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A comparison of teacher behavior and student involvement of athletes and non-athletes in high school physical education

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A COMPARISON OF TEACHER BEHAVIOR AND STUDENT
INVOLVEMENT OF ATHLETES AND NON-ATHLETES
IN HIGH SCHOOL PHYSICAL EDUCATION

A Thesis presented to the Faculty of the School
of Health Sciences and Human Performance

In Partial Fulfillment of the
Requirements for the Degree
Master of Science

by

Brian E. Hill

May 2003

Ithaca College
School of Health Sciences and Human Performance
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CERTIFICATE OF APPROVAL

MASTER OF SCIENCE THESIS

This is to certify that the Master of Science Thesis of

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Submitted in partial fulfillment of the requirements for the degree of Master of Science in
the School of Health Sciences and Human Performance at Ithaca College has been
approved.

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ABSTRACT

Teachers' behavior towards athletes and non-athletes in high school physical education classes and students' involvement were compared. The subjects were 10 teachers and 100 students at five area high schools in the Southern Tier region of New York. Athletes were defined as those students who participated in interscholastic athletics at the freshmen, junior varsity or varsity level. Non-athletes were defined as those students who did not participate in interscholastic athletics. The 10 classes were videotaped during their regularly scheduled time with the teachers wearing a wireless microphone. Each student was given a numbered scrimmage vest selected from four colors. Prior to the start of each class, the teacher assisted the researcher in identifying which students were athletes. Athletes wore two out of the four colors of vests. The non-athletes wore the remaining two colors of vests. Ten students from each instructor's class, five athletes and five non-athletes, were randomly selected for observation. Prior to the start of the investigation it was decided that the difference between the groups needed to be 5% or greater in order to be considered significant. The interaction patterns between the teachers and individual students were coded using the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC). The data compiled from these codings were transferred onto the computer for analysis. Descriptive statistics were calculated, and visual analysis was used to determine if differences existed in the teaching behavior patterns of the teacher with his/her athletes and non-athletes. Visual comparisons of the physical educators' interactions with the athletes and non-athletes indicated significant differences did exist. The athletes were given more praise from the teachers than the non-athletes and were given more information by the teachers. The

non-athletes were given more criticism and received more directions from the teachers than the athletes received. The athletes displayed a higher percentage of interpretive student response than the non-athletes. The non-athletes exhibited more predictable responses than the athletes. Student involvement data were gathered by using the revised Academic Learning Time in Physical Education (ALT-PE) instrument. The data collected for ALT-PE were hand scored and were compiled into percentages and ratios for the ALT-PE parameters, which were also compared by visual analysis. Visual inspection of the ALT-PE data revealed little difference in the context levels of the athletes and non-athletes. However, several significant differences were evident at the learner involvement level. Athletes were more motor engaged, accrued more ALT-PE, spent less time inappropriately engaged, and waited much less time than their non-athlete classmates. Examination of the DAC and the ALT-PE data resulted in the finding that there were significant differences in the interaction patterns of the physical educators with their athletes and non-athletes. Also there were significant differences in the amount of ALT-PE accrued by the athletes and non-athletes in high school physical education classes. These findings resulted in the rejection of the null hypothesis that stated there would be no significant differences in the behaviors of teachers towards athletes compared to non-athletes in high school physical education classes. The null hypothesis that stated there will be no significant differences in the amount of ALT-PE accrued by athletes and non-athletes in high school physical education classes was also rejected. Teachers need to make sure that they provide their students of all abilities with sufficient feedback and opportunities to learn.

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Chapter 1

INTRODUCTION

Students in secondary school physical education classes vary greatly in motor ability. This disparity in student ability brings with it a wide range of experiences for students. This disparity also presents a challenge to teachers who are charged with the responsibility of meeting the needs of all students.

In an ideal classroom situation, all secondary school physical education students are provided with appropriate challenges and tasks to help them be successful in achieving a healthy and active lifestyle. However, many physical education teachers knowingly or unknowingly show favoritism towards specific groups of students. An educational self-fulfilling prophecy is based on a teacher's perception of a student's ability, the student's perception of his/her own ability, and whether or not the student values the teacher's approval. The Pygmalion Theory explains the self-fulfilling prophecy as a phenomenon in which students perform according to the expectations of their teacher (Martinek, Crowe, & Rejeski, 1982). Teachers' expectations of their particular students may influence teachers' behaviors towards these students. If a teacher expects a student to perform well, then that teacher may have biased interactions with that student, which may result in greater performance. DeLola (1998) found that behavior of teachers did differ when interacting with students who were athletes compared with non-athletes.

Research also indicates that differences exist between the physical education experiences of male and female students and urban and suburban students (Bain, 1985).

Hendry and Welsh (1981) investigated physical education teachers' views of students' physical abilities and personal qualities. This study found teachers held the most favorable attitudes towards athletes. In turn, athletes regarded their physical educators as friendly, approachable, and willing to establish good relationships with pupils. Non-athletes, however, reported feelings of neglect and isolation from physical education teachers. This finding is most disturbing because 70% of the non-athletes reported they wished to improve upon their personal physical ability level.

Several systematic observation instruments have been used to determine whether the Pygmalion Effect is evident not only in the classroom but also in the gymnasium (Martinek et al., 1982). In particular, researchers have studied expectancy effects in the physical education setting using the Dyadic Adaptation of CAFIAS or DAC (Martinek & Mancini, 1979). DAC enables researchers to describe the interaction behaviors between a teacher and either a student or a small group of students.

Ryan (1983), Brophy (1983), and Bibik (1999) used DAC to investigate the behavior patterns of teachers toward students of various skill levels. The researchers found that students labeled as high-achievers/high-skilled received more encouragement, acceptance of ideas, and teacher questioning than did students perceived as low-achievers/low-skilled. The high-skilled students also received more information and praise. In a similar study using DAC, DeLola (1998) also determined that athletes received more attention and encouragement than non-athletes. The non-athletes were given more directions and criticism.

Studies using Academic Learning Time-Physical Education (ALT-PE) to examine expectancy effects in the gymnasium have reported similar results. ALT-PE

was developed as a systematic procedure for observing teacher effectiveness and the students' level of participation in the context of the specific physical education class activity (Siedentop, Birdwell, & Metzler, 1979). The ALT-PE observation instrument can be used to measure the amount of time a student is engaged in relevant motor activity at a high rate of success. ALT-PE provides an indirect measure of student achievement and teacher effectiveness. Many researchers have examined the effects of students' skill levels on students' opportunities in physical education. They found the high-skilled groups accrued more ALT-PE than lesser skilled groups (Ryan, 1983; Terrillion, 1988). These groups closely resemble characteristics of athletes and non-athletes, which are the focus of this study; that is, high-skilled students may possess characteristics similar to those of athletes and low- skilled students have characteristics similar to non-athletes.

Promoting achievement in physical education is important in helping students acquire the skills, knowledge, behaviors and attitudes to be lifelong participants in physical activity. Effective teachers provide for individual differences within their classes so that all students can learn. Teachers who directly or indirectly, consciously or unconsciously, provide preferential treatment to one group of students limit their students' opportunities to reach their fullest potential.

Scope of the Problem

This investigation has two purposes. The first purpose is to compare teachers' behavior towards athletes and non-athletes in high school physical education classes. The second purpose is to compare the involvement and, indirectly, learning of athletes and non-athletes in high school physical education classes. The study was conducted at five high schools in the Southern Tier of New York region. The subjects were 10

teachers and 100 students. Athletes are defined as those students who participated in interscholastic athletics at the freshmen, junior varsity, or varsity level. Non-athletes are defined as those students who did not participate in interscholastic athletics. Classes will be videotaped and coded using the DAC and the ALT-PE instruments.

Statement of the Problem

The focus of this study is a comparison of teacher behaviors and student involvement of the athletes and non-athletes in the high school physical education setting.

Null Hypotheses

The following hypotheses were tested in this investigation:

1. There will be no significant differences in the behaviors of teachers toward athletes compared to non-athletes in high school physical education classes.
2. There will be no significant differences in the amount of ALT-PE accrued by athletes and non-athletes in high school physical education classes.

Assumptions of the Study

The following assumptions were made for the purpose of this study:

1. The coding of 10 physical education teachers using the DAC and ALT-PE instruments will be sufficient to yield valid data to test the hypotheses.
2. The target students chosen as subjects will be representative of their identified classification.
3. The DAC and ALT-PE instruments will provide an accurate view of the athletes' and non-athletes' involvement and teachers' behaviors within the classes.

Definition of Terms

The following terms were operationally defined for the purpose of this study:

1. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) is a validated extension of Flanders' Interaction Analysis System (FIAS) developed to record verbal and nonverbal behaviors of teachers and students for the purpose of describing teacher-student interactions in physical education settings (Cheffers, Amidon, & Rodgers, 1974).

