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The present study assessed the use of effective teacher behaviors in athletic training clinical education. Research involved development and use of: 1) the 20-question Survey of Effective Clinical Educator Behaviors (SECEB) to assess student and instructor perceptions of clinical instructor use of effective teaching behaviors; and 2) the Observational Record of Clinical Educator Behaviors (ORCEB) interval recording instrument to objectively measure instructor's demonstrated behaviors in the clinical setting.

The SECEB was distributed to twelve Commission on Accreditation of Allied Health Education Programs (CAAHEP)-accredited athletic training education programs in the National Athletic Trainers' Association (NATA) District 3. Subjects (n=186) representing ten of those schools returned usable data. SECEB item statements were grouped into four subcategories of effective teaching behaviors (Information, Evaluation, Critical Thinking, and Physical Presence), and were ranked on a scale from 'Never (1)' to 'Very Often (5)'. While educators rated themselves and their perceived ideal, students evaluated their current and an ideal clinical instructor. Cronbach's alpha for all items showed excellent internal consistency (α=.858). Results found that students (4.56±.33) and clinical instructors (4.56±.24) had nearly identical perceptions of an ideal instructor's behavior, but that students consistently rated current instructors higher (4.09±.52) than the instructors rated themselves (3.93±.36).

In addition to the survey data, four approved clinical instructors (ACIs) were observed using the ORCEB as they interacted with patients and students for five 30-minute sessions. Inter-rater and intra-rater reliabilities as determined by simple correlation of behavior frequencies between two independent coders were r=.964 and r=.974, respectively. The ORCEB was used to assess clinical instructor demonstration of twelve target behaviors. Results indicate that instructors use only 24% of each clinical education session for teaching/learning behaviors; of the remaining time, 32% was devoted to patient care without student interaction, 35% to behaviors unrelated to clinical education, and 9% in downtime when no students or patients were present. Furthermore, student ranking of these instructors based upon their SECEB scores was identical to that created by ORCEB behavior percentages, indicating that students' perceptions of their instructor's behavior are accurate.

ASSESSING EFFECTIVE TEACHER BEHAVIORS IN ATHLETIC TRAINING CLINICAL EDUCATION

by

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APPROVAL PAGE

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CHAPTER I

INTRODUCTION

The ultimate goal of any clinical education program is to produce competent practitioners (Eaton & Cottrell, 1999; Spike et al., 2000). However, true clinical education is significantly more than passive supervision (Cross, 1994), and students must be actively engaged with the content (Brownstein, Rettie, & George, 1998; Wright, 1973). This occurs in allied health education when students gain field experience under the tutelage of a practicing clinician (Roche, 2002) in a situation where "(Clinical educators) create a learning environment that affects the work of the whole department through peer learning and teaching, team working, and encouraging the exchange of ideas" (APTA, 2002). In the past, students were expected to learn through simple observation and discussion (Strickland, Slemson, & Weber, 1996), but watching alone is not enough (Kachur, 2003). In short, students need time to practice new skills, interact with patients and supervisors, and reflect upon their experiences.

Most clinical education programs use sequential learning experiences that have students gradually taking more responsibility for patient care as they pass certain milestones (Brownstein et al., 1998; Spike et al., 2000). Even though the clinical supervisor and the university faculty are jointly committed to facilitating student learning and skill mastery, the brunt of responsibility to transfer theoretical knowledge into

practice usually falls to the clinical practitioner, who may or may not be adequately prepared for their role as an educator (Amelia, Brown, Resnick, & McArthur, 2001; Bennett & Kitsell, 2003; Brownstein et al., 1998; Kirkpatrick, Byrne, Martin, & Roth, 1991). To further complicate the situation, most clinical teaching spaces are first and foremost work spaces that are rife with both distractions and teaching encounters constrained by patient demands on the instructor (Gordon et al., 2000). Unfortunately, when teaching and learning fail to occur in this situation, much of the responsibility falls on the clinical educators themselves (Harden & Crosby, 2000).

While many university didactic programs are carefully regulated by independent accrediting agencies to standardize students' knowledge acquisition, clinical placements often lack consistency within and across sites and programs (Bennett & Kitsell, 2003; Kilminster & Jolly, 2000), with the teaching abilities of professionals serving as on-site clinical instructors poorly defined (Grealish & Carroll, 1998). Unfortunately, many practicing clinicians placed in the dual role of supervisor and educator must acquire a new set of skills for student learning to be effective (Amelia et al., 2001; Brownstein et al., 1998).

To address student concerns over the variable quality of their clinical educators and better integrate service delivery and education, the quality of clinical education must be improved (Ker & Dent, 2002; McCrea, 2003; Wellard, Rolls, & Furguson, 1995). Not only should the clinical experience be structured to maximize student performance (Meyers, 1995), but programs need more formal recognition and selection of good

teachers (Gordon et al., 2000). While there is little data regarding the selection, training, and rewards for clinical educators (Amelia et al., 2001; Weidner & Henning, 2002b; Wellard et al., 1995), several authors agree that effective teaching behaviors are key to successful clinical learning (Kotzabassaki et al., 1997; Li, 1997). Because teachers can control their instructional behaviors, it is hoped that by making them aware of what they do in the clinical classroom, that ultimately the quality of clinical education will be improved (Funk, Hoffman, Keithley, & Long, 1981; Li, 1997; Wright, 1973).

On-site clinical instructors must be both practitioners and teachers who guide, show, enhance, promote, direct, communicate, manage, plan, develop, and facilitate students' learning while demonstrating clinical competence (Grube & DeJarnette, 1989; Laurent & Weidner, 2001; Richards, 1982). The most commonly cited effective behaviors and attributes in the literature are presented in Table 1, with most relating to subject matter presentation, the learning environment, questioning techniques, and feedback and student evaluation (complete references are found in Appendix A). Examples of ineffective behaviors are: showing favoritism, ridiculing or embarrassing students, losing emotional control, harassing or demoralizing students, failing to accept legitimate excuses or explanations, not knowing students on a personal basis, refusing to answer or giving inadequate answers to student questions, being unwilling to help students, and remaining dogmatic and inflexible in most situations (Ronan, 1972). While faculty and students usually share similar views of what characteristics and behaviors make an instructor effective, they often assign different levels of importance to each based on their different

perceptions and experiences (Jones, 1984; Mogan & Knox, 1987).

Table 1.
Attributes and behaviors of effective clinical educators frequently cited in the literature.

Gives Information; Subject Matter Presentation	Gives Feedback and Evaluates Students	Asks Questions; Promotes Critical Thinking	Maintains Physical Presence and Learning Environment
Effective instructional methods.	Promotes self-reflection and evaluation.	Stimulates problem solving and critical thinking.	Encourages students to use 'down time' effectively.
Clarifies student ideas.	Uses positive body language.	Encourages student comments.	Observes and monitors students.
Uses small group activities.	Recognizes student achievement.	Uses leading, open questions.	Interacts with students.
Demonstrates competence in patient care.	Offers support and encouragement.	Promotes decision making.	Maintains a 'learning' environment.
Leads student/teacher discussions.	Offers praise for good work.	Questions students (in general).	Structures time outside the clinical experience (and site).
Uses humor in presentation.	Identifies student expectations.	Encourages student expression.	Provides practice opportunities.
Answers student questions.	Has good communication skills.		Professional role model.
Relates material to 'real life'.	Evaluates student performance.		Encourages student participation.
Suggests/uses learning aids.	Gives relevant, timely feedback.		Is accessible to students.
Bridges theory to practice.			Plans/structures clinical experience.
Enthusiastic about the subject.			
Understands the material.			
Demonstrates skills/ techniques.			
Gives explanations and examples.			

Research has shown that teachers' intentions often vary considerably from their actual actions in the classroom; in other words, their perceptions do not match reality (Anderson, 1980). To improve their teaching skills and eliminate this disparity, teachers must have accurate, objective feedback about their behavior and ways to improve (Anderson, 1980; Siedentop & Tannehill, 2000). To meet this end, teaching sessions must be observed and systematic data collected (Siedentop & Tannehill, 2000). According to Siedentop (2000), "The appropriate strategy to optimize the influence of observation and supervision is to decide on specific goals that can be observed, create an observation protocol related to those goals, ensure reliable observations, and use the observational record to reflect upon the achievement of the goals and to suggest further improvement strategies" (p.319).

While instructor assessments are common in traditional educational settings, they are rare in clinical education effectiveness assessments (Murray, Gruppen, Catton, Hays, & Woolliscroft, 2000). Therefore, to improve clinical education, the primary purpose of this study was to develop and implement a supervision instrument to measure clinical instructors' use of effective teaching behaviors. This was accomplished through creation and administration of: 1) A survey to assess student- and instructor-perceived use of effective clinical educator behaviors in practice; and 2) An observational clinical supervision instrument to measure the relative frequency and duration of effective behaviors as demonstrated by clinical educators.

Preliminary survey and observational instrument development began with an

extensive review of the allied health (medicine, dentistry, nursing, physical therapy, ophthalmology, and athletic training) literature to identify student-, instructor-, and expert-determined behaviors demonstrated by effective clinical educators. The most commonly cited teaching behaviors that can be objectively observed were then grouped into four categories: 1) Giving information; 2) Evaluating students; 3) Promoting higher order thinking and problem solving; and 4) Having a positive physical presence on-site. Behaviors that required subjective interpretation were intentionally excluded from this study (e.g., "The teacher demonstrates empathy") in favor of those that can be objectively observed (e.g., "The teacher demonstrates a skill for a student").

The second part of the literature search involved identifying assessment methods and tools for measuring effective behaviors in the clinical setting. The most common techniques cited use student surveys and observational recording of teacher and/or student behavior in the classroom. Taken together, this information formed the backbone for the development of both the Survey of Effective Clinical Educator Behaviors (SECEB) and the Observational Record of Clinical Educator Behaviors (ORCEB). Prior to administration on a large scale, both instruments were given to experts in the field for review of content validity; the survey was further pilot tested with a convenience sample of students to determine ease of use and test-retest reliability.

Therefore, the primary purpose of this research was to develop, validate, and determine initial reliability of two new athletic training clinical education supervision instruments through both pilot testing and full-scale administration. In the current

research, the SECEB was administered to students and their clinical instructors in twelve CAAHEP-accredited Athletic Training Education Programs in a southeastern state. The researcher also observed four clinical instructors at her home institution using the ORCEB. The resulting data were then analyzed to identify instructor differences, describe discrepancies between instructor intentions and actions, compare actual behavior with both student- and instructor-perceived actions, identify group differences, and provide baseline data to target future individual and group training.

CHAPTER II

LITERATURE REVIEW

Unlike traditional medical studies, formal clinical education in athletic training educational programs has only garnered significant attention in the last decade. As the profession moved toward formal accreditation standards, it came to realize that "Education is something we neither give nor do to our students...It is a way we stand in relation to them" (Daloz, 1986 as cited in Cross, 1994); and that "Clinical education is far too important to be left to the least experienced and the least prepared" (Karuhije, 1986 as cited in Williams & Webb, 1994). Therefore, the purpose of this research is to explore the historical perspectives behind athletic training education reform, traditional allied health clinical education and its models, what makes teachers and supervisors effective, and clinical education assessment.

Historical Perspective

Compared to other allied health professional organizations, the National Athletic Trainers' Association (NATA) is a wet-behind-the-ears adolescent (Mangus, 1998) who has undergone tremendous growth and maturity (Davis & Misasi, 2001) in a relatively short time frame (Starkey, 1997). In just over fifty years, the profession has gone from being an athletics jack of all trades to a bona fide health care provider. However, until

recently, the educational methods and content used to prepare entry-level athletic trainers hadn't kept pace with the changing patient base (Starkey, 1997). To understand the context and evolution of athletic training clinical education, it is important to first examine the history and development of the NATA (Delforge & Benhnke, 1999).

Hunt (1998) and Ebel (1999) cite the emergence of the first text books on athletic training in 1916 as the premier rumblings of our profession. Shortly before World War II (1938), regional athletic trainers attempted to form a national association to share ideas, knowledge, and innovations; it failed (Ebel, 1999; Hunt, 1998). By 1950, athletic trainers were ready to try again, and this time they succeeded in forming the National Athletic Trainers' Association (NATA) (Delforge & Benhnke, 1999; Ebel, 1999; Hunt, 1998). In 1955, William Newell was named the first National Secretary of the NATA; one of his first acts was to appoint a Committee on Gaining Recognition to focus attention on professional advancement. This committee endeavored to develop a model curriculum for professional preparation, and eventually became the NATA Professional Education Committee (Delforge & Benhnke, 1999). Other professional and educational developments in the 1950's included the establishment of the *Journal of Athletic Training* (current nomenclature) in 1956 (Ebel, 1999; Hunt, 1998), the adoption of a code of ethics and alignment with the National Collegiate Athletics Association in 1957 (Ebel, 1999), and the publication of the first educational model in 1959 (Delforge & Benhnke, 1999; Hunt, 1998). This first recognized educational curriculum in athletic training was not based on a unique body of knowledge; instead, it was drawn from current course

offerings in departments of health and physical education (Delforge & Benhnke, 1999). Students were required to complete the pre-requisite courses to obtain teaching credentials in physical education or health education, and were highly encouraged to complete the necessary course work leading to physical therapy school to serve a potentially larger population (Delforge & Benhnke, 1999; Ebel, 1999).

The 1960's are generally thought to be void of educational development (Delforge & Benhnke, 1999) and recognition, as a 1968 survey found that 53.8% of the heads of health, physical education, and recreation departments were unaware of 1959 athletic training educational curriculum and related athletic training education programs (ATEPs) (Bell as cited in Ebel, 1999; Miller, 1999). Based on the results of that survey, the NATA sought to develop specific athletic training curricula through which schools/programs could seek NATA approval, carry out certification via a standardized test to prove that candidates have met minimal practice competencies, and convince high school administrators and boards of education of the need for athletic trainers at the secondary school level (Bell as cited in Ebel, 1999). Based on these goals, the Subcommittee on Curricular Development determined that 42 institutions across the country housed potential ATEPs (Ebel, 1999; Miller, 1999). By 1969, the Committee on Gaining Recognition had split into the Subcommittee on Professional Education and the Subcommittee on Certification (Delforge & Benhnke, 1999). Later that same year, the Subcommittee on Professional Education evaluated and recommended the first undergraduate ATEPs to be approved by the NATA (Mankato State, Lamar, Indiana

State University, and University of New Mexico) (Delforge & Benhnke, 1999; Ebel, 1999). The crucial step needed to transform athletic training from a trade to a profession, national certification, would arrive one year later (Ebel, 1999).

"With the development of the first certification examination in 1970, athletic training education and national certification began to form parallel, complementary paths to future growth and development" (Delforge & Benhnke, 1999, p.55). While there is no doubt that a certification exam was developed and administered in this general time period, several respected authors disagree about the exact date and pre-requisites for certification. For example, Delforge & Behnke (1999) and Ebel (1999) claim that the first exam was given in 1970, while Grace (1999) asserts that it was given months earlier in August of 1969. These authors also disagree about the routes to certification, with Ebel (1999) claiming three possible routes, Delforge & Behnke (1999) four routes, and Grace (1999) espousing five. Of these different possibilities, the three most common paths to certification eligibility were: graduation from an NATA approved undergraduate or graduate program, participation in an apprenticeship program, and graduation from a school of physical therapy (Delforge & Benhnke, 1999; Ebel, 1999; Grace, 1999).

Even though the original 1959 educational model persisted with only minor revisions and the addition of a clinical experience requirement, the 1970's were the time of greatest proliferation of ATEPs (Delforge & Benhnke, 1999). As teaching opportunities in health and physical education began to decline, the NATA revised the teacher education component of the curriculum to reflect professional preparation in any subject leading to

teacher certification. By decreasing the dependence on physical education and physical therapy pre-requisites, programs were able to expand opportunities to study specific athletic training curricula. As program directors strove to eliminate irrelevant content, the subject matter began to take on its own identity (Delforge & Benhnke, 1999). Other milestones in the 1970's include Texas becoming the first state with licensure in 1971, the first female candidate taking the NATA exam in 1972, Indiana State University beginning the first ATEP for women in 1973, and in 1974, the NATA Board of Directors (NATA BOD) implementing continuing education requirements for all athletic trainers beginning in 1976 (this date was eventually pushed back to 1978) (Ebel, 1999).

The 1980's got off with a bang, when Bud Miller, then Chair of the Professional Education Committee, suggested that approved programs should offer a *major* in athletic training (Delforge & Benhnke, 1999; Ebel, 1999). This reasonable and realistic goal was slated to be in place by 1986, and stimulated positive professional growth (it was finally reached in 1990) (Delforge & Benhnke, 1999). The first new shoots of growth appeared between 1981 and 1982 when the NATA completed the first Role Delineation Study (Delforge & Benhnke, 1999; Ebel, 1999) and wrote the Competencies in Athletic Training to more accurately describe the knowledge and skills required by an entry-level professional (Delforge & Benhnke, 1999). Also in 1982, the NATA Board of Certification (NATABOC) became administratively independent from the NATA and the first allied health organization in sports medicine to become accredited by the National Commission for Health Certifying Agencies (NCHCA) (Grace, 1999). In 1983, the

Guidelines for Development and Implementation of NATA Approved Undergraduate Athletic Training Education Programs were written and became the foundation for educational program development. In 1987, the NATA permanently protected our professional identity by trademarking the letters ATC® and CAT® to refer to only a certified athletic trainer. As important as these events were, the most significant was yet to come: accreditation.

While certification goes hand-in-hand with education (Hunt, 1998), independent program approval is crucial for professionalization (Delforge & Benhnke, 1999). The NATA originally investigated the possibility of outside accreditation in the late 1970's, but found the efforts premature. In 1988, the NATA BOD authorized the Professional Education Committee to seek accreditation through the American Medical Association (AMA) and the Commission on Allied Health Education and Accreditation (CAHEA) (Delforge & Benhnke, 1999; Ebel, 1999) (who was recognized by the US Department of Education as an accrediting agency for the allied health professions) (Ebel, 1999). Two important steps toward accreditation came in 1990: the NATABOC became fully independent of the NATA (Ebel, 1999) [once again, Grace (1999) disagrees and places the date in 1989]; and the Council on Medical Education (CME) determined that athletic training met the criteria to be recognized as an allied health profession by the AMA. With the AMA's recognition, the Joint Review Committee-Athletic Training (JRC-AT) was formed. The earliest members of the JRC-AT were the American Academy of Family Physicians, the American Academy of Pediatrics, and AMA, and the NATA

(Delforge & Benhnke, 1999; Ebel, 1999); the American Orthopaedic Society for Sports Medicine joined in 1995 (Delforge & Benhnke, 1999).

In 1993, the NATA Professional Education Committee officially discontinued approval process for undergraduate ATEPs, with the first CAHEA accredited programs (Barry and High Point) formally recognized in 1994 (Delforge & Benhnke, 1999). While CAHEA accreditation was a major milestone, it would be short lived, as the profession would transfer to accreditation via the Commission on Allied Health Education Programs (CAAHEP) in late 1994 (Delforge & Benhnke, 1999; Ebel, 1999). Also in 1994, the NATA BOD recognized the increasing competition in the workplace, differences in candidate preparedness on the NATABOC exam, and expanding work environments, and established an Education Task Force to identify major issues, analyze future challenges, and make recommendations aimed at improving and standardizing entry-level, graduate, and continuing education (Delforge & Benhnke, 1999; Ebel, 1999; Starkey, 1997). In 1996, the task force recommendations were approved (Delforge & Benhnke, 1999; Ebel, 1999; McMullan, 1997; NATAEC, n.d.; Recommendations, 1997), and the NATA established a permanent Education Council to oversee their implementation and provide ongoing leadership and vision (Starkey, 1997).

On the eve of the NATA's fiftieth anniversary, educators and clinicians alike could stand back and be proud of how far the profession had come in such a short amount of time. For example, by 1999, four role delineation studies (Weidner & Henning, 2002a) that describe the current practice of athletic training and define the content for the

certification exam had been completed (Defining, 2002); the transition from NATA-approved to CAAHEP-accredited educational programs was complete (Delforge & Benhnke, 1999); and the 3rd edition of the Entry-level Athletic Training Competencies for the Health Care of the Physically Active had been written and identified twelve practice domains (up from six) (Defining, 2002; Education Council, 1999; Leaver-Dunn, 2002; Starkey, 1998; Weidner & Henning, 2002a). The NATA membership had also burgeoned to 25,000 members in 1999, up from a paltry 1,000 in 1965 and 10,000 in 1986 (Ebel, 1999). On a more somber note, 1998 also saw the disbandment of the Professional Education Committee after nearly thirty years of educational development and leadership (Delforge & Benhnke, 1999). However, their legacy and that of the Education Task Force can be seen and felt in the current administration of athletic training education programs.

Athletic Training Educational Reform

Athletic training education reform was given a swift kick in the right direction when the NATA BOD approved the Education Task Force's eighteen recommendations to improve administration of educational programs and clinical education in late 1996. One of the most notable changes in educational structure came with the virtual elimination of the internship route to certification and the requirement that all candidates for the NATABOC exam must complete a CAAHEP accredited program to meet eligibility requirements beginning January 2004. Since apprenticeship-style learning lacked

uniformity (Craig, 2003; Peer & Rakich, 2000; Weidner & Henning, 2002a) and no longer consistently prepared students to become entry-level practitioners (Recommendations, 1997), the task force sought to combine its best elements with those of a traditional curriculum program (Falb, 1997; Hunt, 1998; Leverenz, 1998; McMullan, 1997; Starkey, 1997). This move also protects students from athletics departments and administrators who use them as a cheap labor force (Weidner & Henning, 2002a). Elimination of the dual routes to certification is further hypothesized to improve athletic training's credibility in the allied health care community and positively impact third party reimbursement and licensure efforts (McMullan, 1996; Peer & Rakich, 2000). Along this same vein, the task force recommended to reevaluate the number of clinical hours that were necessary to sit for the exam (Recommendations, 1997), and in 2001, the NATABOC announced that beginning with the 2002-2003 academic year that a specific number of experience hours would no longer be required (Cagle, 2001).

To keep pace with the ever evolving patient base and work environment, the task force also recommended an investigation on how different practice settings were being incorporated into educational programs. For example, it's difficult to justify the NATA's claim that its members are qualified to work with any physically active individual when our students are rarely given access to populations outside of athletics. By working to add varied clinical experiences to our students' education, we are both preparing them for a future outside of the collegiate athletic training room, but also giving them the opportunity to work with different types of patients to determine their preferred practice

site upon graduation (Denegar, 1997; Recommendations, 1997; Weidner & Henning, 2002a).

