>
<td>126</td>
<td>31.7%</td>
</tr>
<tr>
<td>41 and above</td>
<td>17</td>
<td>66</td>
<td>25.8%</td>
</tr>
</tbody>
</table>

*Pearson chi square test revealed significance in reports of lumbar spine pain between groups. $\chi^2(2, n=261) = 8.08$, $p < .05$. 
the least problematic in physical therapy practice as only 1.6% of respondents ranked it as a moderate to major problem in their job (Table 8).
Table 8. -- Activities in Field of Physical Therapy Which May Contribute to Injuries as Identified by Respondents

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not a problem or Not part of practice</th>
<th>Minimal Problem</th>
<th>Moderate/Major Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Mobs</td>
<td>n = 77</td>
<td>n = 134</td>
<td>n = 50</td>
</tr>
<tr>
<td></td>
<td>29.5%</td>
<td>51.3%</td>
<td>19.2%</td>
</tr>
<tr>
<td>Repetition of Tasks</td>
<td>n = 67</td>
<td>n = 135</td>
<td>n = 59</td>
</tr>
<tr>
<td></td>
<td>25.7%</td>
<td>51.7%</td>
<td>22.6%</td>
</tr>
<tr>
<td>Bending/twisting body</td>
<td>n = 44</td>
<td>n = 115</td>
<td>n = 102</td>
</tr>
<tr>
<td></td>
<td>16.9%</td>
<td>44.1%</td>
<td>39.1%</td>
</tr>
<tr>
<td>Working in awkward or cramped positions</td>
<td>n = 56</td>
<td>n = 110</td>
<td>n = 95</td>
</tr>
<tr>
<td></td>
<td>21.5%</td>
<td>42.1%</td>
<td>36.4%</td>
</tr>
<tr>
<td>Working away from body</td>
<td>n = 61</td>
<td>n = 141</td>
<td>n = 59</td>
</tr>
<tr>
<td></td>
<td>23.4%</td>
<td>54.0%</td>
<td>22.6%</td>
</tr>
<tr>
<td>Maintaining same position</td>
<td>n = 62</td>
<td>n = 115</td>
<td>n = 84</td>
</tr>
<tr>
<td></td>
<td>23.8%</td>
<td>44.1%</td>
<td>32.2%</td>
</tr>
<tr>
<td>Treating excessive # of pts</td>
<td>n = 55</td>
<td>n = 138</td>
<td>n = 68</td>
</tr>
<tr>
<td></td>
<td>21.1%</td>
<td>52.9%</td>
<td>26.0%</td>
</tr>
<tr>
<td>Treating dependent pts</td>
<td>n = 57</td>
<td>n = 88</td>
<td>n = 116</td>
</tr>
<tr>
<td></td>
<td>21.8%</td>
<td>33.7%</td>
<td>44.4%</td>
</tr>
<tr>
<td>Carrying/lifting heavy equipment</td>
<td>n = 104</td>
<td>n = 121</td>
<td>n = 36</td>
</tr>
<tr>
<td></td>
<td>39.8%</td>
<td>46.4%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Unanticipated sudden movement by pts</td>
<td>n = 66</td>
<td>n = 143</td>
<td>n = 52</td>
</tr>
<tr>
<td></td>
<td>25.3%</td>
<td>54.8%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Working at or near physical limits</td>
<td>n = 99</td>
<td>n = 107</td>
<td>n = 55</td>
</tr>
<tr>
<td></td>
<td>37.9%</td>
<td>41.0%</td>
<td>21.0%</td>
</tr>
<tr>
<td>Scheduling problems</td>
<td>n = 73</td>
<td>n = 128</td>
<td>n = 60</td>
</tr>
<tr>
<td></td>
<td>28.0%</td>
<td>49.0%</td>
<td>23.0%</td>
</tr>
<tr>
<td>Not enough rest breaks</td>
<td>n = 84</td>
<td>n = 116</td>
<td>n = 61</td>
</tr>
<tr>
<td></td>
<td>32.2%</td>
<td>44.4%</td>
<td>23.3%</td>
</tr>
<tr>
<td>Continuing to work when injured</td>
<td>n = 110</td>
<td>n = 109</td>
<td>n = 42</td>
</tr>
<tr>
<td></td>
<td>42.1%</td>
<td>41.8%</td>
<td>16.0%</td>
</tr>
<tr>
<td>Inadequate equipment</td>
<td>n = 103</td>
<td>n = 107</td>
<td>n = 50</td>
</tr>
<tr>
<td></td>
<td>39.6%</td>
<td>41.2%</td>
<td>19.2%</td>
</tr>
<tr>
<td>Inadequate education</td>
<td>n = 164</td>
<td>n = 91</td>
<td>n = 4</td>
</tr>
<tr>
<td></td>
<td>63.3%</td>
<td>35.1%</td>
<td>1.6%</td>
</tr>
</tbody>
</table>
CHAPTER IV

