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# A comparison of the Academic Learning Time-Physical Education of high-skilled and low-skilled female intercollegiate soccer players

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A COMPARISON OF THE ACADEMIC LEARNING TIME-PHYSICAL  
EDUCATION OF HIGH-SKILLED AND LOW-SKILLED FEMALE  
INTERCOLLEGIATE SOCCER PLAYERS

by

Francis J. Shields

An Abstract

of a thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in the School  
of Health, Physical Education,  
and Recreation at  
Ithaca College

December 1984

Thesis Advisor: Dr. Victor H. Mancini

## ABSTRACT

This study was conducted to compare the Academic Learning Time-Physical Education (ALT-PE) of high- and low-skilled female intercollegiate soccer players. Twenty-four female soccer players at the same college in southeastern Connecticut served as subjects. The head coach, a male, was asked to rank his players from high to low according to their ability. The top six ranked and bottom six ranked players on the team were selected for inclusion in this study. The top ranked players were designated as high-skilled and the bottom ranked players as low-skilled. The coach wore a wireless microphone and was videotaped along with his team 12 times during the 1983 season. The videotape of each practice was coded using the revised ALT-PE instrument of Siedentop, Tousignant, and Parker (1982). During the coding of each tape, three target players were selected to represent the high-skilled players and three to represent the low-skilled players. The target players were observed for an entire practice session on an alternating interval basis. Data obtained from these codings were compiled into percentages for the 21 ALT-PE categories. Visual analysis of the data revealed little difference in the context levels of the players. However, significant differences were found in the learner involvement levels of the players, particularly the motor appropriate engaged time (ALT-PE). High-skilled players were motor engaged more, accrued more ALT-PE, were engaged inappropriately less often,

and had to wait less than their low-skilled teammates. The results led to the rejection of the null hypothesis which stated that there would be no significant difference between the ALT-PE of high-skilled and low-skilled intercollegiate female soccer players.

A COMPARISON OF THE ACADEMIC LEARNING TIME-PHYSICAL  
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INTERCOLLEGIATE SOCCER PLAYERS

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A Thesis Presented to the Faculty of  
the School of Health, Physical  
Education, and Recreation  
Ithaca College

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

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by  
Francis J. Shields  
December 1984

Ithaca College  
School of Health, Physical Education, and Recreation  
Ithaca, New York

CERTIFICATE OF APPROVAL

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MASTER OF SCIENCE THESIS

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This is to certify that the Master of Science Thesis of  
Francis J. Shields

submitted in partial fulfillment of the requirements  
for the degree of Master of Science in the School of  
Health, Physical Education, and Recreation at Ithaca  
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## Chapter 1

### INTRODUCTION

In order to achieve higher levels of teacher-coach effectiveness, educators must begin to investigate factors other than just teacher-coach behaviors. Many of the teaching and coaching behaviors have both complex and indirect effects on student achievement (Berliner, 1976).

Teachers and coaches alike must organize and manage the content of their classes and practices to facilitate the best possible learning environment. Berliner (1976) stated that the student's active time-on-task was the link to student achievement, which is what educators seek through more effective teaching and coaching.

Another factor that must not be overlooked in terms of teaching effectiveness is the expectations of teachers and coaches and the effects of expectations on students' and athletes' behaviors. Rosenthal (1974) stated that teachers get what they expect from a student. When a teacher believes that students are high or low in ability, the teacher tends to interact with the students in such a way as to ensure high or low performance from them (Martinek, Crowe, & Rejeski, 1982).

A number of studies have used systematic observation techniques to investigate the influence of teacher's expectancies in physical education settings. One instrument

frequently used has been the Dyadic Adaptation of CAFIAS (Martinek & Mancini, 1979). DAC was developed from Cheffers' Adaptation of Flanders' Interaction Analysis System (Cheffers, 1972) or CAFIAS, one of the most widely used interaction analysis systems in physical education. One shortcoming of CAFIAS was that it focused on the interactions of the teacher with the whole class, obscuring the teacher's interactions with individual students. The DAC modification overcomes this shortcoming, permitting researchers to identify teacher's interactions with individuals or small groups of students. DAC has been utilized to describe teachers' and coaches' interactions with students and athletes of different abilities.

DAC was used by Boyes (1981) and Hoffman (1981) to examine coaches' interactions with specific athletes on the college level. Hoffman (1981) found significant differences in the interaction patterns of male and female lacrosse coaches with their high- and low-skilled athletes. Boyes (1981) found minimal differences in coaches' behaviors as they related to their starting and non-starting players.

DAC was used by Reisenweaver (1980) and Streeter (1980) to examine the behaviors exhibited by teachers as they related to high- and low-skilled students in physical education classes. These two investigations were of like design except that Streeter investigated male teachers while Reisenweaver described female instructors' interactions. Results showed that high-skilled students received more

praise, were asked more questions, were given more information, and initiated more interpretive behaviors than did the low-skilled students. The low-skilled students also received more criticism and gave more predictable responses.

Another systematic observation instrument now being used in physical education and athletics with increasing frequency is the Academic Learning Time-Physical Education (ALT-PE) observation instrument (Siedentop, Birdwell, & Metzler, 1979; Siedentop, Tousignant, & Parker, 1982). Unlike interaction analysis systems, the ALT-PE system focuses on student behaviors instead of teacher behaviors. The ALT-PE instrument describes the amount of time students or athletes spend participating in various tasks. Of particular interest to researchers and physical educators is the amount of time a student spends successfully engaged in relevant motor activities; this time is called ALT-PE. ALT-PE has been shown to be a reliable gauge of teacher effectiveness and student learning (Siedentop et al., 1979). To date, however, few studies have been completed using the ALT-PE instrument to examine coaches' and athletes' behaviors.

Rate (1981) observed the ALT-PE accrued by secondary school athletes during interscholastic practices in five different sports. Rate found that there were significant differences among the sports and that the ALT-PE of the athletes was significantly higher than that of physical education students in the same schools.

Two studies which have examined the effects of coaches' expectancies on ALT-PE have been conducted by Galli (1982) and Thomas (1983). Galli examined the ALT-PE of high- and low-skilled interscholastic male basketball players. Galli found that low-skilled players tended to spend much time waiting and little time actively engaged in motor and cognitive situations when compared to high-skilled players. Thomas (1983) investigated the ALT-PE experienced by high- and low-skilled male and female intercollegiate lacrosse players. Few differences were found in the context level of the players. However, significant differences were found in the learner involvement levels of the players, particularly the motor appropriate engaged time (ALT-PE). High-skilled players accrued more ALT-PE than their low-skilled teammates. They also spent more time actively involved and less time waiting.

A review of the physical education literature reveals only a few investigations which have utilized the ALT-PE instrument to investigate the effects of coaches' expectations on their athletes. This was the intent of the present investigation.

#### Scope of the Problem

The ALT-PE of high- and low-skilled female intercollegiate varsity soccer athletes was investigated. Twenty-four female varsity soccer players at the same college in southeastern Connecticut served as subjects. Twelve practice sessions during the 1983 season were videotaped. Following the season,

the coach ranked his athletes from high to low according to overall playing ability. For this study, the top six ranked athletes and bottom six ranked athletes on the team were selected. The top six athletes were designated as high-skilled and the bottom six athletes designated as low-skilled. During each practice session, three target players were selected to represent each ability group. The target players were observed for an entire practice session on an alternating interval basis using the revised ALT-PE observational system (Siedentop et al., 1982).

#### Statement of Problem

The purpose of this study was to investigate the differences, if any, in the amount of ALT-PE experienced by high- and low-skilled female intercollegiate varsity soccer players.

#### Null Hypothesis

The following null hypothesis was tested in this investigation:

1. There will be no significant difference between the ALT-PE of high-skilled female and low-skilled female intercollegiate soccer players.

#### Assumptions of Study

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

1. The coding of 12 practice sessions of the team would be sufficient to yield valid data on the athletes' behaviors.
2. The target players that were chosen as subjects in

each session were representative of their ability group.

3. The revised ALT-PE instrument provided a valid and accurate view of the athletes' involvement in the team setting.

#### Definition of Terms

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

1. Allocated time is the time designed by the coach for a learning task (Siedentop et al., 1982).

2. Engaged time is the percentage of allocated time that the athletes were actively responding (Siedentop et al., 1982).

3. Academic Learning Time-Physical Education (ALT-PE) is the amount of time athletes spent in practice successfully engaged in a relevant overt motor response (Siedentop et al., 1982).

4. Low-skilled athlete was a player whose skill ability, as determined by her coach, placed her in the bottom 25% of the team.

5. High-skilled athlete was a player whose skill ability, as determined by her coach, placed her in the top 25% of the team.

