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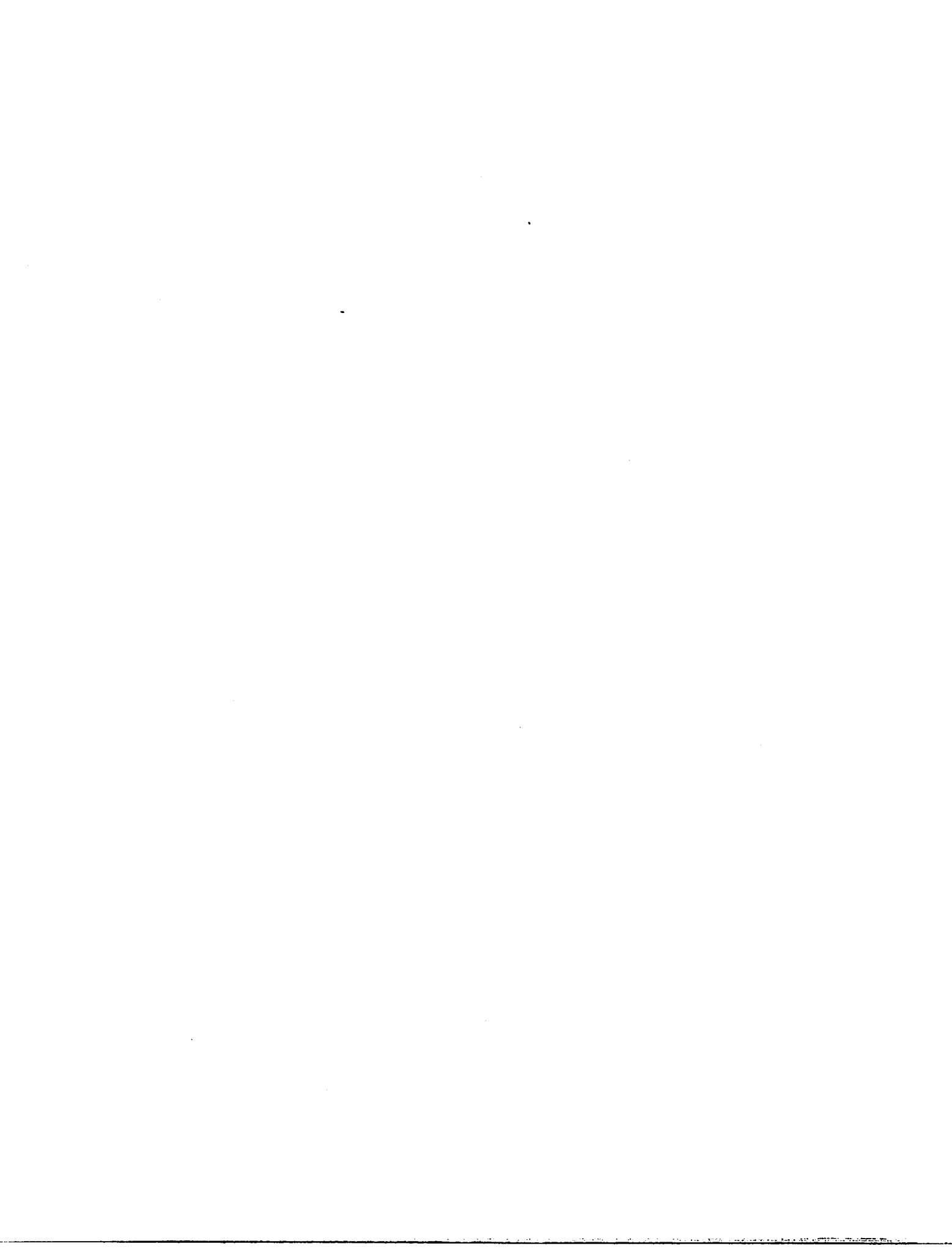
**Collegiate consumers of physical education**

**Metzger, Rhoda, Ed.D.**

**The University of North Carolina at Greensboro, 1986**

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**COLLEGIATE CONSUMERS OF PHYSICAL EDUCATION**

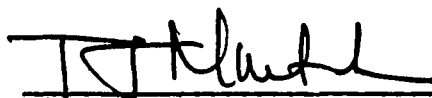
by

**Rhoda Metzger**

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Approved by



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APPROVAL PAGE

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The study developed a viable model for analyzing the nature and predicting the course selection and longitudinal course consumption by collegiate consumers of physical education. The study included a literature search about general university physical education that revealed the majority of past research was program focused with little or no forecasting potential. A secondary analysis was executed on the selected variables derived from participants in the General University Program of physical education at the University of North Carolina at Greensboro (UNCG) from 1980 to 1984. Four sources of data were used in the investigation. Selected items from the Educational Testing Service's Student Descriptive Questionnaire, university student data profiles, university course enrollments and personality types as measured by the Myers-Briggs Type Indicator comprised the database used in the study.

Cross-sectional and longitudinal analyses were used to develop a series of prediction equations creating a successful model of course selection and course enrollment patterns. The characteristics of the participants remain stable over four years. Course types are relatively independent, but less so for course enrollment patterns. The model has global applicability with minor modifications.



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The virtue of this project stems from the contributions of these individuals. The author accepts responsibility for all flaws contained herein.

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## CHAPTER I

### INTRODUCTION

American collegiate physical education programs evolved over the past century. The historical roots are richly embedded in the medical profession. The earliest ties are with Amherst College where the first collegiate program of physical activity was conducted in 1860 (Welch & Lerch, 1981). Edward Hitchcock established a medical orientation for physical education by the detailed anthropometric data recorded during the early Amherst years.

Subsequent to its association with the medical profession, physical education became a follower of the great "educational" movement. The early 1900s were a time of growth for physical education programs. The ideas of Thorndike and Dewey appear to have had a substantial influence on physical education (Ainsworth, 1975; Van Dalen, Mitchell & Bennett, 1953). The "new education" perspective increased the time allotment for physical education in the schools and subsequently, enrollments increased. During the time of industrialization, progress increased the amount of leisure time for the general populace (Weiskopf, 1975). Thus, activities associated with recreation became a part of the programs of physical education. At the same time, collegiate athletics increased and influenced the expansion of collegiate programs of physical education.

Activity in the 30s was no longer restricted to forms of gymnastics or calisthenics. In addition to the increase in numbers of programs, the variety of activities expanded through widespread acceptance of modern sports, swimming, and dance as appropriate physical activity pursuits.

There were military influences on physical education programs particularly in times of war. During the years following World War II physical education program changes reflected the reports of low fitness levels in American youth (Van Dalen, Mitchell & Bennett, 1953). Sputnik rekindled the concern of national security. President-Elect, John F. Kennedy laid the ground-work for what was to become the organization and program of the President's Council for Physical Fitness by stating the need to pursue fitness (Kennedy, 1960).

Kennedy condemned the "soft American" for aiding in the destruction of "the vitality of a nation" (Kennedy, 1960, p. 16). Without physical fitness, Kennedy claimed, as a nation we would be unable to realize our full potential, ensure national security, see "dynamic and creative intellectual activity" or be of "hardy spirits" (Kennedy, 1960, p. 16). Kennedy viewed physical fitness as "the basis of all the activities of our society" and subsequently reflected this belief in his administration (Kennedy, 1960, p. 17).

National concerns such as those mentioned above influenced the "producers" of collegiate physical education to adjust and readjust the focus of their programs. In more recent years, "producers" of college physical education have had great debates over such issues as elective

versus required programs and separate sex versus coeducational instruction (Umstead, 1983).

During the mid 1960s, higher education reflected the continually changing "zeitgeist" by questioning core requirements. After intense scrutiny, many universities subsequently removed their physical education requirements. Yet, university general physical education programs survived.

The 1970s brought more change to physical education associated with the popularization of coeducational activity instruction, a grassroots concern for physical fitness, a trend of accountability, and newly perceived socialization needs. The issue of coed instruction had been on-going for twenty years. However, the implementation of Title IX forced attention on sex separatism. In the 1970s the baby boomers entered their thirties and the senior citizen population exploded as a result of better medical care. Many individuals were disillusioned with the traditional places for socialization, namely, bars or churches. Spas and fitness centers became alternative places for people to meet and interact. Thus, health and fitness clubs fulfilled several needs. The fitness industry boomed and physical education enjoyed a "coat tail ride". These events further primed society to focus on health and fitness.

Toward the end of the decade, Americans were confronted with evidence of gross overspending by the government and a spiraling deficit. A back-to-basics approach became popular as the American media reported students' declining abilities in reading, writing and math

skills. The political climate changed and the Republicans came into power. One of their main platforms was accountability. Budgets were cut and programs of physical education, art and music were affected on all educational levels.

Government officials and educators were confronted with reduced resources. The society of the early 1980s began to view the world with a lifetime perspective. Fearing critical problems beyond control such as nuclear war and economic depression, the trend shifted from immediate needs and goals to a long-term concerns. Evidence of the shift in physical education was the growth of popularity in so-called lifetime activities.

The history of college physical education and its changing programs attempted to be responsive to the broad societal picture. Unfortunately, professionals in the field of physical education have been less than successful in using past research to understand, much less direct, the path of the future. The research emphasis of physical education has attempted to center on testing theory. It is speculated that limited resources (time, people and funding) inhibited the ability to perform operations research at the university level. Other factors influencing physical education research at the college level may be associated with the complexity and interdisciplinary aspects of the field of study and/or the fact that professional preparation considerations have taken precedence over other issues. Therefore, physical educators have not been overly successful in past attempts to make predictions. More often, there has been a confrontation with a

problem already at a critical stage. A lack of a forecasting perspective in prior research endeavors has left a substantial void in the understanding and planning for the physical activity programs of the future. The history of college physical education reveals the need for a longitudinal perspective by those who give leadership to such programs.

Other fields of study have made substantial use of a variety of goals and inquiry techniques. Political science, economics, management studies, etc... have utilized a number of forecasting methods. One of the more successful forecasting techniques suggested by Gordon (1972) is trend extrapolation. Gordon defined trend extrapolation as a type of forecasting procedure that assumes "that trends established in recent history will continue into the future" (Gordon, 1972, 167-168). Trend extrapolation typically has an empirical base. Regression and statistical modeling techniques enabled researchers to make predictions based on existing data. The advent of the computer facilitated the study of questions by researchers in ways previously beyond available technology.

Gordon cautioned that "some systems are more easily changed as a result of external influences than others" (Gordon, 1972, p. 169). Universities suffered from such "developmental inertia" in the past. However, institutions of higher education recognized the critical need to be responsive to change. With these concepts in mind, it is clear that university physical education programs would profit from responding to changes in society where and when possible. It is apparent that

physical education researchers must re-evaluate the way in which problem solving has been approached in the past especially with respect to matters pertaining to program operations. At the very least, trend examination would aid faculty in their understanding of the future and of its consumers, to facilitate better decision making about curriculum.

For example, one important trend of collegiate physical education has been the shift from required to elective programs. Such a change warrants a reassessment of the processes underlying college physical education courses offerings. If the student consumer elects to participate, a needs and interests base is appropriate. An assessment of the current situation would allow full understanding of the present "market" situation. The time is ripe to appraise collegiate physical education programs using marketing research strategies. This is particularly appropriate considering present emphasis on enrollment driven budgets. Enrollment characteristics and unit costs must be studied.

#### Problem Statement

The present study examines the characteristics of the consumers of one university's general physical activity program. The inspection is intentionally executed in such a way so as to develop a technologically cost-effective research model that may be utilized by other institutions and lay the foundation for continued operations research using trend extrapolation. More specifically, the purpose of the study is to examine selected data concerning the collegiate consumers of general



university physical education courses at the University of North Carolina at Greensboro (UNCG). The investigation focuses on the nature of general physical education consumers. In addition, collegiate consumption patterns are explored to determine their relationship(s) to student characteristics. Data for the study are quantitative information records maintained by the university administration which include general demographics, specific course information, a student personality measure (Myers-Briggs Type Indicator), and survey information from the Student Descriptive Questionnaire (Educational Testing Service). An added interest is to examine the usefulness of such research in contributing to present day marketing strategies.

The following questions formed the basis for the research reported in this text:

1. What are the demographic, personality and educational characteristics of collegiate consumers of physical education at the University of North Carolina at Greensboro during the years 1980 through 1984?
2. What variables can best predict individual physical education course selection?
3. What variables can best predict the longitudinal course selection patterns in college physical education?
4. What model or models serve as useful predictors of physical education course consumption?
5. What are the implications for the development of future marketing strategies of the general university program?

### Definition of Terms

For interpretation in the current study, the following terms definitions are specified:

Athletics. Refers to general physical activity in academic settings (i.e., varsity sports, intramurals and individual physical activity). Physical educators typically limit the use of "athletics" to refer to competitive varsity sports. Whereas, the general public allows broad interpretation. As this study uses a consumer perspective, athletics is discussed in the lay sense.

Biodata. Commonly used demographic information and selected background characteristics.

Collegiate Consumers. Persons, students, electing to enroll in general physical education and/or selecting an activity course as part of a physical education credit requirement.

General Physical Education. Physical education courses that are available to all university students as part of the liberal arts curriculum. These courses typically involve physical activity; however, a very small percentage may be topic classroom courses. In the present study, general university program (GUP) refers to the general physical education courses at the University of North Carolina at Greensboro.

Longitudinal consumption patterns. The nature of a selected cohort group's enrollments in general physical education over a period of 4 years in college.

### Scope of the Study

Only data which are typically collected at institutions of higher education are considered for use in this study. Summer school information is excluded due to the reduced course offerings outside the traditional academic year.

The analyses are limited to the consumers of the GUP at the University of North Carolina at Greensboro from the Fall of 1980 to the Spring of 1984. As such, no attempt at generalization of the findings is appropriate. Limited comparisons to the total university student populations are included. Further, it is acknowledged that any ex post facto research study is limited by the inability to control for history effects.

### Research Assumptions

Research assumptions are ideas taken for granted and not verified as a part of the inquiry at hand. As such, a tacit assumption of all ex post facto investigations is that the data, collected previously, are valid, i. e., accurate, reliable, complete. In the present study the assumed validity is of particular importance because all data were collected as standard protocol by the Office of the Registrar and/or the Office of Institutional Research at the University of North Carolina at Greensboro. Knowing that the University took extreme precautions to ensure accuracy, it is reasonable to make such an assumption.

### Significance

General university physical education programs must continue to thrive if departments of physical education are to maintain recognition in institutions of higher education. The large "headcount" of enrollees in some general physical education programs tend to augment the revenues allotted to departments of physical education. The accountability trend has had an effect on college physical education programs. In recent years several programs have been restructured to be self-sufficient. Accurate and current information about general physical education and the consumer(s) of general physical education is imperative to offering attractive and viable programs.

There is a paucity of literature in physical education research analyzing collegiate physical education programs from the perspective of the consumer. Past studies of collegiate physical education have not viewed participants in a longitudinal way. Prior research has classically been retrospective in nature. Research is also needed to indicate if a trend will continue. By means of tracking the patterns of consumption of a selected cohort group the existing void may begin to be filled.

Practical value can be placed on the present study. It adds to the body of knowledge for professionals training to work in collegiate settings. Past program oriented studies of collegiate physical education are limited by the lack of technology. New technologies now enable the pursuit of far more complex questions. The advent of computerization at most universities now provides a new tool for annual

self studies with a minimum of human resource expenditure. Since almost all data points (see Appendix A) are likely to be available at the majority of state institutions of higher education the present study provides an example for other American institutions of higher education to follow. The research model using contemporary forms of technology constructed as a part of the present study is viable for other colleges/universities.

Finally, another feature of the present study is that it demonstrates the use and interpretation of gamma correlations. There is no prior example in the physical education literature reviewed for the present study. Appropriate use of sophisticated statistics is, after all, a characteristic of good research.

CHAPTER II  
PAST RESEARCH  
Introduction

An initial survey of the literature, revealed that relatively little research has been conducted about general physical education. Existing general university physical education articles are of a wide variety. Prior literature summaries are often incomplete and/or misleading due to the tendency to summarize according to program structure. Non-program information pertaining to university physical education does exist. However, several factors interfere with retrieving information with a focus other than that of program structure.

One hindrance encountered in searching the literature is the inordinate attention given to those articles with endorsements from professional organizations. Non-endorsed studies, often reporting conflicting results, are not typically cited in later related research. A second and more obstructing factor is inadequate indices. Several of the older journals were initially indexed by graduate students not professional indexers. In many indices general university physical education is a relatively recent topic heading. Additionally, there is substantial variation in the headings referring to general university physical education. The existing topic headings are insufficient delimiters for searching purposes. For example, "attitude" might have produced more units for inclusion, but is not a cost-effective keyword

because it does not discriminate sufficiently. Finally, the researcher encounters a significant number of inaccuracies in the reference lists of reviewed articles. Many of these errors are not interpretable.

The nature of this research project approaches general university physical education from a consumer perspective. Existing indices have done a particularly inadequate job of facilitating physical education consumer research. In order to discover what is already known about general university physical education consumers, a non-traditional literature survey was undertaken as a part of the present study.

It should be noted that the search strategies used in this study were developed with the intent that any individual seeking information about the nature and history of general college physical education could employ similar procedures. An exhaustive literature search was performed using global keywords instead of the narrowly defined terms traditionally selected. After an initial review of approximately 50 articles, a classification system was developed which includes a category for consumer focused articles.

The present chapter which reports the literature searched in this study is divided into 3 parts. Section 1 contains a detailed report of the literature search procedures and the resulting classification system. Part 2 discusses the literature with a consumer focus. The third and final section summarizes and discusses past trends in general university physical education.

### Search Procedures

There was an initial search of the card catalogue at the Jackson Library of the University of North Carolina at Greensboro.

Subsequently, a computer search of the Educational Resources Information Center (ERIC) database was conducted to establish a list of possible additions. Keywords used throughout the search procedure were tested using all possible combinations among groups of terms. The groups referring to physical education in colleges/universities were:

1. basic, general or service
2. university or college
3. physical education or physical activity

Manual searching supplemented the initial list. The following collections were examined in the manual search:

1. American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) Abstracts
2. Bibliographical Index on Physical Education and Health Education, Sport and Allied Subjects
3. Completed Research in Health, Physical Education and Recreation
4. Dissertation Abstracts International (DAI)
5. Health, Physical Education and Recreation Microcard Bulletin
6. National Association of Physical Education for College Women (NAPECW) Conference Proceedings
7. National College Physical Education Association for Men (NCPEAM) Conference Proceedings



8. National Association for Physical Education in Higher Education (NAPEHE) Conference Proceedings
9. North Carolina Journal of Physical Education (NCJPE)
10. Oregon Microforms
11. Physical Education Index
12. The Academy Papers

Regrettably, NAPECW proceedings reflect an unwieldy combination of meeting reports of varied topics. There are few research papers. Therefore, the NAPECW proceedings were not searched manually, as was the case with the NCPEAM proceedings. Rather, information from the NAPECW proceedings were retrieved using the aforementioned indices.

A final strategy employed was the reviewing of titles contained in the bibliographies of all articles encountered. It should be noted that such second level citation searching provides a substantial increase in the number of articles. Such an effort was worthwhile because it added to the thoroughness of the review and also provided opportunity for verification of citations.

The library at the University of North Carolina at Greensboro is nationally known for its comprehensive collection of materials in physical education. Certain resources such as the complete college association proceedings (NCPEAM and NAPECW) are not readily available elsewhere. Although the attempt was to be exhaustive in discovery, some omissions are acknowledged. The formal literature search included published articles from 1924 through 1984. The earliest citation (Geer, 1924) was the first to emerge from the search which included writings

from the prior century. However, the September 1985 issue of the Journal of Physical Education, Recreation and Dance devoted a full section to the general college physical education program as part of the association's centennial celebration. Selective additions from the September 1985 issue were, then, included to augment the discussion.

#### Literature Classifications

The search procedures yielded 399 articles for inclusion. Content analysis of these articles formed nine categories of topics pertaining to collegiate physical education:

- A. Consumer Oriented
- B. Pedagogy/Curriculum
- C. Administration
- D. Program Oriented
- E. Physical Education Attitude
- F. Student Performance
  - 1. Physical
  - 2. Personality
- G. Carryover Effects
- H. Pervasive/Continuing Issues
- I. Miscellaneous

### Coding Protocol

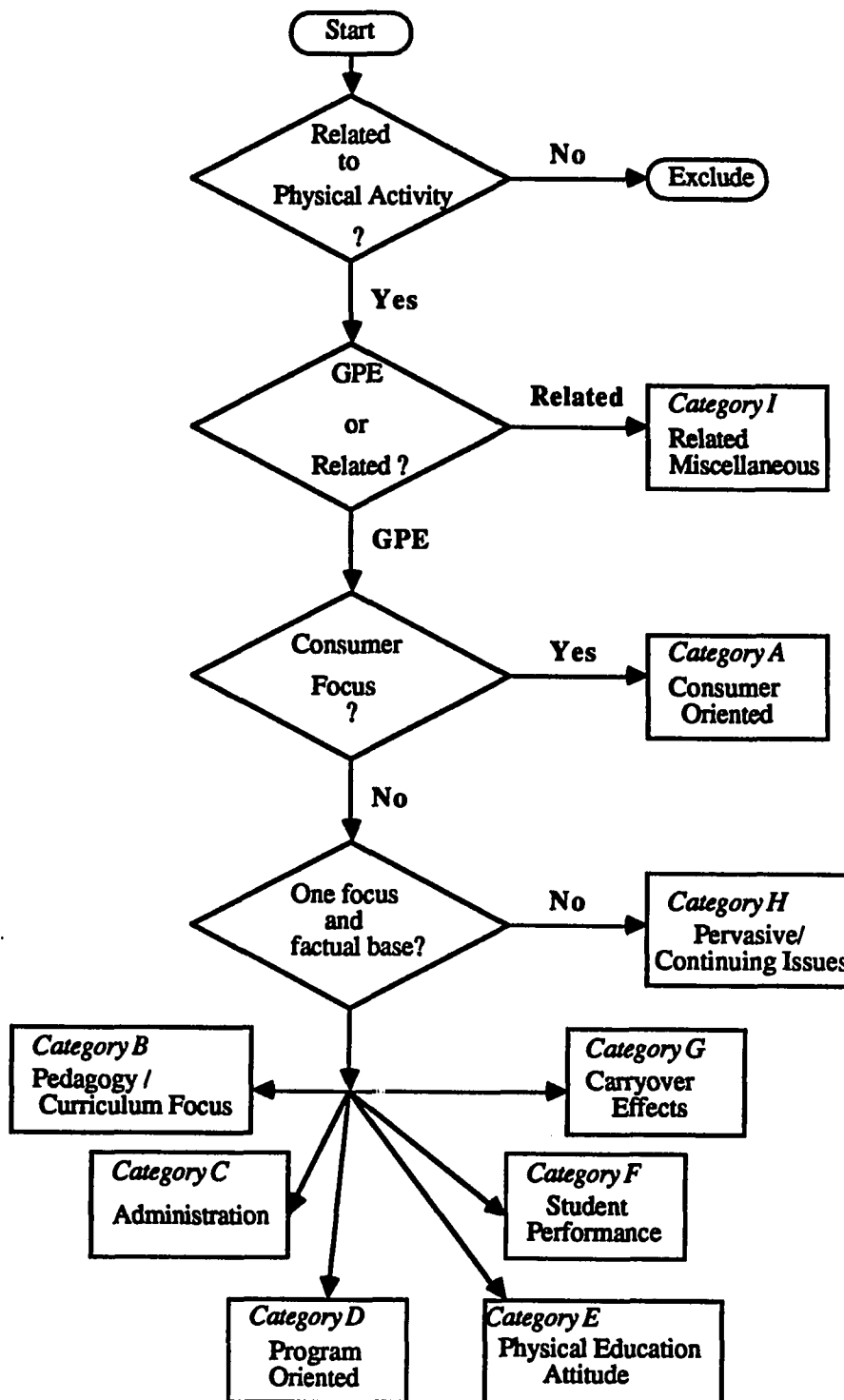
General essays were included in the search in addition to research reports. The liberal inclusion stance was taken due to the large number of published papers lacking empirical support. Figure 1 contains a flowchart of the coding procedure used to facilitate the organization and interpretation of the resource base.

Related articles not dealing directly with general physical education were placed in the Miscellaneous category. All general physical education articles were inspected for traces of consumer information or issues. Therefore, the probability of entry to Consumer Focus category was larger than for all other general physical education categories. Multiple foci articles were considered "global" in nature and were placed in the Pervasive/Continuing Issues category. In addition, if the article was constructed to advocate a particular belief, it was placed in this category.

### Category Descriptions

Consumer classified articles include those which clearly center on student as consumers. Studies in this category often survey the likes and dislikes, needs, or interests of program participants. Some attitude studies are included in this category. The distinguishing factor in the attitude studies is that the researchers give an indication that the program must be responsive to the participant as opposed to the student conforming to the program. In this way, the

Figure 1 Coding Procedure Flowchart.



general university physical education program is viewed from the concerns of producers and consumers. Articles in the Consumer Oriented category are discussed in-depth later in this chapter in as much as the main research project centers on collegiate consumers of physical education.

The Pedagogy/Curriculum category contained those articles concerned with teaching methodologies and/or the overall course plan.

Instructional areas such as adapted physical education are included in this category. Pedagogical concerns such as the purposes of college physical education (Pelton, 1966) are also placed in this category.

Other topics in the category include:

- A. general curricular surveys (Barr, 1933; Davis, 1954; Trimble & Hensley, 1985);
- B. specific interest surveys
  - a. foundation courses (Ricketts, 1971),
  - b. activity classes (Hooks, 1967),
  - c. rock climbing (Coates, 1984);
- C. anecdotal reports of a particular school's curriculum (Annarino, 1974); or
- D. textbooks designed explicitly for use in the general university physical education program (Penman, 1964; Miller, 1963).

Articles classified as Administrative dealt with issues relative to the management of the general university program. Items discussed in this category include legal issues and their implications, off-campus

facility utilization, program costs, budgetary problems and public relations. For example, Ponthieux (1965) surveyed general physical education program requirements in relation to legislative mandate. More recently, Brassie, Trimble & Hensley (1985) analyzed the competition for budget allocations between undergraduate and graduate programs.

The Program category contained the largest number of entries. Articles so categorized include research reports focused directly on the program. Students are viewed as participants instead of as consumers. Articles discussing controversial program issues are not included; rather they are placed in the category, Pervasive/Continuing Issues.

Program research include reports of programs in terms of their:

- A. structure
- B. status in comparison to other programs and/or national standards
- C. staff
- D. evaluation procedures
- E. articulation with junior college programs
- F. racial balance
- G. changes due to war
- H. policies on grades, credit, requirements (credit and swimming), coeducation, exemptions
- I. scheduling and number of minutes per course per week

Several program focused articles are anecdotal reports of a school's status when shifting from a required to an elective program (Miller,

1948; Hartman, 1970). A number of the program focused studies utilized the Nielson-Comer-Griffin Score Card developed by Griffin in 1966 (McNamee, 1976; Robinson, 1975). The best-known research in general physical education is a series of program focused surveys (Oxendine, 1961, 1969, 1972, 1978; Trimble & Hensley, 1984). These surveys summarize general physical education requirements, credit allocations and grading practices. Ruffer (1970) used university catalogues in lieu of survey methods to report program structure, yet found substantially different results from those found by the survey based Oxendine series. Despite the absence of successful triangulation between the work of Ruffer and Oxendine, the latter research was cited extensively in comparison to the former.

The Physical Education Attitude category contained those essays and/or research reports which involve attitudes toward general physical education not included in the Consumer Focus category. In the attitude studies it was clearly evident that the authors do not view the program as responsive to students in the same way that the consumer focused studies do. Articles in this category indicate that the program was already "right" and that physical educators should devise ways in which to change the attitudes of the participants. The time period in which the majority of the attitude-classified studies were conducted must be considered. It is likely that physical educators took this stance in order to gain acceptance of new program foci such as a shift from calisthenics to sports. Additionally, a large number of these studies survey women's attitudes in an attempt to assess the belief in myths

about physical activity. Much of the attitudinal research in general physical education is performed using an inventory developed by Wear in 1951. One random example is the Brumbach and Cross (1965) investigation of the attitudes of men entering the University of Oregon using the Wear Physical Education Attitude Inventory.

The Student Performance category included studies involving university general physical education students as subjects but were designed primarily to investigate some other topic. General physical education students were simply available subjects. The studies tended to be concerned with either physical performance or personality. A common thread in student performance studies was that the subjects were general physical education students. Examples of articles, reports, etc... assigned to this category involved comparing physical education majors to non-majors on some psychological measure or attempts to justify general physical education participation by improved physical fitness. Studies in the Student Performance category also attempt to describe the relationship of physical fitness and/or performance to academic success (Costello, 1966; Olson, 1965).

Personality studies were also included in the Student Performance category. Holyoak, Allen, Varnes, McCaulley and Frye (1974) assess the influence of personality type on physical performance using women enrolled in the general physical education program. Four years later the study was replicated for men (Allen, Siders, Holyoak and McCaulley, 1978) and again for women (Holyoak, Allen, Siders and McCaulley, 1978). Hein (1955) and Flanagan (1951) investigated the relationship between



personality and physical activity participation. In each of these independent studies, a theory testing approach was used and therefore, disregarded the consumer perspective.

Studies included in the Carryover Effects category were those attempting to investigate the lasting effects from prior enrollment in university physical activity programs. Unlike the Student Performance category, Carryover Effect articles report longitudinal effects of program participation not immediate changes from participation in a single activity class. Typically these studies involved the activity patterns of graduates (Going, 1984; Kenney, 1955; Rasmussen, 1981). In the studies researchers sought to determine if enrollment in university physical education enhanced the probability for lifetime involvement with physical activity.

Pervasive/Continuing Issues included articles discussing broad ideas or research reports with multiple foci. The articles in this category were characterized by essays exploring ideas, politics, trends, or generic prescriptions of collegiate physical education. Among the more critical concerns was one discussed by Boycheff in 1954. Boycheff analyzed the inability of physical educators to demonstrate educational validity by means of formal inquiry.

The articles contained in the Pervasive/Continuing Issues category indicated recurring discussions of what general physical education should be. The debate over required versus elective programs reappears many times in the history of general physical education (Elliot, 1930; Grebner, 1975; Jernigan, 1974; Lawson, 1970; Ley, 1974; Nelson,

1972; Razor, 1975; Skubic, 1974). One issue concerns recent trends and their impact on collegiate physical education (Bucher, 1982; Forna, 1972; Fraleigh, 1979; Jewett, 1985; Razor, 1983; Schrader, 1982a). Examples of trends discussed in these articles include: increased interest in high risk leisure activities, increased energy costs, and increased attention to physical fitness.

Miscellaneous Topics was the final category formed from the literature search. The articles placed in this group deal with research and/or issues relevant to, but not directly involved with, collegiate physical education. For example Moore (1941) studied the general attitudes of adult women toward physical activity in recreational settings. Moore's research is related to the evolution of collegiate physical education as it touched upon the changes of women's perceptions. In 1982, Krotee proposed a multidimensional physical activity model of the future. Krotee conceived the future college physical education program as part of a network with an exercise science laboratory, pedagogical learning center, psychosocial laboratory and high technology center.

Another example of research in the category concerns the student as a sport consumer (Lowe & Harrold, 1972). Lowe and Harrold analyzed sport consumption via amount of spectatorship and two forms of indirect consumption, namely, the reading of sports magazines and the listening to radio sports broadcasts. Lewis (1974) discussed general human motivation concepts. Although Lewis spoke specifically of physical education, there is insufficient evidence to indicate that the

discussion was limited to collegiate physical education programs. Another example of Miscellaneous research was the work by Lumpkin (1982). She conducted a historical comparison of two universities and the evolution of their respective physical education departments.

#### Coding Results

Coding enabled the researcher to reduce the literature data points (see Appendix B) to a manageable level. The largest percentage of articles (24.3%) were classified under Program Focus. Pervasive/Continuing Issues is the second largest group of articles at 22.6%. Consumer Focused articles comprised 14.3% of the total. Table 1 contains the complete distribution of articles by classification code.

Table 2 contains the distribution of articles in ten year spans. The number of articles per ten years has continued to increase with substantial growth occurring between 1954 and 1963.

Table 3 presents the distribution of all 399 general physical education articles by publication. The source of the greatest number of articles ( $N = 161$ , 40.4%) is the CPEA/NAPEHE Proceedings. Such an occurrence may have been due to the manual searching of the table of contents of each issue in contrast to the use of indices for the majority of the other sources. If this is the case, this may not reflect the true distribution of information. However, if it is a correct representation, it raises questions about the accuracy of the coding in the existing indices.

Table 1

Code Distribution ofGeneral Physical Education Articles: 1924 - 1984

<u>Classification Code</u>	<u>N</u>	<u>%</u>
A-Consumer Oriented	57	14.3%
B-Pedagogy/Curriculum Focus	38	9.5%
C-Administration	30	7.5%
D-Program Oriented	97	24.3%
E-Physical Education Attitude	35	8.8%
F-Student Performance	27	6.8%
G-Carryover Effects	5	1.3%
H-Pervasive/Continuing Issues	90	22.6%
I-Miscellaneous	20	5.0%
Total	399	100.0%

Table 2

Year Range Distribution of  
General Physical Education Articles

<u>Year Range</u>	<u>N</u>	<u>%</u>
1924 - 1933	8	2.0%
1934 - 1943	30	7.5%
1944 - 1953	39	9.8%
1954 - 1963	100	25.1%
1964 - 1973	103	25.8%
1974 - 1984	119	29.8%
Total	399	100.0%

Table 3

Source Distribution ofGeneral Physical Education Articles: 1924 - 1984

<u>Publication Source</u>	<u>N</u>	<u>%</u>
AAHPERD Publications	9	2.3%
The Academy Papers	9	2.3%
CPEA/NAPEHE	161	40.4%
Dissertations/DAI	81	21.3%
ERIC	2	.5%
JOPERD	29	7.3%
NC Journal of PE	13	3.3%
Physical Educator	10	2.5%
Research Quarterly	47	11.8%
Textbooks	11	2.8%
Thesis	19	4.8%
Other Miscellaneous	8	2.0%
<b>Total</b>	<b>399</b>	<b>100.0%</b>

Doctoral dissertations are the second richest source of general physical education literature with 21.3% of the distribution. Caution is warranted in interpretation as more than one-half of the dissertations studied were coded from abstracts. It is also likely that the number of masters theses have been under-represented due to the unavailability of a comprehensive listing.

Table 4 compares the longitudinal distribution of all articles and Consumer Oriented articles. In contrast to the overall distribution, Consumer Oriented articles do not increase steadily in number. The years surrounding World War II contain relatively few Consumer Oriented articles (3.5% to 10.5%). Such an occurrence reflects the shift of attention to required programs and program structure likely associated with increased military awareness. In recent years the percentage of consumer oriented articles has increased (36.8%). The economic depression of the late 1920s is thought to have encouraged a consumer orientation. Recently, Americans have experienced some economic depression and this may be represented by the increase in the percentage of consumer focused articles. One could then speculate that there is a positive relationship between the national demand for accountability and a consumer focused perspective.

Table 5 compares all general physical education articles to consumer focused articles. The largest number ( $N = 15$ ) of consumer focused articles is found in dissertations and/or dissertation abstracts representing 26.3% of the distribution. The second largest

**Table 4**  
**Longitudinal Distribution Comparison of**  
**GPE and Consumer Focused Articles**

<u>Year Range</u>	<u>GPE Articles</u>		<u>Consumer Focus Articles</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>Col %</u>
1924 - 1933	8	2.0%	5	8.8%
1934 - 1943	30	7.5%	6	10.5%
1944 - 1953	39	9.8%	2	3.5%
1954 - 1963	100	25.1%	13	22.8%
1964 - 1973	103	25.8%	10	17.5%
1974 - 1984	119	29.8%	21	36.8%
<b>Total</b>	<b>399</b>	<b>100.0%</b>	<b>57</b>	<b>100.0%</b>



Table 5

Source Distribution Comparison ofGPE and Consumer Focus Articles: 1924 - 1984

Source Location	GPE Articles		Consumer Focus Articles	
	N	%	N	Col %
AAHPERD Publications	9	2.3%	2	3.5%
The Academy Papers	9	2.3%	0	0.0%
CPEA/NAPEHE	161	40.4%	13	22.8%
Dissertations/DAI	81	21.3%	15	26.3%
ERIC	2	.5%	0	0.0%
JOPERD	29	7.3%	1	1.8%
NC Journal of PE	13	3.3%	4	7.0%
Physical Educator	10	2.5%	2	3.5%
Research Quarterly	47	11.8%	14	24.6%
Textbooks	11	2.8%	0	0.0%
Thesis	19	4.8%	4	7.0%
Other Miscellaneous	8	2.0%	2	3.5%
Total	399	100.0%	57	100.0%

proportion of consumer focused articles (24.6%) is from The Research Quarterly. CPEA/NAPEHE Proceedings generated 22.8%. The consumer focused articles cluster evenly into the top three sources in comparison to all general physical education articles. Interestingly, there are no consumer focused articles in three of the sources in which only general physical education articles are published.

### General Physical Education

#### Literature Summary and Implications

Following a comprehensive search of the literature, it is clear that prior summative writings provide only a limited picture of past research into general college/university programs of physical education. The literature holds a wider range of research than is typically reported in summative writings. Therefore, an alternate classification strategy was used in an attempt to organize the existing information about general physical education. In effect, an ancillary research project was performed using a content analysis framework. The resulting classification schema of nine categories contains one that addresses consumer focused information. Analysis reveals that the topics of published documents are generally eclectic, cyclical, disproportionate and lacking in forecasting ability.

A large percentage of the writings in general physical education are essays based upon the beliefs and opinions. A random example of such an article is by Jewett (1985). Critiques may have been inspiring, but are of questionable validity due to the absence of supportive

research evidence. The more commonly cited articles tend to discuss general physical education only with a program focus. Program structure surveys provide a clear summary of what has been done, but fall short of providing information indicating future directions.

More than twenty years ago Snyder (1961) addressed the need for research with future applicability. In the 1961 Presidential Address to the College Physical Education Association Snyder stated that, "The history of physical education is conceived as a series of crises where the profession has made narrow escapes by side-stepping one booby trap after another" (Snyder, 1961, p. 1). Snyder identified the direction research in physical education should take by saying "To chart the course physical education should take in the future, it is necessary to identify and study the major factors and forces operating in society"(Snyder, 1961, p. 1).

The address given by Snyder identifies three important societal phenomena physical educators must consider: (a) the explosion of amount and rate of human knowledge, (b) the population growth rate, and (c) the increase in amount of leisure time. During the past ten years, societal changes have been discussed more frequently and with greater intensity (Naisbitt, 1982; Toffler, 1970). In addition, Schendel (1984) noted the shifting base of physical education from an academic to an economic base. The shift reflected recurring concern with accountability. Schendel advocated the capitalization of those factors which can enhance the field of physical education. According to Schendel, it would be

advantageous to work with the current societal trends such as the present day increased interest in active lifestyles.

In contrast to research designed for theory testing, consumer focused research is a form of marketing research and has forecasting capabilities. Marketing research investigates current market needs and then produces goods or services to meet such needs (Mandell & Rosenberg, 1977; Russ & Kirkpatrick, 1982). In addition, marketing can also create or expand a need by making the public aware of new and varied uses of a product.

#### Physical Education Consumer Research

##### Enrollment Motivation

As college physical education programs became a stable part of higher education, researchers inquired about the reasons for participation. Wiedamann and Howe (1937) were among the first to investigate the reasons for electing activities. The Wellesley College students in the Wiedamann and Howe survey indicated the top three reasons for activity selection as "interest in new activity", "enjoyed it in high school" and "reputation of activity".

Two years later Cobb (1939) reported similar findings while surveying student and faculty opinion about coeducational physical education. Cobb found that students enroll in coeducational physical education because of their interest in the activity. Scheduling convenience was a distant second. Few students mentioned the opposite sex as an influence in selecting a coeducational class. In the same

year, Kane and Hodgson (1939) reported "pure enjoyment" as the reason most frequently given for electing physical education. The most frequent reasons for not electing physical education were "dislike" and "lack of interest".

Gallon (1958) compared students electing physical education with those who did not. The Gallon research was prompted by projections of insufficient resources to meet the growing demand of a required program. Student sport interests, sport background, opinions and general demographic variables were examined. Findings indicated that positive influences on elective enrollment included student status, interest in sport activity, and prior activity level. Academic load, fear of low grades, lack of ability, and failure to see a need for such a class negatively influenced students from enrolling in physical education.

In 1973 Brumbach noted the paucity of research concerning the reasons students elect college physical education courses. The information void was of particular interest to Brumbach because he was teaching at the University of California at Santa Cruz (UCSC) where a non-credit, non-grade elective physical education program was in operation. Therefore, the UCSC program had to succeed on its own merits. According to Brumbach, the top six reasons for enrollment in physical education ( $N = 704$ ) were: (a) "to learn new skills or improve skills learned previously" (89%), (b) "to have fun and relax" (83%), (c) "to improve or maintain my physical health" (72%), (d) "to get a change from studying" (46%), (e) "to make new friends" (36%), and (f) "to improve my physical appearance" (34%). The rankings of the responses

deemed "most important" are parallel in distribution to the overall response set. Variations in item response are seen when a breakdown is performed by activity type, (ie. dance, martial arts, individual and dual sports, conditioning activities, recreational activities, and team sports).

Motivation has been thought to play an important role in the reasons for participation. Lundegren (1974) examined the motives of one hundred and fifty-one college women who participated in physical activity. Lundegren was particularly concerned with the differences between physical education majors and non-majors. Generally, there were discernable motivation differences between the two groups. Non-majors were classified into five motivational types: (a) the appearance conscious, (b) the skill developers, (c) the fitness fadists, (d) the healthy long-livers, and (e) the groupies. Majors clustered into four groups: (a) the straight arrows, (b) the show-offs, (c) the groupies, and (d) the givers. Overall, the non-majors express a stronger motivation for fitness.

In more recent research, investigators sought to determine the reasons for enrollment as the fulfillment of needs. Weick (1975) reported that both sexes rank "having fun" and "regular exercise" as needs fulfilled by physical education participation. Other needs reported by students were (a) "making new friends", (b) "ability to move freely and with control", (c) "weight control", and (d) "improve self-confidence". Six years after the Weick study, Soudan and Everett (1981) examined physical education objectives by surveying university student

needs. The subjects in their study indicated "keeping in good health and physical condition" as having the highest importance. The findings of Soudan and Everett revealed a shift in student consumer values from those reported by Weick.

"Learning a new activity" and "improving skills" were two primary reasons for physical education participation ( $N = 3187$ ) at the University of North Carolina at Chapel Hill (Arwe & Jacobs, 1980). A lesser reason for enrollment was to exercise regularly. The majority of students completing the two semester general physical education requirement indicated activity selection based on interest. Some attribution to high school involvement was a factor in continued participation. Relatively few students indicated involvement in physical education due to informal recreational experiences. Over half of the the respondents (57%) reported regular weekly physical activity outside of class with males participating more frequently than females.

In 1982 Schrader surveyed student attributes at Western Carolina University (Schrader, 1982b). Students placed greater importance on physical fitness than motor and social skill development. The Schrader study is a classic example of an attempt to advocate required physical education. Despite the questionable value of students' beliefs as a rationale for a requirement, the finding that "students indicated that physical education introduces them to activities of a recreational...nature" (Schrader, 1982b, p. 53) lends credence to the idea that physical education participation has some carryover benefits.

A model representing physical activity incentive values was created to predict activity preference (Lander, 1984). Six hundred eighty four university students completed an inventory of incentive value statements. Principal component analysis yielded twelve incentive factors accounting for 66% of the variance: (a) socialization, (b) dominance, (c) aesthetic expression, (d) body cathexis, (e) excellence, (f) independence, (g) stress reduction, (h) esteem, (i) thrill-seeking, (j) joy, (k) aggression, and (l) leadership. Excellence was valued most overall. Males place a significantly higher value on dominance, aggression, leadership, esteem and thrill-seeking. Females favored body cathexis, aesthetic expression and stress reduction.

#### Participant Attitudes

Attitude and motivation have been thought to be closely related (Freischlag, 1967). In order for the physical education class to be a positive experience for the participant, "interest must be aroused, attention sustained, and learning judged as worthwhile" (p. 19). Some of the early college physical education research looked at student opinion as a consideration in program design. Bullock & Alden (1933) and Smith (1933) researched student attitude for the purpose of responding with appropriate program adaptation.

Bullock & Alden (1933) surveyed college women and examined the factors affecting their attitudes toward college physical education. Findings identified: (a) childhood play opportunities, (b) high school teacher's training, (c) richness of the high school program, and (d) conflicts between preferences and schedule as factors affecting physical



education attitude. There was an increase in positive attitudes towards physical education from high school to college.

In 1973, Smith studied the general attitudes of male students toward a required program. The Smith survey was administered two terms after the introduction of a sports and recreational activity curriculum in lieu of calisthenics. In anticipation of possible financial cutbacks due to the lean years following the depression, Smith included an item asking if the student would have taken the course had it been elective. Smith found that generally the students felt positive about the new program.

A longitudinal student opinion research project was conducted at the University of Oregon from 1954 to 1957 (Rhoda, 1958). The study was the largest college physical education survey of its time with a sample size of 6960. The results indicated extremely positive and consistent opinions of the physical education program.

A large proportion of the attitudinal studies performed during the 1940s and 1950s did not consider the program as being responsive to the students as consumers. Lemen (1962) chose to include leisure time interests in his research and by so doing, he considered the participant as consumer. Lemen (1962) reported relationships between program enjoyment and ability, and skill and leisure time participation. Examining women's attitudes toward physical education and activities, Lemen reported that women generally favored physical education/activity. Hometown size, high school size, father's occupation, and estimation of social class had a significant positive relationship with attitude

toward modern dance and golf. Excluding estimation of social class, the aforementioned variables had a significant negative relationship with attitude toward basketball. Softball had a significant inverse relationship with hometown size, father's occupation, and estimation of social class. It can be said, therefore, that specific components of social background are seen to be related to physical education/activity attitude.

