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Feedback has been established as an important educational tool in athletic training clinical education. However, there is currently minimal understanding of the feedback provided during athletic training clinical education experiences. The purpose of this study was to examine the characteristics of feedback in athletic training clinical education, in addition to perceptions of and influences on the feedback that is occurring. Exploratory, qualitative methods primarily drawing from a case-study design were used to investigate this topic. Four clinical instructors (CI) and four second-year athletic training students from one CAATE-accredited entry-level master's athletic training program participated in this study. Two CIs were located in a Division I collegiate athletics setting and the other two CIs were located in an outpatient rehabilitation clinic. The researcher observed and audio recorded each CI-student pair during their normal daily interactions for three or four days of the student's clinical rotation. After observations were completed, each participant was interviewed individually to gain understanding of their perceptions of feedback and influential factors on feedback. A total of 88 feedback exchanges were recorded during 45 hours and 10 minutes of observation. CIs generally provided feedback that coincides with recommendations for effective feedback in the literature, including immediate, specific, and positive feedback. CIs and students had similar perceptions of the feedback that occurred during their interactions and had similar opinions of what is considered ideal feedback, including immediate, specific, verbal, and positive. Both CIs and students also described that several factors influence their feedback exchanges,

including availability of time, personalities, and the patient. The findings of this study provide insight on the feedback that is currently occurring in athletic training clinical education. Athletic training educators can use this information when training CIs how to provide feedback to students, in addition to evaluating their effectiveness. The exploratory nature of this study also exposes several areas where further research is needed. Investigators need to continue examining the feedback that is occurring across several athletic training programs, in addition to learning more about the effectiveness of feedback training programs, the unique challenges faced by novice CIs, and the extent that personality, time, and the patient influence student learning.

AN EXAMINATION OF FEEDBACK INTERACTIONS

BETWEEN ATHLETIC TRAINING STUDENTS

AND CLINICAL INSTRUCTORS

by

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To my parents –

For your constant support and encouragement throughout my life.

To friends near and far –

Thank you for your support, even if you don't fully understand what I do.

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of

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CHAPTER I

INTRODUCTION

The purpose of clinical education is to foster athletic training students' ability to critically think and apply knowledge and skills in real patient care situations.[1,2] In this setting, Clinical Instructors (CIs) supervise students and help them develop their clinical skills as they gain hands-on experience.[2] Similarly, CIs help students progress their knowledge to clinical competence and develop their professional maturity and communication skills.[2,3] Graduates of athletic training professional education programs state that their clinical education contributed to 53% of their professional development.[2] Because of the significant role clinical education has in student development, athletic training educators must ensure that CIs are providing proper supervision, instruction, and assessment of athletic training students.[4]

One way to help students develop their clinical knowledge and skills is with the use of feedback. Feedback is any information provided to a student regarding their performance, whether it is confirming, correcting, or providing suggestions for change.[5,6] Feedback is a type of evaluation that typically contains less judgment than more formal, summative evaluation and assessment.[6] When providing feedback, clinical instructors determine whether a student's performance was accurate or not, then provide information to the student about their performance.[7] This information can include a brief verbal comment or nonverbal gesture, or a more elaborate description or discussion of the

performance.[6] While some degree of evaluation is necessary to provide feedback, the emphasis on feedback is providing formative information to help the student improve, rather than making a summative evaluation of their performance.[4,6]

Providing feedback has been established as an effective educational technique in education for several years.[8,9] Feedback has significant benefits on learning compared to students who do not receive feedback,[9-11] and is considered to be one of the most influential factors on student achievement.[8] Providing feedback to students has also been described as one of the most important characteristics of clinical instructors in medicine,[12,13] nursing,[14] physical therapy,[15] and athletic training.[16,17] The cognitive, psychomotor, and affective aspects of learning clinical skills are best achieved by receiving feedback from a supervisor, otherwise incorrect actions are not corrected for future performance.[6] Feedback has been shown to improve clinical performance in medical[18,19] and nursing students.[20,21] Despite the support for feedback in clinical education, feedback is often found to be inadequate in these settings.[22-24] These findings have led to several educational interventions that have improved feedback in these environments.[25-27]

Most research in the area of feedback has focused on the recommended characteristics of feedback, such as its specificity, timing, tone, and relation to goals.[8,9,28,29] Through research in classroom[8,9] and clinical education,[28,30] experts have suggested that quality feedback is usually specific, immediate, frequent, based on observed behaviors, related to student goals, and non-judgmental. Because much of the research is based on student and instructor perceptions of whether these

recommendations are followed, several studies have also compared different perceptions of feedback.[19,31] This research has found that there are several disagreements between what students, instructors, and experts believe is good feedback.[19] Additionally, these individuals often do not agree on the efficacy of feedback.[32]

As well as the characteristics and perceptions of feedback, several investigators have examined the factors that influence the feedback exchange between clinical instructors and students. These studies have found that several factors do influence how feedback is given and received in this setting, including interpersonal and communication abilities of clinical instructors,[30,33] their ability to adjust feedback to students,[34,35] and their past experiences as teachers and learners.[23,36] Additionally, student receptivity to feedback,[37] the clinical environment,[38] and the degree of supervision[39] have all been found to influence the feedback exchange between students and teachers. These aspects of the student-instructor relationship further complicate the delivery and use of feedback in clinical education.

Feedback research in athletic training is much less extensive than other areas of clinical education. Most of the research related to feedback in athletic training education has focused on general effective clinical instructor behaviors.[16,40,41] These studies have identified feedback as an important behavior of clinical instructors,[16] and along with evaluation is considered a standard for selecting, training, and evaluating CIs.[40,41] Several authors have provided suggestions for giving effective feedback to athletic training students in clinical education.[5,42,43] Stemmans et al compared the quantity of feedback provided by clinical instructors with different amounts of experience.[44] Their results

indicated that novice clinical instructors provide less feedback to athletic training students than more experienced clinical instructors. Other research has found that students spend more time engaged in active learning in the clinic settings compared to students in intercollegiate and high school settings.[45] Knowing that learning experiences differ between clinical settings, it is possible that the feedback exchange will also differ between settings. Other aspects of feedback in athletic training, such as the characteristics, perceptions, and other influential factors, are largely unknown.

Statement of the Problem

Athletic training clinical education includes a low instructor to student ratio, oftentimes one-on-one, which provides the ideal environment for consistent and effective feedback to influence student learning. Providing feedback is also considered to be one of the most important roles of CIs during clinical education experiences.[16,17] However, feedback has been minimally explored in either practitioner-based articles or research studies specific to athletic training. At this time, no published studies describing the characteristics, perceptions, or factors that influence feedback in athletic training clinical education have been found. Similarly, no research has examined how feedback is used in different clinical education settings, such as rehabilitation clinics and intercollegiate athletic training facilities. This research study was designed to fill the gap in this literature. The purpose of this qualitative study was to gain understanding of the feedback provided by Clinical Instructors (CIs) to students in the athletic training clinical education setting.

Research Questions

1. What are the characteristics of feedback provided by CIs to entry-level master's (ELM) athletic training students during clinical education experiences in different settings?

2. What are ELM athletic training students' perceptions of the feedback provided by their CI(s) during clinical education experiences in different settings?

3. What are CIs perceptions of the feedback they provide to ELM athletic training students during clinical education experiences in different settings?

4. What factors influence the feedback that CIs provide to ELM athletic training students in different settings?

5. What factors influence how ELM students respond to the feedback provided by their CIs in different settings?

Rationale and Significance

This research study provides a foundation of information regarding feedback in athletic training clinical education. Because feedback has such an important role in clinical education, educators should be aware of what is occurring in these settings. Once strengths and weaknesses of feedback have been identified, educators can take action to improve its use in clinical education. Similarly, understanding how CIs and students perceive the feedback they are giving and receiving can provide insight about how well these individuals comprehend what is happening. If a discrepancy is found between students and instructors, actions can be taken to minimize these differences. Along with the perceptions of feedback, knowing the other factors that influence the feedback

exchange can help educators understand how the clinical instructor, student, and environment affect how feedback is given and received. Educators can use this information to construct learning environments that best facilitate the delivery and use of feedback. With this information educators will be aware of the role of feedback in athletic training. Similar to other health professions, this knowledge can be used to improve this area of clinical education through educational interventions and further research.

Approach to Research

In order to address these research questions, a qualitative study drawing from the case study approach to research was conducted. Qualitative methods take into consideration the context and unique interactions of the participants,[46] which is important when investigating factors that influence feedback. Observation, audio recording, and interviews were conducted with several CI-student pairs in one entry-level master's athletic training program. This allowed for in-depth analysis of the feedback that occurred within CI-student pairs, in addition to comparisons between pairs. Also, the combination of observations and participant interviews provided information about the actual and perceived feedback that occurred in this setting. Taking a qualitative approach to research allowed for themes to emerge from the data, which is appropriate when little research has been done in an area.[47] While the results of this study will not be generalized, they provide insight on the use of feedback in athletic training clinical education.

Operational Definition of Terms

1. Feedback: Information provided to a student regarding their performance, whether it is confirming, correcting, or providing suggestions for change.[5,6] Focuses more on providing information than making a judgment or assessment of a student's performance, although some amount of evaluation or judgment is needed to provide feedback.[6]

2. Clinical Instructor (CI): An individual identified to provide supervision of athletic training students during their clinical experience.[48] Within the context of this study a CI is synonymous with an Approved Clinical Instructor (ACI), which is a commonly used term in the context of athletic training clinical education to describe a clinician that evaluates students' performance.

3. Athletic Training Student: A student enrolled in the athletic training major or graduate major equivalent.[48]

4. Clinical Education: The application of knowledge and skills, learned in classroom and laboratory settings, to actual practice on patients under the supervision of a CI.[48]

5. Clinical Experiences: Those clinical education experiences for the Athletic Training Student that involve patient care and the application of athletic training skills under the supervision of a qualified instructor.[48]

6. Direct supervision: Supervision of the athletic training student during clinical experience. The CI must be physically present and have the ability to intervene on behalf of the athletic training student and the patient.[48]

Limitations

1. Participants may have changed their behaviors because they were being observed, known as the Hawthorne Effect.[49]

2. The results of this study may not be generalized to other athletic training education programs due to the small number of participants and purposeful sampling procedures.

3. Various past experiences with CI training and clinical teaching may have influenced CIs' behavior and opinions regarding feedback. Participants were asked about past experiences during the interview to disclose this information.

4. Only three or four days of each CI-student interaction were recorded, which may not have been enough to capture the actual interactions that occurred between CIs and students. Similarly, data collection occurred within seven weeks during the early part of the semester, which may not have captured changes in behavior that may have occurred over time.

5. The researcher's own experiences and bias may have been present throughout the data collection and interpretation process. This was minimized with the use of rich description, peer debriefing, and member checks.

6. Audio recording did not capture non-verbal behavior such as visual feedback. Non-verbal behavior was described in researcher field notes during data collection periods, but it is possible that some non-verbal feedback was missed.

Delimitations

1. This study was limited to the feedback occurring with a small group of CIs and students in one entry-level master's athletic training program in the southeastern United States.

2. Clinical education settings investigated in this study were limited to the collegiate and rehabilitation clinic settings.

3. Only second-year entry-level master's students participated in this study.

Assumptions

1. Feedback is being provided to some degree in the athletic training clinical setting.

2. The presence of the researcher and microphones had minimal influence on CI-student behavior.

3. It was assumed that all participants responded honestly and accurately to interview questions.

CHAPTER II

LITERATURE REVIEW

INTRODUCTION

The purpose of this review is to discuss the theoretical background, roles, and benefits of feedback in clinical education. The major areas of feedback research, including the characteristics, perceptions, and influences on feedback will be described. In addition, the challenges related to providing and researching feedback in clinical education will be discussed. The role of feedback in athletic training clinical education and related research will also be described.

THEORETICAL BACKGROUND

Definition

In educational settings, feedback is any information provided to a learner about the accuracy of their response or performance.[6,7] This may include information that confirms, corrects, or guides a student's future performance.[5,7] Feedback is an informal type of evaluation that has less emphasis on scoring or grading performance than formal evaluation or assessment.[6] Feedback should move a student toward achieving a goal, whereas evaluation determines how successfully a student met the goal.[50] Although there is less emphasis on judgment and providing a score when providing feedback, in order to improve students still need an understanding of whether their performance was correct or not. Therefore, there is some degree of evaluation when giving feedback.[6]

Theoretical Background

The theoretical basis for using feedback comes from several disciplines and has greatly transformed since the beginning of the 20th century. The basis for using feedback in education is nested in several learning theories, including behaviorism, cognitive and social cognitive learning theories, and constructivism.

Behaviorism

Behaviorist approaches to learning focus on the environment as a stimulus for change where the learner has little control over their learning.[51] Thorndike's Law of Effect, developed in 1913, stated that feedback acts as a connector between a response and stimulus.[52] Here, feedback acted as a reinforcement of good behavior and discouragement of incorrect behavior. Similarly, Skinner focused on providing positive reinforcement for desired behavior and ignored undesirable behavior.[51] When used strictly as reinforcement, feedback does not provide information about the actual performance or how to change future behaviors; it only indicates that a performance is correct.[7] This approach to providing feedback places emphasis on the need for the instructor to provide reinforcement in order to promote learning.

Cognitive Learning Theory

Cognitive learning theory, also known as information processing, places more control in the learner's hands. In cognitive learning theory, prior knowledge plays an important role in learning, and the human mind is an active processor of information.[51] Cognitive theorists believe that without the correction of incorrect behavior, learners would not recognize that the behavior needed to be changed. Therefore, in contrast to

behaviorism, feedback in cognitive learning theory serves to correct errors, not just reinforce correct answers.[7] After feedback is given, the learner acts on the feedback to improve their behavior.[7] This cycle of feedback and improvement progresses the learner towards meeting the learning goal.

Social Cognitive Learning Theory

Social cognitive learning theory is similar to cognitive theory because it recognizes that the learner is an active processor of information who can change behavior based on feedback. Different from cognitive learning theory, social cognitive learning theory also takes into consideration the social and environmental contexts of the learning process.[51,53] Primarily developed by Bandura, social cognitive theory states that much of human learning is social and occurs by observing and modeling.[51] Two types of feedback occur during social cognitive learning theory: self-regulation and external feedback.[54] Self-regulation occurs when students provide their own internal feedback about their performance and subsequently change their behavior.[54,55] In addition to student self-regulation of learning, external feedback provided by an instructor provides more information to the student about how to change their behavior.[54] In turn, the student's ability to respond to the feedback depends on their ability to integrate this information with their self-evaluation and self-efficacy.[55] This combination of internal and external feedback, in addition to the student modeling behaviors around them, facilitates learning in social cognitive learning theory.

Constructivism

Constructivism considers learner's experience and the environment in the learning process.[51] In this approach to learning, an individual's personal meaning and past knowledge influence how new knowledge is developed.[51] The learner is an active participant in learning, and there is often a collaborative and social nature to constructivist learning.[51] Similar to social cognitive learning theory, it considers the roles of the individual and environment; however, the learner constructs knowledge rather than imitating the roles and behaviors of others.[51] Feedback provides the learner with information that helps them develop knowledge and make connections between past and future performances.[7] How the learner uses the feedback depends on the context and how the individual interprets the information.[7]

Benefits of Feedback

The purpose of feedback is to increase student knowledge, skills, and understanding of a concept or skill.[9] Providing feedback to students corrects incorrect behavior and guides them toward improving their performance.[6,9] It helps signal a discrepancy between current and desired performance that students may not realize by themselves.[9] Additionally, students often have uncertainty when performing clinical skills, and receiving confirming or correcting feedback from an instructor can help reduce this uncertainty.[9] Providing feedback shows students that instructors are concerned for their progress and willing to put effort toward their development, and not just interested in giving final scores or grades.[6] Feedback also helps promote self-awareness in students, moving them toward self-directed learning.[56]

Several meta-analyses in education have found that feedback significantly improves learning when compared to control groups that did not receive feedback.[9-11] These studies include verbal and written feedback given in laboratory and real-time environments, with effect sizes ranging from 0.40 to 0.80.[9,10] Subsequent analyses have identified certain characteristics of feedback that decrease its effectiveness, including a lack of specificity, presence of a pretest, and different types of instruction.[11] After controlling for the factors that are considered undesirable or poor quality feedback, the average effect size increases to 0.77.[11] Compared to other factors that influence student achievement in classrooms, feedback is one of the top ten influences on achievement, and more significant than homework, socioeconomic influences, and reduced class sizes.[8]

Summary of Theoretical Background

Feedback is any information provided to a student about their performance, including information that corrects, guides, or provides details on the students' skills. It should be more formative and less judgmental than formal evaluation methods. The use of feedback is supported by several learning theories, including behaviorism, cognitive and social cognitive learning theories, and constructivism. Feedback is provided to students to help increase their knowledge, skills, and understanding, by correcting incorrect behavior, guiding them towards improved performance, and promoting self-awareness. Feedback has been shown to improve learning in several education settings, and is one of the most influential factors on student achievement.

FEEDBACK IN CLINICAL EDUCATION

Athletic training clinical education includes the application of knowledge and skills learned in classroom and laboratory settings to actual patients.[48,57] Clinical education is a form of experiential learning, where students learn by integrating past knowledge with new experiences.[58] In experiential learning, students progress through the process of being open to new experiences, reflecting on experiences, integrating ideas, and advancing to problem-solving that is applied in actual clinical practice.[51,58] Students move from theoretical learning to practical learning through the development of critical thinking skills.[59] Feedback from an instructor helps students progress through this process of learning by challenging and validating learners' developing knowledge.[51,58] It also helps students re-arrange information learned in the classroom and fit it into the clinical environment.[7] Without feedback, this process of transforming knowledge through experience can be stalled;[58] students are unaware of when they need to correct a mistake, and their correct performance is not reinforced.[6] As a result students may generate their own feedback, which may be counterproductive to developing clinical competence.[6]

Clinical education also includes development of the affective skills related to becoming a professional, including communication and social behaviors which are important aspects of professional socialization.[59,60] The complex set of cognitive, psychomotor, and affective behaviors[6] that comprise clinical education require feedback to guide the student to correct behaviors. Feedback in clinical education helps students identify their strengths and weaknesses in these areas to promote learning and behavioral change.[4,61] Feedback from a clinical instructor provides information to students about

where they stand in relation to the instructor's expectations and standards of the profession.[1] Feedback also helps with student motivation and can promote self-regulated practice.[61] By providing feedback regarding students' professional behaviors in addition to their clinical skills, clinical instructors can better socialize students into the professional role of an athletic trainer.[62]

The Role of Clinical Instructors

A significant component of receiving feedback during athletic training clinical education experiences is the Clinical Instructor (CI). The CI has a vital role in clinical education experiences,[17,57,60] and CIs are often the most important factor in student satisfaction with a clinical education experience.[63,64] Clinical instructors have the responsibility of acting as both a mentor and assessor of student knowledge in the clinical setting.[61] CIs are responsible for creating an effective learning experience for students, which includes feedback that promotes improvement of clinical skills.[43]

Clinical instructors in athletic training and other professions are typically selected because of their clinical and professional behaviors rather than their instructional skills,[15,40] and few athletic trainers have formal instruction in clinical teaching and supervision.[60] In order to promote effective clinical education experiences for athletic training students, standards have been developed for the selection, training, and evaluation of CIs.[40] Providing formative, constructive feedback is one component of the evaluation standard expected of CIs.[40,41] The Commission for the Accreditation of Athletic Training Education (CAATE) requires that CIs must be trained at least every three years in the areas of student learning styles and instructional skills, evaluation of

student performance and feedback, and other areas related to the educational competencies, legal and ethical behavior, and communication skills.[48] Individual athletic training programs determine the extent that their CIs are trained and evaluated in these areas.

Research in Medicine and Allied Health

Several research studies support the use of feedback in clinical education. Feedback is considered an essential component of supervision in medical education.[65] It is also one of the most important characteristics of clinical instructors in medicine,[12,13] nursing,[14] and physical therapy.[15] In athletic training, program directors, clinical instructors, and students also agree that providing effective feedback is one of the most important clinical instructor behaviors.[16,17]

A study in medicine examined the influences of formative and summative feedback on learning the process of reaching a clinical diagnosis.[18] Students receiving both types of feedback performed better than students who only received summative evaluation of their performance. In a different study, medical students who received feedback on their surgical knot-tying skills improved significantly better than students who did not receive feedback.[19] In a review of 41 studies, 74% found that feedback positively impacted physicians' clinical practice.[66] Another study in medicine examined the effects of providing student self-assessment and instructor feedback on students' videotaped performances.[56] Seventy-five percent of participants said that this combination of feedback helped improve their abilities to self-critique.[56]

In nursing, feedback has been found to improve students' knowledge and confidence when performing general clinical skills during clinical rotations.[21] Another study in nursing investigated the effects of feedback on performing unassisted surgical gloving.[20] Students who received feedback performed significantly better and faster on the skill than those who did not receive feedback on their performance.[20]

Although feedback positively impacts clinical performance, and is considered an important component of clinical education, research in this area demonstrates that students are often unsatisfied with the feedback they receive. Medical residents are generally unhappy with the feedback given in the emergency department[22] and during general internal medicine teaching rounds.[23] Medical residents have also reported that feedback is inadequate and vague, and needs significant improvement in the future.[31] A study in ambulatory medicine audiotaped clinical teachers and examined the comments provided to students.[67] Of all statements given to students, 10% were considered feedback. However, most of the feedback consisted of low-level statements such as "I agree," with few specific comments about how the students could improve.[67] Dental students completing a survey of their clinical education experiences described that they generally received inconsistent and condescending feedback from their clinical instructors.[24] Although they described that they gained proficiency in clinical skills from practice and feedback, only 53% of students described that they received consistent instruction and feedback from clinical instructors.[24] In contrast, nursing students recording and commenting on their instructors' feedback had positive comments on the amount and type of feedback, although specific ratings were not used.[21] These studies

suggest that more research on the relationship between the quality of feedback and impact on clinical performance should be conducted.

Intervention Programs

In order to address the generally poor state of feedback in medicine, several strategies have been used to improve feedback. Workshops following Ende's[6] classification for effective feedback have been used to improve feedback given by clinical instructors. While the changes in feedback were not observed, participants described that the workshop helped them, especially in giving direct, behavior-focused feedback.[25] Workshops teaching the One-Minute-Preceptor, a five-step process of teaching, guiding, and reinforcing student skills, have improved the feedback provided in internal medicine.[27,68] Clinical Encounter Cards, which are cards given to clinical instructors to prompt brief written and verbal feedback, have also been shown to improve feedback in surgical[26] and ambulatory[69,70] medicine. These studies suggest that feedback can be improved with intervention programs in clinical education settings.

Research in Athletic Training

Research on the current state of feedback in athletic training is minimal. There have been no studies conducted in athletic training that have investigated the effectiveness or influence of feedback on clinical skill performance. One study investigating the amount of feedback provided by clinical instructors with different experience levels found that novice CIs with less than one year of experience provide almost no feedback to athletic training students in comparison to CIs with more clinical experience.[44] The study observed clinical instructors and students for ten minute time

periods of their clinical education experiences, and novice, intermediate, and advanced

clinical instructors provided 0.8, 5.5, and 5.8 feedback statements, respectively, during

that time.[44]

Summary of Feedback in Clinical Education

Clinical education provides opportunities for athletic training students to apply

knowledge and skills to real patient care situations. Feedback provided by CIs helps

students transfer this knowledge to the clinical setting by challenging and validating their

application of skills. Effective feedback has been found to improve clinical skill

performance in medicine and nursing. The complex set of behaviors related to developing

clinical competence requires feedback from a knowledgeable clinical instructor, and is

considered an essential characteristic of CIs. This is reflected in standards for the

selection, training, and evaluation of Clinical Instructors. Despite the recognized

importance of feedback in clinical education, feedback in most of these settings is

unsatisfactory. Feedback is described as being inconsistent, vague, and sometimes

condescending. Research on feedback in athletic training is generally lacking, other than

a study identifying that novice CIs provide feedback less than more experienced CIs.