A third crucial task force recommendation was the establishment of an Education Council as a clearing house for educational policy, development, and delivery to our profession. This was accomplished in part in 1998 with the elimination of the Professional Education Committee. In 1999, the NATAEC developed the 3rd edition of the educational competencies that describe the cognitive, psychomotor, and affective entry-level requirements across twelve domains (Defining, 2002; Education Council, 1999; Houglum & Weidner, 2001b; Koehneke, 2001; Leaver-Dunn, 2002; Starkey, 1998; Weidner & Henning, 2002a). Each area's competencies were further integrated into measurable clinical skills or proficiencies that athletic training students (ATS) must master during their clinical education (Defining, 2002; Houglum & Weidner, 2001b; Koehneke, 2001; Starkey, 1998; Weidner & Henning, 2002a) in lieu of the hours requirement (Defining, 2002; Denegar, 1997; Houglum & Weidner, 2001b; Koehneke, 2001; Weidner & Henning, 2002a). Clinical experiences are now based on measurable performance objectives and the concept of learning over time, where educational competencies and clinical proficiencies are taught, practiced, and evaluated in the classroom, laboratory, and clinical setting (Cagle, 2001; Houglum & Weidner, 2001b; Koehneke, 2001; Peer & Rakich, 2000; Starkey, 1997). This move to competency-based education has changed athletic training education from programs of clinical experience to programs of clinical education (Denegar & Hertel, 2002; Overview, n.d.; Starkey, 2002;

Weidner & August, 1997; Weidner & Henning, 2002a).

Professional content in a competency-based educational model is still based on cognitive knowledge, psychomotor skills, and affective professional behaviors (Overview, n.d.; Weidner & August, 1997), with the addition of practice-oriented outcomes (clinical proficiencies) (Overview, n.d.). Modern athletic training clinical sites are extensions of the classroom, where the emphasis is no longer on student *working*, but on student *learning* (Martin, 2001). Under this model, the clinical instructor (CI) is responsible for instruction and evaluation of clinical proficiencies on a learning over time continuum (Koehneke, 2001). Clinical education is a substantial portion of professional preparation in allied health fields (Curtis, Helion, & Domsohn, 1998; Knight, 2002; Martin, 2001; Weidner & Henning, 2002a, 2002b), and serves to transform the novice student to a competent professional (Weidner & Henning, 2002a) by increasing responsibility and task complexity as students master knowledge and skills (Knight, 2002). Since patient load and experiences are random in the clinical setting, time alone does not ensure skill mastery (Weidner & August, 1997); instead, CIs should integrate classroom knowledge into practical/applied experiences (Weidner & August, 1997; Weidner & Henning, 2002a).

The fourth critical tenant of athletic training educational task force's recommendations regards the need for and structure of graduate level education reform. With the elimination of the internship route to certification and the realization that not all future professionals would choose to attend accredited undergraduate programs, the task

force encouraged the development of entry-level post-baccalaureate programs (2-3, 3-2, 4-1, etc. models). These programs would be CAAHEP accredited, and provide a bona fide alternative route to certification for those students who came to the decision to enter our profession later in life or who could not attend an accredited institution for a myriad of reasons (Delforge & Benhnke, 1999; Ebel, 1999; Hunt, 2000; Leverenz, 1998; McMullan, 1997; NATAEC, n.d.; Recommendations, 1997). The task force further emphasized their commitment to undergraduate education by writing:

> It should be stated categorically that we are not recommending that all programs convert to the graduate level as prerequisite for certification for their students. We remain committed to the baccalaureate model of education. This suggestion is simply intended to help provide educational opportunity in athletic training for those students who would be better served by an alternative to the traditional baccalaureate program. (Recommendations, 1997, p.17)

Other task force recommendations that significantly affected educational reform include the development of Certificates of Advanced Qualification (CAQ) and the encouragement of multi-disciplinary programs. The task force recommended two different types of CAQs: one involved becoming an Approved Clinical Instructor (ACI) and the other related to post-entry level specialty knowledge and skills. Since the responsibility to provide high quality clinical instruction and supervision is increasing dramatically and expertise as a clinician does not automatically guarantee expertise as an educator (Weidner & Henning, 2002b), the creation of Clinical Instructor Educator (CIE) workshops to "teach the teachers of athletic trainers" and the requirement that all CIs at

accredited programs become ACIs significantly improved the quality and consistency of clinical education (Starkey, 1997; Walters, 1999; Walters & Weidner, 2002; Weidner & Henning, 2002a). Unfortunately, many CIs are still primarily responsible for patient care (Martin, 2001; Weidner & Henning, 2002b), making the delicate balance between students' clinical education and their workload elusive (Weidner & Henning, 2002a).

Modern athletic training education evolved from early medical education models where apprentice students trained with a master practitioner (Overview, n.d.; Weidner & Henning, 2002b); where what they learned was often greatly influenced by the instructor's own strengths and weaknesses (Weidner & August, 1997). Unfortunately, learning by simply putting in time left too many holes in students' knowledge bases (Knight, 2002), and educational reform became necessary to ensure that athletic training kept pace with the changing healthcare landscape (Booth, 1999; Koehneke, 2001). By strengthening the quality, reputation, and educational requirements of the ATC® credential, the NATA strives for its members to be recognized as experts who can practice in any setting without drawing criticism regarding the scope and breadth of their professional preparation (Starkey, 1997). This will be accomplished, in part, by bringing athletic training clinical education into line with that of other, respected allied health care professions through the use of effective teaching behaviors.

Overview of Allied Health Clinical Education

Modern allied health clinical education has grown from its modest roots as unstructured, trade-like apprenticeships in the 1960's and 1970's (May, 1999) to degree-based educational programs that offer credibility and improved status through standardized curriculums (Cross, 1994). Drilling and learning through role modeling and on-the-job observation (Round, 1999) have given way to active teaching and learning in the clinical setting (Cross, 1994; Gordon et al., 2000; Richards, 1982) where students can apply abstract theoretical knowledge (Mogan & Knox, 1987; Williams & Webb, 1994) and practice newly learned skills on living patients (Grealish & Carroll, 1998; Lauber, Toth, Leary, Martin, & Killian, 2003; Mbambo, 1999; Sanders, Melzer, Boucher, & Keely, 1999; Williams & Webb, 1994). These guided interactions bridge the gap between theory and practice (Grube & DeJarnette, 1989; Lauber et al., 2003; Mogan & Knox, 1987; Richards, 1982; Williams & Webb, 1994) and give students an opportunity to develop professional relationships (Mbambo, 1999; Sanders et al., 1999) and experience while gaining confidence, competence (Williams & Webb, 1994), and compassion (Grealish & Carroll, 1998; Sanders et al., 1999) in an encouraging environment (Williams & Webb, 1994).

Many clinical education programs require students to shadow or observe working professionals and more advanced students early in their academic career to gain exposure to the field (Kachur, 2003) and help clarify their interest level. Unfortunately, students left to simply observe without interaction will very quickly disengage from the

experience, and may even come to resent the time commitment without any actual learning taking place (Kachur, 2003). Therefore, it is imperative that clinical educators *activate* observation through systematic planning of their actions and the related student experience, verbalize their actions and reasoning, and allow the student to participate in patient care up to their ability. To more thoroughly bridge theory to practice, clinical educators can utilize both pre-observation activities that prepare students for success, including: clarification of expectations, site orientation, specific/related readings, and lab-based skill introduction; and post-observation activities that assist the development of conceptual frameworks, including: open discussion, logs, reports, portfolios, skills practice, and follow-up readings (Kachur, 2003).

Under the traditional apprenticeship model of clinical education, students learned through observation and practice with feedback (Eaton & Cottrell, 1999): see one, do one, teach one (Kachur, 2003). In modern clinical education, complex skills are broken down into smaller sequences that are learned individually and then re-integrated for task mastery. One common learning structure proposed by Eaton (1999) has five distinct steps, and is used to enhance motor performance and cognitive interpretation:

1. The clinical instructor demonstrates the skill to the students.
2. The students and instructor discuss each step.
3. The clinical instructor demonstrates the skill again.
4. The students engage in active practice of the skill steps while talking through them.
5. The students practice the skill silently.

Clinical education is not always successful, with many students having difficulty transferring theoretical knowledge into practice (Tanner, 1998). In his 1991 study, Kirkpatrick found that "When the education and service settings are separate, students often have difficulty making the links from theory to practice because they lack practitioner role models...[and] students very often perceive faculty as theoreticians unable to practice...and practitioners as technicians unable to relate theory to practice." To solidify pre-clinical education, many allied health programs now forge the link between patient care and didactic learning early in a student's education through use of a vertically integrated curricula and problem-based learning (Gordon et al., 2000). By engaging with the clinical setting early in their academic career, students can begin integrating knowledge and skills with application (Gordon et al., 2000) and maximize the benefits of patient contact time (Kachur, 2003). However, before complex skills are used on living patients, they are often practiced and refined in skill labs (Eaton & Cottrell, 1999; Kneebone et al., 2002). While laboratory-based teaching is essential and can teach students the when and why of clinical skills (Eaton & Cottrell, 1999), it often overlooks the development of interpersonal skills that affect patient-clinician communication (Kneebone et al., 2002).

In this era of increased accountability, allied health programs have a duty to provide tangible evidence that learning has occurred and that their students meet societal expectations of competence. Many assessment tools currently in use measure quantitative data, such as knowledge and clinical skills, but virtually ignore professional

attributes. To remedy this situation, many programs have begun including more qualitative measures to assess elusive qualities, such as effective communication, integrity, altruism, ethics, and patient consultation skills, which rely on professional judgement and are not easily 'counted' (Murray et al., 2000).

Assessing Clinical Education

As the trend toward quality assurance continues in higher education, many allied health programs are moving from apprenticeships to work-based experiential learning (Hesketh et al., 2001) and are implementing evidence-based curricula (Gordon et al., 2000) that rely on clinical education to ensure that students learn the knowledge and skills at or above the level mandated by credentialing bodies (Wilson, 1996). However, without the benefit of on-the-job experience, students must be *taught* to perform independently and make the decisions that are necessary for autonomous practice (Collins, 2003; Ladyshewsky, Barrie, & Drake, 1998). This has sparked the need for better preparation of teachers, better educational design, better assessment instruments in the clinical setting, the discovery and funding of additional appropriate clinical sites, and the incorporation of information technologies to improve communication and learning (Gordon et al., 2000; Hesketh et al., 2001).

The transformation of clinical education from training into education (Cross, 1994) has come about largely as a result of changes in the health care system (Amelia et al., 2001). Increased medical accountability requires that collegiate allied health programs prove that they deliver a quality educational product to their students. One such

measuring tool is the use of objectives and outcome-based education where decisions about content, pedagogical methods, and assessment are determined by the skills and qualities the teacher wants the students to achieve (Hesketh et al., 2001). In academia, accrediting bodies often serve as gatekeepers who set educational standards and collect institutional, program, and course evidence of compliance. However, many educators are resistant to the use bureaucracy-mandated objectives and fail to incorporate them into their clinical curricula. While many old-school faculty express antipathy at the use of objectives that they interpret as either too broad, narrow, or confusing, many program directors and students recognize their potential usefulness in defining performance expectations (Mcleod, Berdugo, & Meagher, 1998). To enhance ownership of educational objectives, programs should involve both learners and clinical instructors in their formation (Mbambo, 1999; Mcleod et al., 1998).

One of the most important aspects of teaching is assessing whether or not students have learned what you intended to teach (Walsh, Kugler, & Bennet, 2003). In allied health education, many programs' accrediting bodies stipulate the types of patient exposures required for entry-level clinical competence, but fail to clarify the nature and breadth of those experiences (Strickland et al., 1996). Therefore, assessment of clinical skill varies widely between programs (Turocy, Comfort, Perrin, & Gieck, 2000) and disciplines, with many educators wondering, "How many of what is enough?" (Strickland et al., 1996). While some programs track the number of patient-contact hours each student accumulates (Laurent & Weidner, 2001), hours alone neither validate the clinical

experience nor guarantee that learning has occurred (Strickland et al., 1996), and have little influence on board exam performance (Turocy et al., 2000). Instead of tallying encounters on a score sheet (Strickland et al., 1996), supervisors should take responsibility (Williams & Webb, 1994) and evaluate the experience quality (Turocy et al., 2000; Williams & Webb, 1994), placing emphasis on achieving the knowledge, skills, and abilities (Turocy et al., 2000) required by real-world patients (Murray et al., 2000).

While most educators assert that clinical education is critical for the advancement of health science and patient care (May, 1999), weaknesses in this phase of education are potentially destructive as students are weaned from dependence on their clinical instructors (Collins, 2003). Two of the most pervasive and potentially threatening assumptions about clinical education regard students as consumers (not learners) (Gordon et al., 2000) and that clinical education exists simply to solve staffing deficiencies (Gordon et al., 2000; May, 1999; Strickland et al., 1996). Others include: service pressure that limits teaching time, reduced funding, shorter clinical rotations, unrepresentative patients, fewer opportunities to practice skills, variable quality in teaching and assessment, and lack of expert role models (Gordon et al., 2000; Wilson, 1996).

Costs and Benefits of Clinical Education

Before committing to clinical education, collegiate programs and potential site supervisors must weigh both the costs and benefits of preparing the next generation of clinicians. While monetary costs to the site are minimal and revolve around providing

adequate materials and space for students to practice skills (Meyers, 1995; Strickland et al., 1996), the monetary rewards often include increased revenue generated by student-clinicians who provide services to patients and the increased efficiency of practicing clinicians who are able to use students to their benefit and carry a larger patient load (Meyers, 1995). On the other hand, site supervisors often cite stress, external pressures to lower standards to artificially inflate the passing rate, frustration over lack of programmatic control, students' egocentrism, and the need to take work home in the evenings as a result of spending time with students as significant non-monetary costs, and satisfaction from their work with students, exposure to new ideas, positive feedback about their practice, the ability to serve their profession, and renewed enthusiasm as benefits (Meyers, 1995).

Not surprisingly, students rarely mention non-monetary costs to clinical education, and instead cite completely different benefits than their supervisors, including: positive feedback, learning necessary skills, improved self-awareness and reflection, positive exposure to patients and supervisors in real-life situations, application and integration of theories and techniques learned in the classroom, increased confidence, and positive shaping of their professional image. While most students successfully complete their clinical rotations, some fail; and not surprisingly, students and supervisors differ in their reasoning. For example, while clinical instructors cite inadequate didactic preparation, inadequate self-awareness, and poor technical, problem-solving, and communication skills for student failures, students themselves tend to blame personality clashes with

supervisors, lack of structure, and inadequate communication, supervision, and feedback (Meyers, 1995).

Clinical Supervision

Supervision can occur informally, one-to-one, between peers, and in a group situation (Kilminster & Jolly, 2000), and can be divided into two distinct categories: program administration and clinical education (McCrea, 2003). As student diversity increases, workplace demands change, and societal expectations grow, clinical supervision becomes increasingly complex and focused on *education* (McCrea, 2003). Clinical teaching should be appropriate to the students' level of knowledge, experience, and competence, accommodate individual differences and expectations in both students and other clinicians, and nurture self-reflection, critical thinking, decision-making, and problem-solving skills (Mbambo, 1999; McCrea, 2003). While vital to student development, supervision is the least investigated, discussed, and developed aspect of the clinical experience (Kilminster & Jolly, 2000).

Supervision can occur in a variety of setting under various modes of delivery (Kilminster & Jolly, 2000; Kirkpatrick et al., 1991); the most important aspect of which are quality interactions (Kirkpatrick et al., 1991) that ultimately improve patient care (Kilminster & Jolly, 2000). While the underlying goal of clinical education is to make students progressively more self-sufficient, patient care is still the ultimate responsibility of the supervising clinician (Collins, 2003; Strickland et al., 1996; Wellard et al., 1995),

who should directly observe the student-patient interaction, demonstrate proper treatment techniques, and mentor/challenge the student without condescension (Strickland et al., 1996). Even though the patient material largely dictates the content of the clinical rotation (Mcleod et al., 1998) with many teaching sessions lacking organization and intellectual stimulation (Dagget, Cassie, & Collins, 1979; Gordon et al., 2000), both students (Dagget et al., 1979) and clinical supervisors are responsible for maximizing all patient contacts (Strickland et al., 1996). While some students claim to benefit from unsupervised experiences, lack of supervision (or poor supervision) can lead lower patient care standards and decreased educational effectiveness (Kilminster & Jolly, 2000).

Quality clinical supervision is imperative if students are to successfully bridge theory and practice (Grealish & Carroll, 1998; Laurent & Weidner, 2001; Meyers, 1995) and solidify their professional identity (Kirkpatrick et al., 1991). Supervision should be structured (Kilminster & Jolly, 2000; Meyers, 1995) and conducted in a planned and orderly manner (Pertab, 1999), and should include the use of learning objectives, assessment methods, and personal development goals (Kilminster & Jolly, 2000). However, problems with the extent and availability of supervision have been identified across professions (Kilminster & Jolly, 2000; Pertab, 1999), and include lack of role models and unsupportive teaching-learning environments (Kirkpatrick et al., 1991). In addition to good communication, rapport, mutual trust, and respect (Kirkpatrick et al., 1991), effective supervisors often employ good teaching practices to enhance the clinical

experience (Richardson Jr. et al., 1992).

These practices include:

1. The use of adaptive instruction to: provide alternative ways of learning (Gordon et al., 2000; Richardson Jr. et al., 1992), explain content in ways students understand, create innovative presentations, make material applicable to students' lives, provide a non-judgmental learning environment, and teach student success (Richardson Jr. et al., 1992).
2. Emphasize academic achievement by: communicating the expectation that all students can succeed, holding all students to standards, incorporating problem solving and critical thinking into all classes, and providing timely and detailed performance feedback (Richardson Jr. et al., 1992).
3. The use of advance organizers, clinical cases, simulations, and mini-assignments to add structure to the clinical experience, focus attention, make use of the environment at hand, and structure time outside the clinical environment (Gordon et al., 2000).
4. Preparing the learner for independent practice by: encouraging students to formulate and express their own questions, giving them graded responsibility for patient care, encouraging reflection after clinical encounters, and providing computer access to make effective use of down time (Gordon et al., 2000).

Group Supervision

Under traditional supervision or apprenticeship models, clinical instructors supervise only one to two students per rotation; today, however, many allied health programs have begun using group supervision to accommodate a larger number of students (DuPont, Gauthier-Gagnon, Roy, & Lamoureaux, 1997) and reduce the burden on the educational system to find additional placements (Bennett & Kitsell, 2003). While some clinical instructor are more productive when they use group supervision (DuPont et al., 1997),

others are ill-equipt to supervise more than two students at a time (Bennett & Kitsell, 2003; Currens, 2002) and feel exploited by the demand to increase their supervisory responsibilities (APTA, 2002; Bennett & Kitsell, 2003). Group supervision is especially effective during intermediate and advanced placements (DuPont et al., 1997), but brings with it its own set of challenges. For example, before entering into a group supervision situation, clinicians must consider the additional space and other resources needed, the additional time for practice and assessments (APTA, 2002; Currens, 2002), facilitation of peer-assisted learning, provision of adequate feedback, and teamwork and professionalism issues (Currens, 2002). Clinical supervisors should allow students to progress at their own pace (Currens, 2002; Gordon et al., 2000) , be aware of student diversity and adjust teaching methods appropriately, provide individual feedback, and make assessments based on objective information and not comparisons between students (Currens, 2002).

The Clinical Educator

The clinical environment is significantly different from that of the classroom (Williams & Webb, 1994), and simple fact memorization alone will not make a student an effective clinician (Round, 1999). For actual *learning* to occur, students must be actively involved in the experience, be given the opportunity to interact with patients and supervisors, practice new skills, and have time to reflect on their experiences (Richards, 1982). This lofty goal is accomplished through student supervision by and interaction

with quality clinical educators who select developmentally appropriate (Gordon et al., 2000) learning experiences that modify weaknesses into strengths (Mbambo, 1999; Richards, 1982).

Clinical education, arguably, has the greatest potential to positively impact students' application of their education to patient care (Dagget et al., 1979; Grealish & Carroll, 1998), for it is during this time that students are supervised by a practicing professional who corrects, guides, and helps refine their skills (Amelia et al., 2001; Richards, 1982; Sanders et al., 1999) through the judicious use of feedback and encouragement (Cross, 1994; Gordon et al., 2000; Kneebone et al., 2002; Laurent & Weidner, 2001). Clinical instructors are vital to successful student development (Strickland et al., 1996), as they have the ability to stimulate learning in all three educational domains (cognitive, affective, and psychomotor) (Gordon et al., 2000; Lauber et al., 2003; Tanner, 1998) and nurture effective communication (Laurent & Weidner, 2001), critical thinking skills (Blumberg, 2003; Mogan & Knox, 1987; Round, 1999; Tanner, 1998), decision making (Amelia et al., 2001; Lauber et al., 2003; Mbambo, 1999; Mogan & Knox, 1987; Roche, 2002; Round, 1999; Tanner, 1998), and problem solving (Blumberg, 2003; Lauber et al., 2003; Laurent & Weidner, 2001; Mbambo, 1999).

According to Harden (2000), "Teaching is a demanding and complex task." In fact, many practicing clinicians are expected to educate students in the field (Cross, 1994), for little or no reward (Amelia et al., 2001; Kirkpatrick et al., 1991) or training (Grealish & Carroll, 1998; Hesketh et al., 2001; Mcleod et al., 1998) , without sacrificing patient care,

and without reducing billable encounters (Amelia et al., 2001; DuPont et al., 1997; Williams & Webb, 1994). Unfortunately, many clinical supervisors often do not embrace their roles as *educators* (Harden & Crosby, 2000), and fail to recognize the positive impact that behavior modeling (Gordon et al., 2000; Laurent & Weidner, 2001), skill demonstration (Gordon et al., 2000; Laurent & Weidner, 2001), and support have on student learning (Gordon et al., 2000). Therefore, to improve the quality of clinical education, we must first improve the quality of our clinical educators (Hesketh et al., 2001). The development, training, evaluation (Caladine, 2002; Lauber et al., 2003), and recognition (Caladine, 2002; Gordon et al., 2000; Kirkpatrick et al., 1991) of clinical instructors should be a priority for all programs to improve the nature of student-teacher interactions (Tanner, 1998). For some educators, however, their reward is more esoteric, and stems from professional self-development and their relationship with their student (Kirkpatrick et al., 1991).

One of the most important, but intangible skills learned throughout the clinical experience is that of professionalism (Grube & DeJarnette, 1989). Professionalism is a learned behavior that is nurtured by both faculty interaction and modeling of communication skills and administrative behaviors (Sanders et al., 1999) and through both cooperative and individual practice (Ladyshewsky et al., 1998). For those individuals in the clinical setting who move beyond supervision and educate their students, clinical education itself can be a form of professional development. For example, knowledge, skills, and practice are all enhanced through discussions with

students, self-reflection, general problem solving, active demonstration of skills, and the incorporation of current research into practice (Bennett & Kitsell, 2003).

Who Makes a Good Supervisor?