2. Dyadic Adaptation of CAFIAS (DAC) is a modified version of CAFIAS designed for coding and analyzing interactions between the teacher and an individual or a small group of no more than four students (Darst, Zakrajzek, & Mancini, 1989).

3. Interaction patterns are the verbal and nonverbal behaviors and responses that occur between two individuals (Reisenweaver, 1980).

4. Academic Learning Time in Physical Education Observation Instrument is an objective system used to measure the amount of time a student is engaged in a relevant motor task at an appropriate level of difficulty in physical education settings (Siedentop et al., 1982).

5. Allocated time is the amount of time designated by the teacher for a learning task (Siedentop et al., 1979).

6. Engaged time is the percentage of allocated time that students are actively responding (Siedentop et al., 1979).

7. Academic Learning Time (ALT) is the amount of time a student spends engaged in a relevant learning task with an appropriate level of difficulty (Darst, et al., 1989).

8. Academic Learning Time in Physical Education (ALT-PE) is defined as the amount of academic learning time accrued by a student while in a physical education class (Darst et al., 1989). ALT-PE provides an indirect measure of student learning.

9. Certified secondary physical education teacher is a teacher who has successfully completed a professional preparation program at an accredited college, in the physical education field.

10. Athlete is any student who participates in interscholastic athletics at the freshman, junior varsity, or varsity levels during the school year.

11. Non-athlete is any student who does not participate in interscholastic athletics during the school year.

12. Significance is defined as a difference of 5% or greater between the data being compared.

Delimitations of the Study

The following were the delimitations of this investigation:

1. Only 10 high school physical education teachers and 100 students from the Southern Tier of New York area were used in this study.
2. DAC was the only systematic observation instrument used to record teacher-student interactions.
3. ALT-PE was the only systematic observation instrument used to record the student's involvement and time-on-task.
4. The subjects were be videotaped for only one physical education class.

Limitations of the Study

The limitations of this study were as follows:

1. The findings are valid only when ALT-PE and DAC are used as the observation tools.
2. Since only 10 teachers were used in the study, the findings are

generalized only to those teachers who are similar to the teachers in this investigation.

3. Since only 100 students were used in the study, the findings are generalized only to those students who are similar to the those in the investigation.

Chapter 2

REVIEW OF LITERATURE

This study compared teachers' behaviors toward athletes and non-athletes in high school physical education classes utilizing the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC). This study also compared the involvement of athletes and non-athletes in secondary physical education classes. Involvement was determined by using the Academic Learning Time-Physical Education (ALT-PE) observation.

The review of literature relevant to this investigation will focus on the following areas: (a) teacher expectancies, (b) DAC in physical education/coaching, (c) ALT-PE in physical education/coaching, and (d) research profiling athletes and non-athletes. A summary is also provided.

Teacher Expectancies

The connection of teacher expectations to student performance, known as the teacher expectation effect, has been accepted as a possible explanation for a relationship between students' performance and their teachers' perceptions of the students' abilities (Cooper & Tom, 1984; Good & Brophy, 1987; Jussim, 1989; Martinek & Karper, 1986). This relationship occurs when teachers' expectations are communicated to the student in a variety of ways, which may cause the student to produce that behavior. Teachers' instructional decisions and behaviors can influence a student's self-perception in either a positive or negative direction. Since Rosenthal and Jacobson (1968) first applied Merton's ideas on self-fulfilling prophecies (Merton, 1948) to schooling, there has been much debate about whether and how teacher expectations influence children's academic,

social, and emotional behaviors and outcomes (Babad, 1993; Brophy, 1998; Dusek, 1985; Jussim, 1986; Smith, Madon, & Palumbo, 1998). The issue of whether teacher expectations actually influence children's outcomes in real classroom settings has been a particularly thorny one, primarily due to methodological limitations inherent in naturalistic correlational studies (Weinstein, 1993). Nonetheless, critical reviews of these naturally occurring teacher expectations support the presence of teacher expectancy effects on children's achievement. Some have described this presence as significant, yet modest in magnitude on average (Brophy, 1983; Meyer, 1985). Additional literature, however, indicates that expectancy effects are more likely to occur in some classrooms than in others. When teacher expectations are expressed as salient differences in student treatment, particularly those that regularly favor high over low achievers, conditions are ripe for stronger effects (Babad, 1993; Weinstein, 1998). In these classrooms, teacher expectations and related behaviors may serve to magnify pre-existing differences in high- and low-achieving students.

The Pygmalion Theory explains the self-fulfilling prophecy in which students perform according to the expectations of their teacher (Martinek et al., 1982). Teachers' expectations of particular students may influence teachers' behaviors toward these students. If a teacher expects a student to perform well, then that teacher may have biased interactions with that student, provide the student with more opportunities to respond, and give the student more attention all of which may result in greater student performance. Several systematic observation instruments have been used to determine whether the pygmalion effect is evident not only in the classroom but in the gymnasium

as well (Martinek et al., 1982). In particular, researchers have studied expectancy effects in the physical education setting using DAC and ALT-PE.

DAC in Physical Education/Coaching

DAC was adapted from CAFIAS, one of the most widely used interaction analysis systems in physical education, by Martinek and Mancini (1979). CAFIAS, or Cheffers' Adaptation of Flanders' Interaction Analysis System, observes students' verbal and nonverbal behaviors, the teaching agent, and the classroom structure to be classified (Cheffers, 1972). One limitation of CAFIAS was that it only focused on the interactions of the teacher and the whole class, unfortunately neglecting the teacher's interactions with individual students. The DAC modification of the CAFIAS instrument was developed to enable researchers to describe the interactive behaviors between a teacher and either a single student or a small group of students. DAC is basically the same as CAFIAS with a few exceptions: (a) identification of each student must be done prior to the start of the class being observed, (b) the only behavior to be coded is the dyadic interaction between the teacher and the student or small groups, and (c) behavior tallies on the recording sheet are accompanied by a numbered subscript representing the individual student or small group of students to or from which the behavior was directed (Martinek & Mancini, 1979).

Previously, using CAFIAS, most of the research in physical education had been concerned with the interaction behaviors of teachers directed at the entire class. In this student specific study, observational systems used to code dyadic interactions can help in providing the teacher with information that would make them aware of how they

interacted with individual students. Dyadic observation also would make teachers more aware of their students' behaviors and individuality.

DeLola (1998) utilized DAC to describe teaching interaction patterns and behaviors of physical educators with their athletes and non-athletes in physical education classes. DeLola found that behavior of teachers did differ when interacting with students who were athletes compared with non-athletes. Athletes received more praise and information, while the non-athletes received more directions and criticism.

Brophy (1983) found that teachers planned more independent projects, introduced more high-level concepts, praised more, and reinforced high quality performance when working with high ability students. Conversely, when working with low ability students, teachers stressed more structured assignments that dealt with basic facts and skills, were less likely to ask high-level comprehension questions, and waited less time for an answer to a question.

Bibik (1999) conducted a study to examine how college-age students in beginning activity classes construct their self-perceptions of physical competence. Videotape analysis using the DAC indicated some differential treatment occurred; students whose perceptions of competence were lower than their instructor's perception received more corrective feedback. It was concluded that the students interpreted themselves in the instructional context, which accounted for their self-perceptions of competence; the teacher expectation effect played a role as well. Teachers' instructional decisions and behaviors can influence a students' self-perceptions in either a positive or a negative direction.

Ryan (1983) also compared the interactions of the teacher with students of differing ability. His study concluded that high-skilled students received more praise, acceptance, and information, and average- and low-skilled students received more directions and criticism.

Portman (1995) studied the coping behaviors of low-skilled sixth grade students in four physical education classes. After initial observations of the classes, chosen from three separate school districts, 13 low-skilled students were identified. These students were observed, as well as interviewed, for two units of instruction. All the low-skilled students displayed class behaviors that could be termed "survival skills."

These behaviors were used as coping mechanisms and four responses in particular were most common. The first survival skill tactic was to avoid the learning task. The low-skilled students behaved as competent bystanders, placing themselves in inconsequential positions with low frequencies of interaction. A second tactic commonly used was to announce failure in advance. This tactic was used to lower classmates' expectations and, indirectly, ask peers to be less critical of failure. A third behavior was acting out. Low-skilled students would at times display aggressive behaviors such as yelling or stomping feet when faced with failure or criticism from peers. A final behavior employed by the low-skilled students was to accept failure and continue to attempt skills with the belief that eventually the effort would produce success.

The overall effect of all coping behaviors, with the exception of the "accept and keep trying" strategy, was to minimize learning opportunities. By avoiding situations in which failure could be criticized by peers, or recognized by the instructor, students traded the possibility of learning for a reduction in psychological pain.

Research on the expectancy effect has carried over from the physical education setting into the coaching setting. Ware (1985) studied the interaction patterns of a head volleyball coach with Division III varsity volleyball players with high-skill, average-skill, and low-skill abilities. Ware found that the high-skilled athletes received more acceptance and praise, were asked more questions, received more attention, and exhibited more athlete initiated responses than the average-skilled and low-skilled athletes. The average-skilled and low-skilled athletes received more directions and exhibited more predictable responses.