#### Delimitations of Study

The following were the delimitations of this study:

1. One intercollegiate varsity male soccer coach from a southeastern Connecticut college was used for this study.

2. Twenty-four female intercollegiate soccer players,

six high-skilled and six low-skilled, from the same southeastern Connecticut college were used in this study.

3. Each group of subjects was videotaped for 12 practice sessions.

4. ALT-PE was the only instrument used to record the group context level and the learner involvement level during the practice sessions.

#### Limitations of Study

The following were the limitations of this study:

1. The findings related to the context and learner involvement levels may be valid for comparison only when the ALT-PE instrument is used to identify involvement.

2. Because only one college was used, the findings may only be valid for the female soccer players and their coach at the involved college.

## Chapter 2

### REVIEW OF RELATED LITERATURE

This study compared the differences in the amount of Academic Learning Time-Physical Education (ALT-PE) in the coaching setting between female intercollegiate soccer players of high skill ability and those of low skill ability. The review of related literature will focus on the following areas: (a) the observation of coaches and their athletes, (b) the development of Academic Learning Time-Physical Education, (c) research using Academic Learning Time-Physical Education, (d) the Pygmalion Effect, and (e) summary.

#### The Observation of Coaches and Their Athletes

Research utilizing systematic observation of coaches and their athletes was not in evidence until 1975. Prior to this time, many of the coaching studies were psychologically oriented and descriptive in nature. Studies frequently focused on describing coaches' personalities utilizing psychological tests and/or questionnaires.

Not until Kassin's study (1975) were coaches' behaviors quantitatively analyzed through direct observation. The Mancuso Adaptation for Verbal and Nonverbal Behavior (Mancuso, 1972) was used to determine what differences existed between the behaviors physical educators exhibited while teaching and while coaching. Three physical educators at the college level were observed teaching and coaching their particular sport:

gymnastics, baseball, or wrestling. Results indicated that the physical educators were as direct when they were coaching as when they were teaching. Nonverbal behavior was more evident in teaching while verbal behavior was seen more often in the coaching setting.

Tharp and Gallimore (1976) developed their own 10-category observational system and used it to observe the coaching behaviors of UCLA's renowned basketball mentor, John Wooden. They found that during practice over 50% of Coach Wooden's behaviors were instructionally oriented. These findings suggested that his great success in coaching could most likely be attributed to these instructionally-oriented practice sessions.

Langsdorf (1979) conducted a study to determine through objective observation the coaching behaviors of a highly successful major university head football coach, Frank Kush, and to compare his data to Tharp and Gallimore's (1976) data on John Wooden. His findings indicated considerable similarity between Kush and Wooden. Kush's behaviors consisted of much hustle, scold/reinstruct, and instructional behaviors. Langsdorf's results favor the use of these behaviors in practices.

Another system, the Coaching Behavior Assessment System (CBAS), was developed by Smith, Smoll, and Hunt (1977). This system classified the coaches' behaviors into two categories: reactive behaviors and spontaneous or game behaviors. Coaches of various sports were observed in practice, scrimmage, and

game situations. CBAS proved to be most effective with readily predictable sports such as baseball. CBAS was more difficult to use to describe behaviors in sports such as hockey, basketball, and soccer because the observer had trouble identifying the event to which the coach was responding.

This line of research was continued by Crossman (1980) using the Ohio State Athletic Observation Code (OSAOC) to observe the effects of intervention on athletes' behaviors. Practice sessions in wrestling, gymnastics, and volleyball were coded. Players were then supplied with feedback. This intervention proved effective in producing more productive practice behavior in both wrestlers and gymnasts, but not in volleyball players.

Several researchers (Agnew, 1977; Avery, 1978; Barr, 1978; Hirsch, 1978; Proulx, 1979; Rotsko, 1979; Staurowsky, 1979) used the Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) (Cheffers, 1972) to describe coaching behavior. Agnew (1977) used CAFIAS to compare the behaviors of secondary female physical educators while teaching and coaching. Twenty female physical educators were observed, and their interactions with their students/players were coded. Results indicated that coaching behaviors overall were more productive than behaviors observed in the teaching situation. There was also a greater variety of behaviors, more athlete-initiated behavior, and greater amounts of praise and acceptance in the coaching setting. Barr (1978) used CAFIAS

as an intervention technique with coaches. Following instruction and feedback using CAFIAS, coaches also showed increases in questioning, praise, and acceptance. There was also an increase in athlete-initiated behavior.

Some researchers have used other observational instruments that have been developed to measure other aspects of the coaching environment in conjunction with CAFIAS. Rotsko (1979) and Avery (1978) utilized the Coaches' Performance Criteria Questionnaire (CPCQ) (Rosenshine & Furst, 1973) in conjunction with CAFIAS to investigate the behaviors of effective and less effective coaches. Both studies revealed effective coaches used more indirect behaviors than less effective coaches. Hirsch (1978), Proulx (1979), and Staurowsky (1979) utilized the Group Environmental Scale (GES) (Moos, Insel, & Humphrey, 1974) to make comparisons between the interactions of teams and their coaches in a satisfied environment and those in a less satisfied environment. Results showed that coaches in satisfied environments had more control, provided more organization, and tended to be more supportive.

Boyes (1981) used the Dyadic Adaptation of CAFIAS (DAC) (Martinek & Mancini, 1979) to investigate the interaction patterns of Division III college football coaches with their starting and non-starting players. Results indicated that there were minor differences in coaches' behaviors toward the starters and non-starting players. Starting players received more praise and acceptance while the non-starters received more directions from their coaches. Hoffman (1981) used DAC

to describe the coaching behaviors of male and female lacrosse coaches toward their low-skilled and high-skilled players. He found that both coaches interacted with these skill groups differently. The male coach was direct and critical in his interactions with his low-skilled players and informative and supportive in his interactions with his high-skilled players. The female coach displayed similar behaviors as the male coach in her interactions with high-skilled players. However, unlike her male counterpart, she was more supportive of her low-skilled players' efforts and actions.

Researchers have also found that observations of athletes during practice sessions can be useful as an indicator of effective coaching and practice organization. Darst, Langsdorf, Richardson, and Krahenbuhl (1981) used an objective recording technique to describe how football players spent their time in practice. Results indicated too much waiting time or unproductive time was spent during the practice session. It was concluded that unproductive time should be kept to a minimum.

Educational researchers realized that the observation of students and athletes during their classes and practices could be a vital indicator of teaching and coaching effectiveness. An instrument which has recently been used for the observation of coaches and their athletes is the Academic Learning Time-Physical Education (ALT-PE) instrument (Siedentop, Birdwell, & Metzler, 1979; Siedentop, Tousignant, & Parker, 1982).

### Development of Academic Learning Time-Physical Education

In 1972 the California Commission for Teacher Licensing and Preparation began a multi-year research project to study the teaching of reading and mathematics in classrooms. This project was titled the Beginning Teacher Evaluation Study (BTES). The Commission sought to identify which teacher classroom behaviors were related to student academic learning (Fisher, Filby, Marliave, Cahen, Dishaw, Moore, & Berliner, 1972). The BTES project was conducted in three phases: the planning phase, 1972-73; the instrument development and hypothesis for further study phase, 1973-74; and the field studies phase, 1974-78 (Berliner, 1976). During phase three, observers categorized student efforts and made decisions in reference to the following categories: (a) setting for instruction, (b) content of the instruction, (c) level of the instruction, (d) nature of the learner responses (learner moves), and (f) focus of learner moves (Marliave, Fisher, & Dishaw, 1978). The findings for the three phases revealed time variables to be the common denominator for analyzing and measuring classroom instruction (Marliave et al., 1978). In addition, Berliner (1976) reported that time-on-task can provide an actual measure of student achievement. This time-on-task concept evolved and became known as Academic Learning Time (ALT). ALT was defined as the amount of time a student spends in relevant learning tasks with a high degree of success (Marliave et al., 1978).

The BTES researchers identified four variables that comprised the ALT model. Allocated time, the time a teacher apportions to a class task, and engaged time, the amount of time a pupil concentrates on a particular task, were identified as the two time variables of the ALT model. The two nontime variables were student success rate and task relevancy. A student's comprehension of class tasks was described in terms of low, medium, and high success levels. Another important factor in the ALT model was task relevancy. Tasks too easy or too difficult for a student hindered the learning process. However, tasks that challenged the student's ability greatly enhanced the learning process (Fisher et al., 1972).

The concept of ALT was modified by Siedentop et al. (1979) to develop an observation instrument to permit the coding of physical activity. This modification, ALT-PE, was defined as the amount of ALT accrued by a student while in a physical education setting (Metzler, 1980a).

ALT-PE was an attempt to estimate teacher effectiveness in physical education in the absence of valid and reliable student performance data. ALT-PE was also assumed to be strongly and consistently related to achievement in physical education. Siedentop et al. (1979) defined ALT-PE as the amount of time students spend in class activity engaged in relevant overt motor responses at a high success rate. The determinant variables of ALT-PE formulated a sound theoretical perspective from which to analyze student's opportunities to acquire the skills and knowledge of motor play activities

(Metzler, 1982).