Contrary to popular belief, being given a title (Pertab, 1999) or holding a professional degree or certification does not make a clinician a good supervisor or educator (Amelia et al., 2001; Richards, 1982; Strickland et al., 1996). Learning in the clinical environment is crucial for many allied health professions, but this responsibility is often left to practitioners who have no experience (Ker & Dent, 2002; Williams & Webb, 1994) or desire to teach. While competent in their field, clinical instructors without the necessary pedagogical training (Brownstein et al., 1998; Richards, 1982) often draw from their personal experiences and teach how they themselves were taught (Brownstein et al., 1998; Williams & Webb, 1994). These individuals are expected to teach, supervise, and evaluate students in the clinical setting (APTA, 2002; Lauber et al., 2003; Pertab, 1999) all the while maintaining patient safety (Kirkpatrick et al., 1991; Richards, 1982).

Unlike the classroom where students passively listen, take notes, and answer questions (Grealish & Carroll, 1998), students in the clinical setting are active participants in their education. Here the instructor must be both a practitioner and a teacher who sets the stage for learning (Richards, 1982) by setting clear expectations of the behavior and skills that are necessary for proficiency (Gordon et al., 2000; Richards, 1982) and providing quality patient interactions (Gordon et al., 2000; Lauber et al.,

2003). It is through these personal interactions (Gordon et al., 2000) that students integrate and internalize the theoretical knowledge learned in lectures (Mbambo, 1999) and begin to internalize their motivation for patient care (Gordon et al., 2000).

As the number of allied health programs has increased, the demand for quality clinical educators has kept pace (Amelia et al., 2001). While many clinicians already have the ability to be good educators, formal training programs can cultivate: theories about adult learning, managing underperforming students (APTA, 2002), pedagogical skills, curriculum planning, assessment strategies (APTA, 2002; Busari, Scherpbier, van der Vleuten, & Essed, 2003; Mbambo, 1999), communication skills, the use of feedback (Busari et al., 2003), and counseling of students (Mbambo, 1999). Unfortunately, many inexperienced educators exhibit a strong desire to attend faculty development workshops, but have difficulty finding time (Green, Gross, Kernan, Wong, & Holmboe, 2003).

While many clinical educators cannot spare the time from their busy schedules to attend long conferences or in-service training sessions, communication between them and the students' university program is critical (Meyers, 1995). Through conferences and regular communication, university faculty and clinical staff can discuss educational, administrative, and collegial goals, share ideas, teaching experiences, and educational strategies (Wilson, 1996), facilitate their clinical supervision expertise (Ker & Dent, 2002), share information about a student's progress through the program to enhance their current rotation (Wilson, 1996) and reduce stress (Meyers, 1995) and conflicts (Ker & Dent, 2002). Furthermore, national or programatic recognition (Caladine, 2002; Gordon

et al., 2000) and support (Caladine, 2002; Ker & Dent, 2002; Meyers, 1995) for clinical educators increases the consistency and quality of the practical experience and contributes to improved standards of patient care and a profession's profile (Caladine, 2002).

What Makes Educators Effective?

According to research, teachers have a greater influence on student academic success than any other factor (District Administration, 2003; Harden & Crosby, 2000), but defining (District Administration, 2003; Harden & Crosby, 2000) and measuring teacher quality is difficult (District Administration, 2003). In clinical education, a teacher does more than simply dispense information (Harden & Crosby, 2000), they act as a professional role model (Bennett & Kitsell, 2003; Brehaut, Turik, & Wade, 1998; Capie et al., 1979b; Harden & Crosby, 2000; Kirkpatrick et al., 1991; Lauber et al., 2003; Mogan & Knox, 1987), facilitate learning, mentor and assess students, and plan the curriculum (Harden & Crosby, 2000). Under this umbrella of overlapping roles, educators are expected to be competent in their field (Bennett & Kitsell, 2003; Brehaut et al., 1998; Capie et al., 1979b; Harden & Crosby, 2000; Johnson, 1980; Jones, 1984; Kerlinger & Pedhazur, 1967; Lauber et al., 2003; Richardson Jr. et al., 1992; Ronan, 1971, 1972), display enthusiasm and passion for their content (Bennett & Kitsell, 2003; Capie et al., 1979b; Harden & Crosby, 2000; Hoyt, 1969; Johnson, 1980; Jones, 1984; Kerlinger & Pedhazur, 1967; Lorentz, 1978; Marchant, 1988; Micceri, 1990; Mogan &

Knox, 1987; Richardson Jr. et al., 1992), and launch students' quests for knowledge through active, student-centered learning (Harden & Crosby, 2000). To awaken learning in their students, effective teachers use a variety of techniques, including: managing the learning environment (Texas, 1986; Gordon et al., 2000; Strickland et al., 1996), stimulating presentation of subject matter (Li, 1997; Texas, 1986; Weiss & Pasley, 2004), effective questioning techniques (Bennett & Kitsell, 2003; Hall, 1969; Hoyt, 1969; Kerlinger & Pedhazur, 1967; Lorentz, 1978; Marchant, 1988; McGovern & Dean, 1991; Ronan, 1971, 1972; Texas, 1986; Weiss & Pasley, 2004), and performance evaluations (Bennett & Kitsell, 2003; Benor & Leviyof, 1997; Collins, 2003; Funk et al., 1981; Harden & Crosby, 2000; Inglis, 1978; Jones, 1984; Kirkpatrick et al., 1991; Lane & Gottlieb, 2000; Lauber et al., 2003; Lorentz, 1978; Meyers, 1995; Micceri, 1990; Richardson Jr. et al., 1992; Ronan, 1971, 1972; Southwell & Webb, 1972).

The Learning Environment

In order to be effective, the clinical setting must offer a task-oriented atmosphere (Richardson Jr. et al., 1992; Texas, 1986) and contain adequate teaching and learning resources for students to maximize the educational value of their patient contact time (Strickland et al., 1996). To foster this environment, clinical educators should provide quality interactions (Richardson Jr. et al., 1992) that challenge students to engage with the content (Texas, 1986) at their developmental level (Weiss & Pasley, 2004), but should do so in a supportive manner (Capie et al., 1979b; Grube & DeJarnette, 1989; Lauber et al., 2003; Ronan, 1971, 1972) to build self-esteem and confidence (Richardson

Jr. et al., 1992) and prevent a fear of failure (Texas, 1986). Effective teachers carefully organize clinical time (Bennett & Kitsell, 2003; Gordon et al., 2000; Grube & DeJarnette, 1989; Hoyt, 1969; Inglis, 1978; Jones, 1984; Kerwin, 1980; Meyers, 1995; Micceri, 1990; Richardson Jr. et al., 1992; Ronan, 1971, 1972; Southwell & Webb, 1972; Texas, 1986) to prevent boredom and task devaluation, and utilize efficient classroom management strategies (Funk et al., 1981; Inglis, 1978; Micceri, 1990; Ronan, 1971, 1972; Southwell & Webb, 1972; Texas, 1986) to prevent misbehavior and keep students engaged. While teacher skill in classroom administration is essential to the clinical environment, it will not ensure student achievement unless accompanied by skill in subject presentation (Benor & Leviyof, 1997; Dagget et al., 1979; Funk et al., 1981; Inglis, 1978; Lauber et al., 2003; Richardson Jr. et al., 1992; Texas, 1986).

Subject Matter Presentation

Effective clinical educators use well-structured lessons (Bennett & Kitsell, 2003; Capie et al., 1979b; Funk et al., 1981; Gordon et al., 2000; Grube & DeJarnette, 1989; Hoyt, 1969; Inglis, 1978; Jones, 1984; Kerlinger & Pedhazur, 1967; Kerwin, 1980; Lauber et al., 2003; Meyers, 1995; Micceri, 1990; Richardson Jr. et al., 1992; Ronan, 1971, 1972; Texas, 1986; Weiss & Pasley, 2004) that are appropriately sequenced to encourage students to build upon previous knowledge and skills (Texas, 1986; Weiss & Pasley, 2004). They keep students on task and increase participation (Kerwin, 1980; Ronan, 1971, 1972; Texas, 1986) and achievement (Texas, 1986) by encouraging them to practice (Bennett & Kitsell, 2003; Capie et al., 1979b; Johnson, 1980; Lauber et al.,

2003; Laurent & Weidner, 2001; Lorentz, 1978; Marchant, 1988; Micceri, 1990; Southwell & Webb, 1972; Texas, 1986) and interact with the content through real-world simulations (Gordon et al., 2000; Grube & DeJarnette, 1989; Hoyt, 1969; Jones, 1984; Kerlinger & Pedhazur, 1967; Laurent & Weidner, 2001; Richardson Jr. et al., 1992; Ronan, 1971, 1972), first-hand experiences (Weiss & Pasley, 2004), and small group work (Gordon et al., 2000; Jones, 1984; Kerwin, 1980; Texas, 1986). In the clinical setting, teachers also make frequent use of examples, step-by-step explanations (Capie et al., 1979b; Gordon et al., 2000; Hall, 1969; Hoyt, 1969; Johnson, 1980; Jones, 1984; Lauber et al., 2003; Lorentz, 1978; McGovern & Dean, 1991; Richardson Jr. et al., 1992; Southwell & Webb, 1972), role modeling (Mogan & Knox, 1987; Texas, 1986) and skill demonstrations (Gordon et al., 2000; Hall, 1969; Inglis, 1978; Jones, 1984; Kerlinger & Pedhazur, 1967; Lauber et al., 2003; Laurent & Weidner, 2001; Li, 1997; Ronan, 1971, 1972; Southwell & Webb, 1972; Texas, 1986). This stimulates the free-exchange of ideas between students and instructors (Bennett & Kitsell, 2003; Capie et al., 1979b; Gordon et al., 2000; Grube & DeJarnette, 1989; Hoyt, 1969; Johnson, 1980; Jones, 1984; Kerlinger & Pedhazur, 1967; Kerwin, 1980; Lauber et al., 2003; Ronan, 1971, 1972; Southwell & Webb, 1972), and allows teachers to maximize learning opportunities (Green et al., 2003) and help students make sense of the content and see connections (Bennett & Kitsell, 2003; Brehaut et al., 1998; Gordon et al., 2000; Grube & DeJarnette, 1989; Jones, 1984; Kerlinger & Pedhazur, 1967; Lauber et al., 2003; Texas, 1986; Weiss & Pasley, 2004) that might otherwise be missed in a passive lecture situation.

In allied health clinical education, students "must learn to plan a strategy for each patient and to solve problems as they occur" (Brownstein et al., 1998). Students build their knowledge base through skill mastery, idea association, research, and questioning, and eventually create a framework to which new patients and situations can be fastened. For example, when learning new clinical skills, students first form an image of the skill through observation, then refine its performance through feedback-moderated trial and error. Once the skill becomes automatic, they integrate it into their repertoire. To encourage this transference, clinical educators teach the student effective thinking habits through explanations, guided questioning, and problem solving (Brownstein et al., 1998).

Questioning Techniques

When checking for student comprehension, many teachers use both open and closed questioning techniques (Bennett & Kitsell, 2003; Green et al., 2003; Hall, 1969; Hoyt, 1969; Kerlinger & Pedhazur, 1967; Lorentz, 1978; Marchant, 1988; McGovern & Dean, 1991; Ronan, 1971, 1972; Southwell & Webb, 1972; Texas, 1986). In the clinical setting, effective questioning that stimulates content engagement or knowledge and skill integration (Weiss & Pasley, 2004) have been shown to positively affect learning (Texas, 1986). When asking questions, educators should avoid using only low-level questions (Lorentz, 1978; Weiss & Pasley, 2004), imprecise or vague terms, distracting phrases, or qualifiers (Texas, 1986), and instead formulate challenging questions that invite the student think critically by delving into the content (Bennett & Kitsell, 2003; Gordon et al., 2000; Hall, 1969; Jones, 1984; Kerlinger & Pedhazur, 1967; Lauber et al., 2003;

Laurent & Weidner, 2001; Lorentz, 1978; Richardson Jr. et al., 1992; Ronan, 1971, 1972; Southwell & Webb, 1972; Weiss & Pasley, 2004).

Effective questioning techniques encourage the student to do original thinking (Hall, 1969; Jones, 1984), clarify their own ideas (Hoyt, 1969; McGovern & Dean, 1991), answer their own questions (Hoyt, 1969), and to constructively criticize their approach to the content (Kerlinger & Pedhazur, 1967). The use of probing questions allows the clinical instructor to both assess a student's knowledge and learning needs and to take full advantage of the teachable moment (Green et al., 2003). Furthermore, teachers should give students time to think and fully form their answers before moving on or calling upon another student (Texas, 1986; Weiss & Pasley, 2004).

Feedback and Evaluation

According to Harden (2000), "A good teacher can be defined as a teacher who helps the student learn." Common ways they do this is include: identifying educational and behavioral expectations (Bennett & Kitsell, 2003; Brownstein et al., 1998; Lauber et al., 2003; Laurent & Weidner, 2001; Marchant, 1988; Inglis, 1978; Meyers, 1995; Richardson Jr. et al., 1992; Texas, 1986), offering specific, systematic process and product feedback (Brownstein et al., 1998; Johnson, 1980; Lorentz, 1978; Texas, 1986), and reinforcement through judicious use of praise and recognition (Capie et al., 1979b; Hall, 1969; Hoyt, 1969; Jones, 1984; Kerlinger & Pedhazur, 1967; Micceri, 1990; Richardson Jr. et al., 1992; Ronan, 1971, 1972; Southwell & Webb, 1972; Texas, 1986). Feedback is essential in clinical education (Bennett & Kitsell, 2003; Capie et al., 1979b;

Collins, 2003; Gordon et al., 2000; Inglis, 1978; Johnson, 1980; Jones, 1984; Kilminster & Jolly, 2000; Lauber et al., 2003; Marchant, 1988; McGovern & Dean, 1991; Micceri, 1990; Richardson Jr. et al., 1992; Ronan, 1971, 1972; Strickland et al., 1996; Texas, 1986) to make students aware of their strengths and weaknesses, and should be given as close to the supervised learning event as possible (Brownstein et al., 1998, Strickland et al., 1996; Collins, 2003; Inglis, 1978) to be effective. Supervisors should provide both written and verbal comments that are non-judgmental and offer suggestions for improvement (Brownstein et al., 1998).

In clinical education, both the didactic and clinical instructor use discussion, examination (Richards, 1982) , observation (Bennett & Kitsell, 2003; Lauber et al., 2003; Marchant, 1988; Micceri, 1990; Richards, 1982; Southwell & Webb, 1972), and student self-evaluations (Kirkpatrick et al., 1991; Richards, 1982) to evaluate the validity of the learning experience (Richards, 1982) and the student's performance (Bennett & Kitsell, 2003; Collins, 2003; Inglis, 1978; Kirkpatrick et al., 1991; Lauber et al., 2003; Lorentz, 1978; Meyers, 1995; Richardson Jr. et al., 1992; Ronan, 1971, 1972). While such evaluation is largely contingent upon the clinician's skill and the patient content (Grube & DeJarnette, 1989), each clinical site should develop a policy for completing student evaluations that prevents favoritism (Brownstein et al., 1998; Flowers & Hancock, 2003) and promotes task relevance (Brownstein et al., 1998). Many of these systems involve pre- and post-assessments to accurately identify students who need remediation, and allow clinical instructors to identify students' learning styles (Flowers & Hancock, 2003)

to develop individual learning plans (Spike et al., 2000). Supervisors should use a variety of evaluation techniques (Lorentz, 1978) and provide written documentation of progress at least twice per year (Collins, 2003).

> Before those of us charged with the responsibility (through our accreditation agencies) of properly equipping our faculty start sending out students to faraway lands to boost the numbers, we'd better be certain that the persons we entrust with our students have the proper knowledge base and can impart it to the students. Reputation and word of mouth are not enough. It is incumbent on us in the schools and colleges to properly evaluate preceptors before, during, and after a rotation to be sure the goals and objectives of the program are being met. (Strickland et al., 1996, pg.25)

Assessing Educator Effectiveness

Researchers began observing classrooms during the 1960's using descriptive analysis techniques to discover what made some teachers more effective than others (Texas, 1986). Most of this early work was conducted in primary and secondary schools (Ronan, 1972), and focused on teacher's personal characteristics and patterns of student-teacher interactions (Texas, 1986). The Texas Education Agency (1986) found that there are consistent patterns of teacher behavior that relate to increased student achievement that can be extrapolated across subject and geographic and social settings.

According to Ronan (1971), "As a basis for any improvement of college teaching, recruiting or training qualified personnel, or any other such personnel actions, it is essential that a performance assessment method be developed as a requisite for determining who is and who is not an effective teacher." However, measuring teacher

quality is difficult (District Administration, 2003; Ronan, 1972), and is often unduly influenced by the school system itself and other variables that influence student academic achievement (District Administration, 2003). For example, many measurement systems rely on student achievement, attitudes, and/or progress (Ronan, 1971) to gauge teacher effectiveness, but there is little evidence that indicates the teacher's exact contribution, if any, to learning (Ronan, 1971, 1972). Research using both student (Copeland & Hewson, 1999; Ronan, 1971, 1972) and professional peer (Medley, 1969) ratings has been conducted for decades, but often lacks substantial results (Ronan, 1971, 1972) or tangible products (Ronan, 1972); instead, new trends are moving toward observational studies that simply record the presence of absence of an event or behavior to describe the learning situation, and indirectly teacher performance (Medley, 1969).

Assessment Strategies

Most professional supervision and teaching analysis is done through informal observations (Anderson, 1980). Many of these traditional systems are notoriously unreliable and include: intuitive note taking, anecdotal records, checklists, eyeballing (Siedentop & Tannehill, 2000), and rating scales (Morrison & Hafler, 2000; Siedentop & Tannehill, 2000), where the supervisor makes a value judgement based on their subjective, potentially biased account of the teaching session (Anderson, 1980; Morrison & Hafler, 2000; Siedentop & Tannehill, 2000). Since truth and perception can vary markedly, formal systematic observations that simply record what happened, without forming an opinion about the quality of the event, are the hallmark of educational

research (Siedentop & Tannehill, 2000). These methods produce reliable data that can be used to improve teaching strategies (Anderson, 1980; Siedentop & Tannehill, 2000).

By nature, all forms of teaching analysis are fragmentary (Anderson, 1980), but formal observation techniques can provide a more detailed framework of the teaching session than the informal assessment methods mentioned above. For example, once a behavior or performance category is defined, the supervisor can use event recording to indicate the number of occurrences per session, or use duration recording to measure the exact duration of each behavior per session (Anderson, 1980; Siedentop & Tannehill, 2000). While both of these systems produce accurate data, they lack continuity and fail to give the teacher any real sense of the session's flow. Instead, the supervisor may use a combination of the two, interval recording, to code which behavior(s) occur during consecutive, precise time intervals. This data is more meaningful, as it yields both a rate and ratio of behaviors observed (Siedentop & Tannehill, 2000).

When creating an observational strategy, it is imperative to design a system that meets specific goals (Anderson, 1980; Siedentop & Tannehill, 2000; Wellard et al., 1995) and efficiently obtains accurate information (Siedentop & Tannehill, 2000). However, for the system to be reliable, behavior categories must be carefully defined so that independent observers, watching the same person at the same time, record the same data (Anderson, 1980; Siedentop & Tannehill, 2000). According to Medley (1969), it is not even necessary to inform the observer of the evaluation's purpose to prevent unintentionally influencing their actions. But most importantly, the students and other

stakeholders, for whom the quality of clinical education is paramount, should have an active role in the creation of clinical educator evaluation tools (Wellard et al., 1995).

The Use of Student Evaluations

The use of student ratings of clinical instructors is common in allied health education (Beckman, Lee, & Mandrekar, 2004), as they have daily direct contact with the teacher and can observe the full spectrum of teaching behaviors (Mayberry, 1973; Ronan, 1971, 1972; Shrock, 1967) and often provide reliable feedback (Anderson, 1980; Beckman et al., 2004; Mayberry, 1973; Shrock, 1967). Student evaluations are relatively efficient (Shrock, 1967) and inexpensive to conduct (Beckman et al., 2004), with many using Likert scales to rate teacher behaviors (Mayberry, 1973). However, some authors have found that learners consistently rate faculty higher than their peers (Beckman et al., 2004), often confuse interpersonal relationships with effectiveness (Pertab, 1999), and misunderstand evaluation criteria (Shrock, 1967).

Assessing Behaviors

According to a 1971 study conducted by Ronan, there was agreement in the educational community that the major function of teaching is "the ability to assist students toward agreed upon educational goals" (Ronan, 1971, 1972), but approximately one half of the institutions he studied were dissatisfied with their current evaluation methods. More recent studies have found a high level of interest in improving clinical education (Green et al., 2003) through systematic identification, evaluation, and cultivation of effective teaching behaviors (Busari, Scherpbier, van der Vleuten, & Essed,

2000; Busari et al., 2003; McGovern & Dean, 1991; Richardson Jr. et al., 1992). Therefore, if better clinical instructors elicit better academic performances from their students, instruments that assess clinical teaching behaviors (Morrison & Hafler, 2000) should be used to address deficiencies and guide staff development.

Although clinical education is a vital part of many students' learning, objective tools to measure teacher effectiveness in the clinical environment are lacking (Copeland & Hewson, 1999; Ronan, 1972). Carlson and Park (1978) suggest appraisals based on teaching behavior that places emphasis on what the teacher actually does and not necessarily the results of those actions. In the clinical setting, that would involve identifying broad areas of responsibility and creating a specific framework or behavior categories, subcategories, and indicators that identify the expected behaviors to be observed (Carlson & Park, 1978). This format clearly identifies the teacher's performance expectations and provides useful feedback data for growth (Carlson & Park, 1978).

When designing an instrument to measure behaviors, it should be practical, feasible (Copeland & Hewson, 1999; Funk et al., 1981), useful to clinical educators for self-improvement and annual performance reviews (Carlson & Park, 1978; Copeland & Hewson, 1999; Funk et al., 1981), used in real time, valid, and reliable (Copeland & Hewson, 1999). Directions should be clear and concise, and scoring simple (Funk et al., 1981). Instead of measuring observers' opinions about what is happening in the classroom, such an instrument would discriminate among the types and amounts of

events that occur to and paint a more accurate picture of the learning environment (Medley, 1969). The key to this type of measurement is to count only overt behaviors, and not explanations or opinions, that even an untrained observer could accurately identify (Medley, 1969).

