1999

Research Based Practice Among Members of the Michigan Physical Therapy Association

Sarah M. Bennett
Grand Valley State University

James D. Courter
Grand Valley State University

Rachel E. Hastings
Grand Valley State University

RESEARCH BASED PRACTICE AMONG MEMBERS OF THE MICHIGAN PHYSICAL THERAPY ASSOCIATION

By

*Sarah M. Bennett
James D. Courter
Rachel E. Hastings

MASTER'S RESEARCH PROJECT

Submitted to the School of Health Professionals
at Grand Valley State University
Allendale, Michigan
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE IN PHYSICAL THERAPY

1999

Research Based Practice Among Members of the Michigan Physical Therapy Association

ABSTRACT

The purpose of this study was to investigate the extent to which research based practice (RBP) is employed by Michigan Physical Therapy Association Members by assessing attitudes toward research, level of research involvement/scholarly pursuit, and reasons for using or not using treatment interventions.

Three hundred and thirty questionnaires were distributed by mail to a random sample of Michigan Physical Therapy Association Members. A total of 133 questionnaires were used for analysis. Descriptive frequencies were calculated for each section of the questionnaire. Chi-square and Fischer's Exact tests were used to examine significant relationships .

Respondents in the present study overwhelmingly supported (~90%) that clinical research *should* guide physical therapy practice and that the use of clinical research findings *will improve* the quality of physical therapy care. Results indicate that research based practice is being employed to some extent.

Sarah M. Bennett

James D. Courter

Rachel E. Hastings

Research Chair: John Peck, PhD, PT

ACKNOWLEDGEMENTS

The authors would like to extend their appreciation to the following individuals for giving graciously of their time and assistance: John Peck, PhD., P.T., Jolene Bennett, M.A., P.T., A.T.C., O.C.S. and Cynthia Grapczynski, M.S., O.T.R. The authors wish to extend a special thanks to John Peck, PhD., P.T., committee chairman, whose many long hours of assistance in organization of this study helped provide a valuable learning experience.

TABLE OF CONTENTS

Page

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

CHAPTER 1
INTRODUCTION

Background to the Problem

Physical therapists employ a wide variety of interventions when treating patients with a multitude of diagnoses. However, the rationale for choice of physical therapy interventions remains unclear. Therapists may be guided by, but not limited to, any of the following reasons for using or not using a particular physical therapy intervention: original training, good/poor clinical outcomes, reading of literature, research involvement, continuing education courses, discussions with colleagues, lack of familiarity, and insufficient time. Literature suggests that clinical research is the most effective and widely accepted method of choosing effective and appropriate interventions in the health care professions (Hislop, 1975; Bohannon and Leveau, 1986; Bostrom, MacDougale, Malnight, and Hargis, 1989; Stange, 1996; Turner and Whitfield, 1996 & 1997). However, more literature suggests that clinical research is not guiding physical therapists in their rationale for use of interventions (Bohannon and LeVeau, 1986; Riddoch & Lennon, 1991; Greenhelgh, 1996; Rothestein, 1996; Turner & Whitfield, 1996).

More than twenty years ago the need for research based practice (RBP) in physical therapy was acknowledged (Campbell, 1970; Hislop, 1975) and has since been recognized by many authors (Bohannon and Leveau, 1986; Piper, 1991). Sackett in the 1997 book entitled, *Evidence Based Medicine*, defined research based practice as the implementation of the best external evidence with applied individual clinical expertise.

More recently at the Thirteenth General Meeting of the World Confederation of Physical Therapy held in Washington D.C., June 1995, the *Declaration of Principle-Validation of Practice Techniques and Technology* was adapted. The principle states that in the interest of best practice, physical therapists have a duty and responsibility to use techniques and technologies that have been evaluated scientifically by physical therapists or other appropriate persons for efficacy and continued safe use (Harrison, 1996). The adoption of this principle by the World Confederation of Physical Therapy further affirms the need for RBP in the physical therapy profession internationally.

Problem Statement

Physical therapy has been perceived as a profession which bases much of its practice on anecdotal evidence, and which uses interventions that have little scientific foundation (Riddoch and Lennon, 1991). One study stated that,

> Doctors generally believe that these carefully trained and well-educated health care workers [physical therapists] make an important contribution to the management of many conditions. However, physical therapists have a poor record of initiating and responding to research and numerous treatment techniques are used with little if any scientific backing (Riddoch and Lennon, 1991, p. 5).

The objective of human service professions, such as physical therapy, is to improve the status of the client, and all interventions aimed at achieving this goal should be founded on knowledge that is research based (Bohannon and LeVeau, 1986). Practice should be based on a combination of current research findings as well as clinical expertise. Riddoch and Lennon (1991) state that the current economic climate suggests that physical therapists are no longer able to continue to administer particular therapies that have been "handed down" from generation to generation. Private payers as well as

HMO's are unwilling to pay for therapies that are used because they have been part of the physical therapy protocol for years. The only therapies that should be administered are therapies whose success has been demonstrated in an objective way. Success should be proven objectively through pre-intervention and post-intervention measures that control for the possibility of spontaneous recovery (Riddoch et. al, 1990).

Purpose

The purpose of this study is examine Michigan Physical Therapy Association members' attitudes toward research, research involvement/scholarly pursuit, frequency and rationale for using treatment interventions.

Significance of the Problem

The physical therapy profession will benefit in many ways if RBP is employed. If physical therapists are choosing to use interventions that are supported through research, then scientific credibility of the profession will increase. If the profession establishes scientific credibility through research, then continued growth and development of the profession can be expected. Research based practice will either validate or invalidate current practice interventions and perhaps satisfy increasing demands of accountability for the profession brought on by the Balanced Budget Act of 1997. Research based practice will also demonstrate whether physical therapy interventions are cost effective and high quality, two factors which are crucial in this era of managed care (Robertson, 1995).

Ambiguity exists in the literature regarding the relationship, if any, between RBP and demographic variables including, but not limited to: years of experience, employment setting, highest educational degree, primary patient population, and

continuing education credits earned annually (Hightower, 1996; Turner & Whitfield, 1996). Current literature suggests that a positive correlation exists between the level of education and use of research by allied health professionals (Bostrom et. al., 1989; Turner and Whitfield, 1997;). However, current studies that examine this relationship are limited in number. Therefore, one aspect of this present study will be to examine the relationships that exist between degree status and attitudes toward research and rationale for using or not using a treatment intervention.

According to the literature physical therapists often encounter barriers that may influence their attitudes toward research; thereby interfering with their ability to be research based practitioners (Stange, 1996). The two most common barriers identified throughout the literature include insufficient time and lack of administrative support (Bohhannon and LeaVeau, 1986; Barnsteiner, 1996; Simpson, 1996). For this reason, a portion of the present study will include these common barriers and measure physical therapists' attitudes toward these barriers.

Research Questions

The research questions are:

1) What are clinicians' general attitudes towards research?

2) What is the extent of clinicians' personal research involvement and scholarly pursuit?

3) What is the frequency of use for various physical therapy interventions?

4) What are clinicians' primary and secondary reasons for using or not using physical therapy interventions?

5) Does degree status correlate with attitude towards research and primary reason for using or not using a technique?

CHAPTER 2
LITERATURE REVIEW

Conceptual Framework

The use of research based practice (RBP), or evidence-based practice (EBP), as defined by Sackett (1997) a leading proponent of RBP, means integrating clinical expertise with the best available clinical evidence from systematic research. Individual clinical expertise is defined as the proficiency and judgement that individual clinicians acquire through clinical experience and practice. The "best available clinical evidence" is defined as clinically relevant research, especially client centered clinical research into the efficacy and safety of therapeutic, rehabilitative, and preventative regimens (Sackett, 1997, p. 5). External clinical evidence both invalidates previously accepted treatments and replaces them with different ones that are more effective (Sackett, 1997). Effective physical therapists must use both individual clinical expertise and the best available clinical evidence, Sackett warns; neither standing alone is enough.

Research based practice is not impossible to carry out or unrealistic to achieve. Studies show that busy clinicians, who devote their reading time to selective, efficient, patient-driven searching, appraisal and incorporation of the best available evidence, can practice research based medicine (Sackett, 1997). Research based practice is not 'cook-book' for each diagnosis because it integrates the best available evidence with applied individual clinical expertise, to each individual patient. However, RBP is not restricted to randomized trials and research analyses. Research based practice involves tracking down the best external evidence (systematic reviews or primary studies) with which to answer our questions (Sackett, 1997).

Sackett in his 1997 book entitled, *Evidence Based Medicine*, identified five reasons for using RBP that can be applied to physical therapy. First, the available bank of research knowledge expands daily in the physical therapy profession. In order to provide optimal health care, clinicians must keep up to date with these advances. Second, in the past, clinicians have failed to acquire clinically important information. Third, clinical performance tends to deteriorate over time when not using up-to-date knowledge. Fourth, past methods of acquiring knowledge are no longer sufficient, therefore, reader access to clinically important information is needed. Fifth, RBP has clinically proven to increase health care quality. Therefore, as the current literature has demonstrated, it is time for physical therapists to ensure that the treatments, that they are endorsing and providing for their clients, are based on the strictest rules of experimental design and scientific evidence (Sackett, 1997).

Review of Literature

Nursing Findings

The nursing literature was chosen as a subject of review due to the vast amount of published studies on RBP over the last twenty years. In comparison, the physical therapy literature on RBP is less extensive. Nursing and physical therapy are both science-based, patient-centered professions, therefore, a comparison between the two is relevant. Numerous studies have established that RBP is necessary in the nursing profession (Kirchoff, 1982; Bostrom et. al.,1989; Bohannon and LeVeau, 1986; Rizzuto et. al, 1994). Although the nursing profession has established the need for RBP, current literature suggests that the need is not being fulfilled. A general assumption exists throughout the nursing literature that RBP is not a reality (Pearcey, 1995). Tierny and

Turner, in a 1991 study, found a lack of empirical evidence within the nursing population, suggesting that research findings are not used in practice.

The examination of the importance of research utilization in the clinic began as early as the 1970's. Nursing scientists have placed a high value on the utilization of the research process to create a sound theoretical basis for practice (Bostrom et. al, 1989). However, clinical nurses often question the utility of research and the value of a theoretical basis for practice (Cheiska, 1978). Ketefian (1975) agreed that clinical nurses perceive that research and theory development have no relevance to clinical nursing practice. Recent studies show that a gap still exists between research and clinical practice (Eckerling, 1991; Ahmed, 1996; and Barnsteiner, 1996).

Of the recent studies conducted in nurses' use of RBP, a number of studies demonstrated that a positive correlation exists between the use of RBP and journal readership. Kirchoff (1982) proposed that nurses who read a journal article about an innovation were more likely to become aware of that innovation. However, no significant correlation between awareness and frequency of using research in their clinical areas was found. Miller and Messenger (1978) reported on a similar study, which surveyed nurses in Northern Ireland. The results of the study revealed that only 57% of nurses involved in clinical practice and 37% of nurses involved in education subscribed to nursing journals. The lack of journal readership is further supported by Ketefian (1975) who found that of 87 registered nurses surveyed, only one was able to provide a response to treatment consistent with information that had been widely reported in the nursing literature. Heater, Becker and Olson (1988) argued that, despite the fact that more nursing research is conducted now, research findings are not widely applied to

practice. Rizzuto et al. (1994) also discovered that although nurses had a positive attitude toward research, they had a negative perception of support for research in the work environment. These recent findings are consistent with previous studies found in the literature, which emphasized the lack of applicability of research findings to the nursing practice.

Although there has been extensive literature suggesting nurses' failure to use RBP, many current researchers have disputed previous research findings by discovering that nurses still have a positive attitude toward research even though they are not applying research findings to nursing practice. Bostrom et al. (1989) surveyed 929 registered nurses employed at a mid-western teaching hospital and discovered that over 50% of the nurses were interested in research. The nurses also believed that the hospital would support research activities and the implementation of research findings. However, the generalizability of this study is limited because only one hospital was included in the sample. Pearcey, (1995), in a study that surveyed 600 nurses/health authorities, discovered that although nurses are failing to achieve RBP, 93% of nurses were not satisfied and expressed the need to improve their research skills.

The study conducted by Rizzuto et. al.(1994), which surveyed 1,217 nurses employed at nine health care agencies, assessed research attitudes, work environment, and research involvement. Rizzuto and colleagues used a two-part survey. Part one was entitled "Survey of Nurses' Research Attitudes and Activities" that was modified from a Nursing Research Survey (Chenitz and Sates, 1986) composed of two scales: the Nursing Research Attitude Scale (NRAS) and the Research Environment Scale (RES). Also included was a Research Involvement Survey. Part two of the study, was the

Agency Environmental Survey, given to the coordinator of each agency. The results showed that approximately 15.9% of the nurses surveyed are changing practice on the basis of research and only 8.5% are conducting their own research (Rizzuto, 1994). Approximately 42.5% of the nurses stated that they intend to change a nursing practice or protocol based on nursing research findings. These studies, as well as Rizzuto's main findings discussed in the previous paragraph, support nurses' recognition of the need for the incorporation of better research skills in their practice.

Physical Therapy Findings

There are no specific answers to what, where, when, and to what extent RBP is used in the physical therapy profession. Hislop (1975, pg. 1069) recognized that physical therapy is a "fragile" profession because it lacks precision of its treatment techniques. Over the past three decades, Hislop and other prominent researchers (Campbell 1970, Michels 1982, Rothstein 1996, Turner and Whitfield 1997) have advocated the importance of RBP and questioned the survival and theoretical basis of the physical therapy profession. In 1967, the American Physical Therapy Association (APTA) recognized the critical importance for physical therapists to maintain a current knowledge base and developed the Committee on Continuing Education. The committee was designed to guide and counsel the APTA regarding continuing education activities. This was one of the first national actions to emphasize the need for RBP.

Today, active pressure to pursue RBP exists within the physical therapy profession due to the current health care economics. In many countries, there is also added pressure from consumers who are requiring value for money and assurances that the physical therapy treatment being purchased is evidence based (Harris, 1996).

Evidently, RBP has been a recent topic of focus in the physical therapy profession not only in the United States, but in any other countries as well.

Studies have focused on physical therapists' involvement in RBP by examining how physical therapists acquire current knowledge. Bohannon and LeVeau (1986) surveyed physical therapists concerning their methods of acquiring current knowledge. The first through fourth most used methods, as reported by physical therapists were: 1) interaction with students, 2) contact with colleagues, 3) demonstrations, ward rounds, and clinics, and 4) reading journals related to physical therapy. These results imply that clinicians may rely more on personal opinions than research conducted in referenced journals.

Another aspect of RBP is journal readership by clinicians. Bohannon and Leveau (1986) reported that physical therapists may subscribe to and use journals more than other human service professionals. A survey of the membership of the APTA, in 1982, revealed that 35.13% of physical therapists only received the *Physical Therapy* journal, which is included with APTA membership. In addition, findings revealed that only 18.24% of the physical therapists surveyed subscribed to two other journals, not including *Physical Therapy*, and 12.76% subscribed to three or more other journals. Of course, as the authors indicated, a failure to subscribe does not necessarily coincide with a failure to use (Bohannon and Leveau 1986).

Another study, conducted by Turner and Whitfield (1996), investigated the type and level of journal readership among practicing physical therapists in England. A questionnaire was designed to discover the demographic characteristics of participating physical therapists, including degree and diploma status, and the type of journals read six

months preceding the completion of the questionnaire. The findings of this study showed an extremely limited amount of journal readership. The results indicated, with the exception of the *Chartered Society of Physiotherapy* (CSP) journal, *Physiotherapy*, and PT newsletters, the remaining journals had a negligible readership, meaning two or less journals were read in six months. Approximately 34% of respondents indicated reading journals in other subject areas including pediatrics (4%), geriatrics (4%), rehabilitation (7%), neuroscience (6%), rheumatology (2%), biomechanics (2%), hands (2%), pain (1.5%), obstetrics and gynecology (1.5%), and miscellaneous such as wound care (4%) (Turner and Whitfield 1996). A positive correlation was found to exist between the highest educational degree earned and the amount of journal readership. Although the study demonstrated extremely limited journal readership by physical therapists in England, the study is limited because the authors surveyed a sample specific to hospital physical therapists practicing in the U.K.

Turner and Whitfield (1997) in their most recently published study examined physical therapists' use of RBP in both Australia and England. A questionnaire was distributed and completed by 321 hospital employed physical therapists that measured physical therapists' reasons for their use of treatment techniques, with a particular focus on their use of journal review and research literature. The questionnaire was designed following extensive pilot work with practicing physical therapists employed at hospitals in England. Formal approval by an Australian Physical Therapy Projects and Ethics Committee was granted prior to its administration, verifying that the instrument was appropriate for use. A list of reasons for the use of techniques was compiled from a pilot

study and was initially based on the results of studies by Hightower (1973) and Bohannon (1990). Any other validity and reliability measures were not specifically addressed.

The questionnaire included background characteristics and reasons for use of techniques within the six months prior to completing the questionnaire. Ninety percent of all respondents listed "*taught in original training*" and "*prior experience of techniques*" as reasons for performing techniques. Less than 30% of respondents listed "*reading of research articles.*" Just over one-third of respondents listed "*reading of a journal review article.*" Significant association was found between use of review articles and degree status, for English respondents. Fifty-two percent of those with degree backgrounds listed using review articles compared to 32.6% of those without a degree background. In addition, Australian physical therapists were found to have a similar significant association between the use of research articles and current registration for post-qualification courses. Of those registered, 44% listed research articles as a reason compared to 24.1% of those not registered. English and Australian physical therapists showed no differences in their reason for choice of treatment techniques.

Although the results of this study are useful because a cross-national sample was used, some limitations still exist. Turner and Whitfield (1997) used a convenience sample of physical therapists employed at hospitals known to be centers for physical therapy education. The researchers recognized this limitation, and noted that hospitals known to be providers of clinical education would have reasonable access to university libraries and therefore journal literature, which other physical therapy departments may not have. The use of a convenience sample decreased the generalizability of the study to physical therapists employed in settings other than research hospitals. In addition,

questionnaires were mailed to the managers of the chosen physical therapy departments. The managers were in charge of distribution to the individual physical therapists. The authors did not state whether or not enough questionnaires were sent for all physical therapists employed at each hospital or if physical therapist selection was left to the discretion of each manager. Results of this study were somewhat ambiguous because the authors offered no distinction between "reading a journal review article" and "reading of a research article." Even with the limitations listed, these researchers performed a sound study to take the physical therapy profession one step closer to realizing the lack of RBP in the clinical setting today.

Barriers to Research Based Practice

Research based practice depends on the work of motivated, trained health care professionals working in a research-supported environment. Good health care research applies rigorous methods using opportunities created by adequate funding, beginning with innovative ideas based on practice. There are barriers in each of these aspects of the research process in both the physical therapy and nursing professions (Stange, 1996).