The ALT-PE model was an achievement-centered model, designed to help teachers design instruction to give students more opportunity to learn motor skills. Metzler (1982) stated that its greatest strength was an ability to provide a logical blueprint for planning instructional decisions and behaviors in the physical education setting, thus making it a reliable indicator of teaching effectiveness as well.

The ALT-PE system provided an orderly procedure for recording student time-on-task in physical activity. The initial ALT-PE system consisted of four major decision levels: setting, content, learner moves, task difficulty, and 25 further categories, used to explain the major categories. Lastly, a subvariable of general ALT-PE, a category labeled ALT-PE(M), was included to identify when the target student was engaged in a relevant motor task with an easy level of difficulty (Metzler, 1980a).

In 1982, Siedentop et al. developed a revision to the ALT-PE system. The revised ALT-PE system was conceptualized as a two-level, hierarchical decision system. The first level of the system required a decision on the context of the setting under observation and provided information concerning the context within which specific individual student behavior was occurring (Siedentop et al., 1982). There were three major subdivisions at the context level--general content, subject matter knowledge, and subject matter motor--and 13 categories to describe the activities which occurred during class or

practice. The second level involved observations of individual learner involvement and was designed to describe the nature of the learner involvement within the context of the class or practice. There were two major subdivisions at the learner involvement level--not motor engaged and motor engaged--and eight categories to describe individual student behavior (Siedentop et al., 1982). A description of the revised ALT-PE system can be found in Appendix A.

#### Research Using ALT-PE

The ALT-PE instrument has been used by several researchers (Aufderheide, Olsen & Templin, 1981; Godbout, Brunellé, & Tousignant, 1983; Metzler, 1980a) to describe elementary and secondary physical education classes. Metzler (1980a) used the ALT-PE instrument (1979) to discover the amount of ALT accrued in a variety of physical education settings. Students of 21 inservice physical education instructors were videotaped. Findings indicated that students were engaged in content-PE 73.6% of the time, and ALT-PE occurred in 26.8% of all observed class intervals. Analysis of the data revealed a "funneling effect" which indicated a reduction in ALT-PE with an increase in the level of task difficulty.

Godbout, Brunelle, and Tousignant (1983) conducted a study in which 30 elementary and 31 secondary school physical educators were observed twice over a 2-month period. The results obtained were not unlike those of Metzler (1980a). Content-PE activity accounted for 65.7% of class time at the elementary level and 81.1% at the secondary level. ALT-PE

constituted 31.3% and 36.4% of class time, respectively. Both of these studies (Godbout et al., 1983; Metzler, 1980a), conducted at the secondary level, found students to spend as much time not engaged in activity as they spent engaged. At the elementary level, both of these studies found students spent slightly more time engaged than non-engaged.

Aufderheide, Olson, and Templin (1981) investigated the use of ALT-PE concurrently with the Observational System for Instructional Analysis in Physical Education (OSIA-PE). They concluded that when used concurrently, the OSIA-PE and the ALT-PE observational instruments can successfully provide information about teacher effectiveness and student achievement at the elementary, junior high, and secondary levels.

The ALT-PE instrument has also been utilized to describe college students' involvement and the amount of ALT-PE accrued in different activities. Metzler (1981) examined the levels of ALT-PE accumulated by college students. The results indicated that 45% of all coded intervals were ALT-PE. This was nearly twice the amount of ALT-PE that had been exhibited in his grade 1-12 study and, as expected, indicated a substantially higher level of involvement on the part of the college students.

Metzler (1980b) examined the levels of ALT-PE experienced by students in various physical education settings. Results showed that different sports such as volleyball, football, soccer, and gymnastics had different amounts of ALT-PE

associated with them. Students engaged in the volleyball and soccer activities exhibited the highest mean ALT-PE percentages (59% and 40.3%, respectively) while the lowest mean ALT-PE levels were observed in football and gymnastics activities (14.1% and 12.3%, respectively). These results indicated that students engaged in team activities tended to accrue more ALT-PE than did students engaged in individual activities. In addition, Metzler found that ALT-PE did not increase as the teaching units progressed.

A study involving the ALT-PE of mainstreamed physical education classes was conducted by Aufderheide, McKenzie, and Knowles (1982). The purposes were to determine the differences between the amount of ALT-PE of regular and mainstreamed handicapped students and to examine the differences in the amounts of ALT-PE provided to students by users and non-users of individualized instruction. The researchers reported no significant differences in the amount of ALT-PE by mainstreamed handicapped and regular students. However, students within the classes of users of individualized instruction accrued a significantly greater amount of ALT-PE than did the students of non-users of individualized instruction.

The ALT-PE instrument has also been utilized to investigate the effects of different intervention strategies on teachers' behaviors. Metzler (1980b) used an intervention strategy designed to increase the percentage of engaged motor intervals with the intent of increasing ALT-PE(M) by the target students in archery classes. The data indicated that

increases in motor engagement occurred immediately after interventions with concurrent increases in ALT-PE(M). Metzler (1980b) reported an average increase of 127.5% and 20.4% for engaged motor response and ALT-PE(M), respectively. Metzler concluded that the simple intervention of adding extra arrows and having two students shoot at the same target simultaneously resulted in high increases in the percent of motor engaged responding intervals and, subsequently, ALT-PE(M).

Birdwell (1980) conducted a study on the effects of a package intervention, which consisted of instructions and daily feedback, on the teaching behavior of three inservice physical educators to determine if there was a subsequent increase in student ALT. The three inservice teachers, one each from the elementary, junior high, and senior high school level participated in short clinics designed to change teaching behaviors. The behaviors targeted for change were management time, feedback, and student non-engagement. The ALT-PE observation system was modified by adding a teacher behavior category. This gave an idea of the teacher's activities while the students were engaged in physical activity. Birdwell found that there was an association between changes in teacher behaviors and increases in student ALT-PE. He concluded that this study demonstrated that giving instructions and daily feedback to teachers was a successful and cost effective method for changing behaviors and for helping teachers to change student behaviors.

Wurzer (1982) examined the effects of three instructional packages on teacher behavior to determine if there was a subsequent change in student ALT-PE. The subjects included three university volleyball professors. Each subject received an instructional package designed to change management time, feedback, and student non-engagement behaviors. Birdwell's (1980) modification of ALT-PE was used for all the observations. Wurzer (1980) reported that the intervention was successful in changing the target behaviors [ALT-PE and ALT-PE(M)] for all students. Decreases in teacher management time and student nonengagement and increases in feedback to students were associated with a significant increase in student ALT-PE and ALT-PE(M). The study demonstrated that the instructional packages was a successful method of changing teacher behaviors, which in turn resulted in changes in student ALT-PE (Wurzer, 1982).

Whaley (1980) conducted an intervention study that evaluated the effects of daily monitoring and feedback on student ALT-PE. Three students were randomly selected from each of four physical education classes. All teachers had 5 or more years of experience in public schools. Daily observations were conducted for 7 weeks. The study consisted of a baseline phase, an intervention with the teachers, and an intervention with the students. Intervention consisted of providing graphic feedback on ALT-PE categories to the teachers and then feedback on motor response attempts to the students. Whaley found that graphic feedback to teachers had

no effect on the amount of time spent in content-PE activities. He also found that graphic feedback had no effect on engaged time of students or on ALT-PE.

Paese (1982) assessed the effect of feedback on ALT-PE and ALT-PE(M) of two student teachers at the secondary level. Teachers received both verbal and written feedback after each of their observed classes. They were also told how they could decrease management time and increase students' motor responses. The use of feedback led to an increase in motor engagement from an average of 18.5% during baseline to 43% after intervention and in ALT-PE(M) from 7.5% to 19%.

Attempts have also been made to increase ALT-PE in a school physical education setting through an inservice education effort with teachers. Beamer (1983) observed nine physical education students and two physical education teachers in two middle schools. In collaboration with the teacher, an intervention intended to increase large group monitoring, to get classes into activity more quickly, and to give more feedback to low-skilled students was agreed upon. The results showed that content-PE activities averaged 60% and ALT-PE averaged 15%. The interventions were successful in one of the schools but not the other. ALT-PE was found to be affected by the nature of the activity, the amount of activity time available, and the efficient use of the activity time.

Studies have also attempted to examine the effects of employing different instructional strategies on teachers' and

students' behaviors. An instructional strategy has been defined as the vehicle or delivery system by which ordered information imparts to the learner by the instructor or some other informational providing source (Paese, 1982).