Workshops and interventions in medicine have led to improvements in the feedback

given to students, suggesting that feedback can be improved with educational programs.

CHARACTERISTICS OF FEEDBACK

Several characteristics of feedback have been examined in the literature, including

its specificity, complexity, frequency, timing, and tone, in addition to its relation to goals,

degree of student input, and focus on observed behaviors. These characteristics provide a

framework for most research investigating the effectiveness of feedback within different educational environments.

Specificity

Specificity of feedback is related to the level of information, or amount of elaboration, included in a feedback statement.[9] Feedback should be specific enough to help students transfer knowledge from one skill to another.[71] It should provide information about the process rather than just the outcome of the performance.[8] Providing actual examples of the student's performance, rather than generalizations, make the feedback more useful.[6] For example, providing specific information about the student's hand placement and sequence of special tests will provide more helpful information than stating whether a final diagnosis of an injury was correct or not. Feedback that is lacking specificity may be useless or frustrating to students, and takes more work on the student's part to interpret the meaning of the feedback.[9,72] Feedback that lacks specific detail on a behavior often results in general statements such as "good job" or "that's correct." General praise is usually directed more at the individual rather than the behavior, and may be counterproductive to student performance because it does not provide information to help the student improve.[8,73]

Research in education has concluded that feedback is significantly more effective when it provides details on how to improve rather than just correcting the behavior.[9,11] Feedback that only provides information on the outcome has been shown to impede learning of complex tasks compared to simple tasks.[10] Feedback has been shown to positively influence achievement when it guides the student or provides the correct

answer.[11] In contrast, feedback that only states whether the student was right or wrong has minimal influence on achievement.[11]

Medical students interviewed about the characteristics of effective feedback reported that specific, constructive feedback that included explanations was most helpful while vague feedback was often discounted because it was difficult to interpret.[30] In another study, physicians receiving feedback during a medical interviewing workshop described that general reinforcing feedback was too unspecific, making it hard to link their actions to the feedback.[28] Similarly, feedback that lacks suggestions for improvement was also unhelpful.[28]

Complexity

Similar to the specificity of feedback, the complexity of feedback refers to how much and what type of information is given in the feedback statement.[7] Feedback can include simple confirming or correcting information, or elaboration about why the performance was correct or incorrect and how to improve it.[7] Feedback should at least give students detail about the *what, how, and why* of a problem rather than just verifying performance.[9,11] Although feedback should provide detail, too much information may be overwhelming, dilute the message, or lead to cognitive overload.[6,9] Oftentimes the more specific feedback becomes the more complex it is. Therefore instructors must find a balance between providing specific feedback that is not too complicated.

Several meta-analyses in education have led to inconclusive findings regarding the appropriate complexity of feedback.[7,9,74] While some research has identified no differences between complex and simple feedback,[9] others regarding feedback in written

instruction found that more complex feedback did not promote learning while simpler feedback did.[75] Much of the varied findings are due to the multiple classifications of feedback complexity, and the different traits of verbal, written, and computer-based feedback.[9]

Specific to clinical education, only one study was found regarding the complexity of feedback. In this study, nursing students recorded the feedback given by their clinical instructors and later described their reactions to the feedback in interviews.[21] These students described that they preferred feedback that provided just enough information to help improve their clinical practice without making it more complex.[21] Although the literature on feedback complexity is vague, educators in classroom[7,9] and clinical[6] education specifically agree that feedback should provide a balance between specific detail about a performance without overwhelming the student.

Timing

Timing refers to how soon after the performance feedback is provided to the student. Appropriate timing of feedback depends on the nature of the task and the learner.[9] It is generally recommended that feedback be provided soon after a performance in order to give the student time to improve upon the skill before re-attempting it in the future.[4] Some suggest that delayed feedback may be more appropriate for easier, smaller tasks.[9,11] Providing feedback soon after performing a skill also facilitates more specific feedback. Although feedback should be given soon after a task, feedback provided during a task may be disruptive to the student's learning process if it interrupts their problem-

solving process.[9] This requires instructors to be conscious of the student's thought process as they are observing them perform a skill.

Research in education generally agrees that feedback should be provided immediately after a task is completed.[7,9,11,76] Some research has found that delayed feedback is more effective, especially in transfer and retention of knowledge.[11] However most of these findings have resulted from laboratory and simulated tasks. Immediate feedback is known to be more beneficial in actual learning situations.[7,11,76]

Although it is recommended that feedback in medical education is given as close to the event as possible,[6] there is minimal research in this area. Nursing students who recorded their preceptor's feedback over a four week period described that immediate feedback was one of the most helpful characteristics of the feedback they received.[21] This specific area of feedback has not been investigated in other clinical education settings such as medicine, athletic training, and physical therapy.

Frequency

Similar to the timing of feedback in relation to completion of a skill, the frequency of feedback is another timing issue to consider. There is little information about the recommended frequency of feedback in classroom or clinical education. Much of this absence may be due to the differences between settings where feedback is given. For example, most research in classroom education is related to written assignments or tests or computer-based tasks where there are limited opportunities for feedback to be given.[7,9,74,75]

While there has been some research related to the frequency of feedback in psychomotor skills, there are few suggestions or evidence for what is considered an appropriate amount of feedback.[7,77,78] General research regarding feedback provided on motor skills describes that feedback distributed throughout a task is more effective than larger amounts of feedback at the end of a task, but feedback after every practice attempt is too much.[7] Research in physical education has found that teachers provide feedback as many as 30-60 times during a 30-minute time period.[77,79] Although these studies examined feedback on psychomotor skills, they looked at teachers who supervised several students completing constant physical activity during that time period.[77,79] This is much different than the clinical education setting where the CI and student may not be actively engaged in patient care for that time period. Therefore, it may be difficult to transfer these findings to athletic training clinical education.

In another study of motor skills, chiropractic students were given feedback at different frequencies when performing a spring test on the thoracic spine. This study found that providing constant feedback on the amount of force was helpful as students learned the task, but unhelpful when students had to retain information because they became dependent on the feedback.[78] This study found that infrequent and constant feedback were both detrimental to knowledge retention, but providing feedback one-third of the time produced the best delayed performance. At this time there are no specific recommendations for the appropriate frequency of feedback in clinical education settings. Consequently, clinical instructors must rely on their own judgment of the student needs and the skill being performed to determine how often to provide feedback.

Relation to Goals

Another characteristic of feedback that has been recommended is its relation to a student's goals. For a learner to remain motivated, feedback must help the student see the connection between their current performance and the desired goal.[9] Feedback can be given on larger goals such as successfully completing a physical examination of the knee, or on smaller goals such as properly completing a valgus stress test. Feedback should help students understand what needs to be done to meet their goal,[11] and clinical instructors must be clear about what the criteria is for the goal that is to be met.[73] While it is important to relate student performance to a goal and move the student toward this goal, feedback should not include comparisons to other students.[10] Making these comparisons places judgment on the student and the goals of the performance become unclear.

Although relating feedback to goals is highly recommended in classroom[8,9] and clinical[6] education, research in this area is minimal. Most of the research related to feedback and goals in classroom education is related to the individual commitment to and goal-setting ability of learners.[8,9] In clinical education, physicians who received feedback on their medical interviewing skills that was not related to their goals was considered unhelpful.[28] The limited research in this area is likely due to the difficulty of comparing goals across different education settings and tasks.

Student Input

Effective feedback should also include the students' input and opinions of their own performance. Including the student's opinions helps the clinical instructor and

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student come to a mutual agreement of the student's performance.[6] When the student's input is requested it shows that the student understands and accepts the goals of the performance and can match their performance to those objectives.[71] By providing cues and encouraging student input, instructors also help students with self-discovery.[80] Prompting students to provide their own assessment of performance also helps them develop lifelong learning skills important to clinical practice.[73] Physicians thought feedback that did not elicit their ideas and feelings when discussing a medical interviewing practice session was unhelpful because it was interpreted as a lack of understanding on the feedback giver's part.[28] By soliciting the student's thoughts first, the instructor places responsibility on the student for their learning, and ensures that the CI and student agree on the quality of the student's performance.

Observed Behaviors

Feedback should also be focused on specific behaviors of the student that were observed by the instructor. This helps facilitate specific, accurate feedback.[6] Providing feedback on an observed behavior also helps the student relate the feedback to that performance and reflect on their behavior.[73] Focusing on a student's performance of a specific skill rather than general behaviors gives the learner a sense of control over their ability to improve.[9,10,71] Nursing students described that feedback focused on specific, changeable behaviors was helpful.[21] Similarly, physicians receiving feedback in a medical interviewing workshop rated feedback based on actual observations as the most helpful type of feedback out of nine recommended techniques.[28] Therefore, in order to

provide good feedback, clinical instructors must first directly observe a student's performance on a skill. Otherwise there is no basis for providing feedback.

Tone

Feedback should be given in a way that promotes the advancement of clinical skills while still maintaining students' self-esteem.[43] It should be non-judgmental and descriptive of the actual behavior.[6] While positive comments may still be provided to help give the learner confidence,[73] feedback is least effective when it focuses on praise, rewards, or punishment.[8]

While definitions of positive and negative feedback vary, positive feedback is typically considered confirming or encouraging, while negative feedback disconfirms a student's behavior.[8] Both positive and negative feedback can have positive effects on learning, and the content and aim of the feedback usually has more of an influence on its effectiveness than the tone.[8,10] Research has demonstrated that students will likely be more motivated to continue an activity and seek out more feedback when they receive positive feedback.[8] Similarly, students with low self-efficacy are more likely to react poorly to negative feedback.[8]

Several research studies in clinical education have considered the tone of feedback in their investigation. Medical students shared in an interview that they often discounted judgmental feedback and chose to 'tune out' the person who was providing feedback.[30] Similarly, these students described that positive feedback given in an environment of trust and respect was helpful and gave them confidence.[30]

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Physicians participating in a medical interviewing course were given feedback during practice sessions and later shared their opinions about the feedback that they received during the course.[28] Participants described that the delivery of feedback was one of the most important components, and giving feedback in a caring, supportive way was helpful.[28] Similarly, participants described that feedback that included personal judgments or insults was unhelpful and unfair.[28] A study of clinical teachers' approaches to correcting student behavior in ambulatory medicine found that most instructors corrected students in ways that minimized their errors, which helps preserve students' self-esteem.[80] Feedback given to students should have a balance of specific, corrective information that helps the student learn, without discouraging them or lowering their self-esteem.

Summary of Characteristics

There are several characteristics of feedback that are recommended for use in clinical education and supported by the literature. Feedback should provide specific information about the student's performance, which helps the student use the information and apply it to future tasks. While feedback should be specific, it should not be too complex to the point that it confuses the student or the message is lost in translation. Feedback should be given soon after a task is completed to help the student make changes to their behavior. And although there are no specific guidelines for the frequency of feedback, frequent feedback that does not interrupt the student's thought process is preferred. Good quality feedback should also be related to the students' goals, include student input, and should be based on behaviors directly observed by the instructor.

Feedback should be non-judgmental and encouraging, but the clinical instructor should not avoid giving corrective feedback just to maintain students' self-esteem.

PERCEPTIONS OF FEEDBACK

In addition to the actual feedback that occurs, another area commonly considered in the feedback exchange is individual perceptions of feedback. This includes differences between instructor and student perceptions of the feedback they give and receive, in addition to differences between these perceptions and the actual feedback that occurs.

Most studies that investigate the feedback that occurs in clinical education settings base their understanding of feedback on student and instructor perceptions shared in surveys,[22] interviews,[23] and evaluation forms.[19] Relying on these subjective methods, rather than actual observations, leads to misunderstandings about the feedback that is occurring in these settings. Discrepancies between actual and perceived feedback, and student versus teacher perceptions, may come from a lack of understanding and agreement about what feedback is.[81] Differences may also result from individual preferences for giving or receiving one type of feedback over another.

Some of the major issues in this area are the differences between student and instructor perceptions of feedback. A study examining surgical residents and attending physicians' perceptions of feedback found that there were significant differences between what each group thought of feedback.[82] Surgeons believed they provided effective feedback 90% of the time, whereas residents thought the feedback was effective only 17% of the time. More specific ratings such as timing, judgment, and complexity of the feedback had similar discrepancies.[82] Similar differences were found between medical

students and their clinical faculty, who rated the quality of feedback much lower than faculty did.[31,32] These differences are also found in emergency medicine, where there are significant differences between faculty and resident perceptions of whether feedback is positive and constructive, and what topics feedback is provided on.[22] These individuals also disagreed on who initiates the feedback, where faculty believe they almost always initiate feedback, residents thought their instructors initiated feedback only 25% of the time.[22]

Some of these differences in perceptions may come from instructors' inability to self-assess the feedback they provide. Faculty may believe that they are giving feedback when they are actually not.[22] Clinical instructors in physiotherapy education described that the feedback they provide in formal feedback sessions is reflective of best practices in the literature, however their actual feedback was much less interactive with students than they thought.[61] A study in medicine compared clinical instructor, student, and expert ratings of feedback before and after an intervention. The instructors' ratings did not correlate with expert ratings, suggesting that the instructors were not able to appropriately self-evaluate their behavior.[32] The researchers in this study speculated that the instructors based their performance ratings on their improvement of knowledge of feedback after the workshop rather than their actual performance.

Another issue in this area is that students may have trouble recognizing that feedback is being given to them.[22] A qualitative study in medicine explored clinical teacher behaviors and their perceptions, in addition to student perceptions. The researcher found that although large amounts of feedback were provided, students did not recognize

it was feedback because it was such a routine part of the learning process.[23] In order to address this issue, some have attempted to educate students about feedback. A study in nursing found that after students had to record their clinical instructor's feedback in a clinical log, they increased their awareness and ability to use feedback.[21] A pilot study sought to educate medical students about feedback, including how to recognize, solicit, and use feedback provided by clinical instructors.[83] Student perceptions of the feedback improved after the workshop, suggesting that these workshops can improve student's ability to recognize and use feedback.[83]

In addition to disagreeing with instructors about feedback, research has also found that students are often unsatisfied with feedback that is considered to be good quality by experts. Research in education suggests that individuals are more satisfied with and perceive that positive feedback such as general praise is better than negative feedback that provides corrective information,[84] even though students usually improve more when they receive more specific, corrective feedback.[85] Similarly, medical students performing a surgical knot-tying skill in one study were divided into two groups. One group of students received comments of general praise, while another group received immediate feedback on deficiencies in their performance.[19] Students who received the feedback had a significant improvement in performance compared to the compliment-only group; however, the students in the compliment group rated the comments they received significantly higher than the actual feedback group.[19] Another study in medicine showed that student and expert ratings of clinical instructor feedback were low to moderately correlated.[32] These studies suggest that students have different perceptions of what

quality feedback is compared to experts, and that studies about the effectiveness of feedback should include more than student satisfaction measures.

Although there are discrepancies between student and instructor perceptions of feedback, both groups believe that feedback is important. A study in nursing examined students' and clinical instructors' perceptions of general effective clinical instructor behavior.[86] Both groups agreed that providing timely feedback was a very important trait of clinical instructors. Another study investigated student and faculty perceptions of feedback during clinical clerkships. Students and faculty members were in agreement about the importance of eight feedback categories provided on a questionnaire, including amount, specificity, timeliness, frequency, relevance, encouragement, reciprocity, and recommendations for improvement.[31] Although their ratings of the actual feedback differed, both groups agreed on the important qualities of feedback.[31] These results encourage the continued investigation of feedback in the clinical education setting.

Summary of Perceptions

Instructors and students often have different perceptions of the feedback that is actually given in clinical education settings. Instructors often believe that they provide effective feedback much more than students do, and these opinions are often different than actual observed behaviors. These differences may stem from instructors' inability to self-assess their behavior, or students' inability to recognize feedback. Students often prefer different feedback than what is recommended by experts, which further complicates the understanding of feedback in this area. Most studies that investigate feedback in these environments rely on this subjective information, which produces

various results of what is occurring in these settings. Despite disagreements on what feedback is occurring, both instructors and students agree that feedback is a helpful and important component of clinical education.

INFLUENCES ON FEEDBACK

Several factors influence the feedback exchange between clinical instructors and students during clinical education experiences. These include qualities and characteristics of the clinical instructor, student, and the environment. These factors may influence how feedback is given, received, and interpreted in clinical education.

Clinical Instructor

General Characteristics

General qualities of a clinical instructor, such as their communication skills, interpersonal relationships, and clinical skills and knowledge may influence how students respond to feedback given by an instructor. Perceived credibility of the instructor is one area in particular that is investigated in relation to feedback. Studies in education demonstrate that feedback from a trustworthy source will be taken more seriously than other feedback.[10] In a study of general education students trying to list adjectives showed that the more credible they perceived the feedback source, the more influence the feedback had on their subsequent goal setting and performance.[85] In clinical education, medical students describe that they will be less likely to respond to feedback if a clinical instructor has poor interpersonal skills, is not trusted or respected by the student, or is not considered a credible source.[30] Similarly, surgical residents seek out feedback from supervisors who are more supportive, friendly, and approachable.[33]

These studies suggest that the general interpersonal characteristics of clinical instructors influence how students seek out and respond to feedback. Although no research has been done in this area in athletic training, interpersonal relationships and communication skills have been identified as standards and criteria for selecting and training CIs.[40] Similarly, CIs are expected to have sufficient clinical skills and knowledge to instruct athletic training students.[40] If students do not believe their clinical instructor is knowledgeable or credible, they may be less receptive to the feedback they receive. Therefore it is important to consider these other characteristics of clinical instructors in the feedback exchange.

Adjustment to Students

Another component of clinical instruction that may influence the feedback exchange between CIs and students is the clinical instructors' ability to adapt feedback to different students. Clinical instructors must diagnose student readiness to learn to ensure good instruction.[87] Experts in medicine have described that being a good clinical teacher includes knowing learners' prior knowledge and learning needs.[23] It has also been suggested in athletic training that CIs need to recognize that students have a certain level of knowledge and experience when they enter clinical education experiences, and should adjust their teaching accordingly.[40]

Being able and willing to adjust teaching practices to individual students includes adapting feedback according to student developmental level[5] and readiness to change.[88] Individuals in athletic training have described that clinical competency lies on a continuum, so clinical teaching should be adjusted to student needs and developmental

level.[34,35] Low-achieving or novice students may benefit more from immediate feedback to help guide their problem-solving process, where high-achieving or advanced students may benefit more from delayed feedback so they can think through a problem first.[9] Novice students may also benefit more from corrective feedback that helps them develop basic skills and corrects incorrect behaviors before they become habit.[5] In contrast, more advanced students may gain more from directive feedback that helps students refine skills and consider more possibilities for completing a task.[5] The clinical instructors' ability to identify the students' needs and adjust feedback accordingly will influence the quality of feedback given to students.

Past Experiences

An instructor's ability to provide feedback will also depend on their past experiences with teaching and learning. Clinical instructors in ambulatory medicine describe that their knowledge of learners comes from their past teaching experiences and experiences as a learner.[23] Similarly, clinical instructors in radiology describe that they teach and evaluate students based on their experiences as a student.[36] When not taught otherwise, clinical instructors will base their teaching on their past experiences,[87] which should be considered when educators plan and execute their CI training.

In athletic training, clinical instructor experience has also been shown to influence student behavior. A study of student behaviors during clinical education experiences demonstrated that students initiated behaviors less with novice clinical instructors with less than one year of clinical teaching experience compared to more experienced ACIs.[89] Another study examined the amount of feedback provided by CIs with different

experience levels.[44] In this study, novice CIs provided significantly less feedback than intermediate and advanced CIs, suggesting that CI experience has a direct influence on feedback in athletic training clinical education.[44]

Students

The effectiveness of the feedback exchange also depends on the way the student responds to feedback. A student's receptivity to feedback depends on several factors, including their past experience, intelligence, and their emotional response to feedback.[37] If the student had a poor previous experience with feedback or does not recognize feedback, the feedback message may not get through to the student.[83] Students may not recognize feedback and know how to use it if they have not been instructed on its use.[23] The influence of feedback also depends on a student's self-evaluative ability to combine the feedback with their own internal assessment.[85] Students may have interpersonal, cognitive, or affective problems related to learning that may disrupt the processing of feedback.[83,90]

The feedback exchange is also influenced by the student's desire to receive feedback in the first place. Medical students are more inclined to seek out feedback if they think it will help them reach their goals, improve their behavior, or increase their self-esteem.[33] The greater the perceived benefit of feedback, the more students will seek it out.[33] A student's age may also influence their desire for feedback. The millennial generation of students has been identified as a group of learners who want constant, immediate feedback as a part of the learning process.[91] Considering what students bring

to the feedback exchange is important when evaluating what feedback is occurring in this environment.

Environment

The clinical teaching environment also influences clinical teaching and the delivery of feedback in this setting. Several characteristics of the environment can influence clinical teaching, including patient load and type, time restrictions on learning tasks or discussions, and the multiple roles held by instructors and students.[38] Teachable moments in athletic training may also be limited by lack of student initiative, the CI's other responsibilities such as patient care and administrative duties, and clinical instructor approachability.[92] Distractions in the environment, such as noise and multiple events occurring at once, can also make it difficult for the feedback to be processed by the student.[83]

Weidner and Laurent have developed guidelines for selecting and evaluating athletic training clinical education settings.[93] These standards provide suggestions for promoting effective clinical education, including guidelines for the learning environment, learning experiences, number of staff, and administrative support, among others.[93] These standards recognize that although clinical education environments offer diverse learning experiences for students, they should still meet similar expectations that promote effective learning.

Research in medicine demonstrated that clinical education setting influenced student ratings of clinical instructors.[94] Specific to athletic training clinical education environments, research has shown that athletic training students in rehabilitation clinics

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have more active learning time than students in intercollegiate athletics settings.[45] With

less active learning time, it is likely that less feedback is also provided in this setting,

although the researchers mention that increased learning opportunities do not always lead

to more learning.[45] Although it is not feasible to control the environment to improve

feedback, clinical instructors may need to adjust the type and amount of feedback they

provide depending on the clinical setting.[87] This should also be considered when

comparing the feedback that occurs between clinical education settings, institutions, and

patient populations.

Supervision

Similar to the environment, the amount and type of feedback that is provided by

students will be influenced by the supervision provided by their clinical instructors.[95]

Feedback has been identified as one of the biggest components of supervision in clinical

practice settings.[96] When students are not supervised, they are not being mentored or

guided.[39] If student behaviors are not observed, clinical instructors have no basis for

providing feedback.[6]

Because feedback is such a large part of the supervisory relationship between a

clinical instructor and student, the factors that influence supervision will likely influence

feedback. Individuals in athletic training have described that a complex interaction of

factors influence the quality of clinical supervision, including role strain, the number of

students, and the setting.[39] Others have described that clinical supervision is also

influenced by the context of the environment and individuals within that environment,

including race, gender, and social class.[96] Although it is out of the scope of this review to

discuss all of the research and issues in the area of clinical supervision, it is important to

consider these general components of supervision when investigating the feedback

exchange.