Many authors have described the barriers to using research in nursing and physical therapy practice (Hightower, 1973; Bostrom et. al, 1989; Rizzuto et al.,1994; Pearcey, 1995). The barriers experienced in the U.S. and Canada parallel those in other countries such as Australia and England (Simpson, 1996). These barriers include: insufficient time, lack of availability of current research findings, limited experience, and decreased comfort level with library/search techniques, limited ability to understand and interpret research reports, lack of supervisory support and research support services, limited exposure to research-use strategies during educational preparation, cost

constraints, limited access to journals and negative staff attitudes toward research (Bostrom, 1989; Pearcey, 1995; Simpson, 1996).

Summary and Implications for Study

The studies described above provide valuable information for the present study because a need for RBP has been established throughout the allied health care profession. Determining definitively whether or not physical therapists are research-based practitioners is beyond the scope of this study. However, this study aims to take the following steps toward clarifying the extent to which RBP is employed in the physical therapy profession by assessing attitudes toward research, research involvement/scholarly pursuit, and rationale for using or not using treatment interventions.

CHAPTER 3
METHODOLOGY

Study Design

This project was a quantitative research study designed to assess Michigan Physical Therapy Association (M.P.T.A.) members 1) attitudes toward research, 2) research and scholarly involvement, and 3) reasons for using or not using specific physical therapy treatment interventions. Information was gathered through a questionnaire (Appendix A), which included demographic data, attitudes toward research, personal research involvement, and frequency of use and rationale for physical therapy interventions. We chose to use a questionnaire as our instrument for economical reasons, to ensure confidentiality, and to reach a geographically substantial sample size. This chapter includes the following sections: a) sample, b) procedure used, c) instrumentation, d) validity and reliability, e) limitations, and f) data analysis.

Sample

For convenience, the sample was initially derived by contacting the M.P.T.A. and requesting a list of mailing labels for the 1,650 state-wide members. The labels were on fifty-five pages containing thirty addressed labels on each page, arranged by ascending zip code. The fifty-five pages were photocopied, to enable the authors to code the questionnaires and send out post-cards (Appendix B) to those respondents who had not responded by the deadline. Six mailing labels were taken randomly from each of the fifty-five pages. This made a sample size which consisted of 330 M.P.T.A. members from across the state of Michigan.

Instrumentation

The four-page questionnaire used in this study consisted of four sections designed to collect demographic data, attitudes toward research, personal research involvement, frequency of use, and rationale for use or non-use of physical therapy interventions. The first section collected demographic information including: years employed as a licensed physical therapist, type of setting, clinical specialty, highest educational degree, and primary population treated.

Sections two, three, and four were created after reviewing two previous research studies in nursing and physical therapy, Rizzuto et.al (1994) and Turner and Whitfield (1997) mentioned earlier in the text.

Section Two: Attitudes Toward Research

The second section of the questionnaire, *Attitudes Toward Research*, was reprinted and modified with the permission of W. Carole Chenitz RN, EdD, and Barbara Sater, RN, MSN after being obtained from Stanford Health Services (Appendix C). In this section respondents indicated their agreement or disagreement with statements reflective of attitudes towards research. The *Attitudes Toward Research* section consisted of six reflective statements measured on a five point Likert scale.

Section Three: Research Involvement

The third section of the questionnaire, *Research Involvement*, was developed by Rizzuto et.al (1994) and reprinted and modified with the permission of Stanford Health Services (Appendix C). This section addressed past, present, and future research activities. Past, present, and future research involvement was measured by asking the respondent to select from a list of six research activities, those that s/he performed in the

past (more than six months ago), are currently engaged in (now or in past six months), and/or plan to participate in the next year. In this section, the subject's research involvement is defined as participation in one or more of the following activities: 1) reading and analyzing journal articles, 2) presentation of case studies, 3) collecting data for a research study, 4) submitting findings for presentation or publication, and 5) changing a practice/protocol based on published research.

Section Four: Physical Therapy Interventions: Frequency of Use and Rationale

Section four, *Physical Therapy Interventions: Frequency of Use and Rationale*, was inspired by the Turner and Whitfield (1997) questionnaire. Turner sent a copy of the questionnaire used in the 1997 Turner and Whitfield study at our request, and gave consent for modifications in this research project via e-mail (Appendix D). The Turner and Whitfield questionnaire provided a basis for developing section four of this questionnaire. The majority of the physical therapy interventions listed in this section were obtained from the *Guide to Physical Therapy Practice* (Reynolds, 1997). In addition, eight alternative techniques were included. The respondents indicated which treatment they have used over the past six months ranging from never used to daily use, and selected, from the key provided, the primary and secondary reasons for using or not using each treatment technique. Following section four, an area was provided for additional comments from the respondents.

Validity and Reliability

The validity and reliability of our questionnaire was derived from the validity and reliability established by Rizzuto et.al (1994) and Turner and Whitfield (1997) and also

through pilot studies of the entire questionnaire, distributed to Grand Valley State University faculty and local physical therapy clinicians.

Nursing Research Attitude Scale (NRAS) and Research Involvement

The *Nursing Research Attitude Scale* (NRAS) established content validity by expert panel reviews. Rizzuto et.al (1994), using Chronbach's alpha, reported reliability of 0.92. The reliability of this scale reported for the study sample, was an alpha coefficient of 0.93. Nurse researchers employed in various settings determined the *Nursing Research Involvement* survey to have face validity. Chronbach's alpha was used to measure internal consistency for the past, present, and future scales of the instrument,which were 0.89, 0.86, and 0.96 respectively. The modifications made in our questionnaire were simply the deletion and re-wording of some questions and the elimination of the word "nursing." Therefore, because of these minor modifications, the *Attitudes Toward Research* and *Research Involvement* sections of our survey are consistent with the reported validity and reliability by Rizzuto et.al (1994).

Journal and Treatment Techniques Survey

The remainder of the questionnaire was based on the Turner and Whitfield (1997) "Journal and Treatment Techniques" questionnaire regarding research based practice in physical therapy. The Turner/Whitfield questionnaire was designed following extensive pilot work with practicing physical therapists employed at hospitals in England. Formal approval by an Australian Physical Therapy Projects and Ethics Committee was granted prior to its administration, verifying that the instrument was appropriate for use. The *Physical Therapy Interventions: Frequency of Use and Rationale* section of our questionnaire was constructed from the Turner/Whitfield questionnaire.

Questionnaire Used in The Present Study

Several steps were taken to ensure face validity of our questionnaire. First, a preliminary questionnaire, based on the Turner and Whitfield (1997) questionnaire, the Nursing Research Attitude Scale (1994), and the Research Involvement Survey (1994), was created and a pilot study was conducted with nine physical therapy educators at Grand Valley State University in Allendale, Michigan. Each preliminary survey had a cover letter (Appendix E) attached to the front explaining the purpose of the pilot study. Recommendations for format and content changes were then made by those who were involved in the preliminary survey. Next, as suggested by those surveyed, modifications were made in the following areas of our questionnaire: format, treatment techniques, and rationale for use of treatment techniques. The list of treatment techniques were then changed to be consistent with the wording in the *Guide to Physical Therapy Practice* (Reynolds, 1997) to increase validity. After these modifications were made another pilot study was performed on nine practicing physical therapists, and three of the professional educators involved in the first pilot. Each of these questionnaires were also accompanied by a cover letter (Appendix F). Lastly, research chair and committee members verified the appropriateness of the survey and the questionnaire was revised into its final form.

Procedure

On October 5th. of 1998, 330 questionnaires were distributed by mail to the sample of the M.P.T.A. members. Along with each questionnaire was an attached cover letter (Appendix G) and a self-addressed stamped return envelope. Each survey was numbered on the first page which corresponded to an assigned number on the

photocopied list of M.P.T.A. members. By October 26th 136 questionnaires were received , the remaining 194 physical therapists who had not responded were sent a post-card reminder (Appendix B). Another seventeen were received after the reminder making the total number of respondents 153 for a percentage of 46.4.

CHAPTER 4
RESULTS/DATA ANALYSIS

Techniques of data analysis

Initially, the data from each survey was entered into Microsoft Excel 4.0 in a spreadsheet format. The spreadsheet was then transferred to the Statistical Package for Social Sciences (SPSS) for statistical analysis. The entries were recorded and checked for errors to ensure accuracy. Descriptive frequencies were generated and are represented in Table 1 through Table 30 of this manuscript. To examine the relationship between degree status and attitudes toward research, the following three statements were selected for analysis: 1."*Research should guide physical therapy practice*"; 2."*I like to do physical therapy research*"; 3."*I keep informed by reading current literature.*" The following nine interventions were selected for analysis to examine the relationship between degree status and rationale for using or not using an intervention: aerobic endurance activities, postural awareness training, strengthening exercises, magnetic therapy, activities of daily living (ADL) training, neuromuscular relaxation, inhibition, and facilitation, myofascial techniques, cranio-sacral therapy, and strain-counterstrain. For ease of data analysis, some categories of responses were combined. From the *Attitudes Toward Research* section of the questionnaire, the strongly agree and agree responses were combined into one category, and the strongly disagree and disagree responses were combined into one category. The responses from the question regarding the respondents' highest educational degree earned from an academic institution in the "*Demographics*" section, were combined as follows: certificate and baccalaureate responses were combined into one category, and the master's and doctorate responses

were combined into one category. Fisher's Exact test was used to measure the relationship between degree status and attitudes toward research with alpha ≤ 0.05. Pearson's Chi Square or Fisher's Exact test (when $n < 5$) were used with alpha ≤ 0.05 to measure the relationship between degree status and rationale for use/non-use of specific physical therapy interventions.

Figure 1 through Figure 6 provide graphic description of frequencies for the demographics section of the questionnaire.

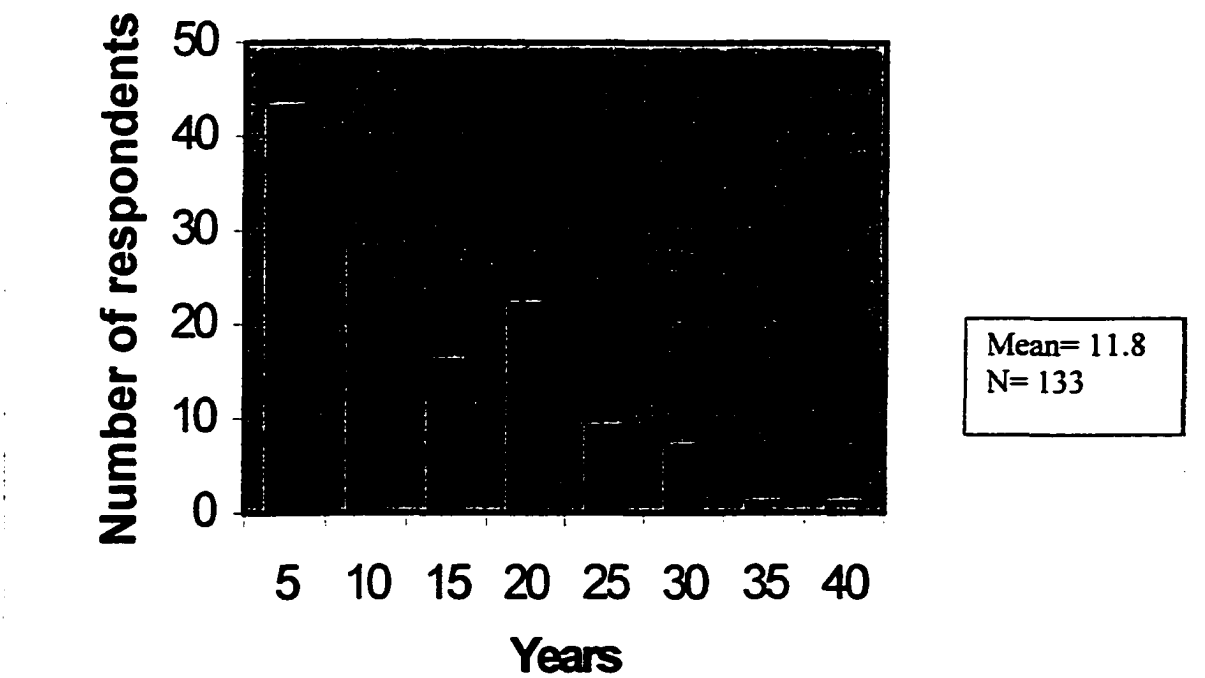

Figure 1. Years employed as a licensed physical therapist

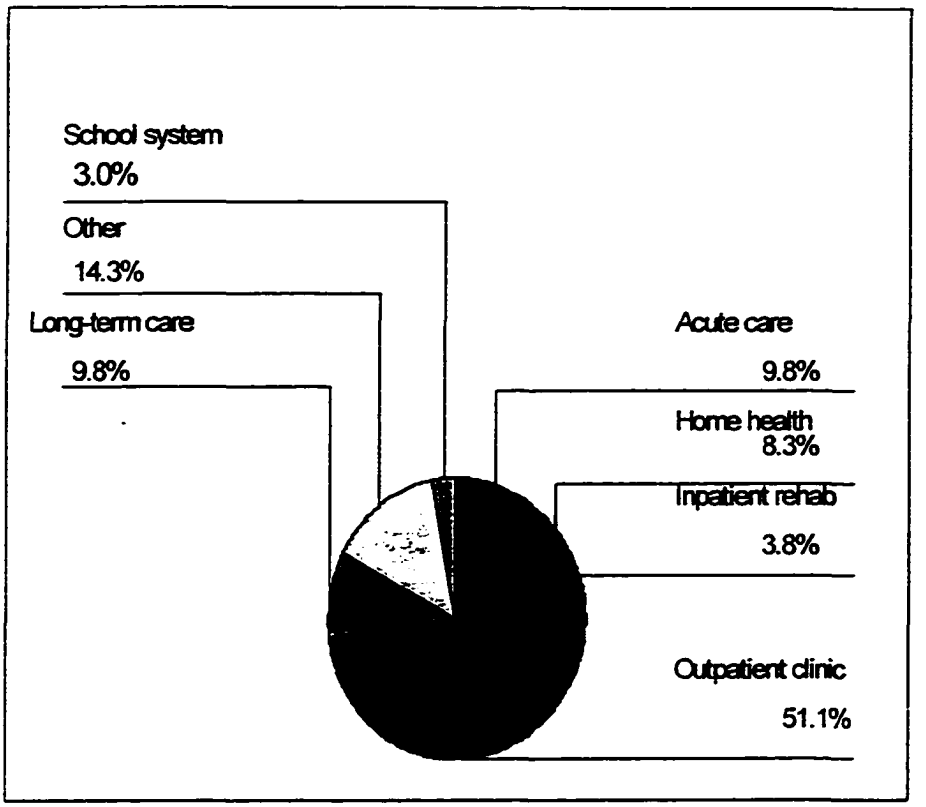

Figure 2. Settings in which respondents are employed

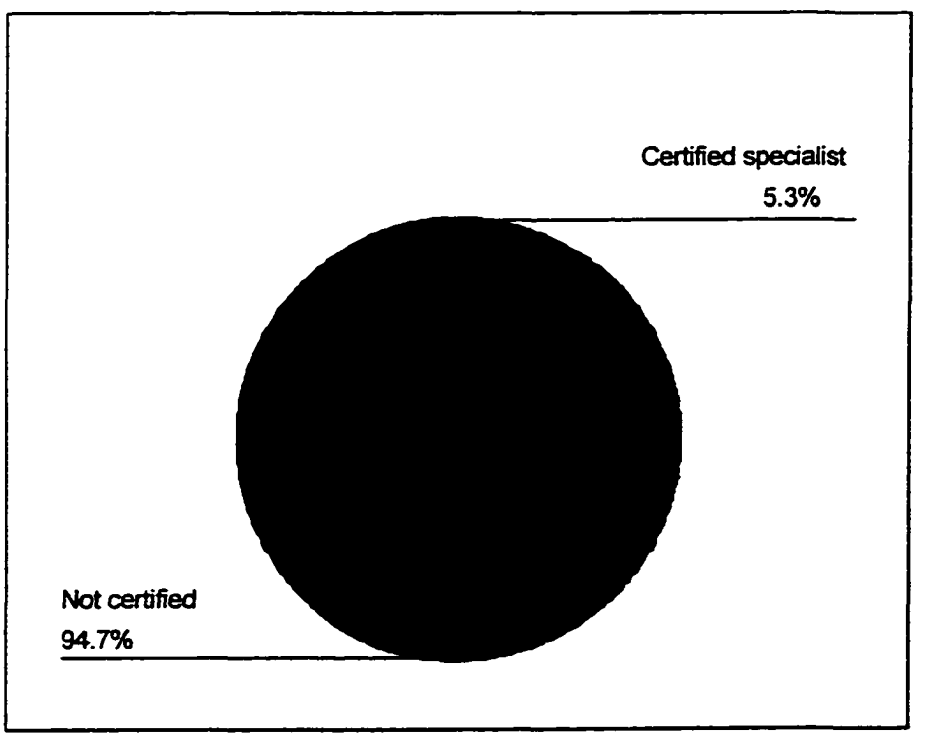

Figure 3. Percentage of respondents certified as a clinical specialist by the APTA

