Predictors of Academic Success in the University of North Dakota Master of Physical Therapy Program

Sherry Sisneros
University of North Dakota

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PREDICTORS OF ACADEMIC SUCCESS IN THE UNIVERSITY OF NORTH DAKOTA MASTER OF PHYSICAL THERAPY PROGRAM

by

Sherry Sisneros
Bachelor of Science in Physical Therapy
University of North Dakota, 1999

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

Grand Forks, North Dakota
May 2000
This Independent Study, submitted by Sherry Sisneros in partial fulfillment of the requirements for the Degree of Master of Physical Therapy from the University of North Dakota, has been read by the Faculty Preceptor, Advisor, and Chairperson of Physical Therapy under whom the work has been done and is hereby approved.

Renee Malvey
(Faculty Preceptor)

Renee Malvey
(Graduate School Advisor)

Thomas Moore
(Chairperson, Physical Therapy)
PERMISSION

Title Predictors of Academic Success in the University of North Dakota
Master of Physical Therapy Program

Department Physical Therapy

Degree Master of Physical Therapy

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Signature

Date Jan 26, 2000
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ACKNOWLEDGEMENTS

There are a lot of people I would like to thank in the completion of this project. Primarily, I would like to thank my preceptor and advisor, Renee Mabey, Ph.D., PT; after countless rewrites the project finally came to an end.

Of utmost importance, I would like to give my parents and family credit for not only who and where I am at today, but their continual support, love, praise, and the countless phone calls home with defeat on my mind and their never ending encouragement.

Finally, I would like to thank true friends: Chantel and Christine for without them this project never would have been started much less completed (is that a good thing?). "What doesn't break us only makes us stronger." We made it through the tense times and still came out as friends!

To the faculty of the PT department at UND, it has been a fun three years, but I can't say I'm sorry to be done...no offense! I will miss all the wonderful instructors and staff.

Last, but not least, I would like to thank the good Lord above who listened to each of my prayers and answered them. It was Him who helped me through the low times and gave me some uptimes to encourage me to continue on this path when I thought of giving up! If it wasn’t for His solace, I probably wouldn’t have made it through the past three years sane.
ABSTRACT

Due to the fact that the number of positions available in the University of North Dakota's Physical Therapy program is few yet the number of qualified applicants is many, the admissions committee has the responsibility to be selective in their process to ensure the most qualified students are admitted. In order to determine the most qualified students, one needs to determine the possible variables that predict not only academic, but clinical success as well.

Data was gathered from 145 students who attended the UND-PT program with admit years of 1991-1995. Traditional descriptive and analytical statistics were utilized to describe applicants, outcomes, and relationships with an alpha level of .05. The variables looked at were preprofessional and professional coursework, location of coursework, demographic information, letters of recommendation, admission interview scoring, clinical affiliation grades, and passing of the licensure exam.

It was found in this study that although many variables in conjunction with other variables predict academic success, only one new variable, Communications 161 is recommended as an additional selection criterion.
CHAPTER I
INTRODUCTION

Predictors of success in any physical therapy program are highly important variables in selecting students. Due to the number of applicants and limited number of available positions, it is extremely important to select the most qualified students who will have success not only academically, but clinically, and professionally as well. Students who succeed in the program have a higher likelihood of remaining in the profession, which in effect will benefit both the profession and society, thus, the importance of determining the best predictors of success in a physical therapy program.

In the literature, most authors agree pre-professional grade point average (GPA) is the best predictor of success in PT programs, it is however, a predictor only in the academic realm. Predictors of clinical performance still need to be determined. Some researchers believe the interview is a good clinical predictor, others believe personality tests are the best predictors. Finally there is the question of professional success, how does one grade that? Could you measure clinical performance during school and compare it to the passing of the licensure examination? Although there has been a lot of research on depicting post graduation success, the results are widely varied.

These questions and others seem to be a universal problem. The University of North Dakota (UND) is also dealing with these same issues not only for admittance into the program, but also for accreditation purposes.
Problem Statement

When admitting students into the UND Physical Therapy (UND-PT) program, the admissions committee looks at reference letters, science grade point average (SGPA), and an interview with the candidate. Not only is it a time consuming process, but it is hard to predict which students will succeed in the program with carry over into the field. That is why it is pertinent to obtain predictors in not only the academic realm, but the clinical realm as well.

Purpose

The purpose of this study is to determine the best predictors of success for the UND-PT Program. Investigated were subject profiles (age, school(s) attended, state of residency), interview scores, reference letter scores, preprofessional coursework grades, SGPA, grades for core courses in the program (PT 322: Anatomy, PT 423: Neuroscience, PT 412: Muscle Function, PT 482: Clinical Practice I and PT 552: Clinical Practice II) and professional fall year 3 GPA.

UND-PT defines academic success as passing all course work and clinical affiliations with a grade of 'C' or higher. Obviously, higher grades are more desirable. Professional success begins with timely graduation from the program, and includes passing of the licensure exam [Professional Examination Service (PES)], and obtainment of a job.

Research Questions

1. Do grades in preprofessional courses predict academic/clinical/professional success?
2. Do the admission variables currently used to determine applicant selection in the UND-PT program predict academic/clinical/professional success?

3. Does subject profile affect academic/clinical/professional success?

**Significance**

To allow for admission of the best qualified students into the program, this study was undertaken to identify predictors of success in the UND-PT program.

As to date, there is a lot of research out there to determine the best predictors of academic, clinical, and professional success in the field of physical therapy. The University of North Dakota's current process is outlined in chapter two of this study. The admissions board wants to determine if their current criterion agrees with the literature in determining those students who will succeed academically, clinically, and professionally.

Identification of the strongest academic and clinical predictors of success will allow the admissions committee for the University of North Dakota's Physical Therapy program (UND-PT) to select those students who possess the highest potential for success. Hopefully this study will enable the admissions board to make changes to their current criterion, adopt new admission criterion if necessary, or maintain their current criterion.
CHAPTER II
LITERATURE AND PROGRAM REVIEW

The researcher included an overview of the UND-PT program in the same chapter as the literature review. The physical therapy program will be discussed following the literature review.

Literature Review

Due to the number of applicants to physical therapy programs coupled with the limited positions available, it is important to pick those variables that not only predict success but allow the admissions committees to select highly qualified students who are most certain to succeed in a program and in the profession.¹,²

In most literature today, few researchers have been able to identify new/better predictors for the application process and screening of candidates. Of the few currently identified, the most widely known and used are the pre-professional GPA, personal interviews, letters of recommendation, essays, and standardized test scores such as the Allied Health Profession Admissions Test (AHPAT), the Graduate Records Exam (GRE), and the Scholastic Aptitude Test (SAT).²,³

In order to determine predictors of success, one must first determine and define the meaning of success and how it will be measured. One's success in the program can be measured not only by how well the students do academically and clinically, but also by timely completion of the program. Success in the profession is not only measured by
passing the licensure examination and obtaining a job, but also by performing well and providing a service to patients that enables them to return to a high quality of life.

When looking at GPA as a predictor of success, Barbara Cocanour and Nancy Peatman found GPA in basic sciences (Anatomy, Physiology, Chemistry, and Physics) to be a better predictor of success than the SAT score. Another study done by Kirchner et al agreed; preprofessional grades are a "powerful predictor of the professional GPA." Willingham in defending his findings of the GPA wrote, "student's undergraduate average has obvious relevance as a predictor because it represents the same amount of behavior one is trying to forecast." Not only is the GPA readily available, but it is also found to be fair and used by many if not all colleges and universities today in their admissions process as a predictor of success.

Mary McGinnis states that the interview and letters of recommendation are useful variables for predicting personality characteristics. Willingham agrees that letters of recommendation "can be highly relevant," especially if the writer is one that is able to foresee a student's success in that particular course of study. The problem he notes with the letters is their "unreliability or lack of comparability among judges."

Most studies find little to no relationship between one's interview score and their academic achievement in school. In Balogun's study, interviews, essays, and faculty ratings show minimal predictive value, accounting for only 2.1% of total variance as a predictor of academic success. The interview and letters of recommendation are not as agreed upon for predictors as is the preprofessional GPA. Few studies have been done on the actual interview process itself, and fewer yet have been done on letters of
recommendation, thus leaving them open for debate regarding their significance and importance in the application process.