DISCUSSION

Demographic Characteristics

The demographic characteristics (age, sex, work setting, years of practice, position, and hours of direct patient care) of the respondents were similar to those reported in the 1996 APTA Practice Profile. The respondents in this study are quite comparable to physical therapists employed at the national level.

Occupational Injuries

Although a high percentage of physical therapists (53.3%) reported experiencing work-related musculoskeletal symptoms in at least one anatomical area, very few respondents missed work because of their condition. Lumbar spine, sacroiliac joint, and wrist/hand disorders were the only work-related musculoskeletal disorders that caused physical therapists to miss more than one day of work. A possible explanation for this finding may be that physical therapists continue to work when injured. In this particular study, 16.0% of respondents rated “working while injured” a moderate to major problem in their career. Another probable explanation may be that physical therapists treat themselves or seek treatment from other health care professionals immediately following injury, allowing for quicker recovery and no lost work time. Thus, productivity of employed physical therapists was not drastically affected.
A majority of responding physical therapists changed their activities on the job as a result of their injuries. The following are examples of these changes: increasing awareness of body mechanics, asking for and utilizing assistance when needed, modifying activities to reduce the amount of stress on the injured body part, and avoiding the injury producing activity completely.

The most frequently injured body part in this study was the lumbar spine. Over one-third of all respondents reported pain and discomfort in this area within the past 12 months. The majority of injuries occurred within the acute care setting followed by the rehabilitation and extended care work settings. In a study by Molumphy, it was revealed that 29% of practicing physical therapists suffered low back pain lasting more than 3 days. He also reported that low back pain was more prevalent in acute care and rehabilitation facilities. The reason for this was that patients within these settings are more dependent than patients in other settings. Therapists are more likely to perform patient lifts and transfers, which is more demanding physically on the PT. Another reason was that new graduates are often employed in these facilities as they offer a diverse number of clinical experiences. Their inexperience may lead to an increased risk of injury.

The youngest age group of respondents (ages 23-30) reported the most problems in the lumbar spine in this study. This is consistent with the results of other occupational injury studies. Both nurses and physical therapists indicated experiencing work-related low back pain before the age of 30. This same study indicated that the occupational injuries occurred within the first 4 years of employment. Another study reported the
highest injury rate for those employed from 4-7 years, although the rate of injury does appear to decrease with age.\textsuperscript{1}

A relatively high prevalence (34.0\%) of wrist and hand injuries were found in the outpatient/sports medicine/industrial rehab work setting. A possible explanation for this finding may be that physical therapists perform manual therapy, such as joint and soft tissue mobilizations, on a regular basis in this work setting. Nineteen percent of respondents reported performing “joint mobilizations” to be a moderate to major problem in their career. Also, therapists employed in the outpatient/sports medicine/industrial rehab setting spent more hours in direct patient care per week (4.66 hours more compared to the mean). In addition, therapists in this setting were the youngest and had the least amount of PT experience. The literature reveals that occupational injuries are, in fact, much more frequent in the newest and youngest employees.\textsuperscript{1,15}

