

**DESCRIPTIVE STUDY OF AEROBIC DANCE-EXERCISE
INSTRUCTIONAL SKILLS**

by

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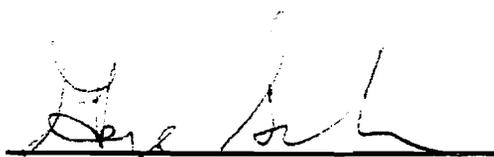
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Health and Physical Education

(ABSTRACT)

The purpose of this study was to describe the instructional skills demonstrated by 29 aerobic dance-exercise instructors as identified through the Aerobic Dance Observation System (ADOS). A secondary purpose was to describe the instructional skills across demographic and contextual variables such as years of teaching experience, certification, age, gender, facility, and equipment.

Twenty-nine aerobic dance-exercise instructors (Male = 5; Female = 24) were observed in a variety of facilities: recreational programs, educational institutions, health clubs and aerobic dance-exercise studios. Each facility had different features and equipment such as floor type (hardwood, concrete or padded), portable or built-in sound system, mirrors and microphones.

The exercise classes consisted of low-impact, high-impact, or step classes that varied from 50 to 90 minutes in length. Class sizes ranged from 4 to 150 individuals from all levels of fitness.

Data were collected using three different methods: demographic questionnaire, on-site data analysis (Tech Checks and the physical location of the instructor) and videotaped analysis (instructional cues, nonverbal cues, general/specific feedback and choreographed movement patterns). Through descriptive statistical analysis, a profile of the instructional skills used in aerobic dance-exercise teaching environment was compiled.

The findings from this study indicate that overall the aerobic dance-exercise instructors demonstrated more similarities than differences in their patterns of teaching across demographic and contextual variables. The instructional profile describes instructors leading from the front of the room providing limited instructional information.

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CHAPTER I

INTRODUCTION

"A dancer-exercise instructor is a leader, role model, a teacher, and an advisor" Jacki Sorenson (Van Gelder, 1987, pg. XV).

Aerobic dance-exercise is considered to be one of the most popular organized fitness activities in the world. Although it is difficult to determine an accurate number of aerobic dance-exercise participants, it has captured the interest of millions. Presently in the United States, there are 23.3 million individuals engaging in some type of aerobic exercise activity (National Sporting Goods Association Representative, personal communication, October 10, 1991).

The development of aerobic dance began in 1969 when Jacki Sorenson began conducting exercise classes for improving cardiovascular fitness by moving continuously to music (Garrick & Requa, 1988). Within several years the popularity of aerobic dance grew. Owners and managers of fitness establishments recognized the potential market and began offering aerobic dance-exercise classes. Sorenson declared 150,000 aerobic dance-exercise participants in 1982 (Garrick & Requa, 1988). Six years later it was estimated that approximately 91.9% of the YMCAs in the United States and 350,000 members of the Health and Tennis Corporation of America alone were participating in this activity (Garrick & Requa, 1988).

Many more instructors were needed to meet the increasing number of aerobic dance-exercise participants. Quality control of instructors was limited or simply nonexistent. Unfortunately, the desire to meet customers' needs resulted in little emphasis being placed on safe exercise techniques (Cassidy,

1986). According to Fenly (1984) and Parks (1990), injury rates were high among participants, fitness establishments sacrificed quality for quantity, and consumers were not satisfied with instructors' qualifications. The lack of national standards for aerobic dance-exercise instructors then became an important concern.

Certification programs were developed to establish a national standard knowledge base and to assure participants and health club facilities that instructors could demonstrate a certain level of competence. In 1988, less than 25% of the estimated 100,000 fitness instructors in the United States had formal training (Parks, 1990, pg. 71). Today there are over 150,000 aerobic dance-exercise instructors (Francis, 1991). Still, only about 32,000 are currently certified by American Council on Exercise (ACE) (A Groot, personal communication, March 21, 1992), while the Aerobic Fitness Association of America (AFAA) has certified 30,000 instructors since 1983. These figures represent only about 40% of practicing instructors.

To become certified, an instructor must complete a written and/or practical exam. The largest certifying organizations are AFAA and ACE (formerly International Dance-Exercise Association, IDEA). Each organization provides instructors with a detailed manual: AFAA's Aerobics: Theory and Practice (Cooper, 1986) and IDEA's Aerobic Dance-Exercise Instructor Manual (Van Gelder, 1987). These manuals prepare aerobic dance-exercise instructors for certification by discussing basic principles of exercise, anatomy, physiology, nutrition, injury prevention, leadership skills and motivational techniques. While these are significant components of a training program, very little attention is given to the acquisition of practical teaching skills. Each

manual devotes one chapter to methods and/or theories of teaching categorized under "leadership techniques." For example, the chapter in the AFAA manual entitled "Instructional Techniques" presents a short discussion regarding leadership skills such as taking charge, establishing rules, setting goals, and motivating students. No specific instructional behaviors are mentioned. The IDEA manual addresses leadership techniques as well as learning theories, planning, teaching styles, motivation, and self-evaluation. However, the practical application of pedagogical skills is not addressed.

In comparison to the time instructors spend in front of class teaching, these certification examinations largely emphasize the demonstrative, performance, and exercise science knowledge of the instructor. Ninety percent of the written examinations for ACE are based on recall knowledge of exercise physiology, anatomy, program planning, etc. Only 10% focuses on leadership techniques (K. Smith, personal communication, October 10, 1991). Smith, an AFAA representative, stated that 5 to 7 questions out of a hundred are based on leadership techniques (personal communication, October 10, 1991), but none are based on actual teaching skills. The practical examination required by AFAA focuses on the ability of an instructor to demonstrate and perform various exercises. The certifying organizations provide little information regarding teaching skills used in aerobic dance-exercise as compared to fitness concepts. A need is clearly present to identify teaching skills necessary to effectively instruct aerobic dance-exercise classes.

It is critical in the teaching of aerobic dance-exercise that instructors possess effective teaching skills. Professionals such as Francis (1989; 1991) and Claxton and Lacy (1991) have described the "missing link" as the lack of

continuity between proper instruction and conveying the content to participants. Francis (1989) states that instructors possessing good teaching skills are better able to communicate and direct information to their participants. Effective teaching is neither intuitive nor inborn; it is learned (Francis, 1989; Siedentop, 1991). To be effective, instructors must learn to coordinate developed teaching skills in order to meet the needs of each exercising participant.

A teacher is generally defined as "one who imparts knowledge to individuals in a learning environment" (American Heritage Dictionary, 1982). A leader is "one who guides or is in charge of others" (American Heritage Dictionary, 1982). A performer, on the other hand, is one who entertains before an audience (American Heritage Dictionary, 1982). In order to be effective, aerobic dance-exercise instructors need to be teachers, leaders and performers while guiding participants through a workout, providing them with the verbal inspiration to continue. It may become confusing for instructors to understand which role is most important. Francis (1989) suggests an aerobic dance-exercise instructor's most important role is that of a teacher rather than a performer. Teachers ensure the successful learning and proper utilization of the exercise techniques while performing (Francis, 1989). However, instructors of aerobic dance-exercise have not been viewed as teachers by the fitness industry, but instead more as performers or leaders. While this idea has dominated the industry, fitness organizations and participants have only recently begun to recognize the importance of instructors possessing practical teaching skills (Claxton & Lacy, 1991; Francis, 1989).

Exercise participants desire professional instruction (Wescott, 1991). In an aerobic exercise/personal training survey Wescott (1991) asked participants to rank seven desired characteristics of fitness instructors. The results indicated that participants placed a high value on instructors who possess a thorough understanding of exercise science and good teaching skills. Wescott (1991) added that the survey differentiated between instructors who were good leaders versus instructors who were good teachers due to their ability to communicate fitness knowledge in a meaningful manner.

The effective teaching literature in physical education provides important insight for aerobic dance-exercise instructors regarding in-class teaching behaviors. Several areas of instruction, such as the use of instructional cues and the use of feedback in physical education, parallel the aerobic dance-exercise teaching environment. Descriptive studies and systematic observation research have provided a thorough overview of teacher and student interactions in physical education. From this research it was found that effective teachers command many developed skills in order to meet the demands of the learning environment (Mustain, 1990; Siedentop, 1991). Aerobic dance-exercise instructors can utilize the same techniques found to be effective in physical education.

PROBLEM STATEMENT

Currently, there is limited description of the instructional skills demonstrated by the large number of aerobic dance-exercise instructors in this country. Opinion articles have been written suggesting the importance of various teaching skills (Buchanan, 1990; Francis, 1989) but little research on

teaching has been completed. Before the teaching of aerobic dance-exercise can be analyzed for effectiveness, the first step must be to describe the instructional skills presently practiced in aerobic dance-exercise classes. From such a description it should be possible to identify typical patterns, eventually enhancing or changing those patterns for increased effectiveness.

PURPOSE

The purposes of this study are:

1. to describe the instructional skills demonstrated by 29 aerobic dance-exercise instructors as identified through the Aerobic Dance Observation System (ADOS), (Castaneda, 1991).
2. to describe the instructional skills across sub-groups of subjects to study the salience of certain variables: years of experience, certification, age, gender, facility, and equipment.

SIGNIFICANCE OF STUDY

The significance of this study stems from the limited knowledge of pedagogical skills and teaching effectiveness in a constantly growing aerobic exercise profession. For years the aerobic dance-exercise industry has concentrated on developing an understanding of the scientific knowledge and applications of fitness concepts. However, little emphasis has been placed on the instructional skills needed to impart this information to participants. Learning to teach is neither intuitive nor spontaneous (Claxton & Lacy, 1991; Francis, 1989; Van Gelder, 1987). Instructors must learn how to teach. Educational methodology would seem to be an essential foundation of aerobic dance-exercise instruction, yet little attention has been drawn to its development. This study will attempt to describe instructional skills practiced

by a sample of instructors. In addition, the study will examine relationships among important demographic/contextual variables and instructional skills that may exist in the process of aerobic dance-exercise instruction.

LIMITATIONS

This study was conducted under the following limitations.

1. The description of aerobic dance-exercise instructional skills included only those measured by ADOS.
2. The videotaped sessions were limited to low/high impact and step classes and may not be representative of other types of classes taught.
3. The instructors taught in different facilities and did not always have similar equipment (microphone, pitch control tape deck, mirrors, and cushioned flooring).
4. The ratio of male to female aerobic dance-exercise instructors might not have been representative of the total population due to the geographical location of this study.

DELIMITATIONS

The following delimitations were imposed by the investigator.

1. The observations were limited to 29 aerobic dance-exercise instructors.
2. The observed aerobic dance-exercise classes were delimited to less than one hour and a half of low/high impact and step classes.

ASSUMPTIONS

1. It was assumed that the instructional skills demonstrated by the 29 instructors were representative of the total population of aerobic dance-exercise instructors in the settings studied.

2. Through analysis of interobserver reliability, it was assumed the observational data were sufficiently reliable.
3. It was assumed that the respondents used to validate the ADOS system are representative of other experts in the fitness industry.
4. It was assumed that the instructors' reactivity to videotaping was satisfactorily reduced therefore representative of behavior when the videotaping did not occur.

DEFINITION OF TERMS

These definitions are operationally defined unless referenced.

Aerobic Council on Exercise (ACE): A not-for-profit organization committed to the world promotion of safe and effective exercise to the public (Groot, 1991).

Aerobic Dance-Exercise Instructor: An individual who leads participants through a fitness workout, including warm-up, cardiovascular (cardio), floorwork and stretching segments. The combination of locomotor skills, dance steps, muscular conditioning and flexibility exercises are taught and performed rhythmically to music by the instructor and learned participants.

Aerobic Dance Observation System: Systematic observation instrument used to analyze instructional skills demonstrated by aerobic dance-exercise instructors (Castaneda, 1991).

Aerobic Dance-Exercise Class: A fitness class that combines the use of music, rhythmic movements, and exercises to improve cardiovascular endurance, muscular endurance and flexibility. The components of the class include: warm-up, cardio, floorwork and stretching segments.

Aerobic Exercise Studios: Business establishments that offer a variety of fitness classes.

Aerobic Fitness Association of America (AFAA): An international aerobic exercise training and certifying association.

American College and Sports Medicine (ACSM): A national professional and scientific, nonprofit organization representing research and education in exercise physiology, cardiac and respiratory rehabilitation, physical fitness, physical education, athletic training, and physical therapy.

Cardiovascular (cardio) Segment: A section of an aerobic dance-exercise class that combines the use of music, rhythmic movements, and exercises to improve the endurance of the heart and lungs.

Choreographed Movement Patterns: The arrangement of steps in a particular direction or directional pattern (e.g., Walking in a forward direction).

Community and Recreational Aerobic Programs: Aerobic exercise classes offered to individuals in the same locale.

Event Recording: The recording of discrete behaviors as they occur (Metzler, 1990).

Floorwork Segment: A variety of exercises designed to improve muscular endurance (e.g., abdominal curls).

General Feedback: Information given by the instructor which contains no specific referent to improve a skill or skill component (e.g., "Good job").

Health Club: A business establishment with weight training and cardiovascular equipment and exercise classes designed to help customers improve their physical conditioning.

High-impact: The use of locomotor movements and other dance steps that create a spring-back or rebound effect upon impact with the floor (e.g., jog, jump).

Instructional Cues: Information given by the instructor to describe the execution of a skill correctly (Metzler, 1990).

Interobserver Reliability: "Two independent observers watch the same lesson, focusing on the same persons throughout, then comparing their records." (Metzler, 1990, pg. 135).

Locus Recording: The recording of the physical location of an instructor to designated locations in the instructional environment.

Low-impact: The use of large dynamic movements of the upper body along with dance steps that shift weight from one foot to the other without jumping or jogging. Generally, one foot stays in contact with the floor (e.g., power walk, step touch).

Nonverbal Cues: Unspoken information used by the instructor to guide participants (e.g., hand signals indicating a change of direction).

Physical Location of the Instructor: A diagram of the defined boundaries used to record the instructor's location during the class.

Plachek Recording: The monitoring of a group of participants at a predetermined time interval while participating in a predetermined category (Metzler, 1990).

Rhythmic Warm-Up: Low intensity movements performed through a full range of motion with the specific purpose of circulating oxygenated blood to warm the working muscles (e.g., step touch).

Specific Feedback: Information given to the participants relating to the stated component of a skill or skills being practiced (e.g., "Make sure your knees are out over your toes when performing the jumping jack").

Static Stretches: The slowed controlled extension of the primary muscles to full length.

Step (aerobic) Class: a fitness class that combines the use of music, rhythmic movements, and exercises to improve cardiovascular and muscular endurance using a platform (4 inch to 6 inch).

Step-n-Sculpt: A fitness class that combines intervals of rhythmic movements on a platform (4 inch to 8 inch) with intervals of muscular strength/endurance exercises using resistive equipment.

Swim and Racquet Club: A business establishment with weight training and cardiovascular equipment, exercise classes, tennis, racquetball and pool facilities.

Tech Check: Form of placheck recording used to monitor the correct/incorrect execution of skills, as well as the number of actively involved participants observed at specified intervals, during the aerobic dance-exercise class.

Time Sampling: The observation of the instructor's and/or participants' behaviors at a predetermined interval throughout the aerobic dance-exercise class (Metzler, 1990).

Warm-Up Segment: A section of an aerobic dance-exercise class designed to prepare the body for exercise. The components include a rhythmic warm-up and stretch segment.

SUMMARY

Aerobic dance-exercise is a popular fitness activity. Participants attend classes not only to work out but also to learn about safe and effective exercise techniques. To meet the needs of exercisers, instructors must communicate fitness concepts and exercise techniques in a clear, concise manner. For years, the aerobic dance-exercise industry has focused on developing an understanding of the scientific theories and applications of the fitness concepts. Research and knowledge of the practical applications of instruction are limited. Before the teaching of aerobic dance-exercise can be analyzed for effectiveness, it is essential to determine the instructional skills presently practiced. The purpose of this study was to assess the teaching methods presently being practiced by a sample of aerobic dance-exercise instructors. The data gathered here could potentially form the basis of future analytic research.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this chapter is to review the literature related to this study of aerobic dance-exercise instructional skills. This chapter has been separated into two sections. The first section briefly examines the purpose of systematic observation in relation to this study and information regarding teaching skills demonstrated by physical educators that relate to aerobic dance-exercise instruction. Emphasis will be placed on selected pedagogical behaviors noted in the effective teaching physical education literature including the use of feedback and instructional cues. The second section will review the information regarding instructional skills presented in the aerobic dance-exercise literature. A discussion of the choreographed movement pattern, will include the number of stationary to traveling movements included during the cardio segment of class.

PHYSICAL EDUCATION EFFECTIVE TEACHING LITERATURE AS RELATED TO AEROBIC DANCE-EXERCISE INSTRUCTION

The effective teaching literature in physical education provides insight for aerobic dance-exercise instructors regarding some areas of teaching. An effective aerobic dance-exercise instructor is one who motivates and guides participants through a safe, individualized workout. Becoming an effective instructor requires the knowledge of the subject matter and the ability to translate that knowledge, through quality teaching methods, in a manner that relates specifically to the needs of the learner (Siedentop, 1991). Much of the

effective teaching literature in physical education had been described through the use of systematic observation.

Systematic observation allows a trained person following stated guidelines and procedures to observe, record, and analyze interactions with the assurance that others viewing the same sequence of events would agree with his (or her) recorded data (Darst, Zakrajsek & Mancini, 1989, pg. 6).

Systematic observation systems, produce an objective, permanent record of the instructional skills demonstrated (Darst et al., 1989). For this study, the Aerobic Dance Observation System (Castaneda, 1991) was used to systematically measure the instructional patterns demonstrated by aerobic dance-exercise instructors.

Throughout the brief history of aerobic dance-exercise, an emphasis has been placed on the understanding and the recalling of exercise principles. Little information has been addressed relating to practical teaching methods. According to Siedentop (1991) knowing the subject matter is no guarantee that an instructor will be effective. Therefore, it is important that aerobic dance-exercise instructors become proficient in the art and science of teaching. Several areas of instruction in physical education such as the stating of instructional cues and the use of feedback, parallel the aerobic dance-exercise teaching environment. These teaching skills will be the primary area of focus in this section.

Feedback

One of the most significant functions of a teacher is to provide information to learners about their performance. Feedback is the information learners receive regarding their demonstration of a skill. In order for participants to successfully learn a skill, feedback must be given regarding

their performance (Francis, 1989). Feedback not only provides information about the skill demonstrated but also serves as a motivator for further responses and reinforcer of correct responses (Docheff, 1990; Francis, 1989). Siedentop (1991, pg. 9) defines feedback as "information about a response that is used to modify the next response."