Instrumentation in the Literature

Research on teaching effectiveness has spawned a multitude of devices for analyzing different aspects of teaching (Medley & Hill, 1973). Many of these instruments rely on multiple data sources (McLarty, 1985), the critical incident technique (Lasley et al., 1989; Ronan, 1971, 1972), and other various scales to measure teaching quality and teacher qualities (Benor & Leviyof, 1997; Capie et al., 1979a; Copeland & Hewson, 1999; Hall, 1969; Hamdy et al., 2001; Johnson, 1980; Kerwin, 1980; Kotzabassaki et al., 1997; Lauber et al., 2003; Marchant, 1988; Medley, 1966, 1969; Medley & Hill, 1973; Micceri, 1990; Mogan & Knox, 1987; Nehring, 1990; Round, 1999; Smith, 1997; Southwell & Webb, 1972; Texas, 1986). Some tools, for example, measure instructional methods (Capie et al., 1979a; Texas, 1986), subject presentation (Capie et al., 1979a; Johnson, 1980; Marchant, 1988; Texas, 1986), student engagement (Capie et al., 1979a; Johnson, 1980; Marchant, 1988; Southwell & Webb, 1972), material organization (Capie et al., 1979a; Johnson, 1980; Micceri, 1990), student development (Micceri, 1990) and support (Micceri, 1990; Smith, 1997; Southwell & Webb, 1972), interpersonal communication (Micceri, 1990; Smith, 1997), classroom management (Capie et al., 1979a; Johnson, 1980; Micceri, 1990; Southwell & Webb, 1972), and performance

evaluation (Southwell & Webb, 1972) in the classroom, while others can be effectively used in the clinical setting (Benor & Leviyof, 1997; Copeland & Hewson, 1999; Hamdy et al., 2001; Kotzabassaki et al., 1997; Lauber et al., 2003; Medley, 1966, 1969; Medley & Hill, 1973; Mogan & Knox, 1987; Nehring, 1990). Of these, the most relevant instruments for measuring behaviors of effective clinical educators are: The Observation Schedule and Record (OSCaR) (Medley, 1966; Medley & Hill, 1973), The Clinical Instructor Behavior Instrument (CIBI) (Lauber et al., 2003), The Personal Record of School Experience (PROSE) (Medley, 1969), The Clinical Teaching Effectiveness Instrument (Benor & Leviyof, 1997; Copeland & Hewson, 1999; Kotzabassaki et al., 1997; Mogan & Knox, 1987; Nehring, 1990), and The Visual Indicators of Teaching and Learning Success (VITALS) (Hamdy et al., 2001).

Before designing an instrument to measure teaching behavior, researchers must first select target behaviors. The CIBI (Lauber et al., 2003), VITALS (Hamdy et al., 2001), and The Clinical Teaching Effectiveness Instrument (Benor & Leviyof, 1997; Copeland & Hewson, 1999; Kotzabassaki et al., 1997; Mogan & Knox, 1987; Nehring, 1990) have subjects use 5-point Likert scales to rank an inventory of teaching behaviors to determine which they consider most and least effective in the clinical environment. Once identified, instruments like PROSE (Medley, 1969) and OSCaR (Medley, 1966; Medley & Hill, 1973) can be used to objectively record the frequency and/or duration of each chosen behavior (Medley, 1966, 1969). Taken together, these types of instruments can be used to study behavior differences between effective and ineffective teachers (Hamdy

et al., 2001; Medley, 1966), measure changes in teachers during training (Medley, 1966), evaluate clinical instruction, and stimulate teacher self-reflection (Lauber et al., 2003). Since these techniques remove observer subjectivity and record only the presence or absence of observable events and not their implied quality (Medley, 1969), content validity and inter-rater reliability are generally high (Medley & Hill, 1973).

Conclusions

After exploring the literature on athletic training education and related allied health clinical education, their delivery, and assessment, it is clear that little research has been done that specifically addresses behaviors of effective clinical educators in athletic training education. While it is likely that athletic training students and their clinical instructors will identify similar effective teaching behaviors as those found in the traditional medical, physical therapy, nursing, and other equivalent literature, there are few practice domain-specific instruments and observation tools available to use. Therefore, the purpose of this literature review has been to identify observable behaviors that are relevant to athletic training clinical instruction and appropriate assessment techniques for their measurement. Once recognized, these behaviors can be used to create surveys and supervisory observation tools to assess both perceptions about and application of effective teaching behaviors in athletic training clinical education.

CHAPTER III

METHODOLOGY

The present study was designed to create and administer two new supervision instruments that assess the use of effective teacher behaviors in athletic training clinical education. An extensive review of the literature revealed student- and instructor-perceived effective teaching behaviors that consistently fell into four categories: Information, Evaluation, Critical Thinking, and Physical Presence. Specific behaviors from each of these categories were used to create the 20-question Survey of Effective Clinical Educator Behaviors (SECEB) and the Observational Record of Clinical Educator Behaviors (ORCEB) interval recording instrument. Both tools were given to an expert panel for review prior to pilot testing and full-scale administration.

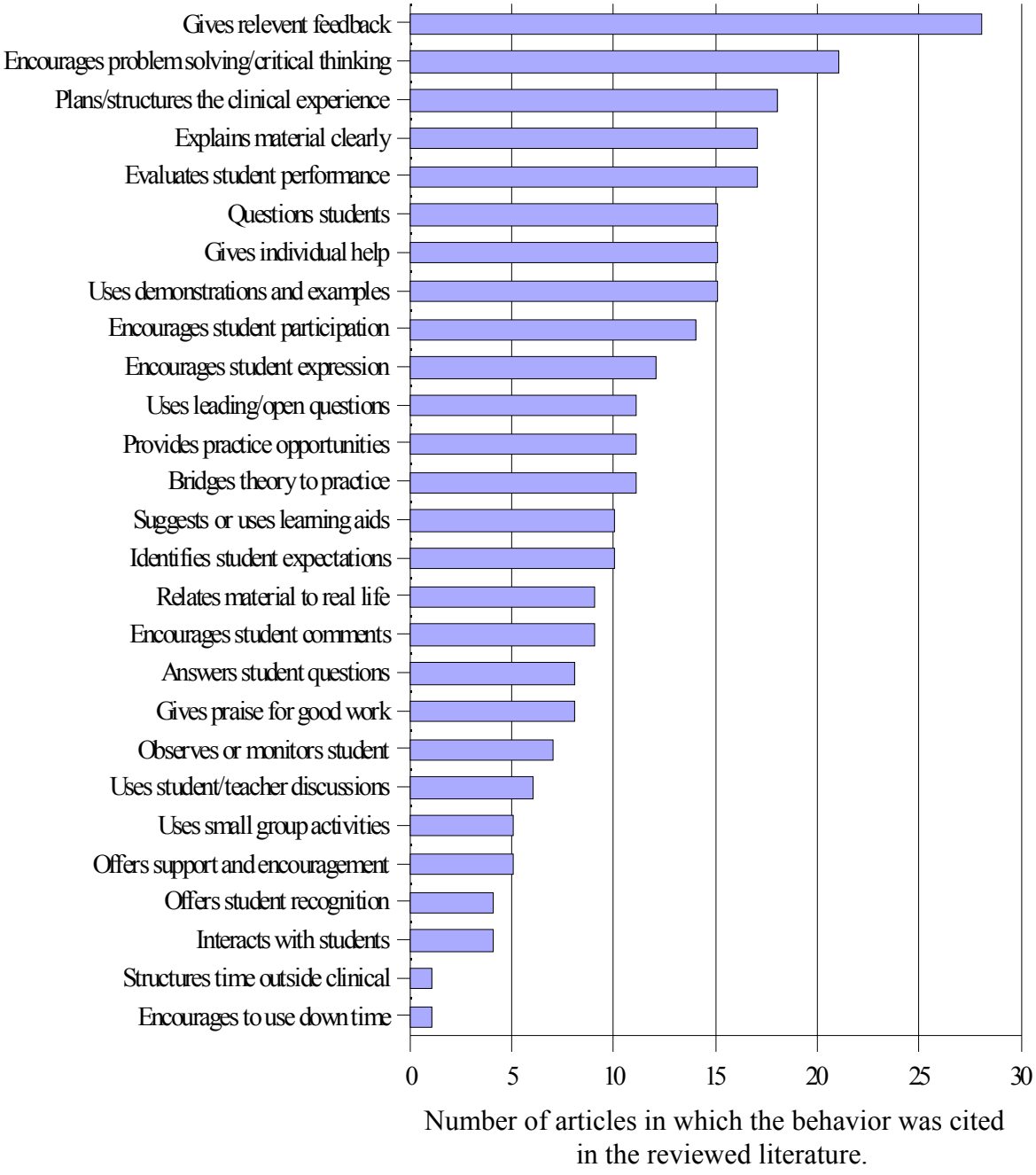
Instrument Development

Instrument development was conducted in three parts. The first part was an extensive review of the allied health literature to determine student-, instructor-, and expert-identified behaviors demonstrated by effective clinical educators and related assessment instruments. First, behaviors identified in each source that could be objectively observed in the clinical teaching setting were put into an Excel spreadsheet that identified both the behavior and the citation. Second, once data from all reviewed articles had been entered,

the comprehensive spreadsheet was condensed to reflect the twenty-eight most frequently cited behaviors and converted into a frequency table (Figure 1). These remaining behaviors were then placed into four categories: 1) Teaching behaviors that give information; 2) Teaching behaviors that evaluate students; 3) Behaviors that promote higher order thinking skills and problem solving; and 4) The clinical educator's physical presence on-site (a complete list of citations by category can be found in Appendix A). Behaviors that required subjective interpretation were intentionally excluded from this study (e.g., "The teacher demonstrates empathy") in favor of those that can be objectively observed (e.g., "The teacher demonstrates a skill for a student"). The literature search also involved identification of assessment methods and tools used for measuring effective teaching behaviors in the clinical setting. While the most common techniques cited use student ratings (Anderson, 1980; Beckman et al., 2004; Mayberry, 1973; Ronan, 1971, 1972; Shrock, 1967) and observational recording of teacher and/or student behavior in the classroom (Benor & Leviyof, 1997; Carlson & Park, 1978; Copeland & Hewson, 1999; Hamdy et al., 2001; Kotzabassaki et al., 1997; Lauber et al., 2003; Medley, 1966, 1969; Medley & Hill, 1973; Mogan & Knox, 1987; Morrison & Hafler, 2000; Nehring, 1990), few published studies combine the two (Lauber et al., 2003).

Figure 1.

Effective Clinical Educator Behaviors.



In the second part of instrument development, the researcher used the four previously established subcategories, cited effective behaviors, and common assessment methods to develop a survey instrument and an interval recording tool. The Survey of Effective Clinical Educator Behaviors (SECEB) (Appendices B and C) was designed to be administered to students and clinical instructors. Both the student and instructor versions of the survey contained twenty identical statements written from a student's perspective that were rated on a five-point Likert-scale form "Never" (1) to "Very Often" (5) indicating how often an instructor demonstrates the behavior in the clinical setting. In addition, students were also asked to rate their current and their perceived ideal instructor whereas clinical instructors rated themselves and an ideal instructor. The Observational Record of Clinical Educator Behaviors (ORCEB) (Appendix D) used the interval recording technique to objectively measure the relative frequency and duration of the aforementioned effective behaviors as demonstrated by clinical educators as they interact with their students and patients. The ORCEB included explicit behavior definitions that supervisors can use to objectively and correctly record the presence or absence of twelve target behaviors reflecting the four categories described earlier. Both the frequency and duration of each behavior was recorded as a proportion of total observation time. Because teachers tend to change activity every 4.5 seconds (Anderson, 1980), the observer recorded the dominant behavior that occurred during each consecutive five-second interval for a thirty minute observation session. Behavior frequency and duration were then calculated by tallying total occurrences, occurrences per category, and number

of intervals to determine their proportion per total time (behavior / time). Behavior subcategories and the corresponding SECEB survey items and ORCEB behavior definitions can be found in Tables 2, 3, 4, and 5.

Table 2.
Teacher behaviors that give information (Information Subcategory).

SECEB Item	ORCEB Item	Statement
1	E	Gives an explanation.
2		Uses verbal examples.
3	D	Demonstrates skills.
4		Bridges classroom knowledge to the clinical site/patient care.
7	A	Refers students to educational aids (books, posters, etc.).
20	E	Responds to questions honestly and intelligently.

Note. 1) SECEB Item refers to the number of the specific Survey of Effective Clinical Educator Behaviors statement; 2) ORCEB Item refers to the specific Observational Record of Clinical Educator Behaviors behavior definition.

Table 3.
Teacher behaviors that evaluate students (Evaluation Subcategory).

SECEB Item	ORCEB Item	Statement
9	P	Offers general praise.
10	C/F	Gives constructive feedback.
11		Gives fair performance evaluations.
12	C/F	Discusses evaluations and opportunities for improvement.

Note. 1) SECEB Item refers to the number of the specific Survey of Effective Clinical Educator Behaviors statement; 2) ORCEB Item refers to the specific Observational Record of Clinical Educator Behaviors behavior definition.

Table 4.
Teacher behaviors that promote higher order thinking (Thinking Subcategory).

SECEB Item	ORCEB Item	Statement
5		Provides practice time and materials.
6		Encourages participation in patient care up to ability.
13	L	Asks closed-type, low-level questions (who, what, when, where).
14	H	Asks open-type, high-level questions (how, why).
16		Participates in or leads discussion.

Note. 1) SECEB Item refers to the number of the specific Survey of Effective Clinical Educator Behaviors statement; 2) ORCEB Item refers to the specific Observational Record of Clinical Educator Behaviors behavior definition.

Table 5.
The teacher's physical presence on-site (Presence Subcategory).

SECEB Item	ORCEB Item	Statement
8	O	Observes or monitors skill practice and patient interactions.
15		Plans or structures the clinical experience.
17		Refrains from engaging in conversations unrelated to clinical education.
18	O	Has constant visual and auditory contact.
19		Structures slow time in the clinical setting to promote learning.
	T[1]	Teacher provides patient care *without* student interaction.
	X[1]	Engages in behaviors unrelated to clinical education.

[1]These behaviors are considered to have a negative impact on clinical learning.
Note. 1) SECEB Item refers to the number of the specific Survey of Effective Clinical Educator Behaviors statement; 2) ORCEB Item refers to the specific Observational Record of Clinical Educator Behaviors behavior definition.

In the third and final part of instrument development, both the SECEB and ORCEB were given to an expert panel of seven Athletic Training Education Program Directors and Clinical Coordinators during the fall semester 2004 to assess general readability, clarity, content validity, and to refine behavior statements and definitions to ensure that they accurately reflect behaviors that are both important for effective clinical educators and can be objectively observed or assessed. These experts were asked to rate each survey response statement and interval coding behavior definition on a five-point Likert scale for both objectivity in observation and relevance; specifically, "Can the behavior be objectively observed," and "Is the behavior relevant to clinical education?" All survey

items and behavior definitions were intended to be written such that a high score indicated a high level of objectivity and/or relevance. However, the ORCEB behavior definition for X, "The clinical educator engages in unrelated behaviors–e.g., unrelated conversations, works in their office, etc.," was inconsistently worded compared to the other statements, causing some ambiguity in scores for this item (M=2.86; SD=1.77) and its related physical presence subcategory (M=3.57; SD=.98). The item should have been worded, "The clinical educator refrains from engaging in unrelated behaviors–e.g., unrelated conversations, works in their office, etc.," for consistency in overall scoring. Average total and subcategory scores were calculated for each reviewer and for the panel as a group; individual item average scores were also calculated across reviewers. Excluding the ambiguous X definition, all item, total, and subcategory mean scores ranged from 4.34 to 5.00 for both objectivity in observation and relevance to clinical education (Tables 6, 7, 8, and 9). Of the seven reviewers, only panelist #1 reported total or subcategory scores greater than one standard deviation from the mean (Tables 6, 8, and 9). Suggestions for improvements from all reviewers were reviewed for similarities and incorporated into the revised version of the ORCEB to be used during final testing. During this same time frame, the SECEB was pilot tested with a convenience sample of students for readability, ease of use, and to determine internal consistency and test-retest reliability.

Table 6.
SECEB expert panel content validity score means for objective observation.

Panelist	Total Score	Information Subcategory	Thinking Subcategory	Presence Subcategory	Evaluation Subcategory
1	3.70 [1]	4.80	3.33 [1]	4.00	3.00 [1]
2	4.95	5.00	5.00	4.80	5.00
3	4.50	4.80	4.67	4.20	4.25
4	4.80	5.00	4.83	4.60	4.75
5	4.60	4.80	4.50	4.40	5.00
6	4.50	4.80	4.67	4.20	4.25
7	4.50	4.80	4.67	4.20	4.25
Group	4.51 ± .40	4.86 ± .10	4.524 ± .55	4.342 ± .28	4.36 ± .69

[1]Outlier more than 1 standard deviation from the mean.

Table 7.
SECEB expert panel content validity score means for relevance to clinical education.

Panelist	Total Score	Information Subcategory	Thinking Subcategory	Presence Subcategory	Evaluation Subcategory
1	4.75	5.00	4.83	4.60	4.50
2	4.80	5.00	4.83	4.40	5.00
3	4.60	5.00	4.67	4.40	4.25
4	5.00	5.00	5.00	5.00	5.00
5	4.85	5.00	4.83	4.80	4.75
6	4.60	5.00	4.67	4.40	4.25
7	4.60	5.00	4.67	4.40	4.25
Group	4.74 ± .15	5.00 ± .00	4.79 ± .13	4.57 ± .24	4.57 ± .35

Table 8.
ORCEB expert panel content validity score means for objective observation.

Panelist	Total Score	Information Subcategory	Thinking Subcategory	Presence Subcategory	Evaluation Subcategory
1	3.27[1]	3.33[1]	5.00	1.67[2]	3.67[1]
2	4.73	5.00	4.50	5.00	4.33
3	4.82	4.67	5.00	5.00	4.67
4	5.00	5.00	5.00	5.00	5.00
5	5.00	5.00	5.00	5.00	5.00
6	4.73	5.00	4.50	5.00	4.33
7	4.64	5.00	4.00	4.67	4.67
Group	4.60 ± .60	4.71 ± .62	4.71 ± .39	4.48 ± 1.25[3]	4.52 ± .47

[1]Outlier more than 1 standard deviation from the mean.
[2]Outlier more than 2 standard deviations from the mean.
[3]Mean = 4.61; SD = .140 when panelist #1 score is removed from calculation.

Table 9.
ORCEB expert panel content validity score means for relevance to clinical education.

Panelist	Total Score	Information Subcategory	Thinking Subcategory	Presence Subcategory	Evaluation Subcategory
1	4.18	4.33[1]	5.00	4.00	3.67[1]
2	4.18	5.00	5.00	2.67	4.33
3	4.73	4.67	5.00	4.67	4.67
4	5.00	5.00	5.00	5.00	5.00
5	4.27	4.67	5.00	3.00	4.67
6	4.18	5.00	5.00	2.67	4.33
7	4.27	4.67	5.00	3.00	4.67
Group	4.40 ± .33	4.76 ± .25	5.00 ± .00	3.57 ± .98[2]	4.48 ± .42

[1]Outlier more than 1 standard deviation from the mean.
[2]Mean = 4.56; SD = 0.64 when item for ambiguous X definition removed.

Pilot Testing

Pilot testing of the SECEB was conducted during the fall semester 2004 to determine test-retest reliability. The researcher administered the Survey to a convenience sample of undergraduate athletic training students (n=23) two weeks apart. They were asked to rate both their current and an ideal clinical instructor. Average total and subcategory scores were calculated for each student and for the sample as a group. Given the small sample size, observed internal consistency when rating a current clinical instructor was acceptable across all items ("=.87), for the higher order thinking ("=.76), evaluation ("=.74), and information subcategories ("=.83), but less so for the physical presence subcategory ("=.56). While consistency when rating an ideal clinical instructor was

also acceptable across all items ("=.76), individual subcategory scores failed to show internal consistency. While correlations of pre- and post-test scores revealed considerable variability in reliability by item, total score, and individual subcategory (Table 10), paired t-tests showed no significant differences between the pre- and post-scores (Table 11).

The pilot data were also explored for group differences; a 1-way ANOVA showed no significant difference among clinical instructors ($F_{(4, 18)}$=.967, p=.45). Student scores for each of these individual instructors were also compared to determine inter-rater consistency (instructor 1 "=.804, n=6; instructor 2 "=.881, n=5; instructor 3 "=.857, n=3; instructor 4 "=.841, n=6; instructor 5 "=.961, n=3). However, a paired t-test revealed significant differences between students' rating of their current and ideal clinical instructor for average score and all four subcategories (Table 12).

Once these new data were analyzed, items with the weakest test-retest correlations from both the current and ideal clinical instructor scales (5, 8, 9, 13, 14) and those that showed poor internal consistency overall (2, 10) and on the physical presence subcategory (8, 17, 19), were rewritten to improve readability and clarity prior to administration in the present study (Appendix E).

Table 10.
Correlations for SECEB item statements by subcategory: Test-retest reliability (n=23).

Item		Current Pre-Test (M, SD)	Current Post-Test (M, SD)	Current Pre-/Post-Test (r)	Ideal Pre-Test (M, SD)	Ideal Post-Test (M, SD)	Ideal Pre-/Post-Test (r)
Information		4.13, 0.69	4.30, 0.63	.83***	4.87, 0.34	4.78, 0.42	.42*
	2	4.22, 0.67	4.22, 0.67	.70***	4.83, 0.39	4.78, 0.42	.59**
	3	3.83, 0.98	4.00, 0.88	.62**	4.65, 0.49	4.70, 0.47	.51*
	4	3.65, 0.71	4.00, 0.77	.64***	4.61, 0.58	4.65, 0.65	.11
	7	2.78, 0.90	3.09, 0.95	.13	4.09, 0.79	4.13, 0.76	.44*
	20	4.61, 0.58	4.50, 0.67	.54**	4.91, 0.29	4.75, 0.38	.26
	Average	3.80, 0.45	3.93, 0.52	.86**	4.77, 0.26	4.75, 0.38	.73***
Evaluation	9	4.09, 0.95	4.43, 0.66	.37	4.78, 0.42	4.78, 0.42	.49
	10	4.35, 0.78	4.35, 0.71	.84***	4.83, 0.39	4.65, 0.49	.34
	11	4.17, 0.78	4.35, 0.65	.42*	4.65, 0.57	4.61, 0.58	-.02
	12	4.17, 0.78	3.97, 0.67	.47*	4.52, 0.67	4.30, 0.63	.47*
	Average	4.20, 0.62	4.26, 0.58	.74**	4.70, 0.36	4.59, 0.40	.35
Thinking	5	3.83, 0.83	3.90, 1.01	.19	4.61, 0.50	4.70, 0.47	.05
	6	4.61, 0.66	4.48, 0.67	.45*	5.00, 0.00	4.83, 0.39	*a*
	13	3.39, 0.99	3.65, 0.83	.01	4.43, 0.59	4.34, 0.57	.21
	14	3.30, 1.06	3.52, 0.90	.26	4.35, 0.65	4.39, 0.72	.09
	16	3.13, 0.76	3.36, 0.79	.46*	4.22, 0.60	4.18, 0.66	.48*
	Average	3.51, 0.59	3.67, 0.64	.22	4.45, 0.33	4.34, 0.47	.37
Presence	8	4.48, 0.51	4.26, 0.54	.35	4.57, 0.51	4.61, 0.50	.20
	15	3.52, 1.16	3.82, 0.96	.76***	4.41, 0.50	4.32, 0.65	.60**
	17	2.57, 0.84	2.86, 0.83	.52*	3.17, 1.23	3.55, 1.01	.47*
	18	4.09, 0.79	3.91, 0.68	.62**	4.61, 0.50	4.45, 0.67	.58**
	19	3.17, 0.98	3.55, 0.96	.22	4.09, 0.79	4.41, 0.67	.44*
	Average	3.66, 0.52	3.70, 0.61	.65**	4.16, 0.46	4.30, 0.52	.44*

[a]This item has no variability.
*p<.05. **p<.01. ***p<.001.