Mancini and Wuest (1987) also used DAC to describe the coach's interactions with athletes of high, average, and low-skill abilities. Videotapes of practices were coded and analyzed to determine if there were differences between the different ability groups. It was found that there were significant differences between the way coaches interacted with athletes of different ability levels. High-skilled athletes received more praise and were asked more questions than their lesser-skilled teammates. More directions were also given to the higher-skilled athletes and they exhibited more interpretive behavior.

Policay (1987) studied the interaction patterns of NCAA Division III football coaches to determine if there were differences in their behavior as they interacted with their high-skilled and low-skilled athletes during various phases of the football season. Policay found the preseason coaching style to be significantly different than the coaching style observed during the regular season. Differences in learning opportunities between the ability groups were found during both active and inactive portions of practices.

The DAC data indicated that differences existed in the behaviors of the coaches as they interacted with athletes of differing abilities. High-skilled athletes were given more

praise, were asked more questions, and were provided with more information and demonstrations about skill techniques than their lesser skilled teammates. The coaches provided their high-skilled players with more feedback while at practice to improve their overall performance. Conversely, the lesser-skilled athletes received less feedback, and the coaches tended to observe these athletes' performance without comment for long periods of time.

Teacher expectancies can influence students' experiences in physical education in many ways. Research indicates differences exist between the experiences of athletic and non-athletic physical education students (Bain, 1985). If athletes are receiving more praise, more information and less criticism than non-athletes, as research has indicated, then their experience will be more positive.

Several researchers identified a form of inequality in physical education termed "motor elitism." Motor elitism refers to teachers using only one learning task for a whole class when it is obvious that some students will be unable to perform the task (Dodds, 1986). Telama, Varstala, Heikinaro-Johansson, and Utrianen (1991) studied 406 physical education classes in an effort to determine to what extent teaching has been differentiated in order to account for students with different motor skill levels. From the 812 students observed, three classifications were selected: high-skilled, average, and low-skilled. Findings obtained by systematic observation showed significant differences existed in the teaching of students in different skill level groups. Low-skilled boys were found to have less time-on-task and spend more time waiting than boys with higher skills. In boys, estimated physical intensity of movement was higher in the high-skill group than it was in the low-skill group. In girls, this difference did not exist. For both girls and

boys clear differences were seen in participation motivation, enthusiasm, and in attitudes toward physical education. High-skill pupils were the more enthusiastic and had the more favorable attitudes. High-skill pupils also were less anxious and more self-assured. In boys, the high-skill group also had more social interaction.

It was determined that in non-differentiated teaching low-skilled students have inadequate opportunities for participation. The findings by Telamo et al. (1991) also suggested that if low-skilled students do not have adequate learning opportunities available to them the end result is the same as that caused by the Pygmalion effect: the high-skilled students benefit most and are most motivated by the teaching.

ALT-PE in Physical Education/Coaching

The ALT-PE systematic observation instrument has been utilized in a number of studies to examine and describe student learning and teacher behavior in physical education classes at all levels. It was originally developed for use in the observation of teachers and their students, and has since been extended to use with coaches and their athletes.

The precursor to ALT-PE was the Academic Learning Time (ALT) instrument, which was developed to study teacher effectiveness in academic subjects such as math and reading. The concept of using ALT as a product approach to measure teaching effectiveness in a physical education setting was first investigated by Siedentop et al. (1979). This modification became known as Academic Learning Time-Physical Education (ALT-PE). The intent of ALT-PE was to observe participation levels of physical education students in respect to the context of the class and the difficulty of the activity. The ALT-PE recording instrument observes student in-class behavior on four

levels. By observing the setting, the content, the activities of the learner being taught, and the level of difficulty of the tasks, many different aspects of a student's behavior can be described.

Following the use of the ALT-PE instrument in several studies, some researchers stated that there was a need for modifications to the system to increase its ease of use (Siedentop, Tosignant, & Parker, (1982). The revised ALT- PE instrument also focuses on the most important part of a learning environment: the learner.

The presently used revised ALT-PE recording system involves a two-level decision system. The two levels in the revised system are the context and the learner involvement levels. The context level describes the class environment and the activity of the class as a whole. This level is divided into three subdivisions: general content, subject matter knowledge content, and subject matter motor content. There are 13 categories within the three subdivisions of the context level, which more fully describe the nature of the class environment. The learner involvement level describes the activities of individual students. This level has two subdivisions--motor engaged and not motor engaged. There are eight categories within the learner involvement level that describe specific student behavior. The revised ALT-PE system provides a process-product measure that can be used to assess motor skill acquisition (Metzler, 1980). The amount of ALT-PE accrued provides an indirect measure of student learning; the greater amount of ALT-PE accrued, the greater the amount of learning that occurred.

The first study to investigate ALT-PE in physical education and to provide descriptive data on ALT-PE variables was carried out by Metzler (1980). Data for this study were collected from the observations of 21 teachers (7 on the elementary level, 7 on

the junior high level, and 7 on the senior high). The teachers were observed in 32 different classes, which included 13 separate physical education activities. Ninety-one target students were chosen to be observed and from the observations of these students data were collected and analyzed using the ALT-PE instrument. From Metzler's study it was found that the mean percentage of ALT-PE intervals across all observations per class was 26.8%. More specifically, the percentage of ALT-PE in elementary classes was 32.3%, in junior high classes it was 28.1%, and in senior high classes it was 20.9%. When the ALT-PE percentages were converted into actual time spent during a class, it was found that there were 9.8 minutes of ALT-PE in elementary classes, 9.4 minutes in junior high classes, and 7.7 minutes in senior high classes. The ALT-PE accrued by students while in motor responding tasks only, or ALT-PE (M), was 7.5% across all observations or specifically 9.1% in elementary classes, 8.3% in junior high classes, and 5.0% in high school classes. Students in these classes accrued approximately 2.5 minutes of ALT-PE (M) per class.

Metzler's (1980) study also provided a descriptive analysis of ALT-PE accrual as students participated. The highest percentage of ALT-PE, 59.4%, occurred in volleyball, followed by soccer with 40.3%. The lowest percentage of ALT-PE was found in gymnastics with 12.3%. Students who participated in team activities accrued more ALT-PE than those who participated in individual activities. There was a reduction in ALT-PE as the difficulty of the task increased.

Smith, Mancini, and Wuest (1984) investigated the ALT-PE experienced by low- and high-skilled male and female secondary students in the basketball classes of a male and female physical education teacher. Results indicated that the female and the male

teachers' high- skilled students were appropriately motor engaged and accrued more ALT-PE than the low-skilled students. Results also showed the male and female low-skilled students were less successful during motor activity than the high-skilled students.

Galli (1982) examined practice sessions of male interscholastic basketball players; the top 33% of the team was designated as high-skilled and the bottom 33% as low-skilled. There were significant differences between the ALT-PE of the high- and low-skilled players. During the practice sessions the low-skilled players spent a large amount of time waiting to participate and received more directions from the coach. The high-skilled players were more actively involved in motor, cognitive, and game-like situations with a high level of success than the low-skilled students.

In a similar study by Policay (1987), the lesser skilled athletes spent considerably more time inactive, subsequently, these lesser-skilled athletes had less opportunity to perform during practice and improve their skills. The high-skilled athletes spent more time actively participating during practices. Conversely the high-skilled athletes were more successful and effective in performing motor skills, accruing more ALT-PE than their lesser skilled teammates.

Thomas, Mancini, and Wuest (1984) compared the ALT-PE of high- and low-skilled male and female lacrosse players. The players were designated as high- and low-skilled according to the same criteria used by Galli (1982). The low-skilled male and female players spent a greater time waiting to participate and were less involved in motor and cognitive situations. The researchers also concluded that the high- and low-skilled male players spent more time in game play, were more motor engaged, and accrued more ALT-PE than the high- and low-skilled female players.

Shaffner (1986) investigated the differences in ALT-PE between starting and non-starting collegiate football players. Significant differences were found at the learner involvement level, particularly the motor appropriate engaged time (ALT-PE). Starting players were motor engaged more often, (57.1% versus 47.4%), accrued more ALT-PE (39.6% versus 26.0%), and spent less time waiting (26.8% versus 37.4%) than non-starting players.

Terrillion (1988) compared the ALT-PE of high-, average-, and low-skilled female intercollegiate volleyball players. Terrillion concluded that high-achievers experienced more opportunity to learn than low-achievers due to increased amounts of the time-on-task and their rate of success. Terrillion reported that while many coaches' behaviors were similar, high-achievers were in fact provided with more frequent feedback and encouragement.