Although the stating of feedback is regarded as an important component of teaching and participant achievement, pedagogical research has not completely accepted this connection. Silverman (1991) stated in his review of research on physical education, that feedback has not been shown to be a strong predictor of student achievement. A clear connection between teacher feedback and student learning has not been verified (Rikard, 1991; Silverman, 1991). However, even in the absence of complete agreement, the stating of feedback is regarded as an important teaching skill (Docheff, 1990; Francis, 1989; Siedentop, 1991).

The two forms of feedback used in this study are labeled general and specific. General feedback is information given by the instructor which contains no specific referent to a skill or skill component (Docheff, 1990; Francis, 1989; Siedentop, 1991; Van Gelder, 1987). The main purpose is to motivate participants by supporting their effort and giving them encouragement to repeat their performance (Francis, 1989; Siedentop, 1991). Examples include "Good job" or "Well done."

Specific feedback, on the other hand, provides information to the participants about selected components of a skill (Francis, 1989; Siedentop, 1991). In this study specific feedback includes corrective statements as well. The purpose of specific feedback is to provide participants information about a

previously performed skill and/or to correct a particular error in performance. An example is "Well done. You kept your heels down while performing the jumping jacks." An example of specific/corrective feedback might be "Pat, you are locking your knees. Keep them slightly bent."

Claxton and Lacy (1991) examined 11 verbal teaching behaviors used by aerobic dance-exercise instructors including feedback. They examined both general and specific feedback given to individuals and groups. They found that instructors gave a higher percentage of specific feedback than general feedback. However, over 98% of the specific feedback given was directed towards the group. Claxton and Lacy's (1991) recommendation for improving participants' skills is to direct feedback towards an individual. This allows instructors to make individual adjustments to the skills being performed. Claxton and Lacy (1991, pg. 51) notes, "The teacher's ability to respond immediately to students' behaviors may be the primary advantage that 'live' teaching has over aerobic dance tapes."

Participants seek instructors who reinforce their performance in a sincere and specific manner for best results. Instructors who repeat general phrases such as "good job" may have a limited impact on participants. Reinforcement which includes information precisely explaining what they are doing or not doing correctly is desired by participants (Wescott, 1991). Claxton and Lacy (1991), in agreement with Wescott (1991) state that aerobic dance-exercise instructors need to take time to focus on helping participants practice the skills correctly. Feedback can provide participants with the necessary information to improve skill performance.

Instructional Cues

Instructional cues contain information given by the instructor to describe the execution of a skill correctly (Metzler, 1990). This information is primarily concerned with the quality of participants' performance (Rink, 1985). A study conducted by Masser (1987) concluded that the stating of instructional cues had an immediate and long term effect on the quality of student performance. Simply performing the exercises without regard for appropriate technique might not enhance skill quality (Ashy, Lee & Landin, 1988). However, other studies as summarized by Masser (1987) found no definite relationship between the stating of instructional cues and student performance. Even in the absence of empirical support, the stating of instructional cues is regarded as an important teaching skill (Graham, 1992; Rink, 1985; Siedentop, 1991). Graham (1992) describes several guidelines that teachers can use to state instructional cues effectively. He notes that instructional cues should be stated one at a time, in a concise manner, while based on the teacher's observation of the student's skill performance. Instructional information presented in a clear, concise and logical order is important in helping participants learn.

Presently the aerobic dance-exercise literature has not focused on the teaching skills necessary to present instructional cues effectively. According to Wescott (1991) participants are searching for instructors who have a strong educational background in exercise/fitness principles and who can communicate this information in a clear, concise manner to meet the individual needs of the exerciser. In the certifying manuals [Aerobic Dance-Exercise Instructor Manual (Van Gelder, 1987) and Aerobic Theory & Practice (Cooper, 1986)] the stating of instructional cues is not addressed. Therefore, it is

important for this study to describe the frequency in which instructional cues are stated throughout the warm-up, cardiovascular, and floorwork segments of the aerobic dance-exercise teaching environment.

DISCUSSION OF THE INSTRUCTIONAL SKILLS PRESENTED IN THE AEROBIC DANCE-EXERCISE TEACHING LITERATURE

The purpose of this section is to review the information related to instructional skills presented in the aerobic dance-exercise literature. Experts (Buchanan, 1990; Brueck, 1991; Bundschub, 1991; Francis, 1989; McNab, 1991; Thompson, 1988) in the aerobic dance exercise industry make suggestions for improving teaching techniques. These suggestions, although stated by experts, are not based on information gathered from research. Therefore, there is a lack of information regarding the physical location of the instructor, the use of nonverbal cues and the choreographed movement patterns used in the aerobic dance-exercise class.

Physical Location

Physical location refers to the circulation of the instructor throughout the class. By circulating instructors can more easily interact individually with participants and provide them with feedback regarding their performance (Claxton & Lacy, 1991). It is the effective instructor who circulates around the room correcting inappropriate technique (Francis, 1989). A field study conducted by Castaneda (1991) found that participants led by instructors who monitored from the front of class were less likely to perform the skill correctly. Francis (1989) suggests an instructor who moves around the room can effectively address participants' needs through providing feedback about their

performance. This is an important aspect of learning. Presently, research is limited on the importance of circulation and its relationship to participant performance.

Nonverbal Cues

In the Aerobic Dance-Exercise Manual (Van Gelder, 1987), a cue is defined as being brief and stated on the previous measure to provide participants with time to change from one movement to another. Nonverbal cues are actions demonstrated by an instructor to note a change in movement or direction of movements. For example, instructors use hand signals to indicate the direction the class should travel. Nonverbal cues are also used for pinpointing specific exercise technique. An instructor might point or touch a body part while giving specific information about an exercise. These types of nonverbal cues are helpful in guiding participants through changes smoothly and to help the instructor pinpoint specific techniques.

At this time, there is limited knowledge about the use of nonverbal cues in class. Presently there are only suggestions regarding the types of cues to be used by instructors and an approximation of when these cues should be stated. Nonverbal cueing is necessary to help participants anticipate movement changes successfully. In large crowded classes, with music playing in the background, it is often hard for participants to see or hear the instructor. Therefore, it is important for instructors to give adequate warning using nonverbal cues to allow time for participants to prepare for the upcoming changes. Nonverbal cues were investigated in this study because they are believed to be an important part of teaching aerobic dance-exercise.

Movement Patterns

Movement patterns are defined as the choreographed sequences of steps that are performed either in a stationary position or while traveling (forward, backward, sideways, etc.). It is believed that a number of aerobic dance-exercise injuries can be caused by repeated impact on the feet (Francis & Francis, 1989). Repeated upward force and prolonged side-to-side force on the foot can place excessive stress to assailable parts of the body (Francis & Francis, 1989). Also, the repetition of high upward force movements (high impact) versus movements which emphasize a reduction in the upward forces (low-impact) may result in injury. To prevent excessive stress it is important for instructors to design choreographed movement patterns that reduce the number of successive upward impacts by reducing the height of movements by including a variety of traveling patterns versus stationary repetition.

This study was designed to observe instructors' choreographed movement patterns by noting the ratio of traveling-to-stationary movements demonstrated during the cardio segment of an aerobic dance-exercise class. Knowledge of these patterns will help an instructor plan movements which allow the participants to move in a variety of directions, reducing the chances of boredom and helping to distribute the stresses of impact throughout the body. In this study, movement patterns were seen as an important aspect of teaching during the cardiovascular segment of an aerobic dance-exercise class. Research is limited, but necessary to understand the direct implications of varied movement patterns on the participants' motivational and biomechanical impact patterns.

SUMMARY

In summary, this chapter has examined the purpose of systematic observation in relation to this study. It also has reviewed the physical education teacher effectiveness literature regarding quality teaching skills which parallel the aerobic dance-exercise teaching environment. The physical education literature states that feedback (general/specific) is the information participants receive on their performance, and instructional cues are the information presented by the instructor describing how to execute a skill correctly. Experts in aerobic dance-exercise suggest that instructors should circulate to provide participants with feedback. It is also suggested that instructors give nonverbal cues to help participants change smoothly from one movement to another. Experts also noticed (Francis & Francis, 1989) that by varying the ratio of traveling-to-stationary movement patterns, injuries may be reduced.

At the present time, little is known about the teaching patterns demonstrated in aerobic dance-exercise classes. From a description of the instructional skills discussed in this chapter, it will be possible to identify patterns, for the further understanding of effective aerobic dance-exercise instruction.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this chapter is to: 1) identify and describe the subjects and the settings in which they were observed; 2) present the research design; 3) provide a description of the development of the Aerobic Dance Observation System; 4) explain the techniques used for data collection; and 5) explain the data analysis used in the study.

SUBJECTS

The subjects in this study were 29 male and female aerobic dance-exercise instructors presently teaching in various settings located in Southwest Virginia. Through professional contacts and telephone listings, the investigator contacted health club owners, instructors, and aerobic coordinators regarding participation in this study. Through the combined efforts of the researcher and coordinators, instructors were identified and asked to give their permission to participate in this study. Selection was based on accessibility to the investigator, type of class taught, and their expressed consent to be videotaped (Appendix A). Instructors were also asked to complete a demographic questionnaire which identified their gender, age, years of aerobic dance-exercise teaching, certifications held, and teaching facility. A composite of the instructors' demographic variables is listed in Table 1.

The aerobic dance-exercise participants (class members) were also asked to sign a consent form (Appendix B). They were notified of the study's purpose, videotaping procedures, and confidentiality procedures.

Table 1

COMPOSITE OF INSTRUCTORS' DEMOGRAPHIC/CONTEXTUAL INFORMATION

	Number
AGE (Mean = 32.86)	
20 - 28	10
29 -37	11
38 - 46	8
GENDER	
Female	26
Male	3
CERTIFICATION	
None	6
ACE	9
ACSM	1
AFAA	9
Other	4
DEGREE	
High School	5
Bachelors	14
Master's	10
TEACHING EXPERIENCE (Mean = 6.76)	
0 - 2 years	5
3 - 5 years	7
6 - 10 years	9
11+ years	8
SETTING	
Community/Recreation	5
College/University	4
Health Club	10
Swim/Racquet	4
Aerobic Studio	6

SETTING

Observations for this study were all conducted in Southwestern Virginia. Subjects taught in a variety of facilities: health clubs, aerobic dance-exercise studios, recreational programs, swim and racquet clubs, and educational institutions. Each facility had different features and equipment such as floor type (wood, concrete or padded), portable or built-in sound system, mirrors, and microphones.

The exercise classes consisted of low-impact, high-impact, or step classes that varied from 50 to 90 minutes in length. Class sizes ranged from 4 to 150 individuals from all levels of fitness.

Each session was videotaped with the instructors wearing a wireless microphone for audio recording. The camera was placed unobtrusively in the back of the room, constantly monitoring the instructor and as many participants as possible.

DESIGN OF THE STUDY

The purpose of this investigation was to identify and describe the instructional skills used by aerobic dance-exercise instructors and to describe teaching events as they occurred in their natural settings. To comply with the purpose of this study a quantitative, descriptive-analytic research design was used. Three types of data were collected in this study: videotaped analysis, on-site analysis using a systematic observation instrument and demographic/contextual questionnaires (Appendix C). The Aerobic Dance Observation System (systematic observation) was used to record the frequency and/or the occurrence/non-occurrence of the identified

teaching/learning behaviors. The questionnaires were used to describe the demographic/contextual characteristics of the subjects. Simple descriptive statistical analysis was then employed to identify the instructional behaviors demonstrated by the aerobic dance-exercise instructors.

DEVELOPMENT OF THE AEROBIC DANCE OBSERVATION SYSTEM

Purpose of ADOS

The Aerobic Dance Observation System (ADOS) was designed to describe the instructional behaviors demonstrated by aerobic dance-exercise instructors (Appendix D). This system provides an objective description of selected instructional behaviors as they occur in the three main components of an aerobic dance-exercise class: warm-up, cardiovascular, and floorwork. ADOS provides information regarding the following dimensions of the teaching environment:

- The circulation of the instructor throughout the class
- The demonstration of choreographed movement patterns
- The feedback given to participants from the instructor
- The instructional cues stated by the instructor
- Total participant engagement and the appropriate execution of exercises

Field Testing

ADOS was designed to record aerobic dance-exercise instructors' teaching behaviors. ADOS analyzes the following behavior categories: instructional cues, nonverbal cues, feedback, physical location of the instructor, and choreographed movement patterns.

A preliminary field study was conducted by the investigator who observed 10 aerobic dance-exercise classes taught in a local health club and a university in Southwest Virginia. Based on the results of this field study several changes were made. During the field testing the investigator coded the movement pattern once every two minutes. This sampling rate did not provide an adequate representation of the movement sequences demonstrated in a 20 - 25 minute cardiovascular segment of class. Therefore, on the last few observations, movement patterns were coded once every minute. This described a more representative picture of the patterns demonstrated. There were also several changes made regarding the use of verbal/nonverbal cues: 1) transitional and instructional cues were redefined; 2) reconstruction of a separate section on the coding sheet for instructional and nonverbal cues; and 3) transitional cues scored on counts 1-6, or 7-8, or 1-2, or 3-4. Once these changes were made, the system was better able to reliably measure the defined teaching behaviors for this study.

A second field study was then conducted with the revised ADOS. The investigator coded two aerobic dance-exercise classes from a local university and an aerobic exercise studio in Southwest Virginia. At these locations the investigator practiced on-site coding of the physical location pattern of the instructor, the active participation and appropriate technique of participants (Tech Checks). The classes were also videotaped and later analyzed for the instructional cues, nonverbal cues, frequency of feedback, and choreographed movement patterns demonstrated. From this field test, it was found that the changes in ADOS more reliably measured aerobic dance-exercise instructional skills. The coding of transitional cues was not included

in the second study and was eliminated from the final ADOS version due to an inability to record them reliably.

Expert Validation

The Aerobic Dance Observation System was validated through expert consensus. Forty aerobic coordinators, trainers, and physical educators were asked to complete a questionnaire (Appendix E) to rate the importance of the following instructional skills defined in ADOS: Circulation of the instructor, choreographed movement patterns, feedback (general/specific), and verbal and nonverbal cueing (instructional and transitional). Other instructional qualities such as personal characteristics and motivational techniques were not included. The researcher was concerned with investigating only observable teaching techniques. The ADOS categories were selected prior to the validation process. The purpose of this process was to obtain experts' opinion on the importance of these instructional skills in the aerobic dance-exercise teaching environment. Responses were grouped and analyzed according to perceived importance of the listed instructional skills: Not at all, Somewhat important, Very important, and Not sure. The strength and consensus of experts' responses validated the instructional skills observed in the Aerobic Dance Observation System (See Table 2).

Videotaped Observation Techniques

The ADOS system employs event recording to gather data on the frequency of four instructional behaviors: Choreographed movement patterns, feedback, instructional cues, and nonverbal cues (See Appendix Form D). Event recording techniques are used to record the number of general (G) and Specific (S) feedbacks given by placing a tally in the appropriate space on the

Table 2

EXPERTS' DEMOGRAPHIC INFORMATION

GENDER	Number
Female	35
Male	5
YEARS OF TEACHING EXPERIENCE	
Average	10.4
CERTIFICATION	
Certified	40
Noncertified	0
PLACES INSTRUCTORS TAUGHT	
Community/Rec.	4
College/University	3
Health Club	20
Swim & Racquet	5
Aerobic studio	5
Other	1

SURVEY RESULTS

ADOS CATEGORIES	RATING BY EXPERTS
1. Provide specific feedback	2.95
2. Provide general feedback	2.93
3. Circulate during class	2.73
4. Provide instructional cues	2.90
5. Provide verbal transitional cues	2.95
6. Provide nonverbal cues	2.88
7. Variety of movement patterns	2.60

NOTE: Maximum rating for each category is 3.0.

coding sheet (Appendix D). Instructional (I) and nonverbal (N) cueing is recorded by tallying the frequency of cues stated as they occur.

Choreographed movement patterns are recorded by circling the appropriate type of impact, location, and the direction of the choreographed steps (Appendix D) once each minute throughout the cardio segment of class.

On-Site Observation Techniques

Locus recording was used to record the circulation patterns of the instructor throughout the class. As the instructor moved from the starting location to the back or sides of the room, the observer recorded the new location by using a consecutive numbering system.

Planned Activity Checking (Placheck) was used to record the number of participants actively demonstrating and performing the appropriate execution of skills [(Tech Check) (See Appendix Form D)]. At predetermined intervals during each of the class segments, the number of participants who were correctly performing the exercise or movement along with those actively participating at that moment was recorded. Each Tech Check includes three scans of the same five participants, 30 seconds apart. Those five participants were chosen at the beginning of class and observed throughout the class unless a participant chose to leave. The content of each scan contained two elements. In the left-to-right element of the tech check, the number of participants actively involved were observed and recorded. In the right-to-left element (a continuation of the same scan), the number of participants appropriately performing the designated skill was observed and recorded. Thus, a total of three-two element scans were performed.

ADOS Category Definitions

Warm-up Segment

Rhythmic warm-up: Low intensity movements performed through a full range of motion with the specific purpose of circulating oxygenated blood to warm the working muscles (e.g., walking, step touch).

Static Stretches: The slowed controlled extension of the primary muscles to full length.

Cardiovascular (Cardio) Segment

Low-Impact: The use of large dynamic movements of the upper body along with movements that shift weight from one foot to the other without jumping or jogging. Generally, one foot stays in contact with the floor (e.g., power walk, step touch).

High-Impact: The use of locomotor movements and other movements that create a rebound effect upon impact with the floor (e.g., jog, jump and slide).

Floorwork Segment

A variety of exercises designed to improve muscular endurance (e.g., abdominal curls, push-ups).

Physical Location of the Instructor (Circulation of the Instructor)

A diagram of the defined boundaries used to record the instructor's location during the class is shown on Figure 1.

Choreographed Movement Patterns

The arrangement of steps in a particular direction or directional pattern (e.g., walking in a forward direction).

Location: Choreographed steps that either remain in a fixed position or travel in various directions. There are two kinds:

Stationary (S): Choreographed steps that remain in a fixed position or move no more than one step away from the fixed position.

Traveling (T): Choreographed steps that move two or more steps away from a fixed position in any direction.