During university fencing classes, McKenzie, Clark, and McKenzie (1982) measured the effect of six instructional strategies: teacher-paced drilling, machine-paced drilling, student-paced drilling, task cards, sparring, and bouting. Fifty-six classes taught by the same instructor were observed using ALT-PE and the Teacher Behavior Observational System. ALT-PE(M) rates during active learning periods ranged from 26.9% for bouting to 97.9% for machine-paced drilling. Similar differences were also evident relative to teacher feedback. Feedback ranged from 18.7% for teacher-paced drilling compared with 54.8% for student-paced drilling. McKenzie et al. suggested that the findings reflect the importance of examining the various instructional strategies now available.

Young (1981) and Keller (1982) have used Experimental Teaching Units (ETU) as a means of measuring ALT-PE. The ETU designed by Young (1981) consisted of a pre-test followed by a 20-minute lesson, in which only content was regulated, followed by a post-test. The results showed a relationship between ALT-PE and reduced scores indicating student mastery of the ETU task. Keller (1982) investigated the effects of two instructional methods, reverse chaining and lecture/demonstration, on student achievement scores. He also

considered which length of instructional period--20, 30, or 40 minutes--would produce greater learning, and whether student ALT-PE is an indicator of student achievement. A pre-test was administered followed by lessons employing different time periods and instructional methods. The findings indicated no significant differences in the ALT-PE accrued by students taught by different instructional methods or in lessons of different lengths. However, the treatment group did score significantly higher than the group that received no instruction.

Researchers have also utilized the ALT-PE instrument to compare the ALT-PE experienced by low- and high-skilled students. Pieron (1982) compared the ALT-PE of high- and low-achievers in gymnastics and volleyball activities. He found that high-achievers accrued significantly higher amounts of the time-on-task and success rate variables than did low-achievers in both activities. In addition, the data indicated that instructors tended to provide feedback to low-achievers more frequently than they did to their high-achievers. In spite of this additional feedback, the performance gap between the two ability groups was expected to widen because of higher success rates and greater time-on-task experienced by the high-achievers.

Shute, Dodds, Rife, Placek, and Silverman (1982) conducted a descriptive study to investigate the accrued ALT-PE of low-, medium-, and high-skilled students in elementary movement education classes taught by a single physical education

teacher. Students rated by the teacher as low-, medium-, and high-skilled were engaged in content-PE activities similar percentages of time, 80%, 78%, and 78%, respectively. High-skilled students were engaged in a motor response at the easy difficulty level 16% of class time and low-skilled students were engaged 13% of the time. No significant differences were discovered among the skill groups in other ALT-PE categories. This physical educator created a learning environment where all students found similar amounts of success even though skill levels varied.

Smith (1983) investigated the ALT-PE accrued by high- and low-skilled secondary students in a male and a female physical educators' classes. He found that the male and female students spent more time engaged in motor activities and accrued more ALT-PE than their low-skilled classmates. Ryan (1983) used the DAC and the ALT-PE instruments concurrently to assess a male elementary physical educator's interactions with his high-, average-, and low-skilled students. The teacher gave his high-skilled students more praise, acceptance, and information. The average- and low-skilled students received more directions and criticism than the high-skilled students. The high-skilled students spent more time engaged in motor activity and accrued more ALT-PE than their average- and low-skilled peers.

Recent studies have utilized the ALT-PE instrument to observe coaches and their athletes. Rate (1981) observed 46 athletic teams during practice sessions in an attempt to



examine the ALT-PE accrued by athletes in various sport settings. The ALT-PE of physical education students in the same central Ohio area were also investigated. Five different sports were represented: basketball, wrestling, gymnastics, baseball, and tennis. Results indicated that: (a) nearly 75% of all content-PE was skill practice or scrimmage; (b) the athletes were engaged for nearly 60% of all content-PE time; (c) the average amount of ALT-PE for all sports was 49.3%; (d) coaches spent approximately equal amounts of time in instruction, management, and silent monitoring; (e) 75% of all instruction was direct; (f) significant differences in ALT-PE existed between wrestlers and tennis players; and (g) large but not statistically significant differences were found between wrestlers and gymnasts. The average of nearly 50% ALT-PE across all practice sessions was significantly higher than the ALT-PE accrued by physical education students in the same schools. Rate attributed the higher ALT-PE of athletes to increased motivation, advanced management techniques of coaches, the use of scrimmage techniques, and the greater availability of equipment.

Galli (1982) conducted a study which examined the differences in ALT-PE between high-skilled and low-skilled male high school basketball players. An  $N = 1$  design was utilized in which a single subject from each ability group was observed for an entire practice session. Twenty practice sessions in all were videotaped: five before the first game, five after wins, five after losses, and five while the team

was preparing for postseason competition. Galli found that there were several differences between the ALT-PE of the high-skilled and low-skilled players. The low-skilled player accrued an average of 30.8% ALT-PE versus 34.4% for the high-skilled players during the same practice sessions. His results indicated that the low-skilled player spent more time waiting to participate and was less actively involved in motor and cognitive situations.

Thomas (1983) conducted a study to investigate the ALT-PE of high-skilled and low-skilled male and female collegiate lacrosse players. Forty varsity lacrosse players, 20 males and 20 females, at the same college in the central New York area served as subjects. Each coach was videotaped with his or her team 10 times during the season. During the coding of each tape, three target players were selected to represent each group of subjects: high-skilled males, low-skilled males, high-skilled females, and low-skilled female lacrosse players. The target players were observed for an entire practice session on an alternating interval basis. Visual analysis of data indicated that there were few differences in the context levels of the players. However, high-skilled males and females were motor engaged more, accrued more ALT-PE, were inappropriately engaged less often, and had to wait less than their low-skilled teammates. High- and low-skilled male players spent more time in game play, were motor engaged more, and accrued more ALT-PE than their high- and low-skilled female counterparts.

### The Pygmalion Effect

Rosenthal (1974) stated that the basic idea of the pygmalion effect is that expectations can result in a self-fulfilling prophecy. He postulated that the teacher gets what he or she expects from the student. Martinek, Crowe, and Rejeski (1982) explained this self-fulfilling prophecy as an expectation which initiates a series of events that causes the original prediction to come true.

The effects of the teachers' expectancies are evident in the physical education setting as well as the classroom. Reisenweaver (1980) and Streeter (1980), using DAC, examined this expectancy effect in the physical education setting. Both researchers concluded that high-skilled students received more praise, more acceptance of their ideas and actions, and they initiated more interpretive responses than low-skilled students. The low-skilled students received more criticism and directions and gave more predictable, expected responses.

Smith (1983), using ALT-PE, Pieron (1982), using ALT-PE, and Ryan (1983), using ALT-PE and DAC, also reported high-skilled students received more preferential treatment from their teachers than their lesser skilled classmates. The teachers provided the high-skilled students with more opportunities to learn and actively participate in class. They also received more information to improve their skills and were more successful in the performance of motor activities. On the other hand, the lesser skilled students had to wait more, had less opportunity to actively participate,

and were inappropriately motor engaged more frequently. Ryan also reported that the teacher was more supportive and encouraging of his high-skilled students' efforts, gave them more information, and asked them more questions to elicit their input. The average- and low-skilled students received more directions and criticism from the teacher than their high-skilled peers.

DAC was used by Boyes (1981) and Hoffman (1981) to examine expectancy effects in the coaching environment. Boyes found minimal differences in coaches' behaviors as they related to their starting and non-starting players. Starting players tended to receive more acceptance and praise while non-starters received more directions. On the other hand, Hoffman found significant differences in the interactions of male and female lacrosse coaches with their high- and low-skilled athletes. Both the male and female coaches provided their high-skilled players with more support and encouragement and information. The male coach was direct and critical of his low-skilled athletes' efforts. In contrast, the female coach was more supportive of her low-skilled players' actions.

Thomas (1983) and Galli (1982) reported coaches provided their high-skilled athletes with more opportunities to actively participate in practice. The high-skilled players also accrued more ALT-PE.

#### Summary

After 1970 the systematic observation of coaching began to increase substantially, and a few researchers began to

utilize these techniques to observe coaches and their athletes. Kasson (1975) analyzed the behaviors of teacher/coaches by the Mancuso Adaptation for Verbal and Nonverbal Behavior (Mancuso, 1972). Results indicated a tendency for educators to be more verbally oriented when acting as coaches than when acting as teachers. Tharp and Gallimore (1976), Langsdorf (1979), Smith et al. (1977), and Crossman (1980) also used systematic techniques to assess the behaviors of coaches and their athletes.

A large group of investigations employed CAFIAS to observe coaching behaviors. Agnew (1977), Avery (1978), Barr (1978), Boyes (1981), Hirsch (1978), Hoffman (1981), Proulx (1979), Rotsko (1979), and Staurowsky (1979) utilized CAFIAS or its modification, DAC, in various contexts which made a significant contribution to coaching literature.