Table 11.
Paired samples t-test for SECEB pilot test-retest reliability (df = 22).

Instructor	Subcategory	M	SD	*t*	*p*
Current	Total Score	-.124	.44	-1.37	.186
	Information	-.100	.31	-1.57	.131
	Evaluation	-.065	.43	-.720	.479
	Thinking	-.165	.77	-1.03	.315
	Presence	-.033	.48	-.33	.746
Ideal	Total Score	.004	.31	.056	.956
	Information	.026	.26	.49	.633
	Evaluation	.109	.43	1.21	.240
	Thinking	.014	.47	.15	.883
	Presence	-.133	.52	-1.22	.235

Table 12.
Paired samples t-test comparing current to ideal instructor pilot SECEB scores (df = 22).

Subcategory	M	SD	*t*	*p* (2-tailed)
Total Score	-.705	.45	-7.54	.001
Information	-.687	.48	-6.89	.001
Evaluation	-.500	.52	-4.59	.001
Thinking	-.942	.56	-8.12	.001
Presence	-.500	.66	-3.64	.001

Ethical Considerations

Ethical considerations for this study included privacy/confidentiality protection, subjects' informed consent and right to refuse, and Human Subjects Committee/IRB approval (Appendix F). The professional research guidelines set forth by the University of North Carolina at Greensboro Institutional Review Board were met prior to study commencement and maintained throughout research, data analysis, and future publication.

Subjects

In the current study, the researcher used the revised instruments to further refine the measures and investigate clinical instructor effectiveness. Students (n=145) enrolled in accredited athletic training education programs completed the SECEB to obtain their perceptions of effective teaching behaviors used by both their current and an ideal clinical instructor. These students' clinical instructors (n=41) also completed the SECEB to assess their perceived use of the effective behaviors and that of an ideal instructor. The ORCEB was also used to code a small sample of clinical instructors who currently supervise students to determine the frequency and duration of their target behaviors. These students (n=19) and instructors (n=4) also reported perceived percentage of instructor time spent using behaviors from each of the four observation categories (Appendix G).

Procedures

Before the first phase of data collection began, all Athletic Training Education Program Directors (n=17) in North Carolina were solicited for subject recruitment via email (Appendix H). Directors who agreed to participate (n=12) were mailed copies of both the student and clinical instructor versions of the SECEB, administration script (Appendix I), and informed consent forms (Appendix J). Program Directors as the participating schools were instructed to administer surveys in a group setting to ensure consistency and prevent subject collaboration. One signed copy of the consent form and all surveys were returned to the investigator in a postage-paid self-addressed envelope; any accidentally returned information that could be used to identify programs or individuals was removed prior to data entry. With the exception of demographic information, no other identifying characteristics were retained. Items on the SECEB were scored using their Likert-scale value (1-5), which was used to calculate mean overall score and subcategory scores for each individual for both current and ideal clinical instructor behavior ratings.

The second phase of data collection involved observation of clinical instructors in the practice setting to code their demonstrated teaching behaviors using the ORCEB. All recruited programs were asked to allow observations and date collection; however, many schools and individual clinical instructors were uncomfortable with an outside observer coding their behaviors. Therefore, the researcher chose to only observe clinical instructors at her home institution. Prior to official data collection sessions, the

researcher randomly observed clinical instructors interacting with students and patients in the athletic training room six times (30-minutes each session for a total of 3 hours) to further refine the ORCEB behavior definitions (the final behavior definitions are found in Appendix D). There were no data collected during these pre-observation sessions.

Each instructor was officially observed in the athletic training room five times for thirty minutes sessions beginning every half hour from 1:00 p.m. to 3:30 p.m. over the course of one month. Using the ORCEB and the interval recording technique, the researcher recorded which of the twelve target teaching behaviors occurred during each consecutive five second interval. For consistency in timing, intervals were measured using a talking watch intended for use with the blind that verbally indicated each passing second. If two behaviors occurred in the same interval, the one that dominated was recorded. Each thirty minute session yielded 360 observation/data points. At the end of each recording session, the researcher made brief field notes to describe the session content and interactions and tallied the frequency of occurrences in each behavior category to calculate the proportion of total observed behaviors and the percentage of actual time spent. In addition, two random coding sessions were videotaped and analyzed independently by both the researcher and the subjects' program director twice in a two-week period. Thus, ORCEB reliability was determined using simple behavior frequency correlations between (inter-rater) and within (intra-rater) raters. Eighty-five percent agreement between and within coders was considered objective and an acceptable level of reliability. When all coding sessions were complete, both the students

currently assigned to the observed clinical instructors and the instructors themselves estimated the percentage of time spent by the instructor in each of the observed behavior categories. This information was compared to the ORCEB findings to determine accuracy between intentions and actions, and against the SECEB data to determine accuracy between instructor and student perceptions.

Data Analysis

Final data analysis included descriptive analyses for all demographic information; SECEB items, subcategories, and total score for both current and ideal clinical instructors as rated by students and clinical instructors; and ORCEB item and subcategory time percentages. Alpha internal consistency was determined for SECEB individual items, subcategories, and item-total correlations for both current and ideal clinical instructors as rated by students and clinical instructors. Reliability analyses for ORCEB inter-rater and intra-rater reliability was determined using simple behavior frequency correlations between and within raters. Data comparisons between student and instructor ratings were also determined for: 1) Students' perceptions of their current instructor to an ideal instructor; 2) Instructors' perceptions of themselves to an ideal instructor; 3) Group differences between gender, ethnicity, and programs; 4) Comparison of current and ideal instructor scores for both students and instructors; 5) Comparison of instructors' use of behaviors (percent time); 6) Comparison students' and instructors' estimated behavior with ORCEB observed behaviors; and 7) Determination of instructor rankings.

CHAPTER IV

RESULTS

The present study was designed to assess the use of effective teacher behaviors in athletic training clinical education. Research involved development and use of: 1) the 20-question Survey of Effective Clinical Educator Behaviors (SECEB) to assess student and instructor perceptions of clinical instructor use of effective teaching behaviors; and 2) the Observational Record of Clinical Educator Behaviors (ORCEB) interval recording instrument to objectively measure instructor's demonstrated behaviors in the clinical setting. SECEB item statements were grouped into four subcategories of effective teaching behaviors (Information, Evaluation, Critical Thinking, and Physical Presence), and were ranked on a scale from 'Never (1)' to 'Very Often (5)'. In addition to the survey data, four approved clinical instructors (ACIs) were observed using the ORCEB as they interacted with patients and students for five 30-minute sessions.

Phase I

This study was conducted in NATA District 3, which has an estimated population of 300 students and clinical educators at 17 CAAHEP-accredited athletic training education programs. The sample size required to be reliably representative of the population for comparison purposes (at a 95% confidence interval) was estimated at n=169. Of the

twelve programs that initially agreed to participate, ten (83%) returned usable SECEB subject data (n=186), exceeding the power requirements. These ten programs averaged 6.51±4.01 students and 6.57±3.39 clinical instructors, creating a sample composed of 145 current students (20.85±2.05 years old) who have been enrolled in their programs for 3.70±1.86 semesters and 41 educators (30.05±6.43 years old) who have been employed by their programs for 8.89±9.20 semesters. While the sample of clinical instructors is relatively evenly distributed between males and females and approximates the NATA's statistics for certified members (Membership, 2004), female student subjects outnumber their male counterparts 3:1. Similarly, the overall sample reflects the national trend for Caucasians to be disproportionately represented (Table 13).

Table 13.
SECEB demographic frequencies and sample percentages as compared to national data.

		National Average		Present Study		
		Students[1]	NATA[2]	Students	Educators	Total
Gender	Male	36%	51%	35 (24%)	17 (41%)	52 (28%)
	Female	64%	49%	106 (73%)	24 (59%)	130 (70%)
	Undeclared			4 (3%)	0	4 (2%)
Ethnicity	Caucasian	88%	86%	119 (82%)	37 (90%)	156 (84%)
	African Amer.	n/a	2%	18 (12%)	1 (2%)	19 (10%)
	Asian	n/a	3%	3 (3%)	0	3 (2%)
	Hisp./Latino	n/a	3%	1 (0.7%)	1 (2%)	2 (1%)
	Other	n/a	1%	1 (0.7)	1 (2%)	2 (1%)
	Prefer not to give	n/a	5%	3 (2%)	1 (2%)	4 (2%)
Class	Freshmen			10 (6%)		
	Sophomore			40 (28%)		
	Junior			41 (28%)		
	Senior			54 (37%)		
Role in the ATEP	Program Director				6 (14%)	
	Clinical Coordinator				3 (7%)	
	Faculty				8 (20%)	
	Staff ATC				14 (34%)	
	GA ATC				8 (20%)	
	Other				2 (5%)	

[1]Leone, Wagner, Gray (n.d.).
[2]NATA Year-End Membership Statistics for all members (2004).

Completed SECEB survey responses were entered into the Statistical Package for the Social Sciences (Version 13.0, SPSS Inc., Chicago, IL) for data analysis. Cronbach's Alpha for internal consistency revealed item consistency for both student-perceived current (" =.904) and ideal instructor (" =.864) total scores and instructor-perceived self (" =.850) and ideal instructor (" =.814) scores. However, the instructor group's subcategory scores were less consistent, probably owing to the smaller sample size (Table14).

Table 14.
Cronbach's alpha with means and variances for SECEB internal consistency.

		Students			Clinical Educators		
	Subcategory	"	M	S^2	"	M	S^2
Current	Total Score	.904	4.11	.12	.850	3.91	.19
	Information	.770	4.23	.09	.632	4.03	.11
	Evaluation	.781	4.27	.03	.633	4.13	.03
	Thinking	.650	4.00	.17	.600	3.76	.25
	Presence	.759	3.87	.11	.475	3.78	.42
Ideal	Total Score	.864	4.56	.12	.814	4.59	.15
	Information	.676	4.74	.04	.600	4.75	.04
	Evaluation	.683	4.75	.02	.740	4.79	.00[a]
	Thinking	.521	4.44	.20	.476	4.38	.28
	Presence	.733	4.31	.14	.399	4.41	.20

[a]Actual variance was .004.

The SECEB questions, subcategories, and total score were then compared across groups to identify trends and differences (Tables 15 and 16). Analysis revealed that clinical instructors consistently rated themselves lower than their students on total score ($F_{(1, 184)}$=4.16, p<.05, 0^2=.02), the Information subcategory ($F_{(1, 184)}$=5.64, p<.05, 0^2=.03), and the Thinking subcategory ($F_{(1, 184)}$=5.66, p<.05, 0^2=.03). Student and instructor ratings were not significantly different on the other subcategories. When student scores were further examined by academic class, freshmen were found to rate their current clinical instructor higher than their peers on total score and all subcategories except Evaluation and Information, with seniors rating them the lowest. On the other hand, there were no student/instructor, academic class, or role in the athletic training education program (ATEP) differences in ideal total and subcategory scores (Table 17). Both student and instructor SECEB scores were also compared across gender and ethnic groups, with no differences found (Table 18).

The results of two-tailed paired sample t-tests between current and ideal scores revealed that students rate their current clinical instructor (M=4.09, SD=.52) significantly lower than an ideal instructor (M=4.56, SD=.33) on all items, all subcategories, and total score (t(143) = -13.07, p<.001), and that educators rated themselves equally poorly (M=3.93, SD=.36) when compared to their image of an ideal clinical instructor (M=4.56, SD=.24; t(39) = -10.01, p<.001).

Table 15.

SECEB item means and standard deviations for a *current* clinical instructor.

		Students		Instructors		Total	
Subcategory	SECEB Item	M	SD	M	SD	M	SD
Information	1 (Explanation)	4.24	.640	4.00	.453	4.19	.611
	2 (Examples)	4.28	.773	4.24	.538	4.27	.726
	3 (Demonstrates)	4.28	.745	3.90	.664	4.20	.743
	4 (Bridge)	4.19	.872	4.15	.823	4.18	.859
	7 (Aids)	3.80	.954	3.51	.810	3.73	.929
	20 (Answers)	4.73	.616	4.54	.552	4.69	.607
	Average	4.25	.526	4.06	.388	4.21	.504
Evaluation	9 (Praise)	4.08	.950	4.15	.802	4.09	.918
	10 (Feedback)	4.28	.889	4.00	.716	4.22	.860
	11 (Evaluation)	4.49	.679	4.34	.617	4.45	.667
	12 (Improvement)	4.22	.770	3.98	.724	4.16	.765
	Average	4.26	.643	4.11	.501	4.23	.616
Thinking	5 (Practice)	4.24	.830	4.00	.837	4.18	.835
	6 (Patient Care)	4.46	.810	4.46	.552	4.46	.759
	13 (Ask-Simple)	3.41	.929	3.20	.641	3.36	.877
	14 (Ask-Complex)	4.07	.828	3.76	.830	4.00	.836
	16 (Discussions)	3.78	1.01	3.41	.921	3.70	1.00
	Average	3.99	.580	3.77	.477	3.94	.565
Presence	8 (Watches)	4.21	.855	4.53	.554	4.28	.808
	15 (Plans)	3.78	.990	3.27	.742	3.67	.963
	17 (Unrelated)	3.38	.910	3.18	.813	3.33	.892
	18 (Supervises)	4.14	.939	4.39	.586	4.20	.878
	19 (Learning)	3.81	.949	3.48	.816	3.74	.930
	Average	3.87	.674	3.77	.396	3.85	.565
	Total Score	4.09	.519	3.93	.358	4.05	.492

Table 16.

SECEB item means and standard deviations for an *ideal* clinical instructor.

		Students		Instructors		Total	
Subcategory	SECEB Item	M	SD	M	SD	M	SD
Information	1 (Explanation)	4.79	.411	4.84	.437	4.80	.416
	2 (Examples)	4.78	.445	4.78	.423	4.78	.439
	3 (Demonstrates)	4.83	.414	4.70	.516	4.80	.440
	4 (Bridge)	4.78	.445	4.88	.335	4.80	.424
	7 (Aids)	4.37	.677	4.40	.672	4.38	.674
	20 (Answers)	4.91	.289	4.90	.304	4.91	.292
	Average	4.74	.285	4.75	.261	4.74	.279
Evaluation	9 (Praise)	4.57	.686	4.72	.456	4.60	.646
	10 (Feedback)	4.84	.385	4.75	.439	4.82	.398
	11 (Evaluation)	4.80	.435	4.85	.362	4.81	.419
	12 (Improvement)	4.77	.472	4.78	.423	4.77	.460
	Average	4.74	.366	4.77	.327	4.75	.357
Thinking	5 (Practice)	4.76	.462	4.63	.586	4.73	.493
	6 (Patient Care)	4.86	.353	4.98	.158	4.88	.325
	13 (Ask-Simple)	3.73	1.13	3.50	.877	3.68	1.08
	14 (Ask-Complex)	4.45	.625	4.40	.632	4.44	.626
	16 (Discussions)	4.40	.715	4.30	.648	4.38	.701
	Average	4.44	.422	4.36	.348	4.42	.408
Presence	8 (Watches)	4.60	.594	4.90	.307	4.67	.558
	15 (Plans)	4.42	.727	4.20	.791	4.37	.745
	17 (Unrelated)	3.65	.954	3.70	.723	3.66	.907
	18 (Supervises)	4.44	.758	4.69	.521	4.49	.720
	19 (Learning)	4.42	.678	4.45	.597	4.43	.659
	Average	4.32	.525	4.38	.320	4.33	.488
	Total Score	4.56	.330	4.56	.244	4.56	.313

Table 17.
ANOVA on SECEB scores by academic class and role in the athletic training education program (ATEP).

		Freshmen vs. Upperclassmen				PD/CC[1] vs. All Others			
Subcategory	Score	F	df_b/df_w	*p*	0^2	F	df_b/df_w	*p*	0^2
Current	Information	2.07	1, 141	.15	.014	1.89	1, 40	.18	.045
	Evaluation	2.35	1, 141	.13	.016	.335	1, 40	.57	.008
	Thinking	7.31	1, 141	.008	.049	.381	1, 40	.54	.009
	Presence	9.94	1, 141	.002	.066	.654	1, 40	.42	.016
	Total	6.79	1, 141	.010	.046	.384	1, 40	.54	.010
Ideal	Information	.562	1, 142	.46	.004	.031	1, 39	.86	.001
	Evaluation	.948	1, 142	.33	.007	2.28	1, 39	.14	.055
	Thinking	2.18	1, 142	.14	.015	.035	1, 39	.85	.001
	Presence	3.28	1, 142	.07	.023	.040	1, 39	.84	.001
	Total	2.56	1, 142	.11	.018	.035	1, 39	.85	.001

[1]PD/CC refers to individuals who identified themselves as program directors or clinical coordinators; the remaining individuals were other faculty, staff athletic trainers, graduate assistants, and other members of the ATEP.

Table 18.
ANOVA on SECEB scores by gender and ethnicity (all subjects).

		Male vs. Female				Caucasian vs. All Others[1]			
Subcategory	Score	F	df_b/df_w	*p*	0^2	F	df_b/df_w	*p*	0^2
Current	Information	.041	1, 180	.84	.000	0.80	1, 182	.37	.004
	Evaluation	.021	1, 180	.89	.000	2.95	1, 182	.09	.016
	Thinking	.073	1, 180	.79	.000	1.25	1, 182	.27	.007
	Presence	.044	1, 180	.84	.000	.006	1, 182	.94	.000
	Total	.006	1, 180	.94	.000	0.98	1, 182	.32	.005
Ideal	Information	.439	1, 180	.51	.002	.029	1, 182	.86	.000
	Evaluation	.212	1, 180	.65	.001	2.76	1, 182	.10	.015
	Thinking	.426	1, 180	.51	.002	.123	1, 182	.73	.001
	Presence	.599	1, 180	.44	.003	.039	1, 182	.84	.000
	Total	.027	1, 180	.87	.000	.369	1, 182	.54	.002

[1]Individuals who did not identify themselves as Caucasian were compared to those who did.

Phase II

The second phase of data collection was conducted at one institution, and involved observational data collected using the ORCEB as well as student and instructor SECEB scores. Four clinical instructors volunteered to be observed and their use of effective teaching behaviors was measured. These data were used to calculated the percentage of time spent in each of five behavior subcategories (Information, Evaluation, Thinking, Positive Presence, and Negative Presence). To ascertain the instrument's reliability, both the researcher and a fellow member of the faculty independently coded two individual observation sessions from a videotape twice in a two-week period. To accurately reflect the instrument's intended use in the field, the videotape was treated as a 'live' coding session, and was not stopped once begun. While the researcher had previous experience using interval recording devices, the second faculty person did not. This difference in familiarity and practice did not affect the instrument's reliability, as both inter- and intra-rater reliability determined through simple correlations of ORCEB behavior frequencies, were excellent (r=.964 and r=.974, respectively) (Table 19).

Table 19.
ORCEB reliability correlations within and between observers (n=2).

	Intra-rater Reliability[1]		Inter-rater Reliability[2]	
Subject	Observer #1	Observer #2	Session #1	Session #2
A	.931	.971	.989	.882
B	.998	.997	.989	.997
	Average .974		Average .964	

[1]Calculated as the correlation between two separate coding sessions of the same subject by the same observer (e.g. Observer 1 of Subject A Session 1: Observer 1 Subject A Session 2).
[2]Calculated as the correlation between observers coding of the same subject at same session (i.e. Observer 1 of Subject A: Observer 2 of Subject A).

Each of the four participating clinical instructors was observed and their teaching behaviors coded for five 30-minute sessions, yielding 1,800 data points (360 per session) for each individual. The resulting behavior frequencies were entered into an Excel spreadsheet in two-minute intervals for data comparison. In addition to the group statistics reported here, profiles were created for each individual instructor, and can be found in Appendix K. On average, instructors spent 67% of each 30-minute session, when both students and patients were present, on behaviors that are classified as having a negative impact on clinical education (Negative Presence subcategory). Of this time, 32% was devoted to giving patient care without student interaction, and 35% in behaviors unrelated to education (e.g., personal conversations). However, these numbers may be misleading, as Instructors A and C spent two-thirds less time than their colleagues engaged in extraneous activities (15% and 17%, respectively compared to an average of 53% for the remaining two instructors). Of the remaining time, 24% was spent in activities related to learning, and 9% was down-time (no patients or students present).

Upon further inspection of the instructors' use of teaching/learning behaviors, 11% of their time was used to give students directions, examples, demonstrations, or to refer to reference materials (Information subcategory), 10% in active observation of student skill practice and patient interactions (Positive Physical Presence subcategory), 2% in promoting critical thinking and peer interactions (Thinking subcategory), and less than 1% for giving feedback or praise (Evaluation subcategory). Surprisingly, the least employed teaching behaviors were use of demonstrations, educational aids, corrective feedback, general feedback, praise, and both high- and low-level questions (Table 20).

Table 20.
Percent teaching time as measured with the ORCEB.

Subcategory	Behavior	Instructor				Group Average
		A	B	C	D	
Information	Explains	13%	2%	6%	21%	10%
	Demonstrates	1%	0	0.3%	0.1%	0.3%
	Uses Aids	0	0	0	2%	0.4%
	Total	15%	2%	6%	23%	11%
Evaluation	Corrective[a]	2%	0.7%	0.5%	0.3%	0.8%
	Positive[b]	0.1%	0.1%	0	0	0.04%
	Praise	0.1%	0.1%	0	0	0.04%
	Total	2%	0.8%	0.5%	0.3%	1%
Thinking	Low-Level[c]	0.8%	0	0.1%	0.2%	0.3%
	High-Level[d]	0	0	0	0	0
	Peer Coaching	0	5%	0	0.4%	1%
	Total	0.8%	5%	0.1%	0.6%	2%
Positive Presence	Observes	22%	3%	5%	11%	10%
Negative Presence	Patient Care	47%	6%	57%	19%	32%
	Unrelated	15%	61%	17%	47%	35%
	Total	61%	68%	74%	66%	67%

[a]Corrective Feedback.
[b]Positive Feedback.
[c]Low-level Question.
[d]High-Level Question.

Based on these observations, instructors were ranked on each of the five ORCEB subcategories; with the exception of the Negative Presence subcategory which was scored inversely, they were ranked in descending order based on percent time engaged in the target behaviors (Table 21). The resulting rank order (A, D, B, and C) was compared to that created by the student SECEB scores previously reported. Of these subjects, students clearly ranked Instructor A first on both SECEB total score and the Information and Thinking subcategories (Table 22). Instructor C, on the other hand, is ranked fourth by students on total score and all subcategories. Interestingly, Instructor C had the highest self-ranking, while Instructor A modestly claimed the lowest rank. Likewise, Instructors B and D's self-perceptions failed to accurately match the student-generated SECEB ranking. ORCEB and student SECEB rankings are identical.