Summary of Influences

The feedback exchange between instructors and students is influenced by several

factors. The general teaching and communication abilities of the clinical instructor can

affect how students respond to the feedback they receive, especially when a CI does not

appear to be a credible source of information. An instructor's past experience as a teacher

and learner, in addition to their ability to adjust feedback to students, will also influence

the type and amount of feedback they give to students. Students' receptivity and desire

for feedback will also influence how much a student responds to the information. If a

student does not think that feedback is helpful, or does not know how to use the

information, the feedback message will be ignored. The clinical teaching environment,

including the setting, patient load and type, and roles and responsibilities of the clinical

instructor may also affect how much feedback is given to students. Clinical settings that

offer less opportunity for student engagement may provide fewer opportunities for

feedback to be given. Lastly, the general supervisory role of the clinical instructor may

also influence how much and what type of feedback is given to students. If students are

not adequately supervised, it is unlikely that desirable feedback will be given to students.

These factors should be considered when investigating how feedback is given and

received in clinical education.

CHALLENGES

Several challenges exist in the process of giving and receiving feedback in clinical education settings. Challenges with providing feedback may come from inadequacies with clinical instructors' ability to give feedback or students' abilities to receive and use feedback.[82] Corrective feedback is difficult to communicate, and clinical teachers who are afraid of damaging their relationship with the learners or the learners' self-esteem may avoid giving feedback.[6,50,73] Clinical instructors may be too busy to provide feedback to medical students, which may send the signal to students that feedback is not important.[50] Medical students may also be ill-equipped to tolerate constructive feedback, especially if they received high grades throughout previous educational experiences.[50] This may also be an issue with the millennial generation of students, who are very confident and used to succeeding.[91] These students may struggle with critical feedback from an instructor.

Feedback is a multi-dimensional type of communication that is influenced by the environment, instructor, and student. This makes the measurement of feedback very difficult, therefore it is challenging to get an accurate understanding of the construct when appraising feedback research.[37] Research studies contain several classifications and descriptions of feedback, making it difficult to compare studies.[7-9] Most of the studies attempting to describe the feedback that occurs in clinical education rely on student and instructor perceptions rather than more objective measures. This also complicates the process of discovering what feedback is occurring in this setting.

SUMMARY OF LITERATURE REVIEW

Feedback provides information to students that help them develop and refine their clinical skills. Feedback is supported by several educational theories, and it has led to student learning and clinical skill performance in general education, medicine, and nursing. Although it is considered an important part of clinical education, feedback is minimally researched, or generally lacking, in these settings. Feedback provided to athletic training students should be specific, immediate, frequent, related to their goals, based on observed performance, non-judgmental, and include student input. Although these are recommended and supported characteristics of feedback, perceptions of when and how often this feedback occurs differ between students, instructors, and experts. Several factors also influence the feedback exchange between instructors and students, including clinical instructor experience, skills, and knowledge, how much the student seeks out or uses feedback, the environment, and degree of supervision. The multiple characteristics, perceptions, and influences on feedback make it a complex element of the clinical teaching environment.

CHAPTER III

METHODS

The purpose of this study was to gain understanding of the characteristics and perceptions of and influences on feedback provided in the athletic training clinical education setting. In order to meet the objectives of this study, a qualitative design drawing from a case-study approach to research was used to investigate the interactions between CIs and students during clinical education experiences. Observations, audio recording, field notes, and interviews were conducted to collect information about the actual and perceived feedback that occurred during clinical education experiences. Inductive analysis was used to synthesize information collected from various sources and methods, and data were triangulated to develop themes. Issues of trustworthiness were addressed with several methods, including triangulation, peer debriefing, member-checking, and rich description. This chapter reviews the setting, participants, data collection, and analysis procedures that were completed for this study.

DESIGN

Qualitative inquiry takes into consideration the context, values, and meaning of the topic under examination.[46,97] Because the purpose of this research was to understand the feelings, thoughts, and actions of participants in addition to the context of feedback, qualitative methods were appropriate for this study.[97] Qualitative methods typically include investigating participants within their natural setting, and the researcher is the

primary instrument for data collection and analysis.[97] Conducting observations of CIs and

students during clinical education experiences allowed the researcher to observe the

actual feedback that occurred. Interviewing the participants provided information about

their experiences with feedback and what they thought and felt about the feedback they

gave and received. Field notes provided a record of the investigator's role throughout the

research process, in addition to adding depth and context to the other data collection

methods.[97] This combination of methods provided several sources of information that

answered the research questions.

This study primarily followed a case-study design, which allowed the researcher

to collect detailed, in-depth information about one or more individual cases within a

particular context.[98] In this study, the cases included the CI and student dyads in their

different clinical education settings within one athletic training education program. Case

study research places emphasis on inductive analysis and rich description, where the

researcher allows themes to emerge from the various data collection methods and the

cases are described in detail.[97] It provides a way to investigate complex social systems

with multiple variables that influence a phenomenon, such as feedback.[97] Using multiple

cases increases variability within the study, and strengthens the validity of the findings.[97]

In this study, four cases were investigated to gain understanding of feedback in this

setting.

Qualitative inquiry is also based on the philosophical assumptions of the

researcher, which speak to one's understanding of knowledge and help guide the study.[98]

These assumptions include the ontological, epistemological, axiological, rhetorical, and

methodological paradigms. The ontological paradigm relates to the nature of reality,[98] and because realities are subjective the researcher represented the multiple viewpoints held by the researcher and participants through rich descriptions and quotations. Epistemology refers to one's understanding of knowledge.[46] Knowledge is situated in and can be constructed from an individual's experience; therefore the selected qualitative methods captured the thoughts and context of the participants. The axiological assumption relates to values and the presence of bias in qualitative research.[98] The researcher was aware that this bias would be present throughout the research process, so the researcher's experience and role in the research were shared when writing up the study. The rhetorical assumption relates to the language of the research,[98] so by using rich description and the personal voices of participants, the study was written in the language of qualitative inquiry. Lastly, the methodological perspective refers to the process of the research,[98] so appreciation for qualitative methodology was demonstrated by examining the data inductively and describing the context of the data within the chosen methods.

Setting

This study was conducted within one nationally accredited Entry-Level Master's Athletic Training Education Program at a large, public university in the Southeastern United States. At the time of this study, the Athletic Training Education Program (ATEP) had been accredited by the Commission for Accreditation of Athletic Training Education (CAATE) for six years. The program spans two years, totaling four semesters and two summer-school sessions. Sixteen students were enrolled in the program.

This study was conducted at two clinical sites used by the ATEP for clinical education experiences. One site was the university's intercollegiate athletic training facility, which is located within a NCAA Division I-AAA setting. The athletic training facility served approximately 275 student-athletes/patients a year, and was run by four full-time and four part-time assistant staff members. The medical staff treated a variety of injuries and illnesses, including acute and chronic orthopedic and general medical conditions. Most injury prevention and rehabilitation sessions occurred in the morning hours, while the afternoon hours were dedicated to pre and post-practice treatments. During the data collection periods, most of the university's 13 athletic teams were actively participating in practice, strength and conditioning, or other sport-related activities. The primary in-season teams included men's and women's soccer, cross-country, women's volleyball, and men's and women's tennis. Other teams, such as baseball and softball, were practicing regularly as a part of their fall seasons.

The second site used for this study was an outpatient rehabilitation clinic located in the community. Several athletic trainers, physical therapists, occupational therapists, and physical therapy assistants each treated approximately ten patients per day in this clinic. This rehabilitation facility primarily treated general population patients with a range of injuries and conditions, including post-surgical cases, chronic conditions, and general physical dysfunctions. Both facilities had served as clinical sites since the program's inception. Letters were obtained from each of the aforementioned clinical sites granting permission to collect data (Appendix A).

Participants

Sampling

Purposeful sampling was used to select participants for this study. Purposeful sampling provides information-rich cases for study of the topic being examined.[99] In this study, a homogeneous sample of second-year graduate students was sought to reduce variation in the small sample and limit the study to students who have had past experiences with CIs.[99] Examining only second-year students also provided a more in-depth analysis of this group of students and the interactions with their CIs.[99]

Students

In order to be selected for the study, students needed to be in their second-year of the ATEP and assigned to one of the data collection sites in the Fall 2010 semester. The four students selected for this study were three male and one female second-year students currently enrolled in the program. Two of the male students were located in the intercollegiate setting, and the remaining male and one female student were assigned to the rehabilitation clinic setting. Because students were not eligible to be assigned to a rehabilitation intensive setting until their second year of the program, this was the first time in this setting for both students. Both students in the intercollegiate setting had a clinical rotation in this setting before, however only one student had been assigned to this same athletic training facility in the past. These students had completed athletic training specific coursework in anatomy, orthopedic assessment, therapeutic modalities, therapeutic exercise, and general medical conditions.

CIs

CIs who worked within the data collection sites and had a second-year student assigned to them during this time were eligible to participate. The four CIs that were selected for this study included two female athletic trainers working in the intercollegiate setting, and one male and one female working in the rehabilitation clinic. In the intercollegiate setting, one participant was a second-year graduate assistant and first-year CI for the athletic training program. The other participant was an experienced athletic trainer who had been a CI for the program for six years. In the clinic setting, the female CI had been a CI for the program for six years, and was a Certified Athletic Trainer. The male participant was a dual-credentialed Athletic Trainer and Physical Therapist, and had also been a CI for the program for six years. Participant dyads and pseudonyms are displayed in Appendix B.

Contact and Consent

Potential participants were contacted by email to introduce the study and request their participation. These individuals had the opportunity to discuss the study with the researcher and ask questions before agreeing to participate. After initially agreeing to participate in the study, the researcher met with the participants at each site to discuss the process of data collection in detail. At this time, participants read and signed the consent form and data collection sessions were scheduled. The CI and student consent form is located in Appendix C.

Patients who were treated by CIs and students who had the potential to be heard on the audiotape gave verbal consent before data collection started. If patients did not

agree to being heard then audio recording would have ceased for that time period, although this did not occur. Patients also had the opportunity to refuse to have the researcher observe and/or take field notes. In this case, the researcher would have ceased all data collection until the patient was no longer present. This situation also did not occur during the data collection periods.

The Researcher

The researcher in this study was a doctoral student and CI for the program under investigation. At the time of this study, the researcher was starting her third year as a CI in the athletic training education program, and was supervising her fifth student. The investigator worked as a part-time assistant athletic trainer in the intercollegiate athletic training facility where portions of the data collection occurred, and was also a colleague of the athletic trainers working at the university. The researcher also interacted with most of the ATEP students during clinical education experiences and some ATEP courses where she acted as a teaching assistant.

One year before this study was conducted; the researcher performed a qualitative study on the feedback provided in the intercollegiate and rehabilitation clinic settings using observations, video recording, interviews, and field notes. While this was not an official pilot study, similar methods were used and the process and findings of the past study were considered in the design of the current study. Participants in the past study were either no longer at the institution or located at a different clinical site, so this should not have confounded the current study. This study also allowed the investigator to gain experience with qualitative research methods.

Based on personal experience and immersion in the literature, the researcher believes that feedback is a useful and important component of athletic training clinical education. When giving feedback to athletic training students, the researcher tries to consider their developmental level and individual needs. This individual also prefers to provide feedback to students by guiding, prompting, and encouraging conversation, rather than providing only corrective information.

Researcher Bias

Because of the researcher's relationship with the participants, students and CIs may have felt uncomfortable with the researcher's presence and may not have communicated their actual thoughts and feelings in the interviews. In order to limit potential biases, the researcher used strategies such as peer debriefing, member-checking, and writing thoughts and assumptions in field notes.[97] These methods helped ensure that the actual data and participants' thoughts and opinions were accurately represented, and the data were not influenced by the researcher's opinions. These methods for reducing bias are described in more detail when trustworthiness is addressed later in this chapter. Participants were also given the contact information for one peer debriefer so they could discuss any questions or concerns about the research process with that individual.

DATA COLLECTION

The university's Institutional Review Board approved this study before data collection began. In order to capture the actual feedback that occurred in these athletic training clinical education settings, in addition to the perceptions and influences of feedback, several data collection methods were used. The actual feedback was collected

with observations and audio recordings of CI-student interactions during clinical education experiences. The perceptions and influences of feedback were solicited from participants during interviews. Researcher field notes taken during and after observations and interviews brought depth and context to the information collected during these methods.

Observation

In order to observe the interactions between CIs and students and see and hear the actual feedback that was provided, the researcher conducted observations of the CI-student dyads. Observations allowed the researcher to get a first-hand account of the topic under investigation.[97] This included observing the setting, activities, and people in the environment to help understand the context of feedback.[97,99] Observations allowed the researcher to see the actual behavior of participants, rather than just depending on participant's perceptions provided in an interview.[97,99]

Participants were observed for two one-hour sessions during the first week of data collection. This helped the participants get used to the researcher's presence in the environment. Similarly, this helped the investigator adjust to the environment and participants. The researcher primarily acted as an observer and had limited interaction with participants. The researcher attempted to maintain a distance of 6-8 feet from the participants to avoid disrupting their interactions.[100] However, the investigator's position in relation to the participants depended on the size of the room and number of people present. For example, the researcher was much closer to the participants when they were in a private patient room (i.e. 6 feet away) than when they were on the soccer field (i.e.

50 feet away). Oftentimes the CI and student were several feet away from each other because they were treating different patients or doing different tasks, which also increased the distance between the researcher and participants. Throughout the study, the researcher found that maintaining a distance of 15-20 feet away from the participants was typically most effective because it allowed the researcher maintain clear visual observation and an auditory pathway while having minimal influence on the participants.

Observation with Audio-recording

After the two initial observation sessions, three more observation sessions were conducted with audio recording. These observation sessions provided the primary data to address the research question about the characteristics of feedback. Participants were audio-recorded for three days of their complete interactions; from the time the student arrived at their clinical site to the time they left, about 3-5 hours each. An additional day of observation was conducted for one CI-student pair to reduce the discrepancy in total observation time between this pair and the other pairs. In the intercollegiate setting, only regular practice days (not treatment-only or game days) were recorded to maintain consistency between the number of hours and activities completed.

During each audio recording data collection session the researcher continuously observed and took field notes. Each participant was recorded with lapel Microphones (Audio-Technica Pro 88W) wirelessly transmitted to receivers attached to the researcher. The receivers fed into an audio-recorder (Zoom H2), and the researcher had an earpiece that allowed the conversation to be heard from a distance. Recording occurred continuously throughout the student's time at their clinical site, and ceased only if a

patient did not consent or the participant chose to pause data collection (e.g., during restroom breaks or while conversing with colleagues). In such cases, the researcher briefly turned off the audio-recording device. The use of the audio-recording technology, including the microphones, transmitters, and recording device were tested several times with multiple individuals to minimize technical difficulties during actual data collection.

Field notes

Throughout observation periods, the investigator recorded descriptive field notes about observations of the participants, setting, interactions and activities that occurred.[99] Notes also included the researcher's thoughts, feelings, and reactions to what was observed, as the researcher's experience is a crucial part of the data.[97,99] Information recorded in these notes was used to streamline later data collection periods (i.e. researcher positioning, creating the map to be used during audio-recording sessions). Any feedback that was noted during these sessions was not analyzed.

During the audio-recording observation periods, the investigator took notes about the physical setting, participants, activities and interactions, subtle behavior, and the researcher's behavior.[97] Notes on the physical setting included the room (i.e. gym, practice field, general rehabilitation area, private patient room) and distribution of space within the room (i.e. amount of equipment, wide open space). Descriptions of the participants included the number and type of people in the room (i.e. athletic trainers/therapists, students, patients) and their general appearance and distribution throughout the room. The activities and interactions included the activities of the participants (i.e. working together on a patient, working on different patients), how the

individuals interacted, and how long activities lasted. The subtle behavior of the participants included the non-verbal communication and physical space between participants. The researcher focused on describing the non-verbal feedback in detail, as this was not captured on the audiotapes. This included behavior such as a head nod, "thumbs-up", correction of hand placement, or demonstration of a rehabilitation exercise. Because this information was particularly important to answering the research questions, noting non-verbal feedback was prioritized over recording other activities in the surrounding environment. For example, if a CI provided non-verbal feedback to a student at the same time that the treatment area became very busy, the researcher continued to focus on describing the non-verbal feedback until the feedback exchange ended.

The location of participants was recorded on a map of the room whenever their locations changed. Additionally, the researcher's behavior was noted, such as distance between the participants, how much interaction with the participants occurred, and the perceived influence of the researcher's presence in the environment. The time of each note was written down so the information could be linked to the audio files during data analysis.[99] A sample field note record sheet is located in Appendix D.

In addition to recording field notes during observation periods, the investigator took time after each observation period and interview to note any thoughts, feelings, or reactions.[97] All field notes were recorded on paper.

Interviews

After the observation data collection periods were completed, participants were interviewed on an individual basis using a semi-structured interview guide. The purpose

of these interviews was to gain understanding of the participant's perceptions and influences of the feedback provided.[99] The semi-structured format provided a set of questions designed to provide the information desired, in addition to allowing the researcher to alter questions and interact with the participant during the interview.[97] The investigator also asked probing questions throughout the interview to draw out more information from the participant and clarify answers.[97,101]

Both CIs and students were asked questions about their general interactions, thoughts about feedback in general, the specific feedback given and received during their interactions, and factors that influenced the feedback exchange during their interactions. Feedback statements from the audio clips of the CI-student observations were also played during the interview to stimulate conversation and clarify statements made by the participants. Three statements were played in each interview, and the same statements were played for the student and their CI. Interviewees were given a written transcript of these feedback statements to read along with during the interview. Feedback statements were purposefully selected from the statements transcribed from the audio-recording sessions. As a form of member-checking, these statements were selected to help answer the research questions and ensure the researcher was interpreting the statements as the participants intended. Background information about the CIs was asked to provide more information about their past experiences as clinical instructors and clinicians. Students were asked about their past experiences in athletic training as well. At the end of the interview, the researcher brought up the three most prominent concepts that emerged

from the interview to give the participants the opportunity to clarify and elaborate on the researcher's initial interpretations.

Interview guides were tested with one CI and one student with similar experiences as the actual participants. Minor changes were made to improve clarity of the questions. A list of these changes and notes is located in Appendix E. Interviews were recorded with an audio-recorder (Zoom H2) for transcription. Upon completion of each interview, the researcher wrote reflective notes regarding the interview. The CI interview guide is located in Appendix F, and the student interview guide is located in Appendix G.

Procedures

Data collection occurred over a process of seven weeks, and the entire process of data collection and analysis occurred over 17 weeks. The purpose of this time period was to capture a descriptive snapshot of the CI-student interactions over a period of several weeks. Because human behavior is rarely static, the relationship between the CI and student may have continued to evolve after the study concluded.[97] Gaining consent and scheduling data collection dates and times was completed during the first two weeks. The short observation periods occurred during weeks 2-4 of the study, and the observations with audio recording occurred during weeks 4-7 of the study. Interviews were conducted during weeks 7-8. Observations were scheduled on various days of the week to avoid repetition that may have occurred on certain days (i.e. if an CI and student treated the same patients every Tuesday). A timeline of data collection procedures can be found in Appendix H.

DATA ANALYSIS

Data Management

All data were coded according to participant number, site, and pseudonym. Data were stored on a password-protected computer. Audio files were transferred to a computer and stored with participant codes, dates, and times of audio recording. The researcher listened to the audio files and transcribed only the feedback statements. Additionally, any notes that provided context to the statement, such as the activity or related conversation, were transcribed or noted. An example of this transcription form is located in Appendix I. Interview audio files were labeled according to subject code and pseudonym and stored along with the interview date on a computer. Interviews were transcribed verbatim. All transcriptions were completed within 72 hours of the actual data collection. Field notes were categorized according to the type of note, including observation, reflection, methods, and analysis. This modification of the categories suggested by Hubbard and Power[102] helped the researcher connect the notes to the other data collected and helped with the development of the audit trail.[97]

Analysis

The process of data analysis in qualitative research often occurs along with data collection.[97] In this study, feedback statements were transcribed during data collection to produce information for member-checking in the interviews. After all data were collected, inductive analysis of the remaining data were conducted. This allowed information and themes to emerge from the data without imposing pre-determined categories on the data.[99]

Data were primarily analyzed using the grounded theory, or constant comparative approach.[103] This included the process of open, axial, and selective coding of data to develop themes.[104] Open coding included breaking down, examining, and initial categorizing of data. Axial coding was done after initial categories were developed, and the data were re-examined with these new codes in mind. Lastly, selective coding included refining and supporting the established categories to build themes.

Coding was done manually by reading the data and breaking down the information. The open coding phase included underlining main points, circling words and phrases, and grouping together these pieces of data to begin the formation of codes. This included noting anything interesting, important, or potentially relevant to the research questions.[97] The researcher then conducted axial coding by re-reading the data while looking for examples and deviations from the emerging codes. This included grouping similar codes together and re-organizing them to develop categories.[97] For example the terms "positive" and "negative" were used as different codes of a feedback statement, but they were then coded as types of "tone" to connect them to a larger category. The final step of selective coding used these refined codes and categories to develop abstract themes, which are conceptual descriptions that cover several examples of categories and codes.[97] Themes and categories were supported by several codes from multiple data sources.

Individual pieces of data were coded separately first (i.e. individual interview, then all interviews), then combined with other data sources (i.e. field notes, audio files) for analysis. After this initial coding, data were brought together during the analysis

process to develop categories and themes. Audio clips from observation periods were brought into interview discussions to further develop events that occurred between participants. Field notes were tied into observations and interviews to add context, researcher reflections, and details to the information. Data were analyzed within cases first, then compared between cases to develop findings.[97] This coding process continued until coding was saturated and distinct themes were developed. Due to the pre-determined data collection time, data may not have become saturated before data collection was completed. Findings, codes, and themes that emerged from the data were linked to similar terminology in the literature to connect this study with previous research. However, categories were not limited to those already established in the literature. A step-by-step list of the coding process is located in Appendix J, and the transformation of the coding scheme can be found in Appendix K.

Trustworthiness

Trustworthiness is the degree to which a study meets the requirements of validity, reliability, and objectivity.[105] In qualitative research, these criteria have been re-named into the following terms: credibility, transferability, dependability, and confirmability.[105]

Credibility

Credibility is similar to the internal validity of a study, or ensuring the study is accurately presenting the multiple realities of the researcher and participants,[105] or how well the research findings match reality.[97] There are several ways to express credibility in a study. Triangulation is one way to show credibility, and there are several methods of triangulation, including sources, data, and methods.[105] Source triangulation includes

acquiring information from different people about the same information.[105] In this study, source triangulation was met by gaining the researcher and participants' perspectives on what is occurring, such as the feedback. Similarly, CIs and students provided their perspectives on feedback, which provided different viewpoints on the same topic. Triangulation of methods included using different approaches to finding information,[105] such as observations, interviews, and researcher field notes. Using several methods improved validity and allowed the strengths of one method to make up for another method's weaknesses.[99] The use of multiple sites, including the clinic and intercollegiate settings, provided triangulation of sites that also improve credibility of the study.[106]

Peer debriefing is another way to improve credibility of a study. By sharing the process of data collection and analysis with another individual, the researcher's developing themes can be tested, and the researcher's honesty is verified.[105] Peer debriefing occurred in this study between the investigator and two other individuals. One individual was an experienced athletic training educator and director of the program being investigated. She was chosen for her knowledge of athletic training clinical education, and was also familiar with qualitative research methods. The other individual had a background in teacher education with six years of experience conducting qualitative research. These peers evaluated the researcher's process of coding and development of the findings throughout the research process to ensure the data were accurately presented and challenged any assumptions that were brought to the research.[97,106] The researcher shared emerging codes and themes and supporting evidence with these individuals after the initial round of coding (weeks 13-14), and final codes and

themes were confirmed by these individuals at the conclusion of all data collection and member checking procedures (week 17). These individuals were also consulted during the data collection and analysis phases on an as needed basis.