In 1966, Moyer, Mitchem and Bell investigated women's attitudes toward general physical education using the attitude inventory developed by Wear (1951). Unlike the majority of studies using the Wear inventory, Moyer, Mitchem and Bell focused on the student as the consumer of the program. They found that students maintain generally positive attitudes towards physical education.

Pillinger (1973) explored college students' attitudes toward physical education cross-sectionally and longitudinally. The longitudinal analyses involved survey responses from subjects as freshmen and then as seniors. Pillinger tested for effects stemming from "group" (participant versus non-participant) and "time" (freshmen versus seniors). Additionally, Pillinger compared two groups of seniors. One group of seniors was the last bound by a physical education requirement and the other was the second class without a requirement. Pillinger reported that 48% of seniors under a requirement participated in physical education, whereas, 73% of seniors under an elective program participated. Choice within a program is obviously then, a factor in continuing participation. The findings of the

Pillinger investigation supported cognitive dissonance theory in that participants have positive reasons for partaking in activity and non-participants have negative reasons for not electing.

In 1979 Hartman found similar attitudes toward physical education among men and women. Overall, males typically had a more positive attitude toward physical education than females. Varsity student athletes displayed a more positive attitude toward physical activity than general students. Students who reported a favorable high school experience exhibited a more positive attitude toward college physical education than those with unfavorable high school encounters.

### Participant Interests

#### General Preferences

The depression spurred a number of physical educators to review their programs (Alden, 1932; Davis, 1933). Alden (1932) studied the factors "working against the satisfactions and services inherent in the type of programs offered" (p. 97). Poor equipment, facilities and uniforms were commonly cited complaints. The following year, Davis (1933) surveyed the needs and interests of university students as a function of differing curricula foci.

Post World War II physical education interests of men were examined at The Ohio State University (Mason, 1948). Despite a required program, The Ohio State University provided for free selection within a requirement. Eight hundred and ten of the sample of 1,040 were veterans. Of particular interest was a survey question comparing the OSU physical education program to the physical training received in the

military. Ninety-four percent of the sample preferred the OSU program indicating the main reason as the activity choice component.

Cousins (1957) sampled Indiana University freshman ( $N = 251$ ) about coeducational preferences. Despite many lacking prior experience in coeducational environments, 65.33% indicated a preference for coeducational classes. Six reasons, in order, for this preference were: (a) aids social development, (b) more interesting and enjoyable, (c) sportsmanship improved, (d) personal appearance improved, (e) a natural condition, and (f) more conducive to learning.

Approximately one-third of the freshman sampled did not prefer coeducational instruction. Those preferring segregated instruction indicate several reasons for their preference. The most commonly cited reasons against coeducational classes are (a) sexes trying to impress one another, followed by (b) less native ability with girls, (c) no competition with girls, (d) creates embarrassment, (e) costumes a problem, and (f) time wasted.

Bornell (1970) evaluated the California Junior College programs on the basis of student interests. Results from the Student Interest Inventory of Physical Recreational Activities ( $N = 784$ ) indicated interest in all forty-nine activities on the survey. Approximately 48% of the selections were not offered in the physical education program. Additionally, 35.7% of the activities could not have been accommodated in the existing facilities. Age and sex were significant factors in some activity interests. It was concluded that the existing physical education offerings were incongruent with student preferences. In

addition, Bornell found a wide range of student preferences with less than 10% of the sample selecting any one activity.

Carroll (1977) found course variety and quality of instruction to be the criteria best-liked by college students. Conversely, grading and time required for a one credit course were aspects least-liked. The findings reported by Arwe and Jacobs (1980) also indicated the greatest program satisfaction of students resulted from the variety of offerings. The Arwe and Jacobs respondents placed noticeable value on smaller class size, increased in-class practice time and improved instructor preparedness. Facilities and equipment were considered good with the exception that improved rainy day sites were needed. Over 60% of the respondents intended to continue participation. Of those not intending continued involvement, lack of time was the primary reason. Arwe and Jacobs included students' opinions of required versus elective curriculums, advanced level course availability, scheduling, course popularity, and the swimming requirement. The findings indicated that serious consideration be given for expanding the offerings of advanced skill courses and the redesign of some class time schedules.

#### Specific Activity Popularity

Harvard University conducted a required physical education program with free activity selection (Geer, 1924). During the years 1919-1923 the most popular sport for men was rowing followed in order by tennis, squash, track, basketball, football, boxing, handball and hockey.

Mason (1948) reported basketball, golf, swimming and tennis to be the top four first-choice activities for men at The Ohio State University following World War II. Marching, tap dance, calisthenics and walking were the least-liked activities.

During the Winter of 1952, Broer and Holland (1954) administered an extensive interest and need questionnaire to lower class women at the University of Washington. Swimming, tennis, bowling and golf were the top four ranking activities. Four water sports and no team sports were in the top ten activities. The authors concluded that this was likely due to the geographical proximity of the institution to water sport sites. Lemen's findings (1962) supported the trend of women to prefer individual sports.

In the 1960s Moyer, Mitchem and Bell (1966) report that students generally preferred individual activities. The researchers observed that most four-year physical education curriculums were saturated with team sports. They concluded that physical educators need to re-evaluate the total curriculum.

Lander (1984) developed a physical activity incentive values model. Overall, individual activities have a significantly higher preference. Typically, males reported a stronger preference for all activities than females. The one exception to this trend concerned rhythmic activities where the opposite was true. Physical activity preferences were subjected to a principal component analysis. The resulting ten activity factors accounted for 31% of the total variance: (1) individual, (2) rhythmic,

(3) nature, (4) running, (5) target, (6) water/snow, (7) martial arts, (8) team/ball, (9) racquet sports, and (10) team/implement.

Subsequently, a discriminant function analysis classified high and low preference groups in each activity cluster. Correct classification is greater than 69% for five of the activity groups: individual, rhythmic, running, team/ball and team/implement. Despite adequate predictability of high and low preferences for the five activity groups noted, incentive value dimension scores are inadequate overall predictors for activity preference.

#### Participant Characteristics

The University of California changed from a required to an elective physical education curriculum in May of 1933 (Kane & Hodgson, 1939). The May 1937 graduates were the first under the elective curriculum and as such, were studied as a cohort group in a longitudinal manner. Kane and Hodgson studied university records of 365 students. The sample included 14.8% who did not elect physical education during their undergraduate study, 61.4% who elected one to three classes, and 23.8% who enrolled in four or more classes. Forty students were selected for personal interviews from two groups, the non-enrolling group and the group having enrolled in four or more courses. Kane and Hodgson found the following factors to be significantly correlated with physical education election: (a) participation in extra-curricular activities (athletic and non-athletic), (b) occasional activity in summer, (c)

part-time employment, (d) participation in high school physical education, and (e) medical qualification for sports participation.

An in-house study of the 1956 University of Kansas graduates by Shenk in 1957 ( $N = 690$ ) revealed that over half of the students elected to participate in one or more activity courses during their four years in college. Thirty-five percent took at least one course at the University of Kansas. Thirty-eight percent were transfers from schools where physical education was probably required. Of these, 72% took physical education at prior schools attended. Excluding physical education majors, a mean of 1.4 credit hours of physical education was reported. Shenk reported 51% of the courses taken were coeducational. The gender composition of those electing coed physical education is approximately equal. However, a greater percentage (44%) of the female student body elected physical education in comparison to male students (33%). The overall distribution of physical education credit hours were: 35% in dance, 33% in individual sports, 10% in team sports, and 15% in swimming. During the four years an increase was seen in the percentage of men enrolling in dance classes. Meanwhile, the percentage of women enrolling in individual sports increased. A breakdown by campus units reveal the following distribution of enrollments in physical education: (a) 70% Education, (b) 57% Arts and Science, (c) 54% Pharmacy, (d) 45% Journalism, (e) 40% Engineering, and (f) 34% Fine Arts.



Riddle (1969) examined the relationships between activity preference, socioeconomic status and personality. Socioeconomic status was not a significant factor in physical education activity preference. However, evidence existed to indicate "that physical education activities do have unique environments which are differentially attractive to different 'types' of college coeds" (p. 1005A). Riddle concluded that the physical activities might "act as selective environments, being differentially attractive to various types of people" (p. 1005A).

Bigelow (1971) examined the predictability of student physical activity selection. Using multiple regression equations, the variables of hometown size, size of high school, a personality measure, two measures of social position and five physical fitness measures, failed to predict physical activity selection.

Pillinger (1973) reported personality differences between participants and non-participants. Participants rate previous experiences in high school higher than non-participants. In addition, participants indicated a stronger intent to continue activity. Seniors bound by the voluntary curriculum participated to a greater extent (73%) than those under the requirement (48%).

Holt and Mueller (1974) surveyed the attitudes of students at the University of North Carolina at Chapel Hill toward a required physical education program. As part of the survey process, substantial student background information was collected. Among the findings was the fact that the majority of students were required to take 2 semesters of high

school physical education. Half of the students experienced high school physical education programs consisting of team and individual sports. Forty-three percent participated in team sport only programs and seven percent experienced individual sport only programs. The majority of the sample considered their high school instruction to be of good to excellent quality.

Several studies attempted to examine physical activity in relation to designated student characteristics. Edwards & Ridgway (1974) compared student ( $N = 488$ ) philosophical beliefs with their activity preferences. The majority of the respondents held pragmatism as their dominant philosophical belief. Yet upon breakdown by activity preference, differences according to philosophical belief were found. For example, students preferring dance and rhythmic activities were predominantly idealistic. Students preferring physical development activities were more often realistic.

Survey research provided additional consumer focused information in the mid 1970s. Reiselt (1975) reported relationships between high school activities and college physical education. For example, a student participating in tennis as a high school activity was also likely to participate in some form of tennis in college. Additionally, evidence was presented indicating a shift in the activity interests of physical education. Reiselt reported that students had a greater interest in team sports while in high school. College students, on the other hand, preferred lifetime/individual activities.

Using survey methods and existing data, Enderly (1976) studied the factors affecting college students' choices of physical activities. Although Enderly did not study formal physical education courses, the research provided insight into the related selection process of physical recreation. Enderly utilized a survey and American College Test (ACT) data from tape and reported high school activity level, availability of facilities, academic load and residence as minor influences on the choice of physical recreational activities. Activity level of peers, perceived fitness level and gender were found to be most influential. Non-significant factors included in the study were college, high school rank, outside work load, availability of information (i. e., publicity) and preferred location of participation. According to the Enderly findings, students tended to increase the amount of their physical activity as their grade point averages (GPA) increased. However, the relationship between level of physical activity and GPA reversed toward the upper end of the GPA scale.

Dobratz (1977) studied the influence of required general physical education enrollment on leisure-time activity selection. Approximately 40% of the sample was influenced by general physical education enrollment. That is to say, there were clear relationships with current activity participation. Among the variables studied by Dobratz was the frequency of participation and type of leisure activity. Cycling, jogging and hiking were popular leisure pursuits, yet were not part of the physical education curriculum.

Hartman (1979) investigated the place of physical education in the liberal arts curriculum. In doing so, Hartman explored the nature of students electing physical education in comparison to students who do not. According to Hartman, students electing physical education; (a) rank lower in scholastic aptitude and college achievement, (b) have lower family income levels, and (c) are more often female than those not electing physical education.

Kovalchik (1983) investigated physical education grade variances as a function of gender. The findings indicated that males generally receive higher skill grades whereas females receive higher knowledge grades. Female instructors assign higher final grades than males teachers when operating under the same grading scale. When separate grading scale are used, the opposite occurs.

Most recently, Watkin (1983) examined high school activity level influence on continued participation by Australian college students. Data indicated that secondary school significantly affects all subjects. The greatest influence of school on continuance was seen in males with low activities levels at entry to high school. Significant key factors revealed were (a) curricula offerings, (b) class size, (c) school sponsorship and sex composition, and (d) inviting teachers.

## Summary

### Collegiate Program Problems

Time and technology have removed a number of the problems associated with general university physical education revealed in past research. For example, early surveys cite poor facilities and uniforms as problems confronting college physical education. Facilities have improved significantly. Poorly equipped locker rooms and showers are no longer points of contention. The apparel industry has capitalized on the increased interest in exercise and responded with fashionable and functional fitness clothing. Combined with a societal trend of individual expression, uniform requirements were eliminated.

Academic credit, once a source of much debate, is no longer an issue. Physical education has become a well-known and accepted component of post-secondary education. Regardless of whether there is a requirement, most participants receive academic credit for general physical education (Trimble & Hensly, 1984).

However, unattractive factors continue to exist in college physical education. Scheduling physical education courses remains a problem given the typical university time plan. Administrative considerations for scheduling continue to dominate the curriculum. Insufficient time for dressing and undressing, and inadequate class time remains an ailment for general physical programs in the 1980s. It is apparent that some of the unattractive factors first cited in the 1930s continue to detract from today's general physical education programs.

### Collegiate Program Trends

General physical education has existed in one form or another for more than 100 years. There have been a number of recurring issues in college physical education. The dominant issue has been required versus elective programs (Shenk, 1957). Collegiate physical education issues have become cyclical. It appears that the issues recur faster and more frequently. For example, physical educators responded to times of economic problems with research designed to demonstrate the desirability of their programs. Such was the case immediately following the Great Depression and in the early 1980s following the recession of the latter 1970s. Another example of an issue that occurred repeatedly is that of fitness. In response to the reports in the early 1950s of low fitness levels among American schoolchildren, there was a push for physical education requirements with a strong fitness component. Then, the President's Council on Physical Fitness was formed. Requirements were advocated again following the Republican administration's platform for a strong defense in the 1980s. Such reaction has not been successful due in part to the lack of supportive research findings and the conflict with the societal trend of individualization (Naisbitt, 1982).

Several new issues have recently been identified. Among them is whether college physical education should be conducted as a service program or as part of a liberal arts education. In addition, budgetary concerns have been recent topics for discussion at meetings and in professional journals. Growing numbers of senior citizens availing

themselves of the activities at local colleges and universities has also become an issue (Whaley, 1976).

Present day issues concerning general university programs of physical education cannot be considered in isolation by the profession and its leaders. Each issue must be dealt with and decisions made with consideration given to the larger university context and the prevailing societal trends. Collegiate physical education must respond to changing times and clientele in order to remain a viable experience for college men and women.

#### Implications

Razor and Arnold (1970) discuss the conflict arising from differences in the student's perception of needs and interests and those perceived by the curriculum designers. Although faculty have been responsible for identifying and meeting the student needs, Razor and Arnold observe that the student consumer is "playing a major and growing role in curriculum development" (Razor & Arnold, 1970, p. 255). Razor and Arnold contend that when the program is electively based, student preferences take precedence over student needs. In addition, activity choice, level of expertise and participation intensity is thought to be student determined (Rogers, 1969).

Tradition more than research evidence has permitted experts to determine curricular aims and objectives. Such practice usually attempted to cajole students into adopting faculty mandates as "acceptable" student aims and objectives. "While it is apparent that

there is some agreement in faculty and student purposes in physical education, it is equally apparent that there are significant differences which may seriously affect student motivation and the ultimate effectiveness of the program" (Rogers, 1969, p.22).

Concerns for a broad and liberal education are frequently addressed by university faculty and administrators. In addition to consideration of goals and processes, the ideas underlying liberal education include student demands for educational relevancy and academic honesty. Sound education is built upon viable objectives, academic freedom, and professional integrity. Learning must be based upon reality and practicality. Moreover, learning should foster student self-determination. Confronted with lower enrollments and smaller budgets, for better or worse, education today has become a market-place. The focus of educational efforts is not only on what is done, but how it is done.

Physical educators have been continually on the defensive. More than fifteen years ago Rogers (1969) cautioned against the distortion of "one's perspective and sense of value" as an effect of the speed of change (Rogers, 1969, p. 21). It often "prompts one to either hang on to tradition for security, or to leap into the swiftly moving current with little regard for consequences" (Rogers, 1969, p. 21). Either extreme impulsive acceptance or absolute resistance may negate the aspects of change that are desirable and beneficial. It appears that physical education has fallen prey to such extremes.



Research has yet to demonstrate that participation in physical education is essential to life. Professionals continuing to use coercion to enroll students in required programs work against the trend for choice and may even misrepresent the product benefits. Until such time when there is sound research evidence that participation in college physical education is essential to the health, happiness and existence of the typical student, physical educators are falsely advertising the alleged benefits of enrollment.

It is evident to the writer that there is little to be gained by resisting change. Physical education exists in the present as part of the educational context. Therefore, action or decisions about the field of study must also consider broad societal trends. Pointing out that college curriculum trends include the reduction of specific requirements in favor of a few general requirements, Rogers challenged higher education "to make use of recognized and existing student purposes in physical education to further the achievement of recognized, existing, and longer range faculty and institution purposes in physical education" (Rogers, 1969, p.24).

Marketing college physical education may be distasteful to some traditionally-oriented physical educators, but it appears to have potential. Moyer, Mitchell & Bell (1966) used a marketing approach and clearly demonstrated the mis-match between the product offered and the consumer interest. There are new and refined research tools available to aid in identifying student needs (Ramsey, 1983; Soares & Trimble, 1983). Ramsey's instrument assesses physical, emotional and social

needs, physical and psychological characteristics, and student preferences in terms of activity choice, program operations, equipment and facility utilization, and administration. Soares and Trimble developed a self assessment instrument designed to guide students into individually appropriate programs of participation. These tools recognize the complexity and variability of college students. Computerization has improved and expanded the researcher's capabilities to analyze the complex data from multivariate instruments cost-effectively. It is essential to have background or baseline information before one can segment the market and approach the process of producing physical education experiences in a timely, appropriate, and effective way.

## CHAPTER III

## METHODOLOGY

It is apparent that the time has come to logically plan a formal baseline dataset about general physical education. The author suggests that in order to break the recurring cycles discussed above we must change the way in which we view physical education. Additionally, it is important to examine whether a difference exists between stated student preferences such as those indicated on surveys, and what students actually do. Therefore, this study investigates the situation at the University of North Carolina at Greensboro in a manner which (a) considers the multivariate nature of college physical education consumers, (b) utilizes demographic, personality, academic and survey information, (c) views students cross-sectionally and longitudinally, (d) allows the procedures to be minimally altered for application elsewhere, and (e) provides sufficient information from which a marketing plan can be developed.

Clearance was secured from the UNCG Protection of Human Subjects Committee to conduct the study (see Appendix C). The research, in effect, is a secondary analysis of information related to General University Program (GUP) participants at UNCG. A four year period was studied. Only information from the academic calendar years, not summer sessions, were investigated. Data from the Fall and Spring terms from 1980 to 1984 are the eight semesters examined.

For the time period studied, to be certain of accuracy with respect to course prefix, title, number and content, annual course catalogues were examined. Thus, course inclusion and matching from year to year were verified. Appendix D contains a list of GUP courses offered.

## Procedures

### Design

Secondary analysis was selected as the appropriate method of providing all of the information needed to answer the framing questions of the study. Glass (1976) defines secondary analysis as "the re-analysis of data for the purpose of answering the original research question with better statistical techniques, or answering new questions with old data." Primary analysis is "the original analysis of data in a research study" (Glass, 1976, p. 3). Hyman (1972) defines secondary survey analysis as the "extraction of knowledge on topics other than those which were the focus of the original surveys" (Hyman, 1972, p. 1). Glass (1976) notes the need for methods allowing orderly and efficient summarization. The investigator recognized that behavioral research questions demand extensive replication and subsequently, advanced synthesis techniques. Secondary analysis is acknowledged to be cost effective as it allows for substantial savings of time, money and personnel (Hyman, 1972). In addition, secondary analysis is non-intrusive. A final argument supporting the strategy of secondary analysis is the notion that such a design facilitates comparisons over time.

The present study is, then, an execution of a secondary analysis of information synthesized from four different data sources to broadly characterize recent collegiate consumers of physical education at the University of North Carolina at Greensboro. By selecting and rearranging potentially related data points the research provides a comprehensive picture of recent participants in the General University Program (GUP) at UNCG. The study examines the nature of collegiate consumers of physical education in two general phases.

The first phase describes participants annually and averaged over four-year. In this way, cross-sectional pictures are generated. The second phase examines one selected cohort group longitudinally. The cohort group used in the second phase consists of 1980 Freshmen. Selected analyses in the second phase focus on regularly participating consumers. Regular participants are defined as those 1980 Freshmen having three or more physical activity enrollments from the Fall of 1980 to the Spring of 1984. The purpose of the second phase is to establish which participant characteristics are related to (a) continued participation and (b) activity selection patterns over time. Freshmen entering the University of North Carolina at Greensboro (UNCG) in the Fall of 1980 are used as the longitudinal cohort group.

#### Units of Observation

The questions in this project necessitated varying the observation unit. In this study, then, the prime observation unit is an enrollment in a physical activity class open to the general university student.

For the cross-sectional analysis an enrollment consists of one participant's place in a given physical education course. Each enrollment is assumed independent of any other enrollment. However, enrollments are often made by the same undergraduate. GUP participants from selected cohort groups are analyzed longitudinally. The second phase uses GUP participants from the selected cohort group for the observation unit in the longitudinal analysis. The second observation unit is a participant in the General University Program (GUP).

#### Variable Selection

Biodata, interest measures, personality measures and course enrollment information were the major variables examined in the present research. Rationale for the use of these variables is briefly described below. Baird (1976) examined the accuracy and validities, concurrent and predictive, of brief self-reported information. He concluded that self-reported data were usually accurate. In 1971 Baird continued his research on self-reported data. He reviewed 30 years of research on self-reported data using various methods and samples. For a second time Baird concluded that such information is generally reliable, even with monetary incentives to report false information. Breland (1981) discussed biodata, interest measures and personality measures in terms of reliability, validity and acceptability. Biodata and interest measures were considered as being of sound reliability and validity, and generally accepted. Personality measures were deemed generally reliable, but not necessarily valid. The use of personality measures

prompts certain ethical considerations and therefore, has questionable public acceptance. But, because these variables were used as successful predictors or sets of predictors in educational research, they were included in the present study.

#### Data Bases

Tape copies of four selected institutional data bases were obtained. The four data sources were (a) UNCG Course Record File, (b) UNCG Student Data File, (c) Myers-Briggs Type Indicators, and (d) Student Descriptive Questionnaire. The UNCG Course Record File and Student Data File were released by the University Registrar. Myers-Briggs Type Indicators and data from the Student Descriptive Questionnaire were contributed by the UNCG Office of Institutional Research. All data used in this study were copied in raw form from tape by a staff member in the Office of Institutional Research. A description of each data source follows. The code book for the data is located in Appendix A.

#### Course Record File (CRF)

The study utilized the enrollment information from the physical activity courses offered by the Physical Education Department. These physical activity classes comprised the General University Program (GUP) and are open to all university students on an elective basis. The information contributed from this source represents enrollments from the 1980-1981 to 1983-1984 academic years. CRF variables selected were:

- A. Course Number uniquely identified each course by a three character prefix followed by a three digit number. All courses in this investigation had a two character prefix of PE followed by a literal space, thereby equalling three characters. The course number identified each class.
- B. Credit Hours identified the number of credits awarded for the successful completion of each course.
- C. Final Grade contained the final grade awarded to the student for a given course.
- D. First/Last Enrollment was a variable created from the CRF file by chronologically sorting each student's set of course records. It identified the enrollment record of the first and last GUP course taken by the student.
- E. Rhythmic/Non-rhythmic was a variable created from the CRF by classifying each course as having or not having music as a primary component of the course. Examples of rhythmically oriented classes were Rhythmic Aerobics and Square Dance. Basketball and Swimming were examples of course not dependent upon music.
- F. Aquatic/Non-aquatic was a variable created from the CRF by distinguishing each course as occurring in or out of an aquatic environment.
- G. Team/Individual-Dual was a variable created from the CRF by categorizing each course as a team activity or as characteristically involving one or two participants.



- H. Course Location was a variable created from the CRF by identifying each course by the primary meeting site. Examples of courses meeting off-campus and requiring student provided transportation were Racquetball and Snow Skiing. Golf and Tennis were examples of courses meeting on the UNCG campus and not requiring transportation.
- I. Time of Course classified each course by its meeting time. Morning classes occurred from 8 AM to 11 AM. Afternoon classes met from noon to 4 PM. Evening courses were scheduled from 5 PM until 10 PM. A number of courses were identified as TBA. TBA stood for "to be arranged".
- J. Participation Group was a variable created from the CRF by counting the number of enrollments each student made in the GUP. A student was considered to be a regular participant if he/she enrolled in three or more GUP courses. Non-regular participants were those students enrolling in one or two GUP courses.
- K. Adjacent Enrollment Times was a variable created from the CRF. The first three GUP course records of regularly participating students were examined and class meeting times identified. Meeting times were considered to be adjacent if they (a) did not involve a morning and evening enrollment and (b) did not involve more than two meeting times of the day. For example, if the first course met in the morning and the second and third met in the afternoon, the enrollment times were considered to

be adjacent. However, if the second or third course met in the evening, the enrollment times were not adjacent.

#### Student Data File (SDF)

The SDF was a short format file (80 column) containing general demographic information about all university students. The variables provided by this data source create a basic student profile for all GUP participants. The SDF is created annually in the Fall term. Therefore, time-related information from this source, such as housing, is assumed to be constant for the following Spring semester. Variables selected from the SDF follow:

- A. Gender contained each student's gender.
- B. Race categorized each student according to race.
- C. Transfer Status distinguished students transferring credit from another institution of higher education from those earning all undergraduate credit at UNCG.
- D. Scholastic Aptitude Test (SAT) contained each undergraduate's summary score from the verbal and math portions of the SAT.
- E. Marital Status distinguished married students from single undergraduates.
- F. Tuition Status identified a student as being "in-state" or "out-of-state" for tuition purposes.
- G. Housing Status classified students living in dormitories on the UNCG campus or commuting from off-campus housing.

- H. Campus Familiarity identified students as new to the UNCG campus or as returning to UNCG.
- I. School classified each student's school within the university. There were seven schools within UNCG: College of Arts and Sciences, School of Business and Economics, School of Education, School of Health, Physical Education, Recreation, and Dance, School of Home Economics, School of Music and School of Nursing.
- J. Quality Point Ratio gave the ratio of cumulative credit hours earned to cumulative quality points awarded.
- K. Class Standing indicated the classification status of the student. Each classification (ie. freshman, sophomore, junior, etc...) was based on the number of credits completed and the course of study undertaken.
- L. Enrollment Status concerned the number of credits in which a student is currently enrolled. An undergraduate was considered full-time when he/she enrolled in courses valued at 12 or more hours. Students were considered to be part-time if enrolled in less than 12 credits.
- M. Age Group identified students as being of typical college age or as an older undergraduate. A student was considered to be of typical college age if he/she were less than 22 years old. Older students were those 22 years old and above.

N. Academic Year is a variable used to identify the academic year from which the profile information was retrieved. The academic year in which the profile was collected was needed to perform year-by-year matching of information.

#### Myers-Briggs Type Indicator (MBTI)

The MBTI is a personality measure published in 1962 by the Educational Testing Service. It is based upon Jung's theory that behavior is a result of observable and measureable differences in mental functioning. The first MBTI was developed in 1942 by Katherine C. Briggs and her daughter, Isabel Briggs Myers (Stricker & Ross, 1962). Educational Testing Service published the MBTI in 1962 (McCaulley, 1976). The Indicator is a self-report, forced choice measure which classifies or sorts people on the basis of their behavior preferences. The MBTI measures extraversion and introversion, perceptual processes, cognitive style and preference for order (Reichard & Uhl, 1979). These four bi-polar dimensions form 16 combination personality types. The MBTI does not indicate the strength as much as the direction of a person's preference.

The MBTI has been widely used for non-psychiatric populations, yet has been relatively neglected by psychologists/psychiatrists (DeVito, 1985). The Indicator is non-judgmental as both poles in a dimension can be viewed as strengths. Therefore, it is especially well-suited to normal populations. In fact, the Indicator is intended as much for the respondent as for the professional, if not moreso. It has been used as

a predictor in academic success research, retention studies and performance on professional tests. In addition, it has shown some utility in career advising. Norms for the MBTI exist for college students on a sex by major basis (Corsini, 1984).

The underlying theory of the MBTI was proposed by Jung in 1923 (Myers, 1962). Briefly, Jung hypothesized that there are three interlocking dimensions of personality type (Myers, 1962). Focus of cognitive activity is represented by the extraversion/introversion (EI) dimension. According to Coan (1978), Jung conceived extraversion/introversion differently from most measures which focus on social introversion, shyness or withdrawal; and social extraversion, gregariousness. Extraverts, as typed by Jung, focus on objects and environment. Introverts concentrate on ideas or concepts.

The second Jungian component concerns a system of perception and is referred to as the sensing/intuition (SN) dimension. Sensing individuals prefer to comprehend by using their natural senses whereas, intuitive persons rely primarily on "indirect perception by way of the unconscious" (Myers, 1962, p. 2).

The last dimension proposed by Jung is thinking/feeling (TF) which reflects the person's decision-making system. An individual typed as "thinking" focuses on logic and impersonal findings to make a judgment. The "feeling" person concentrates on subjective feelings when judging. Myers added a fourth dimension which indicates a person's preference for judging or perceiving (JP) when dealing with the outer world.

Leading and auxiliary functions were an ancillary part of Jung's type theory. Jung and Myers differ on their interpretations of leading and auxiliary functions (Stricker & Ross, 1962). Generally, a leading function is one's natural preference which is then augmented by one's auxiliary function. The dominant and auxiliary functions were not well-developed by Jung and is the most controversial aspect of Myer's interpretation of type theory (DeVito, 1985).

#### Validity

Briggs and Myers conducted extensive research in developing the items for the MBTI (Stricker & Ross, 1962). One of the strengths of the MBTI construction is that any single item deals with one polarity. In other words, each item indicates the strength of the person's preference for one pole such as judging. Therefore, "responses within an item generally reflect two opposing, rather than competing, choices" (DeVito, 1985, p. 1031). Excluding the TF dimension which is scored separately for males and females, all scales are scored the same. Prior evidence suggested a need, and therefore, controls were implemented by the authors of the Indicator to prevent the influence of social desirability on responses (DeVito, 1985).

The construct validity of the MBTI has been examined on two levels (Stricker & Ross, 1962). First, the MBTI has been investigated for its meaningfulness. Secondly, evidence has been sought to validate the MBTI's reflection of the underlying dimensions proposed by Jung and adapted by Myers. Specifically, research has been conducted to demonstrate the bimodality and interaction of the preference dimensions.

Construct validity is supported by a factor analysis that yields the four dimensions (Carlyn, 1977). Cohen, Cohen and Cross (1981) assessed the construct validity of the MBTI by comparing type to spousal ratings. There is significant agreement between spousal ratings and MBTI scores on three dimensions; extraversion/introversion, sensing/intuitive, and thinking/feeling. In addition, divergent validity due to non-significant and negative correlations between subjects ideal ratings and their MBTI scores support the MBTI's validity.

The concurrent validity has been investigated and there is a good relationship between the MBTI and the Gray-Wheelwright Psychological Type Questionnaire, another instrument based upon Jungian type theory. Coefficients with Gray-Wheelwright are .64 for extraversion/introversion, .34 for sensing/thinking, and .54 thinking/feeling. These are all significant at the  $p = .05$  level (Lake, Miles & Earle, 1973).

Omizo (1978) used a model of congruence evaluation on the MBTI. The major weakness of the Indicator was a "lack of demonstrable criterion-related, content and construct validities" (Omizo, 1978, p. 201A). In addition, statistical evidence was lacking for comparable test forms. Half of the criterion standards were met, but the remaining half were deemed questionable. Omizo cautioned against using the MBTI for any purpose other than exploration.

The issue of interaction of different type combinations has not been settled (Carlyn, 1977). Using teachers and students in teacher preparation, Richek (1969) found significant correlations between the EI and TF dimensions for males. Prior research had consistently indicated

the EI dimension as independent. A correlation is reported for females between the JP and SN dimensions. A relationship is also reported for female elementary school teachers between TF and JP dimensions. Stricker and Ross (1963) report intercorrelations involving the JP dimension with the SN dimension and the TF dimension.

### Reliability

Carlyn (1977) discusses the issue of the MBTI's level of measurement. One school of thought is that continuous scores are appropriate because underlying dimensions of personality type are considered to be on a continuum. Therefore, tetrachoric  $r$ 's would be appropriate. The other view is that the dimensions are dichotomies and as such, are categorical in nature. Therefore, phi coefficients would be appropriate. Phi coefficients tend to underestimate the actual correlation. Carlyn concludes that the actual reliability values probably fall between the conservative (phi coefficients) and liberal (tetrachoric  $r$ 's) estimates (see Table 6).



Table 6

Phi and Tetrachoric CorrelationCoefficients of MBTI Dimensions

Type Dimension	phi	tetrachoric r
EI	.55-.65	.70-.81
SN	.64-.73	.82-.92
TF	.43-.75	.66-.90
JP	.58-.84	.76-.84

Numerous samples have been used to determine internal consistency. Carlyn (1977) comprehensively surveyed past validity and reliability studies of the MBTI. Based on continuous scores from ten independent studies, internal consistency reliability values range from .63 to .87 on the extraversion/introversion dimension, .75 to .90 on the sensing/intuitive dimension, .67 to .83 on the thinking/feeling dimension, and .80 to .87 on the judging/perceiving dimension. Stricker and Ross (1962) report the TF scales consistently have the lowest reliability. Using continuous scores, McCaulley (1976) reports the internal consistency to be in the .70s to .80s range. The TF dimension has a lower reliability (.60 to .83). Internal-consistency reliability of the type categories has been assessed using the Guttman method of lower-bound reliability estimation (Stricker & Ross, 1963). The thinking/feeling dimension is reported as having the lowest reliability.

Based on continuous scores from five independent studies (Carlyn, 1977), test-retest correlation coefficients range from .73 to .83 on the extraversion/introversion dimension, .69 to .82 on the sensing/intuitive dimension, .48 to .82 on the thinking/feeling dimension, and .69 to .87 on the judging/perceiving dimension. Comparisons of original and retest type category scores were reported from four studies (Carlyn, 1977). No change in any type area ranged from 31% to 61%. Two of the studies examine the number of changes per subject. No changes occur on all four dimensions. Between 35% and 39% of subjects change in one type area; 10% to 22% change two of their type areas; and two percent to seven percent change three of their type dimensions. Three of the studies examine change on a dimension by dimension basis. The percentage of change reported in these studies ranged from 62% to 83% change in EI typing, 57% to 89% change in SN typing, 61% to 90% change in TF typing, and 63% to 90% change in JP typing. McCaulley and Tonesk (1974) reported that 69% to 88% of the respondents are placed in the same preference type on four independent samples (2 months to 20 months).

#### Summary of Evaluations

Stricker and Ross (1962) based their evaluation of the MBTI on four issues: (a) type theory, (b) test development procedures, (c) reliability, and (d) validity. There is some correspondence between Jung's and Myers' typologies. However, Jung took a broader view of the EI dimension and used judging and perceiving as a classifying mechanism; whereas, Myers added judging and perceiving as a full dimension.

MBTI construction has been enhanced by insightful item writing and numerous item analyses (Stricker & Ross, 1962). The test development procedures provide some congruence with Myers typology, but fall short of sufficient evidence of congruence. Reliability is tenuous due to social desirability causing variance problems. Validity is questioned as the assumption of bi-polarity was not verified (Stricker & Ross, 1962). Sundberg (1965) also concludes that the evidence does not support the existence of a simple bimodal distribution. According to Stricker and Ross (1962), procedures used in the construction of the Indicator leave ambiguities. Additionally, there is evidence indicating respondents interpret items in a popular sense (ie. gregarious behavior as indicative of extraversion) rather than the intended intrinsic type. However, the MBTI derives a good deal of information efficiently.

Despite good practical utility, it is general consensus that the MBTI does not meet the criteria to be considered a psychological test (DeVito, 1985). The MBTI fails to provide normative data for continuous scores which is necessary to be considered a psychological test. A conservative stance must be taken and analyses should be restricted to non-parametric procedures. Carlyn (1977) recommends using the chi-square test for independence to test for significant relationships between the MBTI and categorical variables. Phi and tetrachoric correlations can then provide information about the strength of the relationship with another dichotomous variable.

The MBTI appears to have useful applications, but it is questionable whether it is representative of Jung's dimensions of type. The empirical support for a true dichotomy of type dimensions is, at best, tenuous (Coan, 1978). The "relationship of the Indicator to its theoretical Jungian underpinnings has not been established" (Lake, Miles & Earle, 1973, p. 189). Carlyn (1977) concludes that the MBTI is reasonably valid and potentially useful in a variety of ways. Mendelsohn (1965) concludes that MBTI interpretation would be more accurate based on item content than on its purported underlying constructs. MBTI scores are best interpreted "in light of their empirical relationships rather than their assumed theoretical significance" (Mendelsohn, 1965, p. 322).

#### Current Application

GUP participants' MBTI profiles were included in this study because the data is useful in classifying consumers of physical education and also because it can contribute to exploring empirical relationships. This study does not use these profiles as a representation of Jungian typology. The MBTI was collected from 1977 to 1983 as part of the orientation process. Variables selected from the MBTI tape follow:

- A. Myers-Briggs Type Indicator contains the four character indicator type for each student.
- B. Extravert/Introvert was a variable derived from the MBTI and classifies each student as extrovert or introvert.

- C. Judging/Perceiving was a variable derived from the MBTI and classifies each student as judging or perceiving.
- D. Sensing/Intuitive was a variable derived from the MBTI and classifies each student as sensing or intuitive.
- E. Thinking/Feeling was a variable derived from the MBTI and classifies each student as thinking or feeling.

#### Student Descriptive Questionnaire (SDQ)

The SDQ is a questionnaire administered by the Educational Testing Service (ETS) of Princeton, New Jersey. High school students optionally complete the SDQ as part of the registration process for the Scholastic Aptitude Tests (SATs). The anticipated use of the information provided by the SDQ was prediction of academic success.

There was much debate at the inception of the SDQ (Sims, 1971). The right to privacy was the underlying issue brought to debate by the implementation of the SDQ. The SDQ was, and is, optionally completed by SAT registrants in response to the privacy debate.

The Response Analysis Corporation (1978) surveyed SAT registrants about the SDQ. Students indicate that most of the information requested on the SDQ was appropriate to collect. However, large numbers of students object to information pertaining to ethnicity and participation in church or community activities. Fewer students object to survey items pertaining to work experiences, gender and self-reported abilities. The large majority of respondents remember completing the

SDQ and most thought it would help colleges evaluate them. However, one in five registrants responding thought that the SDQ was required.

The questions in the SDQ were arbitrarily selected for utilitarian purposes (Baird, 1971). Items seeking self-evaluation of abilities in various areas have been included as research suggests that people tend to behave as they see themselves. In addition, students with substantial ability are more likely to seek institutions of higher education with better facilities in that area.

Baird (1971) found evidence that high school behavior can provide prediction of future college behavior. He states that a "latebloomer" was a rarity. The questions included in the SDQ can "provide some useful information about the probability that a student will participate in various activities in college" (Baird, 1971, p. 13). Such information can also anticipate future student needs.

Selected responses adding to the overall description of collegiate consumers of physical education were included in the present research. The study uses SDQ information from 1977 to 1983 to maximize upper classmen matching. Variables selected from the SDQ were:

- A. High School Type identified each student's high school as public or private.
- B. High School Focus identified the emphasis of each student's high school. High schools were classified as academic or college preparatory, general, vocational or other.

- C. High School Class Size classified a student's high school by the the size of the student's graduating class.
- D. High School Class Rank categorized each student into one of five fifths in terms of their class rank.
- E. High School Employment Status identified students as having worked or as not employed while in high school.
- F. High School Athletic Participation concerned a student's physical activity during high school. High school physical education was not included. Individual, intramural and varsity sports were included.
- G. Collegiate Athletic Participation Intent indicated those students intending and not intending to participate in college athletics. College physical education was not included. Individual, intramural and varsity sports were included.
- H. Athletic Ability Self-Rank contained the athletic ability self-rating indicated by students on the SDQ.

#### Analyses

All computing was executed by the principal investigator on a VAX 11-780 cluster at the UNCG Academic Computing Center (ACC). The VAX 11-780 cluster functioned on Versions 4.1 to 4.3 of the Digital Equipment Corporation (DEC) operating system during the investigation. The Statistical Package for the Social Sciences extended (SPSSX) was used to perform all analyses. The SPSSX TABLES procedure created the formatted tables in this study. Research Systems 1 (RS/1), in

conjunction with a Decwriter IV Graphic Printer, produced the barcharts contained in this document. Flowcharts and models were produced using MacDraw software on a MacIntosh model Apple microcomputer in conjunction with an Apple Laserwriter.

Complete nine digit social security numbers were used to match data records from source to source and across time. Each social security number was encrypted to ensure anonymity yet allow for unique record identification. Matching occurred on a semester-by-semester basis where possible. Annual information was matched for each semester in that academic year. Variables recorded once were matched across all semesters by encrypted social security numbers. Matched data records from each related source were stored in a single, compressed SPSSX system file. Variable names, labels and values are included in Appendix A.

Davis (1971) recommended a maximum rule of 70-30 distribution spread in typical dichotomous variable crosstabulations. The large number of observations in the cross-sectional analyses expand the acceptable marginal distribution to between 95-5 and 99-1 (Davis, 1971). The longitudinal analysis utilized slightly more than 300 observations. Therefore, the 70-30 rule was applied. Although the intent of the present investigation was exploration, the 70-30 rule was adhered to in both analysis phases as a means of limiting the information discussed. Additionally, it is generally accepted that a gamma coefficient must have a minimal absolute value of .30 for any practical purpose (Davis, 1971). Absolute values of gamma coefficients were reported as;



"moderate" if falling between .30 and .49, "substantial" if falling between .50 and .69, and "very strong" if .70 and higher (Davis, 1971).

Variables are deemed to be dependent if they were related to enrollment in a course. The dependent variables are course number, credit hours, final grade, first/last enrollment, rhythmic/non-rhythmic, aquatic/non-aquatic, team/individual-dual, course location, and time of course. All other variables are considered independent.

#### Cross-sectional Analysis

- a. Annual and four-year average frequency counts and percentages to provide an overall description of the consumer situation.
- b. Crosstabulations, percentages and gamma correlations of activity characteristics by selected student characteristics to refine the description of consumer sub-groups.
- c. Gamma correlations among independent variables and among dependent variables.
- d. Partial gamma correlations of variables with potential influence.

#### Longitudinal Analysis

- a. Frequency counts and percentages of 1980 Freshmen participants by consumption behavior and pattern variables.
- b. Crosstabulations, percentages, and gamma correlations of 1980 Freshmen participant characteristics by their enrollment patterns.

- c. Partial gamma correlations of variables with potential influence.

Following collection and analysis of the data, findings of the research were determined and this report was prepared.

CHAPTER IV  
CROSS-SECTIONAL DATA ANALYSES  
Participant Characteristics

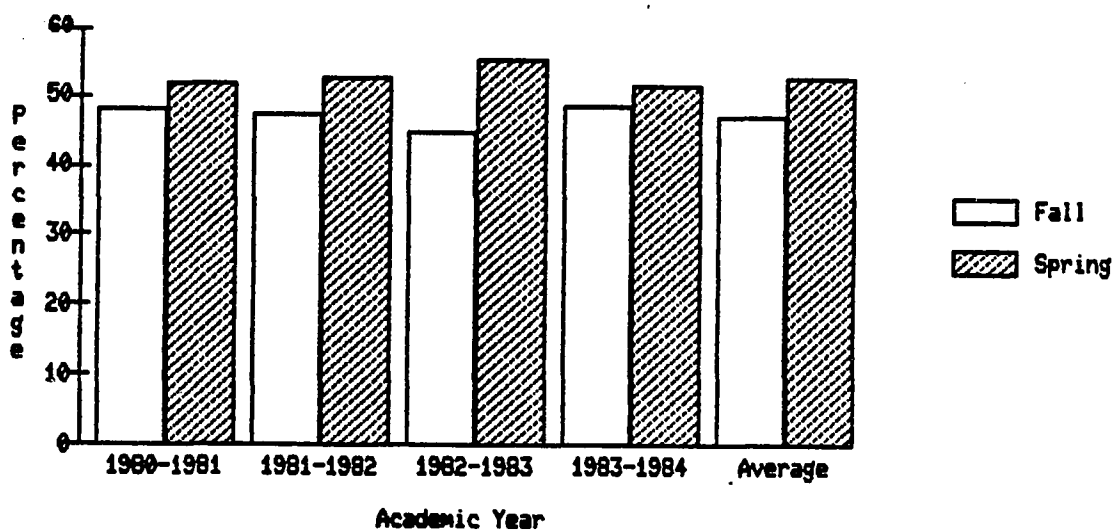
Cross-sectional participant characteristics are represented by those variables signifying a trait of a GUP participant enrolled in a specific course. The cross-sectional analyses utilize enrollments as the unit of observation. The same person may be represented in several enrollments. For the purposes of the cross-sectional analyses, each enrollment is treated as independent of any other enrollment. The percentages indicate the likelihood of any given participant, in any given GUP course, having a particular characteristic. Unless otherwise specified, all percentages reported from Figures 2 to 38 are the four-year averages.

Findings

Figure 2 indicates the overall distribution of collegiate consumers of physical education. The numerical data are also presented graphically in the lower portion of the figure. An annual distribution breakdown for Fall and Spring enrollments is presented. The number of enrollments in the GUP, 2884, 2954, 2890 and 3000, remain relatively constant during the four years under examination. A minimal difference is seen between Fall and Spring semesters. The Spring semester consistently enrolls a higher percentage of students (52.7%).