Darst et al. (1981) found that observations of athletes during practice sessions can be useful as an indicator of effective coaching and practice organization. They focused on objectively recording how football players spend their time in practice. Results indicated too much waiting time or unproductive time spent during practice.

With the conceptualization of ALT by the researchers of the Far West Laboratory for Research and Development, a new observational system, ALT, was made available. After limited use in classroom situations (Fisher et al., 1972; Marliave et al., 1972), Siedentop et al. (1979) modified the ALT observation instrument for application to physical education.

This modification, ALT-PE, has been used to observe involvement levels of students and athletes in many studies.

Aufderheide et al. (1981), Godbout et al. (1983), and Metzler (1980a) used ALT-PE to compare various levels of ALT-PE in elementary and secondary physical education classes. Metzler (1981) studied the ALT-PE of college students and compared the results to the ALT-PE accrued by elementary and secondary students. He found college students generally exhibited higher ALT-PE levels. Metzler (1980b) also examined students' ALT-PE in different sports activities.

Metzler (1981), Birdwell (1980), Wurzer (1982), Whaley (1980), Paese (1982) and Beamer (1983) tried to alter teaching behaviors through the use of different intervention strategies. On the whole, the use of strategies which allowed for more teacher feedback and resulted in increased ALT-PE levels were supported. McKenzie et al. (1982), Young (1981) and Keller (1982) observed the ALT-PE accrued by students when their instructors employed various instructional strategies.

Pieron (1982), Ryan (1983), Shute et al. (1982), and Smith (1983) used ALT-PE to investigate the ALT-PE accrued by low-skilled and high-skilled students. Pieron (1982), Ryan (1983), and Smith (1983) found that high-achievers accrued significantly higher amounts of ALT-PE than did low-achievers. In contrast, Shute et al. (1982) found that the teacher observed created a learning environment where all students found similar amounts of success even when skill levels varied.

Rate (1981), Galli (1982), and Thomas (1983) were the first to utilize the ALT-PE instrument to observe coaches and their athletes. Rate found that ALT-PE levels were higher for athletes than physical education students in the same school area. Galli and Thomas used the ALT-PE instrument to compare the ALT-PE of high- and low-skilled athletes; they found the high-skilled athletes accrued more ALT-PE than their low-skilled teammates.

All of the recent research using the ALT-PE instrument shows that it is an effective tool for the observation of teachers and coaches. Amounts of ALT-PE experienced have been used as an indicator of teacher/coach effectiveness and student/athlete achievement.

The effects of teachers' and coaches' expectancies on students' and athletes' interactions and involvement have been investigated by several researchers. Shute et al. (1982) reported no difference in the opportunities provided to low- and high-skilled students. Similarly, Boyes (1981) found minimal differences in the football coaches' interactions with starting and non-starting players. In contrast, Galli (1982), Pieron (1982), Reisenweaver (1980), Ryan (1983), Smith (1983), Streeter (1980), and Thomas (1983) reported teachers/coaches provided their high-skilled students/players with preferential treatment, either by interacting with them in a more positive manner or by providing them with increased opportunities to learn compared to their low-skilled peers.

## Chapter 3

### METHODS AND PROCEDURES

This chapter describes the selection of subjects, the testing instrument, the method of establishment of intra-observer agreement, the procedures, the methods of data collection, the scoring of data, and the treatment of data. A summary of the methods and procedures used is also included.

#### Selection of Subjects

The subjects in this investigation were 24 varsity female soccer players at the same southeastern Connecticut college. The players' coach, a male, who was also the investigator, had practice sessions videotaped by a student not involved in the soccer program. Each athlete's permission to participate in the investigation was obtained by the use of an informed consent form (Appendix B). The coach ranked his players from high to low according to overall playing ability at the end of the season. The top six ranked and the bottom six ranked players on the team were selected for inclusion in this investigation.

#### Testing Instrument

The revised ALT-PE systematic observation system (Siedentop, Tousignant, & Parker, 1982) was used to code the videotapes (see Appendix A). The ALT-PE instrument used a group-focused context decision and an individually-focused learner decision format. There were three major subdivisions

at the context level (general content, subject matter knowledge, subject matter motor) and two major subdivisions at the learner involvement level (not motor engaged and motor engaged). There were 13 categories within the subdivisions of the context level that described the nature of the class/practice environment and eight categories within the learner involvement level that described the individual student/athlete behavior. In this investigation, the interval recording technique was used with a 6-second observe, 6-second record format.

#### Intraobserver Agreement

The scored-interval agreement method (Hawkins & Dotson, 1975) was used to assess intraobserver agreement (IOA). Four videotapes were randomly selected and were coded by Dr. Victor H. Mancini, an expert coder, during two independent coding sessions. IOA was determined by dividing the number of intervals in which there was agreement by the number of intervals on which there was agreements and disagreements and multiplying the results by 100 (Herson & Barlow, 1976).

#### Procedures

Each player in this study was videotaped with her consent during 12 team practice sessions. The coach wore a wireless microphone which allowed free movement as he coached.

At the end of the season the coach ranked his players from high to low according to overall playing ability. For this study the top six ranked players and the bottom six ranked players on the team were selected. The top six players

were designated as high-skilled, and the bottom six were designated as low-skilled.

The videotapes were coded using the revised ALT-PE instrument by an expert coder, Dr. Victor H. Mancini. During the coding of each practice session, three target players were selected to represent each group: high-skilled and low-skilled. The target players within each group were observed during a practice session on an alternating interval basis, using a 6-second observe, 6-second record format. A programmed cassette was used to provide verbal cues to observe and record.

#### Method of Data Collection

Data for final analysis were obtained from the coding of 12 videotapes of the team's practice sessions. The videotapes were coded by an expert coder, Dr. Victor H. Mancini, using the revised ALT-PE system.

#### Scoring of Data

The data were scored manually, and percentages and ratios for the 21 variables identified by ALT-PE were calculated.

#### Treatment of Data

Descriptive statistics were calculated. The data were visually compared to determine differences in involvement and the ALT-PE between high-skilled and low-skilled female players during their practice sessions.

#### Summary

The subjects in this study were 24 female intercollegiate varsity soccer players from a southeastern Connecticut college. At the end of the season the coach ranked his players on a

continuum from high to low skill ability. The top six ranked players and the bottom six ranked players were selected for study. Twelve practice sessions were videotaped during the same season.

Data for analysis were obtained from the coding of the videotapes by an expert coder, Dr. Victor H. Mancini, using the revised ALT-PE system. During the coding of practices, three players were randomly selected to represent each group of athletes. IOA was calculated on a scored-interval basis using the formula prescribed by Herson and Barlow (1976). The data were scored manually, and percentages and ratios for the 21 ALT-PE variables were calculated. Visual comparisons were used to determine differences between high- and low-skilled players.

## Chapter 4

### ANALYSIS OF DATA

The results obtained from the comparison of the Academic Learning Time-Physical Education (ALT-PE) of high- and low-skilled female intercollegiate soccer players are presented in this chapter. The revised ALT-PE instrument of Siedentop, Tousignant, and Parker (1982) was used to describe the context levels and learner involvement levels of the players. This chapter is divided into the following sections: (a) intra-observer agreement, (b) analysis of the data, and (c) summary.

#### Intraobserver Agreement

Intraobserver agreement (IOA) scores were computed using the scored-interval method (Hawkins & Dotson, 1975). Four randomly selected videotapes were coded at two independent sittings by Dr. Victor H. Mancini, an expert in descriptive-analytic studies. IOA scores ranged from 88.7% to 100% which were sufficient to indicate the coder was reliable (Appendix C).

#### Analysis of Data

Percentages were calculated manually for all ALT-PE categories for high- and low-skilled female soccer players. These calculations were obtained from 3,787 observation intervals of the high-skilled soccer players in practice and 3,796 observation intervals of the low-skilled soccer players in practice.

Visual inspection of the data in Table 1 revealed little difference in the context levels of high- and low-skilled female soccer players, but marked differences were found in the learner involvement levels of these two groups. The amount of time high- and low-skilled soccer players were involved in various context level activities was similar. Regardless of their ability level, the soccer players spent approximately 20% of their time performing general, noninstructional activities. Approximately 8% of this time was used for executing warm-up activities. The players were in transition approximately 8% of the time and were involved in performing managerial tasks about 2% of the time. The players received a break or rest about 3% of the practice time. The coach spent approximately 10% of practice time relating knowledge to his players. Approximately 5% of the time was spent discussing strategy with the team. The players received some information about skill technique (approximately 3.5%). Little time was spent reviewing the rules, and no time was devoted to discussing appropriate social behavior. Approximately 70% of the practice sessions were spent in subject matter motor--performing soccer skills and playing. The players were engaged in skill practice and drills approximately 26% of the time and spent approximately 35% of their time scrimmaging, receiving frequent feedback from the coach. Close to 10% of the time was spent in fitness activities.