Member checking is described as the most important method of establishing credibility of a research study.[105] Member checking includes testing the data, categories, and interpretations of the study with the participants.[105] This allows participants to react to and clarify any findings of the study, and the researcher can respond by changing or clarifying any discrepancies.[105] Member checking occurred at several points during this study. By bringing audio clips into the interviews, CIs and students had the opportunity to describe why something occurred or elaborate on their behavior.[105] During the interview the researcher clarified any vague answers with follow-up probes such as "so you seem to be saying…" The researcher also summarized the main points of the interview and shared them with the participants. These statements allowed the respondents to immediately correct errors or clarify statements that were incorrectly interpreted by the researcher.[105] Eight weeks after the interviews, participants were contacted by email for a follow-up clarification of the initial themes that emerged from the observations and interviews. Participants were sent a summary of the themes that were found for all participants, in addition to those specific to their CI-student pair. Participants had the opportunity to discuss the findings with the researcher by phone, email, or in person. No participants disagreed with the findings. The member checking summary is located in Appendix L.

Transferability

Transferability, or external validity, is the degree to which the findings of one study can be applied to another setting or participants.[97] Unlike generalizability, transferability places the responsibility of determining the applicability of a study on the reader, rather than the researcher, since the reader can best interpret how the study can be applied to their unique situation.[97,105] However, the researcher can promote transferability by providing rich description of the setting, participants, and process of data collection and analysis.[97,105] This does not guarantee that the findings of the study can be replicated, rather it provides information to the reader about the possible applicability of the study to their situation.[105] Thick description has been provided throughout the writing of this study, especially of the participants, setting, and process of data collection.

Dependability

Dependability, which is similar to reliability, suggests that the findings of the research are consistent and can be replicated.[97,105] Dependability is difficult to meet in qualitative research because human behavior is not static, and there will always be variability between settings.[97] Therefore, in qualitative research it is more important to establish that the results are consistent with the data collected in this particular study rather than the general population.[97] Dependability of a study is met with several of the same methods as credibility, such as triangulation, peer debriefing, and member checks.[97,105] Additionally, an audit trail and rich description can be used to promote the dependability of a study.[97] An audit trail is a detailed account of the coding and categorization process of data analyis.[97,105] It includes pieces of the raw data, such as

interview transcripts, that are linked to codes and findings of the study. Quotes from interviews and audio clips have been used when writing up this study to represent the participants' thoughts and opinions. This information, in addition to researcher notes about the process of collecting and analyzing data, allow readers to follow the pathway from the raw data to the conclusions of the study.[105] The researcher's notes that were taken throughout the data collection, analysis, and writing of this study have provided the information for the audit trail.

Confirmability

Confirmability is the qualitative researcher's attempt to address objectivity in a research study.[105] Because the researcher is the primary instrument for data collection and analysis in qualitative research, in order to promote confirmability in the study the researcher must emphasize what the data is saying in the study, rather than the researcher.[105] Describing the researcher's background and role in the study, in addition to providing an audit trail of how the data leads to the findings of the study, are ways to express confirmability.[105,106]

Ethical Considerations

Because the researcher is a significant part of the research process, ethical issues may have occurred throughout the study.[97,99] Since the researcher worked with or had a supervisory relationship with most of the participants, they may have been hesitant to act normally or express their actual thoughts and feelings during observations and interviews.[97] The researcher also collected data in a medical setting where patients' personal health information must be carefully protected. Patients may not have wished to

have an outsider present during their medical care, and they may have felt obligated to participate because the student and CI participated. Because the researcher also chooses what information is actually presented from the data, these assumptions or choices may have influenced what was represented on behalf of the participants. These issues complicate the credibility and ethical nature of qualitative research.

In order to address these ethical concerns, it was important to follow the guidelines for trustworthiness throughout the research process.[97] This helped keep the researcher honest and ensure that the data were accurately represented. Similarly, the procedures, risks, and confidentiality of the research study had to be clearly communicated to participants. Following the guidelines established in the Institutional Review Board protocol was important. This included communicating to participants that they could choose to end participation at any time, and that their personal information would be protected by pseudonym and codes throughout the data collection, analysis, and presentation. By following these procedures for informed consent and trustworthiness, ethical issues should have been minimized throughout this research study.

SUMMARY OF METHODS

In order to investigate the characteristics, perceptions, and influences of feedback in the athletic training clinical education setting, the researcher conducted a study that primarily drew from a case-study design. Four CIs and four students in the rehabilitation clinic and intercollegiate settings participated in this study. These four CI-student dyads were observed and audio-recorded during clinical education experiences to provide information about the actual feedback that was given in this setting. Participants were

interviewed regarding their perceptions of feedback and what influenced the way they gave and received feedback in this setting. Additionally, field notes were recorded throughout the data collection process to provide the researcher's perspective on the observations and interviews. Data were analyzed using a constant comparative approach, which included inductive reading and coding of the data until distinct themes were developed.[104] Issues of trustworthiness and ethics were addressed with several methods, including peer debriefing, member-checking, and an audit trail.[97,105]

CHAPTER IV

RESULTS

INTRODUCTION

The purpose of this study was to gain understanding of the characteristics and

perceptions of and influences on feedback provided in the athletic training clinical

education setting. This chapter presents the results of analyses from observations, audio

recordings, field notes and interviews. The results are organized according to each

research question, in addition to findings that were specific to each case study.

RESEARCH QUESTION #1: CHARACTERISTICS OF FEEDBACK

The first research question sought to identify the characteristics of feedback that

CIs provided to athletic training students during their clinical education experiences.

Information collected from observations, audio transcripts, and field notes were used to

answer this research question. A total of 88 feedback exchanges occurred between CIs

and students during 45 hours and 10 minutes of observation. Table 1 shows the length of

time for each observation session and the amount of feedback provided during each

observation period. Seven categories emerged from the data related to this research

question, including purpose, timing, specificity, reaction to feedback, content of

feedback, form of feedback, and privacy. Appendix M includes a table of the final coding

scheme with the number of codes and categories for each participant.

Table 1. Length of Observations and Number of Feedback Exchanges

		Meg & Carl	Lisa & Chris	Lois & Maggie	Peter & Brian	Total
Audio 1	Length	2:40	3:40	5:00	4:00	15:20
	# Feedback	2	9	16	3	30
Audio 2	Length	4:00	2:20	4:45	4:00	15:05
	# Feedback	4	2	15	8	29
Audio 3	Length	3:40	2:40	2:15	3:30	12:05
	# Feedback	1	9	4	12	26
Audio 4	Length		2:40			2:40
	# Feedback		3			3
Total Time		10:20	11:20	12:00	11:30	45:10
Total Feedback		7	23	35	23	88

Time is shown in hours:minutes.

Purpose of Feedback

The researcher found that feedback was given to students for several reasons during the observed clinical education experiences. This included confirming or reinforcing their behavior, correcting behavior, and promoting improvement in future performance.

Confirm/reinforce

The majority of feedback (69%) given during these clinical education experiences was to confirm or reinforce behavior. Some statements, such as Peter's response to Brian, were made to confirm something that the student was saying about their clinical reasoning. In this statement, Peter was quizzing Brian about the order he would treat a patient's muscles:

> Brian: So basically my thing was working posterior to anterior for the ease of the patient, from the chair to supine.
> Peter: Okay I like that. That's good, I think that's a pretty good plan.
> (C2 Audio 2, 3:36 pm)

At other times, CIs would provide reinforcing feedback as the student was doing or saying something, such as explaining their plan for a patient's rehabilitation session or providing reasoning behind an ultrasound treatment.

Correct

Feedback was also provided to correct a student's behavior, either during or after a performance. In this example, Lois instructs Maggie to change the patient's position while leading a hamstring stretch. Maggie recognized her incorrect behavior and changed it immediately.

> Lois: Let's put that leg off the table.
> Maggie: Oh, I always forget that.
> (C1 Audio 1, 7:21 am)

CIs provided corrective feedback in different ways. Corrective feedback was often done in a less direct way than reinforcing feedback, which Lois often did. And oftentimes CIs would wait to give corrective feedback until the student was no longer treating a patient, which was frequently done by Lisa when giving corrective feedback to Chris.

Promote improvement in future performance

Feedback was often given by CIs to suggest change or improvement, even when a student was not doing anything incorrectly. Feedback to promote improvement in future

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performance could also occur with reinforcing or corrective feedback. In this feedback

exchange, Meg brought up several suggestions for Carl to use the next time he lead the

team in a dynamic warm up:

> Carl: I thought it went pretty well. Except they need to… facing the same direction on some of those.
> Meg: Yeah, and any time you're going to do left or right first give them the direction first.
> Carl: Yeah.
> Meg: Hill [points to hilly landmark on the side of the field], and then the skill. Ya know, tennis courts, because some of them will start the motion because they get ahead of themselves.
> Carl: Yeah.
> Meg: And I'd say position yourself so that you are always in front of them.
> Carl: Uh huh.
> Meg: Because then they skip to you, like that was very arbitrary the distance they went. Sometimes they went far, sometimes they went short. So approximate 5-10 yards and then position yourself there.
> Carl: Yeah.
> Meg: And just don't forget about cueing. Because that's the value in that. I mean we could, ya know, in theory give that warm up to anyone and they could read it so you're expertise comes in to helping them do it better each time.
> Carl: Yeah.
> Meg: So cross border lunge, what's important?, skipping, what's important?, lunge distance, what's important? Ya know, so make sure you're giving all of that cueing because it's a great opportunity to teach. I think one of the reasons they're so good about it as a team is that they hear it from me ad nauseum.
> (A1 Audio 1, 10:11 am)

Other CIs also took the opportunity to provide additional information to students

to help them in the future, suggesting that feedback can be given even when the student is

not doing something incorrectly.

Timing

Most feedback (84%) provided by these CIs was given during or immediately

after a student performed a skill. Immediate feedback was typically given for performing

skills, whereas feedback on professional behaviors was typically given later. For example, Meg suggested that Carl change his manual resistance while he was still treating the patient:

> Meg: So like if you have to adjust your resistance like if she gets to the end then do so, but if it allows her to work through greater…
> Carl: [changes his position as Meg talks to him]
> Meg: There ya go, you see what I'm saying?
> (A1 Audio 1, 10:20 am)

CIs often provided immediate feedback to correct the student's behavior so they could immediately change how they were treating the patient. Because feedback was usually given immediately after the student's performance, whether the student received feedback or not was more dependent on what they were doing than the time of day.

Specificity

Feedback was given with different degrees of specificity. Sometimes feedback was very general, such as 'good job,' where the statement could have been applied to any situation. Feedback was also more specific, where the CI provided detail as to what the student did and why. Even more detailed was when the CI provided a reason for providing the feedback, or information to support their statement.

General

General feedback included feedback that lacked detail or could be applied to any situation. Although not as frequent as specific or supported feedback, non-descriptive feedback was given by each CI at least once. For example, Lisa gave general feedback to Chris at the end of one day:

Lisa: Good job today, we are done.
Chris: Thank you.
(A2 Audio 2, 2:33 pm)

This feedback statement made by Lisa appeared to summarize Chris' performance

for the day, rather than a specific task or activity he did. Sometimes general feedback was

related to something specific that the student did or said, but the feedback statement still

lacked detail. For example, Lois gave Maggie some general feedback when Maggie asked

Lois' opinion on the SOAP note she was writing:

Maggie: Okay, what do you think about that? [points to SOAP note she has been
working on]
Lois: Yeah, that's good.
(C1 Audio 1, 10:42 am)

While this feedback exchange was related to a specific task Maggie was working

on, Lois' statement did not provide any detail on why she thought it was good – it just

acknowledged that what Maggie wrote was acceptable.

Specific

All four CIs frequently gave specific feedback that included detail about the

student's performance. In this example Peter tells Brian that he did well with the patient,

but he also explains *why* he thought Brian did well:

Peter: What did you think about that, that sequence over there? Would you change anything?
Brian: Ehhh, maybe. I - obviously not really knowing the hip hinge exercise. Are you talking about [patient]?
Peter: No, [other patient].
Brian: Oh. No, I don't think I would. [continues to describe what he did with the patient]
Peter: You moved her in different directions than she's done before and that's perfect. That's a tough problem, the lady gets scar tissue.
(C2 Audio 2, 4:26 pm)

Instead of just saying that Brian did well with the patient, he describes why the patient is a difficult case and how Brian managed her well. Oftentimes CIs would also provide details about why they gave the feedback they did, sometimes even citing a source that supported their comment. During this feedback exchange Carl seemed to question or be unsure about what Meg was telling him, so she countered with a statement that clarified why she wanted the athlete's back to be flat:

Carl: [explaining/correcting athlete's technique on exercise] Pull your shoulders up. There ya go.
Meg: Nope. That way [points/touches athlete's shoulders to demonstrate].
Carl: Flat back?
Meg: Yeah, that way her serratus is turned on.
(A1 Audio 2, 8:30 pm)

CIs often provided feedback with evidence as a way to explain why the student should change their behavior. By saying that particular motion activates the serratus anterior muscle, Carl now knows why that exercise should be performed that way in the future.

In another example, Lisa was talking to Chris about how he needed to change his shoes because what he was wearing was unprofessional and inappropriate uniform for a health care setting. As she explained to him why he needed to wear different shoes, she stated: "And flip flops. That's like an OSHA thing…. I mean that's like not even our dress code… that's like the health department." [7:32, 58'] By citing OSHA as a source for why he needed to wear close-toed shoes, Chris was made aware of a reason for not being able to wear flip flops.

Reaction to feedback

Students typically showed some sort of response to the feedback given by their CI, whether it was simply agreeing or acknowledging the feedback, or actually using it right away. Most of the time students agreed with the feedback given by their CIs. Students frequently gave a verbal acknowledgement of their CIs feedback, such as Brian did here:

> Peter: Check his cervical…
> Brian: Rotation?
> Peter: Yeah, just, we're not going to stretch him just check his motion. [watches Brian check motion]
> Peter: Ok, good. Good.
> Brian: Ok
> (C2 Audio 1, 8:15 am)

Students also frequently used or interpreted the feedback given by their CIs, by either immediately changing their behavior or asking a question to prompt more discussion about the feedback. For example, Chris agreed and appeared to process the feedback from Lisa with his response to her:

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Lisa: I just wanted you to have an idea of what you're doing.
Chris: Sometimes I'm too gentle just because I don't know exactly what I can and cannot do.
Lisa: That's normal.
(A2 Audio 1, 11:07 am)

His response to Lisa suggests that Chris was already aware that he was unsure of how far to move a patient during scapular mobilizations, so he agreed and welcomed what she was saying to him. Although Chris frequently agreed with feedback, he also disagreed with Lisa several times. No other student noticeably disagreed or challenged their CI's feedback. While students often appeared to agree or use the feedback given by their CIs, the researcher did not follow up with each specific feedback statement to see how the student responded. Only immediate verbal and physical responses were observed.

Content

CIs provided feedback to students that were based on their clinical skills and clinical reasoning. More feedback was given on students' clinical skills (61%) than their clinical reasoning (16%). Clinical skills included activities such as evaluating or treating a patient, leading them through a rehabilitation exercise, putting together a rehabilitation program, writing a SOAP note, and similar activities. Clinical reasoning included conversation that focused on the student's thought process or decision-making. Feedback was also given on students' professional behaviors such as communication and overall professionalism, although this did not occur enough to stand as its own category.

Clinical skills

Most of the feedback provided by CIs was on their performance of clinical skills, such as progressing a rehabilitation session, performing a joint mobilization, or leading a patient in an exercise or stretch. In one situation Brian was leading a patient through a quadruped exercise when Peter corrected him:

> Peter: So take him… work him in a short arc.
> Brian: [alters patient movement]
> Peter: That's it.
> (C2 Audio 3, 8:38 am)

Peter's feedback here allowed Brian to immediately change how he was leading the patient, and Peter confirmed his correction. Feedback on students' clinical skills occurred immediately as a student was performing the skill, as shown above, in addition to after the skill was completed and the CI reflected on the student's behavior.

Clinical reasoning

Feedback was also provided on students' ability to critically think or describe their rationale for a clinical decision. All CIs, except for Meg, provided some feedback on their student's clinical reasoning. In this case, Brian described to the patient why she felt like one foot was different from the other and Peter commented on his explanation:

> Brian: I don't know about you [looks to Peter], but I'd imagine after surgery you're going to have some scar tissue development and I'd imagine that that's probably why this one might feel thicker. It's because there's actually more scarring going on because you've had multiple surgeries.
> Peter: Ahhh, that's exactly, I couldn't have said it any better myself. That's it. That's exactly right [continues to talk to patient with more detail].
> (C2 Audio 3, 5:06 pm)

In this situation the patient asked Peter a question, and Peter looked to Brian to answer it. Peter's feedback confirmed that Brian's thought process and explanation to the patient were correct, and Peter continued to elaborate on Brian's explanation after the feedback exchange ended. When CIs gave feedback on students' clinical reasoning it often occurred during a discussion that included CIs questioning students' reasoning, students responding with their explanation, and the CIs providing feedback.

Form

CIs delivered feedback in multiple forms, including verbally and non-verbally. Most of the feedback provided by CIs was verbal (92%), and only 8% of feedback was strictly non-verbal. Most non-verbal feedback occurred in conjunction with verbal feedback.

Verbal

Almost all of the feedback provided by CIs was verbal in nature. In this example, Lois provided a confirming comment to Maggie regarding her choice of rehab exercise:

> Maggie: And I was thinking even if it's not a full squat to start I still think it's more challenging because when he's sitting down all the way he's doing no work. So even if he only does a half squat he's still working the whole time instead of getting a break.
> Lois: That would be a very good progression.
> Maggie: Okay
> (C1 Audio 1, 9:00 am)

Even though the objective of Lois' feedback was to simply confirm Maggie's plan for the patient, she chose to give a statement rather than just nod her head in agreement.

Nonverbal

Whether in conjunction with verbal feedback or by itself, feedback was often given in a non-verbal format as well. This included a simple nod of the head, a demonstration, or physically leading the student through a movement. In one example Brian was leading a patient in a balance exercise while Peter stood about ten feet away and watched. Instead of making a verbal comment, Peter made eye contact with Brian and tapped his chin, indicating that the patient's head needed to be up. Brian then changed the patient's position (C2 Audio 2, 2:04 pm). In this situation, Peter was able to provide corrective feedback without the patient knowing.

In another situation Lois guided Maggie's shoulder mobilizations by moving her hands through the air to correct Maggie's movement. Combined with her verbal feedback, this allowed Lois to alter Maggie's behavior without actually jumping in and touching the patient.

> Lois: So I would lift her up more into flexion. Right to there, and then…
> Maggie: So it's more going to be scapular?
> Lois: Yeah.
> (C2 Audio 2, 8:32 am)

CIs often appeared to give non-verbal feedback in this way, to help lead the student without taking over. At other times, CIs would actually place their hands on a patient along with the student's hands to help guide the student. CIs appeared to use this type of hands-on verbal feedback as a way to be more specific, but still allow the student to treat the patient.

Privacy

Feedback was provided to students both in public and private settings. More feedback was provided in public (61%) than in private (39%).

Public

Feedback was considered to be in public when someone else was in earshot, including a patient, other athletic training student, or clinician. In this situation, Peter provided verbal and hands-on feedback to Brian as he performed manual therapy on a patient's back:

> Peter: Straighten out a little. Just kind of stretch it a little bit more.
> (C2 Audio 1, 8:04 am)

When providing corrective feedback in public, CIs sometimes used a less direct approach, such as prompting change with a question. In this example, Lisa does this while the patient being treated is lying on a nearby table:

> Chris: So I'm thinking a heat back and some ultrasound and stretching?
> Lisa: How about just a heat pack and stretching?
> Chris: Okay.
> (A2 Audio 3, 7:17 pm)

By phrasing her feedback as a question, she is able to suggest to Chris what she really wants him to do, rather than saying he was incorrect. Most feedback that occurred in public was given in front of the patient being treated.

Private

Feedback was also provided in a more private setting. This not only included a private office, but also in the main clinic or athletic training room where no one else was in earshot. Lois and Maggie often discussed patient rehab progressions and notes in the main clinic area between patients when no one else was around. Here Lois quizzed Maggie about their next patient:

> Lois: How are you going to challenge him today?
> Maggie: I was thinking with the single leg balance we should scale them back a little bit with the rotation.
> Lois: Yeah.
> Maggie: We talked about not going all the way back to the wall just because he is not as controlled with that.
> Lois: Yeah, I think that's a good idea.
> (C1 Audio 2, 6:00 am)

Lisa often gave Chris feedback in the back office area of the athletic training room after the wrestlers had gone to practice. The feedback she gave in private was often a part of long conversations about Chris' professional behaviors and ability to balance his responsibilities. Lisa appeared to deliberately wait to have these conversations until no one else was around.

Most CIs gave feedback in both public and private settings, however Peter rarely gave feedback to Brian in private. Private feedback from Peter was often given in the main clinic area as they moved from one patient to the next. Peter appeared to not have time to pause and provide feedback to Brian in a private setting because he was almost always treating a patient, talking to another clinician, or completing administrative duties.

RESEARCH QUESTION #2: STUDENT PERCEPTIONS OF FEEDBACK

The second research question examined athletic training students' perceptions of the feedback provided by their CIs during their clinical education experiences. Individual interviews with students provided most of the information to answer this question, in addition to the researcher's field notes. Eight categories emerged from the students' interviews, including purpose, content, tone, timing, frequency, specificity, and form of feedback, in addition to its role in their education.

Purpose

Students described that feedback was given for several reasons during their clinical education experiences. They described that it helped them grow as students, promoted learning, included deeper discussion, confirmed and corrected their behavior, signaled that they needed to change what they were doing, and was related to their future goals.

Promote growth/improvement

Students frequently talked about how feedback helped them grow as a person and a clinician, and it helped them improve on their clinical skills, reasoning, and professional behaviors. Students often described that the feedback they received was constructive and was almost always given to help them improve, despite the delivery or tone of the feedback. In addition, students frequently referred to feedback as guidance for how to improve, especially when they talked about the purpose of feedback in general - not specific feedback statements.

Carl talked about how Meg has helped him compared to past CIs, and how her feedback has helped him grow during his current clinical experience: "I've had previous CIs that aren't very critical and don't give much feedback and I don't think I grew as much as I've already grown as an athletic training student" (Carl interview, line 121-123). In this statement, he associated feedback with educational growth as a student.

Chris also discussed how Lisa's feedback has helped him grow and think differently during his clinical experience: "It's never to embarrass me, it's always to make me grow and to make me think about things that I'm doing or things that I've done" (Chris interview, line 651-654). Even though Chris often thought Lisa's feedback was critical, he still found it important to his experience as a student.

Promote learning

All of the students discussed how feedback led to more learning, whether it was learning about something new or learning more about an already familiar topic. When talking about the general feedback provided by their CI or specific feedback exchanges, they all associated feedback with learning something from their CI. In several cases, students described that feedback from their CI motivated them to want to learn something more about a topic, and this often included looking up information on their own.

Brian talked about how Peter's feedback pushed him to learn more on his own about what he was doing in the clinic: "And that's just another way I use feedback, to push myself to try and find different things. Better educate myself, I guess I should say" (Brian interview, line 1016-1018). Brian often spoke about how Peter would give him articles to read or topics to investigate on his own, and these sources were often the topic

of conversation between Peter and Brian. Peter's feedback often included suggestions for looking up more information, so this is how Brian associated feedback with learning.