Research Profiling Athletes and Non-athletes

Athletics are an integral facet of our society. Americans are deeply interested in and committed to athletic programs. Athletics promote students' identification with their schools, for competition with outsiders seems to draw the institution together in spirit as well as in purpose. Through athletic participation students gain many qualities for effective citizenry. Adherence to the rules, which is essential to most games, carries over to the social order. Fair play and respect for the rights of others constitute a part of the planned athletic program. Engaging in athletics develops one's physical strength, endurance, agility, and speed. Although it is less commonly understood, participation in athletics also satisfies other needs. For example, the need for belonging, peer-approval, self-esteem, and the approbation of authority figures often occurs through the

development of competencies in games and sports. The development of a positive self-concept and the poise and personality improvement that result can be most important for the young athlete.

The opportunities to cooperate and compete, to lead and follow, and to share responsibilities, triumphs and defeat, may be most significant for individuals. The friendships made in these settings will never be forgotten. These are important relationships, which may be carried over into adult life. Athletics can also be entertainment for the student and adult community, a feeder system for colleges, and a builder of community spirit (Sage, 1990).

In fact, it is difficult to imagine an American high school without interscholastic sports program for students. Kuga and Douctre (1994) addressed the "sports builds character" concept in their study of the effects of athletic participation on the self-image of male and female athletes in grades nine through twelve. Their subjects were 537 student-athletes attending 15 high schools in Pennsylvania. The sample consisted of nearly equal percentages of males and females as well as an even split through the grades. The subjects responded to a questionnaire containing statements designed to reflect the perceived self-image of interscholastic athletes on three scales: sociological, psychological, and physical.

Their research found that sports participation has a positive impact on an athlete's self-image. Regardless of sex or grade level, participants attribute positive benefits in self-image to their participation in athletics. A noteworthy difference in this study compared to similar earlier studies was the increase in importance of athletics as indicated by female athletes. High school female athletes were found to be experiencing

benefits typically acknowledged by middle school female athletes and male athletes as a result of athletic participation.

Chase and Dummer (1992) investigated the determinants of social status for elementary and middle school children. A total of 227 boys and 251 girls in Grades 4, 5, and 6 completed a questionnaire to determine which criteria were most important in determining personal, female, and male popularity. Results, when compared to similar studies conducted 15 years earlier, revealed that appearance has become more important and academic achievement less important in determining personal popularity for girls. For boys, the comparison indicated that sports have become more important and academics less important in determining personal popularity. Boys reported sports to be the most important determinant of male popularity and appearance as the most important determinant for girls. Sports became more important for boys with each higher grade level.

The value of experiencing competition in athletics is also prized. A standard cliché is that life is competitive; hence athletics prepare one for playing the game of life. The late President Theodore Roosevelt notes this sentiment as part of his philosophy of life.

It is not the critic who counts, not the man who points out how the strong man stumbled, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena; whose face is marred by the dust and sweat and blood; who strives valiantly; who errs and comes short again and again.... Who knows the great enthusiasms, the great devotions and spends himself in a worthy cause; who, at the best,

knows in the end the triumph of high achievement; and who, at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who know neither victory nor defeat.

The National Federation of State High School Associations (NFSHSA) maintains that athletics are educational and has stated as such:

Athletic participation in high school is a valuable educational experience in itself every bit as important to the students' development as the classroom experience; further, that involvement in athletics supports a student's academic objectives much more than educators realize.

Accordingly, athletics should not be treated as "extracurricular" and positioned as a reward for outstanding students. Athletic participation should be for all students. (Jable, 1987, p. 64)

Byrd and Ross (1991) investigated the influence of participation in junior high athletics on students' attitudes and grades. Attitudes, absenteeism, and school adjustment were also researched. The 379 male subjects were charted academically for a full year and were given an attitude survey containing statements about school attendance, behavior, academic achievement, study habits and self-esteem. Adults, including coaches, physical education instructors, teachers and principals, were also surveyed. Two interesting responses found in the study by Byrd and Ross shed light on the athlete versus non-athlete profiles. The first response was found within the attitude survey. Nearly 50% of the athletes agreed that classmates looked up to them due to their athletic participation. The second notable response was found within the adult survey. One respondent stated, "We expect more of our athletes, and they usually produce those

results." The majority of adults believed that advantages gained by participation in interscholastic athletics far outweighed any disadvantages.

Kollen (1983) found similar patterns in a study of 20 high school seniors. It was discovered that, to avoid embarrassment and humiliation, less skilled students withheld something of themselves through minimal compliance, lack of involvement, manipulation of the teacher, false enthusiasm, rebellion, or giving up. It was concluded that the movement standard in physical education is masculine, athletic, and competitive, creating a fragmented rather than an integrated movement experience.

The athlete versus the non-athlete comparisons begins as early as elementary school. Wang (1987) conducted a participant observation study of a 5th grade physical education class. She discovered a teacher-sponsored curriculum and a separate, contradictory student-imposed curriculum. The teacher-sponsored curriculum promoted an ideal of integrated, democratic living with emphasis upon cooperation, equality, and social responsibility. The student-imposed curriculum revealed patterns of discrimination based on skill level and success in sports and games.

Summary

This chapter presented relevant literature on the comparisons of teacher behavior and student involvement in physical education. The findings of several studies have concurred that in our gymnasiums it appears that physical education teachers display preferential treatment towards high-skilled students, including athletes. This prejudice is detrimental to learning as it creates a Pygmalion effect.

Martinek et al. (1982) defined the self-fulfilling prophecy as an expectation initiating a series of events that causes the original prediction to come true. High

expectations of a student by a teacher are generally associated with good performances; whereas, low expectations tend to be associated with poor performances.

Research has indicated that the self-fulfilling prophecy is evident in the physical education setting. Ryan (1983), Brophy (1983), DeLola (1998), and Bibik (1999) using DAC found high-skilled students received preferential treatment from their teachers. Mancini and Wuest (1987) analyzed seven coach expectancy studies and found high-skilled athletes received more praise and acceptance, were asked more questions, and given more feedback than the coaches' lower-skilled athletes.

In review, DAC stems from the CAFIAS system, as an adaptation of it, with very few changes. Those being identification of each student must be done prior to the class being observed; the only behavior to be coded is the dyadic interaction between the teacher and the student or small groups and finally, behavior tallies on the recording sheet are accompanied by a numbered subscript representing the individual student or group of students to or from which the behavior was directed (Martinek & Mancini, 1979).

The interaction pattern observed by the three studies, DeLola (1998), Ryan (1983), Mancini and Wuest (1987), all noted that high-skilled athletes received more praise and information. Conversely, both DeLola and Ryan found that the low-skilled students received more directions and criticism from the instructor.

Since its inception the ALT-PE observation instrument has been used to investigate the involvement of different individuals and subgroups within classes, such as males and females, mainstreamed and non-mainstreamed students, and students of different ability levels. Several researchers have completed studies of the ALT-PE accrued by students of varying skill abilities. Galli (1982), Smith (1984), Shaffner (1986)

and Terrillion (1988) have concluded that students classified as high-skilled had more opportunities to participate in motor activities in the physical education classes and accrued more ALT-PE than those students classified as low-skilled.

Portman (1995) identified coping behaviors by less skilled students during situations where failure could be criticized by peers or the instructor and therefore were avoided. The study showed behavioral examples of how the learning opportunities of less athletic students are minimized. Specifically noted responses were survival skill tactics, advance failure announcement, acting out and finally, to accept and keep trying.

Self-image among students participating in sports has been notably higher regardless of sex or grade. Kuga and Douctre (1994) found that students held a great importance for athletic participation. Notably, the importance level had increased within the female population during the past decade.

Both within and outside of the gymnasium athletic prowess provides a level of status and popularity non-athletes rarely attain. Studies conducted by Byrd and Ross (1991) and Chase and Dummer (1992) have shown athletic ability to be reported as more important and academics less important in determining popularity.

Chapter 3

METHODS AND PROCEDURES

This chapter outlines the methods and procedures that were utilized in this study. The chapter is divided into seven sections: selection of subjects, testing instruments, procedures, method of data collection, coder reliability and intra-observer agreement, scoring of data, and summary.

Selection of Subjects

The subjects in this study were 10 high school physical education teachers and 100 students. Teachers were contacted in person or by telephone and given the details and rationale for the study. The teachers were asked to give the investigator permission to videotape their class instruction (Appendix A). Each student's permission to participate in this investigation was obtained by the use of an informed consent form (Appendix B). The teachers indicated from their class lists those students who were interscholastic athletes and those students who were non-athletes.

Testing Instruments

Two systematic observation instruments were utilized in this investigation. Teacher interactions with the students were measured with DAC, the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction System (Martinek & Mancini, 1979). The Academic Learning Time in Physical Education (ALT-PE) system (Siedentop et al., 1982) was used to measure student involvement.