Although some researchers have found predictors for academic success, Michael Gross\(^{8(p14)}\) stated it rather well when his study found it very hard to predict one's clinical performance. "The ability to predict clinical performance of students is very poor, and there is no available research regarding the value of admission criteria in predicting future professional practice." His study further states the importance and necessity of a reliable evaluation instrument for student performance. He also deemed it pertinent to look for those individuals who have not only the personality, but also the skills to survive and succeed in the profession.\(^8\)

Only two studies reviewed for this literature review found a relationship between academic and clinical performance. One study by Sandra Olney\(^9\) reports a "small but significant relationship of academic to clinical performance." The second study by Malcolm Peat, Gail Woodbury, and Allan Donner\(^{10}\) found preprofessional GPA "highly related" to clinical performance. As with reference letters and interview scores, the relationship between academic and clinical performance needs further research to prove its significance to success in the program and the profession.

Non-academic predictors such as age and traditional vs. non-traditional students were also looked at as predictors of success for academic and clinical performance. Sherrill Hayes, et al\(^{11}\) reported non-traditional students may have a "weaker" academic record, but once admitted, can successfully complete the program without difficulty. Bella May\(^{12}\) found no statistical significance between grade point average relative to
Thereby, until further research is done, reports are inconclusive as to whether age is related to academic success and can be used as a significant predictor.

**UND Program Review**

The UND-PT program was first established in 1967. Accreditation was received from the American Physical Therapy Association in 1970. In 1991, the program upgraded the degree from a Bachelor of Science in Physical Therapy to a Master of Physical Therapy. Each year, 48 students are admitted to the Physical Therapy program. Thirty-four of these available positions are reserved for the ND pool, while the remaining fourteen positions are reserved for the WICHE (Western Interstate Commission for Higher Education) students from various states. The following section describes the application process for the UND-PT program.

**UND Procedures**

The first two years of the program consist of prerequisite coursework. A student is required to complete at least 6 credit hours of English; 3 credit hours each of Communication, Psychology, and Anatomy; 12 credit hours in the arts and humanities classes; 8 credit hours each of Biology, Physics, and Chemistry; 3 credits in Sociology or a pre-approved substitute; and 4 credit hours each of Developmental Psychology and Human Physiology. For a complete listing of all prerequisite coursework and credits, see Appendix A.

Admittance into the program is very competitive and is determined by an applicant's SGPA (defined later in this section), three reference letters, and a personal
To gain admittance into the program, after satisfactorily completing the preprofessional coursework, an applicant must first fill out an application form in order to be invited to an interview by the admissions board.

**Application Form**

The initial application form to UND-PT is two pages long and asks for basic information such as extra-curricular activities, awards/scholarships received, achievements, volunteer hours, observation hours, and work experience related to PT. Currently, a minimum of 60 volunteered or paid hours are required in a PT setting prior to application to the program. For a copy of this form, see Appendix B.

**Interview**

The interview is to help the judges make a more informed decision about the candidate. It is a structured interview with the interview team consisting of 4-5 members. One or two faculty members, two currently practicing physical therapists from around the region, and a currently enrolled UND physical therapy student comprise a team. Each member receives an information packet and a set of core questions. The team may decide to break up the questions so each member asks the same question to each candidate, thus making the interview more standardized.

The interview begins with an introduction question, followed by questions that are supposed to reveal the applicant's motivation, knowledge about the profession, experience in physical therapy, and interests outside of school. The interview is a chance for the student to "sell" himself/herself as a qualified candidate.
After an interview, each interviewer takes a few minutes to individually score the applicants in the categories previously mentioned on the interview score sheet. Along with the scores for each category, the score sheet has guidelines for the interviewers to follow. Scores can range from 9 to 63 with 63 being a high score.

Following the interview process, faculty members enter total scores onto a computer spreadsheet where they are then ordinarily ranked with other applicant scores.

**SGPA**

SGPA consists of behavioral, biological, and physical science courses and their co-existing labs that the applicants must take prior to applying to the program. Behavioral courses include General and Developmental Psychology. Biological science courses include Biology, Anatomy, Physiology, and Zoology. Physical science courses are those involving Chemistry and Physics.

A replacement grade may be substituted for low science scores. A replacement grade can either be from taking the same class over again or taking a higher-level class and obtaining a higher grade. With either method the overall SGPA is increased.

**Letters of Reference**

An applicant is required to have three reference letters. A standardized form is sent to the applicant in his or her application packet. See Appendix C for a copy of the form. The form consists of questions as to the applicant's work experience, personality, social skills, and motivation set on a scale system. The writer scores the applicant from one to nine (nine being a high score) in the above-mentioned areas. At the bottom of the form is room for any comments the writer would like to make.
There are no requirements as to whom the candidates may choose to write a reference letter. However, it is recommended that at least one letter be from a PT as the therapist will be able to judge the candidate's skills and personality, relative to how the candidate will do in the profession.

**Composite Score**

UND faculty computes a composite score after obtaining all admission criterion. Scores for overall SGPA, reference letters, and interviews are entered onto the Quattro Pro computer spreadsheet. This information is then ordinaily ranked. For the time frame of this study, UND's criterion is: SGPA accounts for 80% of overall composite score, the interview accounts for 15%, and the reference letters make up the remaining 5%.

**Program courses**

After admittance into the program the student has three years of professional classes and clinical affiliations. The first fall semester contains classes that lay the foundation for future coursework. Two of these core courses are: Anatomy for Physical Therapy (PT 322) and Neuroscience for Physical Therapy (PT 423). In the spring semester of their first year, the students complete another core course for the program, Muscle Function in Health and Disease (PT 412). These courses were looked at as outcomes in this study due to the fact that they seem to be classes students have the most difficulty with. For a complete listing of all courses taken during the 3-year program, see Appendix A.
For the fall semester of year 2, students go out on 3 six-week clinical affiliations (PT 482: Clinical Practice I) in the areas of outpatient and acute care, and an area of their choice which can include pediatrics, sports medicine, rural, etc. During the spring semester of year 3, the students have 2 nine-week affiliations (PT 552: Clinical Practice II), one in a rehabilitation setting and one in a setting of their choice. While out on affiliations, the students are evaluated by their clinical instructors who send these forms back to the clinical coordinator at UND. These scores are then changed into course grades of the student's clinical performance. In conjunction with the above core courses, these grades were also looked at for review.

The final academic semester is done in the fall of the student's third year (professional fall year 3). At this time, a student has a Bachelor of Science degree in Physical Therapy and has been admitted to the UND graduate program. A total GPA in the graduate program is obtained at this time. This variable was also reviewed in this study.

From most of the literature, it is evidenced that SGPA, reference letters, and interviews (all current UND criteria) are good predictors of academic success. However, there are those that will debate these issues. Thus, this study was deemed necessary in order to establish predictors of academic and clinical success for the UND-PT program.
CHAPTER III
METHODS

Considerations for methodology included in this retrospective study were subjects, instrumentation, data analysis, and data reporting. This study underwent expedited review by the Institutional Review Board prior to research. A copy of the approval is in Appendix D.

Subjects

Academic files of 144 physical therapy students who were admitted into the program from 1991-1995 with graduation years 1994-1998 were reviewed. Subjects were taken from the North Dakota applicant pool. Students admitted under the Western Interstate Commission for Higher Education (WICHE) program were excluded from this study.

Instrumentation

Data collected were determined by a review of literature on the topic and UND-PT faculty members and included academic and non-academic information. Data were collected from application letters and UND-PT student files, transferred to a standardized data form, and entered into the SPSS (Statistical Package for the Social Sciences) program by departmental staff. For a copy of the data form, see Appendix E. All data about the students were in coded form so as to ensure confidentiality. Only UND-PT staff had access to subject names and identifying numbers (i.e. social security).
Data Analysis

Data was collected and recorded on a standardized form by UND-PT staff. Descriptive, one-way ANOVA, Scheffe's post hoc tests, and regression statistical tests were utilized to describe applicants, outcomes, and relationships between variables. The alpha level was set at .05 to determine the significance of all tests.

Reporting of Results

Results will be reported in this Independent Study. They will be available to UND-PT faculty, staff, students, and the public. The results will help UND-PT faculty members make future decisions regarding admission to the PT program and are necessary for future accreditation purposes.
CHAPTER IV

RESULTS

Statistical analysis for this study is comprised of both descriptive and analytical statistics. The first portion of this chapter will discuss descriptive statistics such as subject profile, admission scoring, preprofessional academic coursework grades, and professional academic and clinical performances. The second portion will discuss the analytical statistics utilized to investigate the predictive value of multiple admission variables relative to academic and clinical success in the UND-PT program.

Subjects

Personal characteristics were investigated in this section to identify the population under study. Included were age, state of residency, and schools attended for preprofessional coursework. Of 144 students represented in this study, by far a majority (76%) were from North Dakota. See Table 1 for an overall representation of students.