When asked about the most helpful feedback he received from his CI, Chris described that feedback on topics he has learned in the past or is still trying to learn is particularly helpful to him:

> So that kind of feedback on um, ya know, learning how to do something that I though I should have already known. Maybe forgetting or being rusty on it, and then really getting into learn more about it on my own. That's probably like some of the most helpful feedback. (Chris interview, line 1211-1215)

Both statements illustrate that students associate feedback as a part of the learning process in their clinical education.

Discussion

All of the students associated feedback with discussion, rather than just a statement from their CI. Once their CI gave feedback, the students often said that it sparked conversation and discussion about the topic. Sometimes they described that the feedback conversation started with their CI prompting their self-reflection on their performance. Several students described the feedback conversation as a debriefing or reflection on what they just did with a patient.

When discussing the time limitations he and Meg had to talk, Carl mentioned how it was much easier for him to use feedback if him and Meg got to talk about it more: "So then you may not be able to use it as effectively as if you actually sat down and talked about it and interacted" (Carl interview, line 237-239).

When Brian said that him and Peter don't have much discussion, and their feedback is often brief and in front of patients, he described that he would like to have some time to discuss what he did that day with his CI: "Like at the end of the day, have like a sit down, have a 30 minute discussion about how was your day, kind of thing. Like a debrief. A quick debrief would be good" (Brian interview, line 1216-1217). Both Brian's and Carl's comments are examples of how the students desired to have more time to talk with their CIs about their performance and feedback, such as a daily brief discussion about how the day went.

Confirming

Students all described that their CIs provided a lot of feedback that confirmed or reinforced what they were doing. Confirming feedback was helpful to students in many ways. It was reassuring to them to know they were correct, and they often described that it helped the patient be more comfortable with them.

Maggie discussed that reinforcement from Lois helped her know when she was doing well so she could do the same thing in the future:

> I think it's also, it helps me to get reinforcement from her, say things like you did a really good job of cueing this patient. And it was a good idea that you used the mirror for them. So then in my head I'm like okay, that was something good and I'll use it again in the future. (Maggie interview, line 265-269)

Similarly, other students described that one of the most important roles of feedback was that it told them when they were doing something right. When students didn't receive reinforcing feedback, they described that they were unsure if what they were doing was correct, so they didn't know if they should continue with their behavior.

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This suggests that even simple, confirming feedback is important to students so they continue doing the right things.

Students also said that reinforcing feedback helped them gain confidence. They mentioned that in addition to feeling more confident in what they were doing at the time, they also described that a feedback exchange made them more confident for their future. When Carl reflected on the playback of a feedback statement given by Meg, he described that her feedback made him feel more confident in his knowledge and ability to cue athletes doing core exercises:

> And then the feedback that Meg was saying, was telling me it was good to do that, I felt like confident in my knowledge of cueing and the knowledge base of the core exercise we were doing. (Carl interview, line 315-318)

So although Carl thought he was leading the athlete correctly, Meg's comments helped confirm that he was correct and gave him more confidence to continue leading these exercises in the future.

Corrective

Students also described that much of their CI's feedback was corrective. Students described that corrective feedback was helpful because it helped them recognize their weaknesses or what they were doing wrong. Most of the time when students discussed corrective feedback they also mentioned that CIs guided them in how to improve their behavior.

When talking about helpful feedback, Chris described an incidence where he was taping a wrestler's thumb and corrective feedback helped him realize that he was not

doing something right: "So forcing me, again, to show her what I am trying to do, realize I'm not doing that, then learning how to do it correctly" (Chris interview, line 335-340). In this statement Chris suggests that Lisa also helped him learn the right way to tape the athlete's thumb, which CIs often took time to do.

Signal change

Students described that feedback that signaled change in their behavior was particularly important. Students gave several examples of their CIs providing feedback that alerted them of a change in their behavior when they thought they were correct. Although they described that corrective feedback was helpful, students seemed to place a special significance on feedback that alerted them of behavior they needed to change. It appears that they often expected correction on some of their behaviors whereas in other situations they were not expecting to be corrected.

Maggie described a particularly helpful feedback exchange because the feedback signaled to her that she needed to change something that she didn't realize. In this statement, Maggie is referring to her first few patient interactions in the clinic where she would often "trail off" in her conversations with patients: "And I thought that was really good feedback because it was something that I didn't notice about myself. But that she was able to notice, ya know" (Maggie interview, line 222-224). Lois helped Maggie focus her discussions with patients so they were more focused and complete.

In another situation, Lisa gave Chris feedback on a wrist joint mobilization that he thought he was doing correctly. Chris talked about this incident where he was surprised by the feedback because he thought he was correct: "Umm, it was good, but like I said I

thought I was doing it properly but from another outside's perspective it didn't look proper. So maybe I can, maybe I can try it a different way or stabilize with a different hand" (Chris interview, line 1082-1086). Lisa's feedback helped Chris realize he was wrong and prompted him to change what he was doing. Without feedback during this observation, Chris would have likely continued to assess the patient improperly and probably would have misdiagnosed the cheerleader's injury.

Goals/future

Students often discussed that feedback had a strong influence on their future behavior. Students frequently described that they listened to the feedback given by their CIs so they could use it again in their future, but they did not indicate when the future was. Sometimes students were more specific about their future goals and mentioned how feedback would help them in their future position as a clinician and professional. Students also described that feedback helped them realize how they were doing in relation to their personal goals or their CI's expectations for them.

During one of the member checking audio playbacks, Chris talked about how Lisa's feedback helped him recognize where he was at in relation to his personal goals and gave him information on how to continue progressing toward them: "And I think that really helped me to set my standards higher for myself and then that feedback is helpful to remember where I'm at and to help me progress down that road" (Chris interview, line 1330-1333). Here he is referring to one of their conversations about Chris' ability to multitask, and Lisa's feedback helped remind him of their goals for him to reach by the end of the semester.

Students also referred to their future roles as clinicians and professionals when talking about feedback. Here, Brian made a clear connection between the feedback he is receiving now and his future role as a professional: "I definitely think that feedback makes me a better clinician, a better person for my future position wherever that may be" (Brian interview, line 943-945). Brian frequently mentioned his future career and role as a clinician, and often talked about how the feedback he received would help him as a professional, not just a student.

Content

Students described that they received feedback from their CIs that not only addressed their clinical skills, but also their clinical reasoning and general professional behaviors.

Clinical skills

Much of the feedback students described was on their performance of clinical skills, such as taping, writing SOAP notes, and leading rehabilitation exercises. Students did not provide much opinion or insight on skill feedback; they mostly just mentioned this type of feedback when giving examples of their CI's feedback. When Carl gave an example of ideal feedback, he discussed a particular example where Meg gave him feedback on his ankle taping:

> So like, with a feedback if I was doing something that needed to be corrected and she showed me, like, with the ankle tape she went and showed me and gave me tips on angles and stuff like that so I use that probably most effective. (Carl interview, line 249-256)

Later in the interview Carl described how ankle taping was a skill he really got to improve on throughout his rotation because of the number of opportunities he had to practice, in addition to Meg's feedback.

Maggie gave more insight to feedback on clinical skills when she described how feedback has changed as she's progressed through the athletic training program:

> Like at the beginning you're getting feedback on just doing skills. Ya know, like can you do this test? Here's the way to do this test. Ya know, those kind of things. Whereas now it's more using those skills effectively and that's what I'm getting feedback in, am I being effective. (Maggie interview, line 340-348)

Her comments here show how she has gained some perspective on how her clinical education experiences have changed over the span of her three semesters in the program. She makes the connection that feedback has changed along with what she is actually doing in the clinical setting.

Clinical reasoning/professionalism

Students described that much of the helpful feedback given to them by their CIs was focused on their clinical reasoning and professional behaviors. Chris gave several examples of feedback exchanges between him and Lisa that focused on his ability to reason through his decisions. Similarly, Maggie talked a lot about feedback on her interactions with patients as being very helpful in the clinic.

Brian described that most of the feedback that Peter gave to him was on clinical decision-making: "I feel like that's most of his feedback, is about decision-making" (Brian interview, line 899-900). Brian also thought that was the most helpful type of feedback he received: "I think that's the most helpful, clinical decision-making type

feedback" (Brian interview, line 681-682). While this was not surprising, given that clinical decision-making was a focus of their interactions, all of the students made at least one comment about receiving feedback about their thought processes.

Tone

Students often discussed the tone of their CI's feedback, typically referring to positive or negative feedback.

Positive

Students made several comments about positive feedback given by their CIs. Students described that positive feedback was always helpful, and never made negative comments about positive feedback they received from their CI. Students said that their CIs generally gave a lot of positive feedback, even if they also gave negative feedback.

Several times throughout his interview Chris described that he had a strong preference for positive feedback: "So, um, the positive reinforcement is probably the way I take criticism best, just because it's, ya know, who doesn't like to do a good job?" (Chris interview, line 607-609). Chris struggled with accepting constructive criticism from Lisa, so this statement in his interview was not surprising.

Maggie did not describe having a preference for negative or positive feedback, but she said that Lois' feedback was always positive and it was helpful for her: "It's like these are some things you did good, these are some things you could work on. So, I think the fact that she keeps it positive is good" (Maggie interview, line 379-381). Brian also described that when Peter gave negative or corrective feedback, he always tried to pair it with a positive comment.

Negative

Students frequently brought up negative feedback, but students had different thoughts about negative feedback. Although negative feedback was usually associated with corrective feedback, the students did not think that all corrective feedback was negative. Chris, Carl, and Brian described that their CIs sometimes gave negative feedback, but most students did not have a negative response to it. Carl described that Meg gave a lot of critical feedback, but it was helpful to him: "Well, with Meg she is very critical but I think that helps me a lot" (Carl interview, line 116-117). Students seemed to expect some negative feedback from their CI as a part of their roles as students.

In contrast to other students, Chris often described that Lisa's feedback was harsh, critical, or negative, and he often described feeling defensive or upset from it. He also mentioned that although he thought critical feedback was necessary, his CI could have made efforts to make it more positive: "So I mean, like I said it was needed, but… maybe, maybe could have left on a better note" (Chris interview, line 413-414). This statement coincides with his previous comment about preferring positive feedback from his CI. Overall, students seemed to expect both positive and negative feedback from their CIs, and they appreciated a balance of delivering feedback in both positive and negative ways.

Role in Education

During the interviews students were asked about the role of feedback in their clinical education experiences, and they all discussed its significance in different ways.

Students all described that feedback had an important role in their clinical education, and that feedback was a necessary part of their education. Students discussed the importance of feedback by giving specific examples to their education, in addition to stating that it was generally important, necessary, and significant.

Carl gave a comprehensive description of what feedback meant to him in his educational experience:

> I think it's crucial to the educational process. Because without feedback you don't know what you're doing right and what you're doing wrong. You can just be doing everything totally wrong and think it's okay so you keep doing it that way, the feedback helps you correct or keep doing what is right or wrong. (Carl interview, line 201-206)

Carl's statement strongly associated feedback with knowing right and wrong, as did other students during their interviews. Their comments suggest that one of the most important reasons students want feedback is to know when they are doing something wrong so they can change it, and doing something right so they can continue doing it.

Similar to Brian's other comments focusing on feedback and decision-making, he stated that feedback is important to his decision-making process and his future:

> I mean, again, like feedback is important in making decisions. Ya know, anytime you have feedback, anytime you have good feedback, bad feedback it's either going to reinforce something you do in the future or it's going to adjust something that you do in the future. (Brian interview, lines 914-922)

Although Brian related the importance of feedback to his future more than any other student, all of the students talked about the importance of feedback to their future, not just their present role as students.

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Timing

All of the students discussed the timing of feedback and the effectiveness of that timing. They frequently compared the helpfulness of immediate and delayed feedback they received from their CIs.

Delayed

Students often mentioned delayed feedback that occurred either later in the day or even weeks after the time of their performance. Students generally thought delayed feedback was not as effective as immediate feedback. Sometimes it upset them because they wanted to change or improve their behavior as soon as possible, and they were not able to do so with delayed feedback. Other times they just described that it was too hard to remember their performance when it was delayed, so it was harder to relate the feedback to a specific event.

Carl talked about having trouble remembering his performance when he got delayed feedback, so it was harder to use. When discussing delayed feedback he mentions a Bi-weekly, which is a self-assessment and feedback sheet that CIs and students in this athletic training program are required to complete every two weeks.

> I think that feedback given right after something happens is more beneficial because it's right along the line of what I did and what went on. Like some of the feedback that you get during the bi-weeklies, you have to like think back about like, what did I do again? (Carl interview, line 133-137)

It appeared that if students couldn't remember their actual performance, the feedback they received from their CI lost much of its value.

Students often mentioned that their CIs gave mostly immediate feedback, but time limitations or being busy often caused them to delay their feedback. Sometimes students did mention that feedback that was slightly delayed gave them time to process and reflect on the feedback, where they didn't always have time for that when given immediate feedback. Maggie mentioned that it was often helpful to have feedback after a performance rather than during because it gave her time to reflect on her performance and make changes for the future:

> I think I can absorb things better if it's after whatever the activity was. Like okay, let's talk about what you just did. This is what you could have done better. So I can think about it, okay, next time I need to do this… as opposed to during the activity and getting feedback and being like uhhh, okay, let me think about that real fast and change something. (Maggie interview, line 397-406)

Maggie's example shows a potential benefit of delayed feedback – that students may be able to think through the feedback more and potentially understand it more. However, she seems to be referring to feedback that was given the same day as her performance, rather than a few weeks after.

Immediate

Students described several times that they received feedback from their CIs as they were doing something or immediately after. All four students preferred immediate feedback to delayed feedback. Students said that it was easier to apply feedback and change their behavior with feedback that was done during or close to their performance. Carl described that he likes immediate feedback because is easier for him to learn from: "Feedback that's prompt and not like two weeks later it's easier to learn from" (Carl

interview, line 524-525). Carl's preference for immediate feedback was usually because it helped him relate it to a specific performance, rather than his general behavior.

For Brian, immediate feedback was important to him because it allowed him to change his behavior immediately: "If I'm not pulling someone's leg correctly I want to know that I'm not pulling someone's leg correctly, I don't want to find out two weeks from now that I wasn't doing it right." (Brian interview, line 1172-1174) He often related this need for immediate feedback to treating the patient effectively, which was very important to him:

> Ultimately my goal is patient outcome. Like if he corrects me, you're not doing something right. I want to know immediately just, like I don't want to repeat myself, but it's going to affect how a patient might feel that day and how they might feel in the future. (Brian interview, line 1390-1394)

Several students mentioned that they were discouraged when they found out they had been doing something wrong for a few weeks, mostly because they were afraid they were doing something wrong with a patient during that time.

Frequency

Students often referred to the frequency of feedback given by their CIs. Although students often mentioned the frequency of feedback, their comments were inconclusive about the ideal frequency of feedback. Students said that they all wanted and needed feedback, but that too much feedback could be unhelpful as well.

Brian clearly stated that no feedback would be the worst type of feedback: "So, I mean, the absence of feedback would be the worst feedback. Sometimes. Cause like you're… as a student you're left in limbo, like well did I do a good job? Did I not do a

good job?" (Brian interview, line 733-736). But later on he pointed out that in the past he has received too much feedback from CIs, which was unhelpful: "Sometimes they [past CIs] give too much feedback" (Brian interview, line 928).

Carl suggested that his current experience with his CI's feedback has been more beneficial than past CI experiences because Meg gives more feedback. Maggie sounded conflicted about how much and how frequently she needed feedback, suggesting that every few weeks was sufficient enough for giving feedback. Interestingly, Maggie also sought out feedback from Lois several times a day, more than any other student. Overall, these students appeared to be happy with the amount of feedback their current CIs provided, but noted some dissatisfaction with past CIs' frequency of feedback.

Specificity

Students often mentioned that their CIs gave feedback with different degrees of specificity. Students described that feedback with more detail or specifics on their performance was more helpful than general statements that confirmed or corrected their behavior.

Chris described a situation where Lisa's feedback was very effective because it gave him details on what he needed to improve on:

> It's I need to okay, [learn] the theory behind ultrasound. I need to know how deeply it can heat, how long each degree temperature increase is going to take and what those increases mean and what they mean for the body. So I think that was very specific, very helpful feedback that I got. (Chris interview, line 1383-1387)

Students also described that feedback from their CIs was often supported by a reason or evidence, which they found to be very helpful. Brian described that much of

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Peter's feedback was supported with evidence, which he liked: "Because the literature supports why you should be doing something, or why you shouldn't be doing something. And I think that's a big thing with feedback" (Brian interview, line 1676-1678).

Overall, students preferred feedback with more detail and evidence because it gave them more information to guide them for changing their performance in the future. None of the students described that feedback could have too much detail.

Form

All of the students mentioned receiving feedback in different forms, especially verbal and written feedback.

Verbal

Students frequently referred to the verbal feedback that their CIs gave them. Students had positive comments about verbal feedback, and it was their preferred form of feedback. Brian repeatedly stated that he preferred to have verbal feedback from his CI: "When I'm in the clinical setting I like to have verbal, instantaneous feedback" (Brian interview, line 1290-1291).

Students described that one of the good qualities of verbal feedback was it easy to give and receive immediately, which was important to them. Students also commented that combining verbal feedback with kinesthetic and/or written feedback was also helpful. Chris commented on a specific feedback exchange and said that one of the reasons it was so effective was because of the combined forms of feedback, including verbal: "So the fact that she could add all three, visual, hands on, and auditory just telling me what I am doing while she is showing me and then getting me to do it really helped out" (Chris

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interview, line 811-813). In this situation Lisa was guiding Chris as he was leading an

athlete through a rehabilitation exercise.

Written

Students often talked about the written feedback they received from their CIs,

which was also usually found on a formal document. Generally students did not consider

written feedback to be helpful to them. If they did receive written feedback they wanted it

to be given verbally as well.

When asked about the most helpful feedback given by her CI, Maggie described

that she usually doesn't look back at written feedback, so verbal and immediate feedback

is more effective: "When she writes it down I don't really go back and read it so I'd say

verbal, verbal feedback immediately following like the task" (Maggie interview, line

451-453).

Students often mentioned that one of the issues with written feedback was that it

is usually delayed, which made it unhelpful for them. Brian discussed that one of his

issues with written feedback is that it is often delayed and he was sometimes surprised by

what was written about his performance: "If that was the case maybe we should talk

about that before this. Ya know, so, I mean still document it as a weakness but don't just

shock me two weeks from now when I've gone two weeks" (Brian interview, line 1208-

1212).

Overall the students did not consider written feedback to be useful, and they

thought it was easier and more helpful to just get verbal feedback instead.

RESEARCH QUESTION #3: CI PERCEPTIONS OF FEEDBACK

The third research question sought to investigate CIs' perceptions of the feedback they provided to athletic training students. Interviews and field notes provided the data for answering this research question. Six categories related to CI perceptions emerged from the data, including purpose, content, tone, timing, and form of feedback, as well as its role in clinical education.

Purpose

CIs described that they gave feedback to their athletic training students for several reasons. These included helping them grow and improve, promote discussion, provide information, confirm and correct behavior, and help students with their future goals and careers.

Growth/Improvement

CIs often described that the feedback they provided was to help students grow as clinicians and improve on their clinical skills. Some CIs described that they wanted to encourage and empower students to learn and improve during clinical education experiences, and they provided feedback to help meet that goal. When discussing feedback in general, CIs said they provided feedback to help and guide their students.

Meg described the importance of giving feedback in the clinical education setting because of its role in helping them grow:

> I think it involves real athletes, real injuries, real variables that are not controllable so I think that it's a huge part of their growth process in addition to, ya know, to where they are, to where they want to be as strong clinicians. (Meg interview, line 231-235)

Here Meg was comparing feedback provided in the classroom and clinical education settings, and she was emphasizing that feedback in the clinical setting is more important than the classroom setting.

Lois related feedback to Miracle Gro, the plant fertilizer, when describing why she gives feedback to students: "To me it's about ya know, taking what they know, encouraging that, making that, ya know, a positive thing and just adding onto it. And letting them grow like that. It's like adding Miracle Gro!" (Lois interview, line 301-311). She suggested that while students are learning and growing as students and clinicians in the clinical education setting, feedback helps accelerate and enhance the growth that is occurring.

Discussion

Several CIs referred to feedback as discussion or dialogue with the student about their performance. When CIs described feedback, they almost always referred to conversations they had with their students rather than just one-way communication.

Lisa commented on a specific feedback conversation she had with Chris, and said that it was an example of the types of conversations they often have:

> I think this might have been maybe when we had one of our long sit-down conversations in the back, or a short sit-down conversation in the back. And usually those are reflective conversations and we were probably just talking about what had happened that day. (Lisa interview, line 555-560)

In this situation, she is talking about a specific feedback exchange that occurred between her and Chris that was one of the several examples of their long, reflective conversations.

When asked about ideal feedback for athletic training students, Meg described that feedback that forces dialogue is one component of ideal feedback: "And I think the kind of feedback that could then force dialogue…. But could then maybe talk about ya know, have it lead to other things" (Meg interview, line 843-851). Meg also talked about how feedback she gave to students often sparked more in-depth conversations about a topic.

Lois, Meg and Lisa all frequently mentioned the feedback conversations they had with students, while Peter never mentioned feedback as a conversation. This was also reflected in the feedback Peter gave to Brian, because almost all of his feedback was a short statement or a few comments rather than a conversation between him and Brian.

Provide information

All of the CIs discussed that part of the purpose of providing feedback to students was to give them information or detail about their performance. CIs often described this as giving tips for how to do something different or better, or sharing with students their perspective on the topic. CIs also described feedback as filling in the cracks in student knowledge, where the student may not have been wrong but they wanted to give them more detail on how or why to do something.

Peter described that he gave detail in his feedback to Brian that Brian could use in the future: "So the feedback to him would be he's developing, he's cataloguing that information, and he's feeling what that joint feels like, or he's feeling what it is. And this is why this is going on" (Peter interview, line 196-198). Similar to Brian's comments,

Peter frequently mentioned Brian's future role as a clinician when talking about the role of feedback.

Meg talked a lot about how she gave Carl suggestions and information about what he was doing at his clinical rotation: "Yeah I do give a lot of suggestions…. I think the type of feedback that I try to give him with suggestions are things that he could implement pretty soon" (Meg interview, line 1244-1251). This was reflected in a few of her feedback statements to Carl, where she would add additional information to her corrective comments.

Confirm

CIs often said that the reason they give feedback is to confirm what the student is doing. They often gave confirming feedback to indicate that the student should keep doing the same thing. They also gave feedback to acknowledge that the student had a good idea or did something well.

Peter described that his confirming feedback helped Brian know that he was going in the right direction: "You kind of give them feedback and kind of fill in the cracks whether they understand it. And if they do understand it then good, good, you're right on track, good, good I wouldn't have disagreed with you at all" (Peter interview, line 538-541). Peter mentioned that he thought it was important to let students know when they were doing something correctly.

Meg clearly said that one reason she gives feedback is to tell the student to continue doing the same thing: "You give feedback because you want them to change or you want them to continue to do the same thing" (Meg interview, line 206-207). Lisa

never spoke about giving feedback to confirm Chris' behavior, however she did give him reinforcing feedback several times during the observation periods.

Correct

Even more often than mentioning confirming feedback, CIs described the importance of corrective feedback and how they give it to students. CIs described their different reasons for providing corrective feedback, some emphasizing that the student needed to change their behavior for the future, others because the patient was in discomfort, and some because they didn't want the student to develop bad habits. Peter described that he thinks corrective feedback is necessary so students don't develop bad habits: "Correct it. Stop it. I mean in a certain way, but it needs to be. You don't want to develop bad habits" (Peter interview, line 916-917).