**Figure 2. UNCG Physical Education Enrollment Distribution.**

Academic Year	N	Semester	
		Fall	Spring
1980-81	2884	48.1%	51.9%
1981-82	2954	47.5%	52.5%
1982-83	2890	44.7%	55.3%
1983-84	3000	48.6%	51.4%
1980-84	11728	47.3%	52.7%



Annual credit hour distributions of collegiate consumers in physical education are presented in Figure 3. The credit hour distribution is similar in each academic year (1980 - 1984). More than 85% of all courses in the GUP are one hour credit classes (86.5%). Auditors, or those enrolling in a GUP course for no credit, are not able to enroll until pre-registration and registration are finished. Enrollment in a GUP course may also occur during the two-week add/drop period at the beginning of each term. During the drop-add time, students adding a GUP course for credit are given preference for admittance. Despite the built-in bias against auditors, approximately five% (4.8%) of the GUP enrollments represent auditing students.

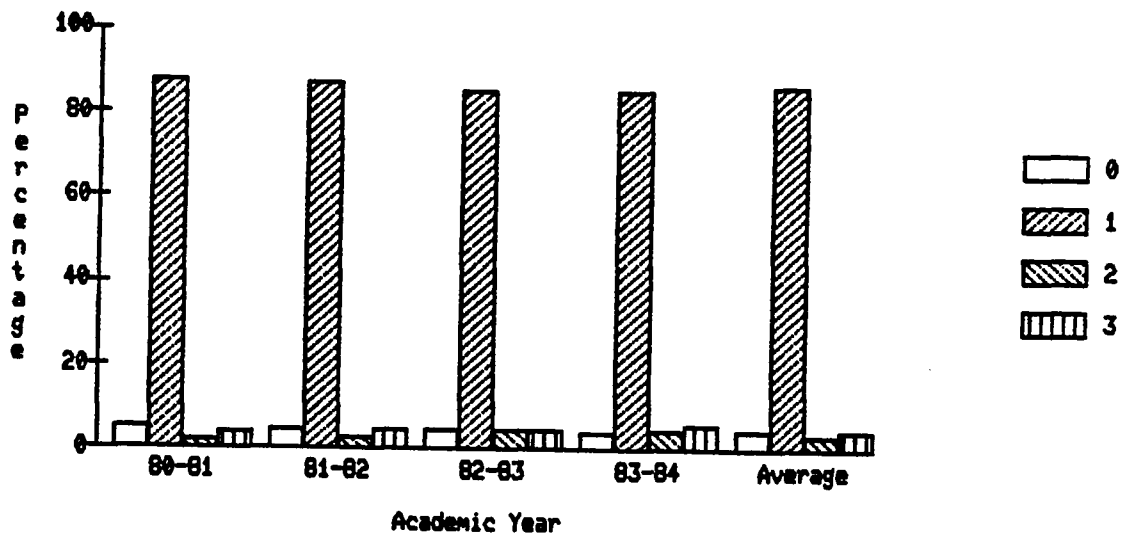
Figure 4 graphically illustrates the gender distribution of GUP participants. The gender distribution of GUP participants is approximately two females (68.6%) to one male (31.4%). The GUP gender distribution remains relatively stable over time.

Figure 5 indicates that most GUP participants are between 18 and 21 years old for all four years (88.0%). Older students represent approximately 12% of the GUP participants.

Figure 6 indicates that approximately 85% of the GUP participants are white (84.5%). In comparison, 13.5% are black. The remaining 1.5% are shared among students classified as Hispanic, American Indian, or Asian. No fluctuations in the racial distribution are seen during the four academic years.

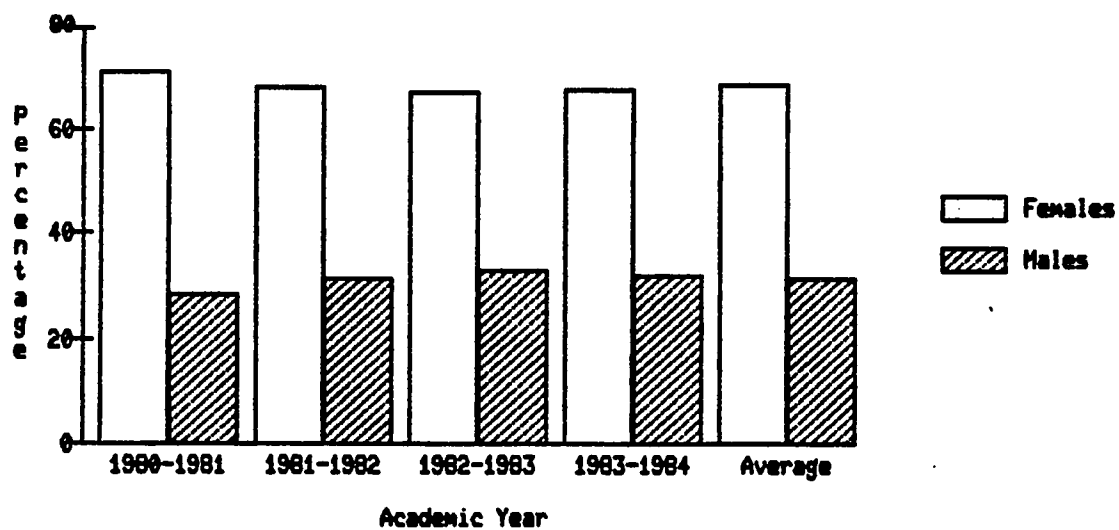
**Figure 3. UNCG Consumers of  
Physical Education Credit Hour Distribution.**

Academic Year	N	Credit Hours			
		0	1	2	3
1980-81	2884	5.2%	87.8%	2.6%	4.4%
1981-82	2954	4.8%	87.4%	2.9%	4.8%
1982-83	2890	5.0%	85.2%	4.9%	4.9%
1983-84	3000	4.3%	85.4%	4.5%	5.8%
1980-84	11728	4.8%	86.5%	3.7%	5.0%



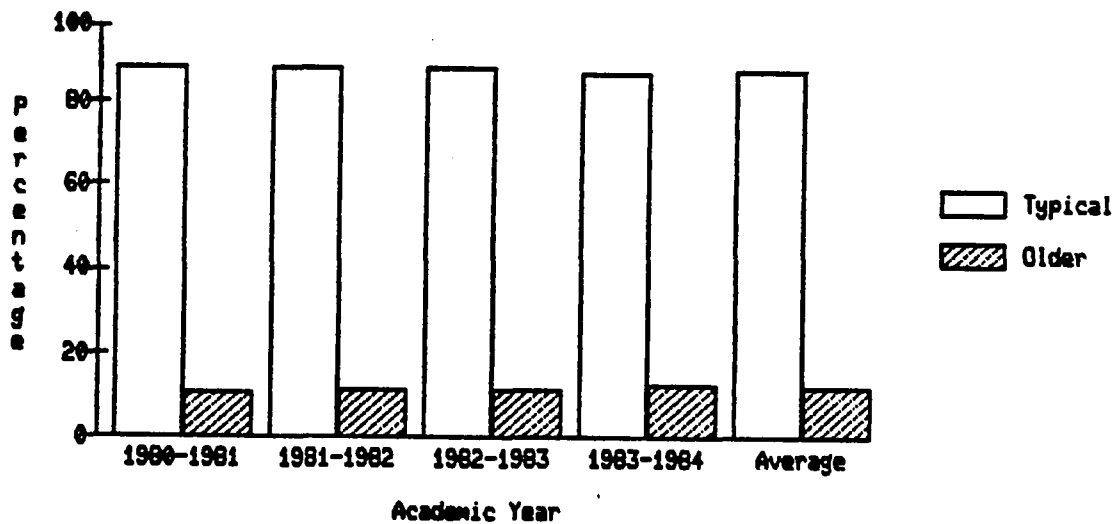
**Figure 4.** UNCG Consumers of  
Physical Education Gender Distribution.

Academic Year	N	Gender	
		Females	Males
1980-81	2774	71.3%	28.7%
1981-82	2861	68.2%	31.8%
1982-83	2793	67.1%	32.9%
1983-84	2878	67.7%	32.3%
1980-84	11306	68.6%	31.4%



**Figure 5. UNCG Consumers of  
Physical Education Age Group Distribution.**

Academic Year	N	Age Group	
		Typical	Older
1980-81	2690	88.8%	11.2%
1981-82	2745	88.2%	11.8%
1982-83	2672	88.2%	11.8%
1983-84	2781	87.1%	12.9%
1980-84	10888	88.0%	12.0%





**Figure 6. UNCG Consumers of Physical Education Race Distribution.**

Academic Year	N	Race				
		White	Black	Hispanic	American Indian	Asian
1980-81	2774	85.5%	13.4%	.6%	.0%	.5%
1981-82	2861	84.1%	14.1%	.7%	.1%	1.0%
1982-83	2793	84.9%	12.7%	.6%	.2%	1.5%
1983-84	2878	83.6%	13.8%	.6%	.2%	1.8%
1980-84	11306	84.5%	13.5%	.6%	.1%	1.2%

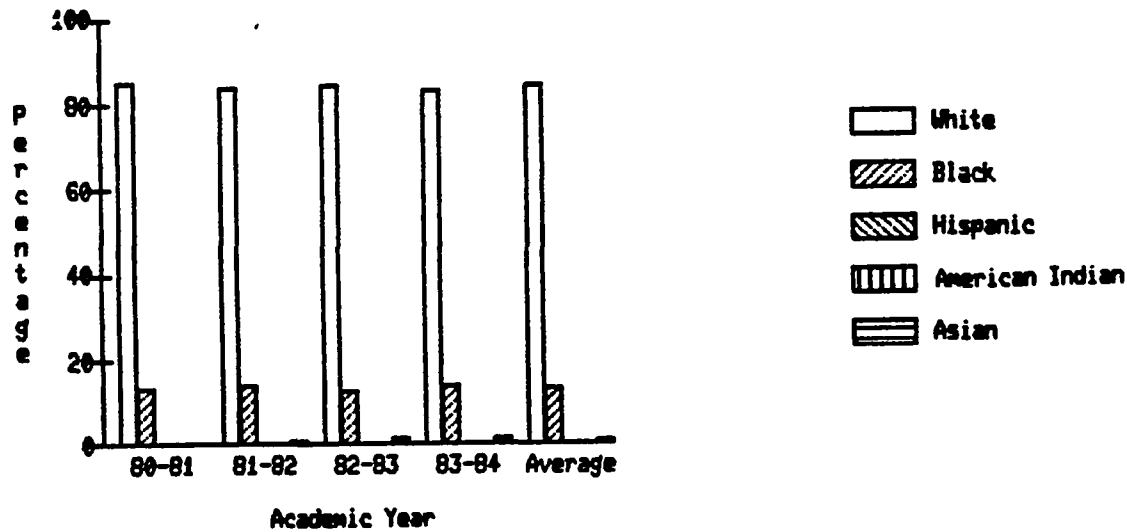


Figure 7 depicts the class distribution of GUP participants. There is some fluctuation in the percentage of freshman (24.5%), sophomore (26.9%), junior (22.4%), and senior students (22.5%) participating in the GUP from year to year. Freshmen show a decrease in GUP participation from 1980 to 1984. During this period, the percentage of seniors increase. Sophomores and juniors remain relatively stable.

Figure 8 presents the school distribution of GUP participants. There is minor fluctuation in the percentage of students from each of the seven schools within the University of North Carolina at Greensboro during the four year period. The largest percentage of students enrolling in the GUP are from the College of Arts and Sciences (47.6%), followed by the School of Business and Economics (24.0%).

The transfer status of GUP participants is represented in Figure 9. Transfer students represent 21.3% of all GUP participants. The percentages are consistent for the four year period examined, 20.1%, 21.3%, 21.8% and 22.2%.

Figure 10 shows the distribution of student housing among the consumers of physical education. On average, 64.1% of the students enrolled in the GUP reside on campus. The student housing distribution does not fluctuate substantially over time.

Most collegiate consumers of physical education are classified as in-state students for tuition purposes. Figure 11 shows that 85% of the GUP participants pay in-state tuition. The low percentage of out-of-state students is expected as the University of North Carolina at Greensboro predominantly serves North Carolinians.

**Figure 7. UNCG Consumers of Physical Education Class Standing Distribution.**

Academic Year	N	Class Standing				
		Freshmen	Sophomores	Juniors	Seniors	Other
1980-81	2713	28.2%	28.0%	21.2%	18.2%	4.3%
1981-82	2778	24.0%	28.9%	21.5%	21.6%	4.0%
1982-83	2701	22.4%	27.5%	23.0%	23.8%	3.3%
1983-84	2815	23.6%	23.4%	23.9%	26.2%	2.9%
1980-84	11007	24.5%	26.9%	22.4%	22.5%	3.6%

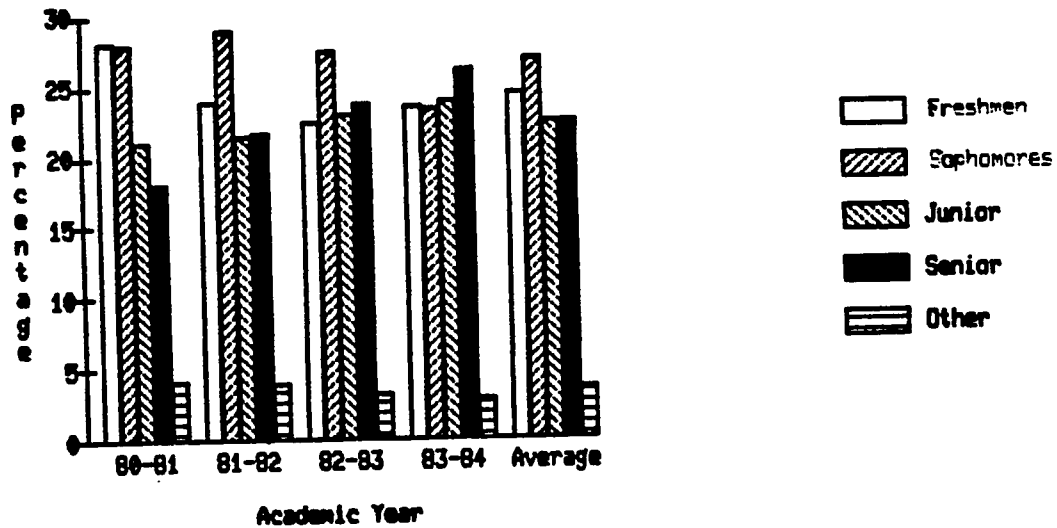
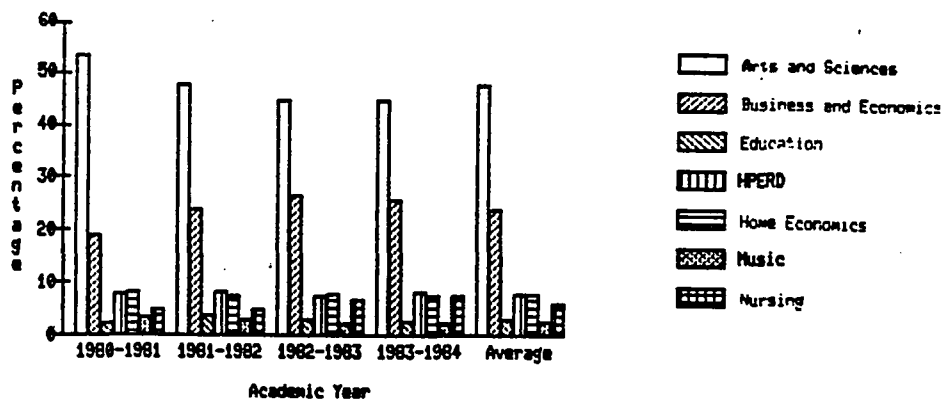


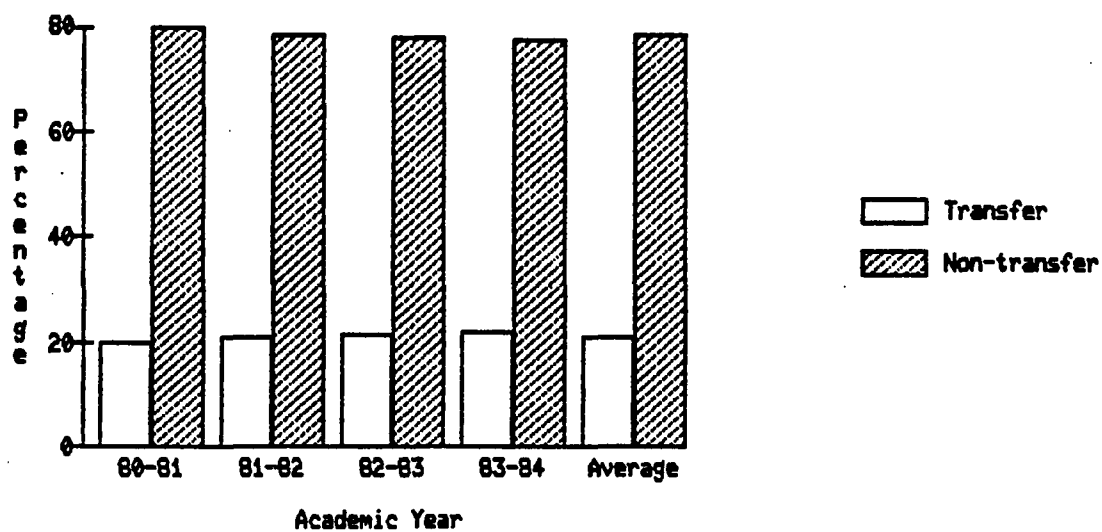
Figure 8. UNCG Consumers of Physical Education School Distribution.

Academic Year	N	School						
		Arts and Sciences	Business and Economics	Education	HPERD	Home Economics	Music	Nursing
1980-81	2595	53.4%	19.3%	2.4%	8.0%	8.4%	3.5%	5.0%
1981-82	2667	47.7%	24.2%	3.9%	8.4%	7.7%	3.1%	5.1%
1982-83	2611	44.8%	26.5%	3.4%	7.8%	7.9%	2.6%	6.9%
1983-84	2770	44.8%	25.8%	2.9%	8.6%	7.8%	2.4%	7.8%
1980-84	10643	47.6%	24.0%	3.1%	8.2%	7.9%	2.9%	6.2%



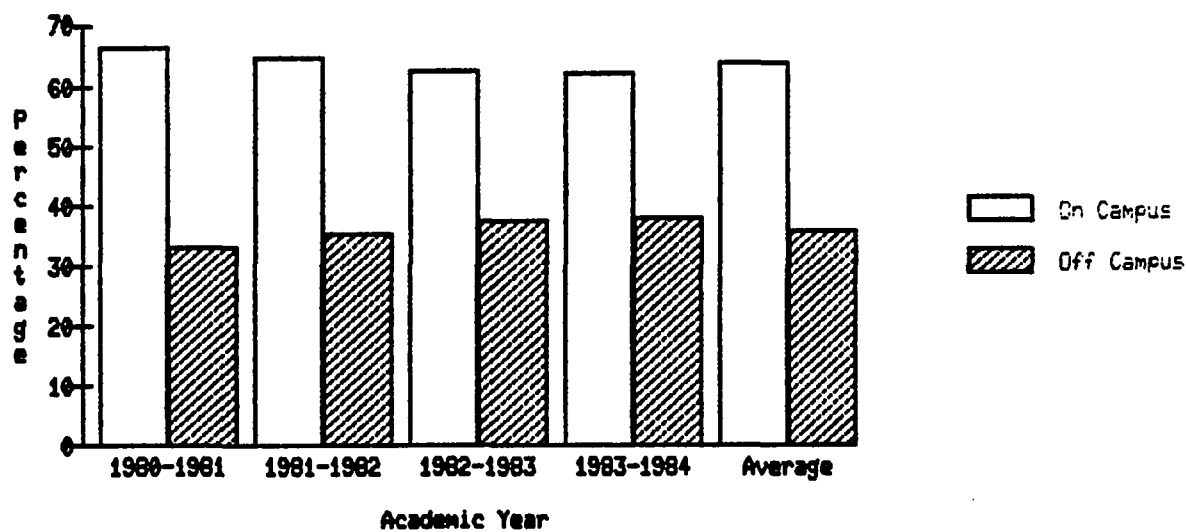
**Figure 9. UNCG Consumers of  
Physical Education Entry Status Distribution.**

Academic Year	N	Entry Status	
		Non-transfer	Transfer
1980-81	2774	79.9%	20.1%
1981-82	2861	78.7%	21.3%
1982-83	2793	78.2%	21.8%
1983-84	2878	77.8%	22.2%
1980-84	11306	78.7%	21.3%



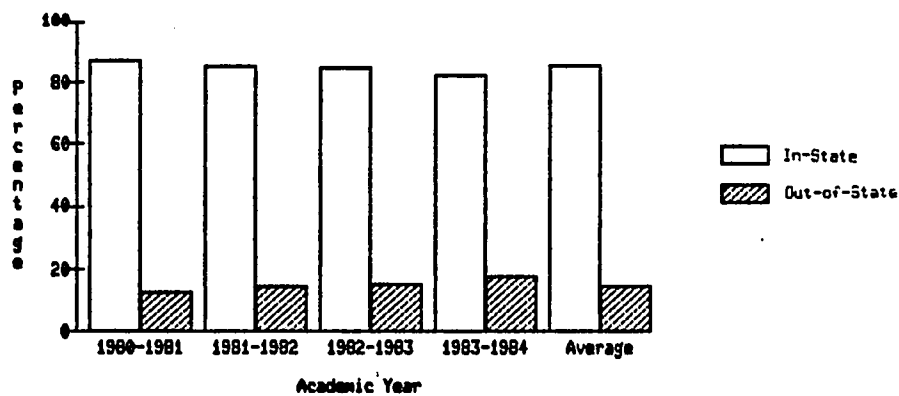
**Figure 10. UNCG Consumers of  
Physical Education Housing Status Distribution.**

Academic Year	N	Housing Status	
		On Campus	Off Campus
1980-81	2713	66.8%	33.2%
1981-82	2778	64.7%	35.3%
1982-83	2701	62.6%	37.4%
1983-84	2815	62.1%	37.9%
1980-84	11007	64.1%	35.9%



**Figure 11. UNCG Consumers of  
Physical Education Tuition Status Distribution.**

Academic Year	N	Tuition Status	
		In-State	Out-of-State
1980-81	2713	87.2%	12.8%
1981-82	2778	85.6%	14.4%
1982-83	2701	84.9%	15.1%
1983-84	2815	82.5%	17.5%
1980-84	11007	85.0%	15.0%



The distribution of students' marital status is seen to vary annually. Figure 12 presents the distribution of UNCG physical education consumers marital status. The vast majority of GUP participants are single (91.5%). Married student participation in the GUP steadily decrease from 9.7% to 5.5% in the first three years studied. However, no trend could be defined as there is a 6% increase in the number of married students participating in GUP courses courses between 1982-1983 and 1983-84.

Campus familiarity may be considered to be a potential influence in GUP enrollment. Students new to the UNCG campus are thought to be less likely to avail themselves of the GUP program. Figure 13 contains evidence to this effect. Approximately 68.4% of the GUP participants are familiar to the campus whereas, 31.6% of the GUP participants are enrolled in UNCG for the first time.

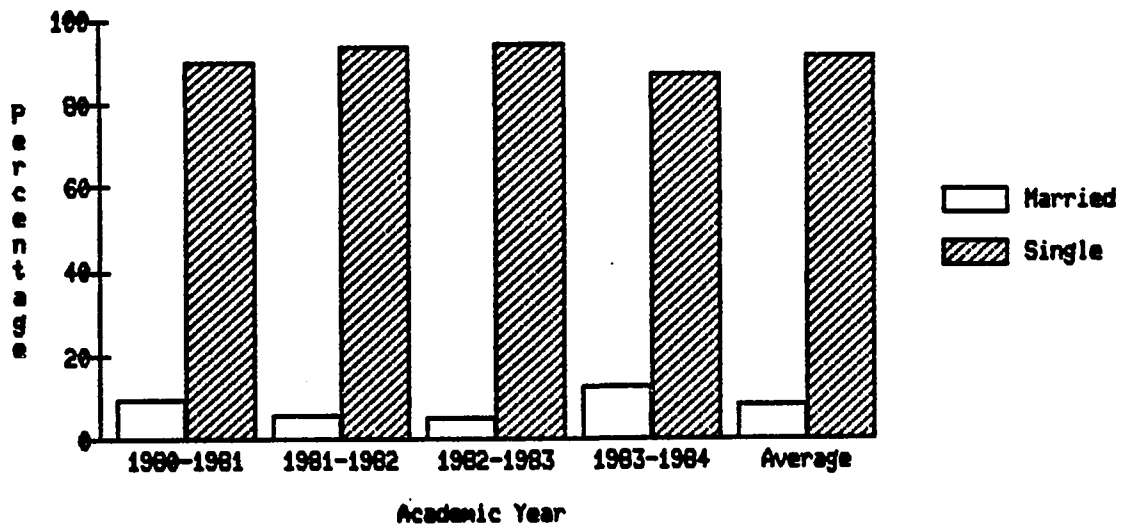
Relatively few GUP participants are part-time students. Figure 14 shows that 93.8% of the students enrolling in the activity program are full-time students. These percentages are consistent for all years under examination.

Figure 15 reports the grade distribution of GUP participants. Withdrawal occurs for 14.4% of the enrollment in the GUP. The withdrawals are accounted for by students withdrawing with a passing grade or those withdrawing before the passing of the six week drop period. Relatively few students withdraw with a failing grade (0.2%). Additionally, there appears to be a steady increase in the number of A's being awarded in the GUP program. In the academic year 1980-81, 46.2%



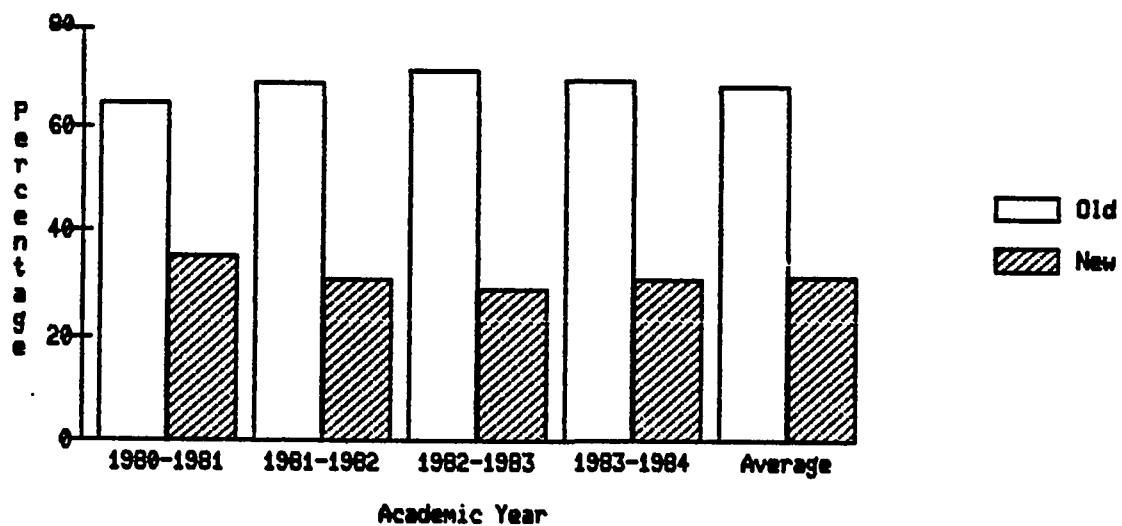
**Figure 12. UNCG Consumers of  
Physical Education Marital Status Distribution.**

Academic Year	N	Marital Status	
		Married	Single
1980-81	2710	9.7%	90.3%
1981-82	2747	6.2%	93.8%
1982-83	2678	5.5%	94.5%
1983-84	2778	12.6%	87.4%
1980-84	10913	8.5%	91.5%



**Figure 13. UNCG Consumers of  
Physical Education Campus Familiarity Distribution.**

Academic Year	N	Campus Familiarity	
		Old	New
1980-81	2713	64.6%	35.4%
1981-82	2778	68.7%	31.3%
1982-83	2701	71.0%	29.0%
1983-84	2815	69.1%	30.9%
198084	11007	68.4%	31.6%



**Figure 14. UNCG Consumers of  
Physical Education Enrollment Status Distribution.**

Academic Year	N	Enrollment Status	
		Part Time	Full Time
1980-81	1764	6.0%	94.0%
1981-82	1139	6.0%	94.0%
1982-83	1030	6.4%	93.6%
1983-84	1068	6.5%	93.5%
1980-84	5001	6.2%	93.8%

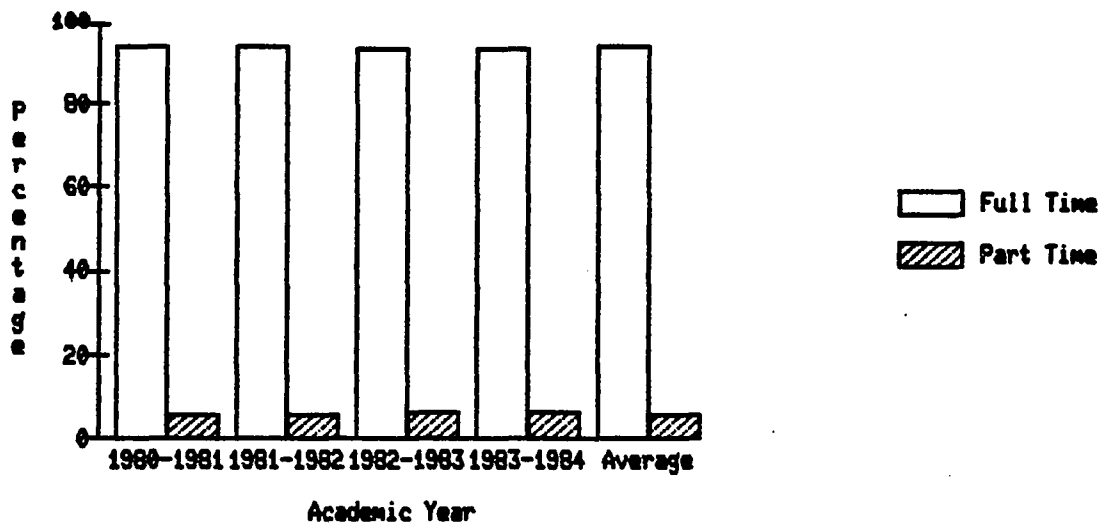
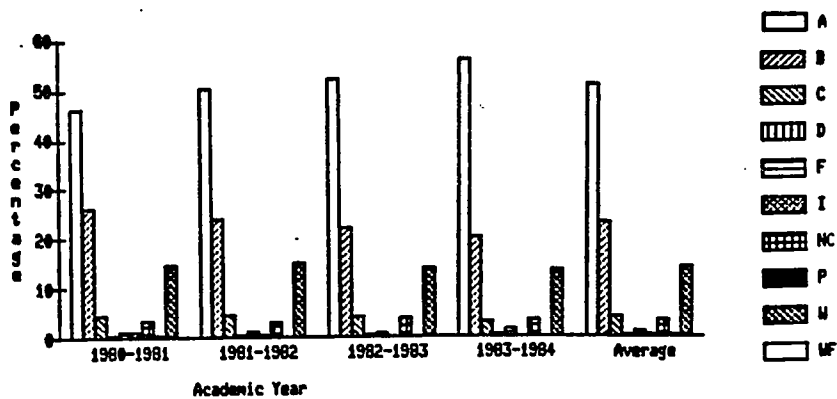


Figure 15. UNCG Consumers of Physical Education Grade Distribution.

Academic Year	N	Final Grade									
		A	B	C	D	F	I	NC	P	W	WF
1980-81	2883	46.2%	26.4%	4.6%	.7%	1.4%	1.3%	3.6%	.5%	14.8%	.4%
1981-82	2954	50.3%	24.0%	4.8%	.6%	1.4%	.5%	3.1%		15.3%	.1%
1982-83	2890	53.2%	22.1%	4.4%	.5%	1.1%	.2%	4.1%		14.0%	.3%
1983-84	2999	56.3%	20.4%	3.2%	.5%	1.7%	.4%	3.7%		13.6%	.1%
1980-84	11726	51.5%	23.2%	4.3%	.6%	1.4%	.6%	3.6%	.1%	14.4%	.2%



of participants received A's. There is a 10% increase in the number of students receiving A's (56%) in 1983-1984. The number of B's decreases 6% during the study period. Therefore, the evidence indicates a tendency for GUP grades to be on the high end of the scale.

Approximately one-half of all GUP enrollments receive a final grade of A. An additional 23% receive a grade of B. In other words, almost 75% of the grades awarded in the GUP program are either A's or B's.

Figure 16 contains a distribution of only the traditional letter grades of A, B, C, D, F without considering incompletes, withdrawals, etc... . Considered in such a way, 63.6% of all enrollments are awarded A's and 28.7% are awarded B's. This analysis indicates 92.3% of all final grades given in GUP courses are either A's or B's.

The distribution of quality point ratios, an indicator of overall academic performance at UNCG, are presented in Figure 17. GUP participant quality point ratios are normally distributed. There are minor fluctuations over the four year period. Approximately one-fourth of all GUP enrollments are represented by students with a quality point ratio between 2.0 and 2.49 (25.1%). Another fourth is associated with students with a quality point ratio between 2.5 and 2.99 (25.2%). Slightly less (20.5%) of the GUP enrollments represent participants with a quality point ratio between 2.0 and 3.49.

**Figure 16. UNCG Consumers of Physical Education Restricted Grade Distribution.**

Academic Year	N	Traditional Final Grades				
		A	B	C	D	F
1980-81	2287	58.2%	33.3%	5.9%	.9%	1.7%
1981-82	2393	62.1%	29.6%	5.9%	.8%	1.7%
1982-83	2352	65.3%	27.2%	5.4%	.6%	1.4%
1983-84	2464	68.5%	24.9%	3.9%	.6%	2.0%
1980-84	9496	63.6%	28.7%	5.3%	.7%	1.7%

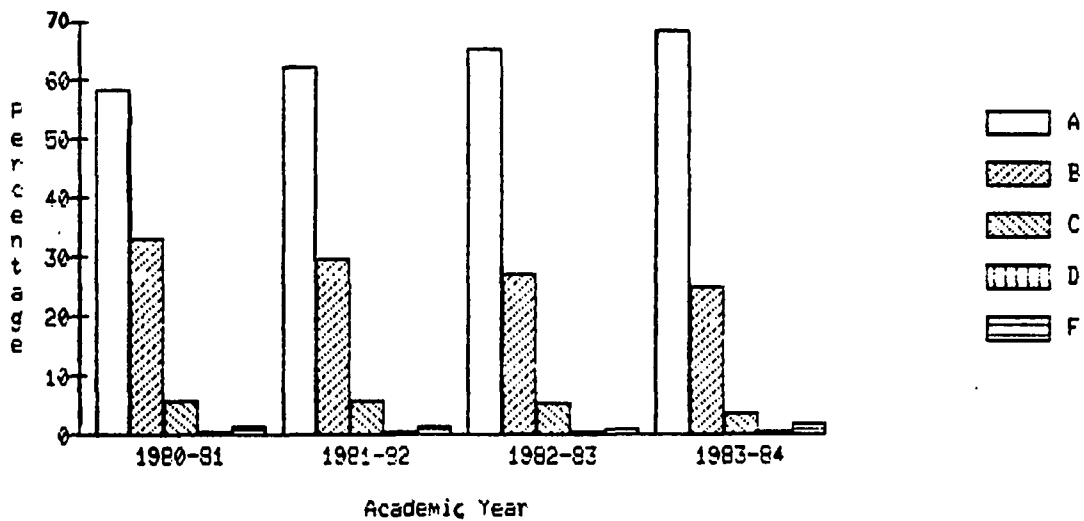


Figure 17. UCG Consumers of Physical Education Quality Point Ratio Distribution.

Academic Year	N	Quality Point Ratio							
		0.01-1.29	1.30-1.59	1.60-1.99	2.00-2.49	2.50-2.99	3.00-3.49	3.50-3.99	4.00
1980-81	1771	.7%	4.2%	13.4%	22.3%	24.7%	20.4%	12.7%	1.6%
1981-82	1899	1.2%	2.6%	11.8%	24.4%	26.3%	22.6%	10.1%	1.1%
1982-83	1873	1.6%	5.0%	12.7%	25.3%	25.3%	20.0%	9.0%	1.0%
1983-84	1916	.4%	4.1%	13.3%	28.0%	24.5%	18.8%	9.4%	1.5%
1980-84	7459	1.0%	4.0%	12.8%	25.1%	25.2%	20.5%	10.3%	1.3%

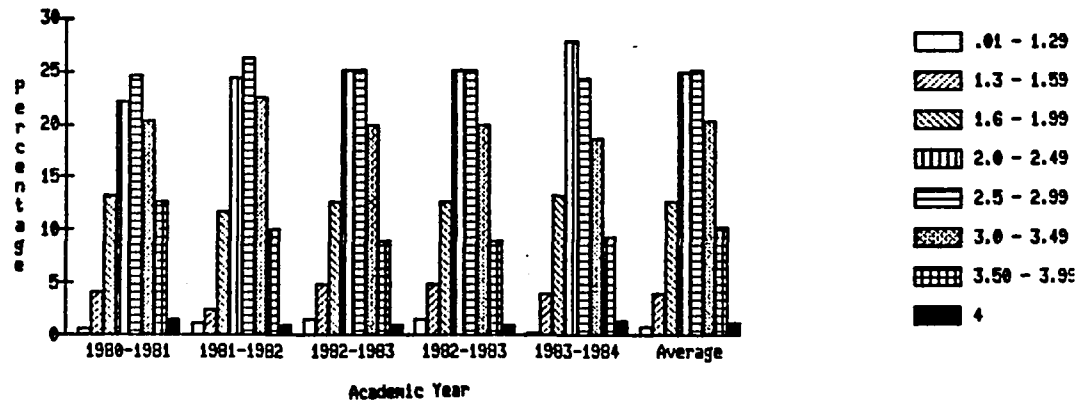


Figure 18 displays the distribution of GUP participant's SAT scores. As is typical in higher education, GUP participant SAT scores are positively skewed. The majority of GUP participants score between 800 and 999 on the SAT (58.6%). The SAT distribution remains stable over time.

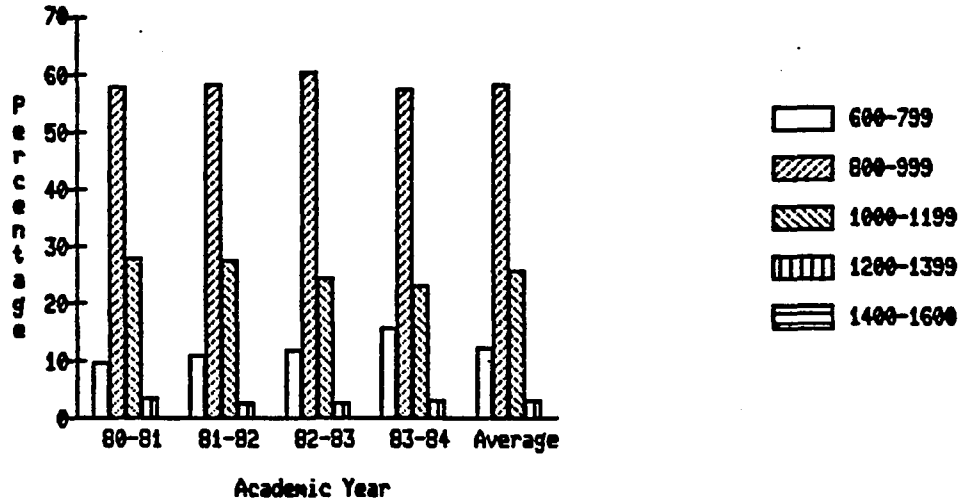
The distributions of UNCG consumers of physical education enrolling in the GUP for the first, last, only or other times are examined in Figure 19. The steady decrease of undergraduates enrolling in the GUP for the first time (40.0% to 16.9%) complements the steady increase of students enrolling in the GUP for the last time (14.2% to 33.3%). These findings indicate a relatively consistent variation in entry and exit from the GUP. Viewing the four-year averages, it is clear that any one enrollment has an equal probability of representing a first, last, or only exposure a person has to the GUP.

Figures 20 through 25 involve the analysis of enrollment distribution of course characteristics. All GUP courses are classified as to type, that is, the nature of the activity and course environment. The categories of activities are aquatic or non-aquatic, rhythmic or non-rhythmic, and individual/dual sports or team sports. Additionally, courses are identified by their location (ie. on-campus or off-campus) and by their starting times; morning (8am to 11am), afternoon (12pm to 4pm), evening (5pm and later), and "to be announced" (TBA). The findings reported in Figures 20 through 25 are a function of student selection and course offering. Figure 20 presents annual overall



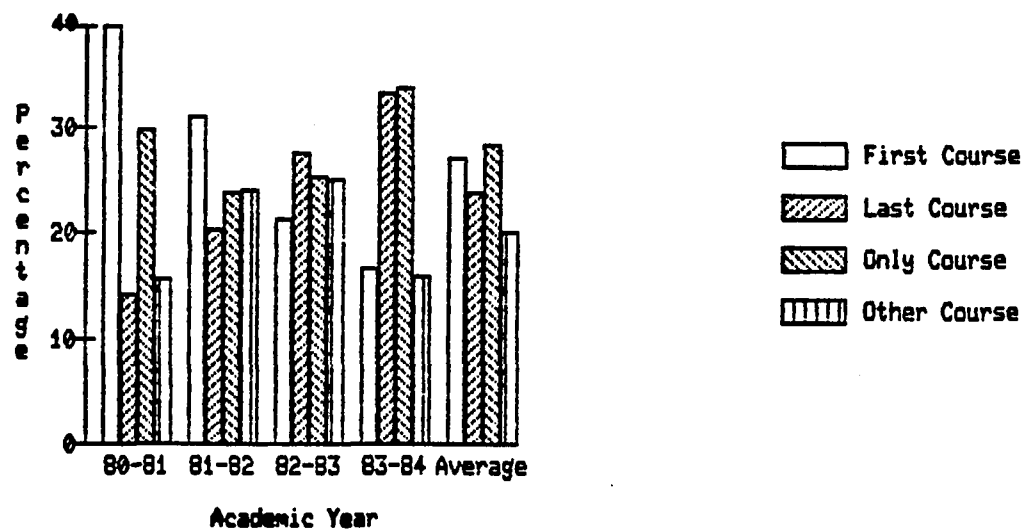
**Figure 18. UNCG Consumers of Physical Education SAT Distribution.**

Academic Year	N	SAT Total Score				
		600-799	800-999	1000-1199	1200-1399	1400-1600
1980-81	2112	10.0%	58.1%	27.9%	3.8%	.2%
1981-82	2091	11.0%	58.2%	27.5%	3.0%	.2%
1982-83	2002	12.2%	60.5%	24.4%	2.8%	.0%
1983-84	2038	16.0%	57.5%	23.1%	3.2%	.1%
1980-84	8243	12.3%	58.6%	25.8%	3.2%	.2%



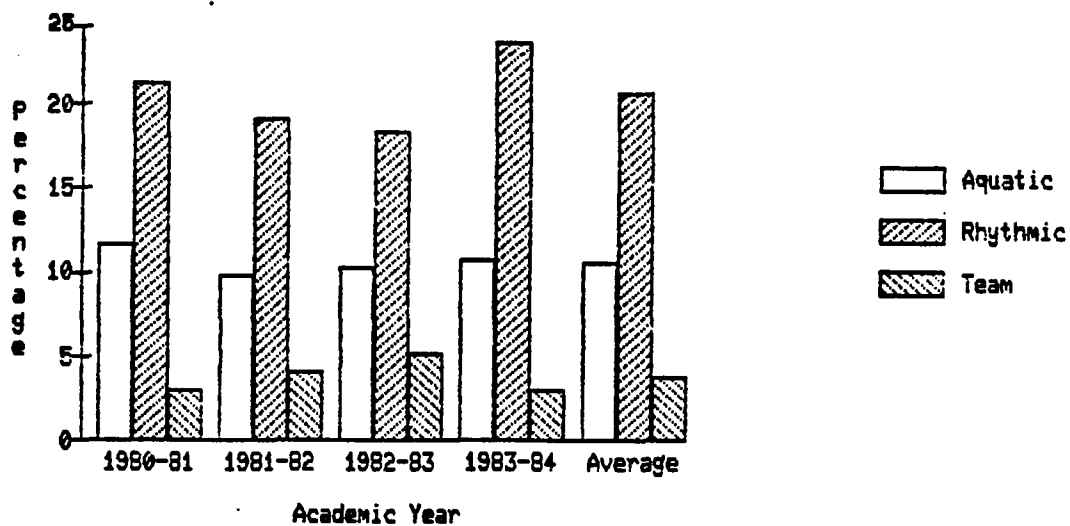
**Figure 19. UNCG Consumers of  
Physical Education Enrollment Entry/Exit Distribution.**

Academic Year	N	Entry/Exit Enrollment			
		First Course	Last Course	Only Course	Other Course
1980-81	2884	40.0%	14.2%	29.9%	15.9%
1981-82	2954	31.2%	20.5%	24.0%	24.3%
1982-83	2890	21.5%	27.8%	25.4%	25.3%
1983-84	3000	16.9%	33.3%	33.8%	16.0%
1980-84	11728	27.3%	24.0%	28.3%	20.3%



**Figure 20. UNCG Consumers of  
Physical Education Course Type Distribution.**

Academic Year	N	Type of Course		
		Aquatic	Rhythmic	Team
1980-81	2884	11.7%	21.4%	3.1%
1981-82	2954	9.8%	19.2%	4.1%
1982-83	2890	10.3%	18.4%	5.3%
1983-84	3000	10.8%	23.8%	3.0%
1980-84	11728	10.6%	20.7%	3.9%



distributions of the different course characteristics. The percentage of course type enrollments appear to relatively stable. Rhythmic course enrollments decrease for the first three years studied (21.4% to 18.4%) and increase approximately 5% in the fourth year (23.8%). Such fluctuation does not appear to affect the distributions of other course enrollments.