Table 21.
Instructor rankings based on observed ORCEB subcategory scores (percent observed time).

Rank	Information Subcategory	Evaluation Subcategory	Thinking Subcategory	(+) Presence Subcategory	(-) Presence Subcategory
1	D (23%)	A (2%)	B (5%)	A (22%)	A (61%)
2	A (15%)	B (0.8%)	A (0.8%)	D (11%)	D (66%)
3	C (6%)	C (0.5%)	D (0.6%)	C (5%)	B (68%)
4	B (2%)	D (0.3%)	C (0.1%)	B (3%)	C (74%)

Note. Overall rankings place the observed instructors in the following order: A, D, B, and C.

Table 22.
Student- and self-perceived instructor rankings based on SECEB subcategory scores.

Rank		Subcategory I	Subcategory E	Subcategory Q	Subcategory P
Student	1	A (4.56)	D (4.56)	A (4.17)	D (4.05)
	2	B (4.50)	B (4.42)	B (4.13)	A (3.97)
	3	D (4.25)	A (4.40)	D (3.85)	B (3.60)
	4	C (3.83)	C (3.96)	C (3.47)	C (3.13)
Self	1	C (4.17)	C (4.25)	C (4.60)	C (4.00)
	2	D (4.00)	B (4.00)	B (3.40)	B (4.40)
	3	B (3.50)	A (3.75)	D (3.40)	D (4.00)
	4	A (3.33)	D (3.67)	A (3.20)	A (3.40)

Note. Overall student rankings place the instructors in the following order: A, D, B, and C. Overall self ranking place the instructors in the following order: C, B, D, and A.

When all clinical instructor observations were complete, both the instructors (n=4) and their students (n=19) were asked to estimate the percent time their current clinical instructor or self spent demonstrating each behavior category on an average day. Student and self estimates of instructor behavior time can be found in Table 23. The results of a paired sample t-tests indicated that both students and instructors overestimated the use of positive and underestimated the use of negative behaviors; these results are found in Table 24. While not accurate when compared to actual observed time, an ANOVA revealed that students and instructors made similar estimations of instructor behavior time on the Information ($F_{(1,5)}$=.28, p=.62, 0^2=.05), Thinking ($F_{(1,5)}$=1.09, p=.34, 0^2=.18), and Positive Presence subcategories ($F_{(1,5)}$=2.18, p=.20, 0^2=.30).

Table 23.

Student and self estimates of instructor behavior time compared to observed time.

		Instructor A		Instructor B		Instructor C		Instructor D	
Subcategory		Student	Self	Student	Self	Student	Self	Student	Self
ECEB[1]	I	23%	30%	35%	25%	29%	20%	18%	25%
	E	32%	10%	36%	25%	24%	20%	26%	25%
	Q	22%	10%	13%	5%	17%	15%	19%	15%
	P (+)	20%	40%	12%	25%	25%	40%	33%	25%
	P (-)	3%	10%	2%	20%	4%	5%	5%	10%
ORCEB[2]	I	15%		2%		6%		23%	
	E	2%		1%		0.5%		0.3%	
	Q	1%		5%		0.1%		0.6%	
	P (+)	22%		3%		5%		11%	
	P (-)	61%		68%		74%		66%	

Note. Subcategory abbreviations are as follows: I (information), E (Evaluation), Q (Thinking), P+ (Positive Presence), and P- (Negative Presence).

[1]Estimated percentage of behavior time as measured by the Estimation of Clinical Educator Behaviors.

[2]Actual average percentage of behavior (time) from observations. (Percentages may not add to 100% due to times during the observation sessions when no students or athletes were present.)

Table 24
Paired sample t-test for estimated behavior time compared to actual time ($p<.05$).

Subcategory	Student		Instructor	
	t(18)	*p*	t(3)	*p*
Information	3.92	.001	3.16	.051
Evaluation	14.26	.001	5.01	.015
Thinking	7.85	.001	2.70	.074
Positive Presence	2.87	.010	4.95	.016
Negative Presence	-48.82	.001	-11.75	.001

CHAPTER V

DISCUSSION

The present study was designed to assess the use of effective teacher behaviors in athletic training clinical education. Research involved the creation of two supervision instruments: the Survey of Effective Clinical Educator Behaviors (SECEB) and the Observational Record of Clinical Educator Behaviors (ORCEB). After initial pilot testing and review by an expert panel, these tools were used to collect baseline data on a sample of athletic training students and clinical instructors in a southeastern state. Results indicated that both tools were easy to use, valid, highly reliable, and objectively differentiated among subjects. Furthermore, students were found to hold accurate perceptions of instructor behavior, while instructors' intentions were found to vary considerably from their actions in terms of their use of effective teaching behaviors.

Instrument Objectivity, Validity, and Reliability

In recent years, several studies have been published that identify behaviors found by students and instructors to be effective in athletic training clinical education. One such study by Lauber et al. (2003) succinctly described these stakeholders' perceptions, and called on future researchers to develop and implement an evaluation tool that could be

used to describe practicing clinical educators' teaching behaviors in real time. This type of instrument would provide instructors and their supervisors objective data that directly relates to their interactions with students and patients. This information could then be used to identify differences between effective and ineffective teachers, measure changes during training, serve as a foundation for performance reviews, and provide specific information for self-reflection, and ultimately improve clinical education.

Many currently available supervision/evaluation tools attempt to assess subjective or difficult to measure behaviors, such as enthusiasm, encouragement, and approachability, or depend on unreliable opinion ratings. Instead, an assessment instrument should be objective and avoid assigning value or quality to target behaviors. It should emphasize what happened and allow the instructor to draw their own conclusions through reflection. Furthermore, an instrument to measure behavior frequency should be practical, feasible, useful in motivating self-improvement, credible for performance reviews and training purposes, valid, and reliable (Copeland & Hewson, 1999). The present study was designed, in this image, to create tools that objectively identify the presence or absence of known effective teaching behaviors in athletic training clinical education.

Institutions and supervisors are often dissatisfied with their current choice of evaluation tools. While the majority are well constructed, they often rely on measures of student behavior or student/teacher interactions to describe what the clinical instructor is doing. While useful, they provide only a second-hand picture of the instructor's

behavior. For example, students may be 'on-task' without direction from their instructor, and many times students themselves are the primary initiators of learning interactions. In both cases, the clinical instructor could be thought of as a passive participant, and not the guiding force behind their student's education. Because better clinical instructors elicit better academic performances from their students, it is imperative that researchers identify what they do that separates them from their less able compatriots.

Both the Survey of Effective Clinical Educator Behaviors (SECEB) and the Observational Record of Clinical Educator Behaviors (ORCEB) were designed to directly measure instructor use of effective teaching behaviors. Survey items and observational behavior definitions were based on behaviors found in relevant literature, and were given to an expert panel to review for content validity. While similar survey construction relied on as few as three (Stemmans & Gangstead, 2002) or five (Berry, Miller, & Berry, 2004) panelists to verify content applicability, the SECEB was reviewed by seven practicing athletic training clinical educators and pilot tested prior to this administration. Many surveys in the literature have also relied extensively on the use of student ratings and Likert scale scoring (Hamdy et al., 2001; Vanic & Drummond, 1998), with acceptable internal consistency between items ranging from α=.70 (Beckman et al., 2004) to α=.82 (Vanic & Drummond, 1998). The current tool also meets or exceeds these marks, with consistency estimates across all items between α=.814 and α=.904. Both the expert findings and high alpha levels indicate that the survey statements were

sufficiently related and relevant to the intended topic.

The ORCEB, on the other hand, was developed as a traditional interval recording tool to be used in real time to measure demonstration of overt behaviors. By simply recording the frequency or occurrence of behaviors and not the opinions derived from them, it is possible to provide the subject (the clinical educator) with an objective, valid description of the their patient and student interactions (Medley, 1966, 1969; Medley & Hill, 1973). A 2002 study by Stemmans and Gangstead (2002) used the interval recording technique to assess student/instructor interactions, and relied on a 3-second observation interval. While a 3-second period is feasible when coding alternating intervals or from videotape, a longer interval is necessary for accuracy when recording consecutive intervals with a live subject. Therefore, the current study used a longer 5-second observation period. This longer interval provided 360 data points per 30-minute observation period, which far exceeds the recommended 90 points per observation for validity (Siedentop & Tannehill, 2000). Additionally, by observing each instructor five times, the number of data points increased to 1,800 per individual (20 times the basic requirement).

In educational research, 85-99% agreement between observers using the interval recording technique is desirable (Anderson, 1980; Stemmans & Gangstead, 2002); therefore, acceptable ORCEB reliability was set at 90%. According to Medley (1969), the level of training and/or experience of the observers using an interval recording instrument is unimportant if the tool has sufficient descriptions of easily identifiable

behaviors. Likewise, it is evidence of observation objectivity when different observers coding at the same time describe the behavior in the same way (Medley & Hill, 1973). To challenge the instrument's reliability and ease of use, reliability testing was intentionally conducted with one experienced and one inexperienced coder. While the veteran observer had three years of experience working with data collection in the classroom and interval tools specifically, the novice coder had never used any type of supervision instrument and was given only the behavior definitions and verbal directions prior to the reliability testing session. Using simple behavior frequency correlations between these two observers, the present study found 96% inter- and 97% intra-rater reliability. This high level of agreement, in the presence of significant experience differences, suggests that the ORCEB behavior definitions were sufficiently detailed and the descriptions of the behaviors accurate.

To determine SECEB ease of use and gather baseline data, the survey was administered to a sample of athletic training students and clinical instructors. In previous studies that relied on nationally sampled survey responses, researchers found less enthusiastic response rates that ranged from 19% (Berry et al., 2004) to 44% (Stradley et al., 2002). It was hypothesized that by targeting only programs in the researcher's home state, the response rate would be higher than that of broadly administered surveys. Not surprisingly, twelve of the state's seventeen (71%) CAAHEP-accredited programs initially agreed to participate in this research. Of those, ten schools returned useable data

(83% of committed programs). The resulting sample represented approximately 59% of the state's athletic training student and educator population. Given the virtual flood of survey requests inundating athletic training education Program Directors, this response rate is fantastic. When comparing gender make-up across different studies, female students usually outnumber their male counterparts 3:2 (Berry et al., 2004; Stradley et al., 2002) or 2:1 (Leone, Wagner, & Gray, n.d.); in this study, the ratio was 3:1. Clinical instructors, on the other hand, were almost evenly divided between genders, both in this research (41% male to 59% female) and across the NATA's national membership (51% male and 49% female) (NATA, n.d.). While not statistically significant, it appears that this state exceeds national norms for both female athletic training students and clinical educators.

Student and Instructor Perceptions

In the most influential study guiding the present research, Lauber et al. (2003) asked athletic training education Program Directors and Clinical Coordinators to rank 30 clinical instructor behaviors based on their perceived importance. Using their findings as a launching pad, the SECEB took the next step and assessed perceived use of many of these behaviors. However, instead of limiting responses to athletic training faculty, this study invited students, staff athletic trainers, and all others involved in athletic training education to participate. Of particular interest were students' and educators' perceptions

of an ideal instructor's behavior. For example, what do students expect from teachers? What do teachers expect from themselves? And do 'ideal' standards identify simply good instruction and teachers, or do they encompass all ideal circumstances (e.g., budget, environment, student ability, etc.)?

SECEB Findings

When comparing student and instructor SECEB ratings of a current and an ideal instructor, it is clear that both groups hold similar views regarding which behaviors are and should be demonstrated by an effective educator. Eight of each group's top ten ideal instructor behaviors were identical (Table 25), as were five of the lowest scored current instructor behaviors (Table 26). Of the ideal behaviors, several agree with previous studies (Mogan & Knox, 1987). For example, Richards (1982) placed 'communicating knowledge', 'evaluation', 'critical thinking', and 'demonstration' in the instructor's top five and 'communicating knowledge', 'evaluation', and 'critical thinking' in the student's top five. A similar study by Benor and Leviyof (1997) also placed 'evaluation' and 'instructional skills' in the student's top five. Notably, the majority of least demonstrated current instructor behaviors fell into the Thinking and Physical Presence subcategories; all of which were conspicuously absent from both the student and instructors ideal behavior lists.

The highest SECEB subcategory scores indicated that both students and instructors prefer clinical educators to use Information Giving and Evaluative behaviors at the

possible expense of the other subcategories. From these data, it was unclear why both groups rated inquiry behaviors as low as they did, but it is clear from the literature that the stimulation of higher order thinking and in-depth exploration of the content is necessary for thoughtful and mature practice. Similarly, uncertainty regarding the role of an instructor's physical presence at the clinical site may have led to 'Refrains from engaging in unrelated behaviors' garnering the lowest SECEB scores of any item for either group for both an ideal and a current instructor. This may indicate that neither group expected a clinical educator to devote 100% of their time to educational activities to the exclusion of personal interactions with patients and students that contribute to the athletic training room atmosphere and generate necessary rapport.

While students and clinical instructors appear to hold similar views of ideal behaviors on the surface, further analysis revealed that students want interaction and specific, regular, and timely feedback about their performance. Instructors, on the other hand, preferred a more passive role that involved silent observations and student-initiated interactions (e.g., 'answers questions'). Both groups placed high value on student/patient interactions, with students locking onto its skill practice value and instructors onto the potential to bridge theory to practice. This is not surprising, as teachers tend to focus on knowledge transmission, and students on skill acquisition and refinement.

When analyzing the SECEB data, the researcher expected to find perception differences between student and instructor scores. It was expected, and confirmed, that

there would be no group differences in ideal instructor scores. Because self-evaluations tend to be more realistic than grandiose, it was not surprising that instructors rated themselves lower then their perceived ideal. However, it was interesting that students consistently rated their current instructor higher than the instructors rated themselves, but still lower than their ideal. This difference in scores indicates that either one group or both hold inaccurate perceptions of instructor behavior. A clearer picture was revealed when SECEB data were compared to the observational record created by the ORCEB.

Table 25.
Student and instructor ranked top ten effective teacher behaviors as demonstrated by an ideal clinical instructor (based on SECEB scores).

Student-Ranked (n=145)	Instructor-Ranked (n=41)
Answers Questions	Allows Patient Care to Ability Level
Allows Patient Care to Ability Level	Watches Student Practice and Interactions
Gives Timely Feedback	Answers Questions
Gives Demonstrations	Bridges Theory to Practice
Provides Fair Evaluations	Provides Fair Evaluations
Explains Material Clearly	Explains Material Clearly
Provides Examples	Provides Examples
Bridges Theory to Practice	Allows for Improvement
Allows for Improvement	Gives Timely Feedback
Allows Time/Materials for Practice	Give Praise for a Job Well Done

Table 26.
Student and instructor ranked least effective teacher behaviors as demonstrated by a current clinical instructor (based on SECEB scores).

	Student-Ranked		Instructor-Ranked	
Behavior	M	SD	M	SD
Refrains from unrelated behaviors.	3.38	.910	3.18	.813
Asks simple questions.	3.41	.929	3.20	.641
Organizes down-time to enhance learning.	3.78	.990	3.27	.742
Participates in or leads discussions.	3.78	1.010	3.41	.921
Plans or structures the clinical experience.	3.81	.949	3.48	.816

ORCEB Findings

While student and instructor SECEB scores indicated that evaluative behaviors were the most frequently demonstrated by an ideal instructor, ORCEB findings did not confirm this in practice. Instructors provided feedback an average of 18-seconds of every 30-minute session; this equates to just over one minute of feedback per 4-hour clinical shift. Specific, immediate feedback is not only valuable (Kilminster & Jolly, 2000; Lane & Gottlieb, 2000), but necessary for motivation and improvement. Similarly, instructors failed to ask any higher-order questions that stimulate inquiry, and asked only 4-seconds worth of simple recall/response questions per 30-minute observation. This is in direct contrast to Carlson and Park's (1978) position that teachers should pose questions from all levels of Bloom's taxonomy while employing different teaching styles and peer problem solving.

Excluding behaviors that were coded as having a negative effect on clinical education, the majority of the remaining observed teaching behaviors could be classified as verbal. On average, instructors silently observed student practice and patient interactions only 10% of the time, with the remaining 14% of time devoted to teacher talk (giving instructions, examples, and explanations). While there is no evidence to suggest that athletic training students as a group prefer one teaching style to another (Stradley et al., 2002), educators should embrace their students' diversity and attempt to balance traditional direct instruction with hands-on experiential learning. This is clearly

illustrated by the fact that students rank 'gives demonstrations' as one the most important instructor behaviors in a 1997 study by Li and fourth in the present research. Unfortunately for their students, the observed instructors demonstrated techniques less than 0.3% of the time (5.4 seconds per 30-minute session). This may be due to the instructors' relative inexperience and lack of comfort educating students, but may also relate to the common perception that upper level athletic training students require fewer direct interactions with supervisors to be successful. While more advanced students can and do function with relative independence, clinical instructors who fail to actively supervise their autonomous practice or recognize that the nature of their interactions should change, not disappear, as students mature, are not contributing to their learning.

Clinical educators in this study were found to use 32% of their time giving patient care and 35% demonstrating behaviors unrelated to clinical education. Because the ORCEB was used to code instructor behaviors and not those of their students, one can assume that students were doing more than waiting for their instructors to interact with them during the observation periods. Two recent studies found that students use 23% (Miller & Berry, 2002) and 32% (Berry et al., 2004) of their clinical experience time to actively treat patients. On the other hand, these same two research groups found that students were unengaged from the content 39% and 59% of the time (Berry et al., 2004 and Miller & Berry, 2002, respectively). If these numbers hold true for the present research, it is conceivable that students spent time both interacting with patients and

unengaged during the 67% of the clinical session in which their instructors were treating patients or performing unrelated activities. Students rely on their clinical instructors for guidance, direction, and reinforcement. Because they require information about their practice and progress for skills to be mastered correctly; the goal of education is lost when they are unengaged or giving patient care without instructor interaction, observation, or feedback.

Dividing time between patient care and supervision of students can be a tenuous balancing act for athletic trainers serving as clinical educators (Williams & Webb, 1994; Wilson, 1996), but patient care should not be compromised in the pursuit of accommodating more students (Bennett & Kitsell, 2003) or in lieu of hiring additional clinical staff. In the present study, clinical instructors gave patient care an average of 32% of the observation period (range 6-57%). Because clinical instructors are first and foremost employed to provide patient care, it is conceivable that one third of their time would be devoted to their patients. Even so, the highest levels of patient care were seen in the least experienced clinical educators. Several possible hypotheses for this observation include: these novice instructors were still making the transition from their previous role as a worker/student to that of an educator, they were uncomfortable relinquishing control to their students, or they equate student autonomy with learning. While allowing students to interact with patients up to their ability level is a central tenant of clinical education, their interactions must be observed and feedback provided.

Given the poor levels of both of these teaching behaviors, it is likely that either students provided care as a service, or instructors were unaware of their lack of true teaching behaviors.

Educational research is replete with examples of teachers whose actions fail to match their intentions in the classroom. The instructors in the present research are no different. When comparing their SECEB scores to their ORCEB time percentages, all four instructors' intentions were found to vary considerably from their actions. For example, the highest self-ranked instructor (instructor C) demonstrated the least use of effective teaching behaviors, and the lowest self-ranked instructor (instructor A) demonstrated the greatest use of effective teaching behaviors. While instructor A might have undervalued their teaching ability out of modesty or low self-perception, instructor C is clearly unaware of their actions. Conversely, students' perceptions of their instructor's behaviors were right on target, with SECEB scores matching ORCEB rankings exactly. This indicates that when given an objective means to assess their instructor's behavior, students can accurately describe their actions. Given these results, it could be hypothesized that with a larger sample, student SECEB scores could be used to predict ORCEB behavior frequencies.

Limitations

While the large return rate provided a SECEB sample (n=186) that conceivably represents the population in North Carolina, and probably the entire United States, the ORCEB sample (n=4) was too small to generalize. Unfortunately, while many programs were willing to submit survey responses, they were uncomfortable allowing an outsider to observe their clinical instructors in action. However, in light of the tool's strong inter-rater reliability, future data collection with the ORCEB could bypass this roadblock and rely on observers coding clinical instructors at their own institutions. While it would be difficult to find willing participants for time-consuming coding sessions, the potential data collected would be invaluable to athletic training education as a means to assess the current state of clinical instruction across the nation.

The small ORCEB sample was further confounded by the instructors themselves, as three of the four were graduate assistants in their first year of student supervision. Because both tools ignored the quality of instructor behaviors in lieu of measuring their presence in any form, the possible influence of instructor skill and experience was negated. If this research were to be repeated, it would be interesting to note the instructor's year of certification, the number of years in active student supervision in accredited-programs, and their pedagogical background and training (both formal and workshops). The comparison between use of effective behaviors and experience is particularly relevant because the NATA requires clinical instructors have only one year

of certification prior to supervising students. A comparable limitation is that of student level in their program.

While the ORCEB data recorded the number of students and patients in the observation setting during each two-minute interval, it did not identify individual student level (e.g. junior standing). It is also not uncommon for one clinical instructor to temporarily supervise another instructor's students, and the ORCEB data did not differentiate between an instructor's interactions with their assigned students and those of another instructor. Similarly, the data did not explore the role of sport season or hierarchy on an instructor's behaviors and student interactions. Undoubtedly, the greatest limitation was the observation sites themselves. All ORCEB data were collected in one of two athletic training rooms at times prior to sport practice. While this was done to maximize potential student/patient and instructor/patient interactions, it may have worked to unintentionally minimize student/instructor interactions. By not observing the teachable moments that occur on the practice field, the data are possibly incomplete, and may be misleading.

When exploring both tools for limitations and points for revision, the most obvious need for clarification lies within the ORCEB Physical Presence subcategory. In the current research, 'Giving patient care without student interaction' (Behavior T) was considered to have a negative effect on clinical education, ignoring the possible benefit students receive watching their instructor perform as both a care-giver and professional

role model. Similarly, all behaviors that appeared unrelated to clinical education (Behavior X) were coded as negative, without differentiating between those that were truly uneducational (e.g., surfs the internet) and those that positively contribute to athletic training room atmosphere and student/athlete rapport. While some could argue that instructors felt comfortable engaging in unrelated behaviors under the guise of encouraging autonomous practice in their students, for that practice to be truly educational, instructors should have observed their students' patient interactions in such a manner that they could exploit any teachable moments or intervene if necessary (Behavior O). When used in the future, the ORCEB Physical Presence definitions for behaviors 'T' and 'X' may need to be revised to more clearly delineate between the different levels of these behaviors and take into consideration students' concurrent actions. For example:

1. W Gives patient care while student is unengaged.
2. T Gives patient care while student is engaged.
3. U Engages in unrelated activities while student is unengaged.
4. X Engages in unrelated activities while student is engaged.
5. O Observes or monitors a student's practice and interactions.