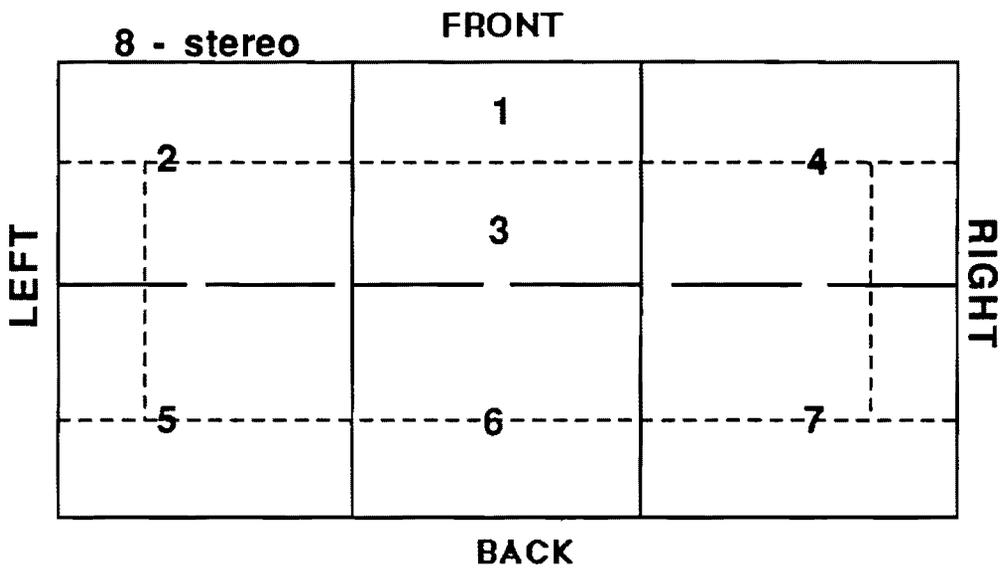


Figure 1

CODING DIAGRAM FOR PHYSICAL LOCATION
OF THE INSTRUCTOR

Stated below are the three defined traveling directions used in ADOS.

Direction

Forward	F
Backward	B
Sideward	S

Directional pattern (noted as "O" for "other" on observation) circular, zig zag, square, etc.

Feedback

Specific: Information given to the participants relating to the stated component of a skill or skills being practiced (e.g., "Make sure your knees are out over your toes when performing the jumping jack.").

General: Information given by the instructor which contains no specific referent to improve a skill or skill component (e.g., "Good job.").

Cueing

Verbal: Spoken information given by the instructor.

Nonverbal: Unspoken information used by the instructor to guide participants (e.g., hand signals indicating a change of direction).

The following is to be coded under verbal cueing:

Instructional Cues: Information given by the instructor to describe the execution of a skill or skill component.

Observer Training

The trainees chosen for this research were an experienced aerobic dance-exercise program coordinator of a swim and racquet club, and a novice aerobic dance-exercise instructor from a local university in Southwest Virginia. They were chosen due to their availability and their interest in investigating aerobic dance-exercise instructional skills. The on-site and videotaped training sessions were conducted on a one-to-one basis with each trainee. The aerobic dance-exercise program coordinator was trained for the on-site

analysis. During the training sessions the trainee was instructed only on the use of ADOS categories including the physical location of the instructor, the active participation of class members, and the practice of appropriate/inappropriate technique. Once training was completed and reliability was established, each trainee accompanied the researcher to the various locations for data collection.

The novice aerobic dance-exercise instructor was trained only for the videotaped analysis. The instructor was trained to code the frequency of the following instructional behaviors: instructional cues, feedback, nonverbal cues and the choreographed movement patterns. Once training was completed and reliability was established, the trainee viewed and coded the aerobic dance-exercise videotapes independently of the researcher.

Observer Training for On-Site Analysis

- Day 1** A three-hour workshop was conducted to familiarize the trainee with the purpose of tech checks as a part of ADOS. At this time the trainee familiarized herself with the target definitions and the criteria (Appendix F) used to recognize the occurrence and non-occurrence of defined behaviors.
- Day 2** A two-hour workshop was conducted to familiarize the trainee with the ADOS coding sheet and the equipment required for coding behaviors onto the data sheet. The researcher and the trainee then watched a one-hour aerobic dance-exercise class coding the correct/incorrect technique of five aerobic participants. Three tech checks per subcategory were taken throughout the warm-up (rhythmic warm-up, stretching), cardio (pre-cardio, cardio, post-cardio) and floorwork (abdominal) sections of class. Four aerobic dance-exercise classes were coded on separate days. The trainee and researcher obtained 80% category reliability before data collection began.
- Day 3** A one-hour session was scheduled to discuss the operational definition and the coding procedure to monitor the circulation pattern of the instructor. A second hour was spent observing an aerobic dance-exercise class coding the circulation

pattern of the instructor throughout the warm-up and cardio segments of class. The researcher and the trainee discussed the location changes as they occurred.

Day 4 The researcher and the trainee observed two one-hour aerobic dance-exercise classes. While stationed in opposite back corners of the room, they coded the instructor's location changes. Results were compared and an 80% agreement was obtained. Once agreement was reached, the researchers then began on-site data collection.

Observer Training for Videotaped Analysis

Step 1 A two-hour workshop was conducted to familiarize the trainee with the purpose of ADOS. At this time the trainee familiarized herself with the target definitions and the criteria (Appendix F) used to recognize the correct/incorrect occurrence of defined behaviors. The trainee was asked to study the definitions and commit them to memory before the next training session.

Step 2 A one-hour training session was conducted to familiarize the trainee with the ADOS coding sheet and the equipment required for the observation.

Step 3 a. A two-hour training session was conducted including a review of the general and specific feedback definitions, and the viewing of two videotapes featuring the warm-up (approximately seven-ten minutes) segment of an aerobic dance-exercise class. The researcher and the trainee first watched the videotape to recognize the occurrence of general and specific feedback spoken by the instructor. The videotape was then viewed again and the frequency of feedbacks was coded. The results were compared. Any differences were addressed by recoding the video segment.

b. A second videotape was viewed with the researcher and trainee coding the occurrence of feedback. At this time the researcher and trainee were not to discuss any questions during the viewing. They were also separated and unable to see each other while coding. The frequency of each feedback category was then compared. A score at or above 80% was obtained.

c. The trainee viewed a third videotape in order to code the frequency of feedback throughout the warm-up. The videotape was viewed without the presence of the researcher.

Later the results were then discussed. The score was at or above 80% agreement.

d. The trainee had one week to code the frequency of general and specific feedback stated in the warm-up, cardio, and floorwork sections of one videotaped subject. After one week the results were compared to see if the 80% agreement was reached. If the agreement was not acceptable (less than 80%), the researcher and the trainee recoded the tape separately until agreement was obtained. Once it was obtained, the researcher moved on to the next category.

e. A two-hour training was conducted to review the operational definition and the coding procedures for monitoring the frequency of instructional cues spoken. During this time the researcher and trainee viewed the warm-up segment (approximately 7-10 minutes) of a videotape. There was an open discussion of the behaviors demonstrated while viewing the videotape. Any questions were addressed by stopping and rewatching the tape.

During the second hour another videotape was viewed with the researcher and trainee coding the occurrence of instructional cues. At this time, the researcher and trainee were not to discuss any questions during the viewing. They were also separated while coding. The frequency of instructional cues spoken was then compared. A score at or above 80% was obtained.

f. The trainee viewed a third videotape coding the frequency of instructional cues throughout the warm-up. The videotape was viewed without the presence of the researcher. Later the results were then discussed. The score was at or above 80% agreement.

g. The trainee had one week to code the frequency of instructional cues spoken in the warm-up, cardio, and floorwork sections of one videotaped subject. After one week the results were compared to see if the 80% agreement was reached. If the percent agreement was not acceptable (less than 80%), the researcher and the trainee recoded the tape separately until agreement was obtained. Once it was obtained, the researcher moved on to the next category.

h. A two-hour training was conducted to review the operational definition and the coding procedures for monitoring the frequency of nonverbal cues. During this time

the researcher and trainee viewed the cardio segment (20-30 minutes) of a videotape. There was an open discussion of the behaviors demonstrated while viewing the videotape. Any questions were addressed by stopping and rewatching the tape.

During the second hour another videotape was viewed with the researcher and trainee coding the occurrence of nonverbal cues. At this time, the researcher and trainee were not to discuss any questions during the viewing. They were also separated while coding. The frequency of nonverbal cues was then compared. If the percent agreement was not acceptable (less than 80%), the researcher and the trainee recoded the tape separately until agreement was obtained.

i. The trainee viewed a third videotape coding the frequency of nonverbal cues throughout the cardio segment. The videotape was viewed without the presence of the researcher. Later the results were then discussed. The score was at or above 80% agreement.

j. The trainee had one week to code the frequency of nonverbal cues used throughout the warm-up, cardio, and floorwork segments of one videotaped subject. After one week, the results were compared to see if 80% agreement was reached. If the percent agreement was not acceptable (less than 80%), the researcher and the trainee recoded the tape separately until agreement was obtained. Once it was obtained, the researcher moved on to the next category.

k. A two-hour training was conducted. The first hour was used to review the operational definition and the coding procedures for monitoring the choreographed movement patterns. During this time the researcher and trainee viewed the cardio segment (approximately 30 minutes) of a videotape. There was an open discussion of the movement patterns demonstrated while viewing the videotape. Any questions were addressed by stopping and rewatching the tape.

During the second hour another videotape was viewed with the researcher and trainee coding the choreographed movement patterns of two individuals (approximately 30 minutes each). At this time, the researcher and trainee were not to discuss any questions. However, during the coding session, the researcher told the trainee when to code. They were also separated and unable to see each other while

coding. The frequency of agreement was then compared. A score at or above 80% was obtained.

Exit Criteria

The trainee demonstrated a proficiency level of 80% category reliability in two consecutive observations. Once training was completed, the observer coded for data collection.

RELIABILITY

Reliability is the degree to which observations are consistent in recording events that have taken place. "Interobserver reliability is measured when two independent observers watch the same lesson, focusing on the same persons throughout, then comparing their records" (Metzler, 1990, pg. 135). The interobserver reliability procedure was implemented for this study. For on-site analysis (location of the instructor and Tech Checks), six subjects were observed to estimate reliability (Appendix G). One hundred and ninety-six reliability checks were conducted; 168 (85%) met the predetermined acceptance criteria. Category reliability for three subjects was established throughout the videotaped analysis. Reliability checks were performed during the first, third and fourth week of the analysis (Appendix G).

The reliability of collected data was estimated by event, time sampling, and placheck equations. In this study, only the coding sessions in which the two observers coded the designated behavior at or above 80% agreement were accepted. The agreements and disagreements were assessed and reliability was calculated by using the following formulas:

Event Recording

Lowest observed frequency x 100 = % Agreement

Highest observed frequency

Time Sampling

Lowest recorded frequency x 100 = % Agreement

Highest recorded frequency

Placheck

Lowest number each score x 100 = % Agreement

Highest number each score

The event recording formula was used to determine reliability in the categories of instructional cues, general and specific feedback. Thirty-six reliability checks were made with 84% at or above the predetermined acceptance criteria. The Time Sampling formula was used to determine the reliability of the choreographed movement pattern. Three reliability coding sessions were conducted. All were at or above the predetermined acceptance level. The Placheck recording formula was used to determine the reliability of the Tech Check category. Forty-three Tech Check category reliability estimates were made. Thirty-one (72%) were at or above the predetermined acceptance criteria. Based on these analyses of interobserver agreement, the observations were deemed adequately reliable. Overall, the system was considered acceptably reliable for the descriptive analyses made in this study.

DATA ANALYSIS

Descriptive statistics were used to analyze observed defined behaviors in classes. Analyses included the frequency and rate per minute for each

instructional behavior category. Additional analyses were made across selected demographic and contextual variables: instructor experience, teaching location, available equipment, certification, and exercise programs. The purpose of these data analyses was to provide an initial systematic description of key instructional patterns in aerobic dance-exercise classes.

SUMMARY

This chapter included a description of the subjects, the research settings, and the development of the ADOS instrument. Quantitative data were collected using the Aerobic Dance Systematic Observation system and a demographic/contextual questionnaire. Validity and reliability of ADOS were also presented. Through descriptive statistical analysis, Chapter IV will describe the instructional behaviors used in an aerobic dance-exercise teaching environment.

CHAPTER IV

RESULTS

This chapter reports and describes the results of the 29 aerobic dance-exercise teaching observations. The formulation of each table is based on the data gathered from the systematic analysis of on-site coding, videotapes, and the demographic questionnaire. The data will be presented and discussed in the following order: a brief description of the subjects' demographic/contextual variables; a description of the facilities where classes were taught; a description of the aerobic dance-exercise class format; mean rate per minute of instructional skills; mean percent of changes into locations; mean percent of choreographed movement patterns; and the mean percent of active participants and appropriate technique. Data analysis were made within each class segment: warm-up, cardio, and floorwork. Each segment was analyzed across the following sub-categories: certification, class type, degree, years of teaching experience, the use of a microphone, and class setting. These analyses provided a description of the teaching skills used by the selected subjects.

INSTRUCTOR DEMOGRAPHIC/CONTEXTUAL INFORMATION

A composite of the instructors' demographic and contextual information is listed in Table 3. As an overview, 90% of the subjects were females, and 10% were male. The mean age of the 29 instructors was 33.2 years. Sixty-six percent of the instructors were certified through leading organizations such as ACE, ACSM, and AFAA. Seventeen percent were certified through their respective health club or local organizations. Non-certified instructors

Table 3

COMPOSITE OF INSTRUCTORS' DEMOGRAPHIC/CONTEXTUAL INFORMATION

AGE (Mean = 32.86 years)	NO.
20 - 28	10
29 - 37	11
38 - 46	8
GENDER	
Female	26
Male	3
CERTIFICATION	
None	6
ACE	9
ACSM	1
AFAA	9
Other	4
DEGREE	
High School	5
Bachelor's	14
Master's	10
TEACHING EXPERIENCE (mean = 6.76 years)	
0 - 2 years	5
3 - 5 years	7
6 - 10 years	9
11+ years	8
SETTING	
Community/Recreation	5
College/University	4
Health Club	10
Swim/Racquet	4
Aerobic Studio	6

represented 21% of the subject pool. The educational level of the instructors is as follows: high school degree 17%; Bachelor's degree 49%; and Master's degree 30%. The mean years of teaching experience was 6.76 years.

DESCRIPTION OF FACILITIES

The subjects taught in a variety of facilities which had different features and equipment. Table 4 provides a composite of these varying conditions. To summarize, 10 classes were taught in health clubs, 6 at aerobic studios, 4 at a college/university, and 4 at a swim/racquet club. Only 5 of the facilities provided instructors with microphones. A pitch control tape deck was available in 18 facilities. A platform was found in 11 of the facilities. Sixteen of the facilities provided a floor system which held shock absorption qualities. These floor types included suspended wood and padded carpet. Other floor types such as wood, and carpet over concrete were provided at 13 facilities.

DESCRIPTION OF THE AEROBIC DANCE-EXERCISE CLASS FORMAT

The instructors were observed teaching a variety of aerobic dance-exercise classes as described in Table 5. In summary, the instructors taught to a mean of 21.62 participants. The majority of classes observed were multi-impact (15), which included a combination of low and high impact movements. Other classes included solely low-impact (8) or high-impact (2). Step aerobics represented four classes, including one class of step and sculpt.

The aerobic dance-exercise classes were divided into three segments: warm-up, cardio, and floorwork. Class time ranged from 50 to 90 minutes. The

Table 4

DESCRIPTION OF FACILITIES

Programs	Community/Recreation	4
	College/University	4
	Health Club	10
	Swim and Racquet Club	5
	Aerobic Studios	6
Equipment	Microphone	
	Yes	5
	No	24
	Pitch Control Tape Deck	
	Yes	18
	No	11
	Platform	
	Yes	11
	No	18
	Floor Types	
	Suspended wood	13
	Padded carpet	3
	Wood	11
Carpet over concrete	2	

Table 5

**DESCRIPTION OF THE AEROBIC
DANCE-EXERCISE CLASS**

		No.
Mean number of class participants		21.62
		No.
Class Types	Low-Impact	8
	High-Impact	2
	Multi-Impact	15
	Step	3
	Step-n-Sculpt	1
		MEAN DURATION (min.)
SEGMENT		
Warm-up		9.0
Cardio		32.1
Floorwork		11.6
		MEAN (min.)
Total Class Time		52.7

mean duration of the warm-up was 9.00/min. The mean duration for the cardio segment was 32.21/min, and the mean for the floorwork was 11.55/min.

MEAN RATE PER MINUTE OF INSTRUCTIONAL SKILLS

The instructional skills observed will be arranged and discussed by class segment: warm-up, cardio and floorwork. Sub-categories with segments will be addressed as previously mentioned.

Warm-up/Instructional Cues

The following information is presented in Table 6. Overall, the 29 instructors had a mean rate of 2.52/min (warm-up), 0.73/min (cardio), and 3.73/min (floorwork).

Certification. The results indicate that certified instructors AFAA (3.77/min), ACE (2.27/min), and "Other" (2.45/min), had a higher mean rate of instructional cues than noncertified instructors (0.9/min).

Class Type. The results indicate that a higher mean rate of instructional cues was given during step classes (3.18/min) followed by multi-impact (2.83/min), Step-n-Sculpt (2.78/min), low-impact (2.25/min), and high-impact (0.39/min).

Degree. The results indicate an increase in the use of instructional cues with advancing education: high school (1.27/min), Bachelor's (2.44/min), and a Master's (3.26/min).

Experience. The results indicate that the mean rate of instructional cues increased with years of teaching experience: 0-2 years (1.63/min), 3-5 years (2.38/min), 6-10 years (2.75/min), 11 plus years (2.83/min).

Table 6

MEAN RATES PER MINUTE OF INSTRUCTIONAL CUES							
		Warm-Up		Cardio		Floorwork	
	N	M	S.D.	M	S.D.	M	S.D.
All Subjects	28	2.52	1.68	0.73	0.65	3.73	1.75
Certification:							
None	5	0.91	0.83	0.96	0.89	3.16	2.82
Ace	9	2.27	1.42	0.40	0.37	3.74	1.38
ACSM	1	1.89	0	0.647	0	0	0
AFFA	9	3.77	1.52	0.96	0.66	4.38	1.14
Other	4	2.45	1.89	0.63	0.73	3.44	1.60
Class Type:							
Low-Impact	8	2.25	1.47	0.87	0.87	3.90	1.62
High-Impact	2	0.39	0.55	0	0	1.35	0.92
Multi-Impact	14	2.83	1.84	0.73	0.61	3.80	1.849
Step	3	3.18	1.48	0.91	0.27	4.38	0.18
Step-n-Sculpt	1	2.78	0	0.59	0	5.10	0
Degree:							
High School	5	1.27	0.65	0.52	0.79	2.41	1.52
Bachelor's	13	2.44	1.50	0.95	0.71	4.27	1.92
Master's	10	3.26	1.94	0.53	0.41	3.59	1.38
Experience:							
0-2 Years	4	1.63	1.63	0.62	0.97	4.11	3.05
3-5 Years	7	2.38	2.14	0.59	0.37	2.92	0.99
6-10 Years	9	2.75	1.84	0.84	0.76	4.16	1.68
11+ Years	8	2.83	1.14	0.79	0.59	3.79	0.99
Microphone:							
Yes	5	2.83	2.33	0.72	0.74	3.70	1.37
No	23	2.46	1.56	0.69	0.59	3.74	1.86
Setting:							
Community/Recreation	5	1.78	2.10	0.13	0.25	2.74	1.14
College/University	4	4.30	1.75	1.13	0.49	3.76	1.16
Health Club	9	1.83	1.46	0.73	0.73	3.78	2.46
Swim/Racquet Club	4	2.72	0.23	1.21	0.84	4.43	0.89
Aerobic Studio	6	2.86	1.57	0.64	0.36	3.87	1.71

Microphone. The results indicate that instructors who had access to a microphone had a higher mean rate of instructional cues (2.83/min), than those without a microphone (2.46/min).