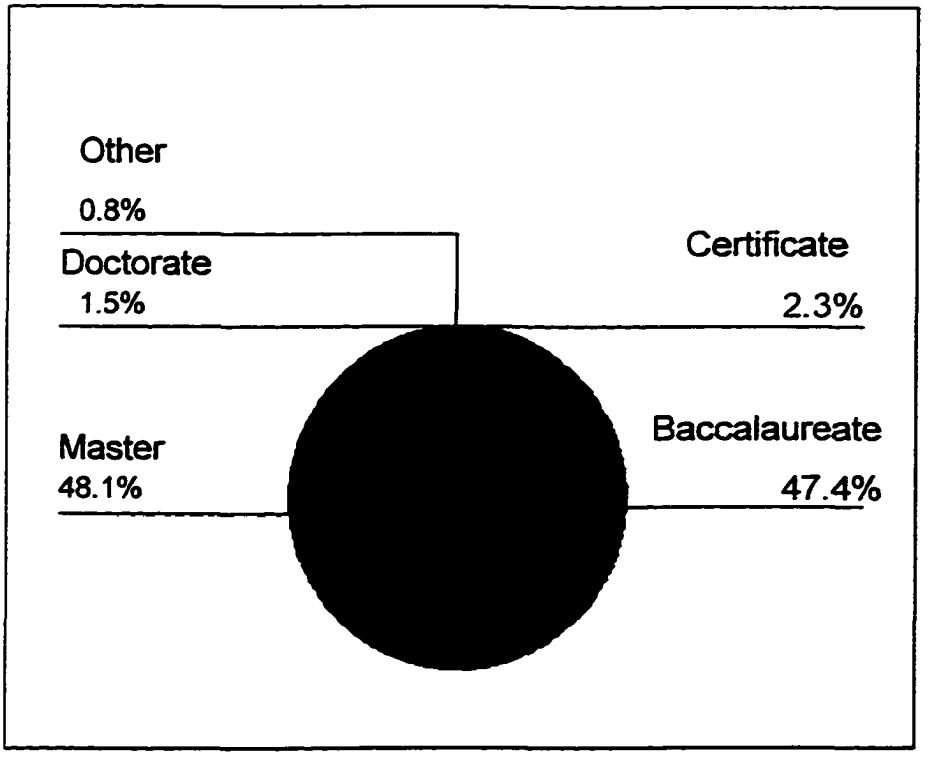

Figure 4. Highest educational degree received from an academic institution

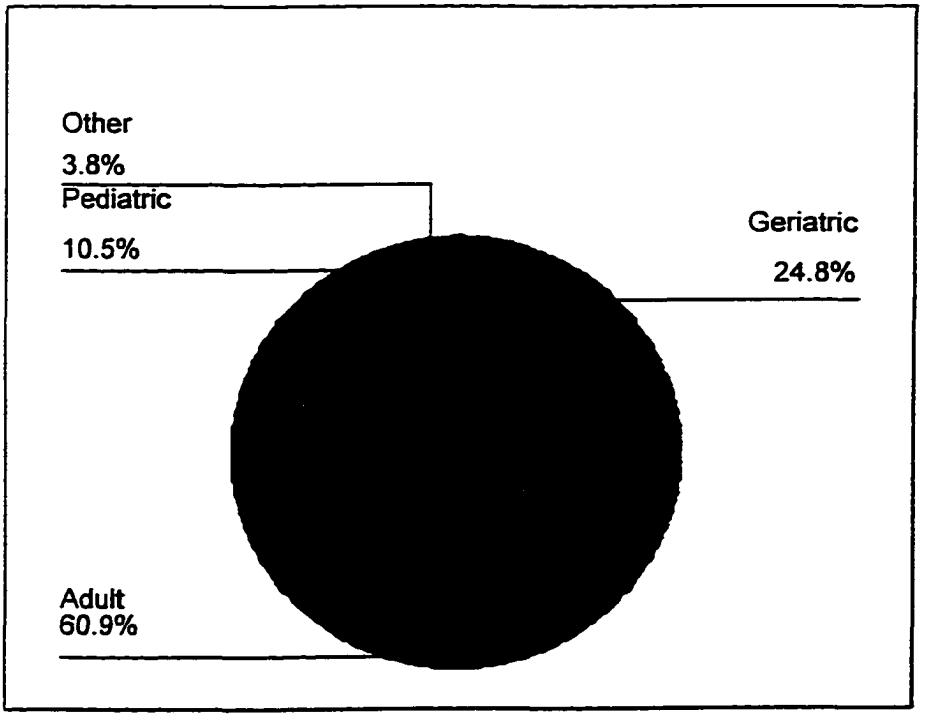

Figure 5. Age group of clients that respondent primarily treats

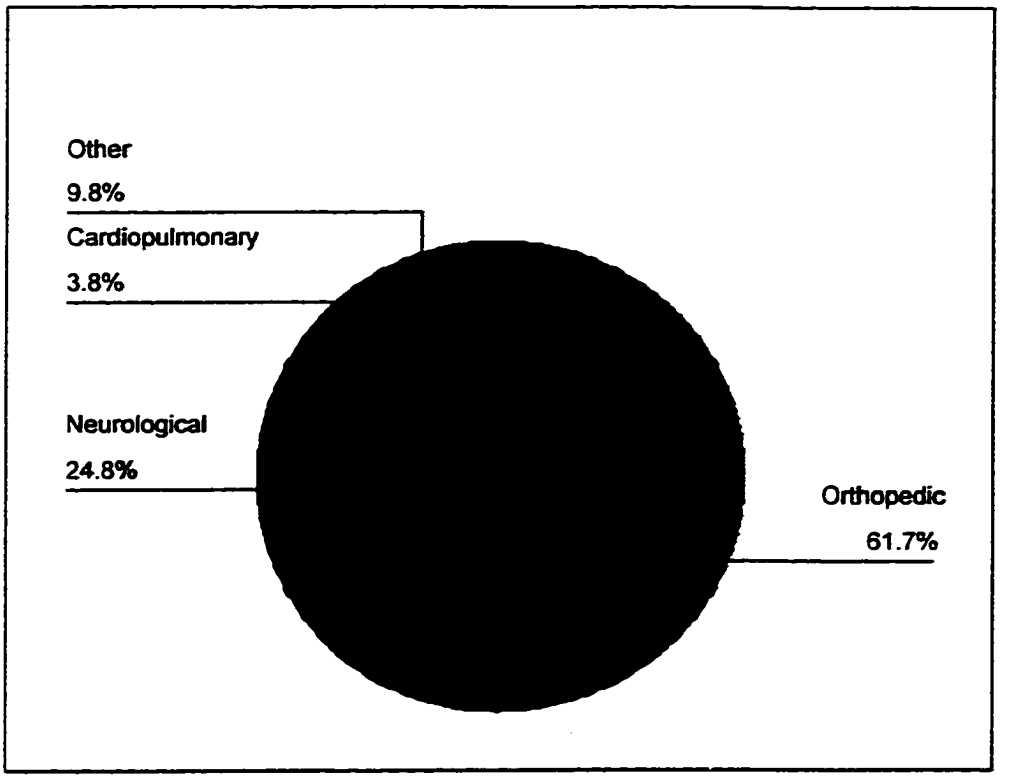

Figure 6. Diagnoses of clients that respondent primarily treats

Table 1 through Table 6 provide descriptive frequencies for the *Attitudes Toward Research* section of the questionnaire. Six statements reflecting attitudes toward research were provided, followed by a Likert scale for respondents to circle the response that best described the respondents' thoughts toward the statement. Responses included: agree strongly, agree, neutral, disagree and disagree strongly. The title of the table represents the exact statement reflecting attitudes toward research that was used in the questionnaire.

Table 1. Research findings should guide physical therapy practice.

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
Strongly Agree	42	33.3
Agree	70	55.6
Neutral	12	9.5
Disagree	2	1.6
Disagree Strongly	0	0.0
Total	126	100.0

Table 2. Physical therapy research is a pain in the neck.

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
Strongly Agree	3	2.3
Agree	34	26.0
Neutral	27	20.6
Disagree	45	34.4
Disagree Strongly	22	16.8
Total	131	100.0

Table 3. I like to do physical therapy research.

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
Strongly Agree	6	4.5
Agree	35	26.5
Neutral	44	33.3
Disagree	39	29.5
Disagree Strongly	8	6.1
Total	132	100.0

Table 4. I think there is insufficient time/administrative support for research.

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
Strongly Agree	28	21.2
Agree	65	49.2
Neutral	22	16.7
Disagree	10	7.6
Disagree Strongly	7	5.3
Total	132	100.0

Table 5. The use of clinical physical therapy research findings will improve the quality of physical therapy care.

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
Strongly Agree	51	38.6
Agree	70	53.0
Neutral	9	6.8
Disagree	2	1.5
Disagree Strongly	0	0.0
Total	132	100.0

Table 6. I keep informed about physical therapy findings by reading current literature.

RESPONSE	NUMBER OF RESPONDENTS	PERCENT
Strongly Agree	35	26.5
Agree	73	55.5
Neutral	16	12.1
Disagree	8	6.1
Disagree Strongly	0	0.0
Total	132	100.0

Table 7 through Table 12 provide descriptive frequencies for data generated from the *Research Involvement and Scholarly Pursuits* section of the questionnaire. Respondents were asked to circle all time periods that best fit his or her research involvement for six activities related to research or scholarly pursuits. The time periods were: *performed in past* (more than six months ago), *currently engaged in* (now or in past six months) and *plan to participate* (within the next year). The title of the table represents the research-related or scholarly pursuit activity provided in the questionnaire.

Table 7. Reading and analyzing journal articles

TIME PERIOD	NUMBER OF RESPONDENTS	PERCENT
Performed in Past	11	8.3
Currently Engaged in	36	27.1
Plan to Participate	0	0.0
Two or more time periods	66	49.6
Total	113	85.0

Table 8. Presentation of case studies

TIME PERIOD	NUMBER OF RESPONDENTS	PERCENT
Performed in Past	40	30.1
Currently Engaged in	9	6.8
Plan to Participate	5	3.8
Two or more time periods	23	17.3
Total	77	58.0

Table 9. Collecting data for a research study

TIME PERIOD	NUMBER OF RESPONDENTS	PERCENT
Performed in Past	59	44.4
Currently Engaged in	6	4.5
Plan to Participate	4	3.0
Two or more time periods	11	8.3
Total	80	60.2

Table 10. Submitting findings for presentation

TIME PERIOD	NUMBER OF RESPONDENTS	PERCENT
Performed in Past	45	33.8
Currently Engaged in	4	3.0
Plan to Participate	9	6.8
Two or more time periods	8	6.0
Total	66	49.6

Table 11. Submitting findings for publication

TIME PERIOD	NUMBER OF RESPONDENTS	PERCENT
Performed in Past	24	18.0
Currently Engaged in	2	1.5
Plan to Participate	12	9.0
Two or more time periods	5	3.8
Total	43	32.3

Table 12. Changing a practice/protocol based on published research

TIME PERIOD	NUMBER OF RESPONDENTS	PERCENT
Performed in Past	17	12.8
Currently Engaged in	21	15.8
Plan to Participate	4	3.0
Two or more time periods	46	34.5
Total	88	66.1

Table 13 through Table 30 provide descriptive frequencies for data generated from the *Physical Therapy Interventions: Frequency of use and rationale* section of the questionnaire. Respondents were provided with a list of 44 physical therapy interventions and asked to indicate the frequency of use or non-use for interventions employed over the previous six months. Frequency choices included: *never*, *rare* (less than once per month), *occasional* (two to four times per month), *frequent* (weekly) and *daily*. In addition to the frequency of use, respondents were asked to indicate their primary and secondary reasons for use or non-use of the 44 interventions from the following key provided:

Reason for Using or Not Using Physical Therapy Intervention
(each reason may be sufficient for either the USE or DO NOT USE columns)

1. Original training
2. Good clinical outcomes
3. Reading of literature
4. Lack of scientific support
5. Research involvement
6. Continuing education courses
7. Discuss with colleague
8. Not available at facility
9. Lack of familiarity
10. Poor clinical outcomes
11. Insufficient time
12. Not applicable to clientele
13. Other, please specify in box

Nine of the 44 physical therapy interventions are represented in the following tables. These interventions include: aerobic endurance activities; postural awareness training; activities of daily living training; strengthening exercises; neuromuscular relaxation, inhibition, and facilitation; myofascial techniques; cranio-sacral therapy; strain-counterstrain; and magnetic therapy. The preceding techniques are represented here because they are topics of discussion in Chapter 5. Appendix H contains a complete listing of tables for the remaining 35 interventions not displayed here. Each physical therapy intervention has two corresponding tables. The first table describes the frequency of use or non-use. The second table describes the primary and secondary reasons for use or non-use.

Table 13. Frequency of use for aerobic endurance activities

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	8	6.3
Rare	14	10.9
Occasional	14	10.9
Frequent	35	27.3
Daily	57	44.5
Total	128	100.0

Table 14. Rationale for use and non-use of aerobic endurance activities

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	63	59.4	Good clinical outcomes
Secondary Reason for Use	27	28.4	Reading of literature
Primary Reason for Non-Use	18	78.3	Not applicable to clientele
Secondary Reason for Non-Use	4	33.3	Insufficient time

Table 15. Frequency of use for postural awareness training

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	1	0.8
Rare	4	3.1
Occasional	15	11.6
Frequent	45	34.9
Daily	64	49.6
Total	129	100.0

Table 16. Rationale for use and non-use of postural awareness training

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	65	50.8	Good clinical outcomes
Secondary Reason for Use	32	27.6	Good clinical outcomes
Primary Reason for Non-Use	2	40.0	Not applicable to clientele
Secondary Reason for Non-Use	a. 1	a. 33.3	a. Discuss with colleague
	b. 1	b. 33.3	b. Insufficient time
	c. 1	c.33.3	c. Not applicable to clientele

Table 17. Frequency of use for activities of daily living training

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	6	4.6
Rare	11	8.5
Occasional	24	18.5
Frequent	41	31.5
Daily	48	36.9
Total	130	100.0

Table 18. Rationale for use and non-use of activities of daily living training

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	66	57.9	Good clinical outcomes
Secondary Reason for Use	35	35.7	Original training
Primary Reason for Non-Use	11	55.0	Not applicable to clientele
Secondary Reason for Non-Use	a. 2	a. 28.6	a. Insufficient time
	b. 2	b. 28.6	b. Other

Table 19. Frequency of use for strengthening exercises (e.g. active, active-assisted)

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	0	0.0
Rare	0	0.0
Occasional	3	2.3
Frequent	14	10.6
Daily	115	87.1
Total	132	100.0

Table 20. Rationale for use and non-use of strengthening exercises (e.g. active, active-assisted)

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	77	58.8	Good clinical outcomes
Secondary Reason for Use	45	36.6	Original training
Primary Reason for Non-Use	1	100.0	Not applicable to clientele
Secondary Reason for Non-Use	0	0	N/A

Table 21. Frequency of use for neuromuscular relaxation, inhibition, and facilitation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	15	11.5
Rare	30	23.1
Occasional	29	22.3
Frequent	31	23.8
Daily	25	19.2
Total	130	100.0

Table 22. Rationale for use and non-use of neuromuscular relaxation, inhibition, and facilitation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	42	48.3	Good clinical outcomes
Secondary Reason for Use	31	39.7	Good clinical outcomes
Primary Reason for Non-Use	33	73.3	Not applicable to clientele
Secondary Reason for Non-Use	6	37.5	Lack of familiarity

Table 23. Frequency of use for myofascial techniques

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	39	29.3
Rare	16	12.0
Occasional	39	29.3
Frequent	27	20.0
Daily	12	9.0
Total	133	100.0

Table 24. Rationale for use and non-use of myofascial techniques

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	39	49.4	Good clinical outcomes
Secondary Reason for Use	20	30.8	Continuing education courses
Primary Reason for Non-Use	30	54.5	Lack of familiarity
Secondary Reason for Non-Use	5	26.3	Lack of familiarity

Table 25. Frequency of use for cranio-sacral therapy

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	90	68.2
Rare	13	9.8
Occasional	14	10.6
Frequent	10	7.6
Daily	5	3.8
Total	132	100.0

Table 26. Rationale for use and non-use of cranio-sacral therapy

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	a. 12	a. 37.5	a. Good clinical outcomes
	b. 12	b. 37.5	b.Continuing education courses
Secondary Reason for Use	8	30.8	Continuing education courses
Primary Reason for Non-Use	62	62.0	Lack of familiarity
Secondary Reason for Non-Use	11	31.4	Not applicable to clientele

Table 27. Frequency of use for strain-counterstrain

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	70	52.6
Rare	19	14.3
Occasional	20	15.0
Frequent	17	12.8
Daily	7	5.3
Total	133	100.0

Table 28. Rationale for use and non-use of strain-counterstrain

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	22	50.0	Good clinical outcomes
Secondary Reason for Use	11	30.6	Continuing education courses
Primary Reason for Non-Use	57	63.3	Lack of familiarity
Secondary Reason for Non-Use	9	25.6	Lack of familiarity

Table 29. Frequency of use for magnetic therapy

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	125	94.0
Rare	6	4.5
Occasional	2	1.5
Frequent	0	0.0
Daily	0	0.0
Total	133	100.0

Table 30. Rationale for use and non-use of magnetic therapy

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	2	40.0	Discuss with colleague
Secondary Reason for Use	1	100.0	Reading of literature
Primary Reason for Non-Use	57	45.2	Lack of familiarity
Secondary Reason for Non-Use	17	26.2	Lack of familiarity

Table 31 through Table 33 report the highest educational degree earned by the respondents to the respondents and the corresponding opinion for the three statements reflecting clinician's attitude toward research.

Table 31. Degree status versus attitudes toward research: ***Research findings should guide physical therapy practice***

DEGREE		AGREE STRONGLY OR AGREE	DISAGREE STRONGLY OR DISAGREE	TOTAL
Certificate and Bachelor's	N	54	2	56
	% for this degree	96.4	3.6	100.0
	% for this response	48.2	100.0	49.1
	% Total	47.4	1.8	49.1
Master's and Ph.D.	N	58		58
	% for this degree	100.0		100.0
	% for this response	51.8		50.9
	% Total	50.9		50.9
Total	N	112	2	114
	% for this degree	98.2	1.8	100.0
	% for this response	100.0	100.0	100.0
	% Total	98.2	1.8	100.0

Table 32. Degree status versus attitudes toward research: ***I like to do physical therapy research***

DEGREE		AGREE STRONGLY OR AGREE	DISAGREE STRONGLY OR DISAGREE	TOTAL
Certificate and Bachelor's	N	18	21	39
	% for this degree	46.2	53.8	100.0
	% for this response	43.9	44.7	44.3
	% Total	20.5	23.9	44.3
Master's and Ph.D.	N	23	26	49
	% for this degree	46.9	53.1	100.0
	% for this response	56.1	55.3	55.7
	% Total	26.1	29.5	55.7
Total	N	41	47	88
	% for this degree	46.6	53.4	100.0
	% for this response	100.0	100.0	100.0
	% Total	46.6	53.4	100.0

Table 33. Degree status versus attitudes toward research: *I keep informed about physical therapy research findings by reading current literature*

DEGREE		AGREE STRONGLY OR AGREE	DISAGREE STRONGLY OR DISAGREE	TOTAL
Certificate and Bachelor's	N	50	5	55
	% for this degree	90.9	9.1	100.0
	% for this response	46.7	62.5	47.8
	% Total	43.5	4.3	47.8
Master's and Ph.D.	N	57	3	60
	% for this degree	95.0	5.0	100.0%
	% for this response	53.3	37.5	52.2
	% Total	49.6	2.6	52.2
Total	N	107	8	115
	% for this degree	93.0	7.0	100.0
	% for this response	100.0	100.0	100.0
	% Total	93.0	7.0	100.0

Table 34 represents the of levels of significance for Fisher's Exact tests for respondents' degree level versus attitudes toward research found in Table 31 through Table 33. No statistical significance was found for the three tests. Full Fisher's Exact tables are included as Appendix I.