Future Research

Research has shown that the quality of student/teacher interactions largely determines learning environment effectiveness (Richardson Jr. et al., 1992). In

the present study, an average of 35% of each 30-minute session (10.5 minutes) was lost to unengaged behaviors, with an astounding 67% of time seemingly devoid of student/teaching interactions. However, the negative interpretation of these numbers may be misleading, as no baseline data exists describing instructors' use of effective teaching behaviors in athletic training clinical education. First, in many programs, clinical instructors are not selected for their teaching ability, but rather for their skill as practitioners and their patient base. Perhaps, then, one-third of their time should rightfully be spent caring for the patients they are employed to treat. Second, there is still no definite answer to the age-old question of how much of what is enough in clinical education. For example, if it is truly the quality of the experience that is important, then the quantity (e.g. amount of time) is irrelevant. While students might be able to learn and master all competencies and proficiencies in 24% of their allocated time, the paltry use of Evaluative and Critical Thinking behaviors appears to be poor use of teaching time. Therefore, future research should focus on systematic identification and cultivation of positive faculty behaviors (Richardson Jr. et al., 1992).

Both the ORCEB and SECEB are easy and unobtrusive to use, and therefore would be ideal to use in conjunction with a formal supervision or training program. Data collected could be used to produce individual profiles to study

differences between effective and ineffective teachers, to measure differences in training level, to measure the effects of training, and to stimulate reflection so teachers can guide their own development. If used to describe a group of clinical educators, supervisors could use the information gathered to create or improve their Approved Clinical Educator (ACI) workshops to address deficiencies or further refine use of clinical time. For example, the supervisor might choose to focus on the inclusion of additional feedback as a way to increase the use of positive behaviors while securing a corresponding natural reduction in negative behaviors. At the other end of the spectrum, the data might provide impetus for either a return to formal pedagogical training in undergraduate and graduate athletic training clinical education or the exploration of student behaviors in relation to their instructor's actions.

While not originally designed to assess student behaviors, simultaneous observation of both the student and instructor in the clinical setting using the ORCEB would provide a wealth of data not yet discovered. This could be accomplished by using two coders recording data simultaneously, coding from videotape, or the use of alternating time intervals. Of particular interest would be the relationship between teacher behaviors and student actions. For example, do certain instructor behaviors stimulate corresponding student behaviors and vice versa. The resulting data would allow clinical educators to further refine their

skills and concentrate on the use of those behaviors that specifically generate the desired response in their students.

While having tools to assess teaching behaviors in clinical education are nice, their existence is only half the battle. To be truly effective in professional practice, the instruments must be used in the field with practicing clinical educators. To this effect, individuals identified as either Clinical Instructor Educators (CIE) or Clinical Coordinators should be encouraged to implement a structured supervision program for all of their approved clinical instructors (ACI). By increasing faculty presence in the athletic training rooms and on the fields, the gap between academics and athletics might be narrowed, to the benefit of the program's students. However, these individuals should not be expected to entertain a demanding supervision program without appropriate workload compensation. Therefore, it falls to future researchers to develop a supervision program using the SECEB and ORCEB that can be easily implemented and it's value justified to program administrators.

Conclusion

When comparing perceived and actual behaviors, results showed that clinical instructors consistently misjudge their use of clinical time, with less than 25% of time spent actively engaged with students in a learning situation. Similarly, students rated their instructors' use of effective behaviors lower than that of an ideal instructor, but more importantly, higher than the instructors rated themselves. These observations indicate that teachers are woefully unaware of their ineffective use of time, and without information about their practice, they cannot be expected to change or improve their methods. While not revolutionary in design or construction, both the Survey of Effective Clinical Educator Behaviors (SECEB) and the Observational Record of Clinical Educator Behaviors (ORCEB) provide supervisors and clinical instructors a valid, reliable, and objective means to assess the use of effective teaching behaviors in athletic training clinical education. This information can be used to identify strengths and areas for improvement, target in-service training, match training with student desires and needs, identify differences between instructors, and compare perceived behavior to actual use.

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APPENDIX A

ATTRIBUTES AND BEHAVIORS OF EFFECTIVE CLINICAL EDUCATORS FREQUENTLY CITED IN THE LITERATURE

Gives Information; Subject Matter Presentation

- Bennett & Kitsell, 2003
- Brehaut, Turik, & Wade, 1998
- Capie et al., 1979b
- Funk, Hoffman, Keithley, & Long, 1981
- Gordon et al., 2000
- Grube & DeJarnette, 1989
- Hall, 1969
- Hoyt, 1969
- Inglis, 1978
- Johnson, 1980
- Jones, 1984
- Kerlinger & Pedhazur, 1967
- Kerwin, 1980
- Lauber, Toth, Leary, Martin, & Killian, 2003
- Laurent & Weidner, 2001
- Li, 1997
- Lorentz, 1978
- Marchant, 1988
- McGovern & Dean, 1991
- Meyers, 1995
- Micceri, 1990
- Mogan & Knox, 1987
- Richardson Jr. et al., 1992
- Ronan, 1971, 1972
- Southwell & Webb, 1972
- Texas, 1986
- Weiss & Pasley, 2004

Gives Feedback and Evaluates Students

- Bennett & Kitsell, 2003
- Brownstein, Rettie, & George, 1998
- Capie et al., 1979a
- Collins, 2003; Flowers & Hancock, 2003
- Gordon et al., 2000
- Grube & DeJarnette, 1989
- Hall, 1969
- Harden & Crosby, 2000
- Hoyt, 1969
- Inglis, 1978
- Johnson, 1980
- Jones, 1984
- Kerlinger & Pedhazur, 1967
- Kilminster & Jolly, 2000
- Kirkpatrick, Byrne, Martin, & Roth, 1991
- Lauber et al., 2003
- Laurent & Weidner, 2001
- Lorentz, 1978
- Marchant, 1988
- McGovern & Dean, 1991
- Meyers, 1995; Micceri, 1990
- Richards, 1982
- Richardson Jr. et al., 1992
- Ronan, 1971, 1972
- Strickland, Slemson, & Weber, 1996
- Texas, 1986

Asks Questions;
Promotes Critical Thinking

- Bennett & Kitsell, 2003
- Brownstein et al., 1998
- Gordon et al., 2000
- Green, Gross, Kernan, Wong, & Holmboe, 2003
- Hall, 1969; Hoyt, 1969
- Jones, 1984
- Kerlinger & Pedhazur, 1967
- Lauber et al., 2003
- Laurent & Weidner, 2001
- Lorentz, 1978
- Marchant, 1988
- McGovern & Dean, 1991
- Richardson Jr. et al., 1992
- Ronan, 1971, 1972
- Southwell & Webb, 1972
- Texas, 1986
- Weiss & Pasley, 2004

Maintains Physical Presence
and Learning Environment

- Bennett & Kitsell, 2003
- Benor & Leviyof, 1997
- Capie et al., 1979b
- Dagget, Cassie, & Collins, 1979
- Funk et al., 1981
- Gordon et al., 2000
- Grube & DeJarnette, 1989
- Hoyt, 1969
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- Micceri, 1990
- Richardson Jr. et al., 1992
- Ronan, 1971, 1972
- Southwell & Webb, 1972
- Strickland et al., 1996
- Texas, 1986
- Weiss & Pasley, 2004

SECEB-STUDENT FORM

DIRECTIONS:
For the following statements, mark each on a scale from 1 to 5 (1 = 'never' to 5 = 'very often') indicating how often your ***current*** and an ***ideal*** clinical instructor/supervisor demonstrates the behavior. Circle the number that corresponds to your answer for your ***current*** clinical instructor in the left-hand column AND an ***ideal*** clinical instructor in the right-hand column (you will have two responses for each behavior statement). If you do not have a current clinical instructor, leave the left-hand column blank.

Current Clinical Instructor					**Survey of Effective Clinical Educator Behaviors**	*Ideal Clinical Instructor*				
1 Never	2 Rarely	3 Some-times	4 Fairly Often	5 Very Often		1 Never	2 Rarely	3 Some-times	4 Fairly Often	5 Very Often
1	2	3	4	5	Provides a clear, concise explanation of the material.	1	2	3	4	5
1	2	3	4	5	Uses relevant verbal examples to clarify my understanding.	1	2	3	4	5
1	2	3	4	5	Demonstrates a variety of clinical skills for my benefit.	1	2	3	4	5
1	2	3	4	5	Bridges classroom knowledge to the clinical site and patient care.	1	2	3	4	5
1	2	3	4	5	Provides the time and materials for skill practice.	1	2	3	4	5
1	2	3	4	5	Encourages me to participate in clinical activities and patient care up to my ability level.	1	2	3	4	5
1	2	3	4	5	Refers me to educational aids (posters, books, journals, etc.) to encourage independent problem solving.	1	2	3	4	5
1	2	3	4	5	Watches me practice my clinical skills and interact with patients.	1	2	3	4	5
1	2	3	4	5	Offers praise for a job well done.	1	2	3	4	5
1	2	3	4	5	Gives immediate and specific feedback that helps me improve my skills.	1	2	3	4	5
1	2	3	4	5	Gives fair, non-judgmental performance evaluations.	1	2	3	4	5
1	2	3	4	5	Provides time to discuss performance evaluations and opportunities for improvement.	1	2	3	4	5
1	2	3	4	5	Asks simple questions that require only recall of memorized facts.	1	2	3	4	5
1	2	3	4	5	Asks complex or difficult questions that make me think critically (ie. analyze, evaluate, or problem solve the situation).	1	2	3	4	5

Current Clinical Instructor					**Survey of Effective Clinical Educator Behaviors**	*Ideal Clinical Instructor*				
1	2	3	4	5	Actively plans or structures the overall clinical experience.	1	2	3	4	5
1	2	3	4	5	Participates in or leads discussions on thought-provoking, relevant topics.	1	2	3	4	5
1	2	3	4	5	Refrains from engaging in conversations that are unrelated to the clinical experience, my education, or patient care.	1	2	3	4	5
1	2	3	4	5	Actively supervises my clinical practice (ie. has constant auditory and visual contact myself and my patients).	1	2	3	4	5
1	2	3	4	5	Takes an active role in organizing slow time in the clinical setting to promote learning and prevent boredom.	1	2	3	4	5
1	2	3	4	5	Answers questions honestly and intelligently when asked.	1	2	3	4	5

Demographic Information

Today's Date: _____ **Age as of today:** _____ **Gender:** ☐Male ☐Female

Race/Ethnicity: ☐Caucasian ☐African American ☐American Indian ☐Hispanic/Latino
☐Pacific Islander ☐Asian ☐Other ☐Prefer not to give ethnicity

College Class: ☐Freshman ☐Sophomore ☐Junior ☐Senior ☐Grad Students ☐Other

What degree are you seeking? ☐BA ☐BS ☐MS ☐MEd ☐PhD ☐EdD ☐Other _____

Including this semester, how many semesters have you been formally enrolled in your college/university's Athletic Training Education Program? _____

Are you currently supervised by a clinical instructor: ☐YES, Clinical Instructor (ACI or CI) ☐YES, Other ☐NO supervisor ☐I'm not sure

If yes, what are the first five letters of your clinical instructor's last name? _____

What are their certifications (check all that apply): ☐ATC ☐PT ☐MD ☐DO ☐DC ☐PA ☐Other_____

DIRECTIONS:
The following statements are written from a STUDENT'S perspective; mark each on a scale from 1 to 5 (1 = 'never' to 5 = 'very often') indicating how often ***you*** as a clinical instructor and an ***ideal*** clinical instructor/supervisor demonstrates the behavior. Circle the number that corresponds to your answer for how often ***you*** as a clinical instructor demonstrate the behavior described in the left-hand column AND an ***ideal*** clinical instructor in the right-hand column (you will have two responses for each behavior statement). If you are not a current clinical instructor, leave the left-hand column blank.

Myself as a Clinical Instructor					**Survey of Effective Clinical Educator Behaviors**	*Ideal Clinical Instructor*				
1 Never	2 Rarely	3 Some-times	4 Fairly Often	5 Very Often		1 Never	2 Rarely	3 Some-times	4 Fairly Often	5 Very Often
1	2	3	4	5	Provides a clear, concise explanation of the material.	1	2	3	4	5
1	2	3	4	5	Uses relevant verbal examples to clarify my understanding.	1	2	3	4	5
1	2	3	4	5	Demonstrates a variety of clinical skills for my benefit.	1	2	3	4	5
1	2	3	4	5	Bridges classroom knowledge to the clinical site and patient care.	1	2	3	4	5
1	2	3	4	5	Provides the time and materials for skill practice.	1	2	3	4	5
1	2	3	4	5	Encourages me to participate in clinical activities and patient care up to my ability level.	1	2	3	4	5
1	2	3	4	5	Refers me to educational aids (posters, books, journals, etc.) to encourage independent problem solving.	1	2	3	4	5
1	2	3	4	5	Watches me practice my clinical skills and interact with patients.	1	2	3	4	5
1	2	3	4	5	Offers praise for a job well done.	1	2	3	4	5
1	2	3	4	5	Gives immediate and specific feedback that helps me improve my skills.	1	2	3	4	5
1	2	3	4	5	Gives fair, non-judgmental performance evaluations.	1	2	3	4	5
1	2	3	4	5	Provides time to discuss performance evaluations and opportunities for improvement.	1	2	3	4	5
1	2	3	4	5	Asks simple questions that require only recall of memorized facts.	1	2	3	4	5
1	2	3	4	5	Asks complex or difficult questions that make me think critically (ie. analyze, evaluate, or problem solve the situation).	1	2	3	4	5

Myself as a Clinical Instructor					**Survey of Effective Clinical Educator Behaviors**	*Ideal Clinical Instructor*				
1	2	3	4	5	Actively plans or structures the overall clinical experience.	1	2	3	4	5
1	2	3	4	5	Participates in or leads discussions on thought-provoking, relevant topics.	1	2	3	4	5
1	2	3	4	5	Refrains from engaging in conversations that are unrelated to the clinical experience, my education, or patient care.	1	2	3	4	5
1	2	3	4	5	Actively supervises my clinical practice (ie. has constant auditory and visual contact myself and my patients).	1	2	3	4	5
1	2	3	4	5	Takes an active role in organizing slow time in the clinical setting to promote learning and prevent boredom.	1	2	3	4	5
1	2	3	4	5	Answers questions honestly and intelligently when asked.	1	2	3	4	5

Demographic Information

Date: _____ **Age:** _____ **Gender:** ☐Male ☐Female **First five letters of your last name:** _____

Race/Ethnicity: ☐Caucasian ☐African American ☐American Indian ☐Hispanic/Latino
☐Pacific Islander ☐Asian ☐Other ☐Prefer not to give ethnicity

Role in the ATEP: ☐Program Director ☐Clinical Coordinator ☐Faculty ☐Staff ATC ☐Grad Student/ATC ☐Other

What degree(s) do you hold? ☐BA ☐BS ☐MS ☐MEd ☐PhD ☐EdD ☐Other _____

What are your certifications (check all that apply): ☐ATC ☐PT ☐MD ☐DO ☐DC ☐PA ☐Other_____

Including this semester, how many semesters have you been employed in your college/university's Athletic Training Education Program? _____

Do you currently supervise athletic training students: ☐YES, I'm an ACI ☐YES, I'm a CI ☐Not supervising ☐I'm not sure

If yes, how many students are currently assigned to you? _____

APPENDIX D

ORCEB

Observational Record of Clinical Educator Behavior Coding Form											
(E) Explanation/Example (D) Demonstrates (A) Refers to Aids			(C) Corrective Feedback (F) Positive Feedback (P) General Praise			(L) Low-level Question (H) High-level Question (S) Peer Learning			(T) Gives Patient Care (X) Unrelated Behaviors (O) Actively Observes		
Intervals	0 min.	2 min.	4 min.	6 min.	8 min.	10 min.	12 min.	14 min.	16 min.	18 min.	20 min.
:00											
:05											
:10											
:15											
:20											
:25											
:30											
:35											
:40											
:45											
:50											
:55											
Intervals	1 min.	3 min.	5 min.	7 min.	9 min.	11 min.	13 min.	15 min.	17 min.	19 min.	21 min.
:00											
:05											
:10											
:15											
:20											
:25											
:30											
:35											
:40											
:45											
:50											
:55											

Clinical Instructor Observed: _____

Site: _____

Date and Time: _____

Observer: _____

Observational Record of Clinical Educator Behavior Coding Form

(E) Explanation/Example (D) Demonstrates (A) Refers to Aids	(C) Corrective Feedback (F) Positive Feedback (P) General Praise	(L) Low-level Question (H) High-level Question (S) Peer Learning	(T) Gives Patient Care (X) Unrelated Behaviors (O) Actively Observes

Intervals	22 min.	24 min.	26 min.	28 min.	30 min.	32 min.	34 min.	36 min.	38 min.	40 min.	42 min.
:00											
:05											
:10											
:15											
:20											
:25											
:30											
:35											
:40											
:45											
:50											
:55											

Intervals	23 min.	25 min.	27 min.	29 min.	31 min.	33 min.	35 min.	37 min.	39 min.	41 min.	43 min.
:00											
:05											
:10											
:15											
:20											
:25											
:30											
:35											
:40											
:45											
:50											
:55											

Comments: _____

_____

_____

ORCEB Coding Definitions:

Teaching behaviors that give information:

E: The clinical educator gives either an **explanation** of the material, offers a verbal example to clarify student understanding, or responds to a student question. Also includes other forms of information exchange (conversations, giving instructions, etc.).
D: The clinical educator **demonstrates** a skill for a student (with or without explanation).
A: The clinical educator refers a student to educational **aids** or research opportunities, or uses an aid to enhance an explanation (posters, books, journals, etc.).

Teaching behaviors that evaluate students:

C: The clinical educator offers specific **corrective** feedback that is timely and relevant (i.e. "Next time try to overlap your tape strips by at least half an inch") .
F: The clinical educator offers specific positive **feedback** (i.e. "Your heel locks were better that time because they had fewer wrinkles").
P: The clinical educator offers general **praise** for good work (i.e. "Good job").

Questioning behaviors that promote problem solving and critical thinking:

L: The clinical educator asks a **low-level** question to ascertain a student's basic understanding of a subject (ie. knowledge or comprehension; "What are the three main ligaments in the lateral ankle?").
H: The clinical educator asks an **high-level** question that stimulates critical thinking and problem solving (ie. analysis, synthesis, or evaluation; "What might be an appropriate exercise for the rehabilitation of a grade 2 ankle sprain at day 3 post-injury, given that PROM is still limited and painful but the athlete can fully weight bear?").
S: The clinical educator is not interacting with students, but 2 or more students are independently engaged in peer coaching or learning activities (i.e. skill practice, **study** behaviors, etc.).

Physical presence at the clinical site:

T: The clinical educator provides direct patient care **without** interacting with a student (i.e. no explanation, demonstration, etc.). This includes practice, treatment, and rehabilitation preparations and clean up.
X: The clinical educator engages in behaviors **unrelated** to clinical education (ie. unrelated conversations, works in their office, etc.).
O: The clinical educator is in close physical proximity to and **observes** or monitors a student's skills practice or patient interaction (i.e. silent observation).

If the ACI/CI is multi-tasking, give credit for the positive behavior (i.e., if they are giving patient care and explaining the treatment, code an "E").

SECEB ITEM REVISIONS BASED ON EXPERT FEEDBACK

SECEB item revisions based on expert feedback.

Item	Original Statement	Revised Statement
1	Provides a clear, concise explanation of the material.	*(No changes.)*
2	Gives relevant verbal examples to clarify my understanding.	Uses verbal examples to clarify my understanding.
3	Demonstrates a variety of clinical skills for my benefit.	*(No changes.)*
4	Bridges classroom knowledge to the clinical site and patient care.	*(No changes.)*
5	Provides and supports skill practice time and materials.	Provides the time and materials for skill practice.
6	Encourages me to participate in clinical activities and patient care up to my ability level.	*(No changes.)*
7	Refers me to educational aids or research opportunities (posters, books, journals, etc.).	Refers me to educational aids (posters, books, journals) to encourage independent problem solving.
8	Observes or monitors my skills practice and patient interactions.	Watches me practice my clinical skills and interact with patients.
9	Offers praise for good work.	Offers praise for a job well done.
10	Gives constructive feedback that is timely and relevant.	Gives immediate and specific feedback that helps me improve my skills.
11	Gives fair, non-judgmental performance evaluations.	*(No changes.)*
12	Provides time to discuss performance evaluations and opportunities for improvement.	*(No changes.)*
13	Asks closed-type questions to ascertain my understanding of a subject (ie. require simple recall of memorized facts).	Asks simple questions that require only recall of memorized facts.
14	Asks open-type questions that stimulate critical thinking (ie. require analysis, synthesis, or evaluation).	Asks complex or difficult questions that make me think critically (analyze, evaluate, or problem solve the situation).
15	Plans or structures the clinical experience.	Actively plans or structures the overall clinical experience.
16	Participates in or leads discussions on relevant topics.	Participates or leads thought-provoking discussions on relevant topics.
17	Refrains from engaging in conversation that is unrelated to the clinical experience, my education, or patient care.	Refrains from engaging in conversations that are unrelated to the clinical experience, my education, or patient care.
18	Actively supervises my clinical practice (ie. has constant auditory and visual contact with student and patients).	*(No changes.)*
19	Structures clinical 'down time' to promote learning and prevent boredom.	Takes an active role in organizing slow time in the clinical setting to promote learning and prevent boredom.
20	Honestly and intelligently answers questions when asked.	Answers questions honestly and intelligently when asked.

APPENDIX F

IRB MATERIALS

UNIVERSITY OF NORTH CAROLINA AT
GREENSBORO
APPLICATION FOR THE USE OF HUMAN PARTICIPANTS IN RESEARCH

1. **BRIEF STATEMENT OF PROJECT GOALS:**
   This project has three goals: 1) development and validation of a survey to assess students' perceptions of both their current and an ideal clinical instructor; 2) development and validation of a survey to assess clinical instructors' perceptions of their own behavior and that of an ideal instructor; and 3) development and validation of an interval recording supervision instrument to measure practicing clinical instructors' use of effective behaviors in the field.

2. **PROTOCOL:**
   Before the first phase of data collection begins, all Athletic Training Education Program clinical coordinators and program directors in North Carolina will be solicited for subject recruitment via email and by telephone. Schools that agree to participate will be mailed copies of both the student and clinical instructor versions of the Survey of Effective Clinical Educator Behaviors (SECEB), administration script including informed consent statement, and a postage-paid self-addressed return envelope. Once the surveys are returned to the investigator, any accidentally returned information that could be used to identify programs or individuals will be removed. Prior to data entry, surveys will be coded to indicate school type (public or private) only, but no other identifying characteristics will be retained.

   The second phase of data collection will include observation of five clinical instructors in their normal work environment to code their demonstrated behaviors in the clinical setting using the Observational Record of Clinical Educator Behaviors (ORCEB). A minimum of five observations that last 30 minutes each will be completed for each subject between 1:00PM and 6:00PM (i.e. in the athletic training room or on the athletic field) over the course of one month. Two coding sessions for each instructor will be videotaped and analyzed independently by both the researcher and the subjects' program director twice in a two-week period to determine inter- and intra-rater reliability. When all coding sessions are complete, both the students currently assigned to the observed clinical instructors and the instructors themselves will complete the SECEB and estimate the percentage of time spent by the instructor in each of the observed behavior categories.