Setting. The results indicate that instructors who taught at a college/university facility had the highest mean rate (4.30/min) of instructional cues, followed by aerobic studio (2.86/min), swim/racquet (2.72/min), health club (1.83/min) and the community/recreation (1.78/min).

Nonverbal Cues

The following information is presented in Table 7. Overall, the 29 instructors had a mean rate of 1.34/min (warm-up), 1.56/min (cardio), and 1.13/min (floorwork).

Certification. From the data it can be determined that certified instructors had a higher mean rate/min of instructional cues than noncertified instructors: AFAA (1.69/min), ACE (1.63/min), "Other" (1.11/min), and noncertified (0.65/min).

Class Type. The results indicate that instructors who taught multi-impact classes gave more nonverbal cues (1.90/min) than those of other class types: low-impact (1.36/min), high-impact (0.81/min), step (0.67/min), and Step-n-Sculpt (0.67/min).

Degree. The results indicate an increase in the use of nonverbal cues with advancing education: high school (0.41/min), Bachelor's (1.49/min), and a Master's (1.61/min).

Table 7

MEAN RATES PER MINUTE OF NONVERBAL CUES							
		Warm-Up		Cardio		Floorwork	
	N	M	S.D.	M	S.D.	M	S.D.
All Subjects	28	1.34	1.10	1.56	1.57	1.13	2.11
Certification:							
None	5	0.65	0.55	0.85	0.57	1.11	2.06
Ace	9	1.63	1.35	1.81	1.71	0.52	0.96
ACSM	1	0	0	0.51	0	0	0
AFFA	9	1.69	0.99	2.02	2.00	1.79	3.29
Other	4	1.11	0.96	1.34	1.31	1.25	1.65
Class Type:							
Low-Impact	8	1.36	1.22	1.84	1.75	0.20	0.39
High-Impact	2	0.81	0.11	0.36	0.43	0.41	0.33
Multi-Impact	14	1.60	1.19	1.90	1.61	2.00	2.66
Step	3	0.67	0.58	0.45	0.16	0.04	0.06
Step-n-Sculpt	1	0.67	0	0.10	0	0	0
Degree:							
High School	5	0.41	0.42	0.59	0.49	0.08	0.10
Bachelor's	13	1.49	1.12	1.79	1.59	1.07	1.67
Master's	10	1.61	1.14	1.74	1.80	1.69	2.93
Experience:							
0-2 Years	4	1.02	0.28	0.99	1.07	1.93	2.34
3-5 Years	7	0.97	0.70	1.26	1.54	1.77	3.28
6-10 Years	9	1.62	1.22	2.03	1.81	0.61	1.04
11+ Years	8	1.51	1.49	1.67	1.647	0.30	0.45
Microphone:							
Yes	5	1.25	0.97	1.647	1.98	0.01	0.02
No	23	1.36	1.15	1.54	1.52	1.42	2.28
Setting:							
Community/Recreation	5	0.52	0.50	0.53	0.80	0.17	0.32
College/University	4	2.03	0.83	2.19	1.14	1.96	1.53
Health Club	9	0.85	0.86	1.52	1.58	0.95	1.78
Swim/Racquet Club	4	2.32	1.13	2.37	2.10	0.34	0.51
Aerobic Studio	6	1.65	1.27	1.54	1.87	2.48	4.35

Experience. The results indicate that the use of nonverbal cues varied across years of teaching experience: 0-2 years (1.02/min), 3-5 years (0.97/min), 6-10 years (1.62/min), 11 plus years (1.51/min).

Microphone. The results indicate that instructors who did not have access to a microphone had a higher mean rate of nonverbal cues (1.36/min) than those with a microphone (1.25/min).

Setting. The results indicate that instructors who taught at swim/racquet facilities had the highest mean rate of nonverbal cues (2.32/min), followed by college/university (2.03/min), aerobic studio (1.65/min), health club (0.85/min), and community/recreation (0.52/min) facilities.

General Feedback

The following information is presented in Table 8. Overall, the 29 instructors had a mean rate of 1.01/min (warm-up), 0.79/min (cardio), and 1.96/min (floorwork).

Certification. The results indicate that instructors who were certified through ACE (1.48/min), and AFAA (1.19/min), had a higher mean rate of general feedback above all other certified and noncertified instructors: ACSM (0.56/min), "Other" (0.03/min), and noncertified (0.73/min).

Class Type. The results indicate that instructors who taught step (1.62/min), and/or Step-n-Sculpt (1.56/min), had a higher mean rate of general feedback than instructors from other class types: multi-impact (1.26/min), low-impact (0.52/min), and high-impact (0.11/min).

Degree. The results indicate an increase in the use of general feedback with advancing education: high school (0.24/min), Bachelor's (1.01/min), and a Master's (1.42/min).

Table 8

MEAN RATES PER MINUTE OF GENERAL FEEDBACK							
		Warm-Up		Cardio		Floorwork	
	N	M	S.D.	M	S.D.	M	S.D.
All Subjects	28	1.01	1.29	0.79	0.86	1.96	4.38
Certification:							
None	5	0.73	0.83	0.55	0.40	1.07	1.44
Ace	9	1.48	1.62	0.87	0.88	1.33	1.50
ACSM	1	0.56	0	0.67	0	0	0
AFFA	9	1.19	1.35	1.19	1.10	4.50	7.84
Other	4	0.03	0.06	0.10	0.09	0.14	0.17
Class Type:							
Low-Impact	8	0.52	0.47	0.49	0.43	0.56	0.68
High-Impact	2	0.11	0.16	0.35	0.41	1.85	2.62
Multi-Impact	14	1.26	1.50	0.84	0.97	2.47	5.95
Step	3	1.62	2.07	1.32	1.17	2.75	2.00
Step-n-Sculpt	1	1.56	0	1.83	0	3.81	0
Degree:							
High School	5	0.24	0.21	0.35	0.31	1.05	1.77
Bachelor's	13	1.01	1.70	0.70	0.69	0.87	1.20
Master's	10	1.42	1.63	1.15	1.13	3.83	6.95
Experience:							
0-2 Years	4	0.23	0.33	0.24	0.25	1.16	1.16
3-5 Years	7	1.08	1.03	1.05	1.07	3.71	8.10
6-10 Years	9	0.85	1.38	0.83	0.83	1.34	1.47
11+ Years	8	1.53	1.62	0.86	0.91	1.33	1.75
Microphone:							
Yes	5	0.92	0.60	0.72	0.74	1.14	1.59
No	23	1.04	1.41	0.81	0.90	2.17	4.85
Setting:							
Community/Recreation	5	0.21	0.29	0.07	0.06	0.12	0.13
College/University	4	1.06	2.11	0.69	1.20	0.89	1.53
Health Club	9	0.87	1.26	0.77	0.76	1.53	1.58
Swim/Racquet Club	4	1.86	1.34	1.40	0.38	1.84	1.48
Aerobic Studio	6	1.32	1.15	1.09	1.08	6.00	10.69

Experience. The results indicate that instructors with 11 plus years of experience had the highest mean rate of general feedback (1.53/min) than those with less experience: 0-2 years (0.23/min), 3-5 years (1.08/min), 6-10 years (0.85/min).

Microphone. The results indicate that instructors who did not have access to a microphone had a higher mean rate of general feedback (1.04/min) than those with a microphone (0.92/min).

Setting. The results indicate that instructors who taught at swim/racquet facilities had a higher mean rate of general feedback/min (1.86/min) than instructors from other settings: aerobic studio (1.32/min), college/university (1.06/min), community/recreation (0.21/min), and health clubs (0.87/min).

Specific Feedback

The following information is presented in Table 9. Overall, the 29 instructors had a mean rate of 0.02/min (warm-up), 0.07/min (cardio), and 0.15/min (floorwork).

Cardio/Instructional Cues

The following information is presented in Table 6.

Certification. The results indicate that instructors certified by AFAA and noncertified instructors had the highest mean rate of instructional cues (0.96/min), above all other certified instructors: ACSM (0.647/min), "Other" (0.63/min), and ACE (0.40/min).

Class Type. The results indicate a varied mean rate across all class types: low-impact (0.87/min), high-impact (0.00/min), multi-impact (0.73/min), step (0.91/min), and a Step-n-Sculpt (0.59/min).

Table 9

MEAN RATES PER MINUTE OF SPECIFIC FEEDBACK							
		Warm-Up		Cardio		Floorwork	
	N	M	S.D.	M	S.D.	M	S.D.
All Subjects	28	0.02	0.08	0.07	0.25	0.15	0.22
Certification:							
None	5	0	0	0.02	0.03	0.11	0.18
Ace	9	0	0	0.02	0.03	0.21	0.29
ACSM	1	0	0	0	0	0	0
AFFA	9	0.07	0.13	0.20	0.44	0.21	0.19
Other	4	0	0	0	0	0	0
Class Type:							
Low-Impact	8	0.01	0.04	0.04	0.10	0.16	0.19
High-Impact	2	0	0	0	0	0.26	0.29
Multi-Impact	14	0.04	0.11	0.11	0.34	0.04	0.07
Step	3	0	0	0.02	0.04	0.21	0.19
Step-n-Sculpt	1	0	0	0	0	0.45	0.00
Degree:							
High School	5	0	0	0	0	0.14	0.22
Bachelor's	13	0	0	0.02	0.03	0.15	0.24
Master's	10	0.06	0.13	0.17	0.42	0.16	0.21
Experience:							
0-2 Years	4	0	0	0.01	0.01	0.14	0.19
3-5 Years	7	0.06	0.15	0.21	0.49	0.17	0.31
6-10 Years	9	0.01	0.04	0.02	0.03	0.17	0.22
11+ Years	8	0.01	0.04	0.04	0.09	0.14	0.13
Microphone:							
Yes	5	0.03	0.06	0.01	0.03	0.13	0.19
No	23	0.02	0.09	0.08	0.27	0.16	0.23
Setting:							
Community/Recreation	5	0.02	0.05	0.05	0.12	0.03	0.03
College/University	4	0.03	0.06	0.01	0.03	0.02	0.04
Health Club	9	0.04	0.13	0.01	0.02	0.20	0.20
Swim/Racquet Club	4	0	0	0.01	0.02	0.21	0.19
Aerobic Studio	6	0	0	0.26	0.53	0.23	0.40

Degree. The results indicate a varied mean rate across all levels of education: high school (0.52/min), Bachelor's (0.95/min), and Master's (0.53/min).

Experience. The results indicate that instructors with 6-10 years of experience had a higher mean rate of instructional cues (0.76/min) than instructors with differing years of experience: 0-2 years (0.62/min), 3-5 years (0.59/min), and 11 plus years (0.79/min).

Microphone. The results indicate that instructors who had access to a microphone had a higher mean rate of instructional cues (0.72/min) than those without a microphone (0.69/min).

Setting. The results indicate that instructors who taught at swim/racquet facilities had the highest mean rate of instructional cues (1.21/min) followed by college/university (1.13/min), community/recreation (0.13/min), aerobic studio (0.64/min), and health club facilities (0.73/min).

Nonverbal Cues

The following information is presented in Table 7.

Certification. The results indicate that certified instructors had a higher mean rate of nonverbal cues than noncertified instructors, (exception: ACSM): ACE (1.81/min), ACSM (0.51/min), AFAA (2.02/min), "Other" (1.34/min) and noncertified (0.85/min).

Class Type. The results indicate that instructors teaching multi-impact classes had a higher mean rate of nonverbal cues (1.90/min), than instructors from other class types: low-impact (1.75/min), step (0.45/min), high-impact (0.36/min), and Step-n-Sculpt (0.10/min).

Degree. The results indicate a varied mean rate across all levels of education: high school (0.59/min), Bachelor's (1.79/min), and Master's (1.74/min).

Experience. The results indicate that instructors with 6-10 years of experience had a higher mean rate of nonverbal cues (2.03/min) than those with differing experience: 0-2 years (0.99/min), 3-5 years (1.26/min), and 11 plus years (1.67/min).

Microphone. The results indicate that instructors who had access to a microphone had a higher mean rate of nonverbal cues (1.647/min) than those without a microphone (1.54/min).

Setting. The results indicate that instructors who taught at swim/racquet facilities had the highest mean rate of nonverbal cues (2.37/min) followed by college/university (2.19/min), aerobic studio (1.54/min), health club (1.52/min), and community/recreation facilities (0.50/min).

General Feedback

The following information is presented in Table 8.

Certification. The results indicate that AFAA certified instructors had a higher mean rate of general feedback (1.19/min) above all other certified and noncertified instructors (exception: "Other"): ACE (0.87/min), ACSM (0.67/min), "Other" (0.10/min) and noncertified (0.55/min).

Class Type. The results indicate that the instructor who taught Step-n-Sculpt had a higher mean rate of general feedback (1.83/min) than instructors from other class types: step (1.32/min), multi-impact (0.84/min), low-impact (0.49/min), and high impact (0.35/min).

Degree. The results indicate an increase in the use of general feedback with advancing education: high school (0.35/min), Bachelor's (0.70/min), and Master's (1.15/min).

Experience. The results indicate that instructors with 3-5 years of experience had a higher mean rate of general feedback (1.05/min) than those with differing experience: 0-2 years (0.24/min), 6-10 years (0.83/min), 11 plus years (0.86/min).

Microphone. The results indicate that instructors who did not have access to a microphone had a higher mean rate of general feedback (0.90/min) than those with a microphone (0.72/min).

Setting. The results indicate that instructors teaching at swim/racquet facilities had the highest mean rate of general feedback (1.40/min), followed by those teaching at an aerobic studio (1.09/min), health club (0.77/min), college/university (0.69/min), and community/recreation facilities (0.07/min).

Specific Feedback

The following information is presented in Table 9. Results indicate that across all subjects and sub-categories the mean rate of specific feedback stated is minimal, almost zero in most cases.

Floorwork/Instructional Cues

The following information is presented in Table 6.

Certification. The results indicate that AFAA certified instructors had a higher mean rate of instructional cues (4.38/min) above all other certified and noncertified instructors: ACE (3.74/min), "Other" (3.44/min), ACSM (0.00/min), and noncertified (3.16/min).

Class Type. The results indicate that the Step-n-Sculpt instructor had a higher mean rate of instructional cues (5.10/min) above those teaching other class types: step (4.38/min), low-impact (3.90/min), multi-impact (3.80/min), and high-impact (1.35/min).

Degree. The results indicate that instructors with a Bachelor's degree had a higher mean rate of instructional cues (4.27/min) above those with differing levels of education: high school (2.41/min) and Master's (3.59/min).

Experience. The results indicate that instructors with 6-10 years of teaching experience had the highest mean rate of instructional cues (4.16/min) than those with differing experience: 0-2 years (4.11/min), 3-5 years (2.92/min), and 11 plus years (3.79/min).

Microphone. The results indicate that instructors who did not have access to a microphone had a higher mean rate of instructional cues (3.74/min) than those with a microphone (3.70/min).

Setting. The results indicate that instructors who taught at swim/racquet facilities had a higher mean rate of instructional cues (4.43/min) followed by those teaching at an aerobic studio (3.87/min), health club (3.78/min), college/university (3.76/min), and community/recreation facilities (2.74/min).

Nonverbal Cues

The following information is presented in Table 7.

Certification. The results indicate that AFAA certified instructors had a higher mean rate of nonverbal cues (1.79/min) above all other certified and noncertified instructors: "Other" (1.25/min), noncertified (1.11/min), and ACE (0.52/min). The ACSM instructor did not conduct a floorwork segment.

Class Type. The results indicate that instructors who taught multi-impact classes had a higher mean rate of nonverbal cues (2.00/min) than those teaching other class types: low-impact (0.20/min), high-impact (0.41/min), step (0.04/min), and Step-n-Sculpt (0.00/min).

Degree. The results indicate an increase in the use of nonverbal cues with advancing education: high school (0.08/min), Bachelor's (1.07/min), and Master's (1.69/min).

Experience. The results indicate that instructors with 0-2 years of teaching experience had the highest mean rate of nonverbal cues (1.93/min), with a gradual decline as experience increased: 3-5 years (1.77/min), 6-10 years (0.61/min), and 11 plus years (0.03/min).

Microphone. The results indicate that instructors who did not have access to a microphone had a higher mean rate of nonverbal cues (1.42/min) than those with a microphone (0.01/min).

Setting. The results indicate that instructors who taught at an aerobic studio had a higher mean rate of nonverbal cues (2.48/min) followed by those who taught at the college/university (1.96/min), community/recreation (0.17/min), health club (0.95/min), and swim/racquet facilities (0.34/min).

General Feedback

The following information is presented in Table 8.

Certification. Results indicate that AFAA certified instructors had a higher mean rate of general feedback (4.50/min) above all other certified and noncertified instructors: ACE (1.33/min), noncertified (1.07/min), "Other" (0.14/min).

Class Type. The results indicate that the Step-n-Sculpt instructor had a higher mean rate of general feedback (3.81/min) than those teaching other class types: step (2.75/min), multi-impact (2.47/min), high-impact (1.85/min), and low-impact (0.56/min).

Degree. The results indicate that instructors with a Master's degree had a higher mean rate of general feedback (3.83/min) above all other instructors: high school (1.07/min), Bachelor's (0.87/min).

Experience. The results indicate that instructors with 3-5 years of experience had a higher mean rate of general feedback (3.71/min) than instructors with differing experience: 0-2 years (1.16/min), 6-10 years (1.34/min), and 11 plus years (1.33/min).

Microphone. The results indicate that instructors who did not have access to a microphone had a higher mean rate of general feedback (2.17/min) than those with a microphone (1.14/min).

Setting. The results indicate that instructors who taught at aerobic studios had a higher mean rate of general feedback (6.00/min) than instructors from other facilities: swim/racquet (1.84/min), health club (1.53/min), college/university (0.89/min), and community/recreation facilities (0.12/min).

Specific Feedback

The following information is presented in Table 9. Results indicate that across all subjects and sub-categories the mean rate of specific feedback stated was less than 0.60/min.

MEAN PERCENT CHANGES INTO EACH LOCATION

The following information is presented in Table 10. Changes into the 8 defined locations will be arranged and discussed by class segment: warm-up, cardio, and floorwork. From the categories listed above, each subsection will be addressed as previously demonstrated. None of the 29 instructors used location 6 or 7.