DAC provides a means by which a teacher's interactions with an individual student or a small group of students may be coded and analyzed. Coding procedures and policies for DAC are similar to those of CAFIAS (Cheffers, 1972). When using DAC,

behaviors are recorded only when the teacher interacts with the selected student. Observers record numerical symbols of the appropriate behavior in the order of occurrence. If both a verbal and nonverbal behavior is occurring simultaneously, the verbal numeral is recorded and circled. A time limitation of 3-seconds is placed on extended behaviors, but the recorder codes all behaviors that are observable.

The ALT-PE observation system measures the amount of time that a student is successfully engaged in a relevant motor task at an appropriate level of success. ALT-PE uses student activity in the physical education class as an indirect product measure of learning. The greater the amount of ALT-PE accrued, the greater amount of learning and learner involvement.

The ALT-PE observation system is an interval recording system that observes student behavior on two levels: the context level and the learner involvement level. The context level describes the focus of instructional content, and the learner involvement level describes student behavior during physical education content. This system is designed to observe three students throughout the physical education class. The ALT-PE system utilizes a 6-second interval recording system. The students are observed for 6 seconds, and their behavior are recorded for 6 seconds. Their behaviors are subsequently placed into categories to provide information about the frequency and percentage of occurrence of behaviors. This information is used to describe the type and amount of student involvement in the physical education class.

Procedures

The classes were videotaped during their regularly scheduled time. The teachers wore a wireless microphone during the course of the videotaping, which in no way

interfered with their teaching. Each student was given a numbered scrimmage vest selected from four colors. Prior to the start of each class, the teacher assisted the researcher in identifying which students had participated in, or were participating in interscholastic athletics during that school year. Athletes wore two out the four colors of vests. The non-athletes, students who had not participated in interscholastic athletics during the year, wore the remaining two colors of vests. Students were given the appropriate color vest in a random order. The number on each vest helped the researcher identify individual students for coding purposes.

Method of Data Collection

The videotapes were coded using the DAC and ALT-PE instruments by an expert coder, Dr. Victor H. Mancini. Data for analysis were obtained from the coding of these videotaped high school physical education classes.

Coder Reliability and Intra-observer Agreement

In order to determine the investigator's DAC coder reliability, two videotapes were randomly selected and then coded by an expert coder in the use of DAC, during two independent coding sessions. The top 10 interaction patterns were ranked, and the Spearman rank-order correlation was used.

In determining the reliability for ALT-PE the scored-interval agreement method (Hawkins & Dotson, 1975) was used to assess intra-observer agreement (IOA). Two videotapes were randomly selected, and then coded by the expert coder, during two independent coding sessions. IOA is determined by dividing the number of agreements and disagreements then multiplying the result by 100 (Herson & Barlow, 1976).

Scoring of Data

The data obtained from the coding of DAC from the videotaped classes of each teacher were entered into the computer for analysis. Percentages and ratios for the 20 variables and 24 parameters identified by DAC were indicated on the computer printouts. The data collected from the ALT-PE observational instrument were coded on tally sheets and then manually compiled into percentages and ratios.

Treatment of Data

Descriptive statistics were utilized to determine whether differences occurred in teachers' interaction behaviors and learner involvement between athletes and non-athletes during the classes. The percentages of the 20 DAC variables and the percentages for the 21 ALT-PE variables were visually compared for the 50 athletes and 50 non-athletes to determine differences between the groups. Comparisons between athlete and non-athletes were considered significant when a 5% difference or greater occurred.

Summary

Ten physical education teachers and 100 students from five Southern Tier region high schools were videotaped. The students were classified as athletes or non-athletes based on their involvement in interscholastic athletics.

Data for analysis were obtained from the coding of each videotape by an expert coder using the DAC and the ALT-PE instruments. During the coding of each class, three students were selected to represent the athlete and the non-athlete groups. Computer analysis provided percentages and ratios for each of the 20 DAC variables for both groups during each class. The ALT-PE data were scored manually, and the percentages

percentages and ratios for the 21 variables were calculated. Differences in behaviors of athletes and non-athletes were determined through the use of descriptive statistics.

Chapter 4

ANALYSIS OF DATA

Presented in this chapter are the results found when comparing the teaching interaction patterns of secondary physical educators with athletes and non-athletes during a physical education class. DAC (Mancini & Martinek, 1979) was utilized to measure the interaction behavior patterns between the teachers' and the individual students. All of the categories inherent in CAFIAS were the same for the DAC system, and its variables will be referred to as DAC variables throughout this chapter. ALT-PE instrument was used to describe the students' involvement during class (Siedentop et al., 1982). Also prior to the start of the investigation it was established that the difference between the groups needed to be 5% or greater in order to be considered significant.

This chapter consists of six sections. The first section discusses coder reliability and intra-observer agreement. The analysis of data is divided into four sections: the total calculations of DAC and ALT-PE observations, the percentages of occurrence of major DAC variables for athletes and non-athletes, a summary of the most frequent interaction patterns and percentages of occurrence for the athletes and non-athletes, and the percentages of occurrence of ALT-PE categories for athletes and non-athletes. Lastly, a summary is provided.

Coder Reliability and Intra-observer Agreement

In order to determine the reliability of the coder for the DAC portion of the investigation, two videotapes were randomly selected to be coded using DAC by Dr. Victor H. Mancini, an expert in the coding of DAC, during two independent sessions. The top interaction patterns of each session were ranked. A Spearman rank-order

correlation for the two independent observations was determined by comparing the concentrations for the top 10 cells. The mean score of the correlation was .98, which was sufficient to indicate the coder was reliable.

Intra-observer agreement (IOA) scores for the ALT-PE coding were computed using the score-interval agreement method (Hawkins & Dotson, 1975). Dr. Victor H. Mancini coded two randomly selected videotapes during two independent coding sessions. Reliability was determined for each of the categories of the ALT-PE recording instrument by dividing the number of agreements by the sum of the agreements and disagreements. The quotient was then multiplied by 100 (Herson & Barlow, 1976). IOA ranged from 92% to 100%, which was sufficient to indicate the coder was reliable.

Total DAC and ALT-PE Observations

Percentages were calculated for all DAC and ALT-PE categories for athletes and non-athletes. During the 10 secondary physical education classes the teacher interacted more frequently with the athletes (3,431 behaviors) than with the non-athletes (2,250 behaviors). When translated to percentages, athletes received 60.4 % of the behaviors, and the non-athletes received 39.6 % of the teacher interactions. The teachers interacted significantly more with the athletes than the non-athletes.

The ALT-PE calculations were obtained from 1,750 observation intervals for each group. The average time for each physical education activity was 35 minutes and 30 seconds.

Total Athlete and Non-athlete DAC Results

The use of the nine selected DAC variables by the physical education teachers with their athletes and non-athletes are summarized in Table 1. Visual comparisons

indicated that significant differences existed in the behavior of the teachers as they interacted with the athletes and non-athletes. The differences existed in the DAC variables of teacher use of praise, information-giving, directions, and criticism. Significant differences were also found in student predictable responses and student interpretive responses. The athletes received more praise from the teachers than the non-athletes and were given more information by the teachers. The non-athletes were given more directions and received more criticism from the teachers than the athletes received. The athletes displayed a higher percentage of interpretive student response than the non-athletes. The non-athletes exhibited more predictable student response than the athletes.

The top 10 ranked cell frequencies of interaction patterns and their percentages of occurrence for both the athlete and non-athlete are presented in Table 2. The predominant interaction pattern common to both the athlete and non-athlete was teacher information-giving followed by student interpretive response, which was followed by further teacher information or instruction (5-8\5). This pattern accounted for more than 20% of the interactions.

The athletes were found to have a notably higher percentage of occurrences of the pattern in which there was extended information-giving by the teacher (5-5). Athletes had a notably higher percentage of occurrences of the pattern in which teacher information-giving followed by student predictable response, which was followed, by further teacher information-giving (5-8-5). Also, athletes were found to have a much higher percentage of occurrence of the pattern in which there was an interpretive student response followed by teacher constructive criticism which was followed by more teacher information (8\7-2-5).