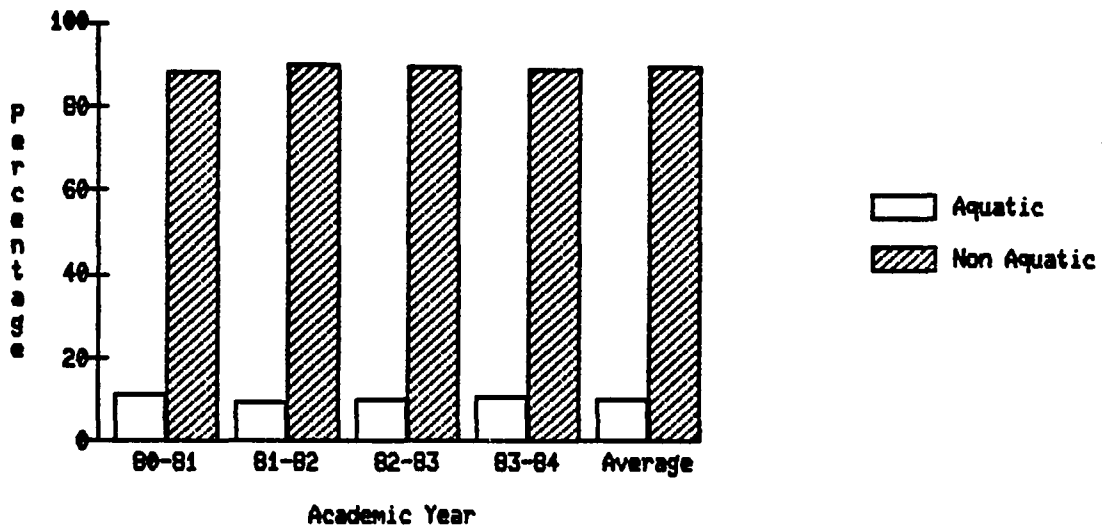
Aquatic enrollments are compared to non-aquatic enrollments in Figure 21. Approximately 10.6% of all GUP enrollments are in aquatic type classes. The remaining participants (89.4%) enroll in non-aquatic activities. These percentages remain constant over time.

Figure 22 compares rhythmic to non-rhythmic course enrollment distributions. The majority of enrollments at UNCG are in courses of non-rhythmic nature. The enrollment percentages are relatively consistent during the four year period. There is a minor increase of 5% between the academic years 1982-83 (18.4%) and 1983-84 (23.8%). These findings are not surprising considering the addition of rhythmic aerobics to the university curriculum in the Fall of 1982 and the transferring of non-recreational dance courses to the Department of Dance, newly found in 1982.

Individual/dual course distributions are compared to team sport distributions in Figure 23. Almost all (96.1%) of the GUP enrollments are in individual or dual sports. Such evidence is consistent with the activity interests that were identified in other survey studies reported in Chapter II.

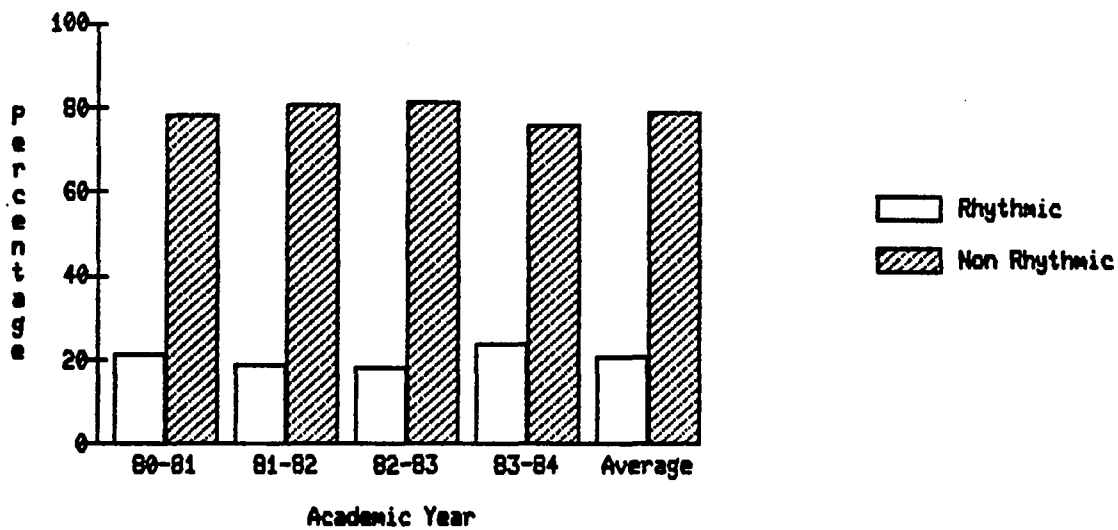
**Figure 21. UNGC Consumers of Physical Education  
Aquatic/Non-aquatic Enrollment Distribution.**

Academic Year	N	Non/Aquatic Courses	
		Aquatic	Non Aquatic
1980-81	2884	11.7%	88.3%
1981-82	2954	9.8%	90.2%
1982-83	2890	10.3%	89.7%
1983-84	3000	10.8%	89.2%
1980-84	11728	10.6%	89.4%



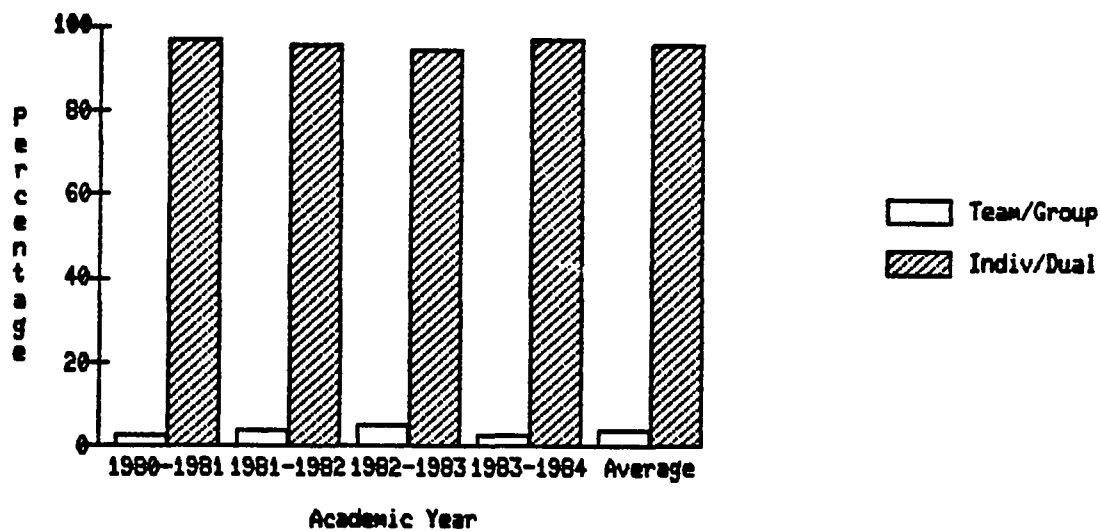
**Figure 22. UNCG Consumers of  
Physical Education Rhythmic/Non-rhythmic Distribution.**

Academic Year	N	Non/Rhythmic Courses	
		Rhythmic	Non Rhythmic
1980-81	2884	21.4%	78.6%
1981-82	2954	19.2%	80.8%
1982-83	2890	18.4%	81.6%
1983-84	3000	23.8%	76.2%
1980-84	11728	20.7%	79.3%



**Figure 23. UNCG Consumers of Physical Education****Team/Individual-Dual Enrollment Distribution.**

Academic Year	N	Team/Individual Courses	
		Team/Group	Individual/Dual
1980-81	2884	3.1%	96.9%
1981-82	2954	4.1%	95.9%
1982-83	2890	5.3%	94.7%
1983-84	3000	3.0%	97.0%
1980-84	11728	3.9%	96.1%



The distribution of GUP course locations (i.e., offered on- and off- campus) are displayed in Figure 24. There is an obvious difference between the number of enrollments for courses conducted on campus in comparison to those conducted off campus. On average, 89.2% of all enrollments are in activities which are based on the UNCG campus. The course location distribution remained constant over time.

Figure 25 reports the class time distribution of GUP enrollments. Almost 50% of all GUP enrollments occur between 8 and 11 in the morning. Afternoon enrollments were next with 42% of the distribution. Approximately 10.5% of the enrollments were evening enrollments. During the four period of time there have been minor fluctuations in the time distribution with no discernable trends. It must be acknowledged that the class time distribution is a function of the sharing of facilities with athletics and campus recreation in the afternoon and evening.

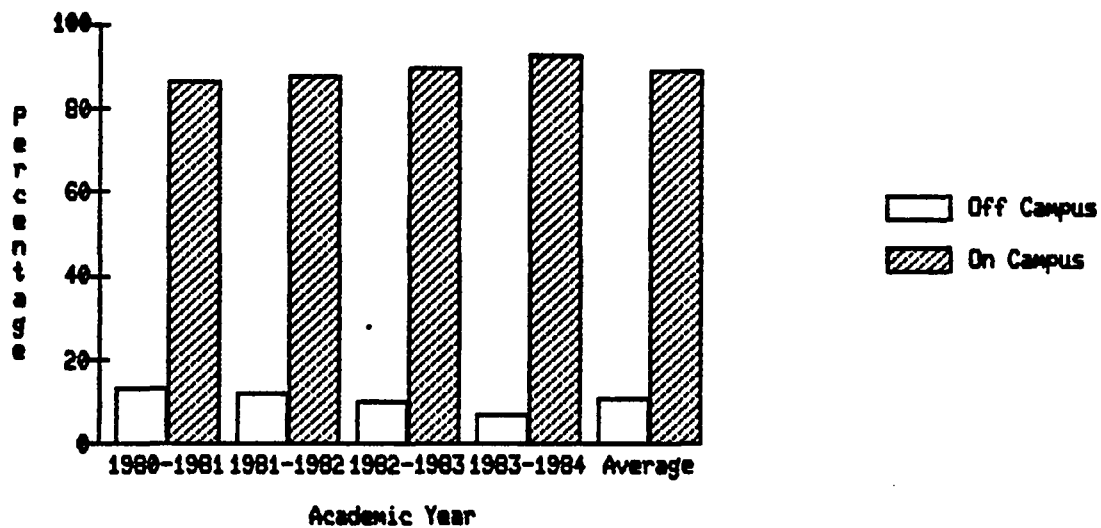
The distribution of Myers-Briggs personality types is contained in Figure 26. The top three personality types are extravert/intuitive/feeling/perceiving (14.6%), extravert/sensing/feeling/judging (13.9%) and introvert/sensing/feeling/judging (12.4%). The distribution of GUP participant personality types does not fluctuate substantially over time.

Figures 27 through 30 contain the MBTI dichotomy distributions for GUP participants. The distribution of GUP extroverted/introverted participants are examined in Figure 27. Approximately 60% of the GUP participants are typed as extrovert. The percentages remain consistent during the four years under study. Figure 28 shows the judging and



**Figure 24. UNCG Consumers of  
Physical Education Course Location Distribution.**

Academic Year	N	On/Off Campus Courses	
		Off Campus	On Campus
1980-81	2884	13.5%	86.5%
1981-82	2954	12.0%	88.0%
1982-83	2890	10.2%	89.8%
1983-84	3000	7.5%	92.5%
1980-84	11728	10.8%	89.2%



**Figure 25. UNCG Consumers of Physical Education Class Time Distribution.**

Academic Year	N	Class Starting Time			
		8 - 11	12 - 4	5 - 7	TBA
1980-81	2878	52.8%	36.6%	10.3%	.2%
1981-82	2947	50.7%	39.9%	9.4%	
1982-83	2879	42.2%	47.5%	10.3%	
1983-84	2992	43.1%	44.5%	12.4%	
1980-84	11696	47.2%	42.1%	10.6%	.1%

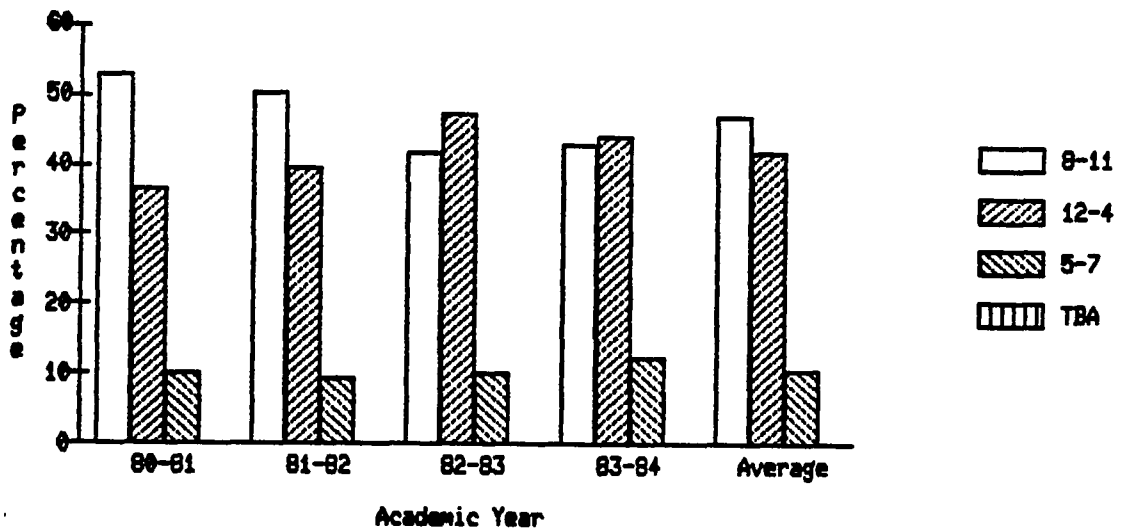
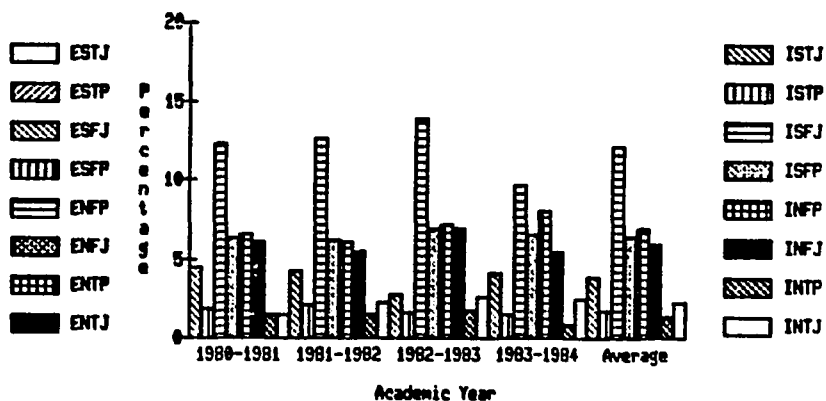
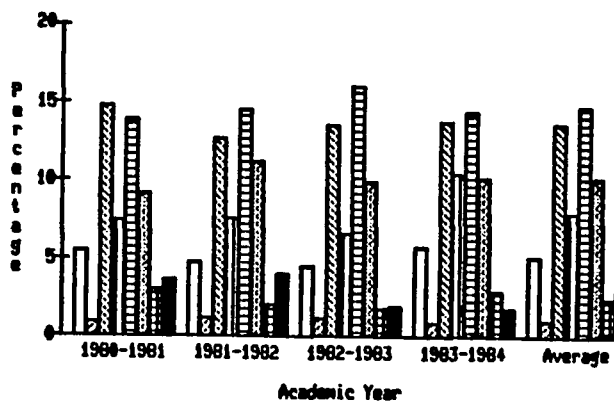


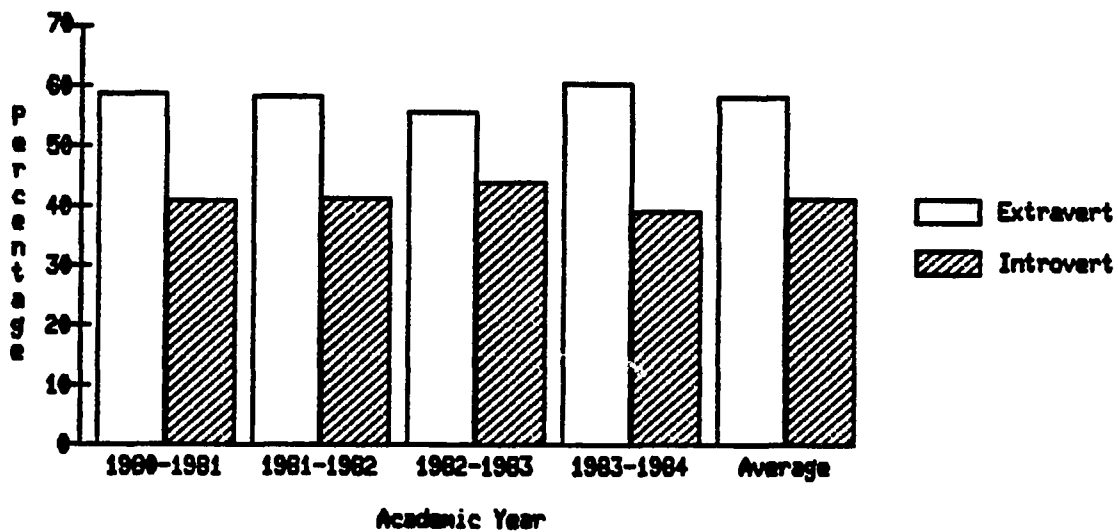
Figure 26. UNCG Consumers of Physical Education MBTI Type Distribution.

Academic Year	N	MBTI TYPE															
		ESTJ	ESTP	ESFJ	ESFP	ENFP	ENFJ	ENTP	ENTJ	ISTJ	ISTP	ISFJ	ISFP	INFP	INFJ	INTP	INTJ
1980-81	1394	5.5%	1.0%	14.8%	7.5%	14.0%	9.3%	3.1%	3.7%	4.5%	1.9%	12.3%	6.4%	6.6%	6.2%	1.6%	1.6%
1981-82	981	4.8%	1.2%	12.7%	7.7%	14.6%	11.3%	2.1%	4.1%	4.3%	2.2%	12.7%	6.3%	6.2%	5.6%	1.6%	2.3%
1982-83	602	4.5%	1.2%	13.6%	6.6%	16.1%	10.0%	1.8%	2.0%	2.8%	1.7%	14.0%	7.0%	7.3%	7.0%	1.8%	2.7%
1983-84	381	5.8%	1.0%	13.9%	10.5%	14.4%	10.2%	2.9%	1.8%	4.2%	1.6%	9.7%	6.6%	8.1%	5.5%	1.0%	2.6%
1980-84	3358	5.2%	1.1%	13.9%	7.7%	14.6%	10.1%	2.8%	3.3%	4.1%	1.9%	12.4%	6.5%	6.8%	6.1%	1.6%	2.1%



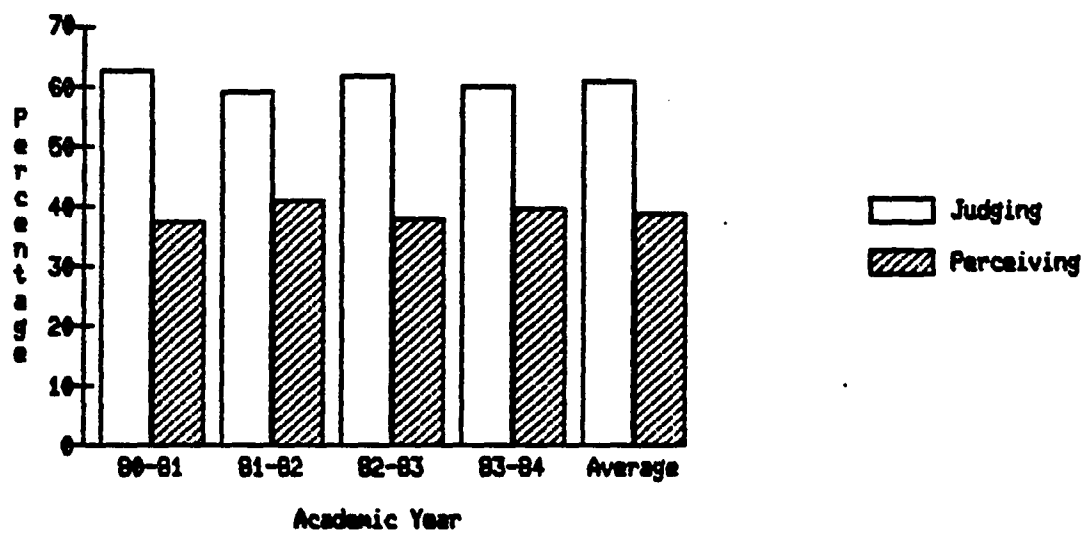
**Figure 27. UNCG Consumers of****Physical Education Extravert/Introvert Distribution.**

Academic Year	N	Extravert/Introvert	
		Extravert	Introvert
1980-81	1394	58.8%	41.2%
1981-82	981	58.6%	41.4%
1982-83	602	55.8%	44.2%
1983-84	381	60.6%	39.4%
1980-84	3358	58.4%	41.6%



**Figure 28. UNCG Consumers of  
Physical Education Judging/Perceiving Distribution.**

Academic Year	N	Judging/Perceiving	
		Judging	Perceiving
1980-81	1394	62.6%	37.4%
1981-82	981	59.1%	40.9%
1982-83	602	62.0%	38.0%
1983-84	381	60.1%	39.9%
1980-84	3358	61.2%	38.8%



perceiving distribution. The majority of students are typed as judging (61.2%) in lieu of perceiving (38.8%). This figure is relatively constant over four years. Figure 29 contains the sensing/intuition Myers-Briggs type dichotomy distributions. There is minimal difference in the distribution between sensing and intuitive GUP participants. Participants typed as sensing (52.9%) occur slightly more often than those typed as intuitive (47.1%). The thinking and feeling type dichotomy is presented in Figure 30. Approximately 78.2% of the GUP participants are typed as feeling. The thinking/feeling distribution remains constant for the four year period studied.

#### Student Descriptive Data

The next set of analyses is executed with data from the Student Descriptive Questionnaire. The findings in Figure 31 indicate that the majority of GUP participants consistently come to UNCG from public schools (94.0%). Figure 32 presents the distribution of high school foci. Approximately 85.2% of all GUP participants come from academically focused high schools as determined by respondents of the Student Descriptive Questionnaire. High Schools with a general educational focus account for 11.7% of the GUP participants. Graduates from high schools with a career focus represent 2.8% of the participants in the GUP.

The high school class size distribution of GUP participants is presented in Figure 33. The size of participants' high school classes are normally distributed for each of the four years. The largest .spi

**Figure 29. UNCG Consumers of  
Physical Education Sensing/Intuition Distribution.**

Academic Year	N	Sensing/Intuitive	
		Sensing	Intuitive
1980-81	1394	53.9%	46.1%
1981-82	981	52.1%	47.9%
1982-83	602	51.3%	48.7%
1983-84	381	53.3%	46.7%
1980-84	3358	52.9%	47.1%

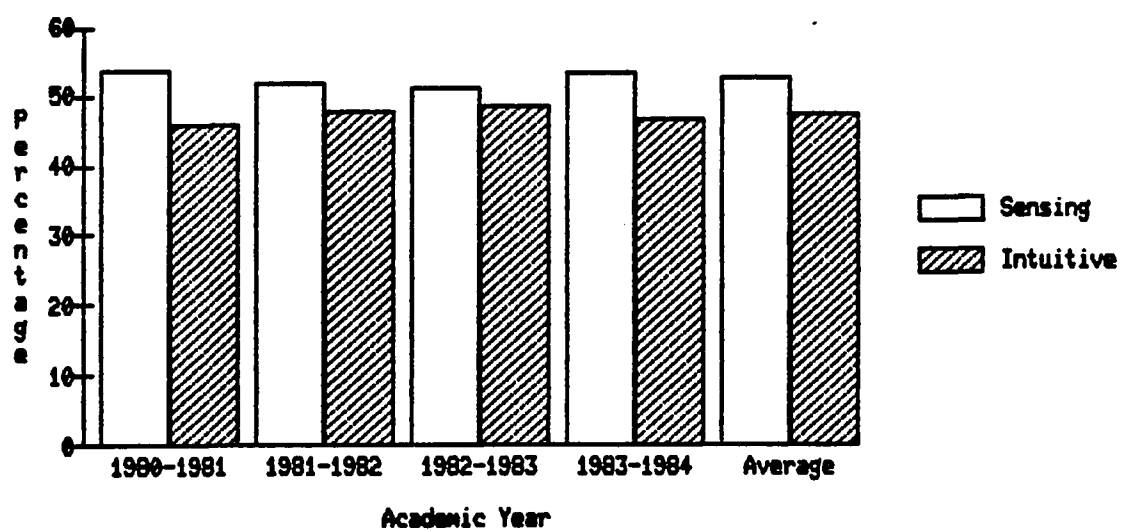
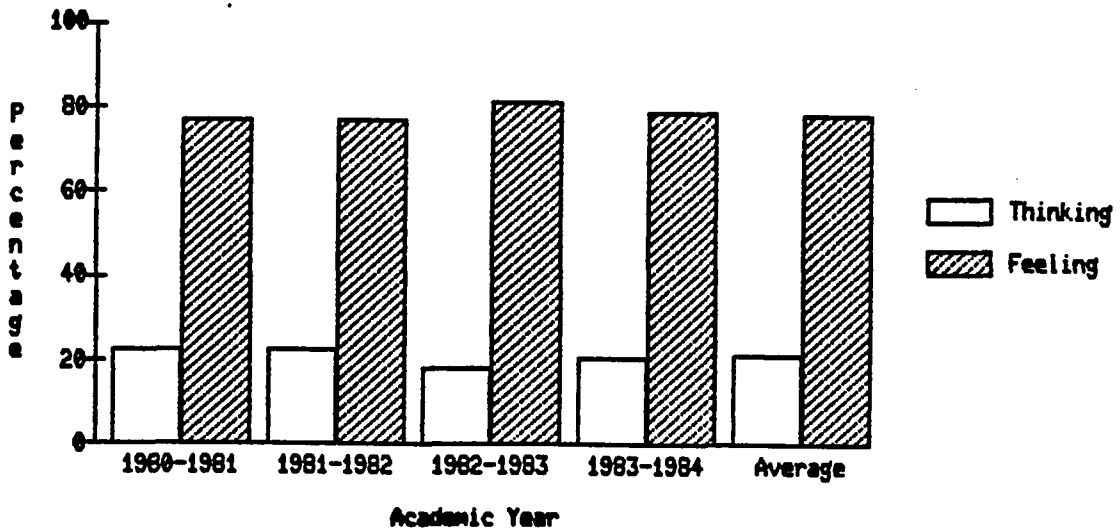


Figure 30. UNCG Consumers of

Physical Education Thinking/Feeling Distribution.

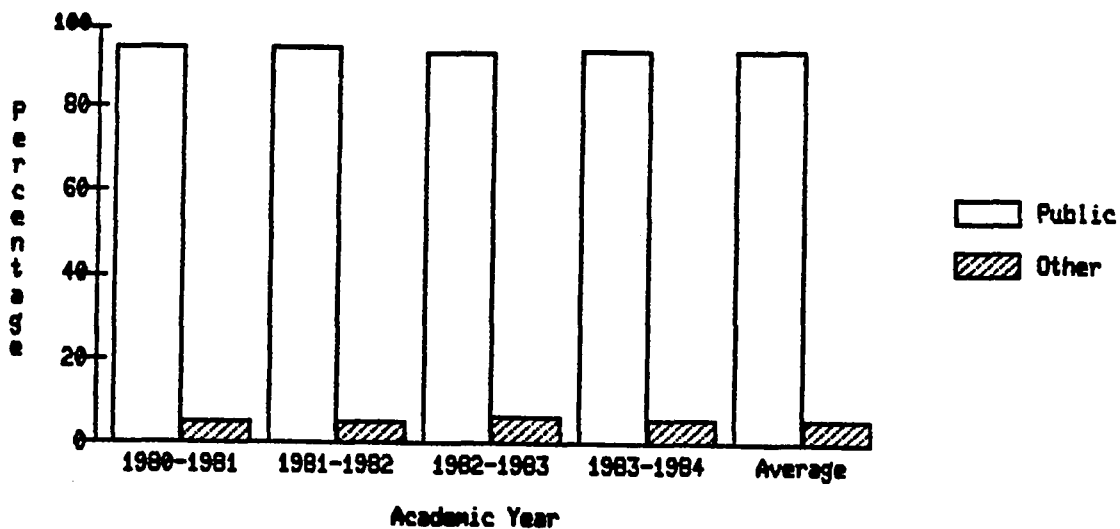
Academic Year	N	Thinking/Feeling	
		Thinking	Feeling
1980-81	1394	22.9%	77.1%
1981-82	981	22.7%	77.3%
1982-83	602	18.4%	81.6%
1983-84	381	21.0%	79.0%
1980-84	3358	21.8%	78.2%





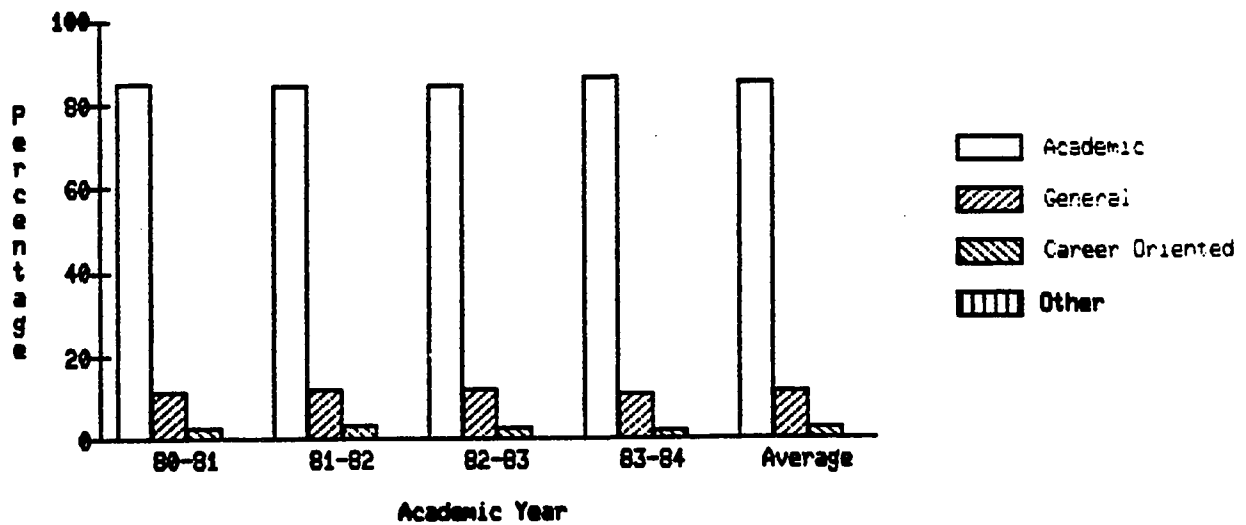
**Figure 31. UCG Consumers of  
Physical Education High School Type Distribution.**

Academic Year	N	High School Type	
		Public	Other
1980-81	1400	94.4%	5.6%
1981-82	1624	94.6%	5.4%
1982-83	1591	93.3%	6.7%
1983-84	1622	93.7%	6.3%
1980-84	6237	94.0%	6.0%



**Figure 32. UNCG Consumers of Physical Education High School Focus Distribution.**

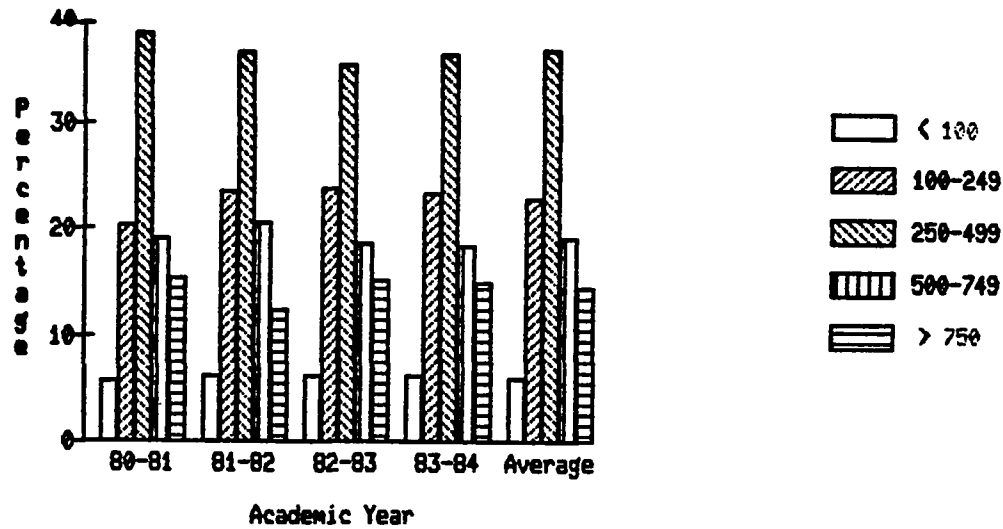
Academic Year	N	High School Focus			
		Academic	General	Career Oriented	Other
1980-81	1387	85.1%	11.5%	3.0%	.4%
1981-82	1611	84.5%	12.0%	3.4%	.1%
1982-83	1583	84.9%	12.0%	2.8%	.3%
1983-84	1616	86.4%	11.0%	2.2%	.4%
1980-84	6197	85.2%	11.7%	2.8%	.3%



**Figure 33. UNCG Consumers of Physical Education**

**High School Class Size Distribution.**

Academic Year	N	High School Class Size				
		< 100	100-249	250-499	500-749	> 750
1980-81	1393	5.8%	20.6%	38.8%	19.2%	15.6%
1981-82	1614	6.3%	23.7%	36.9%	20.7%	12.5%
1982-83	1576	6.3%	23.9%	35.7%	18.8%	15.2%
1983-84	1603	6.3%	23.5%	36.6%	18.6%	15.0%
1980-84	6186	6.2%	23.0%	37.0%	19.4%	14.5%



percentage of GUP participants (37%) graduate from a high school with between 250 and 499 students per class. Smaller schools (100 to 249 students per class) account for the second largest proportion of participants (23.0%). Schools averaging 500 to 749 students per class rank third (19.4%). These figures remain relatively constant during the four year time period.

More than half (53.2%) of the collegiate consumers of physical education at UNCG are ranked in the top fifth of their high school class (Figure 34). Students ranked in the second fifth account for 30.4% of GUP participants. The skewness of this distribution may be partly explained by admission requirements for university acceptance. These figures remain constant for the four year period.

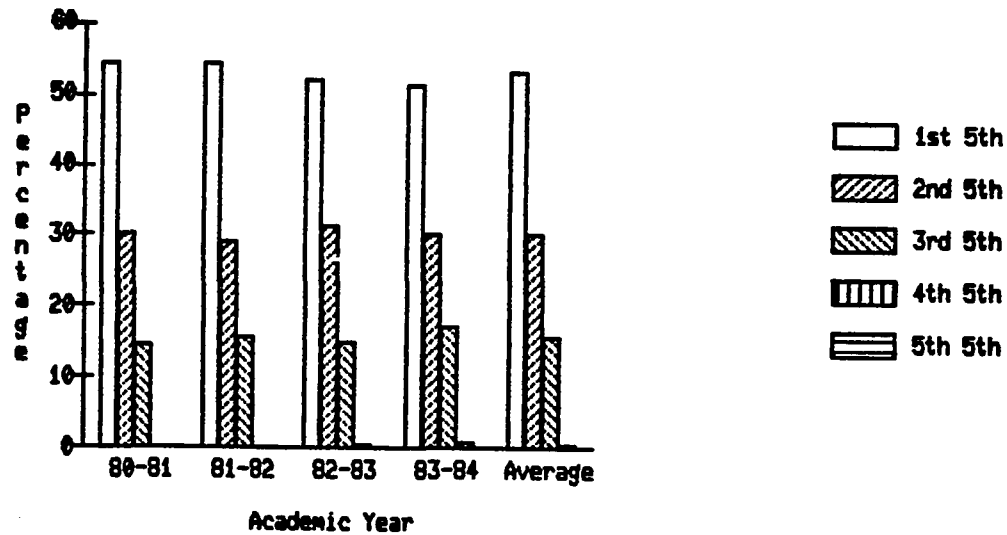
Figure 35 contains the employment status distribution of collegiate consumers of physical education when in high school; college employment information was unavailable. Approximately half (57.6%) of the GUP participants hold a part-time job while in high school. Conversely, 42.4% do not work during their high school years. The figures remain consistent over time.

The distribution of self-ranks of athletic ability are included in Figure 36. Approximately 39.6% of GUP participants rank themselves to have average athletic ability. Fewer participants (29.5%) rank themselves above average. Participants having self-ranked as below average account for 6.9% of the distribution. Minimal fluctuations are seen in these figures over time.

**Figure 34. UNCG Consumers of Physical Education**

**High School Class Rank Distribution.**

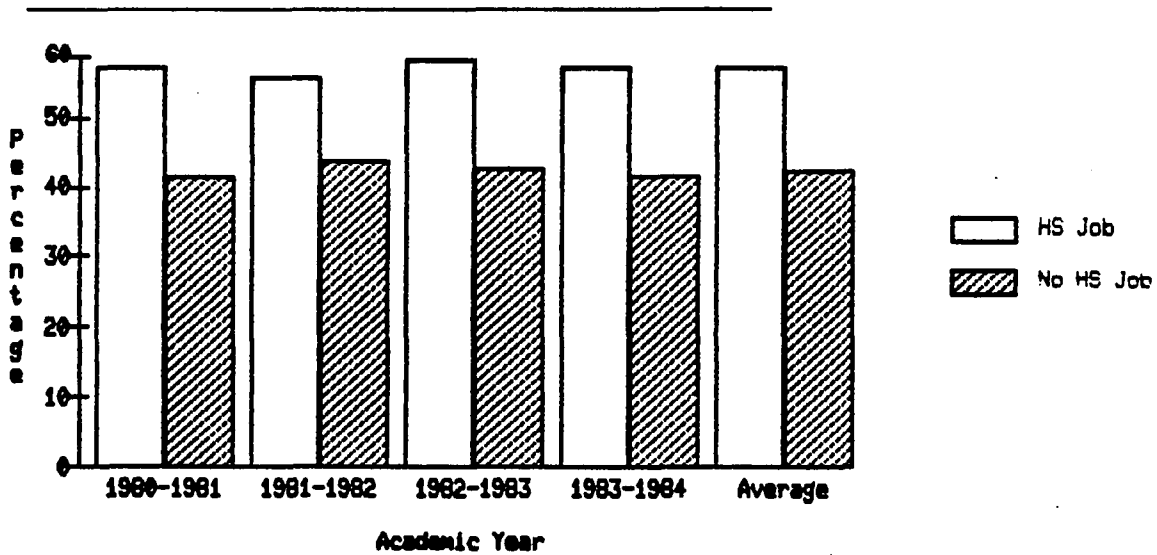
Academic Year	N	High School Class Rank				
		First Fifth	Second Fifth	Third Fifth	Fourth Fifth	Fifth Fifth
1980-81	1330	54.5%	30.5%	14.6%	.2%	.2%
1981-82	1557	54.6%	29.4%	15.8%	.2%	
1982-83	1523	52.4%	31.5%	15.3%	.7%	.1%
1983-84	1571	51.4%	30.2%	17.4%	.9%	.1%
1980-84	5981	53.2%	30.4%	15.8%	.5%	.1%



**Figure 35. UCG Consumers of Physical Education**

**High School Employment Status Distribution.**

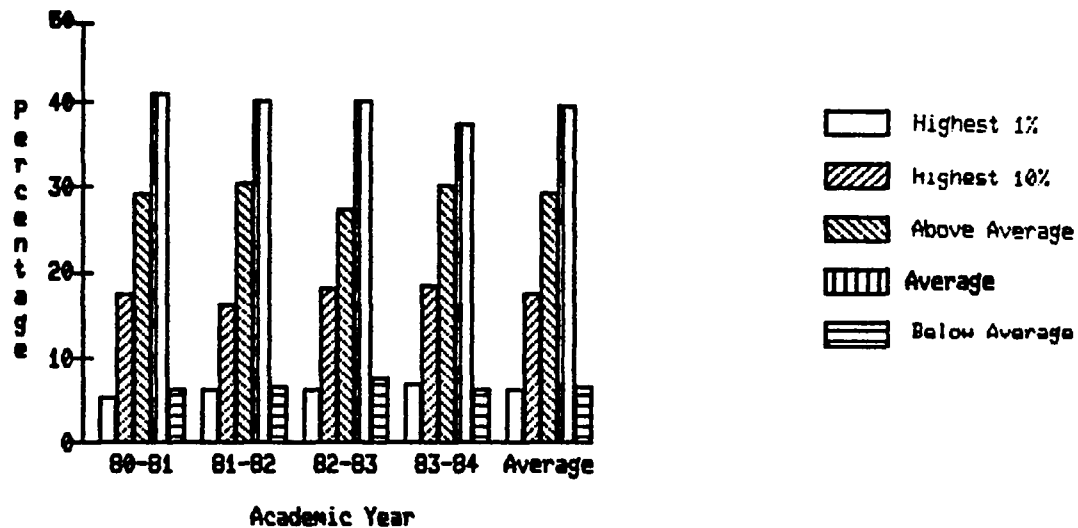
Academic Year	N	High School Employment Status	
		No HS Job	HS Job
1980-81	1392	41.6%	58.4%
1981-82	1608	43.7%	56.3%
1982-83	1570	42.6%	57.4%
1983-84	1620	41.7%	58.3%
1980-84	6190	42.4%	57.6%



**Figure 36. UNCG Consumers of Physical Education**

**Athletic Ability Self-Rank Distribution.**

Academic Year	N	Athletic Ability Self-Rank				
		Highest 1%	Highest 10%	Above Average	Average	Below Average
1980-81	1378	5.5%	17.7%	29.2%	41.1%	6.5%
1981-82	1609	6.5%	16.3%	30.5%	40.1%	6.7%
1982-83	1572	6.4%	18.1%	27.6%	40.2%	7.8%
1983-84	1610	7.1%	18.6%	30.4%	37.3%	6.5%
1980-84	6169	6.4%	17.7%	29.5%	39.6%	6.9%



The SDQ item generating the information in Figures 37 and 38 uses "athletics" to include varsity, intramural and individual sport activity. Therefore, it is of questionable interpretation to the professional educator. However, to the lay person, the interpretation is broad and therefore, reasonable for inclusion in a consumer oriented study. It is used because information about high school physical education participation is not readily available. The item includes forms of voluntary physical activity and therefore, the distribution may accurately reflect an intent to be or not be physically active in college. Figure 37 illustrates the level of athletic participation of GUP consumers while in high school. Approximately 74.1% of the GUP participants were active in varsity, intramural or individual athletic activities while in high school. More than one-fourth (25.9%) of GUP participants report no athletic participation while in high school. These figures are relatively constant. Of the GUP participants, 58.2% of the students indicate that as high school seniors, they had no intent of participating in college athletics (see Figure 38). Fewer participants (41.9%) indicated an intent to participate in collegiate varsity, intramural or individual athletic activities.

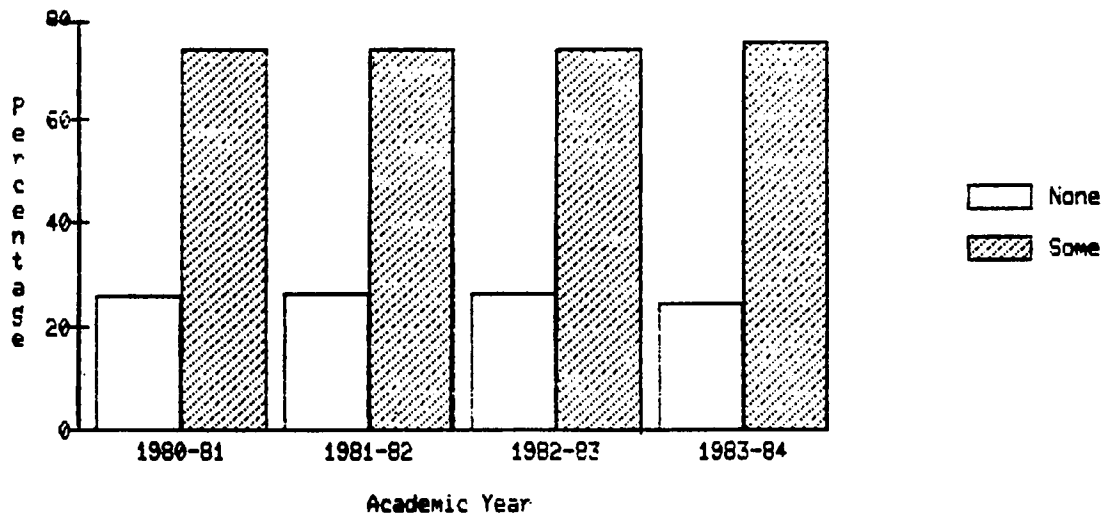
#### Discussion

The major finding of the cross-sectional analyses of participant characteristics is the stability of percentages existing over time for the majority of variables. Caution must be exercised in the interpretation of the reported percentages because they are limited to a



**Figure 37. UCG Consumers of Physical Education  
High School Athletic Participation Distribution.**

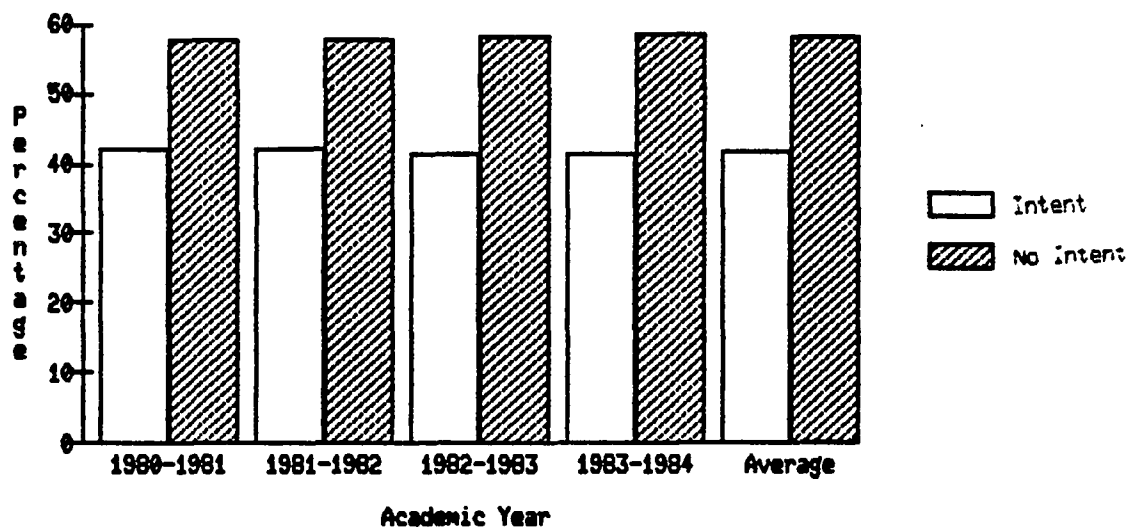
Academic Year	N	High School Athletic Participation	
		None	Some
1980-81	1386	26.2%	73.8%
1981-82	1619	26.4%	73.6%
1982-83	1585	26.4%	73.6%
1983-84	1614	24.7%	75.3%
1980-84	6204	25.9%	74.1%



**Figure 38. UCG Consumers of Physical Education**

**Collegiate Athletic Participation Intent Distribution.**

Academic Year	N	Collegiate Athletic Participation Intent	
		Intent	No Intent
1980-81	1513	42.1%	57.9%
1981-82	1757	42.2%	57.8%
1982-83	1703	41.6%	58.4%
1983-84	1755	41.5%	58.5%
1980-84	6728	41.9%	58.1%



four year period. However, should the distributions continue to be stable upon further examination, marketing suggestions to enhance or change them are appropriate. Exceptions to the prevailing trend of stability include distribution fluctuations in class standing, marital status, school, campus familiarity, final course grade, SAT, rhythmic course enrollment, course locations, and class starting times. The aforementioned variables can be tracked to determine if the fluctuations are true or random. Possible alternatives can be sought to explain the fluctuations. Continued monitoring can (a) determine if the findings in the current study accurately represent the situation, (b) help to create marketing strategies, (c) monitor marketing effectiveness and (d) detect changes in the situational analysis. For the purposes of this discussion it is assumed that the findings represent actual stability or instability, whichever the case may be.