This study demonstrated that years of experience practicing as a physical therapist had some effect on the prevalence of work-related musculoskeletal disorders. Physical therapists practicing five years or less complained of involvement in twice as many anatomical areas compared to those employed sixteen years or more. There are many possible explanations for this: therapists may be inexperienced in patient handling skills, they may feel uncomfortable requesting assistance from other staff members, or they may not have received adequate education on injury prevention. Conversely, it was determined through regression that only 1.86\% of injuries were able to be predicted by years of experience. Future research may help to eliminate such controversy.
Occupational Activities

The most common problematic activity that contributed to work-related injuries in physical therapy was “lifting and transferring dependent patients.” This was reported as being a moderate to major problem by 44.4% of respondents in this study. Comparable results were found in a study by Bork et al,\textsuperscript{16} who reported that 58% of physical therapists indicated lifting and transferring patients put them at the greatest risk of injury. In addition, in research conducted by Molumphy,\textsuperscript{15} physical therapists claimed to be working with a patient at the time of their first episode of low back pain.

Physical therapists, in this study, reported that “inadequate education on body mechanics and injury prevention” was least problematic in their practice. Since physical therapists are educated in biomechanics and proper lifting techniques, it is assumed that they are knowledgeable in treatment and prevention of injuries. Obviously, appropriate education was provided to physical therapists on body mechanics and injury prevention in the sample. This is confirmed by the research study. The University of North Dakota Physical Therapy Program has provided physical therapists a strong knowledge base of biomechanics, etc. This tradition of high quality education must continue to be provided to physical therapists through inservices and continuing education courses in the future to enhance previously learned preventative measures.

Limitations

The questionnaire used in this particular study was sent only to graduates of the University of North Dakota Physical Therapy Program. Therefore, the results may not be representative of the entire population of physical therapists. This bias is one limitation of the study design.
Another limitation of the research project concerns the pilot study. A pilot study was attempted; unfortunately, it did not yield results. No feedback was provided by the eight participants as to improvements or corrections to be made to the survey instrument prior to its distribution to respondents.

Lastly, the study only examined injuries that physical therapists incurred within the past year. The purpose of this was to simplify results and to keep the time frame consistent with all respondents. Consequently, many injuries that occurred prior to one year were ignored completely.

Future Studies

In future investigations, questionnaires could be sent to a random sampling of individuals who graduated from various physical therapy programs. This would eliminate any sample bias that may occur by only examining one particular school, such that this study did. For example, researchers could use a sample of APTA members or include numerous universities and compare results.

Researchers utilizing a pilot study in the future could use a group of at least 20 individuals. This should ensure specific feedback regarding unclear areas and missing content and face validity.

Further research examining work-related disorders within the field of physical therapy could also include longitudinal studies. This would determine if injured therapists experience persistent problems.

Multiple areas could be analyzed in greater detail. The first area includes occupational injuries. Two concerns were found in this category: (1) the patient
population the therapist was treating at the time of injury should be specified, and (2) the type of injury incurred should be expounded upon.

The last area deals with the listing of activities that may contribute to work-related injuries in the field of physical therapy. Clarification should be made in the rating scale. A fifth category should be included for “not a problem in practice.” Many respondents were unsure how to answer this section correctly due to lack of clarity. By including the fifth category, this confusion should be resolved.
CHAPTER V

CONCLUSION

The prevalence of work-related musculoskeletal disorders within the field of physical therapy was highest in the lumbar spine, wrist/hand, cervical spine, thoracic spine, and sacroiliac joint. The incidence rate of these injuries varied greatly with the type of work setting. The youngest workers and those with the least amount of experience were injured most frequently. The most problematic job activity for physical therapists in this study was “lifting and transferring dependent patients.”

Although physical therapists are quite knowledgeable in the musculoskeletal system, they are not exempt from experiencing injuries. This is verified by the results of this research project. It is hoped that physical therapists in both the clinical and academic settings will acquire an increased awareness of the hazards they may encounter within their occupation.