Through one-way ANOVA, no significant difference ($F = .287$, $p = .886$) was found in student age between years of admission, thus the age profile is reported for the aggregate. Of 143 students, a mean of 22.78 years of age was obtained with a standard deviation (SD) of 4.13, and a range of 19 years to 41 years. Estimated age was determined by subtracting applicants' birth year from admit year.

Because students are not required to complete their preprofessional coursework at UND, attendance at a variety of schools is evidenced. Overall, the majority of
Table 1. State of Residency

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percent</th>
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<tbody>
<tr>
<td>North Dakota</td>
<td>110</td>
<td>76</td>
</tr>
<tr>
<td>Minnesota</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>144</td>
<td>100</td>
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preprofessional requisite coursework was completed at UND. The course most often completed at UND was Physiology 301 (88%) and the course least taken at UND was Psychology 101 (73%). Coursework completed within the North Dakota University System (NDUS) followed with 8-17%. Three to eleven percent of all remaining preprofessional courses were completed outside of the UND and NDUS. (Table 2)

**Preadmission Student Performances**

Preprofessional academic courses are presented in Table 3 with means, SD, and ranges identified for all students (n=144). Three courses (Chemistry 105, Physics 101, and Psychology 251) demonstrated a significant difference in mean grades between years under ANOVA. However, this significance was not maintained under Scheffe’s post hoc analysis. Thus all cases are reported in aggregate.

Preprofessional general requirements are presented in Table 4 with means, SD, and ranges identified for all students (n=144). Two variables (interview score and pre-PT hours worked) demonstrated a significant difference between years under ANOVA. However, this significance was not maintained for pre-PT hours worked under Scheffe’s post hoc analysis. Consequently, all cases are reported in aggregate.

To determine if the extreme range and kurtosis of minimal to maximal pre-PT hours worked affected the overall significance, the researchers further analyzed the data by breaking it up into three different categories. The first method, which proved to be the best representation of the data, included all cases from .00 - 6520.00 hours excluding an
<table>
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<th></th>
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<th>NDUS†</th>
<th>Other*</th>
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<tr>
<td></td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
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<tr>
<td>Biology 101</td>
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<td>Psychology 251</td>
<td>144</td>
<td>125</td>
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<tr>
<td>Communications 161</td>
<td>144</td>
<td>108</td>
<td>21</td>
<td>15</td>
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</table>

†NDUS (North Dakota University System) includes Minot State University, Dickinson State University, Bismarck State University, North Dakota State University, Williston State College, Mayville State University, University of North Dakota – Lake Region, North Dakota State University – Bottineau, and Valley City State University. The University of North Dakota was not included within the NDUS for the purpose of this study in order to delineate school attendance.

*Schools included in this category are from a variety of different states.
Table 3. Preprofessional Academic Coursework - Grade Point and ANOVA Significance Levels for Comparison of Grades Between Admission Years 1991-1995.

<table>
<thead>
<tr>
<th>Course</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Range(^{a})</th>
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<td>1.02</td>
<td>.399</td>
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<td>142</td>
<td>3.54</td>
<td>.55</td>
<td>2.00 - 4.00</td>
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<td>.294</td>
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<td>.55</td>
<td>2.00 - 4.00</td>
<td>2.45</td>
<td>.049</td>
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<td>.085</td>
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<td>.56</td>
<td>2.00 - 4.00</td>
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<td>.026</td>
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<td>.44</td>
<td>2.00 - 4.00</td>
<td>1.06</td>
<td>.381</td>
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<tr>
<td>Anatomy 204</td>
<td>142</td>
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<td>.20</td>
<td>3.00 - 4.00</td>
<td>.37</td>
<td>.831</td>
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<td>142</td>
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<td>.36</td>
<td>3.00 - 4.00</td>
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<td>2.00 - 4.00</td>
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<td>.21</td>
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<td>.186</td>
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</table>

\(^{a}\)Range is based on a 4.00 grading scale (1=D, 2=C, 3=B, 4=A)

\(^{b}\)There was no significant difference found on a one-way analysis of variance (ANOVA) between years or if significance was found it was not maintained under Scheffe’s post hoc analysis. Thus mean and standard deviation of all years is reported in aggregate.

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Range&lt;sup&gt;a&lt;/sup&gt;</th>
<th>ANOVA Results</th>
<th>Scheffe's Post hoc Analysis</th>
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<td></td>
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<td></td>
<td></td>
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<td>1992 &amp; 1995</td>
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<tr>
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<td>1994 &amp; 1995</td>
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<tr>
<td>All Years</td>
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<td>44.00</td>
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<td>9.31</td>
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<td>7.66</td>
<td>79.00</td>
<td>0.93</td>
<td>.451</td>
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<td>3.61</td>
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<td>Pre-PT hours</td>
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<td>2.22</td>
<td>.070</td>
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</table>

*Bolded items indicate current admission requirements.

<sup>a</sup>Range reported for admit SGPA is based on a 4.00 grading scale where 1.00=D and 4.00=A. Interview scoring scale is 7-63. Reference scoring scale is 1-9. Composite score consists of 80% admit science GPA, 15% interview score, and 5% reference letter score. Pre-PT hours obtained through volunteer or work related experience require no minimum or maximum as defined by UND requirements. Years spent in Pre-PT is based on a minimum of two years with an undefined maximum.
outlier of 13,160 hours. The second method was performed by selecting cases with less than 500 hours and proved to be nonsignificant. The final method was performed by selecting cases with greater than 500 hours and again proved to be nonsignificant relative to differences between years. (See Table 4)

Professional Program Student Performances

The professional academic courses chosen as outcome variables in this study (PT 322: Anatomy, PT 423: Neuroscience, PT 412: Muscle Function) were selected based upon the fact that they are core courses within the curriculum and oftentimes are the most difficult for students to complete. The second outcome used to measure student academic success, professional fall year 3 GPA, was chosen, as it is the students’ final academic semester that integrates the core and capstone courses. Finally, PT 482: Clinical Practice I and PT 552: Clinical Practice II were chosen as outcomes for this study because they represent the student’s clinical competence.

Two professional academic coursework variables, PT 322 and professional fall year 3 GPA were found to be significantly different between years under one-way ANOVA. Under Scheffe, significance for PT 322 was found to be .043 between the years of 1991 (mean GPA = 3.84) and 1994 (mean GPA = 3.33). However, significance for professional fall year 3 GPA was not maintained under Scheffe’s post-hoc analysis.

Course grades for PT: 482 Clinical Practice I and PT 552: Clinical Practice II are reported in place of individual affiliation competency ratings for each six or nine week affiliation. As there were no significant differences found in affiliation grades between
PT 482 and PT 552 (related samples t (142) = .000, p > .05) only PT 552 competency grade will be used to describe clinical success. (See Table 5)

Out of 145 students admitted from 1991 - 1994, 140 graduated on time in May of their third year. One student required an additional three months to complete the program in August of his/her third year. Two students required longer than three years to complete the program secondary to course retakes. Of these students, one completed the program in four years and one in five years. Secondary to different career choices, two other students withdrew from the program prior to completion.

Out of 143 students who successfully graduated from the UND-PT program, 142 passed the professional licensure examination (Professional Examination Service [PES]).

**Prediction Analysis**

Variables used for prediction in this study include: admission composite score (SGPA (80%), interview (15%), and references (5%)), preprofessional academic grades, hours worked (volunteered or paid), number of times applied to the program, years spent in pre-PT coursework, and number of courses repeated. Outcome variables utilized to describe academic success within the professional program include: select professional coursework grades (PT 322, PT 412, and PT 423) and professional fall year 3 GPA. Junior level professional coursework grades considered in aggregate (mean grade of PT 322, 412, and 423) produced a stronger prediction equation than did any course used individually as an outcome measure. In lieu of this finding, junior year professional coursework grades will now be considered in

<table>
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<th>Course Code</th>
<th>Course Title</th>
<th>Year</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>Range*</th>
<th>ANOVA Results</th>
<th>Scheffe’s Post hoc Analysis</th>
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<td>PT 322: Anatomy</td>
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<td>25</td>
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<td></td>
<td></td>
<td>1992</td>
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<td>.57</td>
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<td>.79</td>
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<td>1993</td>
<td>22</td>
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<td>.67</td>
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<td>.50</td>
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<td></td>
<td></td>
<td>1994</td>
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<td>.69</td>
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<td>.53</td>
<td>.713</td>
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<td>1995</td>
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<td>3.42</td>
<td>.56</td>
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<td>.53</td>
<td>.713</td>
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<tr>
<td></td>
<td>All Years</td>
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<td></td>
<td>3.52</td>
<td>.62</td>
<td>2.00-4.00</td>
<td>2.84</td>
<td>.027</td>
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<td>PT 423: Neuroscience</td>
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<td>.023</td>
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<td>.549</td>
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<td>PT 552: Clinical Practice II</td>
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<td>.713</td>
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</table>

* The range is based on a 4.00 grading scale.
aggregate as a “junior year academic mean” for the purpose of this study. Professional fall year 3 GPA was chosen as an outcome for this study as it is the student’s last academic semester and one of the most important elements in the curriculum, combining both capstone and new material.