The GUP gender distribution parallels the overall university gender distribution and remained stable from year to year. The student gender distribution at the University of North Carolina at Greensboro is disproportionate. There is a two to one ratio of females to males in the overall UNCG undergraduate population (See Appendix E). Approximately 70% of the UNCG undergraduate student body is female. The GUP reflect similar enrollment proportions.

Although stable, the age distribution of consumers of physical education does not parallel the overall university age distribution as is the case in the gender distribution. The age distribution of all UNCG undergraduates is comprised of 22% older students and 78% typical

college age students (see Appendix F). On average, the GUP distribution is comprised of 88% typical age students and 12% older students. The results clearly indicate a differing age distribution between UNCG consumers of physical education and general undergraduates at UNCG.

Each class represents approximately one-fourth of the enrollments in the GUP. There may be a potential trend developing in view of the decline in percentage of GUP freshmen enrollments. One possible explanation for such a development may be an increase in demand for GUP courses. Upperclassmen are given priority in enrollment opportunities, therefore, freshman and sophomore students have a lesser chance of gaining entry into a GUP course. A second possible explanation may be a change associated with freshmen academic advising. Freshmen may be advised not to electively enroll in the GUP during their first year at UNCG possibly to allow for a better adjustment to the rigors of collegiate study demands. If the latter explanation is the case and, moreover, if more freshmen participation is desired in the GUP, then action can be taken in the Academic Advising Office and in individual departments. A possible marketing intervention is to discuss physical education activity courses as an avenue to enhance the socialization and adaptation of college students to campus life. Curriculum schedules often separate lowerclassmen from upperclassmen. GUP courses cut across all classes and schools. What better way to meet people of different interests and backgrounds than in a GUP activity course? In addition to aiding the student acclimate to college life, the interaction in physical activity courses may provide an arena for enhancing the

cohesiveness between upper and lower classmen within a school. For example, students in a major in the School of Business and Economics could be encouraged to enroll in a GUP course to practice the skills that may "close the deal" on the tennis or golf course. Upper and lower classmen would then have the opportunity to meet and establish networks.

The schools of Arts and Sciences, and Business and Economics, respectively account for an average of 47.6% and 24.0% of the GUP enrollment distribution. Generally, these two schools have a larger number of students than most. Therefore, the substantial percentages are within reason. Future marketing strategies should include market segments focusing on the two schools. The fluctuations in the school distributions are thought to be a function of the process by which students declare their academic major; that is, many students do not declare a major until their sophomore year. Many majors require prior successful completion of freshmen and sophomore coursework before admittance to the particular school is granted. Therefore, the change in school percentages of GUP enrollments from first to second year students may be somewhat misleading.

Off-campus and/or part-time students warrant attention. Two thirds of the GUP enrollment represent on-campus students. Therefore, there is place for expanding the proportion of off-campus students. Off-campus students can be targeted as a segment through advertisement in the Commuting Student Association mailings and on cars in the commuter parking lots. Part-time students are a sub-segment of the off-campus student body and represent a very small portion (6.2%) of GUP

enrollments. Although the mechanisms for reaching students may overlap with full-time commuting students, the possible market themes are clear. Part-time students are likely to be working or raising a family, or both. Common sense indicates that the person with multiple obligations may need reminding to live a full and balanced life. Such balance includes rest and physical exercise or mental relaxation and stress reduction through movement.

Marital status appears to be an unstable variable. Continued tracking of married and single GUP participants may reveal a market segment in continual flux. If this should be the case, a good market strategy may be able to influence enrollment.

Another potential trend in need of observation is the decline in new-to-campus GUP participants. Should this tendency continue its descent or level off at a low point, the GUP administrator(s) can investigate the information flow to new students and make corrections as indicated.

One wonders if the predominant grades of A and B in GUP courses are illustrative of the characteristic in higher education referred to, today, as grade inflation. The increased percentage of As corresponds to the decreased percentage of Bs and Cs. Such popularity of grades at the high end of the scale should be scrutinized. As in other universities, the faculty in physical education at UNCG struggled to achieve physical education course credit. However, with almost three-fourths of all grades awarded As or Bs, questions arise concerning

whether instructors in physical education discriminate accurately between excellent and good students.

These values are more dramatic when considering only the traditional grades of A, B, C, D, and F. Such consideration is warranted in the light of (a) almost 15% of the students withdrawing from GUP courses after the 2-week add/drop period. (b) the elimination of late withdrawals and incompletes, (c) no grades, (d) passes and (e) failing withdrawals. Thus, clutter is removed from the distribution. Limiting analysis to the traditional grades reveals the realistic magnitude of high grades, As and Bs, to be 92.3%. Is this an example of grade inflation? One can only question whether less than 10% of GUP enrollments are average, below average or failing in performance. The tendency to receive high grades in physical education may, in part, be an incentive to the weak academic student. Although a single credit hardly has much influence on overall academic records, three GUP courses in one term could meaningfully influence the grade point average for a given semester.

If the GUP is designed primarily to enhance the lifetime pursuit of physical activity, then perhaps alternative grading systems should be instituted. In an attempt to foster fear-free learning, the University of Massachusetts offers a unique pass/fail option. Unlike other schools, the University of Massachusetts pass/fail option contributes to the quality point ratio. A passing grade in a course counts toward the overall grade point average and quality point ratio for the number of credits of the pass multiplied by the grade point average for that term.

In this way, the pass is neutral yet contributes to academic credit. However, if the prime purpose of the GUP is to add to the liberal arts education, then when exceptionally high grades are predominant, a critical examination of the grading processes in use by instructors is appropriate.

Another finding worthy of scrutiny is the increase in low-end SAT score recipients participating in the GUP. This may be associated with general lowering of SAT scores. Participants with low SAT scores may be poorer students who use GUP enrollment as a means to raise their grade point averages. Another possible explanation for an increase in low-end SAT registrants in the GUP may be that a poorer student, not always succeeding in the classroom, has an unfulfilled need to achieve and is able to do so through physical activity.

The entry and exit enrollment distribution is as expected. The decrease in first course enrollment and increase in last course enrollment may both be explained as a function of time. The increase in single course occurrence is also most likely related to time because upper and lower classmen rotate in and out of courses; only freshmen are able to be present for all four years.

Courses in the GUP are required to have a minimum number of students enrolled as set forth by the administration of the University. If a course fails to enroll the minimum number of students in a given term, the course is dropped and may be offered in a subsequent semester. In this way, the GUP responds to current student interests. However, there is no formal mechanism to anticipate or offer courses in new



interest areas. Inspection of enrollments in each course dichotomy reported earlier reveals relatively stable distributions. The low proportion of team/group activities is consistent with previous research. The 20% of rhythmic course enrollment is likely due to the addition of rhythmic aerobics courses with a high degree of popularity in the years studied.

The administrator(s) of the GUP may consider targeting a proportion of aquatic type courses in an attempt to increase enrollments. Aquatic courses such as sailing, windsurfing and canoeing are feasible in the area surrounding the campus given the proximity of public lakes. It is recommend that administrators of the GUP seek to increase the use of local private facilities. The expanded use of non-university facilities is especially prudent at the time of writing the present report because of new construction of facilities for physical education at UNCG. In addition, off-campus facility use may help to facilitate lifetime participation through educated consumerism.

Each of the respective Myers-Briggs Type Indicator dichotomies remain relatively stable over time. The Office of Institutional Research reports that 56% of the 1980 UNCG freshmen ( $N = 1101$ ) were typed as extraverted. Slightly more than half (53%) were typed as sensing. The majority of freshmen preferred feeling behaviors when making a judgment (78%). Students were typed slightly more often as judging (52%) than perceiving (48%). In comparison to these figures, the participants of the UNCG General University Program appear to be essentially identical on all personality type dichotomies except

judging/perceiving. The GUP participants have a 61.2% judging, 38.8% perceiving distribution. This is almost a 10% difference between overall 1980 freshmen students and GUP participants. This difference may be worth future investigation by one interested in the study of personality.

Research about the effects of time-of-day (Westman & Canter, 1979) and associations with extra-curricular activities (Stalcup, 1967) offer ideas that may influence GUP enrollment. Westman and Canter (1979) reported time-of-day to have an effect on self-ratings of behavior preferences and concluded that "knowledge of the temporal patterning in ourselves and others in addition to simple classification by types would help in planning activities to coincide with 'natural readiness'" (Westman & Canter, 1979, p. 1203). Stalcup (1967) investigated and found a relationship between personality types and participation in college extra-curricular activities. In addition, Stalcup reported changes in personality type following participation and further indicated that certain types were more likely to change than others. It is apparent that further investigation about voluntary physical activity and personality types is warranted.

More than half of the GUP participants were employed while in high school (57.6%). These data, and a report issued by the UNCG Office of Institutional Research in 1979, leads to speculation that there is chance for large numbers of students to continue to work while in college. In 1979 the Office of Institutional Research at UNCG conducted a survey of student perceptions of the social and academic environments.

Almost half (45%) of all respondents were employed. Working students represent 62% of the men and 41% of the women. Twenty percent of the employed male students worked 20 hours per week or more whereas 10% of the employed female students worked 20 hours per week or more. Half of all special adult students were employed 30 hours per week or more. In addition, the study revealed that 45% of all respondents were receiving some form of financial aid. Among the financial aid recipients 25% were special adult students. Eighty-four percent of black respondents and thirty-three% of white respondents received some form of financial aid.

A potential marketing strategy for working students may be similar to one recommended for individuals who work full-time and attend school part-time. That is, remind individuals with multiple obligations to take the time to lead a balanced life which should include school, work, rest and exercise. The idea purportedly acts as an influence on decision-making by encouraging individuals to take time for themselves. The strategy might also include incentive to enroll in the GUP by mentioning that the typical college student is able to enroll in two GUP courses at no additional cost. The University fee structure permits enrollment up to 18 credits at no additional charge, typically students carry 15 credits. Therefore, participation in the GUP may be considered a no cost venture and economically feasible for all students.

### Associations Between Student Characteristics and Course Characteristics

To determine the association among student variables and course variables gamma correlations were calculated. This statistic was chosen for several reasons. Gamma correlations lends itself to the analysis of ordinal level data. Gamma correlations represent the association between two ordinal variables. The gamma correlation is defined as the percentage of improvement over chance of predicting one variable correctly when knowing the other variable. The coding of all variables into dichotomies makes the use of the gamma correlation particularly useful. Negative and positive signs are solely a function of the dummy coding for each variable.

The independent variables representing student characteristics are gender, class standing, school, transfer status, housing status, campus familiarity, quality point ratio, SAT, extraversion/introversion, judging/perceiving, sensing/intuition, thinking/feeling, high school class size, high school class rank, high school employment status, athletic ability self-rank, high school athletic participation, and intended collegiate athletic participation. The dependent variables represent course characteristics and are final course grade, aquatic/non-aquatic course nature, rhythmic/non-rhythmic course nature, team/group versus individual/dual course nature, and course meeting time. Each independent variable is correlated with each dependent variable to determine associations between student characteristics and course characteristics.

In a 3-variable analysis the terms "zero-order", "first-order partial", and "conditional" are required. The zero-order gamma correlation represents the relationship between the independent and dependent variables. The first-order partial gamma correlation indicates the association between the independent and dependent variables controlling for the additional independent variable. First-order partial gamma correlations indicates the percentage of improvement over chance of predicting the dependent variable when knowing the independent variable removed the influence of the additional independent variable. Conditional gamma correlations represent the association between the independent and dependent variables for a particular condition of the controlling variable.

#### Findings

Two associations of substance were revealed in correlating student characteristics with course characteristics. Participant's gender appears to be associated with the nature of their course selection. As is indicated in Table 7, courses of a rhythmic nature tend to attract the enrollment of a larger percentage of females than males (gamma = .64). In addition, student's self-rank in athletic ability is seen to be related to their selection of GUP class. Those students ranking themselves as having average or poorer athletic ability are more likely to enroll in a rhythmically oriented class than those students having ranked themselves above average or better (gamma = -.30).

Table 7

UNCG Rhythmic Course Nature by  
Two Student Characteristics -- 1980-84

Characteristic	Gamma	Percent Rhythmic Course Enrollment	Base N
<b>Gender</b>			
Male	.64	7.3	3555
Female		26.4	7751
<b>Athletic Ability Self-Rank</b>			
Above average and up	-.30	17.2	3303
Average and down		27.9	2866

### Discussion

Associations are alleged to be useful in predicting the probable future in a simple manner. Inspection of incoming freshmen classes and transfer student groups can be used to anticipate future course and subsequent staffing requirements. Of course, due to the stability of the characteristics, it would be unusual, but possible to have an influx of students with a different group profile. However, the time taken by those interested in prediction to review group statistics would be of minimal cost to produce using the computer. Moreover, it could be well worth the effort in the event that an unusual group profile is revealed.

Marketing specialists can evaluate relationships and design strategies to attract more males to rhythmic courses. One possibility may be to suggest enrolling in a Rhythmic Aerobics course to have fun and get in shape while meeting new people. Another practical use for knowing the associations between student and course characteristics is to alert advisors of the relationships. Although gender is an apparent characteristic relating to course enrollments, athletic ability self-rank is not. Information enables the advisor to alert the student to the availability of courses that complement their characteristics. Once entry into the GUP is made, it may be possible to increase the probability for continued and varied participation through appropriate marketing tactics.

Rhythmic course instructors could also make practical use of information about relationships among student and course characteristics. Although research in the self-fulfilling prophecy

cautions against the labeling of students, especially those in rhythmic classes, as less skilled, instructors could use the self-fulfilling prophecy to the students' advantage by treating them as if they had ranked themselves high in athletic ability. Awareness of the self-perceptions of rhythmic course participants gives the instructor another piece of information to aid in the instructional process.

#### Intercorrelations Among Variables

Further exploration of the relationships among student and course characteristics requires the inspection of intercorrelations among dependent variables and intercorrelations among independent variables.

#### Findings

##### Dependent Variables

Table 8 indicates that rhythmic course nature is moderately associated with course time ( $\gamma = .41$ ). The relationship is a function of the schedule. Rhythmic oriented courses are usually scheduled in the morning rather than in the afternoon or evening.

##### Independent Variables

All possible combinations of independent variables reveal 18 relationships as "moderate" or stronger according to the Davis (1971) standard. (See full discussion near the end of Chapter III.) Gender is moderately related to housing status ( $\gamma = .40$ ), athletic ability self-rank ( $\gamma = -.40$ ), and collegiate athletic participation intent ( $\gamma = -.33$ ) (see Table 9). These associations reflect females as more likely to live on-campus, rank themselves average or poorer in



athletic ability, and have no intent to participate in collegiate athletic activities.

Table 8

Selected Intercorrelation Among Dependent  
Variables of the GUP at UNCG

<u>Gamma Correlations</u>	
	A B
A	.41
B	

Note. A Rhythmic/Non Rhythmic Nature  
B Course Time

Table 9

Selected Intercorrelations Among Independent

Variables of the GUP at UNCG.

Gamma Correlations															
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
A					.40				-.40		-.33				
B			.90	-.99	.48										
C													-.32		
D					.48								-.34	-.34	
E						.39									
F															
G							.57	-.54							
H								-.47					.40		
I															
J										-.83	.76				
K											-.90	-.30			
L															
M															
N															
O															

Note. A Gender  
 B Class  
 C School  
 D Transfer Status  
 E Campus Familiarity  
 F Housing Status  
 G Quality Point Ratio  
 H SAT  
 I High School Class Rank  
 J Athletic Ability Self-Rank  
 K High School Athletic Participation  
 L Collegiate Athletic Participation Intent  
 M E-I Type  
 N S-N Type  
 O T-F Type

Class standing is very strongly related to transfer status ( $\gamma = .90$ ) and campus familiarity ( $\gamma = -.99$ ), and moderately associated with housing status ( $\gamma = .48$ ) (see Table 9). Such strong associations are reasonable considering the freshman/non-freshman dichotomy of class standing. It is clear and expected that freshmen are less likely to be transfers and almost always be unfamiliar or "new" to the campus. Additionally, freshmen are more likely to reside on-campus than attempt off-campus living during their initial adjustment to college life.

A student's school affiliation is moderately related to the sensing/intuition dimension of the Myers Briggs Type Indicator ( $\gamma = -.32$ ). Translation from dichotomous dummy coding offers one explanation for the association. It suggests that students in the College of Arts and Sciences are less likely to perceive things using their senses, but more likely to rely upon intuition.

In addition to the very strong relationship previously discussed between transfer status and class standing, transfer status is moderately related to housing status ( $\gamma = .48$ ), sensing/intuition type ( $\gamma = -.34$ ), and thinking/feeling type ( $\gamma = -.34$ ). Transfer students are more likely to live off-campus, perceive things using their senses, and make decisions by orderly thought in lieu of relying upon feelings.

Familiarity with the campus is moderately related to quality point ratio ( $\gamma = .39$ ) in addition to class standing as previously noted. GUP participants new to the UNCG campus are more likely to have quality

point ratios of 2.5 or better. Caution must be exercised in the interpretation of this relationship. The bulk of new students are freshmen and do not have quality point ratios. Therefore, the association is based on relatively small numbers.

In addition to an association with campus familiarity, quality point ratio is substantially related to SAT score ( $\gamma = .57$ ) and high school class rank ( $\gamma = -.54$ ). A GUP participant is more likely to have scored less than 1000 on the SAT when having a quality point ratio of less than 2.5. Correspondingly, students with a high school class rank in the top 20% are more likely to have a quality point ratio greater than or equal to 2.5. All three variables are indicators of academic performance, therefore their strong association is predictable.

SAT is moderately associated with high school class rank ( $\gamma = -.47$ ) and sensing/intuition type ( $\gamma = .40$ ). GUP participants scoring less than 1000 on the SAT are less likely to hold a rank in the top fifth of their high school class. Students typed as "thinking" tend to represent the top fifth of their high school class.

As noted previously, athletic ability self-ranks are moderately associated with gender. In addition, athletic ability self-rank is very strongly associated with high school athletic participation ( $\gamma = -.83$ ) and collegiate athletic participation intent ( $\gamma = .76$ ).

High school athletic participation is also strongly associated with collegiate athletic participation intent ( $\gamma = -.90$ ) and moderately associated with the extraversion/introversion personality type dimension ( $\gamma = -.30$ ). GUP participants have almost consistently been

physically active in high school. Extravert GUP participants are somewhat more likely to have had some high school athletic participation.

### Discussion

It must be acknowledged in examining enrollment in a University program of general physical education classes that two elements are critical to both what constitutes the "menu" of offerings and who enrolls in such courses. The elements are facilities and schedule. Any institution of higher education has "structural" and "administrative" idiosyncrasies that dictate, to some extent, the findings that describe student and course characteristics. The University of North Carolina at Greensboro is no exception.

The finding that the dependent variables are relatively independent of one another for the data presented above may be a function of schedule. At UNCG, like many other institutions, the schedule for GUP classes is prepared with consideration that the facilities are shared with two other major programs -- intramurals and athletics.

The independent variables have a greater interrelationship than the dependent variables. Several correlations may be explained by the common nature of what their measurement represents. A clear example of this phenomenon occurs among the academic performance variables of quality point ratio, SAT and high school class rank. In addition, several associations appear to be functions of time-related variables.

This is evident in the relationships among class standing, campus familiarity and transfer status.

The moderate associations between gender and athletic ability self-rank is not surprising. Males have traditionally been encouraged to develop physical prowess. Such has not been the case for women until recent times. Despite lower self-ranks in athletic ability, women at UNCG do become participants in the GUP. This is indicated by the number of female students who had no intent to be athletically active in college yet enrolled in the GUP program.

The associations involving the MBTI types may be fertile areas for future study especially for academic researchers in general. However, none of the associations among personality types involve those independent variables directly related to physical activity, athletic ability self-rank or high school athletic participation. The suggestion is that some characteristic other than prior activity experience may be associated with this finding.

The very strong relationship between high school athletic participation and intent to participate in collegiate athletics is understandable. It is logical that a student already active is more likely to participate in the future. The inclination of persons with high athletic ability self-rank participating in that which they have confidence is also apparent.

### Partial Correlations Among Variables

Partial gamma correlations can reveal greater detail about the associations presented in Table 7. Davis (1971) describes the outcomes of three variable analysis in the following ways (a) being negligible, (b) providing explanation, (c) having no effect, (d) suppressing the true relationship, (e) being in the "twilight zone", or (f) providing specification. A "negligible" relationship is defined by Davis (1971) as occurring when no relationship exists between the variables or when the zero-order and first-order partial gamma correlations are effectively zero. A variable "explains" the dependent variable when the zero-order correlation is non-negligible and the first-order partial correlation is negligible.

When the conditional gamma, zero-order gamma and first-order partial gamma are essentially identical, the third or controlling variable is said to have "no effect". The third or controlling variable may "suppress" or mask the true relationship between the other two variables. This is evident when the first-order partial correlation is stronger than the zero-order gamma.

When the zero-order and first-order partial gammas are nonnegligible, but the first-order partial is weaker than the zero-order gamma, the relationship falls into the "twilight zone". The "twilight zone" represents those "situations which hover between explanation and lack of explanation" (Davis, 1971, p. 97). "Specification" occurs when substantial difference exists between the conditional gammas of the three variable analysis. This means that the controlling variable adds

to the explanation of the relationship for a "specific" condition, but not for all conditions.

Zero-order gammas with a "moderate" relationship or those having a value greater than absolute .30 (Davis, 1971) are included in the presentation. Because the sample size in the present study, is very large ( $N > 11,000$ ), the standard 30-70 marginal rule restriction does not apply (Davis, 1971). A liberal difference of 5 units instead of the conservative 10 recommended by Davis (1971) between (a) the two conditional gammas, (b) the zero-order gamma and first-order partial gamma, (c) a conditional gamma and the zero-order gamma, or (d) any of these comparisons combined, provides the basis for inclusion among findings presented below.

The two independent variables already identified as associated with course characteristics are gender and athletic ability self-rank. The independent variable gamma correlations indicate gender to be associated with (a) housing status, (b) athletic ability self-rank, and (c) collegiate athletic participation intent. Athletic ability self-rank is associated with (a) gender, (b) high school athletic participation, and (c) collegiate athletic participation intent. Tables 10 through 13 present partial gamma correlations of the two variables already known to be associated with course characteristics. The 3-variable associations are created by controlling for each of the other independent variables associated with gender or athletic ability self-rank.



### Findings

Table 10 indicates the analysis of rhythmic type course enrollment by gender controlling for the individual's athletic ability self-rank. The association between gender and rhythmic course enrollment is substantial according to Davis' description (zero-order gamma = .59). Removing the influence of athletic ability self-rank (first-order partial gamma = .57) does not appear to add explanation to the relationship. However, the conditional gammas are different. When athletic ability self-rank is above average or better, the conditional gamma is .73 or 14 units greater than the zero-order relationship. In contrast, the association is weaker (conditional gamma = .34) when athletic ability self-rank is average or poorer. The conditional gammas effectively cancel one another thereby providing a somewhat misleading first-order partial association value. Such an occurrence indicates specificity in the usefulness in identifying rhythmic course enrollees. When gender is accounted for, the data in Table 10 indicate that the probability of being able to accurately predict rhythmic course enrollment is much larger for students with athletic ability self-ranks above average or better (conditional gamma = .73) than for students with a low athletic ability self-rank (conditional gamma = .34).

Table 10

UNCG Consumers of Physical EducationEnrolling in a Rhythmic Type Course byGender Controlling for Athletic Ability Self-Rank

Characteristic	Gamma	Percent Rhythmic Course Enrollment	Base N
<b>Athletic ability self-rank above average and up</b>			
Male	.73	4.4	998
Female		22.7	2305
<b>Athletic ability self-rank average and down</b>			
Male	.34	17.5	446
Female		29.9	2420

Note. zero-order gamma = .59  
 first-order partial gamma = .57

Table 11 indicates the association between rhythmic course enrollment and athletic ability self-rank controlling for gender. The association indicating the relationship between rhythmic course enrollment and athletic ability self-rank is minimally considered to be moderate (zero-order gamma =  $-.30$ ). In contrast to Table 10, the removal of the third or controlling variable (first-order partial gamma =  $-.20$ ), gender, dramatically decreases the strength of the association. The conditional gammas cancel one another but not to the extent of the previous analysis. The reason for this occurrence is that the bulk of the association comes from females ( $N = 4725$ ). Males ( $N = 1444$ ) only account for approximately 23% of the distribution. The 3-variable analysis indicates specification of association. When athletic ability self-rank is known, the probability of accurately predicting rhythmic type course enrollment is significant for males (conditional gamma =  $-.64$ ), but not for females (conditional gamma =  $-.18$ ).

The association between rhythmic course enrollment and athletic ability self-rank controlling for collegiate athletic participation intent presented in Table 12 indicates a trend toward specificity. As noted in the prior text, the zero-order gamma for rhythmic course enrollment and athletic ability self-rank is  $-.30$ . Removing the influence of collegiate athletic participation intent weakens the relationship 8 units (first-order partial gamma =  $-.22$ ). This is just

Table 11

UNCG Consumers of Physical Education  
Enrolling in a Rhythmic Type Course by  
Athletic Ability Self-Rank Controlling for Gender

Characteristic	Gamma	Percent Rhythmic Course Enrollment	Base N
<b>Male</b>			
Athletic ability self-rank above average and up	-.64	4.4	998
Athletic ability self-rank average and down		17.5	446
<b>Female</b>			
Athletic ability self-rank above average and up	-.18	22.7	2305
Athletic ability self-rank average and down		29.9	2420

Note. zero-order gamma =  $-.30$   
first-order partial gamma =  $-.20$

short of the ten recommended by Davis (1971). Inspection of the table reveals a stronger association with rhythmic type course enrollment for students intending to participate in some form of college athletic activities (conditional gamma =  $-.25$ ) than for those not intending to participate (conditional gamma =  $-.20$ ) when athletic ability self-rank is known.

The association between rhythmic course enrollment and collegiate athletic participation controlling for athletic ability self-rank is presented in Table 13. The reverse entry of the independent variables from those in Table 12 intensifies the weakening of the first-order partial gamma ( $-.21$ ). Both conditional gammas indicate a low association for each case of the controlling variable. Thus, when collegiate athletic participation intent is known, individuals with better athletic ability self-ranks are slightly more predictable in their rhythmic type course enrollment (conditional gamma =  $-.22$ ) than those with low athletic ability self-ranks (conditional gamma =  $-.18$ ).

#### Discussion

Each 3-variable analysis provides greater insight about the nature of the GUP and its participants. Existing information from the Office of Admissions, for example, can provide the administrator(s) and the instructors of the GUP with useful data for the planning and conduct of their programs. The 4 associations presented above are illustrative of significant predicting information about the likelihood of future GUP participants enrolling in rhythmic type courses.

Table 12

UNCG Consumers of Physical EducationEnrolling in a Rhythmic Type Course by Athletic AbilitySelf-Rank Controlling for Collegiate Athletic Participation Intent

Characteristic	Gamma	Percent Rhythmic Course Enrollment	Base N
<b>Intent to participate in collegiate athletics</b>			
Athletic ability self-rank above average and up		14.9	2193
	-.25		
Athletic ability self-rank average and down		22.4	606
<b>No intent to participate in collegiate athletics</b>			
Athletic ability self-rank above average and up		21.6	1110
	-.20		
Athletic ability self-rank average and down		29.4	2260

Note. zero-order gamma = -.30  
first-order partial gamma = -.22

Table 13

UNCG Consumers of Physical EducationEnrolling in a Rhythmic Type Course by Collegiate AthleticParticipation Intent Controlling for Athletic Ability Self-Rank

Characteristic	Gamma	Percent Rhythmic Course Enrollment	Base N
Athletic ability self-rank above average and up			
Intent to participate in collegiate athletics	-.22	21.6	1110
No intent to participate in collegiate athletics		14.9	2193
Athletic ability self-rank average and down			
Intent to participate in collegiate athletics	-.18	29.4	2260
No intent to participate in collegiate athletics		22.4	606

Note. zero-order gamma = -.30  
first-order partial gamma = -.21

Using gender, athletic ability self-ranks and collegiate athletic participation intent, it is possible to anticipate course offerings. Each of the four analyses provides some indication of rhythmic course enrollment. However, the strongest prediction can be made for individuals with a higher self-rank in athletic ability. In the event of an unusually large influx of males with high athletic ability self-ranks, the program offerings could be adjusted accordingly.

Marketing strategists desirous of increasing GUP enrollments should utilize available data and execute the types of analyses demonstrated in this chapter. The present study reveals clearly that gender, self-ranked athletic ability, and intent to participate in collegiate athletics do, in fact, relate to specific course enrollments. If one of the goals of a program of general physical education is to attract students presently not participating in course offerings, then specific steps can be taken such as targeting particular genders and initiating campaigns to attract students who previously indicated no intent to be active in college athletics. With the additional information as to why specific selection is made, marketing specialists can aid physical educators in altering these distributions in the interests of students, faculty, and the curriculum in physical education.



CHAPTER V  
LONGITUDINAL ANALYSES  
Participant Characteristics

Longitudinal participant characteristics are identified by the variables representing behavior over time. The data account for information from four years. Only observations from the cross-sectional analyses representing Freshmen in 1980 are used to track college students during the period examined. Thus, the typical four years of college study are tracked from start to finish.

The longitudinal variables are created by aggregating the cross-sectional observations by the participant's encrypted social security number. Each subject is represented by one observation record containing biodata, survey responses, and a varying number of course enrollments with corresponding course information. The focus of the present chapter is on the patterns of course consumption.

Findings

Longitudinal participant characteristics are better discussed, in the writer's judgment, with an understanding of the overall distribution of participation of all GUP students. However, the change in unit of observation from enrollment to participant suggests restraint be used in comparing the cross-sectional and longitudinal results. Only a brief description of the 1980 Freshmen participating in the GUP from the Fall of 1980 to the Spring of 1984 is, therefore, presented.

Table 14 reports the independent student characteristics in concise format. Student characteristics are assumed to remain the same for all four years. Table 14 presents the frequency distributions of all student characteristic variables from the 1980 Freshmen class. The total number of 1980 Freshmen participating in the GUP between the Fall of 1980 and the Spring of 1984 was 959. Slightly more than half of these students enroll in the GUP for the first time in their first year in college (51.4%). The gender distribution is three females (75.1%) to one male (24.9%). Almost all of the 1980 Freshmen GUP participants are of typical college age (98.2%). Single participants account for most of the cohort group (95.5%). White students account for 83.8% of the cohort group. Black participants account for 14.7% of the sample. The remaining racial classifications represent trace percentages.

Students classified as freshmen in 1980 are virtually all non-transfers (98.2%). This finding is understandable because most students transfer after at least one year of college study. Cohort group members are more likely to live on-campus (78.3%) and pay in-state tuition (85.5%). Almost equal proportions of new-to-campus (49.7%) and familiar-with-campus participants (50.3%) enroll in the GUP for the first time. Virtually all cohort group members are enrolled for a full course load (98.4%). At entry to UNCG, more than half (58.7%) of 1980 Freshmen enroll in the College of Arts and Sciences.

Table 14

Frequency Distributions of 1980 UNCG  
Freshmen Who are Regularly  
Participating Consumers of Physical Education

Variable	N	Percent
<b>First Enrollment</b>		
1980-81	493	51.4%
1981-82	294	30.7%
1982-83	96	10.0%
1983-84	76	7.9%
<b>Gender</b>		
Female	720	75.1%
Male	239	24.9%
<b>Age Group</b>		
Typical	933	98.2%
Older	17	1.8%
<b>Marital Status</b>		
Married	43	4.5%
Single	908	95.5%
<b>Race</b>		
White	804	83.8%
Black	141	14.7%
Hispanic	5	.5%
American Indian	2	.2%
Asian	7	.7%
<b>Transfer Status</b>		
Non-transfer	942	98.2%
Transfer	17	1.8%
<b>Housing Status</b>		
On Campus	746	78.3%
Off Campus	207	21.7%
<b>Tuition Status</b>		
In-State	815	85.5%
Out-of-State	138	14.5%

(table continues)

Table 14 (continued)

Variable	N	Percent
<b>Campus Familiarity at First Enrollment</b>		
Old	479	50.3%
New	474	49.7%
<b>Enrollment Status</b>		
Part Time	8	1.6%
Full Time	485	98.4%
<b>School</b>		
Arts and Sciences	559	58.7%
Business and Economics	168	17.6%
Education	30	3.1%
HPERD	34	3.6%
Home Economics	66	6.9%
Music	33	3.5%
Nursing	63	6.6%
<b>SAT Total Score</b>		
600 - 799	106	11.2%
800 - 999	562	59.5%
1000 - 1199	246	26.0%
1200 - 1399	30	3.2%
1400 - 1600	1	.1%
<b>Quality Point Ratio</b>		
0.01 - 1.29	4	.8%
1.30 - 1.59	18	3.8%
1.60 - 1.99	60	12.6%
2.00 - 2.49	121	25.4%
2.50 - 2.99	123	25.8%
3.00 - 3.49	102	21.4%
3.50 - 3.99	44	9.2%
4.00	5	1.0%
<b>High School Rank</b>		
First Fifth	383	55.3%
Second Fifth	200	28.9%
Third Fifth	105	15.2%
Fourth Fifth	4	.6%
Fifth Fifth	1	.1%

(table continues)

Table 14 (continued)

Variable	N	Percent
<b>MBTI TYPE</b>		
ESTJ	20	3.0%
ESTP	6	.9%
ESFJ	79	12.0%
ESFP	58	8.8%
ENFP	121	18.4%
ENFJ	61	9.3%
ENTP	20	3.0%
ENTJ	15	2.3%
ISTJ	23	3.5%
ISTP	14	2.1%
ISFJ	73	11.1%
ISFP	52	7.9%
INFP	54	8.2%
INFJ	36	5.5%
INTP	13	2.0%
INTJ	14	2.1%
<b>Extrovert/Introvert</b>		
Extrovert	380	57.7%
Introvert	279	42.3%
<b>Judging/Perceiving</b>		
Judging	403	61.2%
Perceiving	256	38.8%
<b>Sensing/Intuitive</b>		
Sensing	325	49.3%
Intuitive	334	50.7%
<b>Thinking/Feeling</b>		
Thinking	125	19.0%
Feeling	534	81.0%

(table continues)

Table 14 (continued)

Variable	N	Percent
<b>High School Type</b>		
Public	673	93.6%
Other	46	6.4%
<b>High School Focus</b>		
Academic	619	86.8%
General	77	10.8%
Career Oriented	13	1.8%
Other	4	.6%
<b>High School Class Size</b>		
< 100	50	7.0%
100-249	189	26.3%
250-499	248	34.5%
500-749	132	18.4%
> 750	100	13.9%
<b>High School Employment Status</b>		
No HS Job	281	39.4%
HS Job	432	60.6%
<b>High School Athletic Participation</b>		
None	200	28.1%
Some	513	71.9%
<b>Collegiate Athletics Participation Intent</b>		
Intent	308	39.4%
No Intent	473	60.6%
<b>Athletic Ability Self-Ranking</b>		
Highest 1%	35	4.9%
Highest 10%	116	16.2%
Above Average	209	29.2%
Average	302	42.2%
Below Average	53	7.4%
<b>Participation Group</b>		
NonRegulars	652	68.0%
Regulars	307	32.0%

Most cohort group members score between 800 and 999 on the SAT (59.5%). The distribution of quality point ratios is bell shaped. Almost three-fourths (72.6%) of cohort group members earn a quality point ratio between 2.0 and 3.49. More than half (55.3%) of 1980 Freshmen represent the top 20% of their high school class.

Relative to MBTI measures, the largest percentage (18.4%) of 1980 Freshmen GUP participants are typed as extraverted, intuitive, feeling and perceiving (ENFP). All 16 Myers-Briggs Type combinations are represented in the cohort group of participants. More cohort group members are extraverted (57.7%), judging (61.2%), intuitive (50.7%), and feeling (81.0%).

Cohort group participants tend to come from public high schools (93.6%). The majority of high schools have an academic focus (86.8%). Most high school classes appear to be between 250 and 499 in size (34.5%). The 1980 Freshmen participants are more likely to hold a job while in high school (60.6%). Approximately 71.9% of the cohort group experience some form of voluntary high school athletic participation. Most participants (60.6%) indicate an intent to participate in collegiate athletic activities (varsity, intramural, or individual). Most 1980 Freshmen participants rate themselves as average in athletic ability (42.2%). More than one-fourth of cohort group members rank themselves as above average in athletic ability (29.2%). Few cohort group members indicate their athletic ability to be in the top 1% (4.9%).

Given that regular participants were defined as those individuals having enrolled in three or more GUP courses ( $N = 307$ ) and that non-regular participants enroll in one or two courses, the majority (68.0%) of 1980 Freshmen participants are non-regularly enrolling participants. Regularly enrolling students account for 32.0% of the cohort group. Subsequent longitudinal analyses examine the latter participation group.

Tables 15 through 19 present distributions based upon the classification and aggregation of the first three GUP courses taken by 1980 Freshmen. These patterns represent the dependent variables for the longitudinal analyses of 1980 Freshmen regular participants ( $N = 307$ ).

The aquatic/non-aquatic participation patterns are presented in Table 15. The vast majority (74.3%) of regular participants do not enroll in aquatic courses in the first three classes taken in the GUP. Limiting consideration to those regular participants having enrolled in at least one aquatic course during the first three GUP course, it is clear that very few students enroll in more than one aquatics class.



Table 15

1980 UNCG Freshmen Aquatic/NonaquaticParticipation Pattern Distribution

<u>Participation Pattern</u>	<u>N</u>	<u>Percent</u>
Aqua Aqua Aqua	5	1.6%
Aqua Aqua Non	7	2.3%
Aqua Non Aqua	8	2.6%
Aqua Non Non	22	7.2%
Non Aqua Aqua	5	1.6%
Non Aqua Non	17	5.5%
Non Non Aqua	15	4.9%
Non Non Non	228	74.3%
<b>Total</b>	<b>307</b>	<b>100.0%</b>

The distribution of the rhythmic/non-rhythmic classification is presented in Table 16. Approximately half (53.1%) of regular participants do not enroll in a course with a rhythmic nature in their early GUP experiences. Further analysis of those participating in some rhythmic course reveals that approximately 40% enroll in more than one rhythmic course.

Table 17 indicates the team/group course consumption patterns of regularly participating 1980 Freshmen. Most participants do not take a team/group GUP activity course (87.3%). Less than one-tenth of the 39 Freshmen having some team/group enrollment took two team/group activities.

Participation patterns of course location are contained in Table 18. It is evident that the vast majority of freshmen only enroll in courses located on the UNCG campus (73.6%). Very few students enroll in more than one off-campus course (4.3%).

Table 19 reports the frequency distribution of course time participation patterns. The table indicates the predominance of enrollment in the morning and afternoon time slots. Thirteen and one-half percent of the students continually enroll in morning classes. A number of participants continually enroll in afternoon courses (8.3%). The majority of students enroll in combinations of morning and afternoon GUP classes (73.7%). There are no students who continually enroll in evening classes. Some participants enroll in combinations of courses including evening classes (26.3%).

Table 16

1980 UNCG Freshmen Rhythmic/NonrhythmicParticipation Pattern Distribution

<u>Participation Pattern</u>	<u>N</u>	<u>Percent</u>
Rhythm Rhythm Rhythm	18	5.9%
Rhythm Rhythm Non	8	2.6%
Rhythm Non Rhythm	14	4.6%
Rhythm Non Non	19	6.2%
Non Rhythm Rhythm	17	5.5%
Non Rhythm Non	22	7.2%
Non Non Rhythm	46	15.0%
Non Non Non	163	53.1%
Total	307	100.0%

Table 17

1980 UNCG Freshmen Team/Individual-DualParticipation Pattern Distribution

<u>Participation Pattern</u>	<u>N</u>	<u>Percent</u>
Team Team Non	1	.3%
Team Non Team	2	.7%
Team Non Non	10	3.3%
Non Team Non	13	4.2%
Non Non Team	13	4.2%
Non Non Non	268	87.3%
Total	307	100.0%

Table 18

1980 UNCG Freshmen Physical EducationCourse Location Participation Pattern Distribution

<u>Participation Pattern</u>	<u>N</u>	<u>Percent</u>
Off Off On	6	2.0%
Off On Off	5	1.6%
Off On On	27	8.8%
On Off Off	2	.7%
On Off On	25	8.1%
On On Off	16	5.2%
On On On	226	73.6%
Total	307	100.0%

Table 19

1980 UNCG Freshmen Physical EducationCourse Time Participation Pattern Distribution

<u>Participation Pattern</u>	<u>N</u>	<u>Percent</u>
Morn Morn Morn	41	13.5%
Morn Morn After	27	8.9%
Morn Morn Eve	9	3.0%
Morn After Morn	29	9.6%
Morn After After	21	6.9%
Morn After Eve	9	3.0%
Morn Eve Morn	2	.7%
Morn Eve After	4	1.3%
Morn Eve Eve	1	.3%
After Morn Morn	27	8.9%
After Morn After	24	7.9%
After Morn Eve	3	1.0%
After After Morn	30	9.9%
After After After	25	8.3%
After After Eve	4	1.3%
After Eve Morn	2	.7%
After Eve After	7	2.3%
After Eve Eve	2	.7%
Eve Morn Morn	5	1.7%
Eve Morn After	7	2.3%
Eve Morn Eve	1	.3%
Eve After Morn	12	4.0%
Eve After After	5	1.7%
Eve After Eve	2	.7%
Eve Eve After	4	1.3%
Total	303	100.0%

### Discussion

The student characteristic variables have a limited value in designing marketing strategies. One reason for the limitation is the time for which the information is collected. The student characteristics described in Table 14 reflect information at entry to UNCG. The results provide a good profile for traditional Freshmen entering UNCG. However, the current profile does not have sufficient data to provide information about other cohort groups such as transfer students, older undergraduates or graduate students. Another limitation has to do with whether course, time and place were student preferences of what was available time of registration.

The findings reveal that most Freshmen enroll in the GUP for the first time during their first year of college. Despite the pressures of adjusting to life at a university, approximately half of the cohort group included elective physical activity as part of their early college experiences. It is obvious that with each subsequent year the possibility of becoming a continuing participant diminishes. With this in mind, it is appropriate to take steps to increase the percentage of Freshmen taking GUP courses during their first year of college. A possible marketing approach could be to communicate the fact that a large number of Freshmen do elect a GUP course. The marketing tactic would be to target the non-enrollees by encouraging them to join rather than miss out on an important part of university life.

Findings also indicate that a proportionately larger percentage of women participate in the GUP given the female population of UNCG (see Appendix E). Marketing strategies designed to invite more males to participate in the GUP are in order.

The dominance of "typical" age students is expected. However, older Freshmen should not be overlooked by those seeking to increase GUP enrollments. It is possible that older Freshmen may have misconceptions about the GUP. A targeted investigation using older undergraduates as a cohort group might lead to revealing information which could then be used to design a course or courses to attract these individuals.

A marketing approach with strong potential is one with a focus on social interaction. Approximately 95% of Freshmen participants are single. The homogeneity of the participant group is substantial when considering age and marital status. Therefore, the GUP marketing strategies could capitalize on these commonalities. This could be an added facet of the campaign previously mentioned encouraging Freshmen to join in and be a part of the group.