Warm-Up

Overall the instructors used location 1 (78.89%; front and center), most often. Use of other locations were as follows: 0 (90.31%; left class), 2 (3.16%; left front), 3 (1.72%; mid-center), 4 (0.57%; right front), 5 (2.16%; back left), 6 (0%; mid-back), 7 (0%; right back), and 8 (13.18%; stereo).

Certification. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). Location 1 was used by ACE certified instructors (100.0%) more often than all other certified and noncertified instructors: None (88.11%), ACE (75.51%), AFAA (74.07%), and "Other" (81.25%).

Location 8 was used by AFAA certified instructors (16.67%), more often than all other certified and noncertified instructors: None (13.89%), ACE (15.15%), and "Other" (3.13%).

Class Type. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was in high-impact (100.0%), and in Step-n-Sculpt (100.0%) classes, followed by step (83.30%), multi-impact (80.00%), and low-impact (67.23%) classes.

Table 10

MEAN PERCENT OF CHANGES INTO EACH LOCATION									
Warm-Up									
	0	1	2	3	4	5	6	7	8
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
All Subjects:	0.31	78.89	3.16	1.72	0.57	2.16	0	0	13.18
Certification:									
None	0	88.11	0	0	0	0	0	0	13.89
ACE	1.01	75.51	2.78	5.56	0	0	0	0	15.15
ACSM	0	100.0	0	0	0	0	0	0	0
AFFA	0	74.07	7.41	0	1.85	0	0	0	16.67
Other	0	81.25	0	0	0	15.63	0	0	3.13
Class Type:									
Low-impact	1.14	67.23	8.33	0	2.08	0	0	0	21.21
High-Impact	0	100.0	0	0	0	0	0	0	0
Multi-Impact	0	80.00	1.67	3.33	0	4.17	0	0	10.83
Step	0	83.30	0	0	0	0	0	0	16.67
Step-n-Sculpt	0	100.0	0	0	0	0	0	0	0
Degree:									
High School	0	93.33	0	0	0	0	0	0	6.67
Bachelor's	0	76.79	1.20	0	1.19	4.46	0	0	16.37
Master's	0.91	74.62	7.50	5.00	0	0	0	0	11.97
Experience:									
0-2 Years	0	93.33	0	0	0	0	0	0	6.67
3-5 Years	0	85.71	0	0	0	0	0	0	14.29
6-10 Years	0	74.07	8.33	5.56	0	6.94	0	0	5.10
11+ Years	1.14	69.32	2.08	0	2.08	0	0	0	25.38
Microphone:									
Yes	0	83.33	0	0	0	0	0	0	16.67
No	0.38	77.97	3.82	2.08	0.69	2.60	0	0	12.45
Setting:									
Community/Recreation	0	86.67	0	0	0	0	0	0	13.33
College/University	0	62.50	6.25	12.50	0	15.63	0	0	3.23
Health Club	0.91	77.12	5.00	0	0	0	0	0	16.97
Swim/Racquet Club	0	87.50	4.17	0	4.17	0	0	0	4.17
Aerobic Studio	0	80.56	0	0	0	0	0	0	19.44

Instructors who taught low-impact classes used location 8 (21.21%) more than those who taught other class types: step (16.67%), multi-impact (10.83%), high-impact (0%), and Step-n-Sculpt (0%).

Degree. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was by instructors who held a high school degree (93.33%), followed by those who held a Bachelor's (76.79%), and a Master's (74.62%).

Instructors who held a Bachelor's degree (16.37%) used location 8 more often than those who held other degrees: high school (6.67%), and Master's (11.97%).

Experience. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was by instructors who had 0-2 years of experience (93.33%), with a decline as years of teaching increased: 3-5 years (85.71%), 6-10 years (74.07%), and 11 plus years (69.32%).

Instructors with 11 plus years of experience (25.38%) used location 8 more often than those with differing experience: 0-2 years (6.67%), 3-5 years (14.29%), and 6-10 years (5.10%).

Microphone. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was by instructors who had a microphone (83.33%), more often than those without a microphone (77.97%).

Instructors who had a microphone (16.67%) used location 8 more often than those without a microphone (12.45%).

Setting. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was by instructors who taught at swim/racquet facilities (87.50%), followed by community/recreation (86.67%), aerobic studio (80.56%), health club (77.12%), and college/university facilities (62.50%).

Instructors who taught at aerobic studios (19.44%) used location 8 more often than those who taught at other settings: health club (16.97%), community/recreation (13.33%), college/university (3.23%), and swim/racquet facilities (4.17%).

Cardio

The following information is presented in Table 11. Overall the instructors predominantly used locations 1 (44.27%; front and center) and 8 (20.97%; stereo). Use of other locations were as follows: 0 (1.13%; left class), 2 (7.66%; left front), 3 (8.45%; mid-center), 4 (7.38%; right front), 5 (2.69%; left front), 6 (4.54%; mid-back), and 7 (2.90%; right back).

Certification. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). ACSM certified instructors (57.14%) used location 1 more often than all other certified and noncertified instructors: none (32.49%), ACE (38.77%), AFAA (52.19%), and "Other" (53.28%).

ACE certified instructors (26.61%) used location 8 more often than all other certified and noncertified instructors: none (14.40%), ACSM (0.00%), AFAA (18.58%), and "Other" (24.26%).

Class Type. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1

Table 11

MEAN PERCENT OF CHANGES INTO EACH LOCATION									
Cardio									
	0	1	2	3	4	5	6	7	8
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
All Subjects:	1.13	44.27	7.66	8.45	7.38	2.69	4.54	2.90	20.97
Certification:									
None	1.39	32.49	8.73	21.50	8.27	6.38	5.26	1.59	14.40
ACE	2.72	38.77	14.97	4.09	7.17	0.85	2.16	0.65	28.61
ACSM	0	57.14	0	28.57	0	0	14.29	0.00	0.00
AFFA	0	52.19	3.88	5.65	7.27	1.97	4.40	6.06	18.58
Other	0	53.28	0	0	8.62	3.57	6.70	3.57	24.26
Class Type:									
Low-impact	1.39	41.75	5.93	9.65	3.12	3.48	5.37	7.49	21.83
High-Impact	2.78	50.00	8.33	0	11.11	0	2.78	0	25.00
Multi-Impact	1.07	46.18	3.36	7.62	10.29	2.51	3.76	1.62	23.07
Step	0	35.71	33.33	9.52	0	4.17	8.93	0	8.33
Step-n-Sculpt	0	50.00	0	25.00	12.50	0	0	0	12.5
Degree:									
High School	1.11	44.80	4.93	13.71	9.80	3.66	10.93	2.86	8.20
Bachelor's	1.15	42.31	11.34	6.95	4.25	3.34	3.03	2.08	25.56
Master's	1.11	46.75	3.86	7.93	10.56	1.30	3.47	4.09	20.94
Experience:									
0-2 Years	1.11	56.94	3.33	8.57	7.30	0	1.11	0	21.64
3-5 Years	0.40	30.63	19.74	7.35	9.52	5.65	5.11	1.36	20.24
6-10 Years	1.48	46.26	2.60	5.37	10.81	2.44	4.02	5.94	21.09
11+ Years	1.39	46.06	5.47	12.82	1.70	2.06	6.78	2.66	21.06
Microphone:									
Yes	0	56.76	1.90	5.00	3.45	4.76	0.95	1.90	25.26
No	1.37	41.67	8.85	9.17	8.20	2.26	5.29	3.11	20.08
Setting:									
Community/Recreation	0	51.68	0	4.44	5.36	2.86	5.36	2.86	27.44
College/University	0	55.07	0	0	13.46	1.92	1.92	0	27.62
Health Club	1.67	37.40	8.23	17.78	6.23	5.33	6.81	4.45	12.10
Swim/Racquet Club	0	46.83	3.39	9.19	6.52	0	4.86	5.31	23.89
Aerobic Studio	2.69	40.65	21.02	1.39	7.50	0.46	1.62	0.69	23.98

was high-impact (50.00%) and Step-n-Sculpt (50.00%) classes. Those who taught other class types were as follows: multi-impact (46.18%), step (35.71%), and low-impact (41.75%).

Instructors who taught high-impact classes (25.00%) used location 8 more often than those who taught other class types: low-impact (21.83%), multi-impact (23.07%), step (8.33%), and Step-n-Sculpt (12.5%).

Degree. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was demonstrated by instructors who held a Master's degree (46.75%), followed by high school (44.80%), and Bachelor's (42.31%) degrees.

Instructors who held a Bachelor's degree (25.56%) used location 8 more often than those who held other degrees: high school (8.20%), and Master's (20.94%).

Experience. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was by instructors who had 0-2 years of teaching experience (56.94%), followed by instructors with 6-10 years (46.26%), 11 plus years (46.06%), and 3-5 years (30.63%).

Overall instructors mean percent change into location 8 was: 0-2 years (21.64%), 3-5 years (20.24%), 6-10 years (21.09%), and 11 plus years (21.06%).

Microphone. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was by instructors who had access to a microphone (56.76%), over those without a microphone (41.67%).

Instructors who had a microphone (25.26%) used location 8 more often than those without a microphone (20.08%).

Setting. The results indicate that instructors predominantly used locations 1 (front and center) and 8 (stereo). The highest use of location 1 was by instructors who taught at college/university facilities (55.07%) followed by community/recreation (51.68%), swim/racquet (46.83%), aerobic studio (40.65%), and health club facilities (37.40%).

Instructors who taught at aerobic studios (23.98%), and/or swim/racquet facilities (23.89%), used location 8 more often than those who taught at other settings: community/recreation (13.33%), college/university (3.23%), and health club (16.97%).

Floorwork

The following information is presented in Table 12. Overall the instructors predominantly used location 1 (62.29%; front and center). Location 8 (12.97%; stereo) was the second highest, followed by location 3 (10.88%; mid-center). Use of other locations were as follows: 0 (1.49%; left class), 2 (3.96%; left front), 4 (2.52%; right front), 5 (2.54%; back left), and 6 (3.96%; mid-back). Instructors, regardless of certification, class type, degree, experience, microphone, and setting did not use location 7. The ACSM instructor did not teach a floorwork segment.

Certification. The results indicate that instructors predominantly used location 1 (front and center). "Other" certified instructors (80.36%) use location 1 more often than ACE (62.96%), AFAA (59.49%), and noncertified (53.10%) instructors.

Table 12

MEAN PERCENT OF CHANGES INTO EACH LOCATION									
Floorwork									
	0	1	2	3	4	5	6	7	8
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
All Subjects:	1.49	62.29	3.96	10.88	2.52	2.54	3.96	0	12.36
Certification:									
None	2.22	53.10	4.05	8.33	2.78	3.61	8.33	0	17.58
ACE	3.17	62.96	1.79	10.63	3.00	3.00	2.28	0	13.21
ACSM									
AFFA	0	59.49	8.04	15.34	0	2.56	4.32	0	10.25
Other	0	80.36	0	6.25	6.25	0	0	0	7.14
Class Type:									
Low-impact	0	60.75	5.85	12.24	2.38	5.31	0.95	0	12.52
High-impact	5.56	52.78	5.00	11.11	0	7.50	10.56	0	7.50
Multi-impact	2.00	60.89	3.06	10.87	3.49	1.00	4.39	0	14.35
Step	0	68.18	4.55	11.63	0	0	6.82	0	9.09
Step-n-Sculpt	0	100.0	0.00	0.00	0	0	0	0	0
Degree:									
High School	0	69.64	6.07	12.50	0	3.75	2.50	0	5.54
Bachelor's	2.12	62.65	2.90	7.52	3.21	1.06	5.22	0	15.32
Master's	1.23	58.50	4.55	15.01	2.65	4.13	2.77	0	11.16
Experience:									
0-2 Years	2.22	58.73	2.00	4.44	3.33	3.00	10.89	0	15.38
3-5 Years	1.90	70.00	0	7.74	0	0.95	0.95	0	19.05
6-10 Years	1.59	62.33	7.72	13.10	3.57	3.07	3.12	0	5.50
11+ Years	0	55.00	4.68	18.55	3.33	3.33	2.73	0	12.40
Microphone:									
Yes	0	73.33	0	7.14	0	1.43	0	0	18.10
No	1.84	59.66	4.90	11.77	3.12	2.80	5.00	0	11.01
Setting:									
Community/Recreation	2.78	80.56	0	5.56	0	0	2.78	0	8.33
College/University	0	58.93	3.57	16.96	8.04	1.79	1.79	0	8.93
Health Club	0	51.29	6.67	13.64	3.70	5.00	7.07	0	12.63
Swim/Racquet Club	0	77.50	0	13.93	0	1.79	0.00	0	6.79
Aerobic Studio	5.52	58.00	5.71	2.86	0	1.33	4.19	0	22.38

Noncertified instructors (17.58%) used location 8 more often than all certified instructors: ACE (13.21%), AFAA (10.25%), and "Other"(7.14%). AFAA certified instructors (15.34%) used location 3 more often than all other certified and noncertified instructors: none (8.33%), ACE (10.63%), and "Other" (6.25%).

Class Type. The results indicate that instructors predominantly used location 1 (front and center). The highest use of location 1 was by the instructor who taught Step-n-Sculpt (100.0%) followed by those who taught step (68.18%), multi-impact (60.89%), and low-impact (60.75%), and high-impact (52.78%).

Instructors who taught multi-impact classes (14.35%) use location 8 more often than those who taught other class types: low-impact (12.52%), high-impact (7.50%), step (9.09%), and Step-n-Sculpt (0.00%). Instructors who taught low-impact classes (12.24%) used location 3 more often than those who taught high-impact (11.11%), multi-impact (10.87%), step (11.63%), and Step-n-Sculpt (0.00%).

Degree. The results indicate that instructors predominantly used location 1 (front and center). Instructors who held a high school degree (69.64%) used location 1 more often than those who held other degrees: Bachelor's (62.65%), and Master's (58.50%).

Instructors who held a Bachelor's degree (15.32%) used location 8 more often than those who held other degrees: high school (5.54%), and Master's (11.16%).

Experience. The results indicate that instructors predominantly used location 1 (front and center). The highest use of location 1 was by instructors

with 3-5 years of teaching experience (70.00%), followed by those with 6-10 years (62.33%), 0-2 years (58.73%), and 11 plus years (55.00%).

Instructors with 3-5 years of experience (19.05%) used location 8 more often than those with differing experience: 0-2 years (15.38%), 6-10 years (5.50%), and 11 plus years (12.40%).

Microphone. The results indicate that instructors predominantly used location 1 (front and center). Instructors who had access to a microphone (73.33%) used location 1 more often than those without a microphone (5.66%).

Instructors who had a microphone (18.10%) used location 8 more often than those without a microphone (11.01%).

Setting. The results indicate that instructors predominantly used location 1 (front and center). The highest use of location 1 was by instructors who taught at community/recreation facilities (80.56%), followed by those who taught at swim/racquet (77.50%), college/university (58.93%), aerobic studio (58.00%), and health club facilities (51.29%).

Instructors who taught at college/university facilities (16.96%) used location 3 more often than those who taught at other settings: community/recreation (13.33%), health club (13.64%), swim/racquet (13.93%), and aerobic studios (2.86%). Instructors who taught at aerobic studios (22.38%) used location 8 more often than those who taught at other settings: community/recreation (8.33%), college/university (8.93%), health club (12.63%), and swim/racquet facilities (6.79%).

MEAN RATE PER MINUTE OF CHOREOGRAPHED MOVEMENT PATTERNS

The following information is presented in Table 13. The movement patterns observed will be arranged and discussed by the following categories: stationary and traveling.

Stationary Movement Patterns

Certification. The results indicate that noncertified instructors had a higher mean rate of stationary movements than certified instructors (exception: AFAA): noncertified (1.36/min), ACE (1.26/min), "Other" (1.07/min), and AFAA (0.86/min).

Step classes were not coded for movement patterns. The ACSM instructor taught a step class.

Class Type. The results indicate that instructors who taught high-impact classes had a higher mean rate of stationary movements (1.34/min), than instructors teaching other class types: low-impact (1.14/min), and multi-impact (1.09/min).

Degree. The results indicate the mean rate of stationary movements decreased with advancing education: high school (1.21/min), Bachelor's (1.18/min), and Master's (1.02/min).

Experience. The results indicate that instructors with 6-10 years of teaching experience had the highest mean rate of stationary movements (1.21/min), followed by 0-2 years (1.19/min), 3-5 years (0.99/min), and 11 plus years (1.09/min).

Microphone. The results indicate that the availability of a microphone appeared not to affect the stationary movement patterns: with a microphone (1.13/min), without a microphone (1.11/min).

Table 13

MEAN RATES PER MINUTE OF CHOREOGRAPHED MOVEMENT PATTERNS							
	N	Stationary Movements		Traveling Movements		Total Moves Per Minute	
		M	S.D.	M	S.D.	M	S.D.
All Subjects	25	1.13	0.34	0.70	0.32	1.82	0.09
Certification:							
None	6	1.36	0.14	0.49	0.11	1.85	0.06
Ace	7	1.26	0.25	0.61	0.25	1.88	0.05
ACSM							
AFFA	8	0.86	0.38	0.97	0.36	1.83	0.08
Other	4	1.07	0.29	0.62	0.23	1.68	0.06
Class Type:							
Low-Impact	8	1.14	0.30	0.67	0.27	1.81	0.07
High-Impact	2	1.34	0.09	0.51	0.14	1.86	0.05
Multi-Impact	15	1.09	0.38	0.74	0.36	1.83	0.11
Step							
Step-n-Sculpt							
Degree:							
High School	4	1.21	0.29	0.59	0.18	1.79	0.12
Bachelor's	12	1.18	0.26	0.63	0.22	1.81	0.10
Master'ss	9	1.02	0.45	0.84	0.44	1.86	0.06
Experience:							
0-2 Years	5	1.19	0.27	0.62	0.22	1.81	0.12
3-5 Years	6	0.99	0.49	0.83	0.51	1.82	0.08
6-10 Years	8	1.21	0.26	0.62	0.21	1.82	0.11
11+ Years	6	1.09	0.35	0.75	0.30	1.84	0.07
Microphone:							
Yes	4	1.19	0.17	0.66	0.19	1.85	0.08
No	21	1.11	0.36	0.70	0.34	1.82	0.09
Setting:							
Community/Recreation	5	1.02	0.28	0.74	0.25	1.77	0.09
College/University	4	1.24	0.28	0.54	0.20	1.78	0.14
Health Club	9	1.30	0.23	0.58	0.26	1.87	0.05
Swim/Racquet Club	3	0.96	0.14	0.87	0.13	1.83	0.05
Aerobic Studio	5	0.97	0.56	0.87	0.53	1.84	0.10

Note: Step classes were not coded for movement patterns (ACSM instructor taught step.)

Setting. The results indicate that instructors who taught at a health club had the highest mean rate of stationary movements (1.30/min) followed by those teaching at college/university (1.24/min), community/recreation (1.02/min), aerobic studios (0.97/min) and swim/racquet facilities (0.96/min).