Table 1

Percentage of Occurrence of Major DAC Variables for Athletes and Non-athletes

DAC Variables	Athletes	Non-athletes
Praise	11.4	5.2
Acceptance	6.6	2.3
Questions	3.0	3.2
Information-Giving	28.8	21.6
Directions	9.9	19.3
Criticism	1.9	8.2
Predictable Student Response	7.7	14.9
Interpretive Student Response	28.8	22.3
Student Initiated Response	1.9	3.0

Table 2

Interaction Patterns of Athletes and Non-athletes

Athletes		Non-athletes	
Interaction Patterns	Percent of Occurrence	Interaction Patterns	Percent of Occurrence
5-8\5	25.8	5-8\5	22.0
5-8-5	18.1	6-8\6	19.4
5-5	16.4	6-8-6	11.9
6-8\6	10.8	5-8-5	11.3
6-8-6	6.7	5-5	11.2
8\2-8\	6.5	8\7-8\	8.4
8\7-2-5	6.4	8\3-8\	6.2
8\3-8\	4.4	8\2-8\	4.3
8\7-8\	2.5	8-2-8	2.4
8-2-8	2.4	8\7-2-5	1.0

Table 2 (continued)

Description of the Most Frequent Interaction Patterns

- 5-8\5 Teacher information-giving followed by student interpretive response, which was followed by further teacher information or instruction.
- 6-8\6 Teacher direction followed by student interpretive response, which was followed by further direction.
- 5-8-5 Teacher information-giving followed by student predictable response, which was followed by further information or instruction.
- 5-5 Extended information-giving by the teacher.
- 8\2-8\ Student interpretive response followed by teacher praise and encouragement, which was followed by more student interpretive response.
- 6-8-6 Teacher direction followed by student predictable response, which was followed by further teacher direction.
- 8-2-8 Student predictable response followed by teacher praise and encouragement, which was followed by more student predictable response.
- 8\3-8\ Student predictable response followed by teacher acceptance, which was followed by more student interpretive response
- 8/-7-8\ Student interpretive response followed by teacher criticism, which was followed by more student interpretive response.
- 8-7-8 Student predictable response followed by teacher criticism, which was followed by more student predictable response.

8\7-2-5 Student interpretive response followed by teacher constructive criticism, which was followed teacher information or instruction.

Non-athletes experienced a notably higher percentage of occurrences in only 3 of the 10 most frequent interaction patterns. The interaction pattern of student interpretive response followed by teacher criticism, which was followed by more student interpretive response (8\7-8\) occurred more frequently for non-athletes than athletes.

When the interaction patterns, as shown in Table 2, are examined collectively, further information about teachers' interactions with athletes and non-athletes can be discerned. When the percentages from the three patterns of information-giving (5-8\5, 5-8-5, 5-5) are combined the results show athletes received a total of 60.3% of the information-giving and the non-athletes received a total of 44.8%. Athletes were given significantly more information, either in an extended manner (5-5) or during drills (5-8-5) and scrimmage or game play (5-8\5).

The percentages from the patterns of direction-giving (6-8\6, 8\7-8, and 6-8-6) were combined, this revealed that the non-athletes did receive significantly more directions than the athletes. The non-athletes received 39.4% and the athletes received 20.1%.

Lastly, the five interaction patterns dealing with feedback from the teacher were combined (8\2-8\, 8-2-8, 8\3-8\, 8\7-2-5, and 8\7-8\). Athletes received a total of 35.3% of feedback interactions, and the non-athletes received a total of 19.9% of the feedback interactions. The difference between the totals was 15.4%, showing athletes received more feedback than the non-athletes, whether the feedback was in the form of praise, acceptance, or criticism.

Athletes benefited from teacher information-giving and instruction at higher percentages of occurrence than did the non-athletes. This higher percentage of

occurrence was evident in all patterns where information-giving was present. The most notable difference was in the teacher information-giving followed by student predictable response, which was followed by further information-giving (5-8-5). The athletes experienced a 5.2% greater occurrence of extended information-giving. There was only a slight difference in instances of teacher information-giving followed by student interpretive response, which was followed by further teacher information and instruction (5-8\5).

Non-athletes interacted with teachers at a higher percentage than the athletes in only three of the patterns. These occurrences were when teachers were giving directions. There was a notable difference of 8.6% observed in the pattern of teacher direction followed by student interpretive response, which was then followed by further teacher direction (6-8\6). A difference of 5.2% occurred when teacher direction was followed by student predictable response, which was followed by further teacher direction. (6-8-6). There was also a notable difference of 5.5% in the student interpretive response followed by teacher criticism, which was followed by more student interpretive response (8\7-8\ variable).

ALT-PE Results

The percentages for the ALT-PE categories of the athletes and non-athletes of the secondary physical education teachers are summarized in Table 3. These percentages are based on 1750 observation intervals for each group. Visual comparisons of these data showed no notable differences in the context level categories (see Table 3).

Table 3

Percentage of Occurrence of ALT-PE Categories for Athletes and Non-Athletes

Categories	Athletes	Non-athletes
General Content	17.0	17.8
Transition	7.3	7.9
Management	3.5	3.6
Break	0	0
Warm-up	6.2	6.3
Subject Knowledge	21.0	20.8
Technique	6.1	5.9
Strategy	6.4	6.4
Rules	7.5	7.5
Social Behavior	1.0	1.0
Subject Motor	62.0	61.4
Skill Practice	4.9	4.5
Scrimmage/Routine	11.2	11.3
Game	41.1	40.8
Fitness	4.8	4.8

Table 3 (continued)

ALT-PE Categories	Athletes	Non-athletes
Not Motor Engaged	50.2	58.7
Interim	.5	1.8
Waiting	8.2	19.5
Off-Task	1.1	1.2
On-Task	16.2	15.9
Cognitive	24.2	20.3
Motor Engaged	49.8	41.3
Motor Appropriate	39.4	21.1
Motor Inappropriate	9.2	16.8
Motor Supportive	1.2	3.4

The students in both groups spent slightly more than 17% of their time in the general content area, about 6% of their time warming-up and approximately 3.5% of their time performing managerial tasks.

The teachers devoted approximately 21% of class time to the discussion of knowledge of the particular activities with the class. About 6% of this time was spent informing the students about techniques. The same percentage of time was devoted to discussions of strategies involved in the activity. There was no difference in the amount of time spent regarding rules. The teachers spent little class time discussing social behaviors and no time discussing background of the activity.

Both the athletes and non-athletes spent approximately 62% of their time actively involved in the class activities, which ranged from softball, dance, floor hockey, badminton, handball, tennis, self-defense and basketball. Less than 5% of this time was spent on skill practice and the same figure applies for fitness.

Scrimmaging accounted for about 11% of both groups' class time. The majority of class time, over 40%, was devoted to game play for the students.

Several differences were found to be significant at the learner involvement level. Both groups spent over 50% of their time not actively engaged in the performance of the activity. The non-athletes spent 8.5% more time not engaged than did the athletes. The non-athletes spent 11.3% more time waiting than did the athletes. The students in both groups spent about 16% of their time in on-task activities, performing non-instructional tasks. Both groups spent only slightly over 1% of their time off-task, and both groups received similar amounts of information from the teacher; both groups were engaged in cognitive behavior about 20% of the time.

The athletes were engaged in motor activity 8.5% more time than the non-athletes; the athletes were actively participating nearly 50% of the time compared to 41% for the non-athletes (see Table 3). The athletes accrued substantially more ALT-PE (motor appropriate) than the non-athletes. The athletes were successfully and appropriately engaged in motor activities 39.4% of the class time, and the non-athletes were successfully and appropriately engaged in motor activities only 21.1% of the class time. The non-athletes were not appropriately engaged or unsuccessful in the performing of motor skills 16.8% of the time compared to 9.2% of the class time for the athletes. Both groups spent little time in motor supporting behaviors.

Summary

Coder reliability for DAC was determined to be .98. IOA for ALT-PE ranged from 92% to 100%. These scores were sufficient to indicate that the coder was reliable.

Visual comparisons of the data presented in Table 1 indicated that significant differences existed in the behaviors of the secondary physical educators towards the athletes and non-athletes. Differences were also noted in the student response to the teachers.

Both athletes and non-athletes had the same top 10 interaction patterns although their percentages of occurrence differed. Visual comparisons of DAC interaction patterns indicated the most frequent interaction pattern for both groups was that of teacher information-giving followed by student interpretive response which was followed by further information from the teacher (5-8\5). Athletes were given a noticeably higher percentage of information in response to predictable behavior and greater amounts of extended information-giving. Comparisons also revealed that non-athletes were given a

noticeably higher percentage of the interaction pattern of student interpretive response followed by teacher criticism, which was followed by more student interpretive response (8\7-8).

There were no major differences between the athletes and non-athlete in the percentage of occurrence of ALT-PE categories at the context level. Significant differences between the athletes and non-athletes appeared at the learner involvement level.

Both groups spent over half of the class time not actively engaged in the class activity. The non-athletes spent 8.5% more time not motor engaged than did the athletes. The non-athletes also spent 11.3% more time waiting. The athletes accrued 8.5% more ALT-PE (motor appropriate) than the non-athletes during class. The athletes were also more successfully and appropriately engaged in motor activities 39.4% of the class time versus 21.1% of the time for the non-athletes.

These results led to the rejection of the hypotheses which stated that there would be no significant differences in the behaviors of teachers towards athletes and non-athletes and that there would be no significant differences in the amount of ALT-PE accrued by athletes and non-athletes in high school physical education classes.

Chapter 5

DISCUSSION OF RESULTS

In this chapter the results of this study are discussed and compared to the findings of other related investigations. This study used DAC to examine teachers' expectancies and interaction patterns with athletes and non-athletes in the high school physical education classes. The study also investigated the students' involvement and ALT-PE during high school physical education classes.