One of the most striking findings of the present study is involves the equal proportions of participants who are unfamiliar and familiar with the UNCG campus. It is possible that Freshmen advisors direct students to participate in the GUP. If so, a coordinated strategy should be employed between Academic Advising and the administrators of the GUP. If this is not the case, further investigation is warranted to determine motivational factors of first time participants.

Large percentages of Freshmen participants hold jobs while in high school. In addition, many Freshmen participants were involved in high school athletic activities and intended to participate in college athletic activities. These characteristics may aid in anticipating the number of course sections offered and subsequent staff requirements with each incoming class. Further research is called for to determine what influences individuals to enroll in the GUP having not intended to initially do so. This is especially so for the Freshmen who rank themselves as below average in athletic ability. The comparison of GUP participants and non-participants is also a consideration.

Each of the consumption pattern frequency distributions are partly a function of course offerings. However, course offerings are also partly a function of student enrollments. Facilities play a part in course offerings. The interdependency is reflected in the low enrollments in aquatic, team/group, and evening courses. These results support prior survey research indicating college students preference for individual or dual activities.

Rhythmic course enrollments appear to be in flux. Larger percentages of participants repeat enrollment in a rhythmic type course. This is likely due to recent interest in Rhythmic Aerobic classes. The rhythmic distribution is not as disproportionate as that of the aquatic/non-aquatic and team/group versus individual/dual dichotomies. Findings indicate a greater disparity in the latter groups. The team/group distribution may be consistent with "reality" inasmuch as it agrees with prior survey research. However, the aquatic/non-aquatic distribution



warrants added consideration. Research needs to be performed to determine all possible aquatic course additions. Survey research can be conducted to verify the groups with the greatest potential for aquatic enrollment. One immediate suggestion is to consider offering lifetime oriented aquatic activities such as Water Ballet, Sailing and Aqua Aerobics.

#### Associations Between Consumption Patterns and Student Characteristics

Each independent variable is correlated with each longitudinal dependent variable to determine associations between student characteristics and longitudinal course consumption patterns. The ground rules for discussing a relationship between variables were stated in Chapter III and continue to govern the analyses of associations. Tables 20 through 22 contain the associations between the dichotomized consumption variables and student characteristics with gamma coefficients greater than or equal to the absolute value of .30. In addition, analyses are included if the zero-order gamma correlation reaches the .30 criterion and a change of five units occurs when adding the third variable.

Dichotomized consumption variables are created by transforming the data. The dichotomous consumption variables are (a) some aquatic course enrollment/no aquatic course enrollment, (b) some rhythmic course enrollment/no rhythmic course enrollment, (c) some team or group course enrollment/no team or group course enrollment, (d) some off-campus

course enrollment/no off-campus course enrollment, and (e) adjacent enrollment times/non-adjacent enrollment times.

The dichotomous coding for each characteristic of the first three GUP courses enable the sorting into one of the eight possible combinations. For example, a participant may enroll in a tennis class, followed by a swimming course, and then a weight training class. The swimming course in the selection pattern indicates some aquatic enrollment. The same idea applies for some rhythmic course enrollment, some team or group course enrollment, and some off-campus course enrollment.

"Slightly modified ground rules" apply to adjacent/non-adjacent times. The adjacent/non-adjacent dichotomy seeks to reveal if time of day patterns exist in course selection. An enrollment pattern is considered to be adjacent if a course or courses in the morning do not occur when a course or courses in the evening occur, and vice versa. For example, if a participant enrolled in a morning class, followed by an afternoon course, and subsequently, another morning class, he/she is coded as adjacent enrollment times. However, if the participant enrolls in a morning class, followed by two evening courses, he/she is considered to be non-adjacent enrollment times due to the inclusion of a morning and an evening course in the same pattern. Individuals enrolling in a class in the morning, afternoon and evening are also considered to be non-adjacent. The remaining analyses involve dependent variables representing dichotomized longitudinal course consumption characteristics.

### Findings

Participation consumption patterns involving some aquatic enrollment are moderately associated with high school athletic participation ( $\gamma = -.40$ ). Table 20 indicates that students with some high school athletic participation (29.1%) are more likely to enroll in some aquatic courses within the first three GUP enrollments than students with no voluntary high school athletic participation (15.0%).

Table 21 associates three student characteristics with some rhythmic enrollment. Gender is substantially associated with some rhythmic enrollment ( $\gamma = .50$ ). Females (52.7%) are more likely to enroll in one or more rhythmic courses within their first three GUP courses than males (27.1%). Athletic ability self-rank is moderately associated with some rhythmic enrollment ( $\gamma = -.34$ ). Students with average or lower athletic ability self-ranks (56.8%) are more likely to enroll in a rhythmic type course during their first three GUP experiences than those with high athletic ability self-ranks (39.4%). The last student characteristic associated with some rhythmic enrollment is high school athletic participation. Students with no voluntary high school athletic participation (65.0%) are more likely to enroll in some rhythmic courses than those with some voluntary high school athletic experience (41.3%).

Table 20

Some Aquatic Enrollment by  
High School Athletic Participation  
Among UNCG GUP Students

Characteristic	Gamma	Percent Some Aquatic Enrollment	Base N
<b>High School Athletic Participation</b>			
None	-.40	15.0	60
Some		29.1	179

Table 21  
Some Rhythmic Enrollment by  
Three Student Characteristics  
Among UNCG GUP Students

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
<b>Gender</b>			
Male	.50	27.1	70
Female		52.7	237
<b>Athletic Ability Self-Rank</b>			
Above average and up	-.34	39.4	127
Average and down		56.8	111
<b>High School Athletic Participation</b>			
None	.45	65.0	60
Some		41.3	179

Another association worth consideration occurs between some off-campus course enrollment and collegiate athletic participation intent (see Table 22). A moderate association ( $\gamma = .39$ ) exists between these two variables. Students indicating an intent to participate in collegiate athletic activities (35.9%) are more likely to enroll in course(s) located off-campus than students not intending to participate in collegiate athletic activities (19.9%).

#### Discussion

Gender and athletic ability self-rank are associated with some rhythmic course enrollment. High school athletic participation is associated with some aquatic and rhythmic enrollment. Collegiate athletic participation intent is associated with some off-campus enrollment. With respect to marketing the GUP, simple predictions are possible and potentially useful by inspecting the distributions of these variables for any incoming Freshman class. Such data should be readily available through regular administrative reporting channels. Minimal additional expenditure of time and resource could provide still added useful information for the anticipation of program needs.

Findings of the present study suggest marketing approaches to target students without high school athletic experiences. Such individuals are not inclined to enroll in aquatic courses as part of their early GUP experience. Positive reasons to begin GUP enrollment in aquatics are needed to interest them in participation. Perhaps, the lifetime aspect of these activities has appeal and could be emphasized.

Table 22

Some Off-Campus Physical Education Course Enrollment by  
Collegiate Athletic Participation Intent  
Among UNCG GUP Students

Characteristic	Gamma	Percent Some Off-Campus Course Enrollment	Base N
<b>Collegiate Athletic Participation Intent</b>			
No intent	.39	19.9	146
Intent		35.9	117

Another possibility is to encourage these individuals to enjoy a change of pace. Other approaches may become known as a result of well planned and executed survey research which seeks to determine why people do or do not elect to participate in aquatic activities.

As noted in Chapter IV, instructors of aquatic and rhythmic courses should be made aware of the relationships indicated above. Although not all students contribute to such relationships, well-trained instructors can put this information to use. For example, it is especially important for instructors to put students without past experience at ease among other students who have prior activity experiences.

#### Intercorrelations Among Variables

Further analyses which consider not only the relationships between independent variables and dependent variables but, also the associations among the dependent variables and independent variables are indicated by the data. The relationships among dependent longitudinal variables are, therefore, presented in Table 23. The association among independent variables for the 1980 Freshmen cohort group are reported in Table 24.

#### Findings

##### Dependent Variables

Although not all longitudinal variables are associated with students characteristics, there is some intercorrelation among all longitudinal variables. Some aquatic enrollment is substantially associated with some rhythmic enrollment ( $\gamma = -.59$ ) and is moderately associated with some team/group enrollment ( $\gamma = -.44$ ).



Table 23

Intercorrelations Among  
Longitudinal Dependent Variables  
in the Study of 1980 UNCG GUP Consumers

Gamma Correlations					
	A	B	C	D	E
A		-.59	-.44		
B				-.52	
C					-.39
D					
E					

Note. A Aquatic Enrollment Pattern  
 B Rhythmic Enrollment Pattern  
 C Team/Group Enrollment Pattern  
 D Course Location Enrollment Pattern  
 E Adjacent Time Enrollment Pattern

The results indicate some aquatic enrollment occurs more often with no rhythmic enrollment. Some aquatic enrollment more likely occurs with no team/group enrollment. Some rhythmic enrollment is substantially related to some off-campus enrollment ( $\gamma = -.52$ ) indicating that some rhythmic enrollment occurs more often with no off-campus enrollment. The final dependent variable association occurs between some team/group enrollment and adjacent enrollment times. The relationship is moderate in strength ( $\gamma = -.39$ ) and indicates that participants with some team/group enrollment are less likely to enroll in adjacent course times.

#### Independent Variables

There are 31 associations among the independent variables revealed in Table 24. Of these, 17 are moderate (absolute .30 to .49), 10 are substantial (absolute .50 to .69), and 4 are very strong (absolute .70 to .99) relationships.

Gender is moderately associated with school ( $\gamma = -.30$ ), high school rank ( $\gamma = .45$ ), high school employment ( $\gamma = .31$ ), and thinking/feeling personality type ( $\gamma = -.35$ ). Gender is substantially associated with housing status ( $\gamma = .57$ ). Females are more likely to live on-campus than males. Males are more likely to be enrolled in the College of Arts and Sciences. Females are more likely to be a member of the top 20% of their high school class. They are also less likely to have a job while in high school. Males are more likely to be typed as thinking and females are more inclined to be typed as feeling.

Table 24

Intercorrelations Among Independent Variables  
in the Study of 1980 UNCG GUP Consumers

Gamma Correlations																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A																
B																
C																
D																
E																
F																
G																
H																
I																
J																
K																
L																
M																
N																
O																
P																

Notes. A Gender  
 B Marital Status  
 C Tuition Status  
 D Housing Status  
 E School  
 F SAT  
 G High School Rank  
 H High School Class Size  
 I High School Employment  
 J Athletic Ability Self-Rank  
 K High School Athletic Participation  
 L Collegiate Athletic Participation Intent  
 M E-I Type  
 N S-N Type  
 O T-F Type  
 P J-P Type

A GUP participant's marital status is moderately associated with athletic ability self-rank ( $\gamma = .31$ ) and collegiate athletic participation intent ( $\gamma = .49$ ). Marital status is substantially associated with a GUP participant's housing status ( $\gamma = -.50$ ), school ( $\gamma = .58$ ), and high school employment ( $\gamma = -.56$ ). Single students are more likely to reside on-campus. Married students are more likely to be enrolled in the College of Arts and Sciences. Married students are also more likely to indicate athletic ability self-ranks of above average or better. An intent to participate in college athletic activities is apparent for married students. Single participants are less likely to have had a job while in high school.

The tuition status of a GUP participant is moderately associated with housing status ( $\gamma = -.42$ ), high school class rank ( $\gamma = -.41$ ), and athletic ability self-rank ( $\gamma = -.43$ ). Substantial relationships exist between tuition status and SAT scores ( $\gamma = .53$ ), collegiate athletic participation intent ( $\gamma = -.62$ ), and thinking/feeling personality type ( $\gamma = -.64$ ). A very strong association exists between tuition status and sensing/intuition personality preference ( $\gamma = .78$ ). Interpreting the dichotomous coding reveals that in-state students are more likely to reside off campus, have a score of less than 1000 on the SAT, and prefer sensing. Out-of-state students are more likely to represent the top 20% of their high school class, to have an athletic ability self-rank of above average or better, to intend to participate in collegiate athletic activities, and to have a preference for thinking.

Housing status is moderately associated with high school athletic participation ( $\gamma = -.36$ ). Students living off-campus are more likely not to have participated in athletic activities while in high school than those students living on-campus.

A GUP participant's school is moderately associated with her/his SAT score ( $\gamma = -.39$ ) and judging/perceiving preference ( $\gamma = .33$ ). This indicates that students having scored 1000 or higher on the SAT and having a preference for judging are more likely to enroll in the College of Arts and Sciences.

SAT's are substantially associated with high school rank ( $\gamma = -.50$ ) and sensing/intuition personality type ( $\gamma = .51$ ). GUP participants with a SAT score of 1000 or higher logically are more likely to represent membership in the top 20% of their high school class. Students scoring less than 1000 on the SAT are inclined to be sensing in their personality type preference.

A moderate association exists between high school class rank and high school employment ( $\gamma = .33$ ). Students ranking in the top fifth of their high school class are less likely to have had a job while in high school.

High school class size is substantially associated with thinking/feeling personality type ( $\gamma = .66$ ). GUP participants from high school classes with less than 750 graduates are more likely to prefer logic and thought in making decisions (thinking) than feelings.

Athletic ability self-rank is moderately associated with sensing/intuition ( $\gamma = -.31$ ). Very strong associations exist between athletic ability self-rank and high school athletic participation ( $\gamma = -.84$ ) and collegiate athletic participation intent ( $\gamma = .74$ ). This indicates that students ranking themselves with average or lower athletic ability do not tend to participate in high school athletic activities. In addition, GUP participants with athletic ability self-rank of average or lower are more inclined to prefer using their senses to perceive the world than to rely on intuition. GUP participants with athletic ability self-rank of above average or better are more likely to intend to participate in collegiate athletic activities. High school athletic participation is moderately associated with extraversion/introversion ( $\gamma = -.46$ ) and judging/perceiving ( $\gamma = .38$ ). A very strong association exists between high school athletic participation and collegiate athletic participation intent ( $\gamma = -.94$ ). GUP participants with some high school athletic participation are much likely to indicate an intent to participate in collegiate athletic activities. On the other hand, GUP participants with no high school athletic participation are more likely to focus their cognitive activity inward (introversion) and deal with the outer world by judging.

Extraversion/introversion personality type is moderately associated with thinking/feeling ( $\gamma = -.34$ ). This suggests that individuals focusing their cognitive activity outward (extraversion) are more likely to have a preference for making decisions based on feelings.

### Discussion

All five dependent longitudinal variables are partly a function of the course schedule. Each variable is also inextricably related to the participant's enrollment choice. The interrelationships among the dependent variables can be used to suggest course combinations not presently available in the GUP schedule. For example, the probable enrollment in some rhythmic course enrollment corresponds to the probable unlikelihood of some aquatic enrollment. Inspection of the course offerings (see Appendix D) shows no aquatic courses with a music component. Perhaps, if Water Ballet were offered, students enrolling in rhythmic courses might consider aquatic enrollment. Appropriate marketing strategies would indicate the similarity of these courses to students.

The relationship between some team/group enrollment and adjacent enrollment times warrants cautious interpretation. The sharing of facilities in the later hours of the day and the fact that much of the team/group offerings are field sports meeting outside during daylight does not allow for team/group activities to be offered across all times with ease. As indicated above, few students enroll in some team/group activities and no students take all team/group courses. Students do not typically have a choice of sections when electing a team/group activity. Therefore, the students cannot "control" the time in which they participate to the extent that other multiple section course offerings allow.

A large number of associations were calculated among the independent variables when basing the analysis on 1980 Freshmen regular GUP participants ( $N = 307$ ). The evidence suggests that there is greater homogeneity for the selected cohort group. The large number of associations also make the independent variables suspect of being interdependent.

Gender is among the telling variables in describing simple relationships among Freshmen regular participants. Large gender gamma correlations indicate the utility of this single data point. Marital status is also a useful indicator. However, one of the larger correlations with marital status occurs with housing status. The relationship indicates that married students are unlikely to reside on-campus. Such evidence is expected as married student housing does not exist on the UNCG campus. Exception to this is a few residence directors apartments. The remaining significant relationships with marital status are appropriate simple predictors.

Tuition status associations tend to be large. This finding, may in part, be due to the proportionately few out-of-state students enrolled at UNCG. The academic performance indicators of SAT and high school rank are logically associated. The associations with personality type preferences tend to be large and difficult to explain. However, if the associations exist, marketing strategists can invoke various techniques that may help to shed light on them.



The variables specifically concerned with athletic participation and athletic ability are significantly interconnected. Based upon these results it is clear that participation patterns can and likely should be established in the high school years. However, a fair percentage of continuing participants become involved in college. Speculation as to the cause of this change in behavior by college students suggests several hypotheses. One is that the UNCG GUP is a quality program and fulfills a need for students as it presently exists. Another explanation is the recent grass-root trend toward a new emphasis on health, fitness and well-being. Participation in college may also be a combination of the above explanations or still other reasons. Although unlikely, it is possible that this is a random fluctuation. Replication and continued tracking are required to address these issues. In the meanwhile, marketing strategists can make use of the information that is available.

#### Partial Correlations Among Consumption Patterns

Partial correlations are performed for all independent variables associated with the independent variable in the two-variable associations reported in Tables 20 and 21. Tables 25 through 38 contain the associations between independent and longitudinal dependent variables controlling for related third variables. The inclusion rules previously discussed apply for these 3-variable analyses.

### Findings

Some aquatic course enrollment is moderately associated with high school athletic participation controlling for extraversion/introversion as presented in Table 25. The zero-order gamma (-.41) represents the relationship between some aquatic course enrollment and high school athletic participation. The first-order partial gamma, indicating the amount of association having removed the influence of extraversion/introversion, is equal to -.56. The first-order partial gamma indicates a stronger, negative relationship than the zero-order gamma. Inspection of the table reveals that extraversion/introversion acts as a suppressor variable. Removing the influence of extraversion/introversion unmasks the true relationship between some aquatic course enrollment and high school athletic participation. Extraverted participants with some high school athletic participation (28.3%) are much more likely to have some aquatic enrollment (conditional gamma = -.77) than introverted participants (35.9%) with some high school athletic participation (conditional gamma = -.25). In general, participants with high school athletic participation are more inclined to have some aquatic enrollment than those without high school athletic participation.

Table 26 indicates the association between some aquatic enrollment and high school athletic participation controlling for judging/perceiving personality type. The zero-order gamma is equal to -.41, a moderate relationship. The first-order partial gamma is slightly stronger (-.43). Inspection of the values reported in Table 26 reveal that the cell sizes are similar, yet, the conditional gammas for each

Table 25

1980 Consumers of Physical Education at UNCGEnrolling in Some Aquatic Courses by High School AthleticParticipation Controlling for Extraversion/Introversion

Characteristic	Gamma	Percent Some Aquatic Enrollment	Base N
<b>Extraversion</b>			
Some high school participation	-.77	28.3	92
No high school participation		4.8	21
<b>Introversion</b>			
Some high school participation	-.25	35.9	39
No high school participation		25.0	24

Note. zero-order gamma = -.41  
first-order partial gamma = -.56

Table 26

1980 Consumers of Physical Education at UNCGEnrolling in Some Aquatic Courses by High School AthleticParticipation Controlling for Judging/Perceiving

Characteristic	Gamma	Percent Some Aquatic Enrollment	Base N
<b>Judging</b>			
Some high school participation	-.64	31.9	69
No high school participation		9.4	32
<b>Perceiving</b>			
Some high school participation	.04	29.0	62
No high school participation		30.8	13

Note. zero-order gamma = -.41  
 first-order partial gamma = -.43

specific situation are different. Students typed according to the MBTI as having a judging personality preference with some high school athletic participation (31.9%) are more likely to have some aquatic enrollment than those without high school athletic participation (9.4%) (conditional gamma =  $-.64$ ). Participants with a type preference of perceiving having some high school athletic participation (29.4%) are negligibly less likely to have some aquatic enrollment (conditional gamma =  $.04$ ) than students without voluntary high school athletic experience (30.8%).

Some aquatic course enrollment is associated with high school athletic participation controlling for athletic ability self-rank. These partial correlations are presented in Table 27. The zero-order gamma is equal to  $-.40$ . The first-order partial gamma coefficient equals  $-.43$  indicating a slight suppression of the real relationship. GUP participants with some high school athletic participation and an above average or better athletic ability self-rank (27.1%) are minimally (conditional gamma =  $-.13$ ) more likely to have some aquatic enrollment than students with similar athletic ability self-rank and no high school athletic participation (22.2%). Participants with some high school athletic participation and an average or poorer athletic ability self-rank (33.9%) are substantially more inclined to enroll in some aquatic courses (conditional gamma =  $-.52$ ) than participants with similar athletic ability self-rank and no high school athletic participation (13.7%).

Table 27

1980 Consumers of Physical Education at UNCGEnrolling in Some Aquatic Courses by High School AthleticParticipation Controlling for Athletic Ability Self-Rank

Characteristic	Gamma	Percent Some Aquatic Enrollment	Base N
<b>Athletic Ability Self-Rank above average and up</b>			
Some high school athletic participation	-.13	27.1	118
No high school athletic participation		22.2	9
<b>Athletic Ability Self-Rank average and down</b>			
Some high school athletic participation	-.52	33.9	59
No high school athletic participation		13.7	51

Note. zero-order gamma =  $-.40$   
first-order partial gamma =  $-.43$

Table 28 indicates the relationship between some rhythmic course enrollment and gender controlling for school. The association between some rhythmic course enrollment and gender is substantial (zero-order  $\gamma = .50$ ). Removing the influence of school membership weakens the association (first-order  $\gamma$  coefficient =  $.45$ ). Inspection of Table 28 indicates male Arts and Science participants (28.3%) to be moderately less likely to enroll in some rhythmic courses (conditional  $\gamma = .41$ ). On the other hand, male participants in other schools within the university (23.5%) are substantially less inclined to enroll in one or more rhythmic courses (conditional  $\gamma = .66$ ). In both conditions, females are more likely to have some rhythmic course enrollment in their early GUP experience.

The relationship between some rhythmic course enrollment and gender controlling for high school rank is presented in Table 29. A moderate association (zero-order  $\gamma = .48$ ) exists between some rhythmic course enrollment and gender. Removing the influence of high school rank lessens this association slightly (first-order partial  $\gamma = .45$ ). This indicates that male students in the upper 20% of their high school class (38.1%) are somewhat less likely to enroll in one or more rhythmic courses (conditional  $\gamma = .24$ ). Males from the lower 80% of their high school class are substantially less likely to have some rhythmic course enrollment than females (conditional  $\gamma = .66$ ). The findings indicate some specificity of association for males, but in either condition females are more likely to enroll in some rhythmic courses.

Table 28

1980 Consumers of Physical Education at UNCGEnrolling in Some Rhythmic Courses byGender Controlling for School

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
<b>Arts and Science</b>			
Male	.41	28.3	53
Female		48.3	149
<b>Other</b>			
Male	.66	23.5	17
Female		60.2	88

Note. zero-order gamma = .50  
 first-order partial gamma = .45



Table 29  
1980 Consumers of Physical Education at UNCG  
Enrolling in Some Rhythmic Courses by  
Gender Controlling for High School Rank

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
Upper 20%			
Male	.24	38.1	21
Female		50.0	110
Lower 80%			
Male	.66	21.2	33
Female		56.9	65

Note. zero-order gamma = .48  
first-order partial gamma = .45

Table 30 indicates the relationship between some rhythmic course enrollment and gender controlling for high school employment status. The correlation representing the relationship between some rhythmic course enrollment and gender is substantial (zero-order gamma = .51). Removing the influence of high school employment status reveals a slightly greater relationship (first-order partial gamma = .54). High school employment status minimally suppresses the real relationship between some rhythmic course enrollment and gender. Interpretation of Table 30 indicates that males employed while in high school (23.7%) are less likely to have some rhythmic course enrollment (conditional gamma = .64) than females with high school employment (58.2%). The situation of no employment while in high school indicates males (35.3%) also less likely to enroll in rhythmic courses than females (48.2%). However, the conditional gamma (.26) for no high school employment does not reach .30. The correlations contained in Table 30 indicate the case of specificity of association among the three variables. Knowing gender, students having had high school employment are much more predictable in some rhythmic course enrollment than those without high school jobs.

Table 31 presents the association of some rhythmic course enrollment with athletic ability self-rank controlling for sensing/intuition personality type. The association between some rhythmic course enrollment and athletic ability self-rank is moderate (zero-order gamma = -.41). Controlling for sensing/intuition personality preference negligibly increases the relationship (first-order partial gamma = -.42).

Table 30

1980 Consumers of Physical Education at UNCG  
Enrolling in Some Rhythmic Courses by Gender  
Controlling for High School Employment Status

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
Employed while in high school			
Male	.64	23.7	38
Female		58.2	98
Not employed while in high school			
Male	.26	35.3	17
Female		48.2	83

Note. zero-order gamma = .51  
first-order partial gamma = .54

Table 31

1980 Consumers of Physical Education at UNCGEnrolling in Some Rhythmic Courses by AthleticAbility Self-Rank Controlling for Sensing/Intuition

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
<b>Sensing</b>			
Athletic ability self-rank above average and up	-.34	37.8	37
Athletic ability self-rank average and down		55.3	47
<b>Intuitive</b>			
Athletic ability self-rank above average and up	-.48	35.2	54
Athletic ability self-rank average and down		61.1	36

Note. zero-order gamma = -.41  
first-order partial gamma = -.42

Inspection of Table 31 indicates the existence of slight specificity of situation between sensing and intuitive preference. GUP participants typed as intuitive with athletic ability self-rank of above average or better (35.2%) are moderately less likely to have some rhythmic course enrollment (conditional gamma =  $-.48$ ) than students with similar personality type and lower athletic ability self-ranks (61.1%). Sensing participants with athletic ability self-rank of above average or better (37.8%) are also less likely to have some rhythmic course enrollment (conditional gamma =  $-.34$ ) than students with similar personality type and lower athletic ability self-ranks (55.3%). However, the specific association is more prominent for the intuitive situation and is, therefore, more predictable.

Regularly participating 1980 freshmen enrolling in some rhythmic courses are moderately predictable by their athletic ability self-ranks (zero-order gamma =  $-.33$ ). Table 32 reveals the relationship while controlling for high school athletic participation. Removing the influence of high school athletic participation weakens the association (first-order partial gamma =  $-.19$ ). Inspection of Table 32 reveals both conditions to be less than moderate relationships. The low conditional gamma correlations occur due to a pattern of small cell sizes. Larger differences in the cross-products occur when only two variables are used. This is an effect of larger cell sizes. In both conditions, participants with lower athletic ability self-ranks are more likely to enroll in some rhythmic courses than students with higher athletic ability self-ranks.

Table 32

1980 Consumers of Physical Education at UNCGEnrolling in Some Rhythmic Courses by Athletic AbilitySelf-Rank Controlling for High School Athletic Participation

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
<b>Some high school athletic participation</b>			
Athletic ability self-rank above average and up	-.19	38.1	118
Athletic ability self-rank average and down		47.5	59
<b>No high school athletic participation</b>			
Athletic ability self-rank above average and up	-.23	55.6	9
Athletic ability self-rank average and down		66.7	51

Note. zero-order gamma = -.33  
first-order partial gamma = -.19

Table 33 reports the association between some rhythmic course enrollment and athletic ability self-rank controlling for intended collegiate athletic participation. The correlation between some rhythmic course enrollment and athletic ability self-rank is moderate (zero-order gamma =  $-.34$ ). Removing the contribution made by collegiate athletic participation intent weakens the correlation (first-order partial gamma =  $-.28$ ). Inspection of the table reveals that GUP participants with athletic ability self-rank of above average or better are less likely to enroll in one or more rhythmic classes in both conditions of collegiate athletic participation intent. The situation-specific association is moderate, (conditional gamma =  $-.30$ ) for participants who indicated no collegiate athletic participation intent. The association for participants who indicated a collegiate athletic participation intent does not reach the necessary absolute  $.30$  cutoff (conditional gamma =  $-.25$ ).

High school athletic participation is associated with some rhythmic course enrollment controlling for extraversion/introversion personality type according to Table 34. Some rhythmic course enrollment is moderately related to high school athletic participation (zero-order gamma =  $.45$ ). Removing the influence extraversion/introversion uncovers a stronger relationship (first-order partial gamma =  $.50$ ). Extraversion/introversion acts as a suppressor variable in this association. Table 34 indicates that the extraversion situation is substantial (conditional gamma =  $.58$ ) and the introversion situation is moderate (conditional gamma =  $.34$ ). The two conditions

Table 33

1980 Consumers of Physical Education at UNCGEnrolling in Some Rhythmic Courses by Athletic AbilitySelf-Rank Controlling for Collegiate Athletic Participation Intent

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
Intent to participate in collegiate athletics			
Athletic ability self-rank above average and up	-.25	37.5	88
Athletic ability self-rank average and down		50.0	28
No intent to participate in collegiate athletics			
Athletic ability self-rank above average and up	-.30	43.6	39
Athletic ability self-rank average and down		59.0	83

Note. zero-order gamma =  $-.34$   
first-order partial gamma =  $-.28$



Table 34

1980 Consumers of Physical Education at UNCGEnrolling in Some Rhythmic Courses by High SchoolAthletic Participation Controlling for Extraversion/Introversion

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
<b>Extraversion</b>			
Some high school athletic participation	.58	40.2	92
No high school athletic participation		71.4	21
<b>Introversion</b>			
Some high school athletic participation	.34	41.0	39
No high school athletic participation		58.3	24

Note. zero-order gamma = .45  
first-order partial gamma = .50

effectively "cancel" one another. In both situations, students with some high school athletic participation are less likely to enroll in one or more rhythmic courses. However, extraverted students are more predictable in their type of rhythmic course enrollment. Extraverted students without high school athletic participation (71.4%) are more predictable concerning some rhythmic course enrollment than introverted participants without high school athletic participation (58.3%). Entry of the controlling variable reveals the specificity of the true association.

Table 35 indicates the association between high school athletic participation and some rhythmic course enrollment controlling for judging/perceiving personality type. A moderate association exists between high school athletic participation and some rhythmic course enrollment (zero-order gamma = .45). Removing the contribution made by judging/perceiving type uncovers a stronger relationship (first-order partial gamma = .52). In both conditions of controlling the variable, participants with some high school athletic participation are less likely to enroll in one or more rhythmic courses. The conditional gamma for perceiving participants represents a moderate relationship (conditional gamma = .38). The substantial conditional gamma (.56) reveals that judging participants are much more predictable than perceiving participants.

A moderate relationship existing between some rhythmic course enrollment and high school athletic participation (zero-order gamma = .45) is reported in Table 36. Removing the influence of athletic

Table 35

1980 Consumers of Physical Education at UNCGEnrolling in Some Rhythmic Courses by High SchoolAthletic Participation Controlling for Judging/Perceiving

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
<b>Judging</b>			
Some high school athletic participation	.56	31.9	69
No high school athletic participation		62.5	32
<b>Perceiving</b>			
Some high school athletic participation	.38	50.0	62
No high school athletic participation		69.2	13

Note. zero-order gamma = .45  
 first-order partial gamma = .52

Table 36

1980 Consumers of Physical Education at UNCG Enrolling in  
Some Rhythmic Courses by High School Athletic  
Participation Controlling for Athletic Ability Self-Rank

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
<b>Athletic ability self-rank above average and up</b>			
Some high school athletic participation	.34	38.1	118
No high school athletic participation		55.6	9
<b>Athletic ability self-rank average and down</b>			
Some high school athletic participation	.38	47.5	59
No high school athletic participation		66.7	51

Note. zero-order gamma = .45  
 first-order partial gamma = .37

ability self-rank weakens this association (first-order partial gamma = .37). Table 36 contains the conditional correlations for athletic ability self-rank when knowing high school athletic participation. In both situations, participants with some high school athletic participation are less likely to enroll in one or more rhythmic courses. The conditional correlation for participants with above average or better athletic ability self-rank is equal to .34. The conditional gamma is slightly stronger for participants with average or poorer athletic ability self-rank (gamma = .38). Each of the controlling variable conditions represent moderate relationships. As is the case in Table 32, the low conditional gamma correlations occur due to a pattern of small cell sizes. Larger differences in the cross-products occur when only two variables are used as a result of larger cell sizes.

Table 37 presents the relationship between rhythmic course enrollment and high school athletic participation controlling for collegiate athletic participation intent. A moderate correlation (zero-order gamma = .45) exists between rhythmic course enrollment and high school athletic participation. Removing the influence of collegiate athletic participation intent slightly weakens the association (first-order partial gamma = .41). Analysis of Table 37 reveals a moderate conditional gamma (.38) for students not intending to participate in college athletic activities. The association representing students intending to participate in college athletic activities is stronger (conditional gamma = .50). Although both conditions allow for

Table 37

1980 Consumers of Physical Education at UNCG Enrolling in  
Some Rhythmic Courses by High School Athletic Participation  
Controlling for Collegiate Athletic Participation Intent

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
<b>Intent to participate in collegiate athletics</b>			
Some high school athletic participation	.50	39.8	113
No high school athletic participation		66.7	3
<b>No intent to participate in collegiate athletics</b>			
Some high school athletic participation	.38	43.9	66
No high school athletic participation		64.9	57

Note. zero-order gamma = .45  
first-order partial gamma = .41

prediction, the association is significantly stronger for individuals indicating an intent to participate in college athletic activities. In either condition, individuals with some high school athletic participation are less likely to enroll in one or more rhythmic classes.

The relationship between some rhythmic course enrollment and collegiate athletic participation intent controlling for high school athletic participation is presented in Table 38. Some rhythmic course enrollment is moderately correlated (zero-order gamma = .38) with collegiate athletic participation intent. The association is slightly strengthened when the contribution made by high school athletic participation is removed (first-order partial gamma = .40). This indicates a minimal suppressor effect by high school athletic participation. Both conditions of high school athletic participation indicate individuals intending to participate in college athletic activities are more likely to enroll in one or more rhythmic courses. However, when knowing collegiate athletic participation intent, students with some high school athletic participation are more predictable about some rhythmic course enrollment (conditional gamma = .40) than those without high school athletic participation (conditional gamma = .30).

Table 38

1980 Consumers of Physical Education at UNCG Enrolling in  
Some Rhythmic Courses by Collegiate Athletic Participation  
Intent Controlling for High School Athletic Participation

Characteristic	Gamma	Percent Some Rhythmic Enrollment	Base N
Some high school athletic participation			
Intent to participate in collegiate athletics	.40	36.3	113
No intent to participate in collegiate athletics		19.7	66
No high school athletic participation			
Intent to participate in collegiate athletics	.30	33.3	3
No intent to participate in collegiate athletics		21.1	57

Note. zero-order gamma = .38  
 first-order partial gamma = .40



### Discussion

Three-variable analyses reveal several interesting relationships for 1980 Freshmen participants. Although the simple 2-variable analyses provide useful information about GUP participants, three variables increase the precision with which predictions can be made. For example, the 3-variable relations in Tables 25 through 27 add richness to the description of participants of aquatic courses. High school athletic participation is a fair indicator of probable aquatic enrollment in college. Addition of one of the two personality preference dichotomies (extraversion/introversion or judging/perceiving) or, athletic ability self-rank alters the predictions substantially. In each of these cases the third variable uncovers a clearer picture of association. The clarity stems from the conditional specificity of each combination of variables. Thus, the 2-variable relationship does not display as complete a picture. Using these 3-variable analyses, it is possible to predict the probability of some aquatic enrollment. Review of data about incoming Freshmen students could provide information to create market segments of extraverted and/or judging students with high school athletic participation. Such individuals are the most likely to take some aquatic courses. Therefore, marketing strategies may be able to increase the natural participation of these students.

Similar increased clarity is obtained for some rhythmic course enrollments using 3-variable analyses. A total of 11 significant 3-variable associations are revealed for some rhythmic course enrollment.

In five of the analyses (see Tables 30, 31, 34, 35 and 38) some suppression occurs.

Tables 29, 30, 37 and 38 all provide useful marketing information with variables available before students arrive on-campus. The pre-entry variables with prediction value available from the SDQ are: (a) high school class rank, (b) high school employment status, (c) gender, (d) high school athletic participation and (e) collegiate athletic participation intent. Each of these 3-variable relationships indicate moderate to substantial conditional associations using these variables. The information retrieved from the SDQ data tapes by the Office of Institutional Research can expand the background information for each incoming Freshman class. Then, the administrator responsible for the GUP can use this pre-entry information to aid in the planning and scheduling process.

Personality type indicators appear to be interwoven with some rhythmic course enrollment (see Tables 31, 34, and 35). The MBTI dichotomies having prediction value are: sensing/intuitive, extraversion/introversion and judging/perceiving. Thus, the availability of Myers-Briggs Type Indicator scores can enhance the projection of some types of course enrollment. The reported findings in the present study indicate the benefits of using diversified types of data in the analysis of collegiate consumers of physical education. The predictions possible through the use of personality types may be linked to the non-competitive nature of most rhythmic courses. Further research may support this hypothesis.

Physical educators should seek to attract enrollments of incoming female students with high school class ranks in the lower 80%. Courses could then be offered in light of their tendency to enroll in some rhythmic courses. Additional survey research addressing the motivation to enroll in rhythmic courses may aid marketing professionals in developing plans that are designed to shift more males and higher ranking females into rhythmic courses.

Predictions can be made by identifying incoming females who held jobs while in high school. These women are much more likely to enroll in some rhythmic type courses than their male counterparts. Findings do not indicate as strong a prediction for males and females not having held jobs while in high school. It is possible that individuals lacking work experience prior to college may be inclined to enroll in the more traditional activities. Another possibility is a distaste for structure. Survey research may reveal that these students prefer to be physically active in an informal way. For example, students without high school work experience may prefer intramurals or independent (self-initiated) physical activity.

The variables related to physical activity are also of value in predicting some rhythmic type course enrollment. Tables 31 through 38 have at least one independent variable which clearly reflects past participation, perceived ability, or participation intent in athletics. The source for these variables is the Student Descriptive Questionnaire. Marketing professionals could use such information to identify target groups with precision. Future research may help increase the precision

of prediction using more than three athletic type variables. However, the high correlation among variables reflecting athletic behavior and perception indicates the probable use of any one variable could be sufficient for stimulating enrollment in the GUP.

## CHAPTER VI

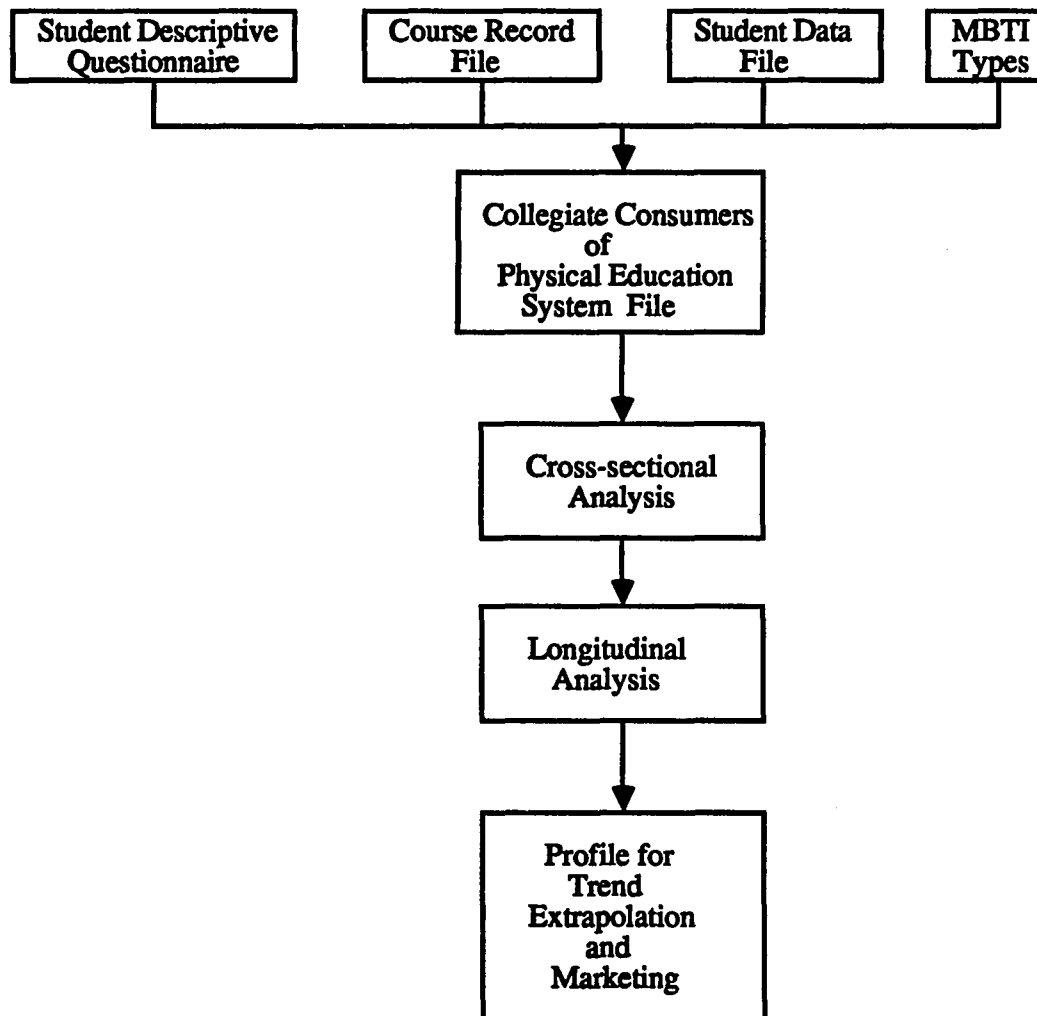
### CONCLUSIONS AND RECOMMENDATIONS

The prime purpose of this project was to describe the nature of collegiate consumers of physical education at UNCG. Data that were collected and analyzed do, give a vivid characterization of the students who elect to participate in the GUP. Thus, the purpose of the investigation was achieved. In addition, the research efforts demonstrated some of the benefits of performing a secondary analysis, a relatively recently popularized research procedure. Also, the project underscored the importance of the computer. Without the ability to integrate and analyze the four data sources accurately and expediently, such a comprehensive synthesis of a massive amount of information could not have been carried out.

In lieu of the traditional research summary, the researcher prefers to reiterate the research process that was utilized by presenting a technologically cost-effective and viable model for operations research. Such a model has heuristic value. In that it describes a system (component parts and relationships) for understanding consumers of university physical education that emerged from the present study, it is also an appropriate summary. Figure 39 presents the model.

Potential use of the model offers the promise of numerous contributions to the functioning of physical education in higher education. For example, information provided by operations research can facilitate program improvement. Trends extrapolated from the on-going

**Figure 39** Forecasting Model Analyzing Collegiate Consumers of Physical Education



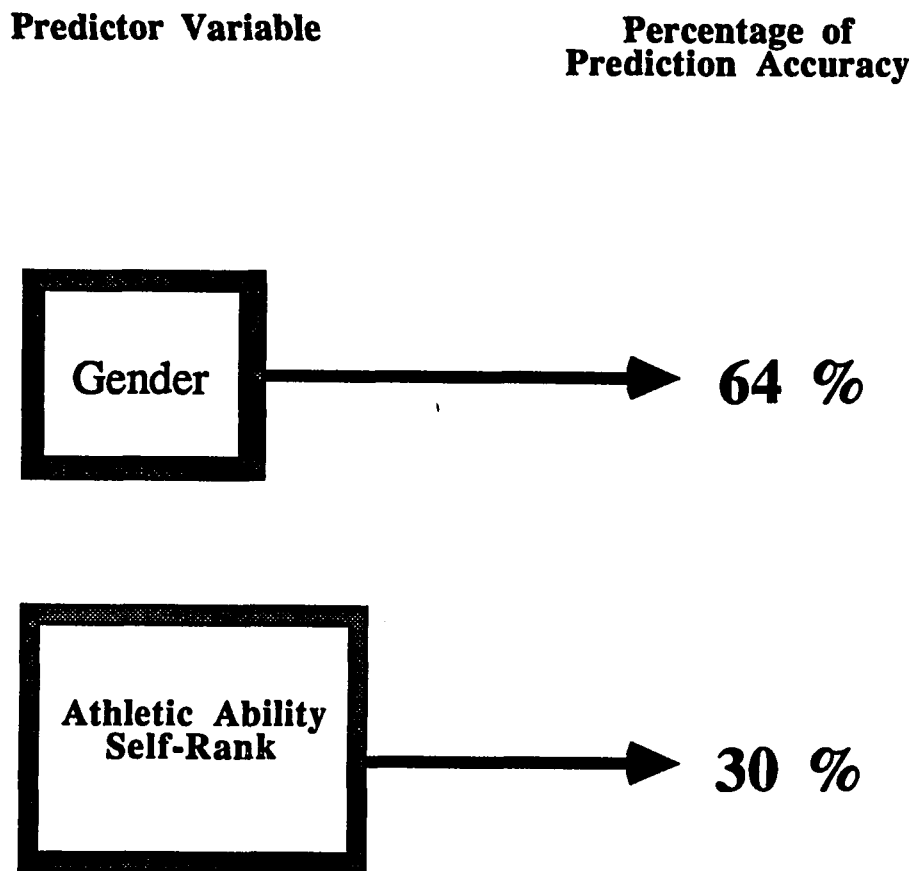
investigation can serve as a meaningful index relative to program goals. Further, the model may aid in revealing the accountability of the GUP. The model "product" can be transformed into an annually occurring "process". Annual evaluation, in conjunction with long-range forecasts, can serve to prevent crises similar to those noted in the history of general university physical education programs. The GUP does not have to be a fragile entity. Regular monitoring from within the program allows the responsible administrator(s) to show the value of the program empirically without last minute scrambling.

Figures 40 through 49 depict simplified presentations of the 2- and 3-variable associations among the data gathered in the present study. Each figure graphically indicates the predictions made possible by knowing one or two characteristics. All predictions are based on the assumption that students will be participants.

Figures 40 and 41 indicate the predictions available using cross-sectional enrollment observations. The remaining figures, 42 through 49, illustrate the longitudinal predictions for incoming Freshmen utilizing consumption patterns of some aquatic (see Figures 42 and 45), some rhythmic (see Figures 43, 46 through 49) and some off-campus (see Figure 44) course enrollment.