Table 1  
 Percent Occurrence of ALT-PE Categories for  
 High- and Low-skilled Players

ALT-PE Categories	High-skilled	Low-skilled
General Content	19.7	19.6
Transition	7.8	7.7
Management	1.7	1.7
Break	2.6	2.6
Warm-up	7.6	7.6
Subject Matter Knowledge	9.9	9.8
Technique	3.5	3.4
Strategy	4.8	4.8
Rules	----	----
Social Behavior	----	----
Background	1.2	1.2
Subject Matter Motor	70.4	70.6
Skill Practice	26.0	26.1
Scrimmage/Routine	34.9	34.7
Game	----	----
Fitness	9.4	9.7

Table 1 (continued)

ALT-PE Categories	High-skilled	Low-skilled
Not Motor Engaged	43.2	48.1
Interim	1.1	1.9
Waiting	7.2	13.4
Off-task	.5	.5
On-task	16.6	16.1
Cognitive	17.7	16.2
Motor Engaged	56.8	51.8
Motor Appropriate	43.6	29.7
Motor Inappropriate	11.4	19.2
Motor Supporting	1.8	3.0

Note. Due to rounding, some subcategories do not sum to exactly the same value as the categories.

Several differences were found in the learner involvement levels of high- and low-skilled soccer players (Table 1). The low-skilled players were inactive or not engaged more often than the high-skilled players (48.1% versus 43.2%). The greatest difference was in the time spent waiting. Low-skilled players spent 13.4% of the time waiting, while high-skilled players waited only 7.2% of the time. Most of the time when the players were not actively engaged they were on-task, performing transition, managerial, and warm-up tasks in the prescribed manner (about 16.5%), or they were listening to information from the coach (about 16.9%). Both the high- and low-skilled players exhibited few off-task and interim behaviors.

The high-skilled players were engaged in motor activity 5% more of the time than the low-skilled players; the high-skilled players were actively participating 56.8% of the time compared to 51.8% of the time for low-skilled players. During the time they were actively involved, the high-skilled players were more successful in the performance of motor tasks (motor appropriate) than the low-skilled players, accruing more ALT-PE (43.6% versus 29.7%). The low-skilled players found the motor (soccer) tasks to be inappropriate for their ability or were unable to successfully perform the skills more often than the high-skilled players (19.2% versus 11.9%). Little motor supporting activity was evident.

The ALT-PE/engaged ratio reflects the appropriateness of the instructional design. The ratio indicates the time the

players were successful while actively involved (motor appropriate/total motor engaged). The ALT-PE/engaged ratio was .77 for the high-skilled players versus .57 for the low-skilled players.

These results led to the rejection of the null hypothesis which stated that there would be no significant differences between the ALT-PE of high-skilled and low-skilled female intercollegiate soccer players.

#### Summary

The revised ALT-PE instrument of Siedentop et al. (1982) was used to describe the context levels and learner involvement levels of the players.

Four randomly selected videotapes were coded at two independent sittings by Dr. Victor H. Mancini, an expert in descriptive-analytic studies. IOA scores were computed using the scored-interval method (Hawkins & Dotson, 1975). IOA scores ranged from 88.7% to 100% which were sufficient enough to indicate the coder was reliable.

Visual inspection of the data in Table 1 revealed little difference in the context levels of high- and low-skilled female soccer players. Regardless of ability level, the players spent approximately 20% of their time performing general, noninstructional activities. Approximately 70% of practice sessions was spent in subject matter motor activity-- performing soccer skills and playing. About 10% of the time was spent in fitness activities.

Several differences were found in the learner involvement levels of high- and low-skilled soccer players. The low-skilled players were inactive or not engaged more often than the high-skilled players (43.2% vs. 48.1%, respectively). The greatest difference was in the time spent waiting. Low-skilled players spent 13.4% of the time waiting, while high-skilled players spent only 7.7% of the time waiting.

The high-skilled players were engaged in motor activity 5% more of the time than the low-skilled players; the high-skilled players were actively participating 56.8% of the time compared to 51.8% of the time for low-skilled players. During the time they were actively involved, the high-skilled players were more successful in performance of motor tasks (motor appropriate) than the low-skilled players, accruing more ALT-PE (43.6% versus 29.7%). The ALT-PE/engaged ratio was .77 for the high-skilled players versus .57 for the low-skilled players.

These results led to the rejection of the null hypothesis which stated that there would be no significant differences between the ALT-PE of high-skilled and low-skilled intercollegiate female soccer players.

## Chapter 5

### DISCUSSION OF RESULTS

In this investigation, the Academic Learning Time-Physical Education (ALT-PE) of high- and low-skilled female intercollegiate soccer players was compared. This chapter will discuss the results of this investigation and compare the findings with those of other studies.

Visual inspection of Table 1 revealed no significant differences in the context levels of high- and low-skilled soccer players. These results were predictable when one realizes that the coach dealt with his team as a single unit. He did not organize his practice sessions in a manner that allowed small groups within the team to perform different activities at the same time. High-skilled and low-skilled players both engaged in context level activities simultaneously.

Although few differences were evident at the context level, significant differences occurred in the players' learner involvement levels. Table 1 revealed substantial differences between the ALT-PE of high- and low-skilled soccer players. Low-skilled players were appropriately engaged less often (29.7% versus 43.6%), and they accrued more motor inappropriate behavior (19.2% versus 11.4%). In addition, low-skilled players waited more than high-skilled players (13.4% to 7.2%). The findings indicated that the coach treated his high-skilled players differently than the

low-skilled players.

There are a few plausible explanations for the low-skilled players accrual of less ALT-PE during practice. One explanation for these results is directly related to the ability levels of the high-skilled players. Since the high-skilled players were more skilled, it is logical that they would be more successful than the low-skilled players (as seen by their higher ALT-PE levels). This coach may have designed his practices to cater to his high-skilled players or "starters." The results in Table 1 would seem to indicate this. Another factor affecting the low-skilled players' accrual of ALT-PE was the longer time they spent waiting. This waiting resulted in low-skilled players receiving less trials during skill-related activities, and, therefore, they received fewer opportunities to improve their skills. This would account for their lower ALT-PE levels and motor engaged times. Another reason that high-skilled players may have received more engaged time could be an indirect result of a first-year varsity program. The high-skilled players were expected by the coach and the other players to set the standards for play. The coach constantly emphasized to the high-skilled players the importance of playing at their top level in order to set an example. The high-skilled players also realized that the success of the new team depended on their consistent performance. The low-skilled players, in turn, were relegated to a much less active role during this inaugural year for the soccer program.

When the data for high- and low-skilled players (see Table 1) were compared, the context levels, especially the percentages for general content, subject matter knowledge, and subject matter motor were virtually identical. In terms of a fledgling varsity soccer program, the goal of the coach in the first season was to teach fundamental skills, and the players worked toward this goal daily. The coach also dealt with the team as a single unit. This would account for the high-skilled and low-skilled players both spending about 70% of their practice time in motor activity, 10% of the time in subject matter knowledge, and 20% of the time in general content activity. Both groups of players spent about 8% of their time in transition (organizing and moving from place to place). Approximately 60% of the practice time was devoted to scrimmage and skill practice.

The findings for high-skilled and low-skilled players (Table 1) indicated significant differences existed at the learner involvement levels. These results revealed that high-skilled soccer players accrued more motor engaged time than low-skilled players (56.8% versus 51.8%). A possible explanation for the high-skilled players' higher levels may be the fact that high-skilled players were used more frequently by the coach to demonstrate to the group and to start off drills and scrimmages. The high-skilled players also spent less time waiting.

At the learner involvement level, of 100% of the allocated time (the total time that the athlete has an

opportunity to be motor engaged) high-skilled players were motor engaged 56.8% of the practice as opposed to not being motor engaged or inactive 43.2% of the time. Low-skilled players were motor engaged 51.8% of the time versus the 48.1% of the time that they were not motor engaged or inactive.

These results would seem to indicate that the coach had his high-skilled players or "starters" in mind more often when planning the motor activities for the practice. The high-skilled players 5% more motor engagement seemed to be a result of the coach using them more in drill and scrimmage. Another explanation would be that the coach found that his practice ran more smoothly and with more successful results when his high-skilled players were involved.

The use of systematic observation instruments, such as the ALT-PE instrument, can assist coaches to become more aware of how they deal with players of different abilities and how they organize their practices. For example, the data from this investigation suggest that the coach should develop a stronger learning environment for the low-skilled players. The practice sessions were designed to favor the development of the high-skilled players; this is supported by the ALT-PE/engaged ratio. Low-skilled players spent more time waiting and were not motor engaged more often than high-skilled players. The data suggest the coach must learn to involve the low-skilled players more often in drills and scrimmages and lessen the time that they spend waiting. This would be advantageous to the coach in terms of a more effective and

skilled overall team and would provide the coach much more depth in his personnel.