Further research is necessary to investigate the cause of work-related musculoskeletal injuries within the field of physical therapy. This is necessary in order to identify specific preventative measures to decrease the incidence of occupational injuries. When these strategies are established and the health of the physical therapist is preserved, patient care will then be greatly enhanced.
APPENDIX A

IRB Form and Approval Form
REPORT OF ACTION: EXEMPT/EXPEDITED REVIEW
University of North Dakota Institutional Review Board

DATE: June 26, 1997 PROJECT NUMBER: IRB-9707-001

NAME: Dawn M. Leidholm DEPARTMENT/COLLEGE: Physical Therapy

PROJECT TITLE: Work-Related Musculoskeletal Disorders Within the Field of Physical Therapy

The above referenced project was reviewed by a designated member for the University's Institutional Review Board on July 1, 1997 and the following action was taken:

☐ Project approved. EXPEDITED REVIEW NO. ________________________________
   Next scheduled review is on ________________________________.

☒ Project approved. EXEMPT CATEGORY NO. _____________. No periodic review scheduled unless so stated in the Remarks Section.

☐ Project approved PENDING receipt of corrections/additions. These corrections/additions should be submitted to ORPD for review and approval. This study may NOT be started UNTIL final IRB approval has been received. (See Remarks Section for further information.)

☐ Project approval deferred. This study may not be started until final IRB approval has been received. (See Remarks Section for further information.)

☐ Project denied. (See Remarks Section for further information.)

REMARKS: Any changes in protocol or adverse occurrences in the course of the research project must be reported immediately to the IRB Chairperson or ORPD.

cc: R. Mabey, Adviser

Signature of Designated IRB Member
UND's Institutional Review Board

If the proposed project (clinical medical) is to be part of a research activity funded by a Federal Agency, a special assurance statement or a completed 310 Form may be required. Contact ORPD to obtain the required documents.

(3/96)
Principle Investigator: Dawn M. Leidholm  Telephone: (701) 775-0363  Date: June 19, 1997

Address to which notice of approval should be sent: Department of Physical Therapy  UND School of Medicine  P.O. Box 9037  Grand Forks, ND 58203

School/College: University of North Dakota  Department: Physical Therapy

Proposed project dates: June 1997 - May 1998

Project title: Work-Related Musculoskeletal Disorders Within the Field of Physical Therapy

Funding agencies (if applicable): N/A

Type of project: dissertation or new project  continuity or renewal  thesis research  student research project

Change in procedure for a previously approved project

Dissertation/Thesis Adviser, or Student Adviser: Dr. Renee Mabey

Proposed project: involves new drugs (IND)  involves non-approved use of drug  institution

If any of your subjects fall in any of the following classifications, please indicate the classification(s):

- Minors (<18 years)  - Pregnant women  - Mentally disabled  - Fetuses  - Mentally Retarded
- Prisoners  - Abortuses  - Und students (>18 years)

If your project involves any human tissue, body fluids, pathological specimens, donated organs, fetal material, or placental materials, check here

1. Abstract: (Limit to 200 words or less and include justification or necessity for using human subjects.

Musculoskeletal injuries are the most frequently reported injuries in the health care industry today. The health care industry employs many physical therapists; their job is to teach and train patients the prevention of musculoskeletal injuries. Ironically, physical therapists are among the individuals who are commonly affected with these injuries. The purpose of this study will be to determine the incidence of work-related musculoskeletal disorders and related job factors within the field of physical therapy. By examining the frequency of these disorders, programs can be established to prevent such injuries from occurring.

A four page questionnaire will be sent to randomly selected individuals who graduated from the University of North Dakota Physical Therapy Program between 1970 and 1996. The responses will be compiled and trends contributing to musculoskeletal injuries in physical therapy will be established. Once these trends are identified, injury prevention programs can be established to decrease the number of injuries in the field of PT. The results of this research project will be shared with all interested individuals, the physical therapy community, and UND-PT.
PLEASE NOTE: Only information pertinent to your request to utilize human subjects in your project or activity should be included on this form. Where appropriate attach sections from your proposal (if seeking outside funding).