Table 34. Summary of the levels of significance for Fisher's exact tests: Degree versus statements of attitudes toward research.

STATEMENT OF ATTITUDE	FISHER'S EXACT LEVEL OF SIGNIFICANCE
Research findings should guide physical therapy practice.	0.239
I like to do physical therapy research.	1.000
I keep informed about physical therapy findings by reading current literature.	0.477

Table 35 through Table 50 report the highest educational degree earned by the respondents and the corresponding primary reasons for use or non-use of specific physical therapy interventions.

Table 35. Degree status versus aerobic endurance activities - primary reasons for use

DEGREE		GOOD CLINICAL OUTCOMES	ORIGINAL TRAINING	TOTAL
Certificate and Bachelor's	N	30	19	49
	% for this degree	61.2	38.8	100.0
	% for this reason	48.4	65.5	53.8
	% Total	33.0	20.9	53.8
Master's and Ph.D.	N	32	10	42
	% for this degree	76.2	23.8	100.0
	% for this reason	51.6	34.5	46.2
	% Total	35.2	11.0	46.2
Total	N	62	29	91
	% for this degree	68.1	31.9	100.0
	% for this reason	100.0	100.0	100.0
	% Total	68.1	31.9	100.0

Table 36. Degree status versus aerobic endurance activities - primary reasons for non-use

DEGREE		NOT APPLICABLE TO CLIENTELE	INSUFFICIENT TIME	TOTAL
Certificate and Bachelor's	N	8	2	10
	% for this degree	80.0	20.0	100.0
	% for this reason	44.4	66.7	47.6
	% Total	38.1	9.5	47.6
Master's and Ph.D.	N	10	1	11
	% for this degree	90.9	9.1	100.0
	% for this reason	55.6	33.3	52.4
	% Total	47.6	4.8%	52.4
Total	N	18	3	21
	% for this degree	85.7	14.3	100.0
	% for this reason	100.0	100.0	100.0
	% Total	85.7	14.3	100.0

Table 37. Degree status versus postural awareness training - primary reasons for use

DEGREE		GOOD CLINICAL OUTCOMES	ORIGINAL TRAINING	TOTAL
Certificate and Bachelor's	N	34	22	56
	% for this degree	60.7	39.3	100.0
	% for this reason	53.1	51.2	52.3
	% Total	31.8	20.6	52.3
Master's and Ph.D.	N	30	21	51
	% for this degree	58.8	41.2	100.0
	% for this reason	46.9	48.8	47.7
	% Total	28.0	19.6	47.7
Total	N	64	43	107
	% for this degree	59.8	40.2	100.0
	% for this reason	100.0	100.0	100.0
	% Total	59.8	40.2	100.0

Table 38. Degree status versus postural awareness training - primary reasons for non-use

DEGREE		NOT APPLICABLE TO CLIENTELE	POOR CLINICAL OUTCOMES	TOTAL
Certificate and Bachelor's	N	1		1
	% for this degree	100.0	N=0	100.0
	% for this reason	50.0		33.3
	% Total	33.3		33.3
Master's and Ph.D.	N	1	1	2
	% for this degree	50.0	50.0	100.0
	% for this reason	50.0	100.0	66.7
	% Total	33.3	33.3	66.7
Total	N	2	1	3
	% for this degree	66.7	33.3	100.0
	% for this reason	100.0	100.0	100.0
	% Total	66.7	33.3	100.0

Table 39. Degree status versus strengthening exercises - primary reasons for use

DEGREE		GOOD CLINICAL OUTCOMES	ORIGINAL TRAINING	TOTAL
Certificate and Bachelor's	N	36	24	60
	% for this degree	60.0	40.0	100.0
	% for this reason	47.4	51.1	48.8
	% Total	29.3	19.5	48.8
Master's and Ph.D.	N	40	23	63
	% for this degree	63.5	36.5	100.0
	% for this reason	52.6	48.9	51.2
	% Total	32.5	18.7	51.2
Total	N	76	47	123
	% for this degree	61.8	38.2	100.0
	% for this reason	100.0	100.0	100.0
	% Total	61.8	38.2	100.0

Table 40. Degree status versus magnetic therapy - primary reasons for non-use

DEGREE		LACK OF FAMILIARITY	LACK OF SCIENTIFIC SUPPORT	NOT AVAILABLE AT FACILITY	NOT APPLICABLE TO CLIENTELE	TOTAL
Certificate and Bachelor's	N	30	10	11	11	62
	% for this degree	48.4	16.1	17.7	17.7	100.0
	% for this reason	52.6	43.5	47.8	57.9	50.8
	% Total	24.6	8.2	9.0	9.0	50.8
Master's and Ph.D.	N	27	13	12	8	60
	% for this degree	45.0	21.7	20.0	13.3	100.0
	% for this reason	47.4	56.5	52.2	42.1	49.2
	% Total	22.1	10.7	9.8	6.6	49.2
Total	N	57	23	23	19	122
	% for this degree	46.7	18.9	18.9	15.6	100.0
	% for this reason	100.0	100.0	100.0	100.0	100.0
	% Total	46.7	18.9	18.9	15.6	100.0

Table 41. Degree status versus activities of daily living training – primary reasons for use

DEGREE		GOOD CLINICAL OUTCOMES	ORIGINAL TRAINING	TOTAL
Certificate and Bachelor's	N	31	18	49
	% for this degree	63.3	36.7	100.0
	% for this reason	47.7	54.5	50.0
	% Total	31.6	18.4	50.0
Master's And Ph.D.	N	34	15	49
	% for this degree	69.4	30.6	100.0
	% for this reason	52.3	45.5	50.0
	% Total	34.7	15.3	50.0
Total	N	65	33	98
	% for this degree	66.3	33.7	100.0
	% for this reason	100.0	100.0	100.0
	% Total	66.3	33.7	100.0

Table 42. Degree status versus activities of daily living training - primary reasons for non-use

DEGREE		NOT APPLICABLE TO CLIENTELE	OTHER	TOTAL
Certificate	N	5	1	6
+and	% for this degree	83.3	16.7	100.0
Bachelor's	% for this reason	45.5	33.3	42.9
	% Total	35.7	7.1	42.9
Master's	N	6	2	8
And	% for this degree	75.0	25.0	100.0
Ph.D.	% for this reason	54.5	66.7	57.1
	% Total	42.9	14.3	57.1
Total	N	11	3	14
	% for this degree	78.6	21.4	100.0
	% for this reason	100.0	100.0	100.0
	% Total	78.6	21.4	100.0

Table 43. Degree status versus neuromuscular relaxation, inhibition, and facilitation - primary reasons for use

DEGREE		GOOD CLINICAL OUTCOMES	ORIGINAL TRAINING	CONTINUING EDUCATION COURSES	TOTAL
Certificate	N	22	11	10	43
and	% for this degree	51.2	25.6	23.3	100.0
Bachelor's	% for this reason	53.7	47.8	58.8	53.1
	% Total	27.2	13.6	12.3	53.1
Master's	N	19	12	7	38
And	% for this degree	50.0	31.6	18.4	100.0
Ph.D.	% for this reason	46.3	52.2	41.2	46.9
	% Total	23.5	14.8	8.6	46.9
Total	N	41	23	17	81
	% for this degree	50.6	28.4	21.0	100.0
	% for this reason	100.0	100.0	100.0	100.0
	% Total	50.6	28.4	21.0	100.0

Table 44. Degree status versus neuromuscular relaxation, inhibition, and facilitation - primary reasons for non-use

DEGREE		NOT APPLICABLE TO CLIENTELE	LACK OF FAMILIARITY	TOTAL
Certificate	N	12	4	16
and	% for this degree	75.0	25.0	100.0
Bachelor's	% for this reason	36.4	50.0	39.0
	% Total	29.3	9.8	39.0
Master's	N	21	4	25
And	% for this degree	84.0	16.0	100.0
Ph.D.	% for this reason	63.6	50.0	61.0
	% Total	51.2	9.8	61.0
Total	N	33	8	41
	% for this degree	80.5	19.5	100.0
	% for this reason	100.0	100.0	100.0
	% Total	80.5	19.5	100.0

Table 45. Degree status versus myofascial techniques - primary reasons for use

DEGREE		GOOD CLINICAL OUTCOMES	CONTINUING EDUCATION COURSES	TOTAL
Certificate	N	17	14	31
and	% for this degree	54.8	45.2	100.0
Bachelor's	% for this reason	44.7	60.9	50.8
	% Total	27.9	23.0	50.8
Master's	N	21	9	30
And	% for this degree	70.0	30.0	100.0
Ph.D.	% for this reason	55.3	39.1	49.2
	% Total	34.4	14.8	49.2
Total	N	38	23	61
	% for this degree	62.3	37.7	100.0
	% for this reason	100.0	100.0	100.0
	% Total	62.3	37.7	100.0

Table 46. Degree status versus myofascial techniques - primary reasons for non-use

DEGREE		LACK OF FAMILIARITY	NOT APPLICABLE TO CLIENTELE	TOTAL
Certificate and Bachelor's	N	15	5	20
	% for this degree	75.0	25.0	100.0
	% for this reason	50.0	35.7	45.5
	% Total	34.1	11.4	45.5
Master's And Ph.D.	N	15	9	24
	% for this degree	62.5	37.5	100.0
	% for this reason	50.0	64.3	54.5
	% Total	34.1	20.5	54.5
Total	N	30	14	44
	% for this degree	68.2	31.8	100.0
	% for this reason	100.0	100.0	100.0
	% Total	68.2	31.8	100.0

Table 47. Degree status versus cranio-sacral therapy - primary reasons for use

DEGREE		CONTINUING EDUCATION COURSES	GOOD CLINICAL OUTCOMES	TOTAL
Certificate and Bachelor's	N	9	5	14
	% for this degree	64.3	35.7	100.0
	% for this reason	75.0	45.5	60.9
	% Total	39.1	21.7	60.9
Master's And Ph.D.	N	3	6	9
	% for this degree	33.3	66.7	100.0
	% for this reason	25.0	54.5	39.1
	% Total	13.0	26.1	39.1
Total	N	12	11	23
	% for this degree	52.2	47.8	100.0
	% for this reason	100.0	100.0	100.0
	% Total	52.2	47.8	100.0

Table 48. Degree status versus cranio-sacral therapy - primary reasons for non-use

DEGREE		LACK OF FAMILIARITY	NOT APPLICABLE TO CLIENTELE	TOTAL
Certificate and Bachelor's	N	32	8	40
	% for this degree	80.0	20.0	100.0
	% for this reason	51.6	42.1	49.4
	% Total	39.5	9.9	49.4
Master's And Ph.D.	N	30	11	41
	% for this degree	73.2	26.8	100.0
	% for this reason	48.4	57.9	50.6
	% Total	37.0	13.6	50.6
Total	N	62	19	81
	% for this degree	76.5	23.5	100.0
	% for this reason	100.0	100.0	100.0
	% Total	76.5	23.5	100.0

Table 49. Degree status versus strain-counterstrain - primary reasons for use

DEGREE		GOOD CLINICAL OUTCOMES	CONTINUING EDUCATION COURSES	TOTAL
Certificate and Bachelor's	N	9	11	20
	% for this degree	45.0	55.0	100.0
	% for this reason	42.9	68.8	54.1
	% Total	24.3	29.7	54.1
Master's And Ph.D.	N	12	5	17
	% for this degree	70.6	29.4	100.0
	% for this reason	57.1	31.3	45.9
	% Total	32.4	13.5	45.9
Total	N	21	16	37
	% for this degree	56.8	43.2	100.0
	% for this reason	100.0	100.0	100.0
	% Total	56.8	43.2	100.0

Table 50. Degree status versus strain-counterstrain - primary reasons for non-use

DEGREE		LACK OF FAMILIARITY	NOT APPLICABLE TO CLIENTELE	TOTAL
Certificate and Bachelor's	N	32	9	41
	% for this degree	78.0	22.0	100.0
	% for this reason	56.1	37.5	50.6
	% Total	39.5	11.1	50.6
Master's And Ph.D.	N	25	15	40
	% for this degree	62.5	37.5	100.0
	% for this reason	43.9	62.5	49.4
	% Total	30.9	18.5	49.4
Total	N	57	24	81
	% for this degree	70.4	29.6	100.0
	% for this reason	100.0	100.0	100.0
	% Total	70.4	29.6	100.0

Table 51 through Table 53 represent the levels of significance for Fisher's Exact test and Pearson's Chi-Square for respondents' degree level versus primary reasons for use and non-use of specific physical therapy interventions found in Table 35 through Table 50. No statistical significance was found. Full Pearson Chi-Square and Fisher's Exact tables are included as Appendix H.

Table 51. Summary of the levels of significance for Fisher's exact tests: Degree versus primary reason for use of specific physical therapy interventions.

PHYSICAL THERAPY INTERVENTION	FISHER'S EXACT LEVEL OF SIGNIFICANCE
Aerobic endurance activities	0.176
Postural awareness training	0.847
Strengthening exercises	0.714
Activities of daily living training	0.669
Myofascial release	0.293
Cranio-sacral therapy	0.214
Strain-counterstrain	0.185

Table 52. Summary of the levels of significance for Fisher's exact tests: Degree versus primary reason for nonuse of specific physical therapy interventions.

PHYSICAL THERAPY INTERVENTION	FISHER'S EXACT LEVEL OF SIGNIFICANCE
Aerobic endurance activities	0.586
Postural awareness training	1.000
Activities of daily living training	1.000
Neuromuscular relaxation, inhibition and facilitation	0.689
Myofascial release	0.519
Cranio-sacral therapy	0.601
Strain-counterstrain	0.149

Table 53. Summary of the levels of significance for Pearson's Chi-Square tests: Degree versus primary reason for use or nonuse of physical therapy interventions.

PHYSICAL THERAPY INTERVENTION	PEARSON'S CHI SQUARE LEVEL OF SIGNIFICANCE
Primary reason for use of neuromuscular relaxation, inhibition and facilitation.	0.784
Primary reason for nonuse of magnetic therapy	0.793

CHAPTER 5
DISCUSSION AND IMPLICATIONS

Discussion of findings/Applications to clinical practice

The purposes of this study were to answer the following research questions:

1) What are clinicians' general attitudes toward research?

2) What is the extent of clinicians' personal research involvement and scholarly pursuit?

3) What is the frequency of use for specific physical therapy interventions?

4) What are clinicians' primary and secondary reasons for using or not using physical therapy interventions?

5) Does a relationship exist between degree status and attitudes toward research and primary reason for using or not using an intervention?

In essence, the study examines the extent to which research based practice (RBP) is being employed by clinicians. RBP is defined as the integration of the best external evidence with individual clinical expertise (Sackett, 1997).

Attitudes toward research

One method of measuring the extent to which RBP is being employed by clinicians is to examine their general attitudes toward research. The present study's results indicate that 88.9% of respondents either strongly agreed or agreed with the statement: "*research findings should guide physical therapy practice.*" In addition, 91.6% strongly agreed or agreed that the use of clinical physical therapy research findings will improve the quality of physical therapy care. The previous findings support the implementation of the *Guide to Physical Therapy Practice* (APTA, 1997) within the clinical setting. The *Guide to Physical Therapy Practice* is a useful tool for the planning

of physical therapy interventions by research minded clinicians. However, only 31.0% of clinicians surveyed strongly agreed or agreed with the statement: "*I like to do physical therapy research.*" The contrast of results suggests that, although the sample felt strongly that research findings should guide physical therapy practice, only a relatively small number (n=41) *like* to participate in physical therapy research.

Currently, there is a small body of research literature on which to base or guide practice. Changing clinicians' attitudes is necessary, so that more research is generated and published within the profession. Perhaps a limiting factor, as evidenced by the present study, was the strong support of the following statement: "*I think there is insufficient time/administrative support for research.*" Of the respondents, 70.4% strongly agreed or agreed with the previous statement. Despite the fact that a majority of the respondents felt there was insufficient time/administrative support for research, 82.0% reported keeping informed about physical therapy findings by reading current literature published within the previous five years. The results demonstrate that clinicians report commitment to RBP in spite of obstacles that they may encounter.

Research Involvement and Scholarly Pursuits

To determine the extent of clinicians' personal research involvement and scholarly pursuits, respondents were asked to select all time periods that described their involvement in researh activities including: "*reading and analyzing journal articles,*" "*presentation of case studies,*" "*collecting data for a research study,*" "*submitting findings for presentation,*" "*submitting findings for publication,*" and "*changing a practice/protocol based on published research.*" Up to three time periods (past, present, future) could be selected for each research activity. For coding purposes, responses that

had more than one time period selected were combined into one category. That category could have consisted of a number of combinations of time periods in which the respondent indicated being involved in research activities, i.e. all three time periods, past & present, present & future, past & future. Because respondents could select more than one time period, specific conclusions regarding respondents' extent of research involvement and scholarly pursuits were difficult to generate.

Relative to the respondents' attitudes toward research is the extent of clinicians' personal research involvement and scholarly pursuit. As evidenced in the earlier discussion of attitudes toward research, strong support of the need for clinical based research exists. Respondents indicated that in the past (more than six months before completing the questionnaire) 8.3% chose the single answer "*reading and analyzing journal articles.*" Fifty percent chose two or more answers, hence, as many as 58% may have chosen "*reading and analyzing journal articles.*" Data indicate that 18% had submitted findings for publication and up to an additional 48% may have. Between 13% and 47% of respondents changed a practice or protocol based on published research. This finding is greater than the 15.9% of the nurses surveyed by Rizzuto et. al. (1994) who indicated changing a practice or protocol based on research. Between 30% and 47% of respondents presented case studies, between 34% and 40% had submitted findings for presentation, and between 44% and 52% had collected data for a research study.

These findings suggest that the level of research involvement among physical therapists is variable. The data indicate that a relatively low percentage of clinicians are involved in research if only the percentage of one time period is examined. However, respondents who chose two or more time periods make the percentage much higher and

indicate a greater extent of research involvement. Therefore, these findings do not support or refute the lack of research involvement among physical therapists that has been established through previous research studies (Bohannon and LeVeau, 1986, Riddoch and Lennon, 1991, and Turner and Whitfield, 1997). The results of the present study did demonstrate that respondents were more engaged in research activities in the past than currently (now or in the six months prior to completing the questionnaire). Only two of the six research activities, "*reading and analyzing journal articles*" and "*changing a practice/protocol based on current findings,*" provided in the questionnaire were reported by respondents to have a greater current than past level of involvement in research. These two research-related activities are readily accessible and less time consuming for clinicians compared to activities such as preparing for publication and presentation.