CIs often gave examples of situations where they gave corrective feedback, and they described that the student doing something incorrectly was a prompt for them to provide feedback. Lisa commented on a situation where she provided corrective feedback. She described that she stood back and watched Chris, but did not jump in until something needed to be changed: "And I was really watching and I saw something that could have been changed. So I stepped in and tried to help him out" (Lisa interview, line 439-441).

Goals/future career

All of the CIs described that they gave feedback to help students move toward a goal or let them know how they were doing in relation to their future goals. CIs often referred to students current and/or future roles as clinicians and professionals when they

talked about feedback and their general interactions. Lisa talked about goals that she and

Chris had discussed that also related to his future as a professional:

> I've tried on more than one occasion like, Chris, in a year this is going to be
> you… When we talk about our goals, and one of my goals for him is like what
> you try to do… like alright, well a couple days I'm going to step back and you're
> going to take over. This is going to be your team. (Lisa interview, line 832-838)

Here, Lisa talked about how she was trying to teach Chris how to take on more

responsibility and multitask, which was something he would have to do as a Certified

Athletic Trainer. This example illustrates that CI's goals for the semester were usually

related to what the student would have to do as a professional as well.

CIs mentioned that feedback helped students meet the CI's expectations or the

student's own goal. Peter often stated directly how his goals for Brian related to the goals

for the patient: "So making sure that he's meeting that goal for that treatment for the

patient" (Peter interview, line 667-668). Most CIs mentioned that they had certain goals

for their student to meet by the end of the semester that were often not defined by

program expectations.

Content

All four CIs discussed giving feedback on different aspects of students' clinical

experiences. The CIs discussed giving feedback on students' professional behaviors,

clinical reasoning, and specific clinical skills. None of the CIs focused on giving

feedback on one specific area of students' performances, but most of them pointed out

that their feedback was not just on clinical skills.

Lisa described that a lot of the feedback she gave Chris is on his professional behaviors: "I think a lot of our stuff is talking about his professionalism and how he acts" (Lisa interview, line 18-19). This coincided with how Chris described Lisa's feedback, in addition to the actual feedback that occurred. When asked about what influences the feedback she gives to students, Meg mentioned that different situations warrant different feedback, and that not all of the feedback she gives is on clinical skills: "So I would say the skill being practiced and the situation they're in because not all of them are skill" (Meg interview, line 783-784). Meg described that she gives feedback when the student needs it, whether it is related to a clinical skill or their communication with a patient. This suggests that the topic of feedback depends on what the student is doing and what the particular student needs, not just the objective of the rotation.

Tone

All four CIs mentioned they are cognizant of the tone of the feedback they give to students. CIs described the importance of creating a positive interaction with students by giving them praise or making feedback positive. Lois emphasized how she tries to make feedback and her general interactions with students a positive experience:

> I want to throw my feedback out there but I want to hear their feedback and encourage that. Create a positive environment so it helps everybody. So it's really… to me it's about ya know, taking what they know, encouraging that, making that, ya know, a positive thing and just adding onto it. (Lois interview, line 298-303)

CIs also mentioned balancing positive and negative feedback when they did have to correct students. Meg described how she tries to balance out negative and positive

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feedback, referring to both the tone of the feedback and whether it is correcting or confirming their behavior:

> I am sensitive to the balance between negative and positive, at least aware of it… Whether or not it always comes out in the balance, that's unpredictable, that's really dependent on the situation. (Meg interview, line 345-351)

Several of the CIs mentioned that they often try to make a positive comment or praise the student when they give corrective feedback so the student does not become discouraged.

Importance of Feedback

When asked about the role of feedback in athletic training clinical education, CIs agreed that it is important to students. CIs described that feedback was important and critical to athletic training student development for multiple reasons, but they mostly agreed that feedback was important for students to know whether they were doing something right or wrong.

When asked about the role of feedback, Lisa described that feedback is important to students' learning processes:

> I think it's the most important part. Because how are they going to learn if you just - if they just do what they think is right. If you don't correct them or help them to steer them in the right direction, they're not gonna know if they're doing the right thing or not. (Lisa interview, line 74-81)

Meg also described how feedback helps with student development:

> I think it's critical to their development. I think that ya know, you don't know
> whether you're doing anything right or wrong until it is evaluated by anyone, in
> the classroom or clinically. (Meg interview, line 222-225)

This association with knowing right vs. wrong was similar to the students'

thoughts about the role of feedback.

Timing

All four CIs frequently discussed the timing of feedback they gave to students.

CIs mostly thought immediate feedback was more effective for students than delayed

feedback because it was easier for them to discuss the student's performance and it is

important for students to correct incorrect behavior immediately.

As Peter reflected on a specific feedback statement he gave Brian, he described

that he gave immediate feedback so the student could change his technique immediately

and in the future: "So I would say that I needed to break that in, to give that immediate

feedback on that particular technique. Next time he does it, he knows to bring it in there"

(Peter interview, line 662-665).

CIs often mentioned that although they tried to give immediate feedback they

would sometimes delay it because a patient was present or because they did not have

time. Meg talked about a delayed feedback exchange that occurred between she and Carl,

and she questioned whether the delayed feedback she gave was as significant as it would

have been if given immediately: "Well was my feedback as impactful because we had to

delay… because of our other responsibilities going on, ya know?" (Meg interview, line 770-772).

Overall, CIs had a preference for giving immediate feedback and would try to give immediate feedback as much as possible.

Form

All of the CIs discussed giving feedback to students in different ways, mostly written and nonverbal. All of the CIs said they gave mostly verbal feedback, but they did not elaborate on verbal as a form of feedback. They seemed to assume that when discussing feedback they were talking about verbal feedback. When discussing different forms of feedback, they referred to times they had given written and nonverbal feedback.

Written

Several CIs mentioned written feedback when talking about how they give feedback to students. Most of the time CIs associated written feedback with the formal documents required by the program. Meg described how most of the feedback she gives is verbal, and associates written feedback with formal documents: "Most of it I would say is verbal, then the written are just the formal documents" (Meg interview, line 355-356).

All CIs preferred to give feedback verbally rather than in written form, but unlike students most CIs did not indicate why this was their preference. When asked about the ideal form of feedback, Lisa described that she does not think written feedback is very effective because of the way Chris responds to it: "I don't think written feedback is necessarily effective. I don't know, because even my bi-weeklies that we go through, they don't mean anything to him" (Lisa interview, line 332-337). Because Chris was her

first student as a CI, she could not compare how past students have responded to her written feedback.

Nonverbal

All of the CIs described giving non-verbal feedback, either by showing students something or actually guiding them through a skill hands-on. Several CIs talked about the importance of applying feedback right away. CIs often described giving non-verbal feedback because it helped students understand what they were doing better than just talking about it.

Peter described how he would have Brian perform something on a patient as he provided feedback so he could feel what he was doing right away:

> There'll be a pulling over and say, can you feel this? Can you see this? What is this end feel? I'll take a leg through a range or something, and then I'll have him do it. And I'll say did you feel the resistance? So the feedback to him would be he's developing, he's cataloguing that information, and he's feeling what that joint feels like, or he's feeling what it is. And this is why this is going on. So that would be the kind of thing is that, after he feels it then I'll give him feedback on whether he has it. So I'll say tell me which side do you think is tighter? (Peter interview, line 193-201)

Peter's example described how he would often have Brian treat the patient with him so he could teach and provide feedback at the same time.

Sometimes CIs would give nonverbal feedback to allow the student to be more autonomous. Lisa gave an example of how she motioned something in the air to Chris so she didn't have to step in too much: "I was trying to like show him in the air without just taking her hand" (Lisa interview, line 710-711). Several CIs mentioned examples where

they would try to give feedback less directly so the student could take on more responsibility with the patient.

RESEARCH QUESTION #4: CI INFLUENCES ON FEEDBACK

The purpose of the fourth research question was to gain insight on the factors that influence the feedback CIs provided to athletic training students. Five categories related to this research question emerged from the interviews and field notes. These categories include time, personality, past experiences, the patient, and their approach to students.

Time

One of the biggest influences on CI delivery of feedback was the time they had available to give feedback. Several of the CIs described being rushed, or had other responsibilities that limited their ability to give feedback. They often described that when they were rushed they had to delay giving feedback, and sometimes forgot to give it. The only CI that did not mention having an issue with time was Lois, which was also noticeable in the researcher's observations. She always seemed to have plenty of time, or make time, to give feedback to Maggie. A high administrative load and several other responsibilities were the time barriers for Meg and Peter, whereas Lisa described that her high patient load was the biggest factor that made her too busy to give immediate feedback.

Meg described how she has so much going on that she has to give feedback right away or she won't have time later: "I mean, again it comes back to there's so much going on with my job and my life that sometimes if I don't do it then than it doesn't happen"

(Meg interview, line 582-589). Peter described that he is more rushed than other clinicians in his clinic, so it is a challenge for him to find time to focus on the student:

> Ya know like Lois, they have their time, they'll have a little bit more. But mine is more rushed. Ya know, so that's a challenge for me – alright, I got Brian here, I got for 5 hours I gotta be in that clinic, I can't be worrying about this [points to desk], I gotta get out there. (Peter interview, line 856-860)

When CIs described their preference for providing feedback, such as ideally giving immediate feedback to students, they often described that time was their biggest barrier to giving feedback in the way they wanted.

Personality

All of the CIs mentioned that the feedback they gave to students was influenced by their personal preference or personality, and/or the student's personality. Several of the CIs described that they have a preference for giving feedback a certain way. All of the CIs mentioned something related to the student's personality and adapting their feedback to how they seem to receive feedback the best.

When asked about what influences the feedback she gives to students, Lisa discussed how she tries to detect how students respond to her feedback and provide it accordingly: "Working with other students I've tried to feel out how they respond best or what kind of feedback they like the best" (Lisa interview, line 134-140). She also gave examples of how she gives feedback differently to Chris than other students based on how he often reacted to her feedback.

Lois also described that her delivery of feedback depends on how the student seems to respond best: "Yeah, and ya know, it depends on the personality of the student,

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of how direct and all that" (Lois interview, line 225-226). These results suggest that personality is a factor in the feedback exchanges between CIs and students, and CIs adapt their feedback based on student personalities.

Past experiences

CIs brought up their past experiences when discussing their approach to providing feedback and their general interactions with students. All CIs mentioned their past experiences with other students or their current student as an influential factor in the way they give feedback.

When asked about influential factors on the feedback she gives, Lisa described that her previous experiences with Chris this semester influenced how she gave him feedback later in the rotation: "Definitely how he's responded to what I've said in the past" (Lisa interview, line 133-134). More specifically, Lisa described that she started to give less feedback on Chris' professional behaviors as the semester went on because he either responded negatively to her or didn't use the feedback she gave him.

Meg and Lisa also mentioned their past experiences as students themselves when discussing how they approached students. Their comments mostly related to their general roles as students rather than the feedback they received. In one example, Meg talked about her experiences as a student and how those influence the standards she has for Carl:

> I hold myself to standards, high standards. I was held to high standards in my education. So I think that I am a pretty good clinician and having said that, I know that it can be done whether you meet the standards or not. If the standards are set then you maybe try harder and learn more and leave here being stronger. (Meg interview, line 621-627)

She made this comment when talking about how she determines what expectations she has for students and when she decides to give feedback based on those expectations.

Patient

All four CIs mentioned that the patient was an influence on when and how they gave feedback. Oftentimes the presence of a patient determined whether the CI gave feedback at that moment or how they gave feedback at that moment. Sometimes the CI would consider which patient was present before providing feedback to the student.

In this situation, Lisa mentioned that she gave feedback to Chris while he was still performing scapular mobilizations on the patient because she knew that the patient would be comfortable with that: "I know that that particular student athlete is fine with that and I think that Chris is comfortable in that whole situation for me to be teaching as he is doing and going" (Lisa interview, line 452-455). Chris was responsible for this athlete's rehab program and progression, so he spent a lot of his time working with this athlete, which may have made him more comfortable with Chris.

Oftentimes if the patient was in pain or could have been harmed was the determining factor whether the CI gave feedback at that point or not. Lois described that the reason she gave corrective feedback immediately was because the patient was in discomfort: "Umm well that pretty much was a necessity because the patient was in some discomfort" (Lois interview, line 579-580). CIs said they never hesitated to give corrective feedback to a student when the patient could potentially be harmed. Meg in

particular said that she tries to protect the athletes so they continue to trust the students who are caring for them.

Approach

All CIs discussed having an approach to students, whether it was specific to providing feedback or more general to their clinical teaching. Although all CIs described having a general approach to students, each one of them also discussed that adapting their feedback and teaching was a part of what they do as a CI.

General

CIs discussed having a general way they approach students. Each CI had some sort of progression for the student throughout the semester, whether it was to become more autonomous or work on a specific skill set. All of the CIs focused on giving the student more responsibility throughout the semester, and they all described that they tried to collaborate with the student and treat them as another clinician. Many of their general approaches regarding feedback came back to their personal preference.

During Lois' interview, she mentioned how she has a general approach that most students respond to well: "Umm, generally that's just my approach with most students. Umm, I haven't run across somebody that hasn't responded well to that" (Lois interview, line 206-212). Previously during the interview she described her approach to giving feedback as guiding and helping students in a positive way.

Adapt

Even more prevalent than discussing a general approach or system to students was CIs talking about how they adapt their clinical teaching and feedback to students. Most of this adaptation occurred during the semester with their current student.

Peter discussed how he adapts the student's experience based on how they are doing in the beginning and what their needs are: "Their role in the beginning is to observe. And then my role is to create an individualized rotation based off of them" (Peter interview line 51-54). Specific to Brian, he described that he knew Brian was capable of high-level clinical reasoning, so he focused his clinical teaching and feedback on this aspect.

Peter and Meg discussed adapting their clinical teaching and feedback over time based on changing students and student needs. For example, Peter described that feedback is more forced and expected by students today compared to 15 years ago, so he has had to adjust how he gives feedback (Peter interview, line 160-173).

Most of the CIs adaptations occurred by watching the student and changing their feedback/teaching according to how they were doing throughout the semester. Meg discussed how she adapts student goals and her subsequent feedback to different students. In this example she mentions that some of the international students she has worked with in the past have had different needs: "With different students I have had to set, like help set different goals because where they… and I'll go back to international students or students who are very shy" (Meg interview, line 672-674).

Overall, these CIs described several different ways that they individualize clinical teaching and feedback to their students, suggesting that this is a regular part of what they do as CIs.

RESEARCH QUESTION #5: INFLUENCES ON STUDENT RESPONSE TO FEEDBACK

The goal of the last research question was to find the factors that influence student responses to feedback. Four categories emerged from the interviews and field notes, including time, personality, receptivity, and privacy.

Time

Similar to the CIs, most of the students mentioned that time was a factor in how much or often they got feedback, or how they responded to it. In other cases, students mentioned that their CIs just didn't have time to give feedback. Brian described that because him and Peter were often so busy with back-to-back patients that he often didn't have time to check in with Peter or get feedback:

> Like, every 30 minutes, every 40 minutes you've got someone else coming in.... I get bogged down like, okay, I just saw a patient, he hasn't given me any feedback, I go right to the next one and then I kinda forget if I had a question. (Brian interview, line 771-779)

In some cases the high patient volume was an influential factor in how they processed or used feedback or whether their CI gave them feedback. Carl discussed that time limitations influenced how he was able to process and use the feedback Meg gives him:

Sometimes we are very busy and a lot of things are going on. Like she'll maybe just say a little feedback but you won't process it right away. So then you may not be able to use it as effectively as if you actually sat down and talked about it and interacted. So I think being busy effects it a lot. (Carl interview, line 230-239)

Students described that time limitations came from both their CI being busy, and having a high patient load at their clinical rotation. This was the case for Brian, Carl, and Chris. Maggie never mentioned that time was an issue in her rotation with Lois.

Personality

Most of the students described that personality of them or the CI influenced their feedback exchange. Oftentimes the students discussed personality in relation to the delivery of feedback and preferred ways of discussing feedback. Students also discussed how them and their CI's personalities set a general tone for their interactions, which then influenced the way they discussed feedback.

Maggie talked about the process of getting to know her CIs and how that influenced the way she responded to their approaches to feedback:

Yeah, I think there's a lot of just getting used to the other person as a person too, like their personality and them… ya know I'm sure that Lois had to feel out my personality too and maybe think about how I'm going to respond best to the feedback she gives me, like how she's going to present it. And I don't know if she did or not, but… yeah, I think it's a lot about personalities, or could be. (Maggie interview, line 886-892)

Chris talked a lot about how he preferred to give and receive feedback in an indirect, supportive fashion, but he thought Lisa preferred a more direct, critical approach:

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Especially like I said, with her being a straight shooter, straightforward, doesn't beat around the bush and I tend to sugar-coat things, or maybe… ya know, walk my way around something instead of going directly toward exactly what I'm trying to say. It's just sort of a difference in the way we take and give criticism, I guess. (Chris interview, line 425-430)

Students usually described that there was a period of time at the beginning of the semester where them and their CIs had to get accustomed to each other's communication style, but once they understood the other person their interactions became easier.

Receptivity

Students recognized that their receptivity to feedback influenced the feedback exchange between them and their CIs. All of the students gave examples of situations where they were more or less receptive to the feedback given by their CI. Students described that if they disagreed with the feedback given by their CI, like if they thought they were right when the CI said they were not, they were less likely to try to use that feedback. Carl talked about how he is not as receptive to feedback that he disagrees with:

I don't think there's many factors that influence the way I use feedback. But if there's something like questionable, like I if I think it's right and she gives me feedback saying it's different, I like maybe tend to not like lean towards that feedback as much. (Carl interview, line 211-215)

Interestingly several students mentioned that there were occasions that they did not agree with their CIs feedback, but no one besides Chris actually made their CI aware of their disagreement.

Students also mentioned certain situations or skills where they were more receptive to feedback, usually because they thought they needed improvement in that

area. Brian talked about how sometimes he desires more feedback because it is a new or uncomfortable situation:

> And sometimes I, with certain patients I need it more than others. Like if it's a patient that I've seen two or three times then I feel more comfortable. If it's a patient I just saw for the first time and I'm doing something different some helpful feedback would be good. (Brian interview, line 816-820)

Receiving feedback during new learning situations was important to students, and they strongly desired supervision and feedback from their CIs during these occasions.

Privacy

Students often mentioned the privacy of feedback as an influential factor in how they responded to the feedback. They often described that the delivery and privacy of feedback were closely related, and they were much more sensitive to negative feedback in the presence of a patient. Brian described that negative feedback in front of a patient often frustrated him, and that Peter often gave critical feedback in front of patients:

> If you were to do a negative feedback in front of a patient I might be more frustrated…. Like, look, there's a saying that somebody always told me, correct in private. Discipline in private. Ya know, give an atta boy in public. And sometimes he does have a tendency to do that…. And at that point it's like well now I just lost all trust in the patient because they're like this person doesn't know what he's doing. (Brian interview, line 1030-1049)

Students usually had a problem with negative feedback in front of a patient because they were afraid of looking bad in front of a patient, which Brian expressed above.

Most of the time students mentioned that their CIs tried to give negative feedback in private or away from the patient. Chris described that Lisa was very good at giving him critical feedback in a private setting, or at least not around anyone that would embarrass him: "My CI this semester is very good at making sure when she gives me feedback that… especially the critical feedback… that it is not in front of anybody that would embarrass me." (Chris interview, line 637-639)

Students never discussed how positive or other feedback given in front of a patient affected them. This suggests that privacy and the tone of feedback are closely related for students.

CASE STUDIES

While all of the above categories were representative of most or all participants, the following categories were unique to each CI-student pair. These categories show unique characteristics of each case that emerged from all of the combined data, and demonstrate that each CI-student interaction is different.

Meg & Carl

Carl's clinical rotation was the most traditional athletic training experience out of all the participants. Assigned to women's soccer during the fall competitive season, Carl would typically arrive at his clinical rotation about an hour before practice to assist with rehabilitation and pre-practice preparation before attending practice with Meg. Throughout practice Meg and Carl would watch practice and sometimes lead an injured athlete through rehabilitation exercises. For the third audio observation session, Meg covered fall softball practice for another staff athletic trainer. During this day Meg and

Carl barely interacted with the athletes, and seemed out of their normal routine. This may have affected how and when feedback was given, considering Meg gave only one feedback statement to Carl in over three and a half hours of observation. An acute injury never occurred during the ten hours of observation, so most of Carl's activities included preparing for and cleaning up from practice, leading athletes through rehabilitation exercises, and doing occasional treatments such as electrical muscle stimulation.

Three themes emerged from their interactions, including listening vs. understanding feedback, being comfortable, and formal evaluation as feedback.

Listening vs. understanding feedback

Meg and Carl frequently discussed Carl's reaction to Meg's feedback. Carl described that he used Meg's feedback to help him learn. When commenting on examples of feedback exchanges, he often described that he was just listening; trying to absorb the information she gave him. When asked to reflect on a specific feedback statement given by Meg, he described why he listens:

> I very rarely, like sit there and um don't listen or don't take feedback just because I want to learn as much as possible and grow. I feel like this feedback was like, I sit there and everything with me was like yeah, uh huh, yeah. So I was just sitting there listening trying to take it all in to learn from it. (Carl interview, line 446-450)

Meg said she thinks Carl listens to her feedback, but she said several times that she questions how well he understands it, especially understanding to the point where he can apply it to similar situations in the future. Meg discussed students' responses to

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feedback and how she questions Carl's ability to understand the significance of her

feedback:

> They always listen but some of them, I guess just agree. And I don't think they're just agreeing… I don't think that Carl just agrees to agree I just don't know… I mean I guess it goes back to that superficial level where does he really understand not my feedback, because I think he understands the feedback. But understand the significance of it and what it then means. Like, in three years from now or whatever. (Meg interview, line 413-421)

Although Meg had concerns about Carl's ability to clinically reason and think

about her feedback, she never provided feedback on his clinical reasoning – it was only

on his clinical skills.

Comfortable

An emphasis of Meg and Carl's interactions was making sure that Carl was

comfortable with what he was doing. Carl would often describe that Meg would check to

make sure he was comfortable doing something before he did it, and Meg would also say

that she wouldn't let Carl do something if she wasn't comfortable with what he was

doing. Carl discussed how Meg encouraged him to take on responsibility but makes sure

he was comfortable before doing so:

> She really, like, tries to make work for me independent. So umm, trying to get that knowledge and education level. So like, she'll ask me to… if I feel comfortable doing something. And if I don't I'll just tell her. (Carl interview, line 40-43)

Meg described an example of how Carl takes on more responsibility once he

becomes comfortable treating the athletes at his clinical rotation:

Once he understands what we're doing with people he takes that on, from taping ankles with specific individuals to rehabs…. And he is becoming more comfortable with at least… and I'm helping him to understand the need, like let's tape in this program at three weeks. (Meg interview, line 82-92)

Meg appeared to want Carl's learning experience to be protected, yet challenging, so this constant communication of Carl's comfort with doing things seemed to facilitate that.

Formal evaluation as feedback

More than any other CI-student pair, Meg and Carl referred to formal documents when discussing feedback. Both Meg and Carl discussed the evaluation forms used for evaluating clinical rotation objectives, in addition to the bi-weekly meetings that all CIs and students in the program have.