2. PROTOCOL: (Describe procedures to which humans will be subjected. Use additional pages if necessary.)

The research design in this project will be a cross-sectional survey. A four page self-administered questionnaire will be mailed to randomly selected individuals who graduated from the University of North Dakota Physical Therapy Program between 1970 and 1996. The names and addresses will be obtained from alumni records. A cover letter will accompany each questionnaire. It will explain the purpose and significance of the study as well as assure the respondents that their answers will remain confidential. A pre-addressed and stamped envelope will also be included to encourage responses. Respondents will be asked to return the completed questionnaire within two weeks. At that time, follow-up postcards will be mailed to each subject. The postcard will both thank those who responded and serve as a reminder to those who have yet to return their questionnaires.

The self-administered questionnaire was derived from a variety of standardized questionnaires, including the Nordic Questionnaire* and one used by the University of Iowa in a similar research study**. A pilot study will be conducted to identify unclear areas and missing content. A group of physical therapists who neither graduated from UND or are involved in the project will be utilized for this.

There are three sections to the questionnaire. All sections consist of both open and closed-ended questions. The first section asks about general physical therapy information such as years of practice, patient population, and work settings. The second section consists of questions referring to occupational-related injuries in nine areas of the body. In addition, job factors that may contribute to musculoskeletal disorders in physical therapy will be assessed to identify problematic activities. The final section of the questionnaire measures demographic characteristics.

The responses will be compiled, and results will be determined using traditional descriptive and analytical statistics. Educational programs can then be developed to decrease the number of occupational musculoskeletal injuries within the field of physical therapy.


3. BENEFITS: (Describe the benefits to the individual or society.)

The individuals participating in the study will benefit by sharing their personal experiences and injuries they have incurred in the field of physical therapy. All individual responses will be compiled and will help to identify trends that contribute to musculoskeletal injuries in PT. Once these trends are discovered, programs to prevent such injuries can be established. It is in this manner each individual will play a role in improving the environment in which physical therapists practice. Future physical therapy education will also be improved both at the clinical and academic level.

Society will also benefit as musculoskeletal disorders can be minimized in the health care industry, making physical therapists more effective providers. Worker efficiency will also increase as lost work hours and days will decrease.

4. RISKS: (Describe the risks to the subject and precautions that will be taken to minimize them. The concept of risk goes beyond physical risk and includes risks to the subject's dignity and self-respect, as well as psycho-logical, emotional or behavioral risk. If data are collected which could prove harmful or embarrassing to the subject if associated with him or her, then describe the methods to be used to insure the confidentiality of data obtained, including plans for final disposition or destruction, debriefing procedures, etc.)

The risks to the individual participating in this study are minimal. Participation in the research project is considered voluntary; the researcher cannot require the individual to respond. All survey respondents will remain anonymous. Respondents can be assured of confidentiality as no personal identification will be included in the survey instrument. All returned questionnaires will be retained by the investigator for a period of two years. They will then be destroyed at that time.
5. **CONSENT FORM**: A copy of the **CONSENT FORM** to be signed by the subject (if applicable) and/or any statement to be read to the subject should be attached to this form. If no **CONSENT FORM** is to be used, document the procedures to be used to assure that infringement upon the subject's rights will not occur. Describe where signed consent forms will be kept and for what period of time.

No consent form will be utilized in this particular research project. The return of the completed survey will serve as proof of consent by the researcher.

6. For **FULL IRB REVIEW** forward a signed original and thirteen (13) copies of this completed form, and where applicable, thirteen (13) copies of the proposed consent form, questionnaires, etc. and any supporting documentation to:

Office of Research & Program Development  
University of North Dakota  
Box 8138, University Station  
Grand Forks, North Dakota 58202

On campus, mail to: Office of Research & Program Development, Box 134, or drop it off at Room 101 Twamley Hall. For **EXEMPT** or **EXPEDITED REVIEW** forward a signed original and a copy of the consent form, questionnaires, etc. and any supporting documentation to one of the addresses above.

The policies and procedures on Use of Human Subjects of the University of North Dakota apply to all activities involving use of Human Subjects performed by personnel conducting such activities under the auspices of the University. No activities are to be initiated without prior review and approval as prescribed by the University's policies and procedures governing the use of human subjects.