Traveling Movement Patterns

The following information is presented in Table 13.

Certification. The results indicate that certified instructors appear to have a higher mean rate of traveling movements than noncertified instructors: ACE (0.61/min), AFAA (0.97/min), "Other" (0.62/min), and none (0.49/min).

Step classes were not coded for movement patterns. The ACSM instructor taught a step class.

Class Type. The results indicate that class type did not appear to affect the mean rate of traveling movements: low-impact (0.67/min), high-impact (0.51/min), and multi-impact (0.74/min).

Degree. The results indicate an increase in the mean rate of traveling movements with advancing education: high school (0.59/min), Bachelor's (0.63/min), and Master's (0.84/min).

Experience. The results indicate that the years of teaching experience did not appear to greatly affect the mean rate of traveling movements: 0-2 years (0.62/min), 3-5 years (0.83/min), 6-10 years (0.62/min), and 11 plus years (0.75/min).

Microphone. The availability of a microphone did not appear to affect the rate of traveling movements: with a microphone (0.66/min), without a microphone (0.70/min).

Setting. The results indicate that instructors teaching at swim/racquet (0.87/min), or aerobic studios (0.87/min), had a higher mean rate of traveling movements than other facilities: community/recreation (0.74/min), college/university (0.54/min), and a health club (0.56/min).

MEAN PERCENT OF ACTIVE PARTICIPANTS AND APPROPRIATE TECHNIQUE

Rhythmic Warm-Up/Percent Active Participants

The following information is presented in Table 14. Overall the mean percent active in the rhythmic warm-up was 99.77%. Low standard deviations indicate that the extremely high percent of activity held across certification, class type, degree, experience, microphone availability, and setting, warranting no further discussion of this section.

Rhythmic Warm-Up/Percent Appropriate Technique

Overall the mean percent appropriate technique was 84.37% across all observed participants.

Warm-Up/Stretch Percent Active Participants

Overall the mean percent active in the rhythmic warm-up was 99.49%. Low standard deviations indicate that the extremely high percent of activity held across certification, class type, degree, experience, microphone availability, and setting, warranting no further discussion.

Warm-Up.Stretch Percent Appropriate Technique

Overall the mean percent of appropriate technique was 50.64% across all participants observed, noticeably lower than the previous class segment.

Table 14

MEAN PERCENT OF ACTIVE PARTICIPANTS AND APPROPRIATE TECHNIQUES									
Tech Checks									
Warm-Up									
	No.	Rhythmic		Warm-Up		Stretch			
		% Active		% Appropriate		% Active		% Appropriate	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
All Subjects:	29	99.77	1.24	84.37	16.26	99.49	1.81	50.64	25.13
Certification:									
None	6	100.0	0	90.00	9.20	100.0	0.00	36.67	25.82
ACE	9	99.26	2.22	80.00	19.15	99.17	2.36	4.50	29.05
ACSM	1	100.0	0	100.0	0	100.0	0	13.33	0
AFFA	9	100.0	0	83.70	20.31	99.26	2.22	63.33	21.47
Other	4	100.0	0	83.33	6.67	100.0	0	51.67	12.62
Class Type:									
Low-impact	8	99.17	2.36	82.50	19.50	98.10	3.25	47.62	30.41
High-Impact	2	100.0	0	86.67	9.43	100.0	0	10.00	4.71
Multi-Impact	15	100.0	0	82.22	16.46	100.0	0	61.28	14.24
Step	3	100.0	0	100.0	0	100.0	0	35.56	32.89
Step-n-Sculpt	1	100.0	0	80.00	0	100.0	0	60.00	0
Degree:									
High School	5	100.0	0	86.67	10.54	100.0	0	26.67	21.08
Bachelor's	14	100.0	0	84.76	17.43	100.0	0	51.11	19.35
Master's	10	99.33	2.11	82.67	18.11	98.67	2.81	59.67	28.30
Experience:									
0-2 Years	5	100.0	0	85.33	5.58	100.0	0	40.00	27.89
3-5 Years	7	100.0	0	95.24	6.34	100.0	0	43.89	22.94
6-10 Years	9	100.0	0	71.11	16.00	99.17	2.36	56.67	14.69
11+ Years	8	99.17	2.36	89.17	18.50	99.05	2.52	57.14	34.40
Microphone:									
Yes	5	100.0	0.00	78.67	15.92	100.0	0	48.00	14.45
No	24	99.72	1.36	85.56	16.41	99.37	2.01	51.27	27.29
Setting:									
Community/Recreation	5	100.0	0	84.00	7.60	100.0	0	49.33	29.67
College/University	4	100.0	0	76.67	11.55	100.0	0	58.33	3.33
Health Club	10	99.33	2.11	89.33	16.98	98.33	3.09	42.50	31.26
Swim/Racquet Club	4	100.0	0	83.33	17.64	100.0	0	55.00	19.15
Aerobic Studio	6	100.0	0	82.22	23.35	100.0	0	55.33	28.83

The results indicate that participants of certified instructors (exception: ACSM) had a higher mean percent of appropriate technique than noncertified instructors: ACE (47.50), AFAA (63.33), "Other" (51.67), ACSM (13.33), and none (36.67).

Class Type. The results indicate that participants in the multi-impact (61.28%), and the Step-n-Sculpt (60.00%) classes had a higher mean percent of appropriate technique than those from other class types: low-impact (47.62%), step (35.56%) and high-impact (10.00%).

Degree. The results indicate participants' appropriate technique increased with instructors' advancing education: high school (26.67), Bachelor's (51.11), and Master's (59.67).

Experience. The results indicate that participants' appropriate technique increased with instructors' increased teaching experience: 0-2 years (40.00%), 3-5 years (43.89%), 6-10 years (56.67%), and 11 plus years (57.14%).

Microphone. The results indicate appropriate technique slightly increased with instructors who did not have access to a microphone (51.27%), than those with a microphone (48.00%).

Setting. The results indicate that participants performed a higher percent of appropriate technique at college/university settings (58.33%) over those from other settings: swim/racquet (55.00%), aerobic studio (55.33%), community/recreation (49.33%), and health clubs (42.50%).

Pre Cardio/Percent Active Participants

The following information is presented in Table 15. Overall the mean percent active in the pre cardio segment was 98.85%. Low standard

Table 15

MEAN PERCENT OF ACTIVE PARTICIPANTS AND APPROPRIATE TECHNIQUES									
Tech Checks									
Cardio									
	No.	Pre-Cardio				Cardio			
		% Active		% Appropriate		% Active		% Appropriate	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
All Subjects:	29	98.85	3.12	79.60	16.12	98.85	3.12	63.33	21.90
Certification:									
None	6	100.0	0.00	80.00	24.59	98.89	2.72	67.78	19.51
ACE	9	97.78	3.33	82.22	13.74	99.26	2.22	60.74	16.81
ACSM	1	100.0	0	80.00	0	100.0	0	0	0
AFFA	9	98.52	4.44	80.93	14.98	99.26	2.22	67.04	23.83
Other	4	100.0	0	70.00	12.77	96.67	6.67	70.00	8.61
Class Type:									
Low-impact	8	97.50	4.96	84.17	15.09	99.17	2.36	79.17	11.52
High-Impact	2	100.0	0	90.00	14.12	100.0	0	66.67	0
Multi-Impact	15	99.56	1.72	74.33	17.79	98.22	3.96	58.00	20.54
Step	3	97.78	3.85	82.22	3.85	100.0	0	44.44	39.06
Step-n-Sculpt	1	100.0	0	93.33	0	100.0	0	66.67	0
Degree:									
High School	5	100.0	0	88.00	10.95	100.0	0	56.00	32.86
Bachelor's	14	99.52	1.78	75.71	18.60	98.57	3.86	64.29	20.52
Master's	10	97.33	4.66	80.33	13.77	98.67	2.81	65.67	19.12
Experience:									
0-2 Years	5	100.0	0	76.00	23.85	100.0	0	60.00	17.64
3-5 Years	7	99.05	2.52	80.24	10.73	99.05	2.51	70.95	11.34
6-10 Years	9	97.78	4.71	70.37	13.79	97.78	4.71	55.56	19.44
11+ Years	8	99.17	2.36	91.67	10.54	99.17	2.36	67.50	32.16
Microphone:									
Yes	5	100.0	0	76.00	16.73	100.0	0	60.00	13.33
No	14	98.16	30.39	80.35	16.24	98.61	3.39	64.03	23.45
Setting:									
Community/Recreation	5	100.0	0	86.67	9.43	10.00	0	69.33	18.01
College/University	4	98.33	3.33	60.00	5.44	96.67	6.67	60.00	19.63
Health Club	10	98.00	4.50	80.67	18.71	98.67	2.81	60.67	26.75
Swim/Racquet Club	4	10.00	0	90.00	11.55	98.33	3.33	68.33	16.67
Aerobic Studio	6	98.89	2.72	78.06	14.31	10.00	0	61.67	25.63

deviations indicate that the extremely high percent of activity held across certification, class type, degree, experience, microphone availability, and setting, warranting no further discussion of this section.

Pre Cardio/Percent Appropriate Technique

Overall the results indicate that the mean percent active in the cardio segment was 79.60%, slightly lower than the rhythmic warm-up segment.

Certification. The results indicate that participants of nationally certified instructors, and noncertified instructors demonstrated a higher mean percent of appropriate technique than "Other" certified instructors: ACE (82.22%), AFAA (80.83%), ACSM (80.00%), noncertified instructors (80.00%), and "Other" certified (70.00%).

Class Type. The results indicate that participants in the Step-n-Sculpt class (93.33%) had a higher mean percent of appropriate technique than those participating in other class types: step (82.22%), low-impact (84.17%), multi-impact (74.33%), and high-impact (90.00%).

Degree. The results indicate that instructors who had a high school degree had a higher mean percent of participants performing appropriate techniques (88.00%): Bachelor's (75.71%), and Master's (80.33%).

Experience. The results indicate that participants of instructors with 11 plus years of experience demonstrated appropriate technique (91.67%) more often than those with instructors from differing experience: 0-2 years (76.00%), 3-5 years (80.24%), 6-10 years (70.37%).

Microphone. The results indicate that more participants had appropriate technique with instructors who did not have access to a microphone (80.35%) over those with a microphone (76.00%).

Setting. The results indicate that participants performed appropriate technique at swim/racquet facilities (90.05), more often than those from other settings: community/recreation (86.67%), college/university (60.00%), health clubs (80.67%), and aerobic studio (78.06%).

Cardio/Percent Active Participants

Overall the mean percent active in the cardio segment was 98.85%. Low standard deviations indicate that the extremely high percent of activity held across certification, class type, degree, experience, microphone availability, and setting, warranting no further discussion of this section.

Cardio/Percent Appropriate Technique

Overall the results indicate that the mean percent appropriate in the cardio segment was 63.33%, noticeably lower than all previous class segments.

Certification. The results indicate that participants exercising with instructors certified through "Other" organizations performed appropriate technique (70.00%) more often than all other certified and noncertified instructors: ACE (60.74%), ACSM (0.00%), AFAA (67.04%), and noncertified (67.78%).

Class Type. The results indicate that participants exercising in low-impact classes performed appropriate technique (79.17%) more often than those participating from other class types: high-impact (66.67%), multi-impact (58.00%), step (44.44%), and Step-n-Sculpt (66.67%).

Degree. The results indicate an increase in the ability of the participants to demonstrate appropriate technique with instructors' advancing education: high school (56.00%), Bachelor's (64.29%), and Master's (65.67%).

Experience. The results indicate that the participants of instructors with 3-5 years of experience performed appropriate technique most often (70.95%), followed by those taught by instructors with 0-2 years (60.00%), 6-10 years (55.56%), and 11 plus years (67.50%).

Microphone. The results indicate that participants performed appropriate technique more often with instructors who did not have access to a microphone (64.03%), over those with a microphone (60.00%).

Setting. The results indicate that participants performed appropriate technique more often at community/recreation facilities (69.33%), than those from other settings: college/university (60.00%), health clubs (60.67%), swim/racquet (68.33%), and aerobic studio (61.67%).

Post Cardio/Percent Active Participants

The following information is presented in Table 16. Overall the mean percent active in the post cardio segment was 98.57%. Low standard deviations indicate that the extremely high percent of activity held across certification, class type, degree, experience, microphone availability, and setting, warranting no further discussion of this section.

Post Cardio/Percent Appropriate Technique

Overall the results indicate that the mean percent appropriate in the post cardio segment was 75.65%. This is lower than the rhythmic warm-up and pre cardio segments, but higher than the warm-up/stretch segment.

Table 16

MEAN PERCENT OF ACTIVE PARTICIPANTS AND APPROPRIATE TECHNIQUE									
Tech Checks									
Cardio/Floorwork									
	No.	Post Cardio				Abdominals			
		% Active		% Appropriate		% Active		% Appropriate	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
All Subjects:	28	98.57	3.32	75.65	23.30	97.87	4.99	38.73	20.31
Certification:									
None	5	100.0	0.00	77.33	7.60	98.89	2.72	40.00	12.65
ACE	9	97.78	4.71	67.41	32.05	95.24	7.42	32.38	22.91
ACSM	1	100.0	0.00	80.00	0.00	—	—	—	—
AFFA	9	98.52	2.94	80.56	22.67	100.0	0.00	46.04	15.33
Other	4	98.33	3.33	80.00	19.63	96.67	6.67	33.33	33.99
Class Type:									
Low-impact	8	98.33	3.09	85.00	15.84	97.14	7.56	46.67	18.05
High-Impact	1	100.0	0.00	0.00	0.00	100.0	0.00	33.33	18.86
Multi-Impact	15	98.22	3.96	77.22	17.54	97.62	4.22	34.40	22.70
Step	3	100.0	0.00	73.33	30.55	100.0	0.00	46.67	0.00
Step-n-Sculpt	1	100.0	0.00	60.00	0.00	100.0	0.00	46.67	0.00
Degree:									
High School	4	100.0	0.00	86.67	9.43	100.0	0.00	38.33	33.72
Bachelor's	14	98.57	3.86	75.71	20.02	98.33	40.14	36.11	16.44
Master's	10	98.00	3.22	71.17	30.71	96.30	6.76	42.41	20.33
Experience:									
0-2 Years	4	96.67	6.67	53.33	36.11	97.33	5.96	38.67	15.20
3-5 Years	7	100.0	0.00	85.48	16.06	98.89	2.72	51.39	21.30
6-10 Years	9	97.78	3.33	74.07	18.69	99.26	2.22	24.44	17.32
11+ Years	8	99.17	2.36	80.00	22.54	94.67	8.69	49.33	15.35
Microphone:									
Yes	5	97.33	5.97	81.00	18.50	100.0	0.00	36.00	7.60
No	23	98.84	2.58	74.42	24.39	97.33	5.47	39.42	22.50
Setting:									
Community/Recreation	5	96.00	5.96	68.00	39.83	100.0	0.00	33.33	33.99
College/University	4	96.67	3.85	76.67	19.25	95.00	6.38	23.33	8.61
Health Club	9	99.25	2.22	72.59	17.46	97.04	6.76	42.22	10.54
Swim/Racquet Club	4	100.0	0.00	90.00	20.00	98.33	3.33	51.67	14.78
Aerobic Studio	6	100.0	0.00	76.39	21.66	100.0	0.00	38.75	30.65

Certification. The results indicate a higher mean percent of participants demonstrating appropriate exercise technique when exercising with a certified instructor (exception: ACE): ACSM (80.00%), AFAA (80.56%), "Other" (80.00%), noncertified (77.33%), and ACE (67.41%).

Class Type. The results indicate that participants in low-impact classes performed appropriate technique (85.00%) more often than those participating from other class types: high-impact (0.00%), multi-impact (77.22%), step (73.33%), and Step-n-Sculpt (60.00%).

Degree. The results indicate that appropriate technique decreased with instructors' advancing education: high school (86.67%), Bachelor's (75.71%), and Master's (71.17%).

Experience. The results indicate that the participants of instructors with 3-5 years of teaching experience performed appropriate technique (85.48%) more often than those taught by instructors with 0-2 years (53.33%), 6-10 years (74.07%), and 11 plus years (80.00%).

Microphone. The results indicate that participants performed appropriate technique more often with instructors who had access to a microphone (81.00%), over those without a microphone (74.42%).

Setting. The results indicate that participants performed appropriate technique when exercising in swim/racquet facilities (90.00%) over those taught by instructors from other settings: community/recreation (68.00%), college/university (76.67%), health club (72.59%), and aerobic studios (76.39%).

Floorwork/Abdominal Percent Active Participants

The information listed below is presented in Table 16. Overall the results indicate that the mean percent active in the floorwork segment was 97.87%. Low standard deviations indicate that the extremely high percent of activity held across certification, class type, degree, experience, microphone availability, and setting, warranting no further discussion of this section.

Floorwork/Abdominal Percent Appropriate Technique

Overall the results indicate that the mean percent appropriate technique in the floorwork segment was 38.73%. This was demonstrably lower than all other class segments. The ACSM instructor did not perform a floorwork segment.

Certification. The results indicate that participants performed a higher percent of appropriate technique when exercising with AFAA certified (46.04%), or noncertified (40.00%) instructors: ACE (32.38%), and "Other" (33.33%).

Class Type. The results indicate that participants performed a higher percent of appropriate technique when participating in a low-impact, step, or Step-n-Sculpt class (46.67%) than all other class types: high-impact (33.33%), and multi-impact (34.40%).

Degree. The results indicate that participants performed appropriate technique more often when exercising with an instructor who held a Master's degree (42.41%), over those with a high school (38.33%), and a Bachelor's (36.11%) degree.

Experience. The results indicate that participants of instructors with 3-5 years of experience performed appropriate technique (51.39%) more often than

those taught by instructors with differing experience: 0-2 years (38.67%), 6-10 years (24.44%), and 11 plus years (49.33%).

Microphone. The results indicate participants performed a higher percent of appropriate technique with instructors who did not have access to a microphone (39.42%), over those with a microphone (36.00%).

Setting. The results indicate that participants performed appropriate technique when exercising in swim/racquet facilities (51.67%), over those from other settings: community/recreation (33.33%), college/university (23.33%), health club (42.22%), and aerobic studios (38.75%).

SUMMARY

The purpose of the study was to describe instructional skills demonstrated by 29 aerobic dance-exercise instructors as identified through the Aerobic Dance Observation System (Castaneda, 1991). The instructional skills data were analyzed based on each class segment: warm-up, cardio, and floorwork. Within each segment the data were analyzed by the following sub-categories: certification, class type, degree, years of teaching experience, the use of a microphone, and class setting.

The results indicate that generally certified instructors had a higher mean rate/min of instructional cues, nonverbal cues and general feedback throughout the warm-up, cardio and floorwork segments (exception: instructional cues during the cardio segment).