Summation of DAC

In this study it was found that athletes received significantly more praise, encouragement and information than non-athletes. Non-athletes received more direction and criticism than athletes. A parallel study was conducted by DeLola (1998), who compared the interaction patterns of physical education teachers with athletes and non-athletes in physical education classes. As in the present study, DeLola used the DAC and ALT-PE instruments concurrently. DeLola's findings were similar to the current findings; both studies found athletes received more praise and information than did non-athletes. In both studies, non-athletes received more directions and criticism from the instructor.

Visual comparisons of the physical educators' interactions with the athletes and non-athletes indicated that significant differences did exist in the teachers' behaviors toward and involvement of athletes and non-athletes in physical education classes. The teacher's interactions were directed towards the athletes 60.4% of the time and the non-athletes only 39.6% of the time, a substantial difference of 20.8%.

When noting the pattern or extended information given by the teacher, it was found that a substantially higher percentage was directed to athletes (5-5). Knowing the athlete has been given this extended information, a pattern was noted for the students' predictable response. A higher response of occurrences was noted among the athletes. This student response was followed by further information from the teacher (5-8-5).

When the percentages from the three patterns of information-giving (5-8\5, 5-8-5, 5-5) are combined, it was found that athletes received a total of 60.3% of the information and the non-athletes received a total of 44.5%. Athletes were given more information, either in an extended manner (5-5) or during drills (5-8-5) and scrimmage or game play (5-8\5). The percentages from the patterns of direction-giving (6-8\6, 8\7-8\ and 6-8-6) were combined and revealed that the non-athletes did indeed receive more directions than the athletes. The non-athletes received 39.4% and the athletes received 20.1%.

Non-athletes experienced a notably higher percentage of occurrences in only 3 of the 10 most frequent interaction patterns. Interestingly, non-athletes were singled out more for criticism than athletes and this was found in the interaction pattern of student interpretive response followed by teacher criticism, which was followed by more student interpretive response (8\7-8\). This interaction pattern occurred significantly more frequently for non-athletes than athletes.

The results of this study indicated that significant differences truly existed in the behaviors and interactions of the physical educators with athletes and non-athletes. These results were similar to the parallel study by DeLola (1998). DeLola found athletes received significantly more praise and information-giving than non-athletes. Also,

DeLola found non-athletes received significantly more criticism and directions than the athletes.

DAC has been used in similar studies by Ryan (1983), Brophy (1983) and Bibik (1999). The main function of these studies was to compare the interaction patterns of physical education teachers with high-skilled and low-skilled students. The results of these studies revealed that students labeled as high-skilled received more praise encouragement, and acceptance of ideas than did students perceived as low-skilled, which are similar to the results found in this study. In the present investigation, it was evident that many teachers were more enthusiastic about the athletes' performance and gave them more attention, praise, etc. The non-athletes received less encouragement and their performances were often treated indifferently. This discrepancy leads to an inequitable learning environment and perpetuates inequalities in skill performance.

DAC has also been utilized in the coaching field. Shaffner (1986), Ware (1985), Policay (1987) and Terrillion (1988) all completed studies using the DAC instrument in athletic settings. The researchers found that the high-skilled athletes received more acceptance and praise, were asked more questions, received more attention, and exhibited more athlete-initiated responses than the average-skilled and low-skilled athletes. The average-skilled and low-skilled athletes received more directions and exhibited more predictable responses. These findings were similar to the findings in the present study in that the athletes in this study were the recipients of more praise, encouragement, were asked more questions and received more attention. The reader should make comparisons prudently when reading these studies due to the fact that they have been conducted in the

coaching field. The present study found that teachers treated athletes in such a way that further encouraged and supported the athletes' development of skills.

These differences in DAC between the physical education teachers and the athletes and non-athletes led to the rejection of the null hypothesis which stated there would be no significant differences in the behaviors of teachers towards athletes and non-athletes in the high school physical education classes.

Summation of ALT-PE

In this investigation the ALT-PE accrued by athletes and non-athletes during high school physical education classes was studied. The findings revealed that athletes were more motor engaged and accrued significantly more ALT-PE than did non-athletes. Non-athletes spent significantly more time waiting and thus had fewer opportunities to develop their skills.

Visual comparisons of these data showed no notable differences in the context level categories of ALT-PE. Athletes and non-athletes spent a similar amount of time in subject matter knowledge, learning about techniques, strategies, and rules of the activities being taught. Both groups also spent a similar amount of time in skill practice, scrimmage opportunities, fitness, and game play. This was to be expected since each teacher did not structure the class differently for each ability group; both the athletes and the non-athletes were exposed to the same activities during class.

Despite each teacher providing similar activities for his/her athletes and non-athletes, differences were found in the involvement of the students during class. The athletes spent more time appropriately motor engaged thus accruing more ALT-PE than the non-athletes, thus the athletes had more of an opportunity to learn and improve their

skills. The non-athletes spent more time waiting and spent noticeably higher percentage of time not motor engaged. The non-athletes accrued less ALT-PE than the athletes due to their greater time spent waiting and they were less successful performing motor activities. These findings were very similar to the findings of the parallel study by DeLola (1998).

The present study results indicated that non-athletes spent 8.5% more time not motor engaged than did the athletes, similar to DeLola's findings, which indicated an 8.3% difference. The present study found non-athletes spent 11.3% more time waiting than did the athletes, compared to the DeLola's findings of 10.2%. Also in the present study the athletes were often used for demonstration of skills, leading to more waiting and non-engagement by the non-athletes. Researchers need to provide activities for students of all skill abilities and focus on reducing waiting time and maximizing opportunities for the lesser skilled students, in this case, the non-athletes.

Pieron (1982), Ryan (1983) and Smith, Mancini, and Wuest (1984) each examined differences in ALT-PE between high-, average-, and low-skilled students. Their studies concluded, as did this study, that high-skilled students were appropriately motor engaged and accrued more ALT-PE than did low-skilled students. Results also indicated that low-skilled students were less successful during motor activity than high-skilled students. These differences between the students of high-ability and students of low-ability were not surprising. When students participate in classes, which are taught by teachers without regard to the different skill levels of the students, the high-skilled students are expected to and will likely be more successful and effective during motor performance attempts. Conversely, the students of low-skill ability will most likely be

less successful and need greater effort at the same skill attempts. The low-skilled students, due to lack of success, may have had less motivation. They also spent more time waiting for their turn to practice thus resulting in fewer opportunities to improve their skills. This was especially noticeable in a basketball class videotaped as part of the present study. In this class the students were playing two on two basketball; several courts were set up and the winners at each at each court stayed on the court and continued to play. The losers sat out until they got another chance to play a winning team. The less-skilled spent more time waiting than did the high-skilled.

Studies using ALT-PE have also been conducted in the coaching environment. The ALT-PE of high- and low-skilled athletes in a team sport were compared by Galli (1982), Thomas et al. (1984), Shaffner (1986), Policay (1987) and Terrillion (1988). These studies indicated that the low-skilled athletes accrued less ALT-PE than the high-skilled athletes and spent much more time waiting to participate. The high-skilled athletes spent more time actively participating than the low-skilled athletes and, therefore, were given a greater opportunity to improve upon their skills.

These differences in ALT-PE accrued between the athletes and non-athletes led to the rejection of the null hypothesis that stated there will be no significant differences in the amount of academic learning time accrued by athletes and non-athletes in high school physical education classes. Athletes had more opportunities to learn and were more successful in physical education classes than non-athletes. These data suggest that teachers need to restructure their lessons to try and give all students an opportunity to be successful and have equal opportunity to improve upon their skills.

Experience of Athletes and Non-athletes in Secondary Physical Education

This study sought to investigate the way athletes and non-athletes experience the same secondary physical education class. Similar studies have focused on athletic participation as a means for improved social status and self-concept, increased popularity, character building, and preferential treatment on behalf of the teachers, peers, and community.

Wang (1987), Kuga and Douctre (1994), and Byrd and Ross (1991) conducted studies that examined the “sports build character” concept. They concluded in their studies that athletes are believed to possess more desirable social characteristics through their participation in sports. An excellent example was noted in the study by Byrd and Ross, with a statement found within an adult survey: “We expect more of our athletes, and they usually produce those results.”

Studies conducted by Wang (1987) and Chase and Dummer (1992) have shown athletic ability to be reported as the most important factor in determining popularity and social status among high school students. In both studies, boys reported sports to be the most important factor of male popularity. The “sports builds character” concept parallels the self-fulfilling prophecy with teacher expectations elevated as well as social expectations.

The athletes in this study were similar to those in earlier studies; they were given preferential treatment due to their highly regarded status and ability. This was reflected in the DAC results, which indicated teachers interacted more with the athletes and provided them with more feedback to improve their skills and more encouragement. The ALT-PE data revealed that athletes experienced more opportunities to learn and were

more successful in these opportunities, resulting in a higher accrual of ALT-PE than the non-athletes. The combination of these factors tends to result in a perpetuating cycle in which the athletes maintain their status and superior skill level and the non-athletes continue to struggle to gain the skills and confidence to participate at a higher level.