**SIGNATURES:**

- **Principal Investigator**  
  DATE: ______________

- **Project Director or Student Adviser**  
  DATE: ______________

- **Training or Center Grant Director**  
  DATE: ______________

(Revised 8/1992)
APPENDIX B

Cover Letter and Questionnaire
July 17, 1997

Dear Physical Therapist:

Did you know that musculoskeletal injuries are the most frequently reported injuries in the health care industry today? The health care industry employs many physical therapists, like yourself, who teach patients the prevention of musculoskeletal injuries. Ironically, physical therapists are among the individuals who are commonly affected with these injuries.

My name is Dawn Leidholm, and I am a graduate student in the Physical Therapy Program at the University of North Dakota. I am conducting research concerning work-related musculoskeletal disorders within the field of physical therapy for my independent study. To accomplish this, I am asking for your cooperation.

The purpose of this study is to determine the incidence of work-related musculoskeletal disorders and related job factors within the field of physical therapy. The results will affect the future education of physical therapists at both the clinical and academic level. By examining the frequency of musculoskeletal disorders, programs can be established to prevent such injuries from occurring. The knowledge gained from this study will be shared with all interested individuals, the physical therapy community, and UND-PT.

A four page survey has been designed for the research project. They will be sent to randomly-selected individuals who graduated from the UND PT program. You have been one of the many who have been selected. You can be assured that your answers will remain confidential as no personal identification is included in the survey instrument.

I would greatly appreciate it if you would take the time to complete the enclosed questionnaire. It will take approximately 10 minutes of your time to answer the 21 questions. A business return envelope has been included for your reply. Please return the questionnaire by August 11, 1997.

Again, thank you for your time and cooperation! If you have any questions or would like more information about this research project, please call the UND Physical Therapy Department at (701) 777-2831 between 8:00am and 4:30pm Monday through Friday. You may leave a message for me at that time, and I will return your call as soon as possible.

Sincerely,

Dawn M. Leidholm
Graduate Physical Therapy Student
GENERAL PHYSICAL THERAPY INFORMATION:

1. How many years have you been practicing as a physical therapist? ______________________

2. How many hours do you devote to direct patient care in a typical week? ________________

3. Indicate your employment classification in the past year:
   A. ______ Full time (> 30 hours/week)
   B. ______ Part time (< 30 hours/week)
   C. ______ Retired
   D. ______ Temporarily not employed in PT
       Reason: __________________________________________
   E. ______ Have left the field of PT
       Reason: __________________________________________

4. Indicate the type of facility in which you work most often (check one):
   A. _____ Acute Care Hospital
   B. _____ Rehabilitation
   C. _____ Outpatient
   D. _____ Home Health Care
   E. _____ Sports Medicine
   F. _____ Extended Care Facility
   G. _____ Industrial Rehab
   H. _____ School System (preschool/primary/secondary)
   I. _____ Academic Institution (post-secondary)
   J. _____ Other (specify) ________________________________

5. Describe the patient population age group(s) you treat in a typical work day (check all that apply):
   A. _____ Infants (< 1 year of age)
   B. _____ Preschool children (1-4 years)
   C. _____ School-age children (5-12 years)
   D. _____ Adolescents (13-17 years)
   E. _____ Young adults (18-29 years)
   F. _____ Middle-aged adults (30-54 years)
   G. _____ Older adults (55 and older)

6. Which of the following best describes your primary position in the field of PT? (check one):
   A. _____ Owner of PT practice or business
   B. _____ Clinical administrator or director of PT
   C. _____ Clinical supervisor of PT
   D. _____ Clinical PT staff
   E. _____ Academic administrator or director of PT education program
   F. _____ Academic faculty
   G. _____ Other (specify) ________________________________

Please continue on to next page →
7. Describe your activities as a PT using the following scale:
   - 0 = Never
   - 1 = Rarely
   - 2 = Occasionally
   - 3 = Frequently

A. _____ General Inpatient/Orthopedic Rehab
B. _____ Outpatient Orthopedic/ Sports Medicine
C. _____ Neuro Rehab
D. _____ Acute Care
E. _____ Cardiopulmonary Rehab
F. _____ Manual Therapy
G. _____ Wound Care
H. _____ Pediatrics
I. _____ Geriatrics