The mean rate of instructional cues, nonverbal cues and general feedback varied across all class types. However, instructors who taught step and Step-n-Sculpt had a higher mean rate of instructional cues over all other

class types. Also, these instructors had a lower mean rate/min of nonverbal cues but had a higher mean rate of general feedback throughout all segments.

The mean rate/min of instructional cues, nonverbal cues and general feedback increased with instructors advancing education (degree) throughout the warm-up segment. The mean rate/min of nonverbal cues increased with advancing education throughout the floorwork segment, while the mean rate/min of general feedback increased throughout the cardio segment.

The mean rate/min of instructional cues, nonverbal cues and general feedback varied across all years of teaching experience, and class settings.

Instructors who had access to a microphone had a higher mean rate/min of instructional cues throughout the warm-up and cardio segment. During the warm-up, a higher mean rate/min of nonverbal cues were given by instructors who did not have access to a microphone. However, during the cardio segments, instructors who used a microphone had a higher mean rate/min. Instructors who did not have access to a microphone had a higher mean rate/min of instructional cues and nonverbal cues during the floorwork segment. Also, instructors who did not have access to a microphone had a higher mean rate of general feedback throughout all segments.

The results indicate that across all subjects and sub-categories the mean rate of specific feedback was low. The overall mean rate was below 0.20/min across all class segments.

Overall instructors had a higher mean rate/min of stationary movements over traveling movements, during the cardio choreographed movement patterns. Noncertified instructors demonstrated the highest mean rate/min of stationary movements and the lowest mean rate of traveling movements over all

certified instructors. The use of stationary movements decreased and the traveling movements increased with advancing education. Instructors who had 6-10 years of teaching experience, or had access to a microphone, or taught at a health club had higher mean rates/min of stationary movements to traveling movements.

Instructors predominately changed into locations 1 (front & center) and 8 (stereo) throughout all class segments and across all certifications, class types, degrees, years of teaching experience, availability of a microphone and class setting.

The mean percent active participants throughout all segments of an aerobic dance-exercise class was extremely high across subjects and sub-categories. However, the mean percent appropriate varied. Generally the mean percent appropriate decreased during the warm-up/stretch and floorwork/abdominal segments across all subjects and sub-categories.

The next chapter will discuss some conclusions that can be drawn from each of the defined instructional skills, active participant involvement and participants' appropriate technique performance, and how the data supports these conclusions.

CHAPTER V

SUMMARY AND CONCLUSION

This chapter presents a summary of the findings, followed by a series of implications and conclusions based on the results of the study. This chapter concludes with recommendations for further research involving the study of aerobic dance-exercise instructional skills.

A SUMMARY OF THE STUDY

The initial purpose of this study was to describe the instructional skills demonstrated by aerobic dance-exercise instructors as identified through the Aerobic Dance Observation System (Castaneda, 1991). This study also examined the instructional skills across sub-groups of subjects to study the salience of certain variables: certification, class type, degree, availability of a microphone, and setting. Descriptive analytic statistics were used to analyze observed instructional behaviors.

FINDINGS AND IMPLICATIONS

From this study, a description of the aerobic dance-exercise instructors' teaching behaviors can be examined. These data suggest a common descriptive profile of the instructors' and participants' behaviors as derived from systematic observation.

Aerobic dance-exercise instructors are leaders, performers and teachers. According to Francis (1989) aerobic dance-exercise instructors' most important role is that of a teacher rather than a performer. Teachers ensure the successful learning and proper utilization of exercise techniques

while performing (Francis, 1989). In order for instructors to help participants achieve their goals, they must also demonstrate certain functions as teachers. Some of these functions include: modeling, verbal/nonverbal guiding, and monitoring. Specifically related to the aerobic dance-exercise teaching environment, instructors model the various exercises and movements while giving instructional cues, nonverbal cues, general feedback, specific feedback, as well as to circulate throughout the class monitoring participants' ability to demonstrate correct exercise technique. In a single 50 to 90 minute class instructors must learn to coordinate a number of teaching skills in order to meet the needs of the exercising participants.

In the past, the main functions of instructors have been leading and performing. However, professionals such as Claxton and Lacy, (1991) and Francis (1989), fitness organizations, and participants (Wescott, 1991) have begun to recognize the importance of instructors possessing practical teaching skills. Therefore, it was the purpose of this study to describe instructional skills which experts in the aerobic dance-exercise industry and in the area of physical education found significant in regards to effective teaching. The overall findings of this study show that the aerobic dance-exercise instructors demonstrated more similar than different instructional behaviors across certifications, class types, degree, experience, availability of a microphone and class setting. Therefore, the following section will discuss the overall profile based on the observed instructional variables (instructional cues, nonverbal cues, general feedback, specific feedback, physical location of instructor, active participants, and appropriate technique of participants).

Instructional Cues

Instructional cues are information given by the instructor to describe the correct execution of a skill and/or the preparation for the execution of a skill (Metzler, 1990). This information, presented in a clear, logical order is important in helping participants learn. The findings from this study indicate that the overall mean rate of instructional cues across all class segments was as follows: warm-up (2.52/min), cardio (0.73/min), and floorwork (3.73/min). These findings indicate that aerobic dance-exercise instructors stated more instructional cues during the floorwork and warm-up segments. Both these segments contained episodes where instructors had participants performing specific exercises and stretches for a longer period of time. This allowed instructors the opportunity to give more instructional cues about each exercise or stretch. During the cardio segment, however, instructors demonstrated a low rate of instructional cues, possibly due to the frequent changes of choreographed movements which limited opportunity for cueing.

Presently the aerobic dance-exercise literature has not focused on the methods or strategies in which to effectively state instructional cues. Certifying manuals such as the Aerobic Dance Exercise Instructor Manual (Van Gelder, 1987) and The Aerobic Theory & Practice (Cooper, 1986) manual do not include a discussion of instructional skills. Therefore, due to the lack of theoretical and practical training, instructors likely have little basic knowledge on what effective instructional cueing includes.

Nonverbal Cues

Nonverbal cues are actions demonstrated by the instructor to help participants note a change in movements, directional path, and/or as a way to

pinpoint particular exercise techniques. This type of cueing is important in guiding participants through changes smoothly or to emphasize correct technique. The findings from this study indicate that the overall use of nonverbal cues was as follows: warm-up (1.34/min), cardio (1.56/min), and floorwork (1.13/min). It is reasonable to conclude that instructors used nonverbal cues more often during the segments which required choreographed movement changes, such as the cardio and warm-up sections. These segments required a substantial amount of movement and directional changes, therefore instructors used more hand signals. Nonverbal cues were used slightly less during floorwork. The lack of choreographed movements promoted the use of fewer nonverbal cues for movement/directional changes and more for the pinpointing of appropriate exercise technique. Due to the nature of the cardio segment, involving more movement and directional changes, it would seem that a notably higher rate of nonverbal cues would be used. However, it appears that there is no substantial difference regarding the number of nonverbal cues used across class segments.

Nonverbal cues are not addressed in the certifying manuals. Only suggestions have been stated in the aerobic dance-exercise literature (Reebok Instructor News, 1991), discussing the types and a vague approximation of when these cues should be demonstrated. Without an understanding of the practical application of nonverbal cues instructors might not effectively provide participants with adequate warnings to prepare for change.

General Feedback

Feedback is information given by the instructor to participants about their performance of a skill. General feedback serves to encourage and

motivate participants to continue exercising, with no specific referent to a skill. The overall mean rate of general feedback across all class segments was as follows: warm-up (1.01/min), cardio (0.79/min), and floorwork (1.96/min). The findings of this study show a strong tendency for instructors to give general feedback during the floorwork segment of class. The instructors had noticeably lower use of general feedback during the cardio segment. The higher rate of feedback given during floorwork was possibly due to the nature of this segment. Participants generally performed high repetitions of fewer exercises for a longer period of time. A longer time between changes of exercises could have allowed instructors more time to motivate participants. During the rhythmic warm-up and cardio segments, instructors were more occupied with the quick changes of choreographed movement patterns (1.82/min) with less opportunity to provide feedback between movement changes.

Although the stating of general feedback appears to be low, participants remained very active throughout all class segments. Other influences which may have acted as a motivational force to keep participants active were the music and exercising with a group.

In the ACE certifying manual, Aerobic Dance-Exercise Instructor Manual (Van Gelder, 1987), the theoretical concept of general feedback is discussed. However, methods and strategies to teach instructors how to give feedback is not. Therefore, it is important that practical teaching techniques be given to instructors to supply them with methods for stating feedback.

Specific Feedback

The purpose of specific feedback is to provide participants with particular information about their performance of a skill and/or to correct an error in their performance. Participants desire information which precisely explains what they are doing or not doing correctly (Wescott, 1991). In order to meet participants' needs instructors must take time to reinforce the correct practice of the skills. Giving specific feedback is a necessary part of helping participants. The overall mean rate of specific feedback given by the observed instructors is noticeably low across all segments: warm-up (0.02/min), cardio (0.07/min), and floorwork (0.15/min). There are three possible reasons for this low rate of specific feedback. First, certifying manuals do not offer methods and strategies for the appropriate stating of specific feedback. Second, due to the nature of certain class segments (rhythmic warm-up and cardio), instructors are involved in quick-changing choreographed movements. Finally, instructors predominantly stand in the front of the room which prevents them from circulating and offering individualized feedback.

Specific feedback is directly related to the ability of participants' skill performance. Aerobic dance-exercise instructors need to be able to respond immediately to participants' incorrect performances. From this study it was observed that participants had a notably low demonstration of appropriate technique during the stretch and floorwork segments. Providing specific feedback to participants would likely promote higher rates of appropriate technique.

Overall, instructors commonly stated a higher ratio of general to specific feedback. These findings suggest that instructors offered more motivational

statements than specific information used to correct an error in performance. According to Claxton & Lacy (1991), it is important for instructors to offer participants more than they can receive in an exercise video. Motivational statements such as "Good job," and "You look great," do not require an instructor to be present in order to provide participants with incentive to continue. However, to correct participants; skill performance an instructor most likely needs to be present. "The teacher's ability to respond immediately to students' behaviors may be the primary advantage that 'live' teaching has over aerobic dance tapes" (Claxton & Lacy, 1991, p. 51).

Physical Location of the Instructor

Physical location describes the circulation pattern of instructors through the class. Experts (Claxton & Lacy, 1991; Francis, 1989) state that circulating allows instructors to interact individually with participants and provide them with feedback about their performance of an exercise. In this study it was found that instructors predominantly used location 1 (front & center) across all class segments: 78.89% warm-up, 44.27% cardio, and 62.29% floorwork. The second most often used place in the room was location 8 (stereo): 13.18% warm-up, 20.97% cardio, and 12.36% floorwork. All other locations were used substantially less. None of the 29 instructors used location 6 and 7.

A possible reason for the predominant use of location 1 is that instructors stand in one location in order to carry out the modeling function. Being in front of the class allows the instructor to demonstrate the exercises where the majority of participants can see them. Other reasons might include over crowded classes. Large classes taught in a limited space may also prevent instructors from moving around participants because of the side to side arm/leg

movements and traveling patterns used during the warm-up and cardio segments. Another possibility is that instructors do not have confidence in their ability to lead from other locations in the room nor have they been trained to circulate. The training programs might have offered little or no emphasis on the instructional skill of circulating and focused more on modeling and performing. Generally, location 8 was used when the instructors adjusted the volume of the music or changed the tape. The three class segments required music with different beats per minute, making it necessary for instructors to change tapes.

In a field study conducted by Castaneda (1991), it was found that participants led by instructors who concentrated on monitoring the class from the front of the room were less likely to perform the exercises correctly. Subjects from this study demonstrated similar patterns; in most class segments a majority of participants demonstrated a lower percent of appropriate technique and instructors predominantly monitored the class from location 1 (front & center).

According to Francis (1989) a teacher is an instructor who circulates around the room providing feedback to participants, while a performer is one who stays in front of the class. At this time, information regarding specific and effective methods and strategies for circulating around the class is not available. What is needed is information suggesting methods in which instructors can circulate to aid participants in their performance of a skill while successfully directing the class. For example, instructors might be provided with an assistant who can model appropriate technique, leaving the instructor free to circulate and make corrections.

Choreographed Movement Patterns

Movement patterns are the choreographed sequences of steps performed in a stationary position or while traveling. Research has demonstrated that a number of aerobic dance-exercise injuries have been caused by repeated forces on the foot (Francis & Francis, 1989). To prevent excessive stress, it is important for instructors to design choreographed movement segments which include a variety of stationary and traveling patterns. This study noted the rate per minute of movement patterns during the cardio segment as follows: stationary (1.13/min), and traveling (0.70/min). These findings suggest that stresses of impact are not being distributed equally throughout the body. However, more thorough research is necessary to understand the direct implication of varied movement patterns (the effects of forces in a stationary position versus traveling forces) on participants' injuries.

Active Participants and Appropriate Technique

The purpose of these analyses was to determine the percent of participants who remained actively engaged in class. It was found that across all class segments participants were extremely active: rhythmic warm-up (99.77%), stretch (99.49%), pre cardio (98.85%), cardio (98.85%), post cardio (98.57%), and floorwork/abdominal (97.87%). Based on the high percentage of involvement it seems reasonable to conclude that participants were motivated to continue participating for the entire workout despite the low amount of general (motivational) feedback given, possible fatigue, and/or failure to perform the exercises correctly.

According to Wescott (1991) participants want instructors who can correct their exercise technique. From the findings of this study it was

observed that the ability of the participants to demonstrate appropriate technique was low during segments that required a variety of specific alignment considerations per exercise, exercises of higher repetition and longer duration. Also noted was that the use of appropriate technique generally declined as the class progressed: rhythmic warm-up (84.37%), stretch (50.64%), pre cardio (79.60%), cardio (63.33%), post cardio (75.65%), floorwork/abdominal (38.73%).

The results suggest that the use of appropriate technique by participants is possibly related to the physical location of the instructor during class and the lack of specific feedback given. Several implications may be drawn from these results. First, the segments which involved a variety of specific alignment considerations, or high repetitions of an exercise, showed a substantial decrease in the use of correct technique. And second, due to fatigue participants were not able to maintain appropriate techniques throughout the entire length of the class.

In summary, based on the above findings it seems reasonable to conclude that in regards to the functions of teaching, (modeling, verbal/nonverbal guiding, and monitoring), aerobic dance-exercise instructors primarily demonstrated the function of modeling. The overall instructional profile (regardless of certification, class type, degree, experience, availability of a microphone, and class setting) describes instructors leading from the front of the room providing limited instructional information. Due to the difficulty of guiding and monitoring participants while simultaneously demonstrating, it is understood why instructors default to the modeling function. These descriptive findings support the popular model of instructing used throughout the aerobic

dance-exercise industry. Presently, certifying manuals offer little information regarding the practical application of instructional skills. It is assumed that instructors receive this information through observing and modeling other classes. The physical education literature refers to learning about teaching while participating as an apprenticeship-of-observation (Schempp, 1989). Apprenticeship-of-observation allows prospective instructors to become familiar with various teaching skills while participating in the class. Apprenticeship offers a strong influence for learning but not the opportunity to practice and master these skills (Schempp, 1989). Without a practical understanding of how to incorporate and coordinate instructional skills, instructors will continue to be performers instead of teachers. This model would appear to be appropriate, except for the fact that participants are requiring that instructors not just know and demonstrate the information, but help them perform the exercises correctly (Wescott, 1991). Therefore, it seems imperative that instructors possess teaching skills.

From this study several suggestions observed in this study can be made for improving the pattern of observed instructional behaviors. First, certifying organizations could provide specific information to instructors about methods and strategies of teaching. This might include chapters on methods for giving feedback to participants, strategies for circulating around the class, and specific techniques for stating instructional and nonverbal cues. Second, instructors could experiment with different models of teaching such as using assistants to model all exercises. This would allow the instructor time to concentrate on other teaching functions. And third, conduct further research into the effective methods of teaching aerobic dance-exercise. For instance,

the examination of various teaching models on the participants' ability to perform exercises correctly.

RECOMMENDATIONS FOR FURTHER RESEARCH

This study contributed to the limited amount of research available on the instructional skills used by aerobic dance-exercise instructors. This initial description provides a foundation for further research regarding effective instruction in this popular activity. Five suggestions for further research are stated. First, to examine each instructional skill separately in order to understand its implication to effective teaching. This study could include investigating the use of various methods and strategies by which instructors state instructional cues, general feedback, specific feedback and demonstrate nonverbal cues.

Second, the results of this study apply only to the 29 aerobic dance-exercise instructors in Southwest Virginia. While conclusions may be generalizable to all aerobic dance-exercise instructors, further studies are needed regarding the influence of different demographic and contextual variables on the teaching behaviors of more aerobic dance-exercise instructors.

Third, there is a need to identify participants' perceptions of what skills an effective aerobic dance-exercise instructor should possess. As a part of this study the researcher might investigate what participants want from a class and the instructional skills participants find useful in helping them through a workout. The primary purpose, however, would be to determine if the

instructional skills identified by experts in the field are the same as identified by participants.

Fourth, a related area of study would be a critical examination of the components and the influence of instructor training programs on aerobic dance-exercise instructors. Do these training programs provide instructors with the practical teaching skills needed, or are these skills primarily learned through trial and error, and/or an apprenticeship of observation (Schempp, 1989) from other aerobic dance-exercise instructors.

A final recommendation would be to examine the reasons why aerobic dance-exercise instructors teach as they do and if they perceive instructing as a way to teach participants appropriate exercise habits or for their own personal gain. This would provide important insight as to the method and strategies of teaching techniques best suited for training programs.

In conclusion, understanding the aerobic dance-exercise teaching environment is extremely complex. Numerous influences exist which determine the appropriate skills needed to address various learning situations. It is evident that further research is needed in order to fully understand the instructional skills necessary for effective aerobic dance-exercise instruction.

This study represents an initial attempt to describe aerobic dance-exercise instructional behaviors through systematic observation. Relationships of these instructional behaviors to effective instruction is unknown. However, this study has proven to be a valuable first step in understanding the aerobic dance-exercise teaching environment. It has provided valuable information that will help to develop more effective instructor training programs in the future.

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APPENDIX A

AEROBIC INSTRUCTOR CONSENT FORM

AEROBIC EXERCISE INSTRUCTIONAL RESEARCH STUDY
INFORMED CONSENT
FOR AEROBIC INSTRUCTOR

I agree to participate in the Aerobic Exercise Instructional research study being conducted by Rosie Castaneda, a Graduate Student at Virginia Tech.

I understand that my participation in this study involves the following:

- I will be videotaped while teaching a 60 minute aerobic exercise class.
- I will be asked to complete a biographical questionnaire.

I further understand that the videotaping will be performed by Rosie Castaneda or other qualified persons. All data will be kept completely confidential and pseudonyms will be used in all presentations and publications. Participation is entirely voluntary.