Results of this study indicate that currently, or in the six months prior to completing the questionnaire, between 1.5% and 6% of respondents had submitted findings for publication, between 3.0% and 6% had submitted findings for presentation, between 4.5% and 13% of respondents had collected data for a research study, between 15.8% and 50% had changed a practice/protocol based on published research findings, between 6.8% and 24% had presented case studies, and between 27.1% and 77% had read and analyzed journal research articles. Respondents' greater level of past involvement than current involvement could be attributed to research activities and scholarly pursuits that are often requirements for graduation from accredited physical therapy programs. After graduation, research involvement and scholarly pursuits have declined as evidenced by the low percentage of clinicians currently engaged in research.

There is no definite way of knowing whether research involvement declined immediately after graduation or at a later date. However, the results implicate that respondents were more engaged in research activities in the past than currently, even though both time periods reveal a lack of research involvement among respondents.

Current involvement in research activities and scholarly pursuits may predict future level of involvement (within the next year of completing the questionnaire). Respondents indicated that between 3.0% and 11% plan to participate in collecting data for a research study, between 3.8% and 21% plan future participation in the presentation of case studies, between 6.0% and 12% plan to submit findings for presentation, and between 9.0% and 13% plan to submit findings for publication. The results indicate that a small percentage of respondents are currently contributing or plan on contributing to the limited body of physical therapy literature, providing yet another barrier to RBP.

Physical Therapy Interventions: Frequency of Use and Rationale

This study assessed the frequency of use and rationale for using or not using physical therapy interventions. For discussion purposes, the authors chose to examine the rationale reported for using or not using widely accepted interventions as well as techniques that were not included in the *Guide to Physical Therapy Practice* (APTA, 1997). Examining the respondents' rationale indicates the extent to which RBP, as defined earlier in the discussion, is being employed.

As expected, the highest percentage of use on a frequent (weekly or daily) basis was found in the following physical therapy interventions: strengthening exercises (97.9%), postural awareness training (84.5%), aerobic endurance activities (71.8%), and activities of daily living training (68.4%). Over 50% of the respondents selected *"good*

clinical outcomes" as their primary reason for using the above stated interventions. *"Taught in original training"* was the second most frequently reported primary reason for use. *"Not applicable to clientele"* was the most frequently reported primary reason for non-use.

The modalities with the highest frequency of use were superficial thermal modalities (59.7%), deep thermal modalities (49.7%), and cryotherapy (49.2%). Again the most frequently reported reason for using each of these modalities was *"good clinical outcomes."* The highest reported secondary reason for use was *"taught in original training."* The most common primary reason for not using all of the above modalities was *"not applicable to clientele."* This last finding is logical considering that approximately 50% of the sample was employed in settings where the primary population was not orthopedic in nature. The rationale given for using or not using modalities and widely accepted physical therapy interventions was predictable because these interventions are included within most physical therapy curricula.

The manual techniques with the highest frequency of use were soft tissue mobilizations and manipulations (59.7%), joint mobilizations and manipulations (58.6%), and connective tissue massage (47.0%). Each manual technique was primarily used because of *"good clinical outcomes."* Most commonly, *"continuing education courses"* were reported as the secondary reason for using connective tissue massage and soft tissue massage and manipulations. *"Good clinical outcomes"* and *"taught in original training"* were the most commonly reported secondary reasons for using joint mobilizations and manipulations. The primary reason for not using each intervention was *"not applicable to clientele."* Many manual techniques are not included in the standard physical therapy

curriculum, which may contribute to the fact that *"continuing education courses"* were reported as the most common secondary reason for using connective tissue massage and soft tissue mobilization and manipulation.

The questionnaire also included non-traditional or alternative interventions that were not included in the *Guide to Physical Therapy Practice* (1997). The interventions included were: myofascial release, craniosacral therapy, strain-counterstrain, magnetic therapy, hippotherapy, and visceral manipulation. Perhaps the most effective way to analyze whether RBP is being employed is to closely examine the reasons for using or not using these interventions. The APTA does not recognize the preceding interventions in the *Guide to Physical Therapy Practice* (1997). Likewise, the interventions are not included in most physical therapy programs. As a result, *"taught in original training"* is not expected to be cited as a common reason for use.

Magnetic therapy, hippotherapy, and visceral manipulation were reported to be never or rarely used by over 96% of all clinicians surveyed. Clinicians overwhelmingly chose *"lack of familiarity,"* for their primary reason for not using the interventions. *"Lack of scientific support"* was selected by only 10.1% of the respondents as a primary reason for not using the intervention. The findings may indicate that clinicians are not aware of the scientific support, or lack thereof, for the intervention or that a limited body of research exists that supports or refutes the intervention. In the absence of familiarity and evidence in the literature supporting magnetic therapy, hippotherapy, and visceral manipulation, physical therapists overwhelmingly are declining to use these interventions. These results suggest that physical therapists are not employing those techniques which are not substantially legitimized by scientific research.

The less obscure alternative interventions, including myofascial release, strain-counterstrain, and craniosacral therapy, had a slightly higher frequency of use on a daily or frequent basis, 29.0%, 18.1%, and 11.4% respectively. Respondents selected *"good clinical outcomes"* for the primary reason for use for both myofascial release and strain-counterstrain. The highest reported rationale for using craniosacral therapy as an intervention was evenly distributed between *"good clinical outcomes"* and *"continuing education courses."* The highest reported secondary reason for use for each of these interventions was *"continuing education courses."*

Such findings suggest that physical therapists are employing these interventions based primarily on continuing education courses that may or may not be research based. A particular continuing education course may introduce interventions which are based on solid scientific evidence and supported with good clinical outcomes. In this case, "*continuing education courses*," as a rationale for using an intervention, would be an example of RBP. Conversely, another continuing education course may be merely based on the opinions of "experts" in the area, perhaps based on anecdotal evidence without quality research to support, or more importantly, refute the intervention. In this instance, "*continuing education courses*," as a rationale for using an intervention, would not be an example of RBP.

The most commonly reported primary reason for not using myofascial release, strain-counterstrain, and craniosacral therapy, was *"lack of familiarity."* The rationale "*lack of familiarity*" can be an example of RBP as discussed earlier in the text. Those who do not use the interventions do not cite *"lack of scientific support"* or *"reading of literature"* for the primary reason for non-use. This could be due to the limited number of

well designed studies that are critical of the alternative techniques listed, therefore clinicians may be less likely to choose "*reading of the literature*" or " *lack of scientific support*" as a reason for non-use. Thus, "*lack of familiarity*" may be the most appropriate rationale for not using an intervention by research based practitioners.

Reasons for use

For all the interventions listed in the questionnaire, *"good clinical outcomes"* and *"taught in original training,"* were the most common primary and secondary reasons for use. "*Reading of the literature*" was not cited as a primary reason for using any of the physical therapy interventions. Only five of the forty-four physical therapy interventions, aerobic endurance activities, biofeedback, hippotherapy, iontophoresis, and aquatic exercises, generated "*reading of the literature*" as the most common secondary reason for use. The results mirror the Turner and Whitfield (1997) cross-national findings where 90% of respondents reported "*prior experience of technique*" and "*taught in original training*" as reasons for performing the techniques. Turner and Whitfield also reported that less than one-third of respondents listed "*reading of research articles*" or "*reading of a journal review article.*"

"*Good clinical outcomes*" as a rationale for treatment, combined with a secondary reason from research or sources based on research (i.e., original training, continuing education), would imply that physical therapists are implementing RBP, as defined in this study, in their clinical decision making. However, due to the subjective nature of the definition of "*good clinical outcomes*" it is difficult to draw solid conclusions about RBP. The definition of "*good clinical outcomes*" is unique to each individual clinician. The rationale, "*good clinical outcomes,*" could be an example of

RBP if the clinician is systematically measuring both subjective and objective outcomes and scientifically interpreting the effectiveness of the intervention employed based on those outcomes. However, if the clinician uses the rationale *"good clinicial outcomes,"* based on the mere observation that the intervention seems to be effective without supporting outcome measures, this would not be an example of RBP.

"Taught in original training" as a reason for use could indicate that interventions are research based if the respondent has graduated recently from a physical therapy program that integrates research based interventions into the curriculum. However, the mean number of years of employment in this study was 11.8 years. The scientific literature could disprove the use of interventions found acceptable a decade ago. Hence, *"taught in original training"* may not be an example of RBP by an individual physical therapist who is still using an intervention that is no longer supported or refuted by scientific research.

Reasons for non-use

"Not applicable to clientele," "lack of familiarity," and *"not available at facility"* were the most commonly reported reasons for not using an intervention. For each of the 44 interventions, *"reading of literature"* or *"lack of scientific support"* was never reported as the most common primary and secondary reason for not using an intervention. As reported earlier in the discussion, 91.6% of respondents agreed with the statement that research findings should guide physical therapy practice. A small number of respondents indicated reading of the literature as a reason for use or non-use, although over 85.0% report keeping informed about phyiscal therapy findings by reading current literature.

"Not applicable to clientele" and *"not available at facility"* are justifiable reasons for not using a treatment intervention. The rationale *"lack of familiarity,"* however, as applied to RBP, is more difficult to draw conclusions from. Clinicians may not be familiar with techniques because an inadequate body of literature supporting or refuting the intervention exists. As stated previously in the discussion, selecting *"lack of familiarity"* does not definitively implicate whether or not the clinician is research based.

Degree Status versus Attitudes Toward Research and Primary Reason for Using or Not Using an Intervention

The researchers expected a significant relationship to be found between degree status and clinicians' attitudes toward research, secondary to increased exposure to research involvement in graduate or doctoral level programs. However, no statistically significant relationship was found. Turner and Whitfield (1997) found a significant association between the use of review articles as a rationale for treatment and degree status. In the present study no significant relationship was found between respondents' degree status and the primary reason for using or not using specific physical therapy interventions. Despite varying levels of exposure to research activities in certificate and baccalaureate programs compared to masters and doctorate programs, results suggest that the varying levels of formal education do not significantly influence clinician's attitudes toward research and the primary reason for using or not using an intervention.

Limitations

Identifying potential limitations of the present study is important when analyzing the findings. The sample size is relatively small, geographically limited to the Michigan area, and each respondent is a member of the MPTA. Clinicians who are established

members of the MPTA receive the nationally published monthly research journal, *Physical Therapy*. Therefore, these individuals have more accessibility to research findings which heightens professional awareness. *Consumer and Industry Services* reported that there are 5,853 licensed physical therapists registered in the state of Michigan. Of those 5,853 physical therapists only 1,650 are members of the MPTA. The results of this study report on 133 of those 1,650 members. The results of this study suggest that while RBP is being employed, to an extent, within the physical therapy profession, however, there is much room for improvement. Chances are, clinicians who are not members of the MPTA are employing RBP to an even lesser extent than those surveyed in the present study. This conclusion may be true because these clinicians have decreased accessibility to current literature and demonstrate a lack of commitment to the professional organization by not being members of the MPTA.

Over 50% of the respondents were employed in an outpatient setting. Therefore, the sample may not be representative of physical therapists employed in environments other than outpatient settings. In addition, reported behaviors in a questionnaire may not mirror actual behaviors exhibited by respondents. The validity of this study depends on the respondents honestly reporting their true behaviors, not being influenced by ideal perceptions of clinical behavior. As mentioned earlier, the subjective nature of the definitions of *"good clinical outcomes"* and *"lack of familiarity"* are limiting factors when drawing conclusions about RBP. Due to these limiting factors, the findings of this study may not be generalizable to all populations of physical therapy settings in which physical therapy is practiced. Readers should keep these limitations in mind when interpreting the results.

Suggestions for future research/modifications

A limited amount of literature exists that examines the extent to which RBP is employed within the physical therapy profession. The present study analyzed the amount of RBP being employed by a small sample of the MPTA. Future research studies would benefit from focusing on a larger and more diverse population of clinicians. Comparing findings from the present study to findings which report results for clinicians who are not members of the national or state physical therapy organization, may provide a more accurate representation of the extent to which RBP is being employed. Qualitative studies that conduct personal interviews with clinicians examining attitudes toward research, personal research involvement, and primary and secondary reasons for using or not using specific physical therapy interventions, would allow clinicians to justify their rationale for treatment and limit some of the subjectivity. Finally, an assessment of clinicians' level and amount of journal readership would provide another finding suggestive of clinicians' current level of involvement in RBP.

Conclusion/Summary

The purposes of this study were to assess MPTA members' general attitudes toward research, personal research involvement, and reasons for using or not using specific physical therapy interventions through five research questions mentioned earlier in this text. Literature suggests that the outcomes of clinical research are the most effective and widely accepted methods of choosing treatment interventions, however literature also suggests that clinical research is not guiding physical therapists in their rationale for use of treatment interventions (Bohannon and Leveau, 1986, Riddoch and Lennon, 1991, and Turner and Whitfield, 1997). Therefore, the implementation of RBP

is viewed among leading researchers as vital to the future of the physical therapy profession.

The first step toward the implementation of RBP is recognizing the importance of applying research findings to establish or maintain validity of physical therapy interventions. The first research question addressed clinicians' general attitudes toward research. The results of this study suggested that physical therapists have a positive attitude toward the implementation of RBP. The respondents in the present study overwhelmingly supported (~90%) that clinical research *should* guide physical therapy practice and that the use of clinical research findings *will improve* the quality of physical therapy care. The results imply that physical therapists have taken a crucial step toward the implementation of RBP.

The second research question was, "*What is the extent of clinicians' personal research involvement and scholarly pursuit*?" Trends generated among the results revealed that there are a limited number of clinicians who are participating in research activities and scholarly pursuits. The greatest level of research involvement consisted of "*reading and analyzing journal articles*" and "*changing a practice/protocol based on published research,*" with respondents selecting two or more time periods (past, present, and future). Due to the fact that a high percentage of respondents selected two or more time periods, definite conclusions regarding the clinicians' extent of involvement in these activities was difficult to measure.

The third research question investigated the frequency of use for specific physical therapy interventions. The most frequently used interventions were strengthening exercises, postural awareness training, aerobic endurance activities, and activities of daily

living. These interventions are used in a wide variety of settings in which physical therapy is employed and are effective for clients with a multitude of diagnoses. The modalities and manual techniques were used on a frequent basis by approximately half of the respondents. These results are logical since approximately 50% of respondents were employed in outpatient settings. Ninety-six percent of the clinicians surveyed reported never or rarely using non-traditional or alternative techniques such as magnetic therapy, hippotherapy, and visceral manipulation. More widely known and accepted alternative techniques had a slightly higher frequency of use on a daily or frequent basis. These techniques included myofascial release (29%), strain-counterstrain (18.1%), and craniosacral therapy (11.4%).

The fourth research question addressed clinicians' primary and secondary reasons for using or not using specific physical therapy interventions. *"Taught in original training"* and *"good clinical outcomes"* were the highest reported primary reasons for using a specific intervention. As discussed earlier in the text, both of these rationale can be examples of RBP. *"Taught in original training"* as a reason for use could indicate that interventions are research based if the respondent has recently graduated from a physical therapy program that integrates research based interventions into the curriculum. However, this rationale may not be an example of RBP if the respondent is using an intervention that was *"taught in original training"* which is no longer supported by scientific research.

The definition of *"good clinical outcomes"* is unique to each individual clinician. If the clinician systematically measures both the subjective and objective outcomes and scientifically interprets the effectiveness of the intervention employed based on those

outcomes, then the rationale, *"good clinical outcomes"* would be an example of RBP. However, if the clinician uses the rationale *"good clinical outcomes,"* based on the mere observation that the intervention seems to be effective without supporting outcome measures, this would not be an example of RBP.

According to the definition of RBP, defined by Sackett (1997), to conclude that RBP is being employed, *"good clinical outcomes,"* and *"reading of literature,"* would be expected as the highest reported reasons for use. However, the authors of the present study feel that this definition may be too limited in scope to apply directly. For example, when describing rationale for using an alternative intervention where there is a lack of scientific literature supporting or refuting the intervention, *"reading of literature"* would not be appropriate as a rationale. The fact that *"reading of literature"* was not chosen as a reason for using or not using an intervention, does not necessarily conclude that the clinician is not research based.

The fifth research question of the present study investigated the relationship between degree status and attitudes toward research and the primary reason for using or not using an intervention. The present study found no significant relationship between degree status and clinician's attitudes toward research and the primary reason that clinicians report for using or not using an intervention. This finding represents that varying levels of education did not effect a respondent's attitude toward research or reason for using or not using a treatment intervention.

If RBP is not employed by clinicians, then long term consequences are inevitable. As Sackett (1997) described, clinicians must keep up to date with current advances in research or else optimal health care will not be provided. This will be evidenced by a

decrease in functional outcomes of clients. Consequently, the perception and importance of physical therapists' role in the health care system will be diminished. Ultimately, these factors could result in future difficulty obtaining reimbursement for services rendered. Therefore, physical therapists must employ RBP.

The extent to which RBP is being implemented by physical therapists is difficult to conclude. However, the results of this study provide evidence that RBP is, to an extent, being employed by clinicians. Physical therapists have a positive attitude toward the implementation of RBP, primarily using interventions because of *"good clinical outcomes"* and *"taught in original training,"* and refusing to use interventions that are unfamiliar, by reporting *"lack of familiarity."* As it becomes increasingly difficult to receive reimbursement for physical therapy interventions, the need to employ RBP becomes even more crucial to the future of the profession. Research based practice is not impossible to achieve. The results of this study, as well as the recent publishing of the *Guide to Physical Therapy Practice,* indicate that physical therapists are taking the correct steps toward implementing RBP.

REFERENCES

Ahmed, L.B., Harvey, G., Kitson, A., Seers, K., and Thompson, D.R. (1996). From research to practice: One organizational model for promoting research-based practice. Journal of Advanced Nursing, 23, 430-440.

Barnsteiner, J.H. (1996). Research based practice. Nursing Administration Quarterly, 20 (4), 52-58.

Bohannon, R.W., LeVeau, B.F. (1986). Clinicians' use of research findings. Physical Therapy, 66, 45-50.

Bostrom, A.C., MacDougale, J., Malnight, M., & Hargis, D. (1989). Staff nurses' attitudes toward nursing research: A descriptive survey. Journal of Advanced Nursing, 14, 915-922.

Campbell, E.D.R. (1970). The purpose of research. Physiotherapy, 6, 480-481.

Chaska, N. (1978). Not crystal clear. In the nursing profession: View through the mist. New York: McGraw-Hill, pp 407-427.

Chenitz, W. C., & Sater, B. (1986). Nurses' attitudes toward research and the clinical setting as a research environment. Journal of Nursing Administration, 16 19-37.

Erhenfeld, M. & Eckerling, S. (1991). Perceptions and attitudes of registered nurses to research: A comparison with a previous study. Journal of Advanced Nursing, 16, 224-232.

Greenhelgh, T. (1996). Is my practice evidence-based? British Medical Journal, 313(7063), 957-958.