Outcomes used to describe clinical success include: undergraduate (PT 482: Clinical Practice I) and graduate (PT 552: Clinical Practice II) clinical competency grades. Because no significant difference was found between grades in these courses under a paired t-test, only PT 552 competency grade will be used to describe clinical success.

Additional outcome measures of student success examined by this study include timeliness of graduation and successful completion of the PES as discussed previously in this chapter. Statistical analysis of these variables, beyond the previously reported descriptive findings, can not be performed due to the personal and confidential nature of this information. Specifically, the Professional Examination Service (PES) will not release an individual’s score to anyone other than the student tested and the state licensure board.

Variables for prediction were looked at individually and in conjunction with other measures using a stepwise regression model with forward solution. The best predictors, relative to an outcome measure, and the adjusted $r^2$ are reported in Tables 6 through 9. Junior year academic mean prediction variables are Physics 102, Chemistry 106, and Biology 102. Predictors for professional fall year 3 GPA are Anatomy 204 and
Communications 161. PT 552: Clinical Practice II grade prediction variables are number of times applied to the UND-PT program and Communications 161. The predictors for the overall mean of professional fall year 3 GPA, junior year academic mean, and PT 552: Clinical Practice II grades are original SGPA and interview score. The ANOVA summary table and the coefficient for each regression model are also presented in Table 6 through Table 9.
Table 6. Regression for Junior Year Academic Mean - Predictors of Physics 102, Chemistry 106, Biology 102.

**ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
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<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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**Coefficients**

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<th>Standardized Coefficients</th>
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Table 7. Regression for Professional Fall Year 3 GPA - Predictors of Anatomy 204 and Communication 161.

**ANOVA**

<table>
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<th>Model</th>
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**Coefficients**

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<th>Std. Error</th>
<th>Beta</th>
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<td>COM161G1</td>
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Table 8. Regression for PT552: Clinical Practice II Grade - Predictors of Number of Times Applied to UND-PT Program and Communications 161.

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Coefficients

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<td>COM161G1</td>
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Table 9. Regression for Junior Year Academic Mean, Fall Year 3 GPA, and PT 552: Clinical Practice II Grade - Predictors of Original SGPA and Interview Score.

### ANOVA

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### Coefficients

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<td></td>
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<td>2.514</td>
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CHAPTER V
DISCUSSION AND CONCLUSION

To allow the UND admissions committee to better select highly qualified students who are most certain to succeed in the UND-PT program and in the profession, this study was undertaken by three physical therapy student researchers. Descriptive statistics for several different variables were looked at to determine differences between admission years of 1991-1995. Analytical statistics were utilized to determine if any of the individual variables looked at determined academic or clinical success.

When looking at predictors for success, several different equations were looked at however only the strongest predictors are reported in this study. It is pertinent to mention that due to the homogeneity of the pre-requisites and professional course grades one does not see strong relationships/high predictability between variables. Balogun (p238) in his study states "Because variables have a narrow range they may not discriminate adequately among the usually homogenous pool of candidates for admission to a professional program."

Subject Profile

In past literature, some researchers found a relationship between age and academic grades. It is said that older individuals do not have strong grades, but once in the actual physical therapy program they do complete it successfully. An estimated age was obtained for all students in the study. It was found that the mean age was 22 years.
The youngest student was 19 years and the oldest 41 years of age. However, under affirmation action, age cannot be a criterion in any selection process. Thus a correlation between age and performance was not investigated.

State of residency was also addressed. This study only included subjects from the North Dakota pool, however the researchers separated the students into ND residents, MN residents, and other residents. Most applicants were found to be ND residents. This could be due to a variety of reasons, one assumption being that most students opt to stay close to home when attending college for the first time. Another reason may be that students feel they have a better chance for admission into a ND program if they are a ND resident. The University of North Dakota is a state school, therefore tuition is lower for ND residents; this may be another reason why most subjects were ND residents.

Preadmission and Professional Student Performances

Preprofessional academic course grades analyzed for this study include: Biology 101 and 102, Chemistry 105 and 106, Physics 101 and 102, Anatomy 204, Physiology 301, Psychology 101 and 251, Communications 161. Other variables looked at were: composite score, original SGPA and admit SGPA, interview score, reference letter score, number of hours worked, number of times applied, number of years in pre-PT, and number of courses repeated.

Interview score was found to be a significant individual predictor of future success in the program. This may be due to the fact that the interview measures not only how much a subject knows about the PT field, but also it is one way of measuring a
subject's personality. In his study Balogun\(^6\) found interview score alone to predict clinical success (adjusted \(r^2 = .346\)). Hayes, et al\(^11\) also found interview score more valid in predicting clinical competence.

Many variables, in conjunction with other variables, were found to predict academic success. For example, basic science prerequisites Biology 102, Chemistry 106, and Physics 102 in combination predicted junior year success (adjusted \(r^2 = .264\)). Anatomy 204 and Communications 161 together predict success for professional fall year 3 GPA (\(r^2 = .154\)). These predictions are not unexpected, as the science courses are foundational courses for the sciences of physical therapy (all theory and practical component classes). In their study, Cocanour and Peatman\(^3\) found a direct relationship between success in the pre-PT science courses and success in the PT courses.

It can be understood why Anatomy 204 is a predictor of success, but one can only guess at the relationship of Communications 161 as a predictor. It may be due to the fact that Communication 161 lays the foundation for not only speech and language skills, but also how students relate to professors, peers, clinicians, and most importantly their patients. Students need to acquire skills to talk professionally with other medical professionals and in laymen terms with their patients of any age. During the graduate year there is an increased academic emphasis on group projects and classroom and professional presentations, thus perhaps the relationship between Communications 161 and professional fall year 3.

Communication 161 was a surprise finding in this study. Not only was it a predictor for fall year 3 GPA, but in combination with number of times a student applied
to the program, it predicted success in PT 552: Clinical Practice II (adjusted $r^2 = .107$). The relationship may be explained in that in the clinical environment, student success is highly dependent upon verbal and written communication skills.

Together original SGPA and interview score were predictors of total mean (PT 322, PT 412, PT 423, fall year 3 GPA, PT 552) adjusted $r^2 = .247$. It was found that original SGPA was a stronger predictor than replacement SGPA in the academic realm. Some teachers may say that a student's first attempt at a class is their "true colors" so to speak. The student does the work, attends the class, and may or may not make it through. If the student is dedicated they will know when and if they need help and will go out of their way to obtain it. However, the less dedicated, the shy/timid, or the students who don't believe they are having trouble will not do as well in the class. After realizing they need a high grade in the class, a retake is inevitable, thus the replacement grade. Upon this retake, the student realizes his first mistake and performs better, however he may have to study harder, need tutoring, or he may need extra help from the teacher. After replacement, the GPA may be higher, but more than likely the student maintains the same study habits as before. Although these students may be good students academically in other areas, they may not be science oriented and thus the correlation between original SGPA and science courses in the program.

Another surprise finding was a negative correlation between the number of times an applicant applied to the program and how well they did clinically. The more times a student applied to the program, the less well they performed on their clinical affiliations. Currently, in UND-PT selections, the number of times applied is not chosen as a criterion
as UND-PT faculty believe the variable could be affected by a number of different factors other than pre-physical therapy academic aptitude.

In contrast, the number of hours worked in a PT setting, either volunteered or paid, was not found to be a significant predictor of success. This could be considered a surprise finding as the hours worked give the student an actual clinical experience to relate to theoretical components. One would think that the more experienced applicant could better understand and apply the information learned in the classroom.

One can find predictors of academic and clinical success, but these predictors cannot identify those students who will drop out of the program secondary to personal issues. It was found that out of 145 students admitted, two students dropped out of the UND-PT program. After discussion with Tom Mohr Ph.D. PT, (December 1999) and Renee Mabey Ph.D. PT (selection chair, director of outcomes assessment, UND-PT faculty; December 1999) it was deemed that these students did not "fail" academically, they dropped out secondary to career changes. In reality the small percentage of those two students did not affect the overall findings of student performance in the program.