Low-skilled players were inappropriately motor engaged approximately 8% more of the time than high-skilled players (19.2% versus 11.4%). The data suggest that the coach should restructure various drill and scrimmage activities so that they are more appropriate to the skill level of these low-skilled players. Instead of expecting low-skilled players to improve their ability by engaging in the same drill situations as high-skilled players, the coach should allow low-skilled players opportunities to improve at their own pace more often with more appropriate drills and scrimmage situations. The intent is not to separate low-skilled players from high-skilled players, only to allow the low-skilled players more chances for success to increase their level of ability through more appropriate progressions and make them ready to compete on a higher ability level.

The original ALT-PE instrument of Siedentop, Birdwell, and Metzler (1979) has been used in nearly all of the ALT-PE studies to date. The revised ALT-PE instrument of Siedentop, Tousignant, and Parker (1982), which was utilized in this study, is similar to the original system in many ways. However, because of some changes in categories and major subdivisions direct comparisons between this study and studies using the original instrument should be made prudently. With this in mind, the remainder of this chapter will discuss this

study's results in comparison to the findings of related studies.

Metzler (1980b) and Rate (1981) observed the ALT-PE levels associated with different sports activities. Metzler (1980b) found that volleyball and soccer activities exhibited the highest ALT-PE percentages (59.4% and 40.3%, respectively). The ALT-PE level in this investigation is similar to the percentage reported by Metzler for soccer. Metzler reported an average ALT-PE of 40.3% for soccer; this investigation yielded an average ALT-PE level of 36.6% for both high- and low-skilled soccer players.

Rate (1981) observed the ALT-PE of athletes while they were practicing basketball, wrestling, gymnastics, tennis, and baseball. Results indicated that 90% of practice time was spent in content-PE. The average amount of ALT-PE for all sports was 49.3%. Although the revised ALT-PE system did not have a category for content-PE, the percentages obtained for subject matter knowledge and subject matter motor in this investigation may be combined to provide an estimate of the time spent in content-PE activities. Both high-skilled and low-skilled soccer players spent close to 80% of their time in content-PE or soccer-related activities. This figure was only 10% less than Rate's 90% figure. The average ALT-PE of high-skilled and low-skilled soccer players in this investigation was 36.6%, which was lower than the average ALT-PE of all sports (49.3%) reported by Rate.

Galli (1982) and Thomas (1983) have conducted the only studies to date which examined the ALT-PE of high- and low-skilled athletes. Both of their results indicated that the low-skilled players accrued less ALT-PE than the high-skilled players and spent much more time waiting to participate. These results were in agreement with those of the present investigation.

Several researchers (Pieron, 1982; Ryan, 1983; Smith, 1983) have used the ALT-PE instrument to investigate the involvement of high- and low-skilled students during physical education classes. Pieron (1982) employed ALT-PE to study the effects of teacher expectations on learners' involvement. He found that high-achievers accrued significantly greater amounts of ALT-PE than did low-achievers when observed in gymnastics and volleyball activities. These results are similar to those found for high- and low-skilled players in the present study. Pieron also reported that the gap between high- and low-achievers would widen due to more productive opportunities provided to the high-achievers.

Ryan (1983) investigated the ALT-PE of high-, average-, and low-skilled elementary students, and Smith (1983) investigated the ALT-PE of high- and low-skilled male and female secondary students. Both researchers reported that the high-skilled students spent more time engaged in motor activities, waited less, and accrued more ALT-PE than their less-skilled classmates. The findings of Pieron (1982), Ryan (1983), and Smith (1983) are similar to those found for

low- and high-skilled players in this investigation. Pieron (1982) also reported that the gap between high- and low-achievers would widen due to more productive opportunities provided to the high-achievers. This assertion may hold true with respect to this investigation. In the present investigation the high-skilled players received many more opportunities to be actively engaged, and they were successful more often than the low-skilled players. Since they did engage in more productive behaviors, it is plausible to suggest the performance gap between the high- and low-skilled players in this investigation widened.

The results of this investigation can also be compared to those of Hoffman (1981) who used DAC to analyze coaches' interactions with their athletes of different abilities. No direct relationships can be established between the two studies because of the use of different observation instruments. However, the findings of the present study paralleled Hoffman's results in the fact that players labelled high-skilled by their coaches appeared to enjoy more advantageous practice conditions than their low-skilled teammates. Hoffman found that the high-skilled players received more support and information from their coaches. The results of the present study indicated that high-skilled players experienced more motor involvement, were more successful, and had to wait less than their low-skilled teammates. In both cases the coaches favored their high-skilled athletes, either through interaction

with them or through the opportunities they provided them during practice.

Boyes (1981) used DAC to observe the interaction patterns of college football coaches with their starting and non-starting players. Results indicated only minor differences in coaches' behaviors toward athletes of different abilities. Since only minor differences were found, few similarities existed between Boyes (1981) and the present investigation.

#### Summary

Very few differences were found in the context levels of the high- and low-skilled female soccer players. The significant differences between the high- and low-skilled players existed at the learner involvement level. These results led to the rejection of the null hypothesis.

There are a number of possible explanations for trends in the data. The fact that high- and low-skilled soccer players had almost identical data at the context level is explained by the fact that the coach treated the team as a single unit. Low-skilled players accrued less ALT-PE than high-skilled players. This is explained by the fact that the coach geared the practices to accommodate high-skilled players more often. This can also be explained by the fact that low-skilled players waited more. While waiting, low-skilled players received less trials and, therefore, received fewer opportunities to improve their skills. It was likely that the superior ability of the high-skilled athletes contributed to their successful skill performance. The

circumstances of a first-year varsity program also had an effect on the involvement levels of high-skilled players in relation to the low-skilled players. The coach and other players looked to the high-skilled players to set the standard of play, and the high-skilled players were expected to play at high performance levels more often. In turn, the low-skilled players were relegated to more minor roles.

High-skilled players were motor engaged 56.8% of the time compared to 51.8% of the practice for low-skilled players. These results might be explained by the coach using his high-skilled athletes more often in drills, demonstrations, and scrimmage situations.

The findings of this investigation were similar to the findings of other researchers (Galli, 1982; Hoffman, 1981; Pieron, 1982; Ryan, 1983; Smith, 1983; Thomas, 1983) regarding the opportunities provided to athletes and students of different ability levels. High-skilled athletes/students received preferential treatment from their coaches/teachers. The results of this investigation support the fact that coaches treat athletes differently based upon their ability levels.

## Chapter 6

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### FOR FURTHER STUDY

##### Summary

The purpose of this investigation was to observe the Academic Learning Time-Physical Education (ALT-PE) of high-skilled and low-skilled female intercollegiate soccer players. Twenty-four female varsity soccer players and their male coach at a Connecticut college served as subjects. Twelve practice sessions during the 1983 season were videotaped. Following the season, the coach ranked his athletes from high to low according to overall playing ability. The top six athletes were classified as high-skilled, and the lowest six athletes were designated as low-skilled. The 12 videotapes of the practice sessions were coded using the revised ALT-PE instrument (Siedentop, Tousignant, & Parker, 1982). The ALT-PE data were manually scored and percentages computed for each ALT-PE category. Descriptive statistics were calculated.

Visual inspection of the data revealed little difference in the context levels of high- and low-skilled female intercollegiate soccer players. However, significant differences were evident in the learner involvement levels. High-skilled players were engaged more frequently in motor activity, accrued more ALT-PE, spent less time inappropriately engaged, and waited much less than their low-skilled teammates

(see Table 1). The hypothesis that there will be no significant difference between the ALT-PE of high-skilled female and low-skilled female intercollegiate soccer players was rejected.

### Conclusions

The findings of this study led to the following conclusions concerning the ALT-PE accrued by high- and low-skilled female intercollegiate soccer players:

1. High-skilled soccer players had more opportunity to actively perform soccer skills than their low-skilled teammates.
2. High-skilled players were more successful and effective (ALT-PE) in performing soccer skills than their low-skilled teammates.
3. Low-skilled players spent more time waiting for their turn to participate than their high-skilled counterparts.
4. Overall, the coach devoted the same amount of time to general, noninstructional activities. Both the high-skilled and low-skilled players received the same amount of soccer-related knowledge and motor-activity. However, significant differences were found in the involvement of the high- and low-skilled players during these activities.
5. The coach treated his high-skilled and low-skilled players differently.

### Recommendations for Further Study

The following recommendations are suggested for further study:

1. Follow-up studies that would examine the effects of intervention on soccer players' ALT-PE.

2. Follow-up studies that would examine the effects of instruction and supervision in interaction analysis on the ALT-PE of soccer players.

3. A study to determine if the ALT-PE of high- and low-skilled soccer players altered during the course of a season.

4. A study to determine if the players of successful and less successful coaches have different amounts of ALT-PE in practice.