Harrison, M.A (1996). Evidence-based practice-practice-based evidence. Physiotherapy Theory and Practice, 12 (3), 129-130.

Heater, B., Becker, A., and Olson, R. (1988). Nursing interventions and patient outcomes: A meta-analysis of studies. Nuring Research, 37 (5), 3030-307.

Hightower, A.B. (1973). Continuing Education in Physical Therapy. Physical Therapy, 53 (1), 16-24.

Hislop, H. (1975). The not-so-impossible dream. Physical Therapy, 55 (10), 1069-1080.

Ketefian, S. (1975). Application of selected nursing research findings into nursing practice: A pilot study. Nursing Research, 24, 89-92.

Kirchoff, K.T. (1982). A diffusion survey of coronary precautions. Nursing Research, 31 (4), 196-201.

Michels, E. (1982). Evaluation and research in physical therapy. Physical Therapy 62, 828-834.

Miller, JR. & Messenger, SR. (1978). Obstacles to applying nursing research findings. American Journal of Nursing, 78, 632-634.

Pearcey, P.A. (1995). Achieving research-based nursing practice. Journal of Advanced Nursing, 22, 33-39.

Piper, M. (1991). Physiotherapy and research-future visions. Physiotherapy Canada, 43, 7-10.

Portney, L.G., and Watkins, M.P. (1993). Foundations of clinical research: Applications to practice. In Mehalik, C.L. and Davis, K.W. (Eds.), Descriptive Statistics and Measures of Variability (pp. 315-333). Appleton & Lange.

Reynolds, J.P. (Ed.). (1997). Guide to Physical Therapist Practice. Journal of Physical Therapy, 77 (11).

Riddoch, J. & Lennon, S. (1991). Evaluation of practice: The single case approach. Physiotherapy Theory and Practice, 7, 3-11.

Rizzuto, C., Bostrom, J., Suter, W.N., & Chenitz, W.C. (1994). Predictors of nurses' involvement in research activities. Western Journal of Nursing, 16 (2), 193-204.

Robertson, V.J. (1995). A quantitative analysis of research in physical therapy. Physical Therapy, 75 (4), 322-327.

Rothstein, J.M. (1996). Outcomes and survival. Physical therapy, 76 (2), 126-127.

Sackett, D.L., Richardson, W.S., Rosenburg, W., and Haynes, R.B. (1997). Evidence-based medicine: How to practice and teach EBM. New York: Churchill Livingstone, pp. 2-16.

Simpson, B. (1996). Evidence-based nursing practice: The state of the art. Canadian nurse, 92 (10), 22-25.

Stange, K.C. (1996). Primary care research: Barriers and opportunities. The Journal of Family Practice, 42 (2), 192-197.

Tierney, A. & Taylor, J. (1991). Research in practice: An experiment in researcher practitioner collaboration. Journal of Advanced Nursing, 16 (5), 506-510.

Turner, P. & Whitfield, T.W.A. (1996). A multivariate analysis of physiotherapy clinicians' journal readership. Physiotherapy Theory and Practice, 12, 221-230.

Turner, P., & Whitfield, T.W.A. (1997). Physiotherapists' use of EBP: A cross-national study. Physiotherapy Research International, 2(1), 17-29.

APPENDIX A

Questionnaire

Demographic Data

Please answer each item in the space to the left of the question by inserting the appropriate number.

_____ 1. How many years have you been employed as a licensed PT?

_____ 2. Which one of the following best describes the type of setting in which you are employed?
1 = acute care 4 = outpatient clinic
2 = home health 5 = long-term extended care
3 = inpatient rehab 6 = other, please specify_____

_____ 3. Are you certified as a clinical specialist by the APTA?
1 = yes 2 = no

_____ 4. What is your highest educational degree received from an academic institution?
1 = Certificate 4 = Doctoral
2 = Bachelor's 5 = other, please specify_____
3 = Master's

_____ 5. Which one of the following best describes the primary patient population you treat?
1 = geriatric 3 = pediatric
2 = adult 4 = other, please specify_____

_____ 6. Which one of the following best describes the primary patient population you treat?
1= orthopedic 3= cardiopulmonary
2= neurological 4= other, please specify_____

Attitudes Toward Research

(Reprinted and modified with the permission of W. Carole Chenitz, RN, EdD, and Barbara Sater, RN, MSN.)

For each item, please circle the one number that best describes your true thoughts. The items are intended to measure your attitude about PT research. (Agree Strongly = 1, Agree = 2, Neutral = 3, Disagree = 4, and Disagree Strongly = 5).

	Agree Strongly	Agree	Neutral	Disagree	Disagree Strongly
1. Research findings should guide PT practice.	1	2	3	4	5
2. PT research is a pain in the neck.	1	2	3	4	5
3. I like to do PT research.	1	2	3	4	5
4. I think there is insufficient time/administrative support for research.	1	2	3	4	5
5. The use of clinical PT research findings will improve the quality of PT care.	1	2	3	4	5
6. I keep informed about PT research findings by reading current literature (published within previous 5 years).	1	2	3	4	5

Research Involvement and Scholarly Pursuits

("used with the permission of Stanford Health Services" and Copyright 1987. Stanford Health Services)

For each activity listed, CIRCLE ALL time periods that best fit your research involvement. Skip if not applicable.

Research Activity	Performed in Past *(more than 6 mos. ago)*	Currently Engaged In *(now or in past 6 mos.)*	Plan to participate *(within the next year)*
1. Reading and analyzing journal articles	PAST	PRESENT	FUTURE
2. Presentation of case studies	PAST	PRESENT	FUTURE
3. Collecting data for a research study	PAST	PRESENT	FUTURE
4. Submitting findings for presentation	PAST	PRESENT	FUTURE
5. Submitting findings for publication	PAST	PRESENT	FUTURE
6. Changing a practice/protocol based on published research	PAST	PRESENT	FUTURE

Physical Therapy Interventions: Frequency of use and Rationale

(PT Interventions, with the exception of the last 8 alternative interventions on pg. 4, are taken from Guide to Physical Therapy Practice. *Physical Therapy, Volume77, #11, November 1997).*

Please indicate which PT interventions you have used over the past 6 months. Indicate the frequency by placing an X in the appropriate box. A space is provided for listing the primary and secondary reasons for using or not using each PT intervention. If your frequency choice is **Occasional, Frequent,** or **Daily**, indicate your primary and secondary reason for use by placing the number of the corresponding reason from the key provided. If your frequency choice is **Rare** or **Never**, indicate your primary and secondary reason **for not using** the PT intervention by placing the number of the corresponding reason from the key provided.

Frequency Definitions

Rare: less than once per month

Occasional: 2-4 times per month

Frequent: weekly

Reason for Using or Not Using PT Intervention

(each reason may be sufficient for either the USE or DO NOT USE columns)

1. Original Training
2. Good clinical outcomes
3. Reading of literature
4. Lack of scientific support
5. Research involvement
6. Continuing education courses
7. Discussion with colleague
8. Not available at facility
9. Lack of familiarity
10. Poor clinical outcomes
11. Insufficient time
12. Not applicable to clientele
13. Other, please specify in box

Frequency					PT interventions	I USE this PT intervention because...			I DO NOT USE this PT intervention because...	
Never	Rare	Occasional	Frequent	Daily	(used within the past 6 months)	Primary Reason	Secondary Reason		Primary Reason	Secondary Reason
		X			*EXAMPLE A*	1	5			
X					*EXAMPLE B*				4	7
					Cryotherapy					
					Deep Thermal Modalities (e.g., pulsed short-wave diathermy, ultrasound, etc.)					
					Superficial Thermal Modalities (e.g., heat, paraffin baths, hot pack, fluidotherapy)					
					Phonophoresis					
					Iontophoresis					
					Electrical muscle stimulation					
					Functional electrical stimulation (FES)					
					Neuromuscular electrical stimulation (NMES)					
					Transcutaneous electrical nerve stimulation (TENS)					
					Aerobic endurance activities					
					Aquatic exercises					
					Posture Awareness Training					
					ADL Training					

Frequency Definitions

Rare: less than once per month

Occasional: 2-4 times per month

Frequent: weekly

Reason for Using or Not Using PT Intervention

(each reason may be sufficient for either the USE or DO NOT USE columns)

1. Original Training
2. Good clinical outcomes
3. Reading of literature
4. Lack of scientific support
5. Research involvement
6. Continuing education courses
7. Discussion with colleague
8. Not available at facility
9. Lack of familiarity
10. Poor clinical outcomes
11. Insufficient time
12. Not applicable to clientele
13. Other, please specify in box

Frequency					PT Interventions	I USE this PT intervention because...			I DO NOT USE this PT intervention because...	
Never	Rare	Occasional	Frequent	Daily	(used within the past 6 months)	Primary Reason	Secondary Reason		Primary Reason	Secondary Reason
					Strengthening exercises (e.g., active, active-assisted)					
					Hydrotherapy (e.g., whirlpool tanks, etc.)					
					Connective tissue massage					
					Therapeutic massage					
					Manual lymphatic drainage					
					Soft tissue mobilization and manipulation					
					Joint mobilization and manipulation					
					Manual Traction					
					Traction (sustained, intermittent, or positional)					
					Compression Therapies (e.g., compression devices, taping, and bandaging, etc.)					
					Neuromuscular education or reeducation					
					Neuromuscular relaxation, inhibition, and facilitation					
					Motor function (motor control and motor learning) training or retraining					
					Organized functional training programs (e.g., simulated environments and tasks)					
					Developmental Activities Training					
					Job Simulation					
					Chest percussion, vibration, and shaking					
					Assistive Coughing Techniques					

Frequency Definitions

Rare: less than once per month

Occasional: 2-4 times per month

Frequent: weekly

Reason for Using or Not Using PT Intervention

(each reason may be sufficient for either the USE or DO NOT USE columns)

1. Original Training
2. Good clinical outcomes
3. Reading of literature
4. Lack of scientific support
5. Research involvement
6. Continuing education courses
7. Discussion with colleague
8. Not available at facility
9. Lack of familiarity
10. Poor clinical outcomes
11. Insufficient time
12. Not applicable to clientele
13. Other, please specify in box

Frequency					PT Interventions	I USE this PT Intervention because...			I DO NOT USE this PT Intervention because...	
Never	Rare	Occasional	Frequent	Daily	(used within past 6 months)	Primary Reason	Secondary Reason		Primary Reason	Secondary Reason
					Active cycle of breathing or forced expiratory techniques					
					Breathing strategies (e.g., paced breathing, pursed lip breathing)					
					Pulmonary postural drainage and positioning					
					Autogenic drainage					
					Debridement					
					Biofeedback					
					Unloading techniques					
					Myofascial techniques					
					Cranio-sacral therapy					
					Strain-counterstrain					
					Magnetic therapy					
					Hippotherapy					
					Visceral manipulation					

Additional Comments:

Thank you for participating in this survey. If you are interested in the results of this study, they will be available at Grand Valley State University in May 1999.

APPENDIX B

Post-card Reminder

October 26, 1998

Dear Physical Therapist,

Hi there! Remember us? We are three physical therapy students from Grand Valley State University conducting research in partial fulfillment of the requirements for a Master of Science degree in Physical Therapy. Approximately two weeks ago we sent you a questionnaire investigating physical therapist's attitudes toward research; personal research involvement; and frequency of use and rationale of physical therapy interventions. As of October 26, 1998 we have not received your completed questionnaire. We understand that your time is extremely valuable and limited. However, if you are able to find 10 –15 minutes in your schedule to complete and return the questionnaire we would greatly appreciate the effort. Your participation is vital to the success and validity of this research. If you have already returned the completed questionnaire please consider this a note thanking you for your invaluable input. Please contact Sarah Bennett at (810) 227-3616 with any questions or requests for additional questionnaires.
Thanks again!

Sarah M. Bennett

James D. Courter

Rachel E. Hastings

APPENDIX C

Consent Form Stanford Health Services

STANFORD HEALTH SERVICES

November 13, 1997

Jaime Courter
3637 Wyoming Avenue
Wyoming, Michigan 49509

Dear Mr. Courter:

Thank you for your interest in work presented in the article "Predictors of Nurses Involvement in Research Activities." On behalf of Dr. Janet Bostrom, I have enclosed a copy of the instrument for you to use along with information regarding scoring validity and reliability.

The undersigned grant permission for the Research Involvement Scale to be used in your research, provided that the following four conditions are met:

1. Reprint of the "Nursing Research Survey" portion of the survey must reference Carole Chenitz, RN, EdD and Barbara Sater, RN, MSN.
2. A copy of the results of any study using this instrument is sent to the Director of Research for Patient Care Services, Stanford Health Services
3. Any questionnaire that is developed using this instrument must contain the words "Used by permission of Stanford Health Services" and Copyright 1987. Stanford Health Services."
4. Any manuscript describing the findings from a study using this instrument must reference the following source: Rizzuto, C., Bostrom, J., Suter, W.N. and Chenitz, C. (1993). Predictors of nurses' involvement in research activities, Western Journal of Nursing Research, 16,(2), 193-204.

I wish you success in your future research endeavors. If you have any other questions regarding this instrument, please contact me at (415) 723-8467.

Sincerely,

[redacted]

Jody Mechanic, RN, MS
Manager, Office of Outcomes Measurement

Enclosure

DOC/ATT-ACT.DOC/:yh
DISK/CORRESPONDENCE#3

APPENDIX D

Consent From Pat Turner

Date: Thu, 7 Nov 96 21:43:17 UT
From: Pat Turner <PATTurner@classic.msn.com>
To: "James D. Courter" <courterj@river.it.gvsu.edu>
Subject: RE: evidence-based practice

Dear James -and the others

I can provide you with a copy of the questionnaire - that will be no problem. You would need to modify it to suit the USA - I did modify it for Australia.

It would be useful at some stage to put all the results together for a major comparative paper. The research division of the Public Health Service in Norway have also requested a copy of the questionnaire - so the study couold have global implications.

Are you proposing to use the same method that I did? Or will you be using a random stratified sample of hospitals? Will they be state (public) or private hospitals?

Do let me know what you would like to assist you -

Regards,
Pat

From: James D. Courter
Sent: 06 November 1997 15:42
To: Pat Turner
Subject: Re: evidence-based practice
>
>

APPENDIX E

Pilot Cover Letter

April 6, 1998

Re: Evidence based practice survey
Attn: Physical Therapy faculty member

We are second year physical therapy students in the process of revising our survey for our Master's research project. The purpose of our study is to determine whether or not clinicians are using current research to confirm or modify their choice of treatment techniques, in other words, being evidence based practitioners. We have enclosed a copy of our current survey. Our goals in piloting this survey with the faculty members (a panel of experts) are to generate feedback concerning the format of the survey, appropriateness of the treatment techniques listed, and any other constructive criticism that you are willing to provide. Perhaps the easiest way to accomplish this task is to fill out the survey, writing any comments or questions you may have, on the survey itself. Please record, in the spaces provided under additional comments, the amount of time required to fill out this survey. Once again, any and all comments are greatly appreciated. Please turn in your completed survey with comments to Dr. Peck on or before Monday April 20, 1998. If you have any questions please contact Jamie Courter @ (616) 538-3613 or by e-mail at courterj or Sarah Bennett @ (616) 892-6472 or by e-mail bennetts. Thank you for your time and cooperation.

Second Year P.T. students:

Rachel Hastings

Jamie Courter

Sarah Bennett

Enclosures (3)

APPENDIX F

Pilot #2 Cover Letter

June 23, 1998

To Whom This May Concern,

We are second year physical therapy students at Grand Valley State University in the process of revising our survey for our Master's research project. The purpose of our study is to determine why clinicians are using or not using a treatment technique and to survey general attitudes about research. We have enclosed a copy of our survey. Our goals in piloting the survey with a select few PT clinicians are to have the clinician complete the survey, generate feedback concerning the format of the survey, appropriateness of the treatment techniques listed, and any other constructive criticism. Upon completion of this survey, we request that you return the survey in the enclosed envelope provided by July 10, 1998. If you have any questions please contact Sarah Bennett @ (616) 892-6472, Jamie Courter @ (616) 538-3613, or Rachel Hastings @ (616) 895-4071. Thank you for your time and cooperation.

Second Year P.T. Students:

Sarah Bennett

Jamie Courter

Rachel Hastings

APPENDIX G

Cover Letter For Questionnaire

October 5, 1998

Dear Physical Therapist:

We are three physical therapy students from Grand Valley State University, conducting research in partial fulfillment of the requirements for a Master of Science degree in Physical Therapy. Our study is investigating physical therapists' attitudes toward research; personal research involvement; and frequency of use and rationale of physical therapy interventions. Three hundred thirty questionnaires were mailed to a sample of MPTA members.

Enclosed is a questionnaire to gather necessary information to complete the data collection of this research. The survey will take approximately 10-15 minutes to complete. By completing and returning the survey in the enclosed stamped envelope, you are indicating informed consent to participate in the study. The questionnaires will be coded. However, reports and subsequent data will not discuss individual responses, but will include only group data. Your identity will be kept strictly confidential.

We understand that you have an extremely busy schedule, and your time is limited. Please realize that your participation is vital to the success of this research. The information that you provide is essential to the validity of this study. Thank you in advance for your prompt response and participation in this study. **Please complete and return questionnaire in the enclosed envelope by October 26, 1998.** If you have any questions, please contact Sarah Bennett at (810) 227-3616 or Paul Huizenga, Chair of GVSU Human Research Committee, at (616) 895-2472.

Thank you again for your help.

Sincerely,

Sarah M. Bennett

James D. Courter

Rachel E. Hastings

APPENDIX H

Additional descriptive frequency tables for:
Frequency of use and rationale for use and non-use for remaining physical therapy interventions

Table 1 through Table 68 represent the remaining 35 of the 44 interventions that were not previously listed in Chapter 4.

Table 1. Frequency of use for cryotherapy

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	15	11.4
Rare	22	16.7
Occasional	30	22.7
Frequent	39	29.5
Daily	26	19.7
Total	132	100.0

Table 2. Rationale for use and non-use of cryotherapy

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	64	64.6	Good clinical outcomes
Secondary Reason for Use	41	45.1	Original training
Primary Reason for Non-Use	24	66.7	Not applicable to clientele
Secondary Reason for Non-Use	6	30.0	Not available at facility

Table 3. Frequency of use for deep thermal modalities (e.g. pulsed short-wave diathermy, ultrasound, etc.)

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	17	12.8
Rare	28	21.1
Occasional	22	16.5
Frequent	30	22.6
Daily	36	27.1
Total	133	100.0

Table 4. Rationale for use and non-use of deep thermal modalities (e.g. pulse short-wave diathermy, ultrasound, etc.)