When asked about preferable forms of feedback, Carl brought up the evaluation forms for clinical rotation objectives and discussed how sometimes they are not effective because Meg doesn't have time to give feedback on every part of the task: "Umm, sometimes like with global evaluations [required form for student evaluation] and CROs [clinical rotation objectives], like there will be some tasks that are completed that she like really doesn't have time to give feedback on with the writing down on the sheets." (Carl interview, line 150-154)

Meg talked about how she is aware of her word choice when balancing positive and negative feedback on formal evaluation forms:

Certainly the words that I use and that's really true on bi-weeklies [formal evaluation form completed every two weeks] and the end of the year and mid-year [evaluation forms]. I take those things very seriously and I am… I read it… I, I mean write it, I read it, I think of this as how is this going to be received. (Meg interview, line 593-596)

Although these two participants referred to formal evaluation and feedback so frequently, the researcher did not observe them completing any formal evaluations during the data collection periods. Perhaps Meg's strong association between feedback and formal evaluation explains why she gave so little feedback to Carl compared to the other CIs.

Lisa & Chris

It is common for athletic trainers to provide medical services for multiple athletic teams simultaneously. Chris' rotation included pre-season wrestling and cheer and dance, providing him with the challenging experience of balancing two teams at one time. During his days with wrestling, Chris would assist Lisa and lead several athletes through rehabilitation sessions, as they had several injured athletes throughout the data collection period. Chris would help prepare for practice, and after the wrestlers started practice Lisa and Chris would stay in the athletic training room. During this time they would often work together or separately to write rehabilitation programs and complete paperwork, and they would often use this time to discuss the team and Chris' performance as a student. Many of their feedback exchanges occurred during this time. When needed, Lisa and Chris would walk down the hall to the wrestling room to check on the team or evaluate an athlete, although this only happened once during the observation periods.

During Chris' time with cheer and dance, he would assist with pre-practice treatments and rehabilitation. Similar to wrestling, cheer and dance was covered from the athletic training room across the hall, so Lisa and Chris spent actual practice time either treating an injured cheerleader or completing administrative tasks. Both of the observation periods with dance included changes unexpected by the participants and researcher. During the first day at cheer and dance (Audio 3) practice was cancelled after they had already completed pre-practice preparation, so they stayed for another hour and a half to treat some of the cheerleaders and complete administrative work. Because of this cancelled practice, the researcher added a fourth observation day to capture more of their interactions. This was also cut short because Lisa and Chris had to take a cheerleader with an acute back injury to the emergency room. The researcher was able to observe their interactions in the emergency room until the athlete was admitted and Chris left for the evening. Although these unexpected changes may have affected their interactions and the subsequent feedback that may or may not have been provided to the student, they are still representative of the responsibilities of athletic trainers in this setting.

Four themes emerged from this pair's interactions, including discussing professional behaviors, misunderstanding of the relationship, negative reaction to feedback, and self-confidence.

Discussing professional behaviors

Unlike other pairs, most of Lisa and Chris' feedback exchange included a lot of discussion on his professional behaviors. This feedback was often delayed, although it is unclear whether this is because it was not always related to a specific event, Lisa wanted

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to wait until they could talk in private, or because they did not have enough time to discuss it until later in the day. Most of Lisa's feedback was given in this way, where they discussed Chris' time management, professional dress, or communication skills in the back office while athletes and others were not around.

In one example, Lisa waited until practice had started and the cheerleaders were out of the room before she commented on his inappropriate clothing: "And flip-flops, that's like an OSHA thing." This feedback exchange also included some discussion that included Chris explaining that he was sorry and gave a reason why it occurred: "I understand… that was a big whoops on my part." The discussion continued with Lisa providing reasons why she gave the feedback: "And then it's inexcusable only because [staff athletic trainer] sent out that email [referring to the dress code]" (A2 Audio 4, 7:32 pm).

In another example, Chris and Lisa had a long discussion about how Chris should have prepared more for his rehabilitation session, in addition to his lack of time management. Lisa reminded Chris: "Like I said we are working toward that goal of you being able to run it [the rehabilitation session]… because I want you to have the experience" (A2 Audio 1, 2:17 pm).

This feedback exchange included a lot of discussion about how and why Chris struggles with being prepared. Lisa would also get Chris involved in these conversations by questioning and asking him to self-evaluate his performance on a given day.

Misunderstanding of the relationship

Several comments made in the interviews, in addition to the researcher's observations, suggested that there is a significant misunderstanding between Chris and Lisa and their relationship, and that working with each other is a challenge. This misunderstanding appears to mostly come from Chris, who struggles with receiving and using constructive criticism. Both Lisa and Chris mentioned their ages several times, pointing out that he was older than Lisa and she was a first-year CI.

Lisa often described feeling disrespected by Chris and thought he did not listen to what she had to say to him. Chris often mentioned feeling discouraged after a feedback exchange between he and Lisa, although he often said this was a combination of her delivery and his personal reaction to feedback. Lisa discussed how she interpreted Chris' interaction with her and other staff members:

> I have tried to, since the beginning, keep it a fun relationship but I've also tried to keep it as it needs to be - professional. And I don't think that he gets that separation. Because I don't think he's had that before. I don't think he gets that, and I feel disrespected that he does that. I feel like he feels he's talking to a peer instead of his superior. Which is actually how he addresses the rest of the staff. So I understand it's not just me and it's, it is kind of him but - I don't know if it's so much disrespect but he just doesn't understand the relationship. (Lisa interview, line 801-817)

Specific to feedback, Lisa described how a feedback interaction between she and Chris often goes: "This is my general way that I see our feedback go. That I try to say something and he just has some quick, smart answer, and that's the end of it. And it's quite hard to deal with on a daily basis" (Lisa interview, line 671-674). Chris gave an example of how he often reacts to Lisa's feedback:

I think I was a little bit taken back because when she said we're going to teach you to multitask… wow, I got a little offended. I thought I did great today. And now I'm hearing I did poorly, I mean, I understand ya know, you're already an athletic trainer and you've already worked with this sport for a year so you already know the ins and outs…. Ya know I thought I was progressing and doing better and then when she's like we're going to teach you to multitask I was like wow, like she's not noticing my effort at all. (Chris interview, line 916-930)

During the observation periods Chris and Lisa appeared to struggle to just get through the day with each other. This made many of the feedback exchanges between them tense and negative.

Negative reaction to feedback

Lisa mentioned several times that she does not think Chris uses the feedback she gives him, and thought he often had a negative reaction as she was giving him feedback. When asked if students use her feedback, she discussed how she thinks Chris responds:

Specifically with the student that I have now I just feel like he'll fight me on what I have to say. Instead of just taking it for what it is and taking it and using it how he'd like. And instead I think he sees it as I am challenging him constantly in a bad way instead of challenging him to think differently. (Lisa interview, line 116-121)

Chris often described having an emotional reaction to feedback, using the words harsh, disheartening, and upset. Chris talked about a situation where Lisa gave him feedback on how he did not prepare well enough for a rehab session:

So that was really, umm, although I needed it, it was kind of disheartening because I go home, like, now she's mad at me, now like the whole semester she's going to be expecting all of this from me. (Chris interview, line 382-386)

There were several instances where Lisa gave feedback and Chris either did not listen or refuted the feedback Lisa gave to him. In one example Lisa gave Chris feedback on how he was stretching a cheerleader with an acute hamstring strain. In this feedback exchange, Chris challenges Lisa on her feedback several times before deciding to change what he was doing:

> Lisa: That's going to hurt her.
> Chris: You think so? Even just a little bit?
> Lisa: Yeah.
> Chris: Okay, we don't have to do that.
> Lisa: Yeah, I don't want her to do that.
> Chris: Alright. Even just a light stretch?
> Lisa: I'd rather not.
> Chris: Okay.
> (A2 Audio 1, 8:35 pm)

Although Chris often appeared to disregard Lisa's feedback, he also described in his interview that although he responds negatively initially, upon reflection he often realizes the value of her feedback and uses it. However during the follow-up member checks Lisa mentioned that Chris did not change a lot of his behavior throughout the semester. Therefore it appears that by the end of the rotation Lisa and Chris were still not on the same page about his performance and her feedback.

Self-confidence

As Chris and Lisa talked about their interactions and giving and receiving feedback, they both made comments that suggested they had issues with their self-confidence related to their roles as a CI or student.

Lisa often mentioned her age and position as a new CI, and how she struggles with asserting herself because she is the same age as students. "So I like to assert myself as someone who is more knowledgeable than them just because that has to be my position, I feel. And I struggle with that a lot" (Lisa interview, line 288-290). She also described that she is occasionally unsure whether the feedback she gives a student is correct or not, but she would always follow up with a reference to make sure she was correct.

Chris mentioned his own issues with confidence in his knowledge during the interview. Chris often described how he was afraid to ask questions or seek feedback because he was afraid he would look unknowledgeable. Chris talked about how he wanted feedback on areas that he was still learning or didn't know as well as he should, but was afraid of looking bad:

> So like, asking for help or asking for someone to demonstrate something that I already know I get really, ya know, thought conscious. Okay, they're going to think I don't know this so I obviously don't know what I'm doing, or I should already know this so if I ask for help I'm going to look like I didn't do my work and all this stuff. (Chris interview, line 1130-1135)

Both Lisa and Chris' personal insecurities may have contributed to their challenging relationship, and their issues with confidence and knowledge may have influenced the way they gave and responded to feedback.

Lois & Maggie

The rehabilitation clinic provides a common rotation for athletic training students. This setting provides the opportunity for students to work in a different environment with

a more diverse patient population than the collegiate setting. The outpatient rehabilitation clinic setting is typically more structured than the collegiate setting, where patients are steadily scheduled throughout the day and daily tasks are more predictable. Maggie's time in the rehabilitation clinic included a balance between observing Lois treat patients and leading her own patients through rehabilitation sessions. Lois always kept close supervision of Maggie, and even if Maggie was across the room treating a patient Lois always kept an eye on her. It was noticeable that Maggie took on more responsibility with patients throughout the weeks of observation. Lois and Maggie appeared to have more down time than Peter and Brian because patients cancelled or Lois had fewer patients scheduled. This allowed a lot of time for Maggie to work on developing a rehabilitation program while Lois made herself available for questions and discussions about what Maggie was working on. Their interactions always appeared to be positive and calm, and never appeared to be hectic or overwhelming.

Three themes emerged from Maggie and Lois' interactions, including questioning as feedback, seeking feedback, and discussion.

Questioning as feedback

Unlike other CIs, Lois used a lot of questioning when providing feedback to Maggie. In one feedback exchange Maggie was leading a patient through an exercise. Lois prompted Maggie to alter the exercise with the question: "And should there be a hold?" rather than a statement (C1 Audio 1, 10:10 am).

Lois explained that she often used a question instead of making a statement when providing corrective feedback, especially in front of a patient. When asked about how she gives feedback to students, Lois described why she uses questioning:

> Definitely question feedback. Ya know. To make her think a little bit. But overall I emphasize the positive and then if ya know if anything needs to be changed then throw in the questions. Ya know, what could be done differently, to create the… instead of me saying um, no, this shouldn't be done this way. She would think of okay, here's a different way I could do it. (Lois interview, line 92-101)

Maggie recognized that Lois often asked questions as a form of feedback, and thought that Lois' questions prompted deeper thought about what she was doing.

Seeking feedback

Much more than any other student, Maggie sought out Lois' feedback on what she was doing. Maggie's prompting of feedback actually led to 34% of the feedback exchanges between Lois and Maggie. Although Maggie frequently sought out feedback, Maggie and Lois did not mention this in their interviews. Sometimes Maggie would directly ask Lois how she was doing on something:

> Maggie: Okay, what do you think about that? [points to SOAP note she has been working on]
> Lois: Yeah, that's good.
> (C1 Audio 1, 10:42 am)

Most of the time Maggie would walk over to Lois and tell her what she was doing, which would then prompt feedback from Lois:

Maggie: So I'm thinking see what her quad set looks like, see what her straight leg raise looks like.
Lois: Ummhumm, okay.
Maggie: Just maybe do some straight leg raises depending on how the quad set looks may or may not do the neuromuscular re-education.
Lois: Okay
Maggie: Or do you think I should do that regardless?
Lois: I would do it. And either I would do it with the straight leg raise with assistance or the standing. Either one, and I would move over to this table.
(C1 Audio 1, 7:22 am)

Maggie's prompting or questioning Lois' thoughts often led to longer discussions about what she was doing, in addition to specific feedback on Maggie's performance.

Discussion

Feedback between Lois and Maggie included a lot of discussion about Maggie's performance. Oftentimes they would have these discussions between patients, or sometimes they would pause treating their patients to discuss what Maggie was doing. In this example Maggie explains to Lois what she is writing for a patient's plan. More than any other student Maggie did a lot of the talking during she and Lois' feedback exchanges:

Maggie: So maybe just say… maybe have him come back in but just give him a home plan for strengthening.
Lois: Yeah.
Maggie: Because I really think that's what he is lacking most….
Lois: Yeah.
Maggie: At this point.
Lois: Yeah, that sounds good. How would you write that?
Maggie: So, plan would be have patient return… well maybe get him to come back once next week after… well definitely have him come back after he sees the doctor.
Lois: Mmm hmmm.
Maggie: And maybe then have him come back, like… give him a plan to do at home, strengthening things you do at home, and them maybe have him come back in like a week. Well he's not really going to have much strength…
Lois: Yeaaahhh [questioningly]
Maggie: Measureable strength improvements in a week.
Lois: Yeah. How about this… let's have him come back for one visit for a home exercise plan and let's just leave it at that.
Maggie: Okay.
Lois: And then if things, then we'll verbally tell the mom: hey, if he's not getting better do the rest time like we talked about and if he's still not better he needs to go back to the doctor and then see us.
Maggie: Okay.
Lois: But let's just do one more visit in here.
Maggie: So say, have patient return for follow up visit… or for one more visit to umm give him a home exercise plan…
Lois: Mmmm hmmmm.
Maggie: Which will address strengthening….
Lois: Mmmm hmmmm.
Maggie: Of the lower extremity. Because it's not going to…
Lois: And?
Maggie: And? [questioningly]
Lois: What else are we working on for him?
Maggie: Core.
Lois: Yeah. Core and lower extremity strengthening.
Maggie: Yeah, okay. Let me write that out.
(C1 Audio 2, 10:34 am)

These discussions would often occur when a patient cancelled their appointment,

or when they had extra time between patients. Maggie and Lois would often work on

something individually, but next to each other, so Lois remained available for Maggie when she had a question. Oftentimes Lois would peek over Maggie's shoulder to see what she was doing, which would initiate a feedback exchange.

Peter & Brian

Brian's clinical rotation was located at the same outpatient rehabilitation clinic as Maggie's. Similar to Maggie, Brian spent his time in the clinic watching Peter treating patients and also treating patients on his own. Peter always appeared to be a very busy person, and was usually rushing between patients, making phone calls, and going into the back office. Oftentimes he left Brian unsupervised in the front clinic area while he was in the back, although two other CIs were present in the main clinic area. When Brian observed Peter treat a patient, Peter often did a lot of active clinical teaching by telling Brian what he was doing and quizzing Brian on his knowledge. Nearly all of the interactions between Peter and Brian occurred in this way, in front of a patient. The researcher never observed them debriefing or discussing things in a private setting that was not rushed. When Brian was left in the front clinic area during down time with no patient to treat, he would often walk around and watch other clinicians or just wait for Peter to return. Brian was very aware of Peter's heavy workload, as he mentioned it several times during observation periods and during his interview. However, he seemed understanding of Peter's actions and did not seem negatively affected by it.

Three themes emerged from Peter and Brian's interactions, including classroom vs. clinical knowledge, it is okay to make mistakes, and focus on learning and knowledge.

Classroom vs. clinical knowledge

Both Peter and Brian mentioned differences between what students learned in class and their clinical experiences. Brian described that he struggled with what he was learning in the classroom versus the clinic because he was afraid what he was learning in the classroom was not correct. Brian described how much of Peter's feedback was on what Brian learned in the classroom, which Brian got frustrated with:

> So sometimes that does make me a little bit, why am I going to class if this is not what I am supposed to be learning? So, umm, but, yeah I mean there's definitely been times where I get frustrated with Peter because he'll say something negatively but then my response immediately is well that's what I learned in school. (Brian interview, line 552-570)

Interestingly, Peter also brought this up and described that what he teaches students is more advanced, but still builds on their classroom knowledge.

Much of what Brian learned with Peter was advanced clinical techniques and different approaches with evidence-based practice, which was likely why he was so frustrated with what he was learning. Peter described how a lot of what he does is unconventional, which is difficult for students to grasp:

> The challenge for me is what I know, alright, and what I struggle with is I don't expect you - you to get into my head, and to figure out. So my evaluations are very unconventional, and they're very, they don't follow a certain thing. When I have a student there with me I've gotta do some of the basic, I've gotta do some of that stuff. Because if start through it they're gonna say this isn't what I learned in school, I've never done it this way before, and I'm supposed to learn that!? [laughs] (Peter interview, line 358-366)

Brian was so focused on becoming a good clinician and professional, in addition to relying on evidence as a base for his decision-making, that he often became frustrated when information coming from his CI and the classroom did not match. None of the other students held Brian's identity as a clinician and a professional or his focus on evidence-based practice and clinical reasoning.

It's okay to make mistakes

Both Peter and Brian talked about how part of Brian's experience in the clinic was about making mistakes and learning from them. Brian made several comments about how students often want to please and don't realize that it is okay to make mistakes, which Peter was helping him learn.

Peter talked about how students often struggle when he challenges them because they are afraid of making mistakes: "The self frustration I think is that they - or that they're not impressing me because they don't have an answer. It's okay to say I don't know" (Peter interview, line 593-596).

Brian discussed how Peter pushes him to become more autonomous, and that he might make mistakes but it is okay: "And that's what he told me as a teacher, you need to learn how to make mistakes. Ya know and as a student, that's kinda counterintuitive what I've learned" (Brian interview, line 285-291).

No other students or CIs mentioned this expectation of making mistakes as a part of learning, but Peter and Brian frequently mentioned it as a part of his clinical rotation.

Focus on learning and knowledge

Both Brian and Peter emphasized that their interactions are focused on learning and gaining knowledge. Compared to other pairs, Peter and Brian talked much more about the importance of integrating evidence and literature into clinical practice, and Peter frequently gave feedback to Brian on his ability to do this. Brian gave the straightforward statement that their interactions are based on knowledge: "He's there to do a job, I'm there to learn" (Brian interview, line 47-48) and "He, uh, expects certain things from me and our interaction is based off knowledge. I mean, essentially" (Brian interview, line 21-23). His comments suggested that he had a very business-like approach to his clinical experiences, and his focus was learning rather than building relationships.

Clinical reasoning and thinking was another focus of Peter and Brian's interactions and feedback. Brian emphasized the role of evidence in their interactions and feedback, and focused on how feedback on his evidence and clinical reasoning led to more effective patient outcomes. Peter also made comments about how he focused his teaching and feedback on clinical reasoning. In this statement he described that he starts students' rotations by assessing their ability to make decisions and reason through them, and he gives feedback to help advance their ability to do this: "That first couple of days of knowing about their decision-making, their reasoning skills, their sequencing. And then you start filling in those little cracks" (Peter interview, line 325-327). Later he described that he has especially emphasized this for Brian.

SUMMARY OF RESULTS

The results of this study suggest that feedback is provided to athletic training students for many reasons, and in many ways. Similarly, CIs and students recognize that feedback is given in multiple ways, and they believe that it is important to clinical education for several reasons. There are also several factors that influence the feedback exchanges between athletic training students and CIs, including time, personality, past experiences, student receptivity, the patient, privacy, and CI's approaches to students. The one-on-one learning relationships between CIs and students also have unique characteristics that influence clinical teaching and the feedback exchanges that occur between CIs and students. Figures 1-3 below illustrate the relationships between the findings. The overlap in the figures demonstrates the similarities between CI, student, and researcher observations and perceptions. The categories that do not overlap show categories that only emerged for a certain source. These do not suggest a disagreement between CIs, students, or the researcher, rather they illustrate that some categories were more important or recognizable by some sources rather than others. Further analysis and interpretation of these findings is included in the next chapter.