One hundred forty-three individuals in this study went on to graduate from the program. However, only 140 graduated in May of their third year, and three students took longer than the usual time. The faculty as educators believe it is important to help the students in any way possible to successfully complete the program, even if it means the student retakes courses and graduates at a later date. The student still graduates with a Master of Physical Therapy. Out of 143 who took the national exam, only one person was unable to pass the test. After discussion with Mohr (December 1999) and Mabey
it is believed that after 3 attempts, the student finally moved on to something else.

Although components for academic and clinical success have been found, professional success predictors and outcomes have yet to be determined. One such predictor, student performance on the PES, is eluded to, but passing this does not predict how well the student performs in the clinic nor does it predict his inter-personal relationship skills with co-workers, clients, or other medical professionals.

Gross reports the ability to predict clinical performance is poor; the research studies are few. Further research geared toward predicting clinical performance is necessary and may lead to new admissions criterion to better predict not only clinical but also professional success.

Based on the results of this study, it is recommended the UND-PT admission board continue their current criterion and add Communications 161. However, one must consider a question: If all physical therapy students were included in this study (the ND pool and the WICHE pool), would the results be affected?

Limitations

Due to the homogeneity of subjects in this study, researchers were unable to identify relationships beyond the correlations analyzed.

Additional research with the inclusion of all students is necessary before ensuring more conclusive results and or recommendations for better predictors of academic, clinical, and professional success relative to the UND-PT program. A follow-up study needs to be done in order to better identify those variables that have a strong relationship with professional success.
Conclusion

This study was undertaken to try to establish better predictor variables for the admissions committee for the UND-PT program. Although there were some variables found as predictors in this study, only one new variable, Communication 161 was recommended to the admissions committee to add to their current criteria. It is suggested to the UND-PT applications committee to maintain their current selection method (SGPA, interview score, reference letters) with the inclusion of this new variable.
APPENDICES
APPENDIX A
Physical Therapy
(PT)

T. Mohr (Chair), Johnson, Keck, Mabey, P. Mohr, and Simunds

The Department of Physical Therapy offers the clinically oriented, rural emphasis, entry level Master of Physical Therapy (M.P.T.). The professional educational component of the M.P.T. requires three academic years and one summer session beyond the pre-physical therapy preparation.

Physical Therapy is an allied health profession open to both men and women. Physical therapists are involved in the evaluation and treatment of many types of disabilities. They are employed by hospitals, rehabilitation centers, nursing homes, school systems, community health agencies, and in private practice.

The first two years of the following curriculum are considered to be pre-Physical Therapy. The professional educational component of the M.P.T. will require three academic years and one summer session following completion of the 63-71 credits pre-physical therapy entrance requirements. The curriculum requires that the student take 3 to 8 semester credits in elective coursework, and 63 credits of required courses. The Department advises students to consider elective courses in the areas of psychology, management, principles of education or special education, or the specific Rehabilitation Services Concentration in the Department of Social Work. Before a student can make application into the professional program, ALL the coursework listed for the pre-Physical Therapy portion must be completed or underway. Specifically, Physiology 201 and Anatomy 204 must be completed prior to selection. Once that coursework is near completion, the student must make application for the professional program through the Department of Physical Therapy. Wyoming residents and WICHE-eligible students must apply by invitation of UND-PT through the WICHE certification process. Selected out-of-state students may be eligible for Physical Therapy Individual Independent Contracts (PTICs), inquiry should be addressed to the Admissions Coordinator at UND-PT. UND-PT does not accept applications for the professional program from any other out-of-state candidates unless they have completed all of the pre-P.T. coursework at UND. North Dakota residents are strongly encouraged to spend at least one year in pre-P.T. at UND. Applications must be made to the Department no later than March 1 of the year the student wishes to enter the professional program.

Acceptance into Physical Therapy is on a competitive basis, with the major determinant being the basic science grade point average. The basic science grade point average is defined as: biology (8 semester hours), chemistry (8 semester hours), anatomy (3 semester hours), physics (8 semester hours), psychology (17 semester hours - including Intro and Developmental), and physiology (4 semester hours). Reference letters, a personal interview, and other personal qualifications are also considered prior to final acceptance into the professional program. Acceptance by the Office of Admissions of the University of North Dakota does not constitute acceptance into the professional program in Physical Therapy.

Once accepted, all students in the professional program must attain a letter grade of at least "C" in their major courses in order to continue in the program. No student will be allowed to complete the full-time clinical affiliation during Semester I of the second year unless he/she has received at least a grade of "C" in each of the major coursework classes.

Students who have been accepted into the professional program in P.T. and who have successfully completed professional education years 01 and 02 and the summer session between those years will be automatically advanced into Graduate School for professional year 03 upon completion of the GRE, completion of a UND Graduate School application form, submission of all undergraduate transcripts to the Graduate School, and submission of a letter of endorsement from the Chair of Physical Therapy. This advancement in status of the physical therapy student assures the students that they will not be placed in double jeopardy.

Advancement to Candidacy for the M.P.T. degree is a formal procedure and can be granted only after a student in Approved Status has met certain academic requirements. To be advanced to candidacy, the following requirements must be met in approximately the following sequence:

1. Completion of the equivalent of one semester of full-time work (12 semester credits)
2. A GPA of at least 3.00 for all work attempted
3. The appointment of an Advisor. The Advisor, who must be a member of the Graduate Faculty from the Department of Physical Therapy, will be appointed by the Dean upon written recommendation of the Chairperson of the Physical Therapy Department. Until the Advisor has been appointed, the Chairperson of the Department will serve as the temporary Advisor.
4. Approval of a Program of Study for the degree on a form available from the Graduate School. The program, which should be developed in consultation with the Advisor, shall carry the approval of the student, the Advisor, and the Chairperson of the Department, and shall be submitted to the Dean of the Graduate School for approval. Inclusion of a minor in the program of study will necessitate obtaining the signed approval of the Chairperson of the minor department.
5. Approval of a topic for the Independent Study by having the Advisor sign the "Outline of Independent Study" form and submitting the Outline and three copies to the Graduate Office become part of the record.

The student and the Advisor will be notified in writing by the Graduate School of the advancement to Candidacy. Students should complete all requirements for advancement to Candidacy prior to the semester in which they plan to graduate.
Students must apply for the award of the M.P.T. degree at the beginning of the semester or summer session in which the degree is to be awarded (see page 38 for requirements). Application must be made at the Graduate School Office on the form provided by the deadline noted in the Academic Calendar. In order for students to be placed on the graduation list e.g., to have their "Application for Degree" accepted by the Graduate School and to be eligible to receive the Master of Physical Therapy Degree, they must be in approved status or have been advanced to Candidacy for the degree no later than the beginning of the semester or summer session in which they expect to graduate.

After the student makes application for the degree, the Graduate Office checks the records to ensure the student has been advanced to Candidacy for the M.P.T. and is in good standing. The eligibility of the student to proceed with the graduation process will be certified and the Final Report form will be sent to the Advisor approximately six weeks before graduation.

Students in the professional program should be aware that there are special requirements for clinical uniforms and professional liability insurance that must be met prior to any clinical contact with patients. The student will also be responsible for travel, housing, and food costs, in addition to the payment of regular tuition, during the full-time clinical affiliation semesters; the majority of these affiliation sites are at geographic locations other than the City of Grand Forks.

The faculty reserves the right to place on professional probation or to cancel the registration of any student in Physical Therapy whose performance in the classroom or the clinic is unsatisfactory.

School of Medicine

MASTER OF PHYSICAL THERAPY (Degree awarded by the Graduate School)

I. General Graduation Requirements: see pages 52-60

II. The Following Curriculum

Pre-Physical Therapy
Engl 101, 102  Composition I, II  13
Arts and Humanities  12
Biol 101, 102  Introduction to Biology  14
Chen 105, 106  General Chemistry I, II (Quant Analytical)  15
Soc 101  Introduction to Sociology for approved students  13
Phys 101, 102  Introduction to College Physics  8
Anat 204  Anatomy of Human Physiology  13
Comm 101  Fundamentals of Public Speaking  11
Psy 251  Developmental Psychology  11
PT 101  Orientation to Physical Therapy  13-16

Professional Program — Physical Therapy
PT 200, 210  Medical Sciences I  16
PT 201  Introduction to Ethics  11
PT 210  Public Health and Medical Legal Aspects  11
PT 214  Biomedical, Anatomical, and Isolation Techniques  11
PT 218  Techniques I: Theory and Techniques Massage  11
PT 219  Techniques II: Theory and Techniques Thermodynamics  11
PT 220  Research I: Research Methods  12
PT 222  Anatomy for Physical Therapy  11
PT 223  Abnormal Psychology  11
PT 310  Rehabilitation Procedures  11
PT 311  Muscle Function in Health and Disease  11

PT 312  Public Health and Medical Legal Aspects  11
PT 313  Techniques II: Theory and Techniques Thermodynamics  11
PT 320  Research I: Research Methods  12
PT 322  Muscle Function in Health and Disease  11
PT 410  Theory and Techniques of Therapeutics Exercise I: Muscle Control and Coordination  11

PT 411  Theory and Techniques of Therapeutics Exercise I: Muscle Control and Coordination  11

PT 412  Theory and Techniques of Therapeutics Exercise I: Muscle Control and Coordination  11
Patterns of muscle action with neurovascular involvement. Theory and techniques of muscle testing and joint mobilization. Laboratory.