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	45	48.9	Good clinical outcomes
Secondary Reason for Use	35	43.2	Original training
Primary Reason for Non-Use	31	68.9	Not applicable to clientele
Secondary Reason for Non-Use	12	46.2	Not available at facility

Table 5. Frequency of use for superficial thermal modalities (e.g. heat, paraffin baths, hot pack, fluidotherapy)

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	14	10.6
Rare	24	18.2
Occasional	27	20.5
Frequent	30	22.7
Daily	37	28.0
Total	132	100.0

Table 6. Rationale for use and non-use of superficial thermal modalities (e.g. heat, paraffin baths, hot pack, fluidotherapy)

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	56	58.9	Good clinical outcomes
Secondary Reason for Use	41	51.9	Original training
Primary Reason for Non-Use	24	58.5	Not applicable to clientele
Secondary Reason for Non-Use	7	30.4	Not available at facility

Table 7. Frequency of use for phonophoresis

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	52	39.1
Rare	34	25.6
Occasional	22	16.5
Frequent	17	12.8
Daily	8	6.0
Total	133	100.0

Table 8. Rationale for use and non-use of phonophoresis

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	21	39.6	Original training
Secondary Reason for Use	13	28.9	Good clinical outcomes
Primary Reason for Non-Use	38	48.7	Not applicable to clientele
Secondary Reason for Non-Use	12	21.4	Not available at facility

Table 9. Frequency of use for iontophoresis

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	54	41.2
Rare	24	18.3
Occasional	23	17.6
Frequent	20	15.3
Daily	10	7.6
Total	131	100.0

Table 10. Rationale for use and non-use of iontophoresis

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	33	56.9	Good clinical outcomes
Secondary Reason for Use	13	25.0	Reading of literature
Primary Reason for Non-Use	40	53.3	Not applicable to clientele
Secondary Reason for Non-Use	14	31.1	Not available at facility

Table 11. Frequency of use for electrical muscle stimulation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	33	25.0
Rare	39	29.5
Occasional	19	14.4
Frequent	28	21.2
Daily	13	9.8
Total	132	100.0

Table 12. Rationale for use and non-use of electrical muscle stimulation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	34	50.0	Good clinical outcomes
Secondary Reason for Use	a. 22	a. 37.3	a. Original training
	b. 22	b. 37.3	b. Good clinical outcomes
Primary Reason for Non-Use	35	54.7	Not applicable to clientele
Secondary Reason for Non-Use	14	33.3	Not applicable to clientele

Table 13. Frequency of use for functional electrical stimulation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	47	36.4
Rare	45	34.9
Occasional	27	20.9
Frequent	7	21.2
Daily	3	9.8
Total	129	100.0

Table 14. Rationale for use and non-use of functional electrical stimulation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	20	41.7	Good clinical outcomes
Secondary Reason for Use	11	28.9	Original training
Primary Reason for Non-Use	44	52.4	Not applicable to clientele
Secondary Reason for Non-Use	16	29.1	Lack of familiarity

Table 15. Frequency of use for neuromuscular electrical stimulation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	58	44.3
Rare	31	23.7
Occasional	27	20.6
Frequent	10	7.6
Daily	5	3.8
Total	131	100.0

Table 16. Rationale for use and non-use of neuromuscular electrical stimulation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	19	40.4	Good clinical outcomes
Secondary Reason for Use	15	38.5	Good clinical outcomes
Primary Reason for Non-Use	32	40.0	Not applicable to clientele
Secondary Reason for Non-Use	14	27.5	Lack of familiarity

Table 17. Frequency of use for transcutaneous electrical nerve stimulation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	32	24.2
Rare	54	40.9
Occasional	28	21.2
Frequent	14	10.6
Daily	4	3.0
Total	132	100.0

Table 18. Rationale for use and non-use of transcutaneous electrical nerve stimulation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	22	40.7	Good clinical outcomes
Secondary Reason for Use	15	34.9	Good clinical outcomes
Primary Reason for Non-Use	34	43.6	Not applicable to clientele
Secondary Reason for Non-Use	12	23.5	Not available at facility

Table 19. Frequency of use for aquatic exercises

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	87	66.9
Rare	8	6.2
Occasional	6	4.6
Frequent	19	14.6
Daily	10	7.7
Total	130	100.0

Table 20. Rationale for use and non-use of aquatic exercises

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	26	70.3	Good clinical outcomes
Secondary Reason for Use	a. 8	a. 25.8	a. Reading of literature
	b. 8	b. 25.8	b. Discuss with colleague
Primary Reason for Non-Use	82	87.2	Not available at facility
Secondary Reason for Non-Use	11	30.6	Not applicable to clientele

Table 21. Frequency of use for hydrotherapy (e.g. whirlpool tanks, etc.)

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	47	35.6
Rare	35	26.5
Occasional	28	21.2
Frequent	16	12.1
Daily	6	4.5
Total	132	100.0

Table 22. Rationale for use and non-use of hydrotherapy (e.g. whirlpool tanks, etc.)

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	22	43.1	Good clinical outcomes
Secondary Reason for Use	16	38.1	Original training
Primary Reason for Non-Use	35	44.3	Not available at facility
Secondary Reason for Non-Use	14	30.4	Not applicable to clientele

Table 23. Frequency of use for connective tissue massage

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	18	13.8
Rare	17	13.1
Occasional	34	26.2
Frequent	37	28.5
Daily	24	18.5
Total	130	100.0

Table 24. Rationale for use and non-use of connective tissue massage

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	61	62.2	Good clinical outcomes
Secondary Reason for Use	25	29.4	Continuing education courses
Primary Reason for Non-Use	17	53.1	Not applicable to clientele
Secondary Reason for Non-Use	6	40.0	Not applicable to clientele

Table 25. Frequency of use for therapeutic massage

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	11	8.3
Rare	25	18.9
Occasional	44	33.3
Frequent	36	27.3
Daily	16	12.1
Total	132	100.0

Table 26. Rationale for use and non-use of therapeutic massage

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	57	57.0	Good clinical outcomes
Secondary Reason for Use	31	37.3	Original training
Primary Reason for Non-Use	18	52.9	Not applicable to clientele
Secondary Reason for Non-Use	8	50.0	Insufficient time

Table 27. Frequency of use for manual lymphatic drainage

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	93	70.5
Rare	25	18.9
Occasional	10	7.6
Frequent	4	3.0
Daily	0	0
Total	132	100.0

Table 28. Rationale for use and non-use of manual lymphatic drainage

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	6	35.3	Original training
Secondary Reason for Use	4	33.3	Original training
Primary Reason for Non-Use	70	63.1	Not applicable to clientele
Secondary Reason for Non-Use	18	36.0	Lack of familiarity

Table 29. Frequency of use for soft tissue mobilization and manipulation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	12	9.3
Rare	11	8.5
Occasional	29	22.5
Frequent	41	31.8
Daily	36	27.9
Total	129	100.0

Table 30. Rationale for use and non-use of soft tissue mobilization and manipulation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	64	61.0	Good clinical outcomes
Secondary Reason for Use	35	36.5	Discuss with colleague
Primary Reason for Non-Use	16	69.6	Not applicable to clientele
Secondary Reason for Non-Use	5	50.0	Lack of familiarity

Table 31. Frequency of use for joint mobilization and manipulation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	9	7.0
Rare	24	18.8
Occasional	20	15.6
Frequent	33	25.8
Daily	42	32.8
Total	128	100.0

Table 32. Rationale for use and non-use of joint mobilization and manipulation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	57	58.2	Good clinical outcomes
Secondary Reason for Use	27	30.7	Good clinical outcomes
Primary Reason for Non-Use	22	68.8	Not applicable to clientele
Secondary Reason for Non-Use	7	46.7	Not applicable to clientele

Table 33. Frequency of use for manual traction

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	25	18.9
Rare	31	23.5
Occasional	19	14.4
Frequent	37	28.0
Daily	20	15.2
Total	132	100.0

Table 34. Rationale for use and non-use of manual traction

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	51	65.4	Good clinical outcomes
Secondary Reason for Use	22	30.6	Good clinical outcomes
Primary Reason for Non-Use	41	77.4	Not applicable to clientele
Secondary Reason for Non-Use	6	31.6	Insufficient time

Table 35. Frequency of use for traction (sustained, intermittent, or positional)

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	41	31.3
Rare	20	15.3
Occasional	27	20.6
Frequent	28	21.4
Daily	15	11.5
Total	131	100.0

Table 36. Rationale for use and non-use of traction (sustained, intermittent, or positional)

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	47	63.5	Good clinical outcomes
Secondary Reason for Use	27	41.5	Original training
Primary Reason for Non-Use	36	64.3	Not applicable to clientele
Secondary Reason for Non-Use	9	33.3	Not applicable to clientele

Table 37. Frequency of use for compression therapies (e.g. compression devices, taping, bandaging and etc.)

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	43	32.8
Rare	39	29.8
Occasional	36	27.5
Frequent	11	8.4
Daily	2	1.5
Total	131	100.0

Table 38. Rationale for use and non-use of compression therapies (e.g. compression devices, taping, bandaging and etc.)

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	23	47.9	Good clinical outcomes
Secondary Reason for Use	11	27.5	Good clinical outcomes
Primary Reason for Non-Use	51	60.0	Not applicable to clientele
Secondary Reason for Non-Use	15	33.3	Lack of familiarity

Table 39. Frequency of use for neuromuscular education or re-education

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	9	6.9
Rare	19	14.5
Occasional	29	22.1
Frequent	39	29.8
Daily	35	26.7
Total	131	100.0

Table 40. Rationale for use and non-use of neuromuscular education or re-education

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	52	50.0	Good clinical outcomes
Secondary Reason for Use	33	34.7	Good clinical outcomes
Primary Reason for Non-Use	17	65.4	Not applicable to clientele
Secondary Reason for Non-Use	5	45.5	Not applicable to clientele

Table 41. Frequency of use for motor function (motor control and motor learning) training or retraining

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	16	12.2
Rare	23	17.6
Occasional	27	20.6
Frequent	31	23.7
Daily	34	26.0
Total	131	100.0

Table 42. Rationale for use and non-use of motor function (motor control and motor learning) training or retraining

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	51	54.8	Good clinical outcomes
Secondary Reason for Use	27	32.5	Good clinical outcomes
Primary Reason for Non-Use	29	74.4	Not applicable to clientele
Secondary Reason for Non-Use	7	50.0	Lack of familiarity

Table 43. Frequency of use for organized functional training programs (e.g. simulated environments and tasks)

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	37	28.2
Rare	22	16.8
Occasional	25	19.1
Frequent	27	20.6
Daily	20	15.3
Total	131	100.0

Table 44. Rationale for use and non-use of organized functional training programs (e.g. simulated environments and tasks)

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	41	56.9	Good clinical outcomes
Secondary Reason for Use	17	27.0	Continuing education courses
Primary Reason for Non-Use	30	52.6	Not applicable to clientele
Secondary Reason for Non-Use	a. 6	a. 33.3	a. Lack of familiarity
	b. 6	b. 33.3	b. Insufficient time

Table 45. Frequency of use and non-use for organized functional training programs (e.g. simulated environments and tasks)

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	37	28.2
Rare	22	16.8
Occasional	25	19.1
Frequent	27	20.6
Daily	20	15.3
Total	131	100.0

Table 46. Rationale for use and non-use of developmental activities training

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	20	42.6	Good clinical outcomes
Secondary Reason for Use	10	26.3	Good clinical outcomes
Primary Reason for Non-Use	60	75.0	Not applicable to clientele
Secondary Reason for Non-Use	13	46.4	Lack of familiarity

Table 47. Frequency of use for job simulation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	57	44.2
Rare	29	22.5
Occasional	31	24.0
Frequent	10	7.8
Daily	2	1.6
Total	129	100.0

Table 48. Rationale for use and non-use of job simulation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	31	66.0	Good clinical outcomes
Secondary Reason for Use	10	27.0	Continuing education courses
Primary Reason for Non-Use	56	71.8	Not applicable to clientele
Secondary Reason for Non-Use	a. 5	a. 26.3	a. Lack of familiarity
	b. 5	b. 26.3	b. Not applicable to clientele

Table 49. Frequency of use for chest percussion, vibration, and shaking

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	103	78.0
Rare	15	11.4
Occasional	10	7.6
Frequent	1	0.
Daily	3	2.3
Total	132	100.0

Table 50. Rationale for use and non-use of chest percussion, vibration, and shaking

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	a. 7	a. 41.2	a. Original training
	b. 7	b. 41.2	b. Good clinical outcomes
Secondary Reason for Use	c. 5	c. 38.5	c. Original training
	d. 5	d. 38.5	d. Good clinical outcomes
Primary Reason for Non-Use	91	78.4	Not applicable to clientele
Secondary Reason for Non-Use	13	38.2	Lack of familiarity

Table 51. Frequency of use for assistive coughing techniques

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	83	63.8
Rare	22	16.9
Occasional	20	15.4
Frequent	3	2.3
Daily	2	1.5
Total	130	100.0

Table 52. Rationale for use and non-use of assistive coughing techniques

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	13	41.9	Good clinical outcomes
Secondary Reason for Use	11	47.8	Original training
Primary Reason for Non-Use	80	80.0	Not applicable to clientele
Secondary Reason for Non-Use	12	42.9	Lack of familiarity

Table 53. Frequency of use for active cycle of breathing or forced expiratory techniques

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	83	63.4
Rare	19	14.5
Occasional	19	14.5
Frequent	8	6.1
Daily	2	1.5
Total	131	100.0

Table 54. Rationale for use and non-use for active cycle of breathing or forced expiratory techniques

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	15	45.5	Good clinical outcomes
Secondary Reason for Use	10	40.0	Good clinical outcomes
Primary Reason for Non-Use	71	72.4	Not applicable to clientele
Secondary Reason for Non-Use	13	41.9	Lack of familiarity

Table 55. Frequency of use for pulmonary postural drainage and positioning

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	100	75.2
Rare	18	13.5
Occasional	8	6.0
Frequent	3	2.3
Daily	4	3.0
Total	133	100.0

Table 56. Rationale for use and non-use of pulmonary postural drainage and positioning

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	9	45.0	Good clinical outcomes
Secondary Reason for Use	6	37.5	Good clinical outcomes
Primary Reason for Non-Use	86	76.1	Not applicable to clientele
Secondary Reason for Non-Use	16	39.0	Lack of familiarity

Table 57. Frequency of use for autogenic drainage

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	118	90.8
Rare	6	4.6
Occasional	3	2.3
Frequent	2	1.5
Daily	1	0.8
Total	130	100.0

Table 58. Rationale for use and non-use of autogenic drainage

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	a. 2	a. 28.6	a. Good clinical outcomes
	b. 2	b. 28.6	b. Continuing education courses
Secondary Reason for Use	2	40.0	Reading of literature
Primary Reason for Non-Use	73	60.3	Not applicable to clientele
Secondary Reason for Non-Use	22	50.0	Not applicable to clientele

Table 59. Frequency of use for debridement

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	73	55.3
Rare	27	20.5
Occasional	23	17.4
Frequent	8	6.1
Daily	1	0.8
Total	132	100.0

Table 60. Rationale for use and non-use of debridement

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	15	41.7	Original training
Secondary Reason for Use	a. 8	a. 24.2	a. Original training
	b. 8	b. 24.2	b. Good clinical outcomes
Primary Reason for Non-Use	81	84.4	Not applicable to clientele
Secondary Reason for Non-Use	11	33.3	Not available at facility

Table 61. Frequency of use for biofeedback

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	78	59.1
Rare	24	18.2
Occasional	18	13.6
Frequent	10	7.6
Daily	2	1.5
Total	132	100.0

Table 62. Rationale for use and non-use of biofeedback

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	16	45.7	Good clinical outcomes
Secondary Reason for Use	10	41.7	Reading of literature
Primary Reason for Non-Use	40	41.7	Not applicable to clientele
Secondary Reason for Non-Use	11	27.5	Lack of familiarity

Table 63. Frequency of use for unloading techniques

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	75	58.6
Rare	7	5.5
Occasional	28	21.9
Frequent	15	11.7
Daily	3	2.3
Total	128	100.0

Table 64. Rationale for use and non-use of unloading techniques

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	20	44.4	Good clinical outcomes
Secondary Reason for Use	10	25.6	Continuing education courses
Primary Reason for Non-Use	37	43.5	Lack of familiarity
Secondary Reason for Non-Use	13	46.4	Lack of familiarity

Table 65. Frequency of use for hippotherapy

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	123	93.2
Rare	4	3.0
Occasional	4	3.0
Frequent	0	0.0
Daily	1	0.8
Total	132	100.0

Table 66. Rationale for use and non-use of hippotherapy

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	6	75.0	Good clinical outcomes
Secondary Reason for Use	3	60.0	Reading of literature
Primary Reason for Non-Use	53	42.4	Lack of familiarity
Secondary Reason for Non-Use	17	32.1	Lack of familiarity

Table 67. Frequency of use for visceral manipulation

FREQUENCY OF USE	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL
Never	120	90.9
Rare	7	5.3
Occasional	2	1.5
Frequent	2	1.5
Daily	1	0.8
Total	132	100.0

Table 68. Rationale for use and non-use of visceral manipulation

ITEM	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL	REASON
Primary Reason for Use	3	42.9	Good clinical outcomes
Secondary Reason for Use	a. 2	a. 40.0	a. Reading of literature
	b. 2	b. 40.0	b. Continuing education courses
Primary Reason for Non-Use	81	65.3	Lack of familiarity
Secondary Reason for Non-Use	16	35.6	Not applicable to clientele

APPENDIX I

Pearson's Chi Square and Fischer's Exact Tables

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.108[b]	1	.146		
Continuity Correction[a]	.545	1	.460		
Likelihood Ratio	2.880	1	.090		
Fisher's Exact Test				.239	.239
Linear-by-Linear Association	2.090	1	.148		
N of Valid Cases	114				

a. Computed only for a 2x2 table

b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .98.

DEGREE2 * LIKE2

Crosstab

			LIKE2		Total
			1.00	5.00	
DEGREE2	1.00	Count	18	21	39
		% within DEGREE2	46.2%	53.8%	100.0%
		% within LIKE2	43.9%	44.7%	44.3%
		% of Total	20.5%	23.9%	44.3%
	2.00	Count	23	26	49
		% within DEGREE2	46.9%	53.1%	100.0%
		% within LIKE2	56.1%	55.3%	55.7%
		% of Total	26.1%	29.5%	55.7%
Total		Count	41	47	88
		% within DEGREE2	46.6%	53.4%	100.0%
		% within LIKE2	100.0%	100.0%	100.0%
		% of Total	46.6%	53.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.005[b]	1	.942		
Continuity Correction[a]	.000	1	1.000		
Likelihood Ratio	.005	1	.942		
Fisher's Exact Test				1.000	.557
Linear-by-Linear Association	.005	1	.942		
N of Valid Cases	88				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.17.