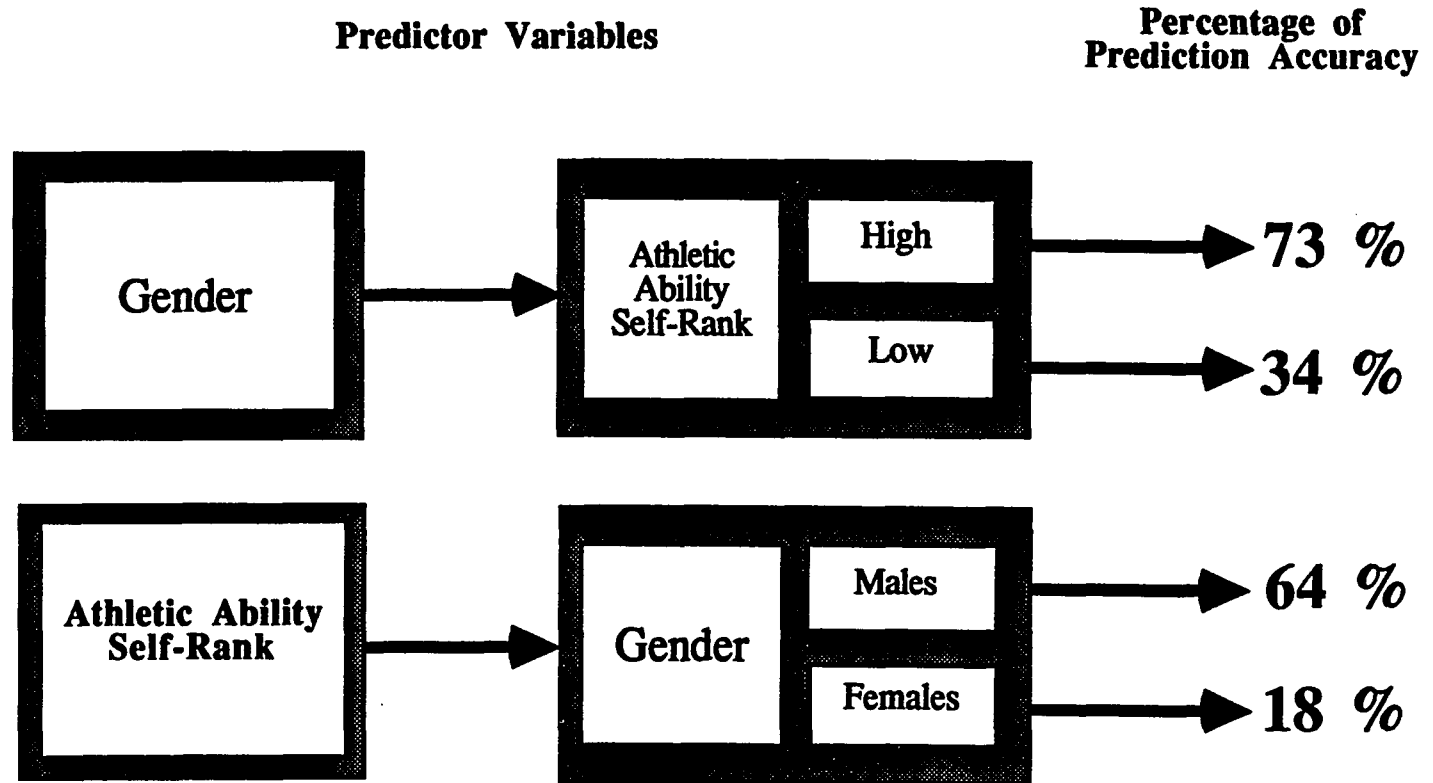
Research alone cannot deliver decisions, but only the information from which decisions are made (Locke, 1969). Locke (1969) cautions against the overestimation of the influence of research on change. Subsequent to the completion of this research project, a plan to effect

**Figure 40** Cross-sectional Predictors of Rhythmic Course Enrollment at UNCG





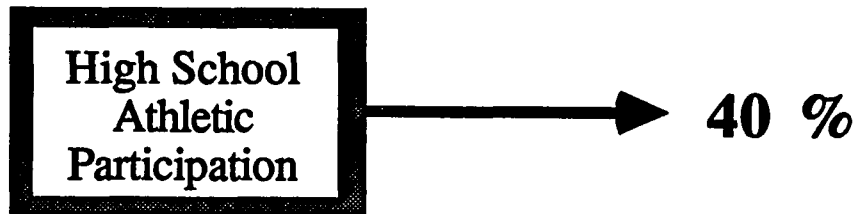
**Figure 41** Cross-sectional Predictors of Rhythmic Course Enrollment at UNCG



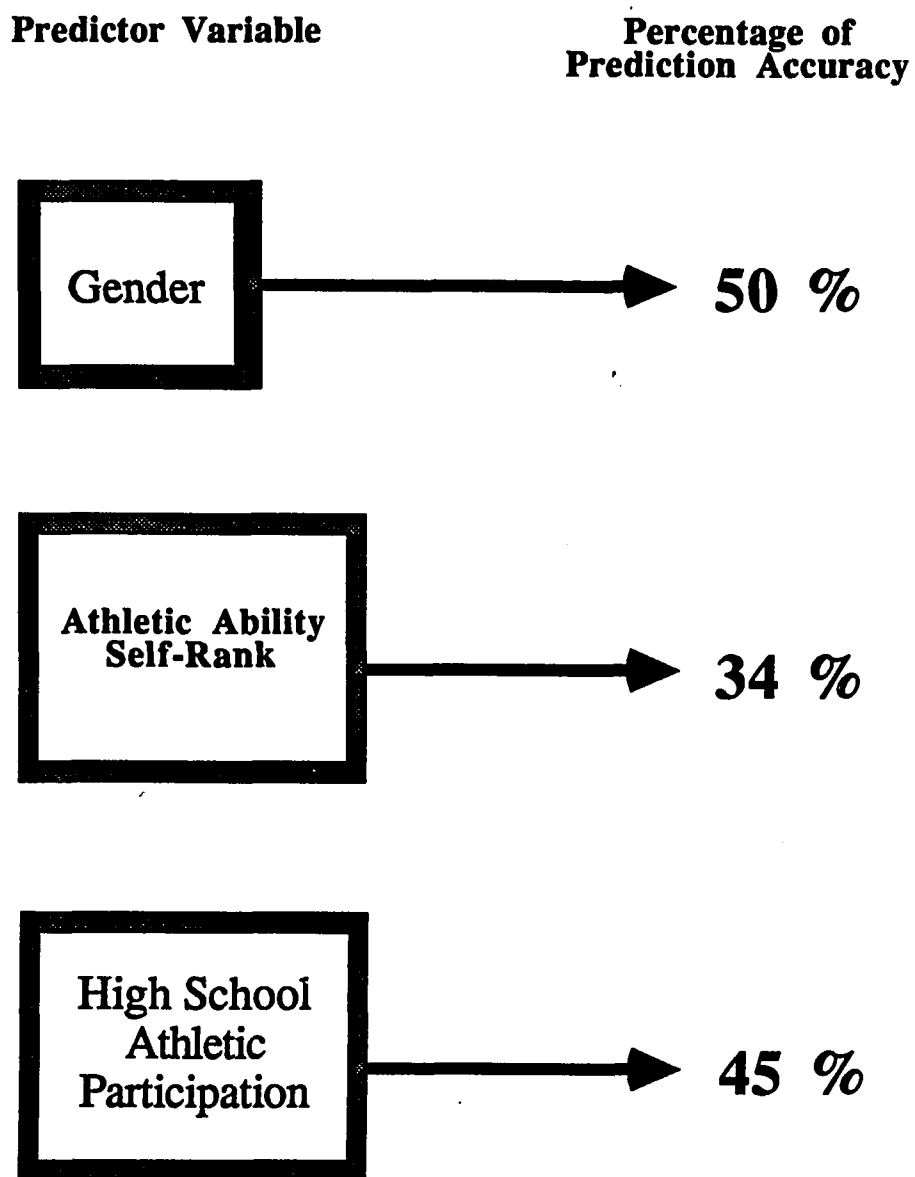
**Figure 42** Longitudinal Predictor of Some Aquatic Course Enrollment at UNCG

**Predictor Variable**

**Percentage of  
Prediction Accuracy**



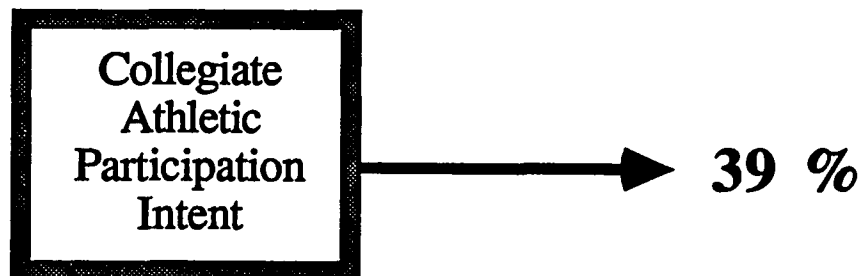
**Figure 43** Longitudinal Predictors of Some Rhythmic Course Enrollment at UNCG



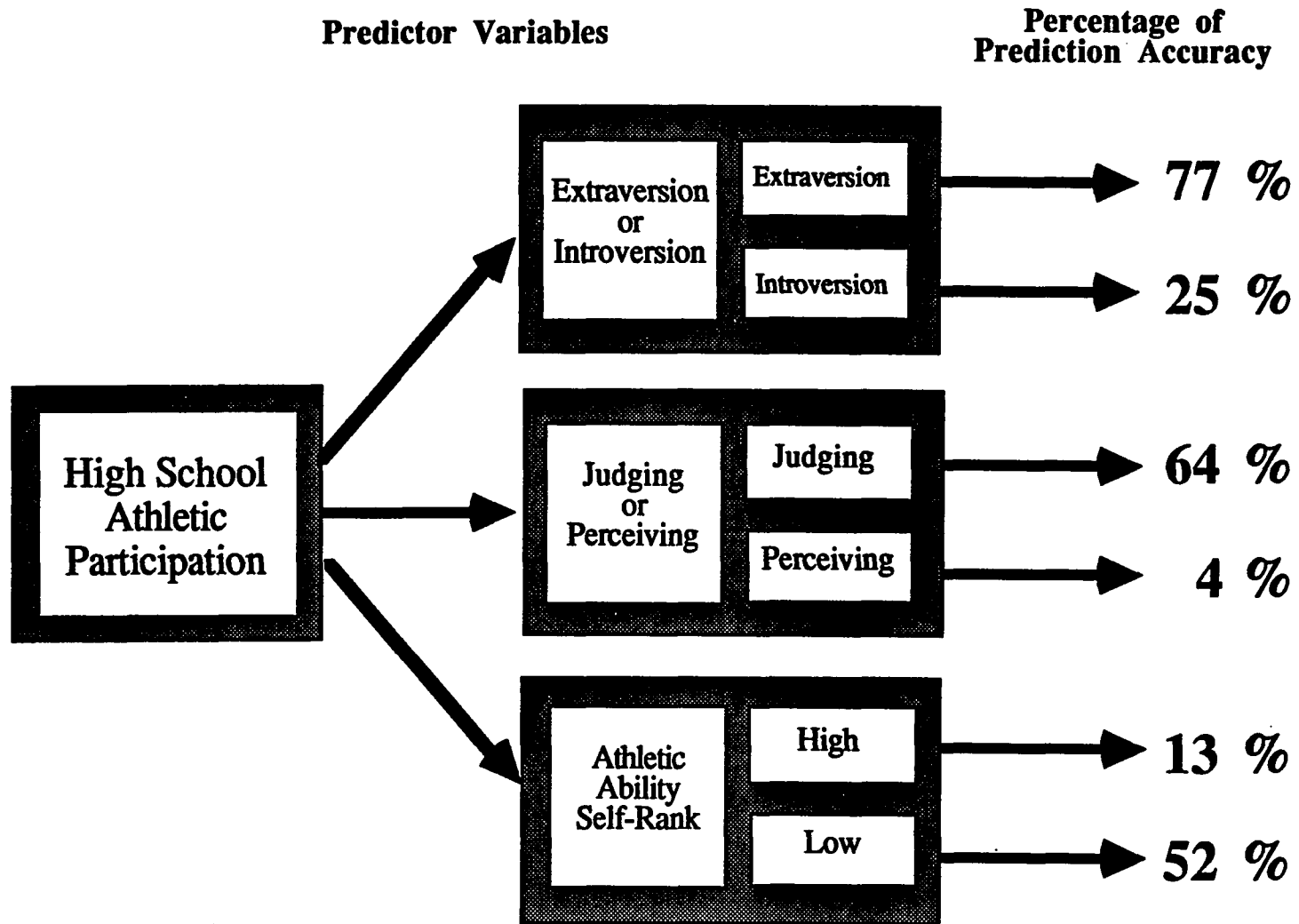
**Figure 44** Longitudinal Predictor of Some Off-Campus Course Enrollment at UNCG

**Predictor Variable**

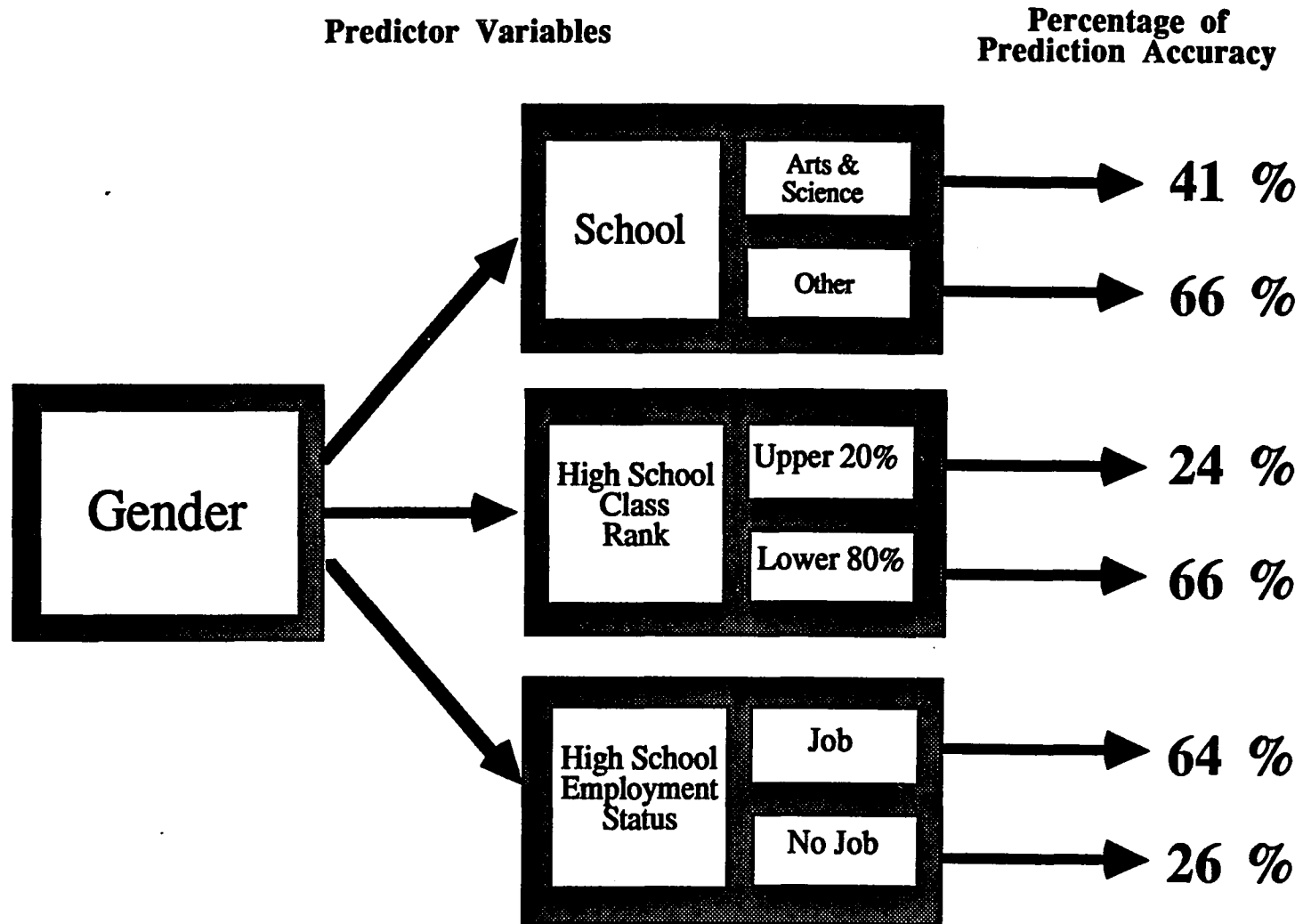
**Percentage of  
Prediction Accuracy**



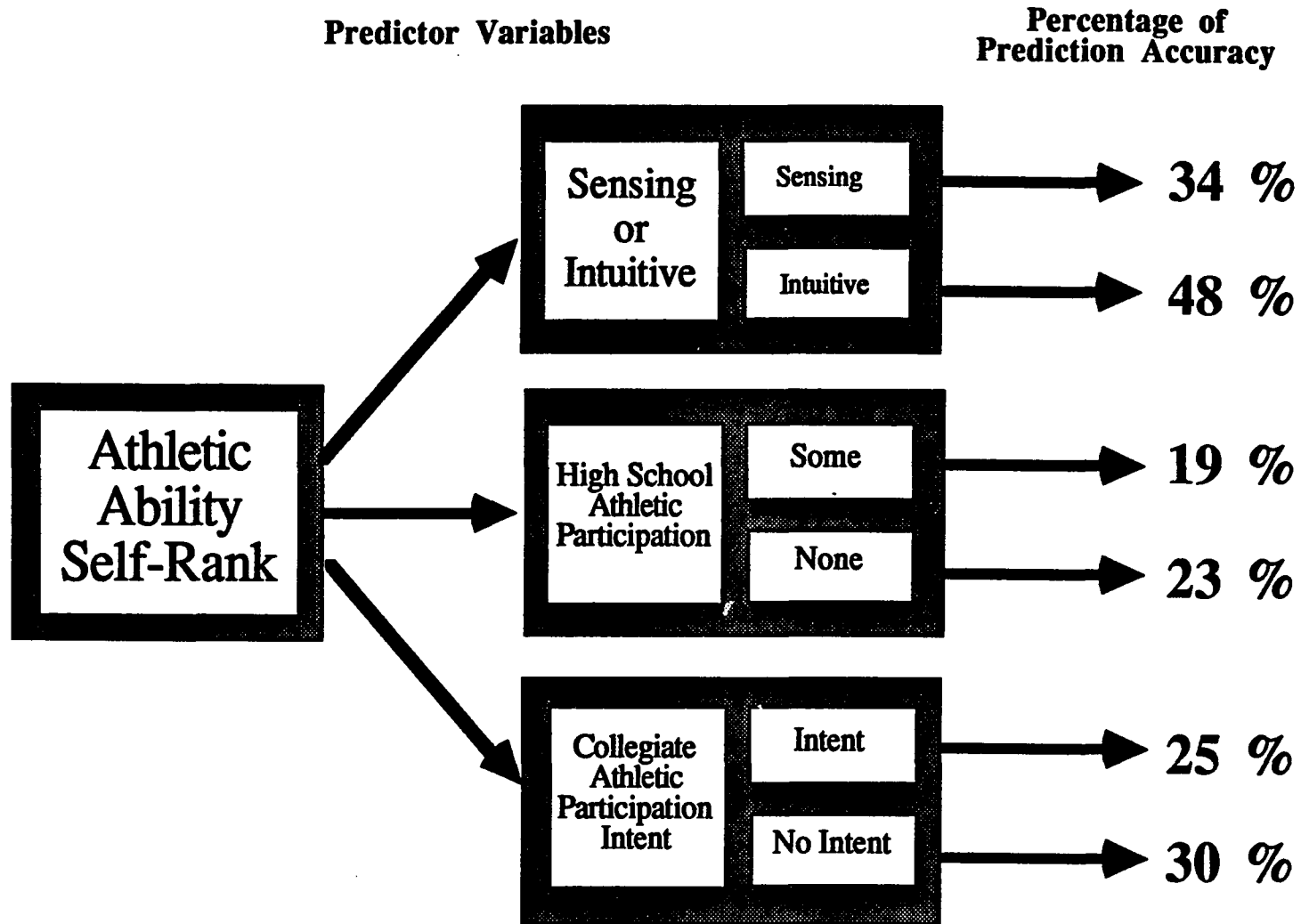
**Figure 45** Longitudinal Predictors of Some Aquatic Course Enrollment at UNCG



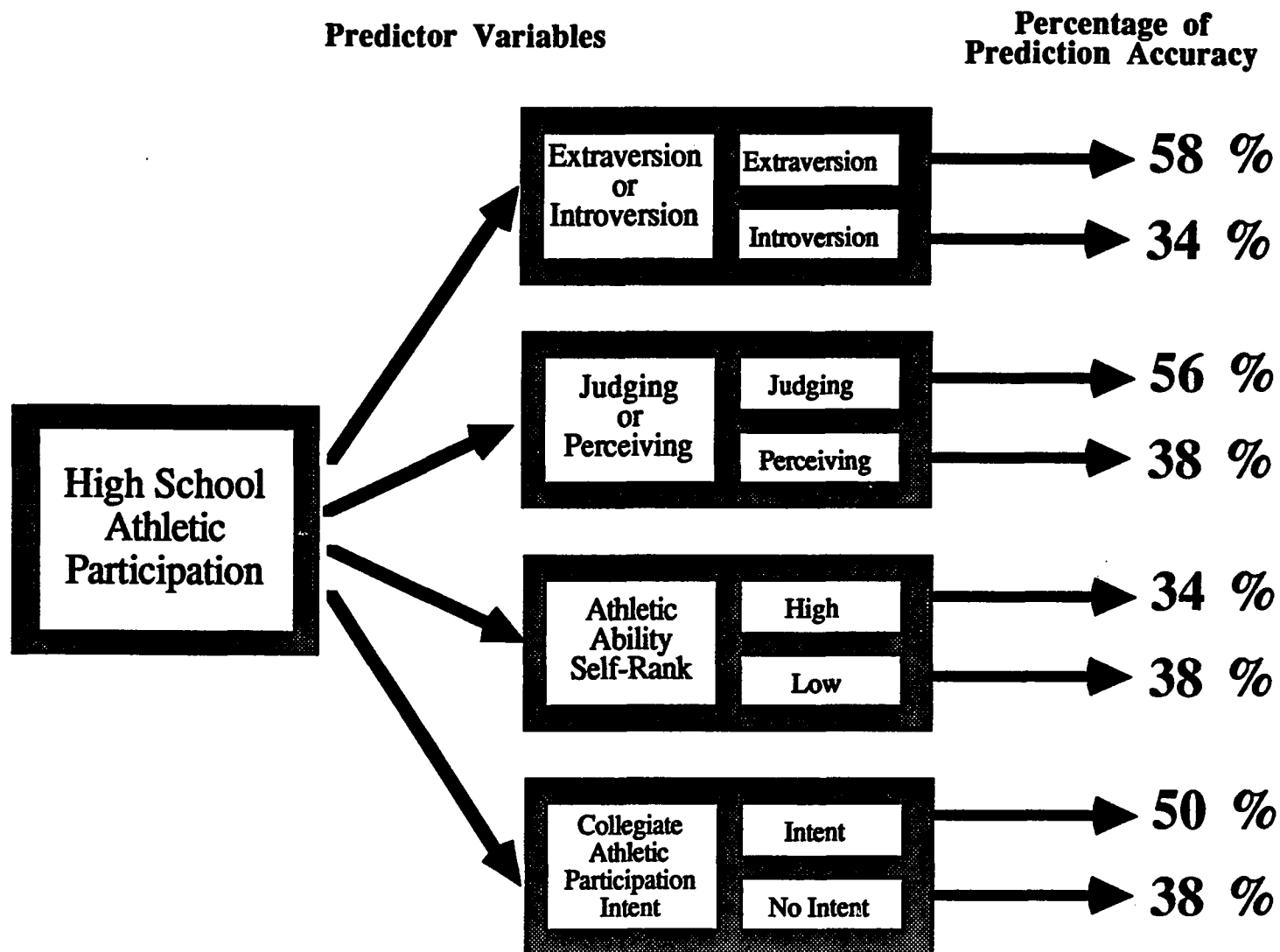
**Figure 46** Longitudinal Predictors of Some Rhythmic Course Enrollment at UNCG



**Figure 47** Longitudinal Predictors of Some Rhythmic Course Enrollment at UNCG

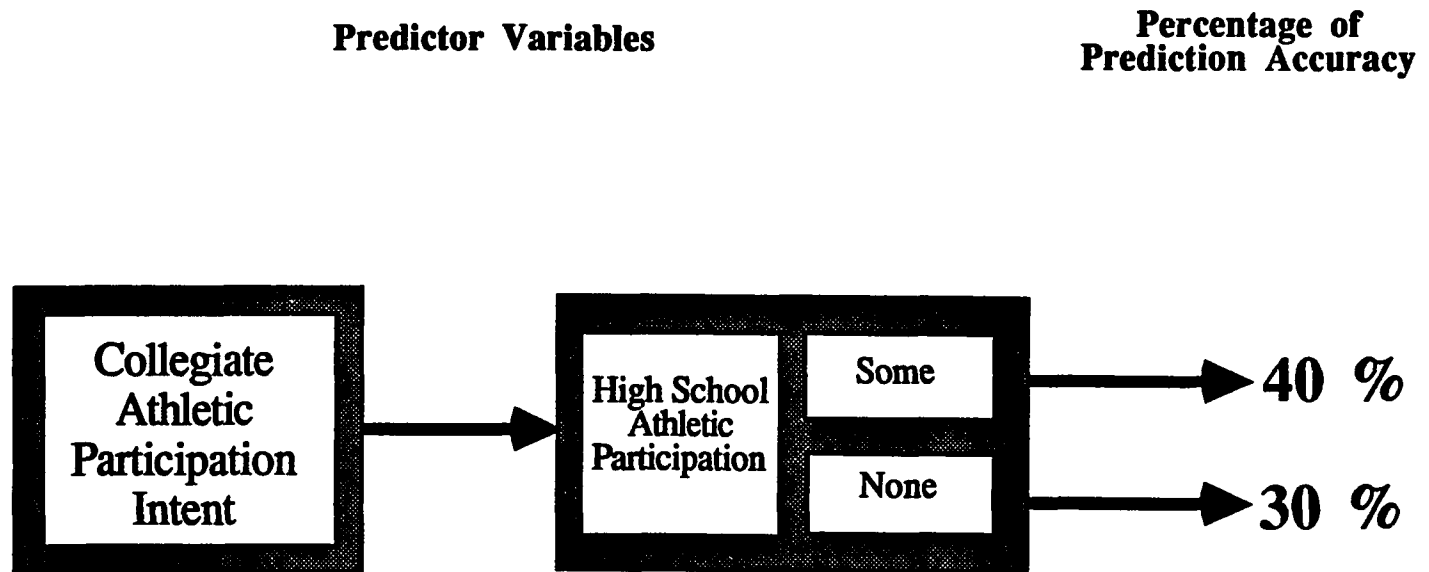


**Figure 48** Longitudinal Predictors of Some Rhythmic Course Enrollment at UNCG





**Figure 49** Longitudinal Predictors of Some Rhythmic Course Enrollment at UNCG



desired changes in the UNCG GUP can and should be undertaken. The plan must adopt some form of promotion.

In general, four philosophical orientations for promotion exist (Brooks, 1985). Brooks distinguishes between orientations of production, product, selling and marketing. She alleges that only the marketing philosophy operates on a needs base, one that recognizes individual differences. Marketing begins with a situational analysis based on research and then creates a plan for implementation based on additional considerations such as communication channels, marketing mix, and market segmentation. Marketing also includes the process of outlining the subsequent steps to implementation and continued review. Marketing has the potential to be successful because it views a situation as continually susceptible to change. Formal systematic inquiry, as performed in this research, is only the beginning. The current study provides a model to establish baseline information. Such a situational analysis represents the first step in marketing (Brooks, 1985). The crucial information needed to formulate "message strategies" (Brooks, 1985, p. 272) is the next step in the successful promotion of general university physical education.

Physical educators must also realize that the motivation of students to electively enroll in the GUP may not match the goals of the program. Congruency is necessary between student objectives and program objectives to achieve maximum success (Lewis, 1974). When students have no voice in the selection, congruency is a random occurrence. Following this logic, it is appropriate and preferred for general university

physical education to be elective. Research has yet to provide evidence in support of the superiority of required university physical education. The literature indicates that free choice is an important component of program satisfaction. In addition, all current trends seem to be incompatible with required physical education at the university level. Yet, many physical educators continue to fight for required programs.

Prior to the development of the model presented in this study, physical educators lacked a realistic and efficient means of becoming familiar with students participating in general university physical education programs on a continual basis. The stability of GUP participant characteristics and enrollment reported in the present study indicates that the elective program is fulfilling a need on the UNCG campus. When a sufficient number of repetitions of this study occur at other universities, generalizations can be made about the needs fulfilled by collegiate physical education programs.

#### Conclusions

The following conclusions are grouped according to the major steps taken in conducting the research: (a) the content analysis of the literature, (b) secondary analysis of four selected databases, and (c) the development of the forecasting model.

### Content Analysis of the Literature

The literature provides evidence of:

- a. An eclectic picture of general university physical education,
- b. Prior reviews presenting distorted information due to the exclusion or insufficiency of research,
- c. Physical education issues occurring in cycles with increasing frequency,
- d. A plethora of critiques, opinion, and belief papers,
- e. Research having a dominant program focus rather than a consumer focus,
- f. GUP functioning on a crisis basis,
- g. The original shift from required to elective programs not occurring by choice but by insufficient economic resources to maintain a requirement as general enrollments increased,
- h. Prior research into general university physical education having little or no forecasting potential,
- i. Past research tending not to include longitudinal tracking of selection patterns.

### Secondary Analysis of Selected Databases

With respect to the questions that framed the study, modal findings indicate that:

- a. GUP participants at UNCG are between 18 and 21 years of age; females outnumber males 2:1; students are predominantly white; they are almost equally divided among the classes--freshman, sophomore, junior, and senior; most are enrolled in the College of Arts and Sciences; one-fourth are transfer students; almost two-thirds reside in dormitories, relatively few participants are married; most GUP students are not new to campus; less than one-tenth attend UNCG part-time; and the majority receive As or Bs in GUP courses.
- b. GUP participants at UNCG display personality characteristics that are relatively consistent between entering classes over time and students are more likely to be extraverted, judging, sensing, and feeling.
- c. With respect to their educational backgrounds, GUP participants at UNCG completed high school in North Carolina which was likely to be a public institution; they scored between 800 and 999 on the SAT; held jobs while in high school; and the majority were involved in varsity, intramural or individual athletics as high school students.

In addition, GUP student characteristics tend to be stable and non-random as are the course characteristics and course selection patterns.

### Forecasting Model

The development of the model for prediction of course selection patterns indicated that:

- a. The depth of information generated in this study reveals that, secondary analysis is an efficient, cost-effective, useful and non-intrusive approach for developing a marketing database.
- b. Two-variable and three-variable associations are useful.
- c. The model can be applied to programs/data from other colleges/universities.

### Recommendations

The successful demonstration in the present project of the use of existing data sources for purposes other than for which they were initially intended holds vast potential for future research. For example, the data about GUP participants can greatly enhance the research environment at UNCG. Moreover, greater depth and complexity of information was achieved at a minimal cost of time and resource. Therefore, continued use and further "fine tuning" of the model that was created as a result of this project is strongly recommended. In addition, it is proposed that additional research be conducted investigating the reasons students choose to enroll in the GUP and, also, what keeps them from participating in the program. Further, marketing professionals should be called in to work with physical educators in establishing viable promotion strategies for the program. Social marketing is distinctly different in some ways from traditional

commercial marketing (Brooks, 1985). Physical educators should not continue to work in a vacuum and make needless mistakes. Rather, physical educators should engage in team research by networking with marketing professionals.

Other general recommendations associated with the present efforts are:

- a. Instructors and physical educators should be informed about the naturally occurring associations between student and course characteristics to help improve the quality of instruction. L.le;Continued efforts to establish research findings supporting specific belief structures should be lowered in priority by professionals,
- b. Physical education might be better served by capitalizing on successful components of the curriculum in lieu of casual opinions about course offerings.
- c. Traditions should not be allowed to act as barriers to improvement. Rather, curricular decision-making should be based on data that were collected and analyzed systematically such as that which was demonstrated in the present study.
- d. UNCG GUP administrators should work with marketing professionals to increase the percentage of older students participating in physical activity courses.

The completion of a substantive research project invariably suggests numerous other undertakings. On the basis of her experience, the writer recognizes the need for the following research:

- a. The creation of a more responsive indexing structure with multiple access points for the literature in physical education.
- b. Replication of this study.

The raw data set and/or SPSSX system file is available from the principal investigator. It should be noted, however, that ethical standards for conducting human subjects investigations will be required for such replication. Prior to mailing a blank data tape with the specifications of the computer system on which any future analyses are performed, clearance must be obtained from the Office of the Registrar, the Office of Institutional Research and the Department of Physical Education at UNCG.

- c. A comparison between participants and non-participants in the GUP using the analysis model derived in the present study.
- d. Replication of the study with variations such as adding a competitive/non-competitive course type dichotomy to the analysis model; including new course alternatives by utilizing all possible combinations of course types (e.g., rhythmic and aquatic components suggest Synchronized Swimming); and/or supplementing the model with lifestyle information thereby providing the necessary components for a successful marketing plan.



- e. The utilization of the model in conjunction with an instrument designed to assess undergraduate "perceived needs, characteristics and interests as they pertain to general physical education courses" (Ramsey, 1983, p. 5).
- f. An investigation of GUP consumers using cluster analysis as a grouping technique. Lessig & Tollefson (1971) performs this procedure for buying behavior and consumer characteristics. Unlike prior unsuccessful attempts using linear regression, clustering allows for non-linear relationships to surface naturally. Lessig & Tollefson's work empirically supports market segmentation and appears to be a viable methodology.

The utilization of the processes and findings of this study poses a specific challenge to physical education researchers who have strong commitments to their field of study. Continued examination of student and course characteristics can help structure the GUP to be responsive to a rapidly changing higher education and society. It is the writer's hope that the challenge is accepted and that the present study ultimately is seen as the beginning of new efforts, creative approaches, to providing meaningful physical education experiences in higher education.

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APPENDIX A

COLLEGIATE CONSUMERS OF PHYSICAL EDUCATION

CODEBOOK

Course Record File

VARIABLE LABEL	VALUES*
Course Number	
Credit Hours	0, 1, 2, 3
Final Grade	A, B, C, D, F I, NC, W, WF, P
First/Last Enrollment	FIRST, LAST, ONLY, OTHER
Rhythmic/Non-rhythmic	RHYTHMIC, NON-RHYTHMIC
Aquatic/Non-aquatic	AQUATIC, NON-AQUATIC
Team/Individual-Dual	TEAM-GROUP, INDIVIDUAL-DUAL
Course Location	ON-CAMPUS, OFF-CAMPUS
Time of Course	MORNING, AFTERNOON, EVENING
Participation Group	REGULARS, NON-REGULARS
Adjacent Enrollment Times	ADJACENT, NON-ADJACENT

\* For categorical variables only.



Student Data File

VARIABLE LABEL	VALUES*
Gender	MALES, FEMALES
Race	WHITE, BLACK, ASIAN, HISPANIC, AMERICAN INDIAN
Transfer Status	TRANSFER, NON-TRANSFER
Scholastic Aptitude Test (SAT)	600-799, 800-999, 1000-1199, 1200-1399, 1400-1600
Marital Status	MARRIED, SINGLE
Tuition Status	IN-STATE, OUT-OF-STATE
Housing Status	ON-CAMPUS, OFF-CAMPUS
Campus Familiarity	NEW, OLD
School	ARTS & SCIENCE, BUSINESS & ECONOMICS, EDUCATION, HPERD HOME ECONOMICS, MUSIC, NURSING
Quality Point Ratio	0.01-1.29, 1.30-1.59, 1.60-1.99, 2.00-2.49, 2.50-2.99, 3.00-3.49, 3.50-3.99, 4.00
Class Standing	FRESHMEN, SOPHOMORE, JUNIOR, SENIOR
Enrollment Status	FULL-TIME, PART-TIME
Age Group	OLDER, TYPICAL
Academic Year	1980, 1981, 1982, 1983

Myers-Briggs Type Indicator

VARIABLE LABEL	VALUES*
Myers-Briggs Type Indicator	ESTJ, ESTP, ESFJ, ESFP, ENFP, ENFJ, ENTP, ENTJ, ISTJ, ISTP, ISFJ, ISFP, INFP, INFJ, INTP, INTJ
Extravert/Introvert	EXTRAVERT, INTROVERT
Judging/Perceiving	JUDGING, PERCEIVING
Sensing/Intuitive	SENSING, INTUITIVE
Thinking/Feeling	THINKING, FEELING

Student Descriptive Questionnaire

VARIABLE LABEL	VALUES*
High School Type	PUBLIC, OTHER
High School Focus	ACADEMIC, GENERAL, CAREER-ORIENTED, OTHER
High School Class Size	<100, 100-249, 250-499, 500-749, 750+
High School Class Rank	1st-5th, 2nd-5th, 3rd-5th, 4th-5th, 5th-5th
High School Employment Status	JOB, NO JOB
High School Athletic Participation	YES, NO
Collegiate Athletic Participation Intent	INTENT, NO INTENT
Athletic Ability Self-Rank	ABOVE AVERAGE & UP, AVERAGE & DOWN

APPENDIX B  
LITERATURE ANALYSIS CODE  
AND  
CITATION DATABASE

SPSSX Command Code

```

file handle indata/name='dbase.dat'
comment Identifies the data file.
data list file=indata/
  id 1-3 year 5-6 use 8 source 10-16 (a) vol 18-19 (a)
  no 21-22 (a) pages 24-30 (a)
  code 32 (a) loc 34 (a) name 36-40 (a)
comment Identifies the column location and data type for each variable.
do if (year lt 34)
compute yr=1
else if (year lt 44)
compute yr=2
else if (year lt 54)
compute yr=3
else if (year lt 64)
compute yr=4
else if (year lt 74)
compute yr=5
else
compute yr=6
end if
comment Creates a variable to indicate 10-year intervals.
recode source ('AAHPER '=1) ('AAHPERD'=1) ('ACAD '=2)
('CPEA '=3) ('NAPEHE '=3) ('NCPEAM '=3) ('DAI '=4)
('DISS '=5) ('ED '=6) ('JOHPE '=7) ('JOHPER '=7)
('JOPER '=7) ('JOPERD '=7) ('NCJ '=8) ('PE '=9)
('RQ '=10) ('TEXT '=11) ('THESIS '=12) ('AIR '=13)
('APER '=13) ('CBR '=13) ('CU '=13) ('EE '=13)
('EGE '=13) ('EPM '=13) ('ICUT '=13) ('JAC '=13)
('JAH '=13) ('JAP '=13) ('JCCP '=13) ('JNACAC '=13)
('JPA '=13) ('MACTPEW'=13) ('NAPECW '=13) ('PAPER '=13)
('SG '=13) ('SI(26) '=13) ('WSPECW '=13) into place
comment Recodes the source variable into a new numeric variable,
PLACE, to eliminate journal name changes.
recode code ('A'=1) ('B'=2) ('C'=3) ('D'=4) ('E'=5) ('F'=6)
('G'=7) ('H'=8) ('I'=9) ('J'=10) ('K'=10) ('L'=10)
('M'=10) ('N'=10) ('O'=10) into cde
comment Converts the letter codes indicating the classification
of an article into CDE (a numeric variable).
variable labels
  id 'Article ID Number'
  year 'Year of Article'
  use 'Usage in Text'
  source 'Source of Article'
  vol 'Volume of Source'
  no 'Issue of Source'
  pages 'Page(s) of Article'

```

```

cde 'Classification Code'
code 'Classification Code'
loc 'Location of Article'
name 'Name of First Author'
comment Assigns variable labels to each varname.
value labels
  use 1 'Yes' 2 'No' /
  cde 1 'A-Consumer Focused'
      2 'B-Pedagogy/Curriculum'
      3 'C-Administrative Focus'
      4 'D-Program Structure'
      5 'E-Attitude Focus'
      6 'F-Student Performance'
      7 'G-Carryover Effects'
      8 'H-Global Issues'
      9 'I-Related Misc.' /
  yr 1 '1924 - 1933'
      2 '1934 - 1943'
      3 '1944 - 1953'
      4 '1954 - 1963'
      5 '1964 - 1973'
      6 '1974 - 1984' /
  place 1 'AAHPERD Publ.'
         2 'The Academy Papers'
         3 'CPEA/NAPEHE'
         4 'DAI'
         5 'Dissertation'
         6 'ERIC'
         7 'JOPERD'
         8 'No. Carolina Journal'
         9 'Physical Education'
        10 'Research Quarterly'
        11 'Textbook'
        12 'Thesis'
        13 'Other Misc.' /
comment Assigns value labels for each value in a categorical variable.
select if (year lt 85)
comment Selects articles up to 1984 for analysis.
select if (cde lt 10)
comment Eliminates records used in other chapters of the dissertation.
frequencies variables= cde yr place
comment Performs frequency counts on 3 variables
crosstabs cde by yr place
options 3 4 5
comment Performs crosstabulation on code by 10-year interval and place.
finish

```

Literature Citation Database

001	75	1	TEXT	-	-	-	N	U	AINSWORTH/DS
002	74	2	AAHPER	-	-	101	F	A	ALLEN/RE&
003	78	2	AAHPER	-	-	012	F	A	ALLEN/RE&
004	84	2	JOPERD	55	05	035-037	H	A	AUSTIN/DA
005	80	2	ED	-	-	206591	L	U	AUSTIN/TL&
006	84	1	PAPER	-	-	-	K	P	BERLIN/P
007	71	1	DAI	31	-	3927A	A	*	BIGELOW/TW
008	68	2	DAI	28	-	3484A	D	A	BLAMER/WC
009	70	1	ED	-	-	040422	L	U	BLANK/LF
010	78	2	JAP	63	06	689-697	J	U	BORGEN/FH&
011	70	1	DISS	-	-	-	A	*	BORNELL/DG
012	80	1	ICUT	28	04	179-185	A	P	BOS/RR&
013	74	2	DAI	35	-	241A	D	A	BOWEN/JC
014	54	1	DAI	14	-	626	H	A	BOYCHEFF/K
015	56	2	DAI	16	-	2086	D	A	BUIE/GE
016	82	2	DAI	43	-	107A	E	*	BUSCH/DL
017	80	2	DISS	-	-	-	C	*	CANFIELD/DV
018	80	1	DAI	40	-	4911A	A	*	CHAFE/PG
019	57	2	DAI	17	-	554	G	A	CHELLMAN/J
020	78	1	ED	-	-	167065	L	U	CLAXTON/CS&
021	82	2	ED	-	-	214463	L	A	COOPER/CR
022	59	2	DAI	20	-	584	D	A	CORDTS/HJ
023	66	1	DAI	26	-	5150	F	A	COSTELLO/JJ
024	61	1	JOHPER	32	09	037-038	D	P	OXENDINE/JB
025	65	2	DISS	-	-	-	E	*	DAVIS/LG
026	74	1	AAHPER	-	-	4	A	A	EDWARDS/WH&
027	82	1	DAI	43	-	29A	D	*	ELDER/WT
028	76	1	DISS	-	-	-	A	*	ENDERLY/MT
029	72	1	JOHPER	43	03	026-028	D	P	OXENDINE/JB
030	64	2	DAI	25	-	1721	E	A	FISHER/AH
031	68	2	DAI	29	-	1037A	D	A	FREEMAN/CH
032	81	1	TEXT	-	-	-	N	U	BRELAND/HM
033	72	1	JOHPER	43	01	063-064	H	P	NELSON/WE
034	79	2	DAI	40	-	3184A	E	A	GELLERT/TRN
035	73	2	DAI	34	-	1117A	F	A	GLASS/AF
036	84	2	AAHPERD	-	-	74	J	A	GOLDBERGER/M
037	70	2	TEXT	-	-	-	J	U	GOULET/LR&
038	81	2	DISS	-	-	-	D	*	GRANT/NG
039	79	1	TEXT	-	-	-	K	U	HAIR/JF&
040	81	2	DISS	-	-	-	E	*	HAMMONDS/CR
041	79	2	JOPER	50	11	019-022	C	P	COLL--UNIV
042	58	2	DAI	18	-	904	D	A	HARRIS/WH
043	79	1	DAI	40	-	1300A	A	*	HARTMAN/RN
044	82	1	JOPERD	46	05	023	H	P	BUCHER/CA
045	81	1	ED	-	-	205129	L	A	HENGSTLER/DD&
046	74	2	DISS	-	-	-	D	A	HODGES/PB