413. Theory and Technique of Therapeutic Exercise I: Mobility-Strength-Endurance. 3 credits
Prerequisite: Registred in Professional Physical Therapy Curriculum. Lecture and laboratory work in therapeutic exercises to increase mobility, strength, and endurance in the human body. Laboratory.

415. Theory and Technique of Therapeutic Exercise II: Control and Coordination. 3 credits
Prerequisite: Registred in Professional Physical Therapy Curriculum. Lecture and laboratory work in therapeutic exercise to establish and maintain muscle control and coordination, including muscle re-education, facilitation, relaxation. Laboratory.

417. Theory and Technique of Therapeutic Exercise III: Tests and Measurements. 3 credits
Prerequisite: Registred in Professional Physical Therapy Curriculum. Specific physical therapy tests, measurements, and evaluation techniques related to the musculoskeletal and neurological systems Lab/Techniques. Laboratory.

419. Techniques III: Theory and Technique of Electrotherapy and Electrodiagnosis. 2 credits
Prerequisite: Registred in Professional Physical Therapy Curriculum. Theory and application of therapeutic currents, biofeedback, electromyography, and nerve conduction velocity in physical therapy. Laboratory.

52. Administration — Physical Therapy. 1 credit. Prerequisite: Registred in Professional Physical Therapy Curriculum. Lectures and discussion of administration procedures as they apply to the physical therapy department.

523. Neuroscience for Physical Therapy. 3 credits. Prerequisite: Registred in Professional Physical Therapy Curriculum. Introduction and investigation of advanced clinical procedures and topics. Topics discussed will be dictated by student and faculty interests.

524. Independent Study in Physical Therapy. 1-4 credits. Prerequisite: Registred in Professional Physical Therapy Curriculum. Research and independent study in a specialized area of physical therapy. Laboratory.

529. Psychological Aspects of Disability. 2 credits. Prerequisite: Psy 101, Psy 251, Psy 370, and/or equivalents, and consent of instructor. Readings and discussion course. Study of psychological coping mechanisms, stress, and motivational factors pertinent to the disabled. Review of adjustment problems unique to specific disabilities and disease processes, including the terminally ill.

524R. Research I: Clinical Research. 1 credit. Prerequisite: Registred in Professional Physical Therapy Curriculum. Preparation of research papers and thesis on a clinical topic. Laboratory.

525. Techniques IV: Clinical Evaluation. 3 credits. Prerequisite: Registred in Professional Physical Therapy Curriculum. Specific clinical evaluation techniques including neurological testing, soft tissue assessment, joint mobilization, and relevant written documentation of results.


529. Health Law for Health Care Providers. 2 credits. Discussion and readings course relevant to the "ordering" capability of law as it relates to health care. This course addresses the issues of quality of health care, risk management, health planning, access, and "networking" in the health care system. Topics discussed will be relevant to the health care system.

530. Ethics. 2 credits. Discussion and readings course relevant to the ethics of health care. Topics discussed will be relevant to the health care system.

531. Current Topics in P.T. Administration. 2 credits. Discussion and readings course relevant to the ethics of health care. Topics discussed will be relevant to the health care system.
537. Strategies for Early Intervention. 2 credits. Prerequisite: PT 415. This course is designed to
review current practices in early intervention. Course materials will focus on characteristics of disabling
conditions that influence growth and development of motor skills, cognition and educational development.
Emphasis will be on collaborative service provision with an interdisciplinary approach. Topics also covered
include: current issues, assessment of the child/family unit and legislative guidelines for service provision.

538. Advanced Pediatrics Assessment and Treatment Techniques. 3 credits. Prerequisite: PT 415.
This course is designed to provide physical therapy students with opportunities to explore and implement
standardized and criterion-referenced evaluation instruments to identify need areas for treatment. In addition,
students will design treatment programs for children with disabilities by integrating current therapeutic
techniques with efficacy studies.

549. Advanced Applied Anatomy/Clinical Kinesiology. 3 credits. Prerequisite: Registered in
Professional Physical Therapy Curriculum. Study of applied anatomy and its importance to research and
clinical application, particularly as related to Physical Therapy.

552. Clinic I: Clinical Practice. 7-14 credits. Prerequisite: Registered in Professional Physical
Therapy Curriculum. Full-time clinical practice affiliation in selected Physical Therapy provider centers, in
and out of City of Grand Forks. Two nine-week segments, one of which will be related to student area of
Directed Studies, the other either research or additional clinical.

561. Seminar: Physical Therapy. 1-4 credits. Prerequisite: Registered in Professional Physical
Therapy Curriculum. This course serves to focus student attention toward graduate study in Physical
Therapy. Explore and discuss areas of interest for student and faculty. May repeat to 4 credits maximum.

562. Readings: Physical Therapy. 1-4 credits. Prerequisite: Registered in Professional Physical
Therapy Curriculum. Review of current literature pertinent to Physical Therapy; critical examination of
design, content, and validity of conclusions.

570. Patient Education Techniques — Physical Therapy. 2 credits. Prerequisite: Registered in
Professional Physical Therapy Curriculum. A review of the teaching/learning process with emphasis on
techniques targeted to enhance patient involvement in their rehabilitation and physical therapeutic processes.
Thirty hours of lecture, discussion, and project per semester.

572. Teaching Experience in Physical Therapy. 1-3 credits. Prerequisite: Registered in Professional
Physical Therapy Curriculum. Supervised experience in University teaching in Physical Therapy. Projects in
curriculum development, formulation of teaching/learning objectives, teaching materials, evaluation tools, and
experience in competency based learning environment.

582. Instrumentation for Physical Therapy. 2 credits. Prerequisite: Registered in Professional
Physical Therapy Curriculum. The application of existing electrical and mechanical instrumentation theories
and techniques to research and clinical practice in physical therapy.

590. Directed Studies/Clinical Concepts. 1-12 credits. Prerequisite: Registered in Professional
Physical Therapy Curriculum. Individualized study of a particular area of interest for the student approved by
his/her major advisor and supervised by preceptors with specialty and/or recognized expertise in the area of
interest. Study may include library research, clinical research, discussion/seminars, projects and directed

990. Continuing Education Workshops in Physical Therapy. 1-8 credits. Prerequisite: Registered in
Professional Physical Therapy Curriculum. Credit in Physical Therapy may be granted for workshops,
conferences, institutes, or other types of short-term activities, provided they have been approved for credit by
the Chairperson of Physical Therapy. Written report of the activity is required. A one-week workshop shall
carry no more than one semester hour of credit.

996. Continuing Enrollment/Physical Education. Credit arranged. Prerequisite: Registered in
Professional Physical Therapy Curriculum. Students in Physical Therapy who have previously completed all
necessary credits for their approved program of study but who have not completed PT 997: Research III:
Independent Study Report in Physical Therapy, must register for PT 996 each additional semester or summer
session they are utilizing UND-PT faculty time. All students must be enrolled in either PT 996 or other credits
the semester of Graduation.