Summary

This study was compared teachers' behavior towards athletes and non-athletes in high school physical education classes. The student involvement and ALT-PE of athletes and non-athletes were also studied.

Visual comparisons of the DAC data led to the rejection of the null hypothesis that no significant differences would exist in the behaviors of teachers toward athletes compared to non-athletes in high school physical education classes. The data showed that the teachers gave more praise and acceptance of ideas, and more information to the athletes. The athletes displayed a higher percentage of interpretive student response than the non-athletes. The non-athletes exhibited more predictable responses than the athletes. The non-athletes received considerably more criticism and directions. The results of this investigation were very similar to the results of the parallel study conducted by DeLola (1998) and also to similar studies by researchers Brophy (1983), Ryan (1983), Ware (1985), and Bibik (1999).

Visual analysis of the ALT-PE revealed noticeable differences in the learner involvement category, this led to the rejection of the null hypothesis that no significant differences in the amount of ALT-PE accrued by athletes and non-athletes in high school physical education classes. Athletes were more motor engaged, accrued more ALT-PE, spent less time inappropriately engaged, and waited much less time than their non-athlete

classmates. The findings of this study were congruent with the findings of the parallel study by DeLola (1998) and also to the similar studies conducted by Smith (1984), Thomas et al. (1984), Shaffner (1986), Policay (1987), and Terrillion (1988).

Visual comparisons of the DAC and ALT-PE data revealed some relationship between the teachers' interactions and the involvement and ALT-PE of their athletes and non-athletes. The athletes were frequently more successful in performing motor tasks and, in turn, received more praise and information from their teacher. Conversely, the non-athletes were less successful in their performance and received more direction and criticism from their teacher.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This investigation was conducted to compare teachers' behavior towards athletes and non-athletes in high school physical education classes. The student involvement and ALT-PE of athletes and non-athletes were also studied. The study was conducted at five area high schools in the Southern Tier New York region. The subjects were 10 teachers and 100 students. Athletes were defined as those students who participated in interscholastic athletics at the freshmen, junior varsity, or varsity level. Non-athletes were defined as those students who did not participate in interscholastic athletics. Ten physical education teachers were videotaped during their regularly scheduled time. Each student was given a numbered scrimmage vest selected from four colors. Prior to the start of each class, the teacher assisted the researcher in identifying which students were athletes. Athletes wore two out of the four colors of vests. The non-athletes wore the remaining two colors of vests. Ten students from each instructor's class, five athletes and five non-athletes, were randomly selected for observation.

Data for the final analysis were obtained from the 10 videotapes. Each videotape was analyzed utilizing the DAC instrument to assess teacher-student interactions and the revised ALT-PE instrument to describe student involvement. Data compiled from these 10 physical education classes were coded and then transferred onto the computer for analysis. Data were compiled into percentages for the DAC categories and interaction patterns. Data collected for ALT-PE were hand scored and were compiled

into percentages and ratios for the ALT-PE parameters, which were also compared by visual analysis.

Visual comparisons of the physical educators interactions with the athletes and non-athletes indicated significant differences did exist. The athletes were given more praise from the teachers than the non-athletes and were given more information by the teachers. The non-athletes were given more criticism and received more directions from the teachers than the athletes received. The athletes displayed a higher percentage of interpretive student response than the non-athletes. The non-athletes exhibited more predictable responses than the athletes.

Visual inspection of the ALT-PE data revealed little difference in the context levels of the athletes and non-athletes. However, several significant differences were evident at the learner involvement level. Athletes were more motor engaged, accrued more ALT-PE, spent less time inappropriately engaged, and waited much less time than their non-athlete classmates.

Examination of the DAC data and the ALT-PE resulted in the finding that there were significant differences in the interaction patterns of the physical educators with their athletes and non-athletes. Also there were significant differences in the amount of ALT-PE accrued by the athletes and non-athletes in high school physical education classes. Visual comparisons of these data found in this study resulted in the rejection of the null hypothesis that stated there would be no significant differences in the behaviors of teachers towards athletes compared to non-athletes in high school physical education classes. Also the null hypothesis that stated there will be significant differences in the

amount of academic learning time accrued by athletes and non-athletes in high school physical education classes was also rejected.

Conclusions

The findings of this study led to the following conclusions regarding the interaction patterns of teachers with athletes and non-athletes in high school physical education classes and the accrual of ALT-PE by the athletes and non-athletes:

1. The interaction patterns of the teachers were different with the athletes and non-athletes.
2. The teachers interacted more with the athletes than with the non-athletes.
3. The non-athletes spent more time waiting and inappropriately engaged in motor activities than did the athletes.
4. The physical education teachers gave more praise and encouragement to the athletes and received more interpretive responses from the athletes than the non-athletes.
5. Non-athletes received more criticism and directions from the physical educators and gave more predictable responses to the physical educators.
6. The non-athletes spent more time not engaged in motor activity and accrued less ALT-PE than the non-athletes.
7. The athletes received more information from the physical educators than the non-athletes.

Recommendations for Further Study

The following recommendations are suggested for further study:

1. A replication of this study could be conducted using a larger number of teachers and students.

2. A study could be conducted comparing athletes of different sports.
3. A comparison between the same gender teacher and the same gender athletes could be conducted.
4. Conduct a study comparing athletes of the same gender with non-athletes of the same gender and of different gender.
5. The ALT-PE of students of varying skill levels could be studied in a life-time sport instructional unit versus a team-sport instructional unit.
6. A study could be conducted using a feedback intervention to see if the behaviors exhibited by teachers toward athletes and non-athletes can be more equitable.

Appendix A-Informed Consent Form

Teacher Copy

The study in which you have been asked to participate focuses on describing students' behaviors and opportunities for participation in physical education class. You will be videotaped along with your students during the winter of 1998. The students will wear numbered vests for identification. The videotaping will not interfere with students' normal actions in the class. You will wear a wireless microphone while teaching for the purpose of videotaping. Later a trained observer, Dr. Victor H. Mancini, using two observation instruments, will code the videotapes. Cheffers' Dyadic Adaptation of Flanders' Interaction Analysis System (DAC) and Academic Learning Time-Physical Education (ALT-PE) will be used to describe teacher and student behaviors. The resulting information may assist the teacher in planning for equal activity/learning opportunities for the students.

There are no apparent physical, psychological, or social risks involved in this study. Participation in the investigation is voluntary and you have absolutely no obligation to participate and are free to discontinue at any time.

It is assured that the names in this study will be kept confidential. The tapes will be erased promptly following the investigation. If you do not have any questions and are willing to participate in this study, please sign your name below. Failure to return a signed informed consent form shall be taken to mean that you do not wish to participate.

If at any time during this study you would like additional information, please feel free to contact Dr. Victor H. Mancini, Dr. Deborah A. Wuest or Brian Hill at (607) 274-3109.

Thank you,

Brian Hill, Graduate Student

Dr. Victor H. Mancini

Dr. Deborah A. Wuest

I have read the above information about the investigation and I understand its contents. I agree to participate in this study.

Signature

Date

Appendix B-Informed Consent Form

Parent or Guardian Copy

The study in which your son/daughter is asked to participate focuses on describing differences in students' behaviors in physical education class. Your son/daughter will be videotaped for one class during the winter of 1998. The videotaping will not interfere with the students' normal actions in class. Later, a trained observer, Dr. Victor H. Mancini, using two observation instruments, will code the videotapes. Cheffers' Dyadic Adaptation of Flanders' Interaction Analysis System (DAC) and Academic Learning Time-Physical Education (ALT-PE) will be used to describe the teaching and student behaviors that take place during class. The resulting information may improve the instruction time made available to all students and assist teachers in planning for equal learning/activity opportunities for all students.

There are no apparent physical, psychological, or social risks involved in participating in this study. Participation in the investigation is voluntary, and the parents' agreement to the students' participation does not prevent them from discontinuing at any time. If your son/daughter does not want to participate in this investigation, arrangements will be made with the teacher to provide your child with the opportunity to participate in an alternative physical education class with his/her peers.

It is assured that names in this study will be kept strictly confidential. The tapes will be erased promptly following the investigation. If you do not have any questions and are willing to let your child participate in this study please sign your name below. Failure

to return a signed informed consent form shall be taken to mean that consent is not given for your child's participation in this study.

If at any time during this study you feel you would like additional information, please feel free to contact Dr. Victor H. Mancini, Dr. Deborah A. Wuest, or Brian Hill at (607) 274-3109.

Thank you,

Brian Hill, Graduate student

Dr. Victor H. Mancini

Dr. Deborah A. Wuest

I have read the above information about the investigation and understand its contents. I agree to allow my son/daughter to participate in this study.

Signature

Date

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