047	78	1	AAHPER	-	-	13	F A HOLYOAK/OJ&
048	74	1	AAHPER	-	-	102	F A HOLYOAK/OJ&
049	83	2	ED	-	-	233061	L U HOOVER/RL&
050	56	2	DAI	16	-	907	E A HUNTER/SR
051	82	2	DAI	43	-	108A	F A IKEDA/K
052	76	2	AAHPER	-	-	75	F A JACKSON/CW
053	58	2	DAI	18	-	1715	D A JACOBS/MG
054	81	2	ED	-	-	205130	L U JONASSEN/DH
055	73	2	DAI	34	-	1677A	E A JUDKINS/CW
056	76	2	DAI	36	-	5124A	D A KARAFFA/FJ
057	60	1	SI(26)	13	12	015-017	N P KENNEDY/JF
058	55	2	DISS	-	-	-	G * KENNEY/HE
059	70	1	DISS	-	-	-	H * LAWSON/HA
060	62	1	DISS	-	-	-	A U LEMEN/MG
061	76	1	TEXT	-	-	-	K L LOCKE/LF&
062	71	2	DISS	-	-	-	E * LOCKHART/BD
063	74	2	DAI	35	-	2036A	I U LOPIANO/DA
064	77	2	ED	-	-	150186	L U LORENTZ/JL&
065	74	1	AAHPER	-	-	24	A A LUNDGREN/H
066	84	1	ED	-	-	243838	L U LYONS/CA
067	77	1	TEXT	-	-	-	O U MANDELL/MI&
068	74	2	ED	-	-	093965	L U MCCAULLEY/MH
069	57	2	DAI	17	-	782	D A MCCOWN/LA
070	76	2	DAI	37	-	180A	D A MCNAMEE/MA
071	75	2	DAI	35	-	4232A	E A MILLER/CE
072	79	1	JOPER	50	06	036-038	O P CARTER/GF
073	78	2	DAI	38	-	5335A	E A MIRANDA/FJ
074	66	2	DISS	-	-	-	E * MISTA/NJ
075	70	2	DAI	30	-	4814A	E A MULLINS/M
076	76	2	TEXT	-	-	-	L L MYERS/IB
077	70	2	DISS	-	-	-	D * NELSON/WE
078	73	2	DAI	34	-	6432A	E A OLIVER/MJ
079	61	2	DAI	22	-	2677	F A OLREE/HD
080	76	2	DAI	37	-	2059A	E A ORGAN/JM
081	69	1	JOHPER	40	01	032-035	D P OXENDINE/JB
082	81	2	AAHPERD	-	-	131	F A PECHAR/GS&
083	66	1	DAI	27	-	941A	B A PELTON/BC
084	54	2	DAI	14	-	296	D A PHILLIPS/BM
085	73	1	DAI	33	-	3486A	A * PILLINGER/BB
086	70	2	DAI	31	-	2159A	E A PIRKEY/JG
087	78	2	ED	-	-	173361	L U PRATT/LK&
088	81	2	ED	-	-	205128	L U PRATT/LK&
089	82	2	ED	-	-	220046	L U PRATT/LK&
090	59	2	DAI	20	-	4331	D A PUCKETT/JR
091	81	2	DISS	-	-	-	G * RASMUSSEN/JM
092	83	1	NAPEHE	04	-	068-076	H P RAZOR/JE
093	71	1	DAI	32	-	2471A	B A RICKETTS/JG
094	69	1	DAI	30	-	1005A	A A RIDDLE/L
095	73	2	DAI	34	-	3967A	J A RIDER/VJ
096	75	2	ED	-	-	115322	L U ROBERTS/DY

097	70	2	DAI	30	-	3768A	J A ROBERTS/PC
098	74	2	AAHPER	-	-	22	E A ROSENSTOCK/SA
099	69	2	DISS	-	-	-	J U RUSHALL/BS
100	82	1	TEXT	-	-	-	O U RUSS/FA&
101	79	2	AIR	-	-	-	L A SALLEY/CD&
102	51	2	DAI	11	-	147	D A SCHALK/I
103	84	1	JOPERD	55	05	046+	H P SCHENDEL/JS
104	82	1	NCJ	18	02	008-010	H P SCHRADER/C
105	82	1	NCJ	18	02	051-054	A P SCHRADER/CW
106	80	1	DAI	41	-	159A	L * SCHWARTZ/VS
107	77	2	DAI	37	-	6348A	D A SCOLES/DG
108	76	2	DAI	36	-	5878A	E A SEPASI/H
109	72	2	DISS	-	-	-	E * SHAMBARGER/J
110	75	2	DAI	36	-	3247A	D A SHAW/WG
111	83	2	PE	40	01	044-050	J P SHERRILL/C
112	73	2	JAC	07	10	001-012	L U SMITH/A
113	74	2	ED	-	-	096313	L U SMITH/AB&
114	83	1	PE	40	04	200-204	A P SOARES/P&
115	68	2	DAI	29	-	472A	J A STANALAND/P
116	82	2	PE	39	04	195-198	C P STIER/WF
117	80	2	ED	-	-	189182	L U STONEWATER/JK
118	62	2	DAI	23	-	2001	D A STRATHAIRN/PL
119	62	1	ED	-	-	191869	L U STRICKER/LJ&
120	74	2	DAI	35	-	248A	D * SWEARINGEN/KD
121	75	1	JOPER	46	09	024-028	H P COLL--+-UNIV
122	71	2	DAI	31	-	6389A	E A TALLMAN/AJM
123	84	1	JOPERD	55	05	082-089	D P TRIMBLE/RT&
124	70	2	JOHPER	41	07	035-037	J P TURNER/ET
125	81	2	ED	-	-	205130	L U UHL/NP&
126	83	1	PAPER	-	-	-	H P UMSTEAD/E
127	53	1	TEXT	-	-	-	N U VANDALEN/DB&
128	80	2	DAI	40	-	5367A	D A VANGEEM/JP
129	65	2	DAI	25	-	7068	J A VERDA/MM
130	83	1	DISS	-	-	-	A * WATKIN/BC
131	75	1	RQ	46	03	385-388	A P WEICK/K
132	75	1	TEXT	-	-	-	N L WEISKOPF/DC
133	81	1	TEXT	-	-	-	N L WELCH/PD&
134	75	2	RQ	46	03	274-281	J P WIDDOP/JH&
135	73	2	DISS	-	-	-	D * WITTENAUER/JL
136	59	2	THESIS	-	-	-	A T BROWN/F&
137	77	1	JPA	41	05	461-473	L P CARLYN/M
138	81	1	EPM	41	03	883-891	L P COHEN/D&
139	82	1	ED	-	-	245255	L U COVNER/TC
140	66	2	DISS	-	-	-	D U GRIFFIN/LE
141	55	1	THESIS	-	-	-	F U HEIN/M
142	63	1	DISS	-	-	-	A U HICKMAN/J
143	81	2	EE	01	01	016-017	L S HOPMEIER/G
144	84	2	ED	-	-	244936	L U LYONS/CA
145	59	2	NAPECW	-	-	-	H P GRAY/M(ED)
146	55	2	NAPECW	-	-	-	H P NAPECW



147	53	1	NAPECW	-	-	-	H P NAPECW
148	75	2	RQ	46	03	364-370	E U ZAICHKOWSKY/L
149	54	2	THESIS	-	-	-	D U OLGILVIE/SA
150	80	2	SG	11	03	336-346	L U PRATT/LK/&
151	75	1	JAH	04	01	020-026	L U REZLER/AG&
152	69	2	PR	25	01	028-030	L U RICHEK/HG
153	78	1	ICUT	26	04	249-254	L U RUTSOHN/P
154	36	2	TEXT	-	-	-	F U DUGGAN/AS
155	85	1	JOPERD	56	08	016-020	N P POLIDORO/JR
156	73	2	EGE	63	06	435-440	L P SMITH/AB&
157	76	2	JCCP	44	04	690-691	L P STEELE/RS&
158	63	2	THESIS	-	-	-	I U WAGNER/AL
159	82	1	THESIS	-	-	-	I U WILKE/BJ
160	77	2	THESIS	-	-	-	E U AMOS/B
161	75	2	THESIS	-	-	-	F T BLOUNT/ML
162	75	2	THESIS	-	-	-	F T BRUCKNER/JF
163	77	1	THESIS	-	-	-	A * CARROL/RA
164	74	2	THESIS	-	-	-	F T CAVANAUGH/SR
165	75	2	THESIS	-	-	-	I T DENNEY/EA
166	77	1	THESIS	-	-	-	A T DOBRATZ/AE
167	73	1	THESIS	-	-	-	F * ELDER/GCB
168	78	2	DISS	-	-	-	B U FERGUSON/CJ
169	76	2	DISS	-	-	-	D * GARDNER/P
170	78	1	JOPER	49	01	021-023	D A OXENDINE/JB
171	74	2	DAI	35	-	2750A	J A GUNNER/RJ
172	75	2	DISS	-	-	-	D U HARDY/CR
173	74	2	DISS	-	-	-	F * HART/EK
174	75	2	THESIS	-	-	-	F T HUMPHREY/WE
175	75	2	THESIS	-	-	-	F T MASI/VJ
176	75	2	THESIS	-	-	-	F T PULLIAM/JM
177	75	1	DISS	-	-	-	A * REISELT/RW
178	75	2	DAI	36	-	3492A	D A ROBINSON/HJ
179	80	2	THESIS	-	-	-	E U RUSZOVAN/VJ
180	75	1	JOPER	46	06	023-024	H P RAZOR/JE
181	76	1	DISS	-	-	-	I U TAKOVICH/JM
182	76	1	DAI	37	-	3504A	A A WHALEY/G
183	78	2	DAI	39	-	6460A	C A WHEELER/FH
184	73	1	NCJ	09	03	003-007	K P BERLIN/P
185	77	2	NCJ	14	01	022-023	J P DAWSON/GA&
186	76	2	NCJ	13	01	030	D P EDDY/R(ED)
187	70	2	NCJ	06	03	008-009	H P FRIEDRICH/JA
188	79	2	NCJ	16	02	001-008	D P HARDY/R
189	67	1	NCJ	03	03	004+	B P HOOKS/EW
190	78	2	NCJ	15	02	025-027	H P LAUFFER/RA
191	76	2	NCJ	13	01	020-026	D P MILLER/DK
192	84	2	DISS	-	-	-	D * BRIGGS/EC
193	73	2	DISS	-	-	-	D * CHASE/DD
194	84	1	NCJ	20	01	026-028	B P COATES/TE
195	73	2	DAI	34	-	3114A	E A COUTTS/CA
196	84	2	DAI	45	-	451A	G * GOING/WR

197	75	2	DAI	36	-	830A	L	A	HOFFMAN/JL
198	84	2	DAI	44	-	3360A	L	A	HUELSMAN/JM
199	83	1	DAI	43	-	2275A	A	A	KOVALCHIK/MJ
200	84	1	DAI	44	-	2407A	A	*	LANDER/LM
201	83	1	DISS	-	-	-	A	*	RAMSEY/ML
202	83	2	DAI	44	-	1283A	L	A	RUUD/DU
203	75	2	JOPER	46	05	023	D	P	WITTENAUER/JL
204	64	2	WSPECW	-	-	-	H	P	WESTERN
205	85	1	JOPERD	56	07	037+	B	U	TRIMBLE/RT&
206	80	1	TEXT	-	-	-	H	C	NIXON/J&
207	51	2	MACTPEW	-	-	-	J	C	GRAY/M(ED)
208	73	2	TEXT	-	-	-	H	C	HEITMANN/HM
209	63	1	TEXT	-	-	-	B	C	MILLER/KD
210	36	2	NAPECW	-	-	-	D	C	GRAYBEAL/E
211	77	1	TEXT	-	-	-	N	C	WELSH/R
212	64	1	TEXT	-	-	-	B	C	PENMAN/KA
213	74	2	TEXT	-	-	-	H	C	COLL--UNIV
214	59	1	TEXT	-	-	-	D	C	NCPECMW
215	58	2	TEXT	-	-	-	B	U	BROER/MR
216	76	2	TEXT	-	-	-	H	C	SINGER/RN
217	82	1	TEXT	-	-	-	H	U	FREEMAN/WH
218	75	2	TEXT	-	-	-	H	C	FROST/RB
219	78	1	TEXT	-	-	-	N	C	CHEFFERS/J&
220	69	1	TEXT	-	-	-	N	U	LOCKE/LF
221	80	1	NCJ	17	01	009-015	A	P	ARWE/K&
222	74	1	NCJ	10	02	017-020	A	P	HOLT/VR&
223	77	2	NCJ	14	01	024-034	A	P	LUMPKIN/A&
224	76	1	JNACAC	21	01	037-042	M	P	ARMSTRONG/RJE
225	76	1	CU	51	02	183-192	M	P	ARMSTRONG/RJE
226	71	1	CBR	81	-	010-016	M	P	BAIRD/LL
227	71	1	CBR	80	-	013-020	M	P	SIMS/AG
228	82	1	ED	-	-	224824	M	U	CONNECTICUT
229	79	1	ED	-	-	222511	M	U	COLL-ENTR
230	82	2	ED	-	-	217068	M	U	MCCARSON/C
231	81	2	ED	-	-	205127	M	U	REICHARD &
232	80	2	ED	-	-	196926	M	U	LISACK/JP
233	79	1	ED	-	-	176692	M	U	COLL-ENTR
234	79	2	ED	-	-	174085	M	U	REICHARD/&
235	78	1	ED	-	-	164597	K	U	RESPONSE-ANAL
236	78	2	ED	-	-	164596	M	U	COLL-ENTR
237	78	2	ED	-	-	163886	M	U	COLL-ENTR
238	76	2	ED	-	-	148874	M	U	JACKSON/R
239	75	2	ED	-	-	124847	M	U	COLL-ENTR
240	75	2	ED	-	-	124073	M	U	HELMS&
241	75	2	ED	-	-	116563	M	U	MCDERMOTT/M
242	82	1	NCJ	19	01	021-030	I	P	LUMPKIN/A
243	32	1	RQ	32	04	097-107	A	U	ALDEN/MA
244	74	1	PE	31	03	131-133	B	U	ANNARINO/AA
245	79	2	JOPER	50	04	021-023	C	U	ARNOLD/DE
246	82	2	JOPERD	53	01	057-058	D	U	BANKSON/SR

247	33	1	RQ	04	03	117-131	B	U	BARR/MC
248	54	1	RQ	25	04	387-397	A	P	BROER/MR
249	65	1	RQ	36	01	010-016	E	U	BRUMBACH/WB
250	60	2	RQ	31	03	409-419	D	U	CORDTS/HJ
251	33	1	RQ	04	04	049-059	A	U	DAVIS/EC
252	54	1	RQ	25	02	144-149	B	U	DAVIS/D
253	37	2	RQ	08	03	038-045	I	P	DUGGAN/AS
254	72	1	JOHPER	43	10	033-036	H	P	FORNIA/DL
255	56	2	RQ	27	01	121-127	D	U	FOX/MG
256	75	1	PE	32	01	024-025	H	U	GREBNER/F
257	45	2	RQ	16	02	120-127	D	U	GREENE/MD
258	54	2	RQ	25	04	429-438	E	U	KAPPES/EE
259	82	1	JOPERD	53	05	052-055	I	P	KROTEE/ML
260	82	1	JOPERD	53	05	048+	H	P	LAPOINT/JD
261	74	1	PE	31	03	127-128	I	U	LEWIS/GT
262	36	2	JOHPE	07	11	535+	H	U	MACCLEAN/MS
263	36	2	RQ	07	03	003-013	D	U	MARSHALL/VB
264	48	1	RQ	19	03	215-221	A	P	MASON/JG
265	79	2	JOPER	50	01	021-022	C	U	MEREDITH/M
266	82	2	JOPERD	53	05	050-051	H	P	O'CONNOR/JS
267	79	1	ACAD	13	-	050-058	H	U	PHILLIPS/M
268	80	2	JOPER	51	09	046-047	J	P	ROBINSON/SM
269	82	2	PE	39	02	159-162	C	U	SHROYER/G
270	73	2	JOHPER	44	02	018+	D	P	THOMAS/JR
271	67	2	RQ	38	01	126-131	E	U	VINCENT/MF
272	53	2	RQ	24	04	471-474	F	U	WEBER/RJ
273	40	2	RQ	11	01	072-079	I	U	WEEKLEY/HJ
274	37	1	RQ	08	01	015-032	A	U	WIEDAMANN/I
275	71	2	JOHPER	42	04	081-082	D	U	YARNELL/D
276	30	1	RQ	01	02	074-085	H	U	ELLIOT/R
277	79	1	ACAD	13	-	020-026	H	U	FRALEIGH/WP
278	53	2	RQ	24	01	067-071	C	U	HUSMAN/BF
279	42	2	RQ	13	03	364-372	D	U	JONES/LM
280	66	1	RQ	37	04	515-519	A	U	MOYER/LJ
281	43	2	RQ	14	02	167-174	D	U	RARICK/L
282	33	2	RQ	04	01	118-125	H	U	ROGERS/FR
283	79	1	ACAD	13	-	059-064	H	U	SCOTT/PM
284	72	1	TEXT	-	-	-	K	U	GORDON/TJ
285	66	2	NCPEAM	-	-	053-055	H	P	ROGERS/MH
286	35	2	CPEA	-	-	069-071	H	U	BUTLER/LK
287	35	2	CPEA	-	-	067-069	H	U	LOEBS/GF
288	35	2	CPEA	-	-	065-067	H	U	LOWE/HE
289	76	1	TEXT	-	-	-	N	U	BAIRD/LL
290	51	2	CPEA	-	-	029-031	H	U	MESSERSMITH/L
291	51	2	CPEA	-	-	032-037	H	U	OBERTEUFFER/D
292	34	2	CPEA	-	-	125-133	H	U	RIDER/GL
293	35	2	CPEA	-	-	072-074	H	U	WEBER/MA
294	34	2	CPEA	-	-	134-135	H	U	WINTERS/AR
295	62	1	RQ	33	02	142-143	A	U	STEGER/J
296	62	2	CPEA	-	-	036-039	H	U	HASLINGER/LW

297	72	1	TEXT	-	-	-	K	U	HELMER/O
298	62	2	CPEA	-	-	001-011	H	U	KISTLER/JW
299	61	1	CPEA	-	-	001-007	H	U	SNYDER/RA
300	61	2	CPEA	-	-	057-064	B	U	SHEA/EJ
301	46	1	CPEA	-	-	007-011	A	U	LEIB/KE
302	60	1	TEXT	-	-	-	O	U	AMER-MARKET
303	79	1	TEXT	-	-	-	O	U	MCCARTHY/EJ
304	70	1	PE	27	02	079-080	D	U	RUFFER/WA
305	59	2	PE	16	01	003-006	H	U	HUSMAN/BF&
306	55	2	JOPER	26	09	025-026	D	U	GREENE/MM
307	39	1	RQ	10	02	057-066	A	U	KANE/IB&
308	33	1	RQ	04	01	246-248	A	U	SMITH WR
309	39	2	RQ	10	04	070-080	D	U	MCCRISTAL/KJ&
310	46	2	RQ	17	01	002-009	D	U	SHAW/JH&
311	39	2	RQ	10	01	135-141	D	U	ELLIS/AW
312	39	1	RQ	10	04	020-032	A	U	COBB/LS
313	39	1	RQ	10	02	143-149	A	U	CRAIG/HW
314	33	1	RQ	04	04	060-070	A	U	BULLOCK/M&
315	62	1	JOHPER	33	06	039-040	H	U	MAND/CL
316	81	1	JOPERD	52	05	015-017	A	U	SOUDAN/S&
317	46	2	CPEA	-	-	012-016	H	U	DANIELS/AS
318	47	2	CPEA	-	-	026-029	H	U	SCHOTT/CP
319	47	2	CPEA	-	-	044-049	D	U	DELLMUTH/CK
320	47	2	CPEA	-	-	053-057	D	U	LOWE/HE
321	48	2	CPEA	-	-	023-029	D	U	NESSLEY/C
322	48	2	CPEA	-	-	030-036	D	U	SHEA/EJ
323	50	2	CPEA	-	-	051-053	D	U	EVANS/HM
324	50	2	CPEA	-	-	054-057	D	U	MCDONOUGH/TE
325	52	2	CPEA	-	-	101-103	C	U	STALEY/SC
326	52	2	CPEA	-	-	140	D	U	SEATON/DC
327	53	2	CPEA	-	-	076-084	D	U	SNYDER/RA
328	53	2	CPEA	-	-	085-089	D	U	JAMERSON/D
329	53	2	CPEA	-	-	121-123	B	U	GALLIGAN/GE
330	53	2	CPEA	-	-	132-135	B	U	WISE/AR
331	53	2	CPEA	-	-	154-158	B	U	CLARKE/HH
332	54	2	CPEA	-	-	157-159	I	U	BARROW/HW
333	54	2	CPEA	-	-	136-143	C	U	STOLEY/SC
334	54	2	CPEA	-	-	040-043	D	U	KRETCHMAR/R
335	54	2	CPEA	-	-	034-039	C	U	LIEBEE/H
336	54	2	CPEA	-	-	032-033	D	U	SEGREST/H
337	54	2	CPEA	-	-	029-031	D	U	HUNSICKER/PA
338	55	2	CPEA	-	-	183-186	C	U	BUCHER/CA
339	55	2	CPEA	-	-	176-177	H	U	MCDONOUGH/TE
340	55	2	CPEA	-	-	175	B	U	CLARKE/HH
341	55	2	CPEA	-	-	174	B	U	BRACE/DK
342	55	2	CPEA	-	-	120-121	B	U	HUNSICKER/P
343	55	2	CPEA	-	-	030-050	H	U	ASHBROOK/WP
344	55	2	CPEA	-	-	005-014	A	P	JACKSON/CO
345	56	2	CPEA	-	-	207	D	U	LEIBEE/HC
346	56	2	CPEA	-	-	247-249	H	U	MCDONOUGH/TE

347	36	2	RQ	07	04	060-063	F	U	GRAYBEAL/E
348	59	2	JOHPER	30	09	035+	H	U	MONTEBELLO/RA
349	65	2	JOHPER	36	03	059	B	U	SINGER/RN
350	77	2	RQ	48	02	499-503	F	U	ZUTI/WB&
351	74	2	PE	31	03	138-139	E	U	CORBIN/CB&
352	57	2	CPEA	-	-	218-221	H	U	ESLINGER/AA
353	57	1	CPEA	-	-	273-275	A	P	SHENK/H
354	57	2	CPEA	-	-	276-277	H	U	SEATON/DC
355	57	2	CPEA	-	-	278-280	H	U	STRUCK/RF
356	57	1	CPEA	-	-	281-285	A	P	COUSINS/GF
357	57	1	CPEA	-	-	297-299	H	P	ASHBROOK/WP
358	60	2	CPEA	-	-	064-069	D	U	LEIBEE/HC
359	60	2	CPEA	-	-	069-075	D	U	CASADY/D
360	60	2	CPEA	-	-	075-077	D	U	FISHER/JA
361	60	2	CPEA	-	-	077-083	D	U	JAMERSON/RE
362	61	2	CPEA	-	-	040-044	I	U	MCBRIDE/FA
363	61	2	CPEA	-	-	045-049	C	U	COUSINS/GF
364	61	2	CPEA	-	-	049-052	H	U	MASSEY/BH
365	62	2	CPEA	-	-	016-017	H	U	ZENTI/R
366	62	2	CPEA	-	-	017-021	B	U	LOGAN/GA
367	62	2	CPEA	-	-	021-026	B	U	WIREMAN/BO
368	64	2	CPEA	-	-	115-120	H	U	MOORE/GC
369	64	2	CPEA	-	-	128-130	H	U	BEARDEN/F
370	75	2	NCPEAM	-	-	072-079	B	U	MURRAY/D
371	75	2	NCPEAM	-	-	079-083	D	U	DREWS/F
372	75	2	NCPEAM	-	-	083-088	I	U	CARTER/GF
373	75	2	NCPEAM	-	-	088-095	I	U	FISHER/MJ
374	75	2	NCPEAM	-	-	095-099	D	U	JONES/D
375	73	2	NCPEAM	-	-	019-027	C	U	RAZOR/JE&
376	73	2	NCPEAM	-	-	031-039	B	U	CORBIN/CB
377	73	2	NCPEAM	-	-	065-070	C	U	EWERS/JR
378	68	2	NCPEAM	-	-	050-055	B	U	SERFASS/RC
379	68	2	NCPEAM	-	-	056-063	H	U	COGAN/M
380	68	2	NCPEAM	-	-	064-067	H	U	CORDTS/HJ
381	65	2	CPEA	-	-	073-076	C	U	WILEY/RC
382	65	2	CPEA	-	-	076-077	C	U	BURNHAM/S
383	65	2	CPEA	-	-	078-080	D	U	NORDLY/CL
384	65	2	CPEA	-	-	080-082	D	U	NIXON/JE
385	65	2	CPEA	-	-	082-084	B	U	PENNY/WJ
386	65	2	CPEA	-	-	085-087	B	U	PETERSEN/A
387	65	2	CPEA	-	-	087-092	D	U	PARTIN/C
388	65	1	CPEA	-	-	093-095	B	U	PENMAN/KA
389	65	1	CPEA	-	-	096-097	C	U	PONTHIEUX/NA
390	65	1	CPEA	-	-	110-112	F	U	OLSON/AL
391	65	2	NCPEAM	-	-	054-058	B	U	MCCRISTAL/K
392	65	2	NCPEAM	-	-	067-069	H	U	BURNHAM/S
393	65	2	NCPEAM	-	-	069-070	B	U	BROWN/HS
394	65	2	NCPEAM	-	-	071-072	B	U	VANBIBBER/EG
395	85	1	JOPERD	56	07	039-043	H	U	JEWETT/AE
396	66	2	NCPEAM	-	-	056-058	D	U	RUFF/WK

397	66	1	NCPEAM	-	-	058-066	A	U	FRIEDRICH/JA
398	66	1	NCPEAM	-	-	067-069	D	U	STOLBERG/DC&
399	66	2	NCPEAM	-	-	070-073	D	U	MAINIERI/DJ
400	66	2	NCPEAM	-	-	074-077	D	U	SWALEC/JJ
401	66	2	NCPEAM	-	-	078-080	D	U	GRAY/GM
402	66	2	NCPEAM	-	-	080-084	D	U	LONGLEY/G
403	66	2	NCPEAM	-	-	102-103	E	U	STREID/RB
404	74	2	ACAD	45	-	064	H	U	MITCHEM/JC
405	74	2	ACAD	45	-	065	H	U	BOSCO/JS
406	74	2	ACAD	45	-	082-087	H	U	FROST/RB
407	40	2	CPEA	-	-	028-032	D	U	CORNWELL/OK
408	40	1	CPEA	-	-	033-040	H	U	SAVAGE/CW
409	40	1	CPEA	-	-	063-068	H	U	BOOKWALTER/KW
410	42	2	CPEA	-	-	044-045	H	U	WICKHORST/FH
411	43	1	CPEA	-	-	024-028	D	U	WEBSTER/RW
412	44	2	CPEA	-	-	028-032	H	U	ASHBROOK/WP
413	44	1	CPEA	-	-	040-041	H	U	OLESEN/FA
414	74	1	ACAD	45	-	053-057	H	U	LEY/K
415	74	1	ACAD	45	-	058-059	H	U	SKUBIC/V
416	74	1	ACAD	45	-	059-063	H	U	JERNIGAN/SS
417	48	1	CPEA	-	-	037-043	D	P	MILLER/RD
418	80	1	TEXT	-	-	-	K	U	KRIPPENDORFF/K
419	69	2	NCPEAM	-	-	026-031	D	U	GEDVILAS/LL
420	69	2	NCPEAM	-	-	032-035	C	U	KRISTUFEK/CJ
421	69	2	NCPEAM	-	-	036-040	I	U	BRUMBACH/WB
422	73	2	NCPEAM	-	-	081-084	B	U	GREENE/CP
423	72	2	NCPEAM	-	-	110-114	D	U	CHASE/DD
424	72	2	NCPEAM	-	-	114-125	D	U	PARTIN/C
425	72	2	NCPEAM	-	-	131-133	I	U	CASADY/DR
426	72	2	NCPEAM	-	-	126-130	D	U	TURNER/ET&
427	69	2	NCPEAM	-	-	058	F	U	INGOLD/JD
428	69	2	NCPEAM	-	-	063	F	U	PARTIN/C&
429	69	2	NCPEAM	-	-	139-142	B	U	CORBIN/C
430	69	2	NCPEAM	-	-	148-152	D	U	JOHNSON/PB
431	70	1	NCPEAM	-	-	238-241	H	U	PELTON/BC
432	70	2	NCPEAM	-	-	242-254	B	U	TIEMANN/PW&
433	70	1	NCPEAM	-	-	254-260	A	P	RAZOR/JE&
434	73	2	NCPEAM	-	-	076-080	C	P	STANLEY/PL
435	73	1	NCPEAM	-	-	071-075	A	P	BRUMBACH/WB
436	69	1	NCPEAM	-	-	143-148	B	P	SHERMAN/MA
437	69	1	NCPEAM	-	-	131-137	D	P	COGAN/M
438	72	1	NCPEAM	-	-	186-193	I	P	LOWE/B&
439	72	1	NCPEAM	-	-	014-025	H	P	ALLEN/DW
440	69	1	NCPEAM	-	-	025-027	H	P	BREEN/JL
441	69	1	NCPEAM	-	-	021-024	A	P	ROGERS/MH
442	70	1	JOHPER	41	10	022	D	P	HARTMAN/RN
443	57	2	CPEA	-	-	300-302	H	U	MCCLOY/CH
444	57	2	CPEA	-	-	302-306	H	U	SCOTT/HA
445	57	2	CPEA	-	-	306-307	H	U	DANIELS/AS
446	71	2	ED	-	-	058875	D	U	STIER/WFJR

447	71	2	ED	-	-	058861	D	U	STIER/WFJR
448	49	2	CPEA	-	-	022-030	H	U	PRICE/H
449	49	2	CPEA	-	-	031-033	H	U	DERR/P
450	49	2	CPEA	-	-	034-037	H	U	MCCRISTAL/KJ
451	49	2	CPEA	-	-	038-039	D	U	KENNEY/HE
452	49	2	CPEA	-	-	040-044	C	U	LOKEN/NC
453	49	2	CPEA	-	-	045-047	C	U	LOKEN/NC
454	58	2	CPEA	-	-	023-025	C	U	SEIDLER/AH
455	58	1	CPEA	-	-	026-032	A	P	GALLON/AJ
456	58	2	CPEA	-	-	033-035	I	U	KIREILIS/RW
457	58	2	CPEA	-	-	036-040	H	U	FOURIER/AE
458	58	2	CPEA	-	-	041-047	B	U	REUTER/ER
459	58	2	CPEA	-	-	048-052	H	U	NORDLY/CL
460	58	1	CPEA	-	-	129-131	A	P	RHODA/WP
461	58	2	CPEA	-	-	192-197	H	U	MEANS/LE
462	58	2	CPEA	-	-	225-227	H	U	KENNEY/HE
463	58	2	CPEA	-	-	228-233	H	U	MCCLOY/CH
464	58	2	CPEA	-	-	018-022	C	U	WAGLOW/IF
465	58	2	CPEA	-	-	023-025	C	U	BRUCE/RM
466	58	2	CPEA	-	-	025-033	C	U	FRIEDRICH/JA
467	58	2	CPEA	-	-	033-038	C	U	HUSMAN/BF
468	58	2	CPEA	-	-	038-042	D	U	DAVIS/JF
469	48	1	CPEA	-	-	049-057	G	P	BENNETT/BL
470	58	1	CPEA	-	-	151-154	A	P	SEGREST/HB
471	59	1	CPEA	-	-	089-092	A	P	MOFFETT/DC
472	59	2	CPEA	-	-	092-095	A	P	LONG/JW
473	59	2	CPEA	-	-	095-098	B	U	HUSS/WD
474	59	2	CPEA	-	-	099-103	C	U	ERICKSON/CE
475	59	2	CPEA	-	-	104-108	C	U	WESTON/A
476	59	2	CPEA	-	-	108-113	C	U	SWISHER/IW
477	59	2	CPEA	-	-	116-119	B	U	NEWBERG/S
478	59	2	CPEA	-	-	119-122	B	U	SHELTON/RE
479	60	2	RQ	31	04	638-643	E	U	RICHARDSON/CE
480	39	2	THESIS	-	-	-	A	T	PATERSON/A
481	50	2	RQ	21	03	216-229	H	U	KRETCHMAR/R
482	73	1	TEXT	-	-	-	K	L	KERLINGER/F
483	62	1	RQ	39	02	566-574	E	U	KENYON/G
484	67	1	PE	30	01	019-021	A	P	FREISCHLAG/J
485	72	2	RQ	43	02	148-156	E	U	DOTSON/C&
486	68	2	RQ	39	03	456-462	E	U	CAMPBELL/D
487	53	2	RQ	24	04	379-391	E	U	BELL/M&
488	40	1	RQ	11	04	120-134	A	U	BEISE/D
489	24	1	APER	29	-	217-219	A	P	GEER/WH
490	41	1	RQ	12	-	720-725	I	P	MOORE/BY
491	51	1	RQ	22	-	312-323	F	P	FLANAGAN/L
492	51	1	RQ	22	-	114-126	E	P	WEAR/CL
493	85	1	JOPERD	56	07	044+	C	U	BRASSIE/DS&
494	85	2	JOPERD	56	07	051-054	H	U	WATKINS/D
495	55	2	RQ	26	04	379-384	E	U	BROER/MR&
496	85	1	JOPERD	56	07	031	H	P	CONSIDINE/WJ

497	85	1	JOPERD	56	07	032-036	H P	OXENDINE/JB
498	41	1	THESIS	-	-	-	I *	SWENSON/HJ
499	82	1	TEXT	-	-	-	K P	NAISBITT/J
500	70	1	TEXT	-	-	-	K U	TOFFLER/A
501	62	1	ETS	-	-	-	L P	STRICKER/LJ&
502	78	1	DAI	39	-	01A	L A	OMIZO/MM
503	76	1	PAPER	-	-	-	L I	MCCAULLEY/MH
504	77	1	PAPER	-	-	-	L I	CARLYN/M
505	79	1	REPORT	-	-	-	M I	OIR/UNCG
506	62	1	TEXT	-	-	-	L *	MYERS/IB
507	79	1	PAPER	-	-	-	L I	REICHARD/DJ&
508	84	1	TEXT	-	-	-	L U	CORSINI/RJ
509	79	1	PSYREP	44	-	1199-	L P	WESTMAN/AS&
510	67	1	DAI	28	-	4452A-	M P	STALCUP/DLK
511	81	1	ED&PSY	41	-	883-891	L U	COHEN/D&
512	73	1	TEXT	-	-	186-190	L U	LAKE/DG
513	77	1	PAPER	-	-	-	L I	CORDRAY/RE
514	69	1	PSYREP	25	-	028-030	L U	RICHEK/HG
515	63	1	PSYREP	12	-	287-293	L U	STRICKER/LJ&
516	77	1	JPERSA	41	05	461-473	L P	CARLYN/M
517	71	1	JMARKET	08	-	480-487	O P	LESSIG/VP&
518	76	1	TEXT	-	-	-	L I	MYERS/IB
519	79	1	JSPMED	19	-	397-404	L U	JONES/RD&
520	80	1	TEXT	-	-	-	L U	MYERS/IB&
521	85	1	TEXT	-	-	1029-	L U	DEVITO/AJ*
522	83	2	TEXT	-	-	267-268	L U	MITCHELL/JV
523	78	1	TEXT	-	-	970-975	L U	COAN/RW*
524	65	1	TEXT	-	-	321-326	L U	MENDEL-SUND*
525	70	2	TEXT	-	-	-	L U	BUROS/OK
526	74	2	TEXT	-	-	-	L U	BUROS/OK
527	23	2	TEXT	-	-	-	L U	JUNG/CG
528	76	1	EDRES	05	11	003-008	K P	GLASS/GV
529	74	1	SEE503	-	-	-	L U	MCCAULLEY/MH&
530	72	1	TEXT	-	-	-	K U	HYMAN/HH
531	71	1	TEXT	-	-	-	K U	DAVIS/JA
532	83	1	TEXT	-	-	-	K U	NORUSIS/MJ
533	85	1	DISS	-	-	-	O U	BROOKS/CM
534	85	1	USNEWS&	12	30	108-119	N U	LANG/JS&



**APPENDIX C**  
**CLEARANCE INFORMATION**

THE UNIVERSITY OF NORTH CAROLINA  
AT GREENSBORO

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*School of Health, Physical Education,  
Recreation, and Dance*

Dr. Don Reichard  
Office of Institutional Research  
University of North Carolina at Greensboro  
Greensboro, NC 27412

February 25, 1985

Dear Dr. Reichard,

Attached you will find a copy of my dissertation statement and human subject clearance. As we discussed some time ago, I am attempting to research the consumers of the General University Program in Physical Education at UNC-G. As is indicated by the human subject clearance, all data is existing and no identification will be made of individual subjects.

Therefore, I am requesting authorization to access the following information:

- 1) Student Course File Data (CF) 1980-1984
- 2) Master Course File Data (MCF) 1980-1984
- 3) Student Descriptive Questionnaire Data (SDQ) 1977-1983
- 4) Myers-Briggs Type Indicator Data (MBTI) 1977-1980, 1983
- 5) Student Data Profiles (SDP) 1977-1983

With the exception of the Myers-Briggs data, all information is already stored on tape at the Academic Computing Center from the recent university self-study project. Therefore, I am requesting clearance on all of the aforementioned data and a tape copy of the MBTI scores. Following your endorsement, I will conclude the clearance process by obtaining authorization to use all data from Mr. Hoyt Price, Registrar.

Thank you for your time and cooperation in this endeavor. I am looking forward to your prompt reply.

Sincerely,



Rhoda Metzger, doctoral candidate  
Department of Physical Education

GREENSBORO, NORTH CAROLINA / 27412-5001

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*an equal opportunity employer*

The University of North Carolina  
at Greensboro  
School of Health, Physical  
Education, Recreation & Dance  
Greensboro, North Carolina 27412

2/25/85  
Date

To: Metzger:

The purpose of this communication is to indicate the results of the review made by the Human Subjects Committee of your proposed project

*Collegiate Consumers of PE*

The evaluators have judged your plans which guarantee the rights of human subjects to be

Approved as proposed

(only if all data is existing data and if no subject will be identified. If this is not <sup>the</sup> case - see me immediately...)

Approved conditionally pending

Not approved. Please contact the School Human Subject Chair, for further information.

We appreciate your compliance with School/University regulations in this important matter. Please remember your commitment to notify the Committee in the event of any change(s) in your procedure.

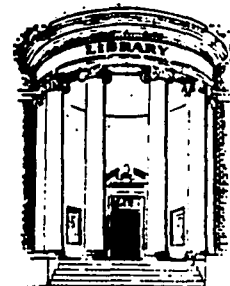
Sincerely,

*WB Harper*

Chair, School of HPERD  
Human Subjects Review Committee

Revised 12/83

THE UNIVERSITY OF NORTH CAROLINA  
AT GREENSBORO



Office of Institutional Research

February 26, 1985

MEMORANDUM

TO: Rhoda Metzger  
FROM: Donald J. Reichard *DJR*  
SUBJECT: Release of MBTI Data

This note is to provide approval for your access to the Myers-Briggs Type Indicator (MBTI) files for the Fall 1977-1980 and Fall 1983 semesters developed by the Office of Institutional Research (OIR). It is our understanding that you also have access to the other data sets noted in your letter to me of February 25. These data were utilized in the Self-Study reports you prepared for the School of Health, Physical Education, Recreation and Dance.

For further information on the layout of and access to the MBTI information and/or the layout of the Fall 1977 Student Descriptive Questionnaire Data (SDQ) for Fall 1977, please contact Barbara Barton or Jackie Gillis.

DJR/nat

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*School of Health, Physical Education,  
Recreation, and Dance*

Mr. Hoyt Price  
Registrar  
University of North Carolina at Greensboro  
Greensboro, NC 27412

February 26, 1985

Dear Mr. Price,

Attached you will find a copy of my dissertation statement and human subject clearance. As we discussed some time ago, I am attempting to research the consumers of the General University Program in Physical Education at UNC-G. As is indicated by the human subjects clearance, all data is existing and no identification will be made of individual subjects.

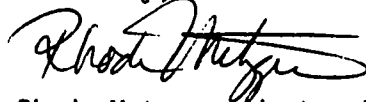
Therefore, I am requesting authorization to access the following information:

- 1) Student Course File Data (CF) 1980-1984
- 2) Master Course File Data (MCF) 1980-1984
- 3) Student Descriptive Questionnaire Data (SDQ) 1977-1983
- 4) Myers-Briggs Type Indicator Data (MBTI) 1977-1980, 1983
- 5) Student Data Profiles (SDP) 1977-1983

With the exception of the Myers-Briggs data, all information is already stored on tape at the Academic Computer Center from the recent university self-study project. Therefore, I am requesting clearance on the aforementioned data produced by your office. If you would be so kind as to send written confirmation of approval for this research project, I will be most appreciative.

Thank you for your time and cooperation in this endeavor. I am looking forward to your prompt reply.

Sincerely,



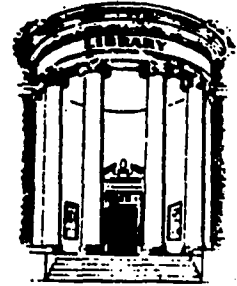
Rhoda Metzger, doctoral candidate  
Department of Physical Education

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AT GREENSBORO



Office of the Registrar

March 14, 1985

MEMO

TO: Dr. Don Reichardt  
FROM: H. Hoyt Price, Registrar  
SUBJECT: Release of Data for Research Project

I am giving my approval for the release of data for the research project of Rhoda Metzger. This involved the Student Course File (1980-84), the Master Course File (1980-84) and the Student Data Profiles (1977-1983).

It is understood that this data will be used in a professional manner with no identification made of individual subjects.

HHP/bdc

cc: ✓ Rhoda Metzger  
Dr. Ted Hildebrandt

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**APPENDIX D**  
**GENERAL UNIVERSITY PROGRAM COURSE OFFERINGS**

## COURSES WITH SKILL LEVEL DESIGNATIONS

Swimming for Non-swimmers		
Beginning Swimming	Low-intermediate Swimming	Advanced Swimming
	High-intermediate Swimming	Water Safety
Instructor		
Beginning Tennis	Intermediate Tennis	Advanced Tennis
Elementary Ballet		Advanced Ballet
		Advanced Sport
Techniques		
Beginning Badminton	Intermediate Badminton	
Beginning Bowling	Intermediate Bowling	
Beginning Fencing	Intermediate Fencing	
Beginning Golf	Intermediate Golf	
Beginning Gymnastics	Intermediate Gymnastics	
Beginning Modern Dance	Intermediate Modern Dance	
Beginning Racquetball	Intermediate Racquetball	
Beginning Snow Skiing	Intermediate Snow Skiing	
Beginning Volleyball	Intermediate Volleyball	
Beginning Folk Dance		
Beginning Self-defense		



**ACTIVITY COURSES WITH NO SKILL LEVEL DESIGNATIONS**

<b>Aerobics</b>	<b>Performance Folk/Social Dance</b>
<b>Backpacking/Camping</b>	<b>Personalized Physical Education</b>
<b>Basketball/Softball</b>	<b>Rhythmic Aerobics</b>
<b>Clogging</b>	<b>Skin and Scuba</b>
<b>Conditioning</b>	<b>Soccer/Basketball</b>
<b>Fitness for Life</b>	<b>Social Dance</b>
<b>Folk Dance</b>	<b>Square Dance</b>
<b>Hiking/Camping</b>	<b>Water Polo</b>
<b>Ice Skating</b>	<b>Weight Training</b>
<b>Jogging</b>	<b>Wrestling</b>
<b>Lifesaving</b>	

**NON-ACTIVITY COURSES**

**Aesthetics of Sport**  
**Aquatic Facility Management**  
**Philosophy of Sport**  
**Physical Education for Individual Spec.**  
**Prevention and Care of Athletic Injuries**  
**Social Issues in Competitive Sports**

**APPENDIX E**  
**UNCG UNDERGRADUATE GENDER DISTRIBUTION**

UNCG Undergraduate GenderDistribution by Year

Academic Year	N	Male	Female
1980-81	6816	28.4%	71.6%
1981-82	6793	29.2%	70.8%
1982-83	6895	30.1%	69.9%
1983-84	6904	30.8%	69.2%
Average	6852	29.6%	70.4%

**APPENDIX F**  
**UNCG UNDERGRADUATE AGE DISTRIBUTION**

UNCG Undergraduate AgeGroup Distribution by Year

<u>Academic Year</u>	<u>N</u>	<u>Typical</u>	<u>Older</u>
1980-81	6804	80.1%	19.9%
1981-82	6769	79.2%	20.8%
1982-83	6865	76.8%	23.2%
1983-84	6867	76.8%	23.2%
Average	6826	78.2%	21.8%

**APPENDIX G**  
**RELATED SDQ RESULTS**

Table G-1

Percentage of SDQ RespondentsParticipating in Athletics (varsity, intramural & community)While in High School by Academic Year

<u>Academic Year</u>	<u>Male</u>	<u>Female</u>
1971-1972	75.0	56.0
1976-1977	83.0	59.0
1981-1982	82.2	64.4

Note. (Connecticut, 1982)

Table G-2

Percentage of SDQ RespondentsParticipating in Athletics (varsity, intramural & community)While in High School and Intent to Participate in College

	Male	Female	Average
High School	80.6	58.3	68.8
Collegiate Intent	67.5	44.8	55.5

Note. (College Entrance Examination Board, 1979a)



Table G-3

Percentage of SDQ RespondentsParticipating in Athletics(varsity, intramural & community)While in High School by Region

<u>Region</u>	<u>Male</u>	<u>Female</u>	<u>Average</u>
New England	83.9	64.2	73.4
Middle States	82.0	60.6	70.7
Southern	77.4	52.0	63.5
Midwestern	82.6	60.5	71.3
Southwestern	73.5	48.4	60.5
Rocky Mountains	82.3	64.8	73.6
Western	79.8	58.0	68.1

Note. (College Entrance Examination Board, 1979b)

Table G-4

Percentage of SDQ RespondentsIntent to Participate in Athletics(varsity, intramural & community)While in College by Region

<u>Region</u>	<u>Male</u>	<u>Female</u>	<u>Average</u>
New England	73.5	52.3	62.2
Middle States	71.1	48.7	59.2
Southern	63.7	37.7	49.5
Midwestern	68.4	45.0	56.5
Southwestern	55.9	32.2	43.6
Rocky Mountains	71.8	52.2	62.1
Western	62.6	43.3	52.3

Note. (College Entrance Examination Board, 1979b)