997. Research III: Independent Study Report. Credit arranged. Prerequisite: Registered in
Professional Physical Therapy Curriculum. The Independent Study Report in Physical Therapy is designed to
require the student to independently generate a written report relevant to his/her Directed Studies/Clinical
Concepts area of interest. The topic must be approved by the student’s major advisor/preceptor. Approval is
effected by completion of the form entitled, "Outline of Independent Study" and submitting the outline to
his/her advisor/preceptor for approval. The Independent Study is designed to require the student
independently to investigate a topic related to Physical Therapy and to the interest of the student. The study
need not be an original contribution to knowledge but may be a presentation, analysis, and discussion of
information and ideas already in literature. The requirement is to ensure that a student can investigate a topic
and organize a scholarly report on the investigation. The report should display correct usage, style, and format
and should be of a formal nature. The outline should be on file in the Graduate School no later than the end of
Full Semester, Year 013.
APPENDIX B
APPLICATION FORM

DEPARTMENT OF PHYSICAL THERAPY
UNIVERSITY OF NORTH DAKOTA
SCHOOL OF MEDICINE

This application form should be completed and returned by March 1 to:

Department of Physical Therapy
School of Medicine
University of North Dakota
P.O. Box 9037
Grand Forks, ND 58202-9037

Transfer Students: Please note requirement for transcript presentation in UND Catalog. This must be done before this application can be considered.
1. NAME ____________________________ (LAST) (FIRST) (MIDDLE)

2. PERMANENT HOME ADDRESS
   (Street) ____________________________ (City) ____________________________ (State) (Zip Code)

3. MAILING ADDRESS
   (Street) ____________________________ (City) ____________________________ (State) (Zip Code)

4. TELEPHONE NUMBER(S) Home (_____ ) ____________________________ Work (_____ ) ____________________________

5. SOCIAL SECURITY NUMBER ____________________________

6. NAME OF PARENT OR GUARDIAN
   (LAST) ____________________________ (FIRST) (MIDDLE)
   ADDRESS ____________________________________________ (Street) ____________________________ (City) ____________________________ (State) (Zip Code)
   TELEPHONE NUMBER(S) Home (_____ ) ____________________________ Work (_____ ) ____________________________

7. EDUCATION — (List in chronological order):

   Name of School Location Dates Attended Diploma or Degree

   High School(s):

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   Undergraduate College(s):

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   Graduate School(s):

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8. HONORS, AWARDS, SCHOLARSHIPS, MEMBERSHIP IN HONORARY SOCIETIES, ETC.: (If additional space is required, please submit separate sheet)
9. EXTRACURRICULAR ACTIVITIES AND/OR HOBBIES:

________________________________________________________________________
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10. COMMUNITY INVOLVEMENT (Give offices held, if any):

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11. EMPLOYMENT SINCE HIGH SCHOOL GRADUATION:

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12. GOVERNMENT SERVICE (Civil or military)

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13. EXPERIENCE(S) RELATED TO PHYSICAL THERAPY: List type of experience (i.e. work, volunteer, observation)

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14. REFERENCES: Please give the attached reference forms to three (3) persons who know you and whom you would like to use as references. Ask them to return the forms to our office by May 1 (WICHE students within 2 weeks of submitting your application).

I hereby release to the Physical Therapy Admissions Committee my academic records including letters of reference for the purpose of consideration of this application.

(Signature of Student)     (Date)
The University of North Dakota

The University of North Dakota (UND) was founded in 1883 by the Dakota Territorial Assembly, six years before North Dakota became a state. The campus, with its twelve colleges, schools, and centers, plus a Division of Continuing Education, is located in Grand Forks in the northeastern corner of the state. UND offers more than 100 major fields of study and a variety of degrees at the associate, bachelor's, master's, specialist's, and doctoral level. A total enrollment of approximately 12,000 students makes UND the largest postsecondary institution in the Dakotas, Montana, and Wyoming. Approximately 40% of the student body lives in on-campus housing. There are excess of 2700 employees of the University of which nearly 700 are full-time faculty members. The campus is spread out over 475 acres with ongoing building programs continuing to increase the size of the campus. The Chester Fritz Library, with about two million print and non-print items, is the largest in North Dakota, and is the University's primary library. Additional facilities include the Health Sciences Library within the School of Medicine. Besides medical education, the School of Medicine offers graduate programs in anatomy, biochemistry, microbiology, pharmacology, physiology, medical technology, and physical therapy.

The City of Grand Forks

Grand Forks, North Dakota is located in the heart of the Red River Valley of the North. The area around Grand Forks is primarily agricultural. The primary crops include potatoes, wheat, and sugar beets. The City of Grand Forks has a population of about 50,000 people, and is located approximately 15 miles from the Grand Forks Air Force Base which has a population of 14,000. The City of Grand Forks has 2 hospitals and 3 medical clinics. Grand Forks has an excellent school system which includes the University of North Dakota, 2 high schools, 4 junior highs and 15 elementary schools. There are also 3 parochial grade schools. The churches in Grand Forks represent over 50 major faiths and most denominations. Grand Forks is served by two major airlines operating out of the Mark Andrews International Airport.

Grand Forks offers an exceptional variety of cultural opportunities including theatrics, art exhibits and museums. The Chester Fritz Auditorium on the UND campus brings in national and international top-name performers. As for recreational opportunities, Grand Forks has 35 parks, 4 golf courses, 5 ice arenas, as well as public swimming pools and tennis courts. The Grand Forks area also offers excellent fishing and hunting.

The Physical Therapy Department

The physical therapy program at UND was established in 1967, and was first accredited by the American Physical Therapy Association in 1970. The Department of Physical Therapy offers a five-year curriculum leading to the Master of Physical Therapy (M.P.T) degree. Acceptance into the program is on a competitive basis, with the major determinant being the basic science grade point average. At present, the Physical Therapy program accepts 48 students per year. Thirty four of those students are accepted through the UND admissions process. The additional 14 students are selected from WICHE states through direct contracts between the UND Physical Therapy Department and those states.

The Physical Therapy Department is staffed by eight full-time faculty members. All of the faculty members are registered physical therapists with graduate training. Along with their teaching responsibilities, the present faculty are also engaged in ongoing part-time clinical practice. The Physical Therapy Department is a separate department within the UND Medical School and is located in the Medical Science North building. The Physical Therapy Department contains the student classrooms, a laboratory area, a research facility, as well as several study areas and lounges for the students' use. The faculty are involved in research activities including muscle strengthening, blood flow analysis, electrical stimulation, functional outcomes, EMG, and physical therapy treatment efficacies. In addition to the regular curriculum, students are given the opportunity to carry on their own research activities.

At present, there are 165 clinical affiliation sites, the majority of which lie outside the greater Grand Forks area.
University of North Dakota
School of Medicine
Department of Physical Therapy

Personal Reference Request

Name of Applicant __________________________ __

Applicant Please Sign

I hereby waive the right to read the information in this letter and request that it remain confidential.

Applicant’s Signature __________________________ __ Date ____________

Your name has been given as a reference by the above named applicant to our Physical Therapy program. Please rate the applicant based on the characteristics listed and the rating scale provided. Circle where on the scale you rate the student (1 being the lowest and 9 being the highest). If you do not have information on a particular characteristic, please circle N/A.

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Brief Comments About Applicant:

How long have you known the applicant? __________________________

In what capacity did you know the applicant? __________________________

Printed Name __________________________ Signature __________________________

Position __________________________ Signature __________________________ Date ____________

Address __________________________

Mail this form directly to the Physical Therapy Department, School of Medicine and Health Sciences, University of North Dakota, P.O. Box 9037, Grand Forks, ND 58202-9037

University of North Dakota Printing Center
_X_ EXPEDITED REVIEW REQUESTED UNDER ITEM ____ (NUMBER[S]) OF HHS REGULATIONS
____EXEMPT REVIEW REQUESTED UNDER ITEM ____ (NUMBER[S]) OF HHS REGULATIONS

UNIVERSITY OF NORTH DAKOTA HUMAN SUBJECTS REVIEW FORM
FOR NEW PROJECTS OR PROCEDURAL REVISIONS TO APPROVED
PROJECTS INVOLVING HUMAN SUBJECTS

PRINCIPAL INVESTIGATOR: Renee Mabey, Chantel Helling, Sherry Sisneros, Christine Thorne
TELEPHONE: (701) 777-2831 DATE: March 16, 1999

ADDRESS TO WHICH NOTICE OF APPROVAL SHOULD BE SENT: Dept. PT, Box 9037 Grand Forks, ND 58202


PROJECT TITLE: Predictors of Academic Success in the University of North Dakota Masters of Physical Therapy Program

FUNDING AGENCIES (IF APPLICABLE): None

TYPE OF PROJECT (Check ALL that apply):

_X_ NEW PROJECT   ___ CONTINUATION   ___ RENEWAL   ___ DISSERTATION OR THESIS RESEARCH   ___ STUDENT RESEARCH

___ CHANGE IN PROCEDURE FOR A PREVIOUSLY APPROVED PROJECT

DISSERTATION/THESIS ADVISER, OR STUDENT ADVISER: Renee Mabey Ph.D., PT

PROPOSED PROJECT: INVOLVES NEW DRUGS (IND)   ___ INVOLVES USE OF DRUG   ___ INVOLVES A COOPERATING INSTITUTION

IF ANY OF YOUR SUBJECTS FALL IN ANY OF THE FOLLOWING CLASSIFICATIONS, PLEASE INDICATE THE CLASSIFICATION(S):