**OCCUPATIONAL INJURY INFORMATION:**

8. Have you experienced any work-related injury, pain, or discomfort within the past year in the following areas:

- NECK
- THORACIC SPINE
- LUMBAR SPINE
- SACROILIAC JOINT
- SHOULDERS
- ELBOWS
- WRIST/HANDS
- HIPS
- KNEES
- FOOT/ANKLES

9. Has this condition prevented you from working in the past year?

- NECK
- THORACIC SPINE
- LUMBAR SPINE
- SACROILIAC JOINT
- SHOULDERS
- ELBOWS
- WRIST/HANDS
- HIPS
- KNEES
- FOOT/ANKLES

10. Have you sought treatment for this condition in the past year?

- NECK
- THORACIC SPINE
- LUMBAR SPINE
- SACROILIAC JOINT
- SHOULDERS
- ELBOWS
- WRIST/HANDS
- HIPS
- KNEES
- FOOT/ANKLES

11. If you answered yes to any of these questions for each area of the body injured, indicate who treated you on the line provided (eg: physician, other PT, or self).

Please continue on to next page →
12. If you have had an injury at work in the past year, briefly describe the mechanism. 

______________

A. Did you file an incident report? _____ No _____ Yes
B. Did you file a worker’s compensation claim? _____ No _____ Yes
C. As a result of your injury, did you change your activities as a PT? _____ No _____ Yes
   If yes, briefly explain. ________________________________________________

D. Were you unable to return to work? If so, for how long? ____________________

13. Have you ever sustained an injury (not work-related) that is exacerbated by your job as a physical therapist? _____ No _____ Yes
   If yes, briefly explain. ________________________________________________

14. The following is a list of activities that may contribute to job-related injuries, pain, and discomfort within the field of physical therapy. Indicate how much of a problem each item is for you in your practice using the following scale:

   0 = Not part of your practice
   1 = Minimal problem
   2 = Moderate problem
   3 = Major problem

A. _____ Performing manual therapy techniques (joint and soft tissue mobilization)
B. _____ Repeating the same task over and over
C. _____ Bending or twisting body in an awkward way
D. _____ Working in awkward or cramped positions
E. _____ Working away from body (reaching)
F. _____ Maintaining the same position for long periods of time (standing, sitting, kneeling, etc)
G. _____ Treating an excessive number of patients in one day
H. _____ Treating dependent patients (lifting and transferring)
I. _____ Carrying or lifting heavy equipment
J. _____ Unanticipated sudden movement by patient (falls)
K. _____ Working at or near your physical limits
L. _____ Scheduling problems (overtime, length of workday, irregular shifts)
M. _____ Not enough rest breaks during the workday
N. _____ Continuing to work when injured or hurt
O. _____ Inadequate equipment in facility (eg: plinths are too high or too low, inadequate desk chairs, etc)
P. _____ Inadequate education on body mechanics and injury prevention

Please continue on to next page →
15. Indicate how satisfied you are with the education you received at the University of North Dakota in the Physical Therapy Program regarding body mechanics, injury prevention, etc (check one):

   _____ Completely Satisfied
   _____ Somewhat Satisfied
   _____ No Opinion
   _____ Somewhat Dissatisfied
   _____ Completely Dissatisfied

   Comments on changes that could be made: ____________________________________________

   ______________________________________________________________________________

DEMOGRAPHIC INFORMATION:

16. State your sex. ____________
17. State your age in years. ________
18. State your height in inches. ________
19. State your weight in pounds. ________
20. State the year of your graduation from UND PT School. ________
21. Are you currently on a regular exercise program? _____ No _____ Yes
   If yes, describe it briefly. ________________________________________________________

   ______________________________________________________________________________

   Additional comments: _____________________________________________________________

   ______________________________________________________________________________

Thank you for your time in completing this survey. Your cooperation is greatly appreciated!
Please review the survey to ensure that all pages and questions have been answered thoroughly.
Please enclose the completed survey in the stamped envelope and mail before August 11, 1997.
REFERENCES