DEGREE2 * INFORM2

Crosstab

			INFORM2		Total
			1.00	5.00	
DEGREE2	1.00	Count	50	5	55
		% within DEGREE2	90.9%	9.1%	100.0%
		% within INFORM2	46.7%	62.5%	47.8%
		% of Total	43.5%	4.3%	47.8%
	2.00	Count	57	3	60
		% within DEGREE2	95.0%	5.0%	100.0%
		% within INFORM2	53.3%	37.5%	52.2%
		% of Total	49.6%	2.6%	52.2%
Total		Count	107	8	115
		% within DEGREE2	93.0%	7.0%	100.0%
		% within INFORM2	100.0%	100.0%	100.0%
		% of Total	93.0%	7.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.742[b]	1	.389		
Continuity Correction[a]	.245	1	.621		
Likelihood Ratio	.746	1	.388		
Fisher's Exact Test				.477	.311
Linear-by-Linear Association	.736	1	.391		
N of Valid Cases	115				

a. Computed only for a 2x2 table

b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 3.83.

DEGREE2 * AERPU2

Crosstab

			AERPU2		Total
			1.00	2.00	
DEGREE2	1.00	Count	19	30	49
		% within DEGREE2	38.8%	61.2%	100.0%
		% within AERPU2	65.5%	48.4%	53.8%
		% of Total	20.9%	33.0%	53.8%
	2.00	Count	10	32	42
		% within DEGREE2	23.8%	76.2%	100.0%
		% within AERPU2	34.5%	51.6%	46.2%
		% of Total	11.0%	35.2%	46.2%
Total		Count	29	62	91
		% within DEGREE2	31.9%	68.1%	100.0%
		% within AERPU2	100.0%	100.0%	100.0%
		% of Total	31.9%	68.1%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.333[b]	1	.127		
Continuity Correction[a]	1.695	1	.193		
Likelihood Ratio	2.365	1	.124		
Fisher's Exact Test				.176	.096
Linear-by-Linear Association	2.307	1	.129		
N of Valid Cases	91				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.38.

DEGREE2 * AERPN2

Crosstab

			AERPN2		
			11.00	12.00	Total
DEGREE2	1.00	Count	2	8	10
		% within DEGREE2	20.0%	80.0%	100.0%
		% within AERPN2	66.7%	44.4%	47.6%
		% of Total	9.5%	38.1%	47.6%
	2.00	Count	1	10	11
		% within DEGREE2	9.1%	90.9%	100.0%
		% within AERPN2	33.3%	55.6%	52.4%
		% of Total	4.8%	47.6%	52.4%
Total		Count	3	18	21
		% within DEGREE2	14.3%	85.7%	100.0%
		% within AERPN2	100.0%	100.0%	100.0%
		% of Total	14.3%	85.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.509[b]	1	.476		
Continuity Correction[a]	.008	1	.929		
Likelihood Ratio	.515	1	.473		
Fisher's Exact Test				.586	.462
Linear-by-Linear Association	.485	1	.486		
N of Valid Cases	21				

a. Computed only for a 2x2 table

b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.43.

DEGREE2 * PATPU2

Crosstab

			PATPU2		
			1.00	2.00	Total
DEGREE2	1.00	Count	22	34	56
		% within DEGREE2	39.3%	60.7%	100.0%
		% within PATPU2	51.2%	53.1%	52.3%
		% of Total	20.6%	31.8%	52.3%
	2.00	Count	21	30	51
		% within DEGREE2	41.2%	58.8%	100.0%
		% within PATPU2	48.8%	46.9%	47.7%
		% of Total	19.6%	28.0%	47.7%
Total		Count	43	64	107
		% within DEGREE2	40.2%	59.8%	100.0%
		% within PATPU2	100.0%	100.0%	100.0%
		% of Total	40.2%	59.8%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.040[b]	1	.842		
Continuity Correction[a]	.000	1	.999		
Likelihood Ratio	.040	1	.842		
Fisher's Exact Test				.847	.499
Linear-by-Linear Association	.039	1	.843		
N of Valid Cases	107				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.50.

DEGREE2 * PATPN2

Crosstab

			PATPN2		
			10.00	12.00	Total
DEGREE2	1.00	Count		1	1
		% within DEGREE2		100.0%	100.0%
		% within PATPN2		50.0%	33.3%
		% of Total		33.3%	33.3%
	2.00	Count	1	1	2
		% within DEGREE2	50.0%	50.0%	100.0%
		% within PATPN2	100.0%	50.0%	66.7%
		% of Total	33.3%	33.3%	66.7%
Total		Count	1	2	3
		% within DEGREE2	33.3%	66.7%	100.0%
		% within PATPN2	100.0%	100.0%	100.0%
		% of Total	33.3%	66.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.750[b]	1	.386		
Continuity Correction[a]	.000	1	1.000		
Likelihood Ratio	1.046	1	.306		
Fisher's Exact Test				1.000	.667
Linear-by-Linear Association	.500	1	.480		
N of Valid Cases	3				

a. Computed only for a 2x2 table

b. 4 cells (100.0%) have expected count less than 5. The minimum expected count is .33.

DEGREE2 * STPU2

Crosstab

			STPU2		Total
			1.00	2.00	
DEGREE2	1.00	Count	24	36	60
		% within DEGREE2	40.0%	60.0%	100.0%
		% within STPU2	51.1%	47.4%	48.8%
		% of Total	19.5%	29.3%	48.8%
	2.00	Count	23	40	63
		% within DEGREE2	36.5%	63.5%	100.0%
		% within STPU2	48.9%	52.6%	51.2%
		% of Total	18.7%	32.5%	51.2%
Total		Count	47	76	123
		% within DEGREE2	38.2%	61.8%	100.0%
		% within STPU2	100.0%	100.0%	100.0%
		% of Total	38.2%	61.8%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.159[b]	1	.690		
Continuity Correction[a]	.045	1	.831		
Likelihood Ratio	.159	1	.690		
Fisher's Exact Test				.714	.416
Linear-by-Linear Association	.157	1	.692		
N of Valid Cases	123				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 22.93.

DEGREE2 * STRPRN

Crosstab

			STRPRN	
			12.00	Total
DEGREE2	2.00	Count	1	1
		% within DEGREE2	100.0%	100.0%
		% within STRPRN	100.0%	100.0%
		% of Total	100.0%	100.0%
Total		Count	1	1
		% within DEGREE2	100.0%	100.0%
		% within STRPRN	100.0%	100.0%
		% of Total	100.0%	100.0%

Chi-Square Tests

	Value
Pearson Chi-Square	.[a]
N of Valid Cases	1

a. No statistics are computed because DEGREE2 and STRPRN are constants.

DEGREE2 * MAGPU2

Crosstab

			MAGPU2		
			3.00	7.00	Total
DEGREE2	1.00	Count	1		1
		% within DEGREE2	100.0%		100.0%
		% within MAGPU2	100.0%		33.3%
		% of Total	33.3%		33.3%
	2.00	Count		2	2
		% within DEGREE2		100.0%	100.0%
		% within MAGPU2		100.0%	66.7%
		% of Total		66.7%	66.7%
Total		Count	1	2	3
		% within DEGREE2	33.3%	66.7%	100.0%
		% within MAGPU2	100.0%	100.0%	100.0%
		% of Total	33.3%	66.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.000[b]	1	.083		
Continuity Correction[a]	.188	1	.665		
Likelihood Ratio	3.819	1	.051		
Fisher's Exact Test				.333	.333
Linear-by-Linear Association	2.000	1	.157		
N of Valid Cases	3				

a. Computed only for a 2x2 table

b. 4 cells (100.0%) have expected count less than 5. The minimum expected count is .33.

DEGREE2 * MAGPN2

Crosstab

			MAGPN2				Total
			4.00	8.00	9.00	12.00	
DEGREE2	1.00	Count	10	11	30	11	62
		% within DEGREE2	16.1%	17.7%	48.4%	17.7%	100.0%
		% within MAGPN2	43.5%	47.8%	52.6%	57.9%	50.8%
		% of Total	8.2%	9.0%	24.6%	9.0%	50.8%
	2.00	Count	13	12	27	8	60
		% within DEGREE2	21.7%	20.0%	45.0%	13.3%	100.0%
		% within MAGPN2	56.5%	52.2%	47.4%	42.1%	49.2%
		% of Total	10.7%	9.8%	22.1%	6.6%	49.2%
Total		Count	23	23	57	19	122
		% within DEGREE2	18.9%	18.9%	46.7%	15.6%	100.0%
		% within MAGPN2	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	18.9%	18.9%	46.7%	15.6%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.034[a]	3	.793
Likelihood Ratio	1.037	3	.792
Linear-by-Linear Association	.961	1	.327
N of Valid Cases	122		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.34.

DEGREE2 * ADLPU2

Crosstab

			ADLPU2		Total
			1.00	2.00	
DEGREE2	1.00	Count	18	31	49
		% within DEGREE2	36.7%	63.3%	100.0%
		% within ADLPU2	54.5%	47.7%	50.0%
		% of Total	18.4%	31.6%	50.0%
	2.00	Count	15	34	49
		% within DEGREE2	30.6%	69.4%	100.0%
		% within ADLPU2	45.5%	52.3%	50.0%
		% of Total	15.3%	34.7%	50.0%
Total		Count	33	65	98
		% within DEGREE2	33.7%	66.3%	100.0%
		% within ADLPU2	100.0%	100.0%	100.0%
		% of Total	33.7%	66.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.411[b]	1	.521		
Continuity Correction[a]	.183	1	.669		
Likelihood Ratio	.412	1	.521		
Fisher's Exact Test				.669	.335
Linear-by-Linear Association	.407	1	.523		
N of Valid Cases	98				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.50.

DEGREE2 * ADLPN2

Crosstab

			ADLPN2		
			12.00	13.00	Total
DEGREE2	1.00	Count	5	1	6
		% within DEGREE2	83.3%	16.7%	100.0%
		% within ADLPN2	45.5%	33.3%	42.9%
		% of Total	35.7%	7.1%	42.9%
	2.00	Count	6	2	8
		% within DEGREE2	75.0%	25.0%	100.0%
		% within ADLPN2	54.5%	66.7%	57.1%
		% of Total	42.9%	14.3%	57.1%
Total		Count	11	3	14
		% within DEGREE2	78.6%	21.4%	100.0%
		% within ADLPN2	100.0%	100.0%	100.0%
		% of Total	78.6%	21.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.141[b]	1	.707		
Continuity Correction[a]	.000	1	1.000		
Likelihood Ratio	.144	1	.704		
Fisher's Exact Test				1.000	.615
Linear-by-Linear Association	.131	1	.717		
N of Valid Cases	14				

a. Computed only for a 2x2 table

b. 3 cells (75.0%) have expected count less than 5. The minimum expected count is 1.29.

DEGREE2 * NRFPU2

Crosstab

			NRFPU2			Total
			1.00	2.00	6.00	
DEGREE2	1.00	Count	11	22	10	43
		% within DEGREE2	25.6%	51.2%	23.3%	100.0%
		% within NRFPU2	47.8%	53.7%	58.8%	53.1%
		% of Total	13.6%	27.2%	12.3%	53.1%
	2.00	Count	12	19	7	38
		% within DEGREE2	31.6%	50.0%	18.4%	100.0%
		% within NRFPU2	52.2%	46.3%	41.2%	46.9%
		% of Total	14.8%	23.5%	8.6%	46.9%
Total		Count	23	41	17	81
		% within DEGREE2	28.4%	50.6%	21.0%	100.0%
		% within NRFPU2	100.0%	100.0%	100.0%	100.0%
		% of Total	28.4%	50.6%	21.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.486[a]	2	.784
Likelihood Ratio	.487	2	.784
Linear-by-Linear Association	.384	1	.536
N of Valid Cases	81		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.98.

DEGREE2 * NRFPN2

Crosstab

			NRFPN2		Total
			9.00	12.00	
DEGREE2	1.00	Count	4	12	16
		% within DEGREE2	25.0%	75.0%	100.0%
		% within NRFPN2	50.0%	36.4%	39.0%
		% of Total	9.8%	29.3%	39.0%
	2.00	Count	4	21	25
		% within DEGREE2	16.0%	84.0%	100.0%
		% within NRFPN2	50.0%	63.6%	61.0%
		% of Total	9.8%	51.2%	61.0%
Total		Count	8	33	41
		% within DEGREE2	19.5%	80.5%	100.0%
		% within NRFPN2	100.0%	100.0%	100.0%
		% of Total	19.5%	80.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.503[b]	1	.478		
Continuity Correction[a]	.093	1	.760		
Likelihood Ratio	.494	1	.482		
Fisher's Exact Test				.689	.374
Linear-by-Linear Association	.491	1	.484		
N of Valid Cases	41				

a. Computed only for a 2x2 table

b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 3.12.

DEGREE2 * MYOPU2

Crosstab

			MYOPU2		
			2.00	6.00	Total
DEGREE2	1.00	Count	17	14	31
		% within DEGREE2	54.8%	45.2%	100.0%
		% within MYOPU2	44.7%	60.9%	50.8%
		% of Total	27.9%	23.0%	50.8%
	2.00	Count	21	9	30
		% within DEGREE2	70.0%	30.0%	100.0%
		% within MYOPU2	55.3%	39.1%	49.2%
		% of Total	34.4%	14.8%	49.2%
Total		Count	38	23	61
		% within DEGREE2	62.3%	37.7%	100.0%
		% within MYOPU2	100.0%	100.0%	100.0%
		% of Total	62.3%	37.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.492[b]	1	.222		
Continuity Correction[a]	.916	1	.338		
Likelihood Ratio	1.501	1	.220		
Fisher's Exact Test				.293	.169
Linear-by-Linear Association	1.468	1	.226		
N of Valid Cases	61				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.31.

DEGREE2 * MYOPN2

Crosstab

			MYOPN2		
			9.00	12.00	Total
DEGREE2	1.00	Count	15	5	20
		% within DEGREE2	75.0%	25.0%	100.0%
		% within MYOPN2	50.0%	35.7%	45.5%
		% of Total	34.1%	11.4%	45.5%
	2.00	Count	15	9	24
		% within DEGREE2	62.5%	37.5%	100.0%
		% within MYOPN2	50.0%	64.3%	54.5%
		% of Total	34.1%	20.5%	54.5%
Total		Count	30	14	44
		% within DEGREE2	68.2%	31.8%	100.0%
		% within MYOPN2	100.0%	100.0%	100.0%
		% of Total	68.2%	31.8%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.786[b]	1	.375		
Continuity Correction[a]	.315	1	.575		
Likelihood Ratio	.795	1	.373		
Fisher's Exact Test				.519	.289
Linear-by-Linear Association	.768	1	.381		
N of Valid Cases	44				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.36.

DEGREE2 * CSPU2

Crosstab

			CSPU2		
			2.00	6.00	Total
DEGREE2	1.00	Count	5	9	14
		% within DEGREE2	35.7%	64.3%	100.0%
		% within CSPU2	45.5%	75.0%	60.9%
		% of Total	21.7%	39.1%	60.9%
	2.00	Count	6	3	9
		% within DEGREE2	66.7%	33.3%	100.0%
		% within CSPU2	54.5%	25.0%	39.1%
		% of Total	26.1%	13.0%	39.1%
Total		Count	11	12	23
		% within DEGREE2	47.8%	52.2%	100.0%
		% within CSPU2	100.0%	100.0%	100.0%
		% of Total	47.8%	52.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.103[b]	1	.147		
Continuity Correction[a]	1.046	1	.306		
Likelihood Ratio	2.135	1	.144		
Fisher's Exact Test				.214	.154
Linear-by-Linear Association	2.012	1	.156		
N of Valid Cases	23				

a. Computed only for a 2x2 table

b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 4.30.

DEGREE2 * CSPN2

Crosstab

			CSPN2		Total
			9.00	12.00	
DEGREE2	1.00	Count	32	8	40
		% within DEGREE2	80.0%	20.0%	100.0%
		% within CSPN2	51.6%	42.1%	49.4%
		% of Total	39.5%	9.9%	49.4%
	2.00	Count	30	11	41
		% within DEGREE2	73.2%	26.8%	100.0%
		% within CSPN2	48.4%	57.9%	50.6%
		% of Total	37.0%	13.6%	50.6%
Total		Count	62	19	81
		% within DEGREE2	76.5%	23.5%	100.0%
		% within CSPN2	100.0%	100.0%	100.0%
		% of Total	76.5%	23.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.526[b]	1	.468		
Continuity Correction[a]	.214	1	.643		
Likelihood Ratio	.528	1	.468		
Fisher's Exact Test				.601	.322
Linear-by-Linear Association	.519	1	.471		
N of Valid Cases	81				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.38.

DEGREE2 * SCPU2

Crosstab

			SCPU2		Total
			2.00	6.00	
DEGREE2	1.00	Count	9	11	20
		% within DEGREE2	45.0%	55.0%	100.0%
		% within SCPU2	42.9%	68.8%	54.1%
		% of Total	24.3%	29.7%	54.1%
	2.00	Count	12	5	17
		% within DEGREE2	70.6%	29.4%	100.0%
		% within SCPU2	57.1%	31.3%	45.9%
		% of Total	32.4%	13.5%	45.9%
Total		Count	21	16	37
		% within DEGREE2	56.8%	43.2%	100.0%
		% within SCPU2	100.0%	100.0%	100.0%
		% of Total	56.8%	43.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.451[b]	1	.117		
Continuity Correction[a]	1.520	1	.218		
Likelihood Ratio	2.492	1	.114		
Fisher's Exact Test				.185	.109
Linear-by-Linear Association	2.385	1	.122		
N of Valid Cases	37				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.35.

DEGREE2 * SCPN2

Crosstab

			SCPN2		Total
			9.00	12.00	
DEGREE2	1.00	Count	32	9	41
		% within DEGREE2	78.0%	22.0%	100.0%
		% within SCPN2	56.1%	37.5%	50.6%
		% of Total	39.5%	11.1%	50.6%
	2.00	Count	25	15	40
		% within DEGREE2	62.5%	37.5%	100.0%
		% within SCPN2	43.9%	62.5%	49.4%
		% of Total	30.9%	18.5%	49.4%
Total		Count	57	24	81
		% within DEGREE2	70.4%	29.6%	100.0%
		% within SCPN2	100.0%	100.0%	100.0%
		% of Total	70.4%	29.6%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.348[b]	1	.125		
Continuity Correction[a]	1.661	1	.197		
Likelihood Ratio	2.366	1	.124		
Fisher's Exact Test				.149	.099
Linear-by-Linear Association	2.319	1	.128		
N of Valid Cases	81				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.85.