Aerobic Instructor

Date

Witness

Witness

APPENDIX B

AEROBIC DANCE-EXERCISE PARTICIPANT CONSENT FORM

AEROBIC EXERCISE INSTRUCTIONAL RESEARCH STUDY
INFORMED CONSENT
FOR AEROBIC DANCE-EXERCISE PARTICIPANTS

By signing below, I agree to participate in the Aerobic Exercise Instructional research study being conducted by Rosie Castaneda, a Graduate Student at Virginia Tech. I also understand that I am serving as a witness for other participants in this aerobic exercise class.

I understand that I will be videotaped while participating in a 60 minute aerobic exercise class. I further understand that the videotaping will be performed by Rosie Castaneda or other qualified persons. All data will be kept completely confidential and pseudonyms will be used in all presentations and publications. Participation is entirely voluntary.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
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23. _____
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26. _____
27. _____
28. _____
29. _____
30. _____
31. _____
32. _____
33. _____
34. _____
35. _____
36. _____
37. _____
38. _____
39. _____
40. _____
41. _____
42. _____
43. _____
44. _____
45. _____
46. _____
47. _____
48. _____
49. _____
50. _____

APPENDIX C

AEROBIC EXERCISE INSTRUCTIONAL QUESTIONNAIRE

AEROBIC EXERCISE INSTRUCTIONAL QUESTIONNAIRE

Age: _____

Gender: M F (Circle one)

Certification: (Circle all that apply)

ACE (Formerly IDEA Foundation) ACSM AFAA Other _____
(list)

Degree Earned: (Circle all that apply)

H.S. B.A./B.S. M.A./M.S. PH.D. Other _____
(list)

Teaching Certificate: _____
(subject)

Location You Now Teach Aerobic Exercise :

Years of Teaching Aerobic Exercise :

Where and With Whom, If Any, Did You Learn To Teach Aerobic Exercise (training program)?

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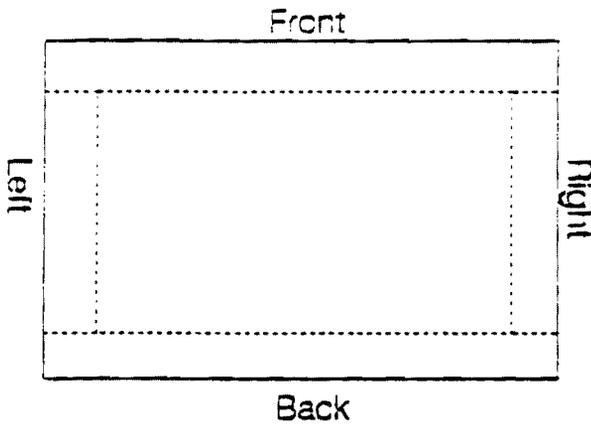
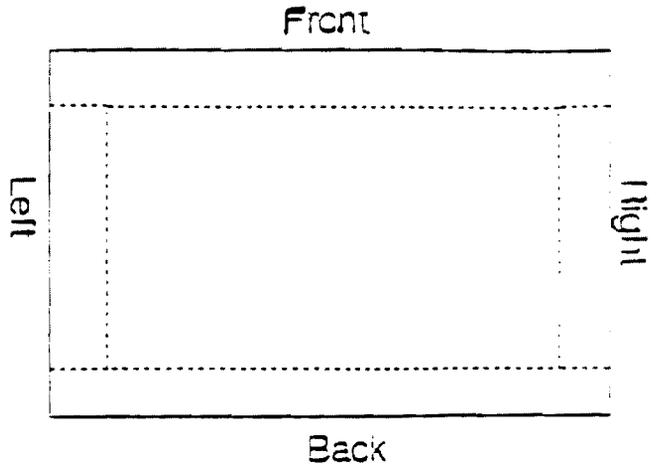
APPENDIX D

**AEROBIC DANCE OBSERVATION SYSTEM
CODING SHEET**

WARM-UP
 Begin _____ End _____

Rhythmic Warm-up
 1 2 3

Stretch
 1 2 3



CARDED
 Begin _____ End _____

Pre
 1 2 3

Cardio
 1 2 3

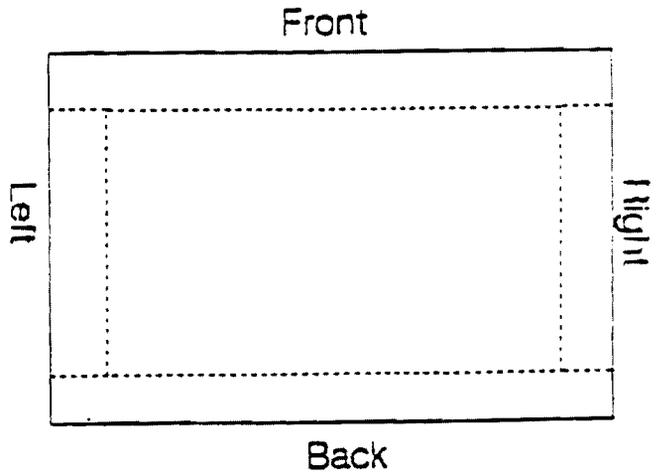
Post
 1 2 3

FLOORWORK
 Begin _____ End _____

1 2 3

1 2 3

1 2 3



IC# _____

Aerobic Dance Observation System

Aerobic begin _____ End _____ Elapsed _____

		Cues			Feedback	
		Verbal	Nonverb	Inst.	Gen.	Specif.
_____	Instr. cues = _____/min. = _____%					
_____	Warning cues = _____/min. = _____%					
_____	4-ct cues = _____/min. = _____%					
_____	2-ct cues = _____/min. = _____%					
_____	During = _____/min. = _____%					
_____	After = _____/min. = _____%					
_____	Nonverbal = _____/min. = _____%					
_____	General = _____/min. = _____%					
_____	Specific = _____/min. = _____%					

N	Imp	Loc	Direction	N	Imp	Loc	Direction	N	Imp	Loc	Direction
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO
_____	LH	ST	FBSO	_____	LH	ST	FBSO	_____	LH	ST	FBSO

Total # _____/min.

_____ Stationary = _____/min. = _____% _____ Traveling = _____/min. = _____%

_____ Low = _____/min = _____% _____ High = _____/min = _____%

Category codes

Cues: (I) Instructional
(T) Transitional
(N) Nonverbal

T cues timing: (W) Warning
(4) 4-ct
(2) 2-ct
(D) During
(A) After

Feedback: (G) General
(S) Specific

Aerobic Dance Observation System

Instructor _____ Facility _____ Date _____ # Part. _____

Warm up begin _____ End _____ Elapsed _____

	Cues			Feedback	
	Verbal	Nonverb	Inst.	Gen.	Specif.
_____ Instr. cues = _____/min. = _____%					
_____ Warning cues = _____/min. = _____%					
_____ 4-ct cues = _____/min. = _____%					
_____ 2-ct cues = _____/min. = _____%					
_____ During = _____/min. = _____%					
_____ After = _____/min. = _____%					
_____ Nonverbal = _____/min. = _____%					
_____ General = _____/min. = _____%					
_____ Specific = _____/min. = _____%					

Floorwork begin _____ End _____ Elapsed _____

	Cues			Feedback	
	Verbal	Nonverb	Inst.	Gen.	Specif.
_____ Instr. cues = _____/min. = _____%					
_____ Warning cues = _____/min. = _____%					
_____ 4-ct cues = _____/min. = _____%					
_____ 2-ct cues = _____/min. = _____%					
_____ During = _____/min. = _____%					
_____ After = _____/min. = _____%					
_____ Nonverbal = _____/min. = _____%					
_____ General = _____/min. = _____%					
_____ Specific = _____/min. = _____%					

Category codes

Cues: (I) Instructional
(T) Transitional
(N) Nonverbal

T cues timing: (W) Warning
(4) 4-ct.
(2) 2-ct.
(D) During
(A) After

Feedback: (G) General
(S) Specific

APPENDIX E

**AEROBIC DANCE-EXERCISE INSTRUCTIONAL QUESTIONNAIRE
COVER LETTER AND EXPERT SURVEY**

September 17, 1991

Dear

I am a graduate student in the Division of Health and Physical Education at Virginia Polytechnic Institute and State University pursuing research in aerobic instruction. My professional experiences in the aerobic fitness industry include: National Aerobic Champion-Individual Female, 1988; American Council on Exercise and Aerobic Fitness Association of America (AFAA) certified, continuing education provider, AFAA Consultant, Nike Network presenter, and coordinator of aerobic instructors at Virginia Tech.

My main area of interest concerns the various teaching skills demonstrated by expert aerobic instructors. Specifically, it involves the investigation of personal characteristics and/or instructional skills contributing to the understanding of effective instruction.

I have enclosed a brief questionnaire which asks you to identify personal characteristics and teaching skills used by expert aerobic instructors. Because you have been identified as a leader in the aerobic fitness industry your input is valuable. The questionnaire will take only a few minutes of your time. Please take this opportunity to complete and return it in the self-addressed stamped envelope provided. I would greatly appreciate a response by October 4, 1991. All information will remain completely confidential as it is for RESEARCH PURPOSES ONLY.

Thank you for your time and commitment to advancing research in the area of effective aerobic instruction. If there are any questions, please contact me at the address and phone number listed above.

Cordially,

Rosie Castaneda

AEROBIC EXERCISE INSTRUCTIONAL QUESTIONNAIRE

Age: _____

Gender: M F (Circle one)

Certification: (Circle all that apply)

ACE (Formally IDEA Foundation) ACSM AFAA Other _____
(list)

Highest Degree Earned: (Circle one)

H.S. B.A./B.S. M.A./M.S. PH.D. Other _____
(list)

Location You Now Teach Aerobic Exercise :

Years of Teaching Aerobic Exercise:

Please rate the importance of the following instructional skills by circling the appropriate response. Please return by October 11, 1991.

How important is it for an Aerobic Exercise Instructor to demonstrate the following:

	Not at all	Somewhat Important	Very Important	Not Sure
1. Provide participants with specific information regarding the performance of a skill (e.g. "Keep elbows bent").	NA	SI	VI	NS
2. Give general words of encouragement (e.g. "Good job").	NA	SI	VI	NS
3. Circulate throughout the class while participants are active.	NA	SI	VI	NS
4. Begin class exactly on time.	NA	SI	VI	NS
5. Demonstrate nonverbal transitional cueing.	NA	SI	VI	NS
6. Choreograph a variety of movement patterns (e.g. circle, diagonal) during the cardiovascular portion of the class.	NA	SI	VI	NS
7. <u>Briefly</u> describe how to perform a skill.	NA	SI	VI	NS
8. Give verbal transitional cueing.	NA	SI	VI	NS

ROSIE CASTANEDA, GRADUATE STUDENT
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 BLACKSBURG, VA 24061 (703) 231-4900

APPENDIX F

CRITERIA FOR TECH CHECK OBSERVATIONS

CRITERIA FOR TECH CHECK OBSERVATIONS

WARM-UP

Rhythmic warm-up

Upright posture
Knees in line with feet
Knees flexed
Roll through foot (heel ball toe)
Heels contact the floor
Controlled movements

Stretch

Proper alignment
Joints soft
Static

CARDIO (Pre, and Post included)

Upright posture
Knees in line with feet
Knees flexed
Roll through foot (heel ball toe)
Heels contact the floor
Controlled movements

FLOORWORK

Abdominals

Chin a fist distance from chest
Head relaxed in hands
Lift began with abdominals not neck
Shoulders/shoulder blades lifted on exertion
Low back pressed to floor

APPENDIX G

RELIABILITY

ON-SITE ANALYSIS - Tech checks and Physical Location of the Instructor

VIDEOTAPED ANALYSIS - Instructional Cues, Nonverbal Cues, General and Specific Feedback, Choreographed Movement Patterns

**RELIABILITY: CATEGORIES FOR ON-SITE ANALYSIS
TECH CHECKS**

Warm-Up

Subject	Rhythmic Warm-Up			Stretch		
	Observer A	Observer B	% Agree	Observer A	Observer B	% Agree
13	14	15	93	14	14	100
14	13	14	93	8	8	100
15	10	15	83	9	10	90
19	12	13	92	10	8	80
20	15	14	93	2	9	22*
26	7	4	57*	6	5	83
27	9	9	100	---	---	---
30	14	13	93	1	0	---*

*Percent agreement did not reach predetermined criterion

**RELIABILITY: CATEGORIES FOR ON-SITE ANALYSIS
TECH CHECKS**

Cardio

	Pre-Cardio			Cardio		
Subject	Observer A	Observer B	% Agree	Observer A	Observer B	% Agree
13	15	11	73*	15	15	100
14	14	14	100	8	11	73*
15	9	12	75*	6	8	73*
19	6	7	86	5	6	83
20	12	10	83	0	1	---*
26	9	5	56*	4	4	100
27	18	8	44*	5	5	100
30	15	15	100	10	11	91

*Percents did not reach predetermined criterion

**RELIABILITY: CATEGORIES FOR ON-SITE ANALYSIS
TECH CHECKS**

Post Cardio and Floorwork

Subject	Post Cardio			Abdominals		
	Observer A	Observer B	% Agree	Observer A	Observer B	% Agree
13	14	15	93	---	---	---
14	10	12	83	5	5	100
15	---	---	---	4	2	50*
19	10	6	60*	9	7	77*
20	12	11	92	---	---	---
26	9	9	100	6	7	86
27	8	7	88	0	0	100
30	---	---	---	7	8	88

*Percents did not reach predetermined criterion

**RELIABILITY: CATEGORY FOR ON-SITE ANALYSIS
LOCATION OF INSTRUCTOR**

WARM-UP

Location

Subjects

	13	% Agree	14	% Agree	15	% Agree	19	% Agree	20	% Agree	27	% Agree
0	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
1	2/1	508	2/2	100	1/1	100	1/1	100	1/1	100	2/2	100
0	00	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	100
3	0/0	---	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
4	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
5	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
6	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
7	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
8	1/1	100	1/1	100	0/0	100	0/0	100	0/0	100	1/1	100

Note: The first number represents Observer A and the second number represents Observer B

*Percents did not reach predetermined criterion

**RELIABILITY: CATEGORY FOR ON-SITE ANALYSIS
LOCATION OF INSTRUCTOR**

CARDIO

Location

Subjects

	13	% Agree	14	% Agree	15	% Agree	19	% Agree	20	% Agree	27	% Agree
0	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	2/1	59*
1	5/6	60*	3/3	100	1/1	100	2/1	50*	4/5	80	8/5	63*
2	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	1/1	100
3	2/1	50*	0/0	100	0/0	100	3/2	67*	2/1	50*	0/0	100
4	0/1	---	0/0	100	0/0	100	1/1	100	0/0	100	0/0	100
5	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
6	0/0	100	0/0	100	0/0	100	0/0	100	2/2	100	0/0	100
7	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
8	2/2	100	1/1	100	0/0	100	0/0	100	0/0	100	4/2	50*

Note: The first number is observer A and the second number is observer B

*Percent agreement did not reach predetermined criterion

**RELIABILITY: CATEGORY FOR ON-SITE ANALYSIS
LOCATION OF INSTRUCTOR**

FLOORWORK

Location

Subjects

	13	% Agree	14	% Agree	15	% Agree	19	% Agree	20	% Agree	27	% Agree
0	—	—	0/0	100	0/0	100	0/0	100	0/0	100	1/1	100
1	—	—	2/1	50*	1/1	100	3/2	67*	2/2	100	4/4	100
2	—	—	0/0	100	0/0	100	0/1	—*	0/0	100	0/0	100
3	—	—	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
4	—	—	0/0	100	0/0	100	1/1	100	0/0	100	0/0	100
5	—	—	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
6	—	—	0/0	100	0/0	100	2/2	100	0/0	100	0/0	100
7	—	—	0/0	100	0/0	100	0/0	100	0/0	100	0/0	100
8	—	—	1/0	—*	0/0	100	0/0	100	0/0	100	2/2	100

Note: The first number is Observer A and the second number is Observer B

Note: Subject 13 did not conduct a floorwork segment

*Percent Agreement did not reach predetermined criterion

RELIABILITY: CATEGORIES CODED FROM VIDEOTAPE								
Warm-Up								
Subject	Instructional Cues	% Agree	Nonverbal Cues	% Agree	General Feedback	% Agree	Specific Feedback	% Agree
5	48/41	85	25/33	76*	0/0	100	0/0	100
13	47/43	91	0/0	100	2/2	100	1/0	---
31	0/0	100	8/8	100	0/0	100	0/0	100
Cardio								
5	46/42	91	78/63	81	6/7	86	0/0	100
13	15/15	100	6/8	75*	1/1	100	7/8	88
31	0/0	100	1/1	100	1/1	100	0/0	100
Floorwork								
5	42/33	79*	25/33	76*	5/5	100	0/0	100
29	26/25	96	0/0	100	3/3	100	0/0	100
31	34/34	100	11/11	100	0/0	100	1/1	100

CARDIO MOVEMENT PATTERNS				
Subject	Stationary Movements	% Agree	Traveling Movements	% Agree
5	43/43	100	9/9	100
13	18/16	89	28/27	96
31	24/23	96	7/8	88

*Percent agreement did not reach predetermined criterion.

VITA

Carmelita Patrice Castaneda (Rosie), was born on November 23, 1960, to Manuel and Carmelita Castaneda in Sacramento, California. Her elementary and secondary education was completed at Sacramento Union Academy, when she graduated in 1979.

Throughout her undergraduate studies, Rosie attended several universities in her pursuit of a Bachelors of Science degree in Physical Education: Loma Linda University, Riverside, CA, Collegio de Adventista, Sagunto, Spain, and Andrews University, Berrien Springs, Michigan. Rosie graduated in 1986 from California State University, Sacramento with a B.S. in physical education. Upon graduating, she was hired by the Sacramento Catholic school systems where she taught grades K-8 for one year.

In 1987 Rosie entered the realm of competitive aerobic dance-exercise. In January 1988 she won the title "National Aerobic Champion-Individual Female." The next two years involved traveling extensively throughout the world as a United States fitness representative. In addition, Rosie became a part of the body Elite program, sponsored by Nike, Inc. This included presentations of instructional workshops for aerobic dance-exercise professionals across the United States.

After the aerobic championship, Rosie was employed by Sacramento Country Day School. She was hired as the Physical Education Department Chairperson to coordinate the curriculum and teach grades K-12. Following her two year commitment to Country Day School, Rosie entered Virginia Polytechnic Institute and State University and completed a Master's of Science in Physical Education pedagogy, 1992.

Rosie plans to continue her education and pursue a Doctoral Degree. She has received a fellowship to study pedagogy at Florida State University, Tallahassee. Career goals include finding a position in education that will utilize to their fullest ability Rosie's skills, experience, and creativity in order to prepare future physical educators and aerobic dance-exercise to achieve instructional effectiveness.

Carmelita Rosie Patricia Castañeda