3. **BENEFITS:**
   The principal investigator seeks to measure effective behaviors used by clinical educators in athletic training education programs to assess possible areas for improvement. This information will be helpful in developing a model for supervision specifically for use with athletic training education clinical instructors.

4. **RISKS:**
   There are no physical, psychological, or sociological risks associated with this study other than those inherent in completing a paper and pencil survey and participating in normal activities of daily living. While basic demographic information will be obtained from each participant, no information that can be used to identify an individual or program will be collected. Additionally, each member of the research team with access to the data will sign a confidentiality agreement. All surveys, consent forms, and video tapes will be kept in a secure location for seven years and shredded prior to disposal.

5. **POPULATION:**

Subjects will be recruited from all athletic training education programs in North Carolina (all students and clinical instructors will be invited to participate). No one will be excluded on the basis of their gender, race, color, or any other demographic characteristic.

6. **PARTICIPANT CONSENT:**
   Participants will be advised of their rights through an informed consent form; they will be give one copy to sign and return and another to keep for their records. Consent will be obtained from all students and clinical instructors who complete the survey and those instructors that are observed in their work environment. The principal investigator will provide a script to be used at each survey administration site that highlights subjects' consent rights and nature of their voluntary participation. Completion and return of the survey will further indicate their willingness to participate.

7. **CONFLICT OF INTEREST:**
   There are no financial sponsors for this research. At no time will any member of the research team or their immediate family members have financial interest in, receive personal compensation from, or otherwise have potential conflict of interest regarding conduct of this study.

8. **PHI:**
   This study will not obtain any personally identifiable health information.

I certify that the statements made herein are accurate and complete. I agree to inform the Board in writing of any emergent problems or proposed procedural changes. Should changes be made, I further agree not to proceed with the research until the Board has reviewed and approved the changes that I propose to make in the protocol.

_____ _____
Principal Investigator Date

_____ _____
Faculty Sponsor Date

Enclosures:
Survey of Effective Clinical Educator Behaviors
Observational Record of Clinical Educator Behaviors
Recruitment Letter
Administration Script
Informed Consent Form
Signed Confidentiality Statements
Use of Human Subjects in Research Certification

2/5/20

VERSITY OF NORTH CAROLINA

REENSBORO

FEB 15 2005

IRB File NUM:

045182

LE: Assessing Effective Teacher Behaiors in Athletic Training Clinical Education

PI: Dondanville,Abbey DEPT: ESS

CO_PIS:

FACULTY SPONSOR: Gill,Diane

Action Taken:

_____ eXempt from Full Review

__✓__ Expedited Review

_____ Full IRB Review

Disposition of Application:

__✓__ Approved

_____ Disapproved

MODIFICATIONS AND COMMENTS:

IRB Chair/Designee

APPROVAL DATE*: 2/14/05

EXPIRATION DATE*: 2/14/06

pproval of Research is for up to **ONE** year only. If your research extends beyond one year, the project must be reviewed efore the expiration date prior to continuation.

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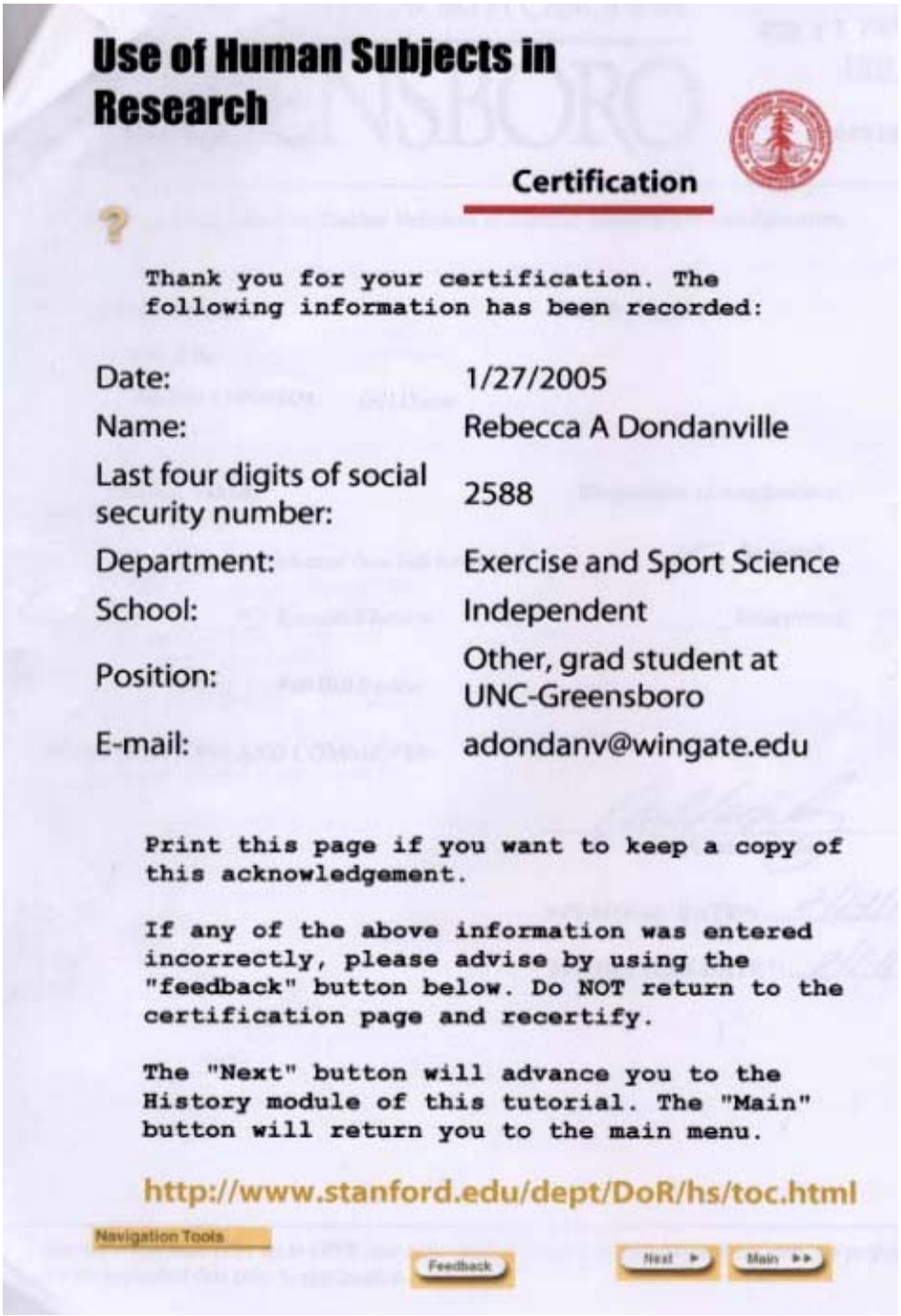
Use of Human Subjects in Research
Certification
Thank you for your certification. The following information has been recorded:
Date: 1/27/2005
Name: Rebecca A Dondanville
Last four digits of social security number: 2588
Department: Exercise and Sport Science
School: Independent
Position: Other, grad student at UNC-Greensboro
E-mail: adondanv@wingate.edu
Print this page if you want to keep a copy of this acknowledgement.
If any of the above information was entered incorrectly, please advise by using the "feedback" button below. Do NOT return to the certification page and recertify.
The "Next" button will advance you to the History module of this tutorial. The "Main" button will return you to the main menu.
http://www.stanford.edu/dept/DoR/hs/toc.html
Navigation Tools
Feedback
Next
Main

University of North Carolina at Greensboro

RESEARCH CONFIDENTIALITY AGREEMENT
FOR RESEARCH INVOLVING HUMAN PARTICIPANTS

I, ***Dr. Traci Gearhart***, have agreed to assist with ***behavior coding from video-taped observations*** for the research project entitled ***Assessing Effective Teacher Behaviors in Athletic Training Clinical Education.***

I agree not to discuss or disclose any of the content or personal information contained within the data, tapes, transcriptions or other research records with anyone other than the Principal Investigator, ***Abbey Dondanville***, or in the context of the research team. I agree to maintain confidentiality at all times and to abide by the UNCG Policy and Procedure for Ethics in Research and the UNCG Policy on the Protection of Human Subjects in Research.

Date: 1-31-05 Signature

Principal Investigator

To be completed by all members of the research team with access to personal data on human research participants.

File a copy with the PI and a copy with the IRB Application.

APPENDIX G

ECEB

Estimation of Clinical Educator Behaviors

Date: _____ **Age:** _____ **Gender:** ☐ Male ☐ Female

First five letters of your clinical instructor's last name: _____

Race/Ethnicity: ☐ Caucasian ☐ African/American ☐American Indian ☐Hispanic/Latino
☐Pacific Islander ☐Asian ☐Other ☐Prefer not to give race

College Class: ☐Freshmen ☐Sophomore ☐Junior ☐Senior ☐Grad Student ☐Other

What degree are you seeking? ☐BA ☐BS ☐MS ☐MEd ☐PhD ☐EdD ☐Other _____

Including this semester, how many semesters have you been formally enrolled in your college/university's Athletic Training Education Program? _____

Directions: For the following categories, estimate the average amount of time your clinical instructor spends demonstrating each of the behaviors groups. Write you estimate as a percentage; the total must add up to 100%.

_____ **Teaching behaviors that give information:**
- Gives explanations or verbal examples
- Demonstrates skills for students
- Refers students to educational aids (posters, books, etc.)

_____ **Teaching behaviors that evaluate students:**
- Gives feedback that corrects a student's skill performance
- Gives specific positive feedback
- Gives general praise

_____ **Teaching behaviors that promote critical thinking and problem solving**
- Asks simple questions
- Asks complex questions
- Stimulates or guides though-provoking conversations

_____ **Positive physical presence**
- Actively observes student practice and patient interactions
- Plans or structures the clinical experience

_____ **Negative physical presence**
- Provides patient care without interacting with the student
- Engages in unrelated conversations and behaviors (i.e., works in their office)

APPENDIX H

SUBJECT RECRUITMENT E-MAIL/TELEPHONE SCRIPTE

SUBJECT RECRUITMENT EMAIL/TELEPHONE SCRIPT

February 1, 2005

Dear _____,

My name is Abbey Dondanville, MS, ATC, and I'm the Clinical Coordinator at Wingate University (near Charlotte). I am currently recruiting subjects for my dissertation research project entitled, "Assessing effective teacher behaviors in Athletic Training clinical education." The study has three parts: 1) development and validation of a survey to assess students' perceptions of both their current and an ideal clinical instructor; 2) development and validation of a survey to assess clinical instructors' perceptions of their own behavior and that of an ideal instructor; and 3) development and validation of an interval recording supervision instrument to measure practicing clinical instructor's use of effective behaviors in the field.

My goal is to administer the survey to as many athletic training students and clinical instructors (ACIs and CIs) in North Carolina as possible. This is where I need your help. I would like permission to send copies of the survey to your school for your students and clinical instructors to complete. The survey has 20 questions and basic demographic information–it took the pre-pilot subjects less than 10 minutes to complete. I would also like to observe clinical instructors in action, but will not observe at all schools. Furthermore, I am not collecting any information that will identify your school, program, or specific individuals (the survey is attached), and will gladly share the collected data with those who are interested.

I believe that this information is critical for improving Athletic Training clinical instruction, and I am grateful to those that are willing and able to help. If possible, please let me know if your program is willing to participate by February 28, 2005. Thank you for your time and consideration.

Respectfully,

Abbey Dondanville, MS, ATC

APPENDIX I

DIRECTIONS FOR SURVEY ADMINISTRATION

DIRECTIONS FOR SURVEY ADMINISTRATION

1. Please administer this Survey to as many students and clinical instructors in your program as possible. Students must be formally admitted to your ATEP to be eligible; clinical instructors may be either ACIs or CIs.

2. Participants may use either a pen or a pencil to complete the Survey. On average, it should take each participant less than ten minutes to complete the Survey.

3. Surveys should be completed under supervision to prevent collaboration and possible data corruption. Distribute one copy of the Survey packet to each participant; Student copies are **white** and Clinical Instructor copies are **yellow**.

4. Read the following script:

   Thank you for agreeing to participate in this research project. Please take a minute to read the informed consent form on the top of the Survey packet. If you agree to participate in this study, fill in your name, sign, and date both copies of the consent form (the top two pages). [Pause to give participants time to read and sign the consent forms.]

   Carefully tear the top copy of the form off of the packet to retain for your records. Next, turn to the Survey and read the directions at the top of the page.

   The Survey of Effective Clinical Educator Behaviors is intended to measure your perceptions of demonstrated effective teaching behaviors. On the left side of the survey (on both the front and back), indicate how often your current clinical instructor (or yourself if you are a clinical instructor) demonstrates the behavior. On the right side of the Survey, indicate how often an ideal clinical instructor would demonstrate the behavior. [Do not discuss the attributes of an ideal instructor with the participants.] Once you have rated each statement for both your current and an ideal clinical instructor, please complete the demographic information at the bottom of the back page. Remember that your participation is completely voluntary.

5. Collect Survey packets when all participants have finished. Carefully separate the second copy of the consent form from the survey.

6. Return all Surveys and signed consent forms in the provided envelope.

7. Thank you for your participation. If you have any questions or would like a copy of the completed data, please call or email the investigator.

Abbey Dondanville, MS, ATC
Clinical Coordinator, Wingate University
Campus Box 2511
Wingate, NC 28174
adondanv@wingate.edu
704/233-8371

APPENDIX J

CONSENT FORM

THE UNIVERSITY OF NORTH CAROLINA
GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT

Project Title: Assessing Effective Teacher Behaviors in Athletic Training Clinical Education

Project Director: Abbey Dondanville, MS, ATC

Participant's Name: _____

DESCRIPTION AND EXPLANATION OF PROCEDURES:
Subjects will be recruited from all Athletic Training Education Programs in North Carolina. However, no information that could be used to identify schools, subjects, or their programs will be collected. This project will assess student and clinical instructor perceptions of effective clinical teaching behaviors using the Survey of Effective Clinical Educator Behaviors. The Survey requires approximately ten minutes of each subject's time to complete, but no preparation or follow-up. The principal investigator will also observe a few subjects during their clinical rotations to measure their use of effective behaviors in practice. By consenting, you agree to be observed if chosen. All observations will take place during regularly scheduled clinical experiences, and will be as unobtrusive as possible. Data and consent forms will be kept for seven years in a secure location and shredded upon disposal.

RISKS AND DISCOMFORTS:
There are no risks of participation other than those associated with completing a paper and pencil survey and participating in your normal activities of daily living.

POTENTIAL BENEFITS:
The data collected from this study will be used to improve athletic training clinical education by identifying potential disparities between student-identified effective teacher behaviors and those actually demonstrated by clinical instructors.

CONSENT:
By signing this form and completing the survey, you agree that you understand the procedures and any risks and benefits involved in this research. You are free to refuse to participate or to withdraw your consent to participate in this research at any time without penalty or prejudice; your participation is entirely voluntary. Your privacy will be protected because you will not be identified by name or program as a participant in this project.

The research and this consent form have been approved by the University of North Carolina at Greensboro Institutional Review Board, which insures that research involving people follows federal regulations. Questions regarding your rights as a participant in this project can be answered by calling Mr. Eric Allen at (336)256-1482. Questions regarding the research itself will be answered by Ms. Abbey Dondanville, MS, ATC by calling (704)233-8371. Any new information that develops during the project will be provided to you if the information might affect your willingness to continue participation in the project.

By signing this form and completing the survey, you are agreeing to participate in the project described above.

_____ _____
Participant's Signature* Date

*If participant is a minor or for some other reason unable to sign, complete the following:

Participant is _____ years old or unable to sign because _____.

_____ _____
Custodial Parent(s) / Guardian Signature(s) Custodial Parent(s) / Guardian Signature(s)

APPENDIX K

ORCEB PROFILES FOR CLINICAL INSTRUCTORS

ORCEB Profile for Clinical Instructor A (percent of observation time per behavior category).

Subcategory			Observation Period (Time of Day)					
			1:00-1:30	1:30-2:00	2:00-2:30	2:30-3:00	3:00-3:30	Average
Information	E (Explains)		17	29	5	10	6	13.4
	D (Demonstrates)		4	2	0	0	0	1.2
	A (Uses Aids)		0	0	0	0	0	0
		TOTAL	21	31	5	10	6	14.6
Evaluation	C (Corrective Feedback)		1	1	0.8	4	0.6	1.5
	F (Specific Feedback)		0	0	0	0.3	0	0.06
	P (General Praise)		0.3	0	0.3	0	0	0.12
		TOTAL	1.3	1	1.1	4.3	0.6	1.66
Thinking	L (Simple Question)		3	0	0	1	0.3	0.86
	H (Complex Question)		0	0	0	0	0	0
	S (Peer Learning)		0	0	0	0	0	0
		TOTAL	3	0	0	1	0.3	0.86
Positive Presence	O (Actively Observes)	TOTAL	15	34	4	13	45	22.2
Negative Presence	T (Patient Care)		47	11	79	65	31	46.6
	X (Unrelated Behaviors)		15	23	11	7	17	14.6
		TOTAL	62	34	90	72	48	61.2
Down Time		TOTAL	0	0	0	0	0	0

ORCEB Profile for Clinical Instructor B (percent of observation time per behavior category).

Subcategory		Observation Period (Time of Day) 1:00-1:30	1:30-2:00	2:00-2:30	2:30-3:00	3:00-3:30	Average
Information	E (Explains)	0	0	0	9	0	1.8
	D (Demonstrates)	0	0	0	0	0	0
	A (Uses Aids)	0	0	0	0	0	0
	TOTAL	0	0	0	9	0	1.8
Evaluation	C (Corrective Feedback)	0	0	0	3	0	0.6
	F (Specific Feedback)	0	0	0	0.6	0	0.12
	P (General Praise)	0	0	0	0.3	0	0.06
	TOTAL	0	0	0	3.9	0	0.78
Thinking	L (Simple Question)	0	0	0	0	0	0
	H (Complex Question)	0	0	0	0	0	0
	S (Peer Learning)	27	0	0	0	0	5.4
	TOTAL	27	0	0	0	0	5.4
Positive Presence	O (Actively Observes) TOTAL	0	0	0	15	0	3
Negative Presence	T (Patient Care)	0	0	0	31	0	6.2
	X (Unrelated Behaviors)	73	100	100	33	0	61.2
	TOTAL	73	100	100	64	0	67.4
Down Time	TOTAL	0	0	0	7	100	21.4

ORCEB Profile for Clinical Instructor C (percent of observation time per behavior category).

Subcategory		Observation Period (Time of Day) 1:00-1:30	1:30-2:00	2:00-2:30	2:30-3:00	3:00-3:30	Average
Information	E (Explains)	4	0	0	2	2	1.6
	D (Demonstrates)	0.8	0	0	0	0.8	0.3
	A (Uses Aids)	0	0	0	0	0	0
	TOTAL	4.8	0	0	2	2.8	1.9
Evaluation	C (Corrective Feedback)	1	0	0	0	1	0.4
	F (Specific Feedback)	0	0	0	0	0	0
	P (General Praise)	0	0	0	0	0	0
	TOTAL	1	0	0	0	1	0.4
Thinking	L (Simple Question)	0	0	0	0	0.3	0.06
	H (Complex Question)	0	0	0	0	0	0
	S (Peer Learning)	0	0	0	0	0	0
	TOTAL	0	0	0	0	0.3	0.06
Positive Presence	O (Actively Observes) TOTAL	9	0	0	2	1	2.4
Negative Presence	T (Patient Care)	41	85	0	78	82	57.2
	X (Unrelated Behaviors)	43	15	0	16	12	17.2
	TOTAL	84	100	0	94	94	74.4
Down Time	TOTAL	0	0	100	2	0	20.4

ORCEB Profile for Clinical Instructor D (percent of observation time per behavior category).

Subcategory		Observation Period (Time of Day) 1:00-1:30	1:30-2:00	2:00-2:30	2:30-3:00	3:00-3:30	Average
Information	E (Explains)	11	19	12	15	48	20.8
	D (Demonstrates)	0	0	0	0	0.6	0.12
	A (Uses Aids)	0	0	9	0	0	1.8
	TOTAL	11	19	21	15	48.6	22.7
Evaluation	C (Corrective Feedback)	0	0	2	0	0	0.4
	F (Specific Feedback)	0	0	0	0	0	0
	P (General Praise)	0	0	0	0	0	0
	TOTAL	0	0	2	0	0	0.4
Thinking	L (Simple Question)	0	0	0.6	0.3	0	0.18
	H (Complex Question)	0	0	0	0	0	0
	S (Peer Learning)	2	0	0	0	0	0.4
	TOTAL	2	0	0.6	0.3	0	.6
Positive Presence	O (Actively Observes) TOTAL	0	4	32	7	11	10.8
Negative Presence	T (Patient Care)	11	42	14	16	11	18.8
	X (Unrelated Behaviors)	75	36	31	62	30	46.8
	TOTAL	86	78	45	78	41	65.6
Down Time	TOTAL	0	0	0	0	0	0

APPENDIX L

COMPARISON OF OBSERVED INSTRUCTORS' SCORES ACROSS ALL INSTRUMENTS

Comparison of Observed Instructors' Scores Across All Instruments.

		Instructor A		Instructor B		Instructor C		Instructor D	
Subcategory		Student	Self	Student	Self	Student	Self	Student	Self
SECEB[1]	I	4.56	3.33	4.50	3.50	3.83	4.17	4.25	4.00
	E	4.40	3.75	4.42	4.0	3.96	4.25	4.56	3.67
	Q	4.17	3.20	4.13	3.40	3.47	4.60	3.85	3.40
	P	3.97	3.40	3.60	4.40	3.13	4.00	4.05	4.00
	Total	4.28	3.40	4.16	3.60	3.59	4.25	4.16	4.05
ECEB[2]	I	23%	30%	35%	25%	29%	20%	18%	25%
	E	32%	10%	36%	25%	24%	20%	26%	25%
	Q	22%	10%	13%	5%	17%	15%	19%	15%
	P (+)	20%	40%	12%	25%	25%	40%	33%	25%
	P (-)	3%	10%	2%	20%	4%	5%	5%	10%
ORCEB[3]	I	15%		2%		6%		23%	
	E	2%		1%		0.5%		0.3%	
	Q	1%		5%		0.1%		0.6%	
	P (+)	22%		3%		5%		11%	
	P (-)	61%		68%		74%		66%	

Note. Subcategory abbreviations are as follows: I (information), E (Evaluation), Q (Thinking), P (General Presence), P+ (Positive Presence), and P- (Negative Presence).
[1]Total Score representing perceived behavior time.
[2]Estimated percentage of behavior time.
[3]Actual percentage of behavior (time) from observations. (Percentages may not add to 100% due to times during the observation sessions when no students or athletes were present.)