Appendix A  
THE ALT-PE CATEGORIES<sup>1</sup>

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Context Level

General Content Categories--refers to class time when students are not intended to be involved in physical education activities.

Transition (T). Time devoted to managerial and organizational activities related to instruction such as team selection, changing equipment, moving from one space to another, changing stations, teacher explanation of an organizational arrangement, and changing activities within a lesson.

Management (M). Time devoted to class business that is unrelated to instructional activity such as taking attendance, discussing a field trip, lecturing about appropriate behavior in the gymnasium, or collecting money for the yearbook.

Break (B). Time devoted to rest and/or discussion of nonsubject matter related issues such as getting a drink of water, talking about last night's ball game, telling jokes, celebrating the birthday of a class member, or discussing the results of a student election.

Warm Up (WU). Time devoted to routine execution of physical activities whose purpose is to prepare the individual for engaging in further activity, but not designed to alter the state of the individual on a long

## Appendix A (continued)

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General Content Categories (continued)

term basis, such as a period of light exercises to begin a class, stretching exercises prior to a lesson, or a cooling down activity to terminate a lesson.

Subject Matter Knowledge Categories--refers to class time

when the primary focus is on knowledge related to physical education content.

Technique (TN). Time devoted to transmitting information concerning the physical form (topography) of a motor skill such as listening to a lecture, watching a demonstration, or watching a film.

Strategy (ST). Time devoted to transmitting information concerning plans of action for performing either individually or as a group such as explanation of a zone defense, demonstration of an individual move, or discussion of how best to move the ball down a field.

Rules (R). Time devoted to transmitting information about regulations which govern activity related to the subject matter such as explanation of the rules of a game, demonstration of a specific rule violation, or viewing a film depicting the rules of volleyball (time devoted to transmitting information about rules governing general student behavior in physical education are coded management).

## Appendix A (continued)

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Subject Matter Knowledge Categories (continued)

Social Behavior (SB). Time devoted to transmitting information about appropriate and inappropriate ways of behaving within the context of the activity such as explanation of what constitutes sportsmanship in soccer, discussion of the ethics of reporting one's own violations in a game, or explanations of proper ways to respond to officials in a game.

Background (BK). Time devoted to transmitting information about a subject matter activity such as its history, traditions, rituals, heroes, heroines, records, importance in later life, or relationship to fitness.

Subject Matter Motor Categories--refers to class time when the primary focus is on motor involvement in physical education activities.

Skill Practice (P). Time devoted to practice of skills or chains of skills outside the applied context with the primary goal of skill development, such as a circle drill in passing a volleyball, one against one practice of dribbling a basketball, exploration of movement forms, practicing the Schottische step, or practicing a particular skill on a balance beam.

## Appendix A (continued)

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Subject Matter Motor Categories (continued)

Scrimmage/routine (S). Time devoted to refinement and extension of skills in an applied setting (in a setting which is like or simulates the setting in which the skill is actually used) and during which there is frequent instruction and feedback for the participants--such as, a half court five on five basketball activity, the practice of a complete free exercise routine, six against six volleyball (all with instructions, suggestions, and feedback during the scrimmage).

Game (G). Time devoted to the application of skills in a game or competitive setting when the participants perform without intervention from the instructor/coach--such as a volleyball game, a complete balance beam routine, the performance of a folk dance, or running a half-mile race.

Fitness (F). Time devoted to activities whose major purpose is to alter the physical state of the individual in terms of strength, cardiovascular endurance, or flexibility such as aerobic dance, distance running, weight lifting, or agility training (the activities should be of sufficient intensity, frequency, and duration so as to alter the state of the individual).

## Appendix A (continued)

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Learner Involvement Level

Not Motor Engaged Categories--refers to all involvement other than motor involvement with subject matter oriented motor activities.

Interim (I). The student is engaged in a noninstructional aspect of an ongoing activity such as retrieving balls, fixing equipment, retrieving arrows, or changing sides of a court in a tennis match.

Waiting (W). Student has completed a task and is awaiting the next instructions or opportunity to respond such as waiting in line for a turn, having arrived at an assigned space waiting for the next teacher direction, standing on a sideline waiting to get in a game, or having organized into the appropriate formation waiting for an activity to begin.

Off-task (OF). The student is either not engaged in an activity he/she should be engaged in or is engaged in activity other than the one he/she should be engaged in--behavior disruptions, misbehavior, and general off-task behavior, such as talking when a teacher is explaining a skill, misusing equipment, fooling around, fighting, disrupting a drill through inappropriate behavior.

On-task (ON). The student is appropriately engaged carrying out an assigned non-subject matter task (a management task, a transition task, a warm up task) such

## Appendix A (continued)

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Not Motor Engaged Categories (continued)

as moving into squads, helping to place equipment, counting off, doing warm up exercises, or moving from the gym to a playing field.

Cognitive (C). The student is appropriately involved in a cognitive task such as listening to a teacher describe a game, listening to verbal instructions about how to organize, watching a demonstration, participating in a discussion or watching a film.

Motor Engaged Categories--refers to motor involvement with subject matter oriented motor activities.

Motor appropriate (MA). The student is engaged in a subject matter motor activity in such a way as to produce a high degree of success.

Motor inappropriate (MI). The student is engaged in a subject matter oriented motor activity but the activity-task is either too difficult for the individual's capabilities or the task is so easy that practicing it could not contribute to lesson goals.

Supporting (MS). The student is engaged in subject matter motor activity the purpose of which is to assist others learn or perform the activity such as spotting in gymnastics, feeding balls to a hitter in a tennis lesson, throwing a volleyball to a partner who is practicing set up passing, or clapping a rhythm for a group of

## Appendix A (continued)

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Motor Engaged Categories (continued)

students who are practicing a movement.

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<sup>1</sup>Cited from Siedentop, Tousignant, and Parker (1982, pp. 11-15).

Appendix B  
INFORMED CONSENT FORM  
ATHLETE'S COPY

The purpose of this investigation is to compare the Academic Learning Time-Physical Education (ALT-PE) of high-skilled and low-skilled female collegiate soccer players throughout the course of the season. ALT-PE is that portion of practice that an athlete spends in motor activity that is appropriate for her ability level. The resulting information may prove useful in improving the ALT-PE made available to players in an activity and may assist the coach in planning for equal opportunities for all players.

The subjects are 24 collegiate female soccer players and their male coach. Subjects will be videotaped for 12 entire practice sessions during the course of the 1984 soccer season. The coach will be asked to wear a wireless microphone. The normal actions of the players and their coach will not be interrupted. The videotapes will be coded using the ALT-PE instrument by a trained observer. At the end of the season the coach will be asked to rank his players from high to low according to overall playing ability.

The top 25% ( $n = 6$ ) will be designated as high-skilled, and the bottom 25% ( $n = 6$ ) will be designated as low-skilled. These target students will be observed on an alternating interval basis.

It is assured that the names in this study will be kept strictly confidential. Taping is solely for the purpose of this study and the tapes will only be available to the researcher and the coach involved. If you do not have any questions, and you are willing to participate in this investigation, please sign your name in the space below. Thank you.

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Signature

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Date

Appendix C

INTRAOBSERVER AGREEMENT PERCENTAGES FOR  
FOUR RANDOMLY SELECTED VIDEOTAPES

ALT-PE CATEGORIES	TAPE 1	TAPE 2	TAPE 3	TAPE 4
GENERAL CONTENT				
Transition	92.3	98.0	89.2	89.7
Management	100.0	100.0	100.0	93.2
Break	-----	-----	-----	91.8
Warm-up	100.0	100.0	100.0	100.0
SUBJECT MATTER KNOWLEDGE				
Technique	93.7	90.3	88.9	88.8
Strategy	93.3	91.4	88.7	93.6
Rules	100.0	-----	-----	-----
Social Behavior	-----	-----	-----	-----
Background	-----	-----	-----	-----
SUBJECT MATTER MOTOR				
Skill Practice	93.6	91.6	92.6	94.0
Scrimmage/Routine	95.8	94.2	93.7	94.2
Game	-----	-----	-----	-----
Fitness	100.0	100.0	-----	100.0

## Appendix C\* (continued)

ALT-PE CATEGORIES	TAPE 1	TAPE 2	TAPE 3	TAPE 4
NOT MOTOR ENGAGED				
Interim	-----	-----	100.0	-----
Waiting	93.1	96.7	92.8	89.9
Off-Task	-----	100.0	90.9	-----
On-task	91.8	95.3	92.1	96.4
Cognitive	96.8	98.1	95.7	95.4
MOTOR ENGAGED				
Motor Appropriate	95.7	91.4	97.0	90.7
Motor Inappropriate	96.4	89.6	96.8	90.6
Motor Supporting	-----	100.0	100.0	-----

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