_X_ MINORS (<18 YEARS)   ___ PREGNANT WOMEN   ___ MENTALLY DISABLED   ___ FETUSES   ___ MENTALLY RETARDED

___ PRISONERS   ___ ABORTUSES   ___ UND STUDENTS (>18 YEARS)

IF YOUR PROJECT INVOLVES ANY HUMAN TISSUE, BODY FLUIDS, PATHOLOGICAL SPECIMENS, DONATED ORGANS, FETAL, MATERIAL, OR PLACENTAL MATERIALS, CHECK HERE

IF YOUR PROJECT HAS BEEN/WILL BE SUBMITTED TO ANOTHER INSTITUTIONAL REVIEW BOARD(S), PLEASE LIST NAME OF BOARD(S):

Status: ___ Submitted; Date _____________   ___ Approved; Date _____________   ___ Pending

1. ABSTRACT: (LIMIT TO 200 WORDS OR LESS AND INCLUDE JUSTIFICATION OR NECESSITY FOR USING HUMAN SUBJECTS.

The number of qualified applicants far exceeds the number of positions currently available in the University of North Dakota's Physical Therapy program. Due to the number of applicants, the admissions committee is provided with the opportunity and the responsibility to be selective in order to ensure that the most qualified students are admitted. Identification of possible variables that predict academic success in this program must be ascertained in order to determine the correlation between the variable and the level of student success.

The most accessible criteria by which success may be predicted are based on data gathered from the student's pre-professional coursework, the location of the coursework, demographic information, letters of recommendation, and admission interview scoring. Success in the physical therapy program is defined by completion of all program coursework with a grade of 'C' or higher, completion of clinical affiliations with a grade of 'C' or higher, and fulfillment of licensure exam criterion. The purpose of this study is to identify the strongest predictors of student success in the University of North Dakota's Physical Therapy program.
PLEASE NOTE: Only information pertinent to your request to utilize human subjects in your project or activity should be included on this form. Where appropriate attach sections from your proposal (if seeking outside funding).

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

METHODOLOGY

Subjects:
A retrospective study of physical therapy students admitted from the years of 1991-1995 (graduation years 1994-1998).

Instrument:
Data to be collected has been determined by a literature review and discussion with the University of North Dakota Physical Therapy program's faculty members. Data will be collected on a standardized data form and department staff will enter the data onto the SPSS program (see appendix). Any student information to be analyzed by student researchers will be in a coded form. Only University of North Dakota Physical Therapy faculty and staff will have access to subject's names and social security numbers.

Data Analysis:
Traditional descriptive and analytical statistics will be utilized to describe applicants, outcomes, and relationships. An alpha level of .05 will be used to determine significance for all tests.

Reporting Results:
Results will be published in an independent study and will be used in making administrative decisions in the University of North Dakota's Physical Therapy program. Results will also be utilized for future accreditation reports for the Physical Therapy program.
3. BENEFITS: (Describe the benefits to the individual or society.)

Identification of the strongest academic predictors of success in the University of North Dakota's Physical Therapy program will allow the admission committee to select students who possess the highest potential for success. Students who succeed in the program have a higher likelihood to remain in the field of physical therapy which in effect will benefit both the profession and society.

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

A potential risk posed by this study involves the possibility of breaching student confidentiality. In order to compensate for this risk, actual data transfer from student files to data format will be done by physical therapy staff.
5. CONSENT FORM: A copy of the CONSENT FORM to be signed by the subject (if applicable) and/or any statement to be read to the subject should be attached to this form. If no CONSENT FORM is to be used, document the procedures to be used to assure that infringement upon the subject’s rights will not occur.

Describe where signed consent forms will be kept and for what period of time.

See following page for Renee Mabey’s comments regarding consent form.

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

Office of Research & Program Development
University of North Dakota
Grand Forks, North Dakota 58202-7134

On campus, mail to: Office of Research & Program Development, Box 7134, or drop it off at Room 105 Twamley Hall.

For EXEMPT or EXPEDITED REVIEW forward a signed original and a copy of the consent form, questionnaires, etc. and any supporting documentation to one of the addresses above.

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

SIGNATURES:

Principal Investigator

Project Director or Student Adviser

Training or Center Grant Director

Date

Date

Date

(Revised 3/1996)
I, Christine W. Thorne, recognize that portions of my independent study may include data, questions or processes sensitive to past, current and/or future students of the program. These data, questions or processes may also impact the management and success of the Department of Physical Therapy.

I agree to maintain issues of confidentiality regarding data from individual students and of the administrative processes. Specific questions asked of me, outside of the published independent study, will be referred to the Project Advisor, Renee Mabey, Ph.D., P.T. or to the department chairperson.

Chantel J. Helling
Sherry P. Sisneros

Christine W. Thorne

Student

April 8, 1999
Date
The information used for this study is routinely available within the physical therapy department for administrative purposes. The information is on forms relative to the admissions process and progression through the physical therapy professional curriculum. It includes student applications, transcripts, and clinical evaluation forms.

As this information is part of the routine administrative processes, and as this study is relative to administration of the program, it is not felt that consent forms from the individual students are necessary. It is also recognized that even though the analysis of the data will be performed in part by current graduate students, these students will have access to CODIFIED information only. In addition, each of the students working with this project will sign a statement of confidentiality relative to data from individual student files and administrative procedures. (See the addendum.)

Student files, with inherent identifying features, will only be accessed by current faculty and (select) staff within the department. As faculty and (select) staff routinely have access to the files for matters arising, it is not felt that analysis of the data is an atypical event, or an event outside of routine administrative procedures.

Reporting of the results, which will be done in a ‘public’ domain via the independent study, will have data reported in aggregate, relative to predictors for success and impact on the curriculum. No individuals will be identified.
REPORT OF ACTION: EXEMPT/EXPEDITED REVIEW
University of North Dakota Institutional Review Board

DATE: April 28, 1999 PROJECT NUMBER: IRB-9904-224
Renee Mabey, Chantel Helling, NAME: Sherry Sisneros, Christine Thorne
DEPARTMENT/COLLEGE: Physical Therapy
PROJECT TITLE: Predictors of Academic Success in the University of North Dakota Masters
of Physical Therapy Program

The above referenced project was reviewed by a designated member for the University's Institutional Review Board
on April 28, 1999 and the following action was taken:

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

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

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

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

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

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

PLEASE NOTE: Requested revisions for student proposals MUST include adviser's signature.

cc: R. Mabey, Adviser
Dean, Medical School

Signature of Designated IRB Member
UND's Institutional Review Board

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

(1/98)
NAME ___________________________ Entrance Year ________

State of Residence _____ Home Town _______________________ Graduation Year ________

SS# ___________________ Reference Scores ________ Interview Score ________

DOB ___________________ Composite Score ____________ # hours worked ____________

Biol 101-1 School _____ Biol 101-2 School _____ Biol 101-Course School _____

Biol 101L-1 School _____ Biol 101L-2 School _____ Biol 101L-Course School _____

Biol 102-1 School _____ Biol 102-2 School _____ Biol 102-Course School _____

Biol 102L-1 School _____ Biol 102L-2 School _____ Biol 102L-Course School _____

Chem 105-1 School _____ Chem 105-2 School _____ Chem 105-Course School _____

Chem 106-1 School _____ Chem 106-2 School _____ Chem 106-Course School _____

Phys 101-1 School _____ Phys 101-2 School _____ Phys 101-Course School _____

Phys 102-1 School _____ Phys 102-2 School _____ Phys 102-Course School _____

Anat 204-1 School _____ Anat 204-2 School _____ Anat 204-Course School _____

Phy 301-1 School _____ Phy 301-2 School _____ Phy301-Course School _____

Psy 101-1 School _____ Psy 101-2 School _____ Psy 101-Course School _____

Psy 251-1 School _____ Psy 251-2 School _____ Psy 251-Course School _____

Comm 161-1 School _____ Comm 161-2 School _____ Comm 161-Course School _____

Pre-PT CGPA ________ SGPA without replacement ________ with replacement ________

Years pre-PT: 2 3 >3 9 # lectures repeated ________ # times applied ________

# labs repeated ________

Anatomy ____________ Neuro ____________ Muscle Function ____________

Clinic I Grade ________ Grad Fall GPA ________ Clinic II Grade ________

Pass PES: Y N

Student Competency & Potential-1 A B C D E F G H

Student Competency & Potential-2 A B C D E F G H

Student Competency & Potential-3 A B C D E F G H

Student Competency & Potential-4 A B C D E F G H

Student Competency & Potential-5 A B C D E F G H

Student Competency & Potential-R A B C D E F G H
REFERENCES