Figure 1. Relationships Between Researcher Observations and Participant Perceptions of Feedback

CI Perceptions

Researcher Observations

Specificity: general

Purpose: confirm, correct, grow/improve

Timing: immediate

Specificity: specific/provide information

Reaction: agree

Content: skills, reasoning

Form: Verbal, nonverbal, written

Purpose: Discussion, future/goals

Purpose: promote learning, signal change

Student Perceptions
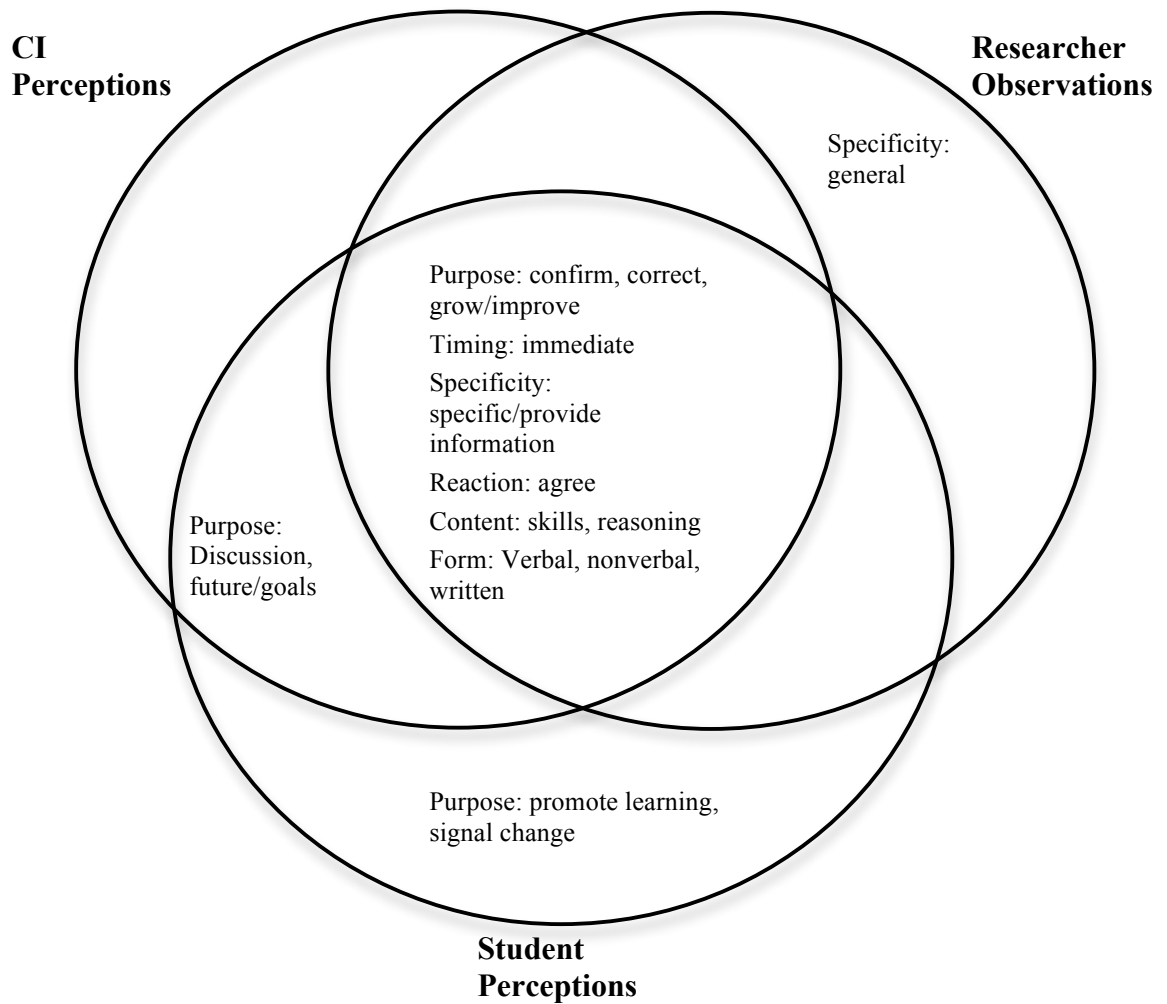
Figure 2. Relationships Between CI and Student Perceptions of Feedback

CIs

Feedback is
important to
education

Prefer verbal
feedback
to written

Prefer positive
feedback to
negative

Unsure of
ideal
frequency

Prefer
specific to
general
feedback
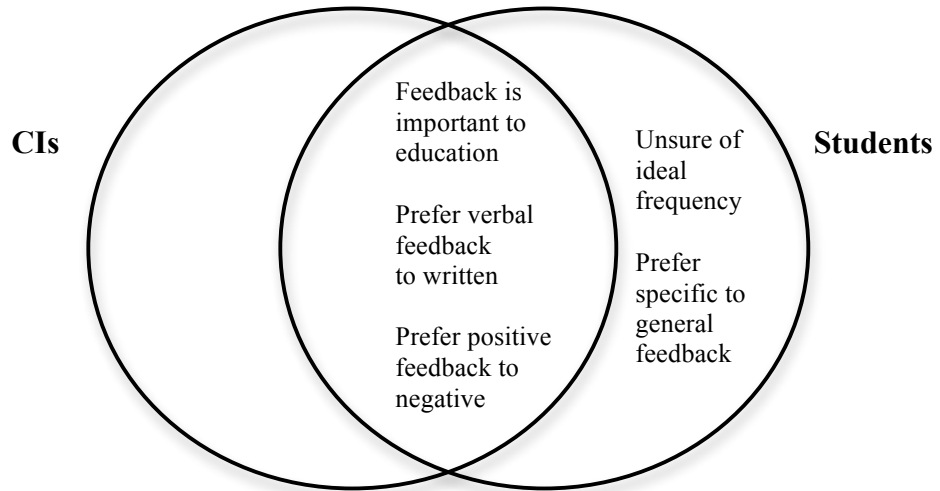
Students

Figure 3. Relationships Between CIs' and Students' Perceived Influences on Feedback

CIs **Students**

Past experiences

Approach to students

Time

Personality

Patient/Privacy

Student receptivity
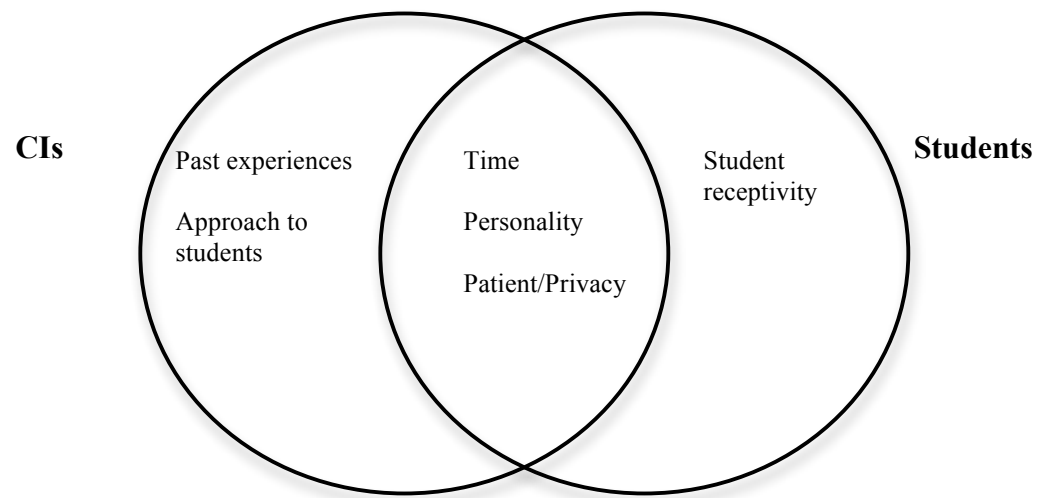
CHAPTER V

DISCUSSION

Feedback has been established as an important educational tool in clinical education[12-15,65] and athletic training.[16,17] However, there is currently minimal understanding of the feedback provided during athletic training clinical education experiences. Therefore, the purpose of this study was to fill the void in the current literature by examining the current use of feedback in athletic training clinical education, in addition to perceptions of and influences on the feedback that is occurring. This chapter includes a discussion of the findings, relation of the findings to current literature, implications for current educational practices and suggestions for future research. The chapter is organized around three themes that encompass the findings of the study, including a) feedback has several components, b) feedback is important to student learning in many ways, and c) feedback exchanges are influenced by several factors.

THEME #1: FEEDBACK HAS SEVERAL COMPONENTS

The results of this study demonstrate that the feedback provided by CIs includes several components that make each feedback exchange unique. Not only were these different characteristics of feedback observed by the researcher, but CIs and students also frequently mentioned these different aspects of feedback during their interviews. These characteristics include timing, specificity, form, privacy, tone, frequency, and discussion.

Timing

The CIs participating in this study primarily gave feedback to students as they were performing a skill, or immediately after doing so. When discussing ideal feedback, both CIs and students preferred immediate feedback. These findings coincide with recommendations in the literature, which state that immediate feedback is more effective for student learning.[4,7,9,11,76]

These participants preferred immediate feedback because they thought it helped facilitate student learning. Students especially wanted immediate feedback so they could apply the information and change their behavior right away. CIs thought it was important because students could change their behavior immediately, potentially improving patient outcomes. These results are similar to a study that asked third-year nursing students to reflect on the feedback provided by their preceptors during a four week period.[21] The nursing students described that one of the most helpful characteristics of their preceptors' feedback was that they received it immediately after their performance, although they did not report why this was the helpful.

Current literature suggests that novice athletic training students may prefer immediate feedback, while more advanced students may benefit more from delayed feedback.[9] It is thought that novice students need feedback to guide their problem-solving process while advanced students prefer to think through a problem first. The students who participated in this study were second year master's students who had completed most of their athletic training coursework, and were considered advanced students. Contrary to suggestions in the literature, they preferred immediate feedback. This

difference may come from the inability to accurately describe effective feedback, which

has been an issue in research in other allied health fields.[22] The difference may also stem

from varying maturity levels, as participants in this study were adult graduate students

while previous literature in athletic training examined traditional undergraduate students.

The adult learning literature describes that adult students desire to have immediate

application for learning to be significant,[51] which these students described. In addition,

these students were also a part of the millennial generation, who are known for needing

immediate and constant feedback to learn.[91] These factors should be considered when

determining when to provide feedback to students.

Although these CIs and students preferred immediate feedback, there were

situations when they chose not to give feedback right away. For example, Lisa often

waited to give Chris feedback on his professional behaviors until they were no longer in

front of a patient. Students also described not wanting negative feedback in front of a

patient, and preferred to wait until they were in private. So despite having a preference

for immediate feedback, CIs and students both thought that some situations warranted

more delayed feedback to avoid embarrassing the student. These findings suggest that

although immediate feedback is usually preferred and may lead to more student learning,

immediate feedback may not be appropriate in every situation.

Specificity

Research in education has concluded that feedback is significantly more effective

when it provides details on how to improve rather than just correcting the behavior.[9,11]

Feedback that is specific provides more information to help students improve, which

helps promote student learning.[8,73] Similar to suggestions in the literature, participants in

this study preferred specific feedback from their CI because it gave more information for

them to improve upon. This was similar to a study where medical students were

interviewed about their preferred characteristics of feedback.[30] In this study the medical

students preferred specific, constructive feedback to vague feedback because it was easier

to interpret.[30] Although CIs in the current study did not discuss the specificity of the

feedback they gave to students, they gave more specific feedback than general feedback.

Based on the findings of the current study, in addition to other studies, clinical instructors

should continue to provide enough detail in their feedback to help students improve,

without overwhelming them.[6]

Form

Participants in the current study described that they gave and received feedback in

several different forms, including verbal, nonverbal, and written. CIs were also observed

giving students verbal and nonverbal feedback, although almost all feedback provided

was verbal. Both CIs and students in the current study preferred verbal feedback to

written feedback. They often associated the form of feedback with the timing, and said

that verbal feedback was usually more immediate, and therefore more helpful, than

written feedback. CIs and students also thought that nonverbal feedback was helpful

when given with verbal feedback, usually because it helped clarify what the CI was

trying to say.

When discussing written feedback, CIs almost always associated this type of

feedback with the required documents of the program. This suggests that they do not

have their own informal ways of providing written feedback to students. Perhaps if CIs used more immediate, informal ways of providing written feedback, such as the use of clinical encounter cards,[26,70,107] students and CIs would think more favorably of written feedback.

Research on preferred forms of feedback in clinical education is currently lacking, however findings from this study show a strong preference for verbal feedback by both clinical instructors and students. Clinical instructors should be encouraged to provide verbal feedback to students soon after their performance, in addition to supplementing their verbal comments with nonverbal feedback when appropriate. Future research should also investigate student and CI use and opinions of written feedback in clinical education, as it is a required component of athletic training education programs.

Privacy

CIs in this study provided feedback to athletic training students in both public and private settings. The decision whether to give feedback in public or private appeared to be dependent on the CI's availability to provide feedback and the student's potential for harming the patient. Peter spent almost all of his time communicating with Brian while they were in front of a patient. This appeared to occur because Peter was too busy to spend time debriefing with Brian in a private setting. This is similar to studies that have found that lack of time[30] and other responsibilities of the clinical instructor[92] are barriers to providing feedback and instruction to students. These barriers are described in more detail in the discussion of influences of feedback.

CIs also appeared to give feedback in public when they were concerned that the student would harm the patient or was not meeting the goals for the patient. This occurred a few times, where the CI interrupted the student to change what he or she was doing before the patient was harmed. In some cases, CIs waited to give feedback on professional behaviors or more sensitive topics in private. For example, when Lois wanted to give feedback to Maggie about her communication with the patient, she waited until the patient was gone so she didn't embarrass Maggie. CIs rarely gave feedback in front of another student or clinician, probably because there were few opportunities to do so.

These participants did not have a preference for giving or receiving feedback in a public or private setting; rather their preference was dependent on the situation. Students did not want to be embarrassed by feedback in front of the patient, but they did want to know when they were doing something incorrectly. Similarly, CIs thought it was important to protect the patient and alert students of incorrect behavior, but they were also sensitive to maintaining the patient's trust and student's confidence. No research has examined the preferences for delivery of feedback in public and private settings in relation to the presence of a patient. However, the findings of this study suggest that CIs should consider the situation and student when determining whether to give feedback in front of a patient or in a private setting.

Tone

CIs and students often mentioned the tone, or delivery, of feedback they gave and received during clinical education experiences. Students had a preference for receiving

positive, encouraging feedback. This is similar to a study where medical students described that positive feedback helped them learn and gain confidence.[30] These medical students also described that they would sometimes ignore feedback that was judgmental or negative,[30] which some of the athletic training students in the current study also mentioned. Despite this preference for positive feedback, students described that negative feedback could still be helpful to their learning as long as it did not embarrass them in front of a patient.

CIs emphasized that they tried to create a positive environment for students, and when they did have to provide corrective or critical feedback they tried to pair it with positive feedback. Students agreed that their CIs gave mostly positive, encouraging feedback, and they were generally satisfied with their CI's delivery of feedback. Only one student, Chris, thought his CI's feedback was too critical and negative. Chris also described that he had a tendency to take Lisa's comments personally and had trouble receiving criticism, which likely contributed to his negative opinions of her feedback.

It is important to point out that participants had different ways of discussing the tone of feedback. Negative feedback is often associated with corrective feedback, while positive feedback is usually associated with reinforcing feedback.[8] In other literature, the terms positive and negative are used to describe the tone of the feedback rather than the purpose of the feedback.[21] In these studies, negative feedback is usually considered judgmental[28,30] and positive feedback is usually described as supportive and encouraging.[21] Students in this study often used the terms "critical" and "bad" to describe corrective, not negative, feedback, even though they thought it was helpful. When

discussing the negative tone of feedback, students also used the word "critical," in addition to "harsh" and "negative." CIs and students used the term "positive" in similar ways, showing less variation between the descriptors of positive feedback.

The different word choices of participants in this study, in addition to variations in the literature, suggest that different perceptions of the meaning of different words may influence how participants describe feedback. More consistency of terminology is needed in research studies to facilitate comparisons of the delivery and purposes of feedback. In addition, researchers need to consider the importance of interpreting the meaning behind participants' word usage to ensure their voices are accurately described.

Frequency

Although students mentioned the frequency of feedback, they could not describe the ideal frequency. This finding is similar to other literature on the frequency of feedback for psychomotor skill learning, which is also inconclusive.[7,77,78] Students in this study recognized that feedback was important to the learning process and they wanted and needed it to learn. They described that during their experiences as athletic training students they sometimes received too much feedback, and other times they did not receive enough. However, they were unable to quantify or describe their ideal frequency of feedback.

A study that evaluated the effect of different frequencies of feedback on chiropractic students performing a spinal manipulation found that infrequent and constant feedback were both detrimental to student learning.[78] The researchers found that providing feedback one-third of the time produced the best long-term learning in

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students. No other studies have examined the ideal frequency of feedback in clinical education, leaving clinical instructors to use their own judgment when deciding how often they should provide feedback to students. Considering that students and CIs believe immediate feedback to be ideal, the ideal frequency may be dependent on what the student is doing throughout their time at their rotation. More information is needed in this area before educators can make specific recommendations on the ideal frequency of feedback in this environment.

Regarding the observed frequency of feedback provided by clinical instructors, Meg gave significantly less feedback than the other three CIs even though she was observed for a comparable length of time. The only existing study on the frequency of feedback provided by athletic training clinical instructors found that novice (≤ 1 year experience) clinical instructors provided less feedback than intermediate (2-4 years experience) and experienced (≥ 5 years experience) clinical instructors.[44] These results do not coincide with those of the current study, as Meg had the same amount of clinical teaching experience as Lois and Peter, who provided 7, 35, and 23 feedback statements during the observed time periods, respectively. Lisa, the only novice clinical instructor, provided just as much feedback as Peter, an experienced clinician and clinical instructor. It is important to point out that these comparisons of frequency do not account for the overall quality of feedback, which is more important than the mere amount of feedback provided.

It appears that other factors may have influenced the different frequencies of feedback provided by these CIs. Meg and Carl treated noticeably fewer patients and Carl

did less hands-on learning than the other students, which may explain why Meg provided so little feedback to Carl. Meg directly supervised Carl almost constantly, so supervision does not appear to have affected the frequency of feedback in this situation. Another factor may have been the nature of the setting. Meg and Carl spent much of their time watching practice and waiting for something to happen, rather than actively treating patients, which also likely contributed to the lack of feedback. All of these factors should be considered when examining the frequency of feedback provided by CIs.

The clinical instructors in the current study provided 88 feedback statements in 45 hours of students' clinical experiences, averaging about two feedback statements per hour for all clinical instructors. In contrast, Stemmans[44] found that novice (≤ 1 year), intermediate (2-4 years), and experienced (≥ 5 years) clinical instructors provided 0.8, 5.5, and 5.8 feedback statements, respectively, per ten minutes of observation. This study evaluated feedback in several settings, and included sophomore, junior, and senior undergraduate athletic training students.[44] The details of the amount of feedback provided in different settings is unknown, but perhaps patient volume or the characteristics of the settings influenced the frequency of feedback. The Stemmans' study also used more novice students, such as sophomores and juniors, while the current study included second-year master's students. The Supervision, Questioning, Feedback (SQF) model of clinical teaching suggests that novice students may need more feedback than intermediate and autonomous learners.[5] Therefore, the difference in student maturity or previous clinical experience in athletic training may have also influenced how often clinical instructors gave feedback to students. Lastly, differences in the frequency of feedback

provided might be a result of the way the clinical instructors were trained. For example, if one athletic training program's CI training included detailed instruction on providing frequent feedback then their CIs would be more likely to provide feedback more frequently. Similarly, if CI training did not include discussion on how often to provide feedback CIs would need to determine this on their own. Also, if clinical instructors were trained to adapt their feedback according to student knowledge and experience, they may provide more feedback to novice students and less feedback to advanced students. Further research across more athletic training programs may provide more information on the frequency of feedback that is occurring in athletic training clinical education.

Discussion

Participants in this study associated feedback with discussion, rather than just a statement, from a CI. This finding is consistent with recommendations and findings in the literature, which suggest that feedback should be a discussion that includes student input and promotes further learning.[6,71] Feedback exchanges between the CIs and students in this study often sparked long discussions between the CI and student, which led to elaboration on a topic and further learning. Most of these discussions occurred when the CI and student were not actively treating a patient, such as during practice or between patients in the rehabilitation clinic.

Although all participants associated feedback with discussion, not every CI-student pair was observed having a long feedback exchange. Peter and Brian never had long discussions, which was likely due to Peter's time limitations and other obligations. Meg and Carl rarely had long feedback discussions. This was surprising because they had

the most down time of any CI-student pair. In contrast, Lisa and Lois frequently had long

feedback exchanges with their students. These differences may be due to different

preferences in providing feedback, personalities, different time limitations of each CI-

student pair, or opportunities for providing feedback.

Much of the literature on discussion and feedback is focused on the use of self-

evaluation of student performance. It is suggested that clinical instructors should solicit

student opinions of their performance to promote self-awareness[80] and develop skills

important for lifelong learning.[73] Medical students also believe that feedback that solicits

their opinion is more meaningful.[28] All of the CIs in this study prompted student self-

evaluation at least once, however this strategy was not used very often. CIs and students

also rarely mentioned self-evaluation during their interviews. Perhaps these participants

did not associate self-evaluation with feedback, which is why they did not discuss it. The

limited prompting of self-evaluation by CIs may also be a result of a lack of training or

understanding of how to integrate student self-evaluation into clinical instruction. It

would be interesting to investigate the use of self-evaluation as a part of feedback in other

athletic training programs to see if there is a lack of this technique elsewhere.

CI and Student Perceptions

As shown in the previous discussion of characteristics of feedback, CIs and

students in this study had similar perceptions of ideal feedback, in addition to the

feedback that was actually occurring, during clinical education experiences. This is

contrary to most of the literature in this area, which suggests that clinical instructors and

students typically have different opinions of feedback.

Much of the existing research on feedback is based on instructor and student perceptions provided in surveys,[22] interviews,[23] and evaluation forms,[19] which may lead to misunderstandings of the actual feedback that is occurring. One study comparing surgical residents' and attending physicians' perceptions of feedback found significant differences in what each group thought of different characteristics of feedback provided by the attending surgeons, including timing, judgment, and complexity.[82] Similar results have been found in emergency medicine, where faculty often rate the quality of feedback they provide higher than students.[22]

It has been suggested that these discrepancies occur from a lack of understanding and agreement about what feedback is,[81] differences in individual preferences, faculty inability to self-assess the feedback they provide,[22] or students' inability to recognize feedback.[22] The participants in this study seemed to have a good understanding of what feedback is when asked to define it in the interview. This may have contributed to their similar ideas of the feedback that was given during the observed experiences. Both students and CIs gave examples during their interviews that illustrated the point they were trying to make, also suggesting they had the ability to recognize and accurately assess feedback.

Previous research has also found discrepancies between experts' recommendations of feedback and student perceptions of ideal feedback, often leaving students dissatisfied with feedback. Research in emergency[22] and internal medicine[23] has found that students are generally unhappy with the feedback they receive from clinical instructors. This often occurs because students prefer positive, encouraging feedback to

corrective feedback,[84] even though specific, corrective feedback usually leads to more learning.[19,85] In contrast to the existing literature, students in this study were satisfied with their CIs' feedback. All of the students described that corrective, even negative feedback, was helpful to their learning. They seemed to prefer feedback that helped them, rather than feedback that made them feel better. Only Chris had issues with negative feedback, saying he sometimes just liked getting feedback that made him feel good.

It is unknown why the results of this study differ from most of the literature. Perhaps it is due to the methods, which included an in-depth account of not only the student and clinical instructor perceptions, but also the actual feedback that was occurring. This may have captured a more thorough understanding of actual and perceived feedback than other studies have. Also, this study was conducted within one athletic training education program. Therefore the similarities in actual and perceived feedback may be a result of the way CIs were trained to provide feedback and students were taught to evaluate CIs. Further research should use similar methods across multiple programs to gain broader understanding of actual and perceived feedback in athletic training clinical education.

Summary and Implications of Theme #1

The findings related to this theme illustrate that feedback has several different components that make each feedback exchange unique. Because each feedback exchange may include a different combination of the components of feedback, such as privacy, tone, and timing, it is difficult to standardize feedback for training and evaluation purposes.

Although feedback exchanges can vary greatly, there are several recommended characteristics of feedback that should be utilized by clinical instructors based on the results of this study and comparative literature. Feedback should be given immediately as the student is completing a task, or as soon after as possible. However, the CI should consider the sensitivity of the situation, student, and patient when timing feedback. Feedback should include enough detail to help the student understand the feedback and improve their performance from it. Generally more specific feedback is helpful to students. Feedback should be given in a variety of forms, especially a combination of verbal and nonverbal. If CIs give written feedback it should also include verbal discussion given immediately or soon after the task so students are not surprised by delayed written comments.

CIs should consider what type of feedback they are giving to students and who is around when giving feedback. If feedback is given in a public setting, the CI should try to maintain the student's confidence and patient's trust. Similarly, regarding the tone of feedback, CIs should try to make feedback exchanges positive for students, while still promoting change or improvement in their behavior. CIs should consider that feedback should be a two-way discussion between CIs and students that includes students' input and leads to deeper learning about a subject. Students can also initiate feedback from their CIs that leads to further discussion. The feedback provided by these CIs was mostly aligned with recommendations in the literature, suggesting that the CIs in this study provided effective feedback to students. Athletic training educators should continue to

use these recommendations for effective feedback when training and evaluating clinical instructors.

THEME #2: FEEDBACK IS IMPORTANT TO STUDENT LEARNING IN MANY WAYS

Importance of Feedback

The CIs and students in this study believed that feedback has an important role in clinical education. Although participants did not talk extensively about the role of feedback, they emphasized its importance with enthusiasm. These participants' opinions coincide with findings of other studies, which show that students and clinical instructors believe that feedback is important. Clinical instructors and students in medicine[31] and nursing[86] agreed that providing timely and effective feedback was an important trait of clinical instructors. These findings are promising considering the importance of feedback in clinical education. If CIs and students recognize its role in clinical education, they are more likely to give and receive feedback.

Purpose of feedback

In addition to describing the importance of feedback, participants described that feedback had several purposes in their education. CIs and students most strongly associated feedback with helping students recognize when they were doing something right or wrong. This is similar to recommendations in the literature, which suggest that feedback should be used to correct incorrect behavior or confirm correct performance.[6,9] Students often described feeling uncertain without feedback, and feedback helped them gain confidence in what they were doing. Students also described that feedback was

particularly important in signaling when they needed to change something, which increased their awareness of their performance. These findings have also been mentioned in the literature as purposes of feedback,[9] which reinforces that these CIs and students have a good understanding of the purposes of feedback.

In addition to recognizing right and wrong, students and clinical instructors also associated feedback with learning and refining skills and behaviors, known as directive feedback.[5] This is supported by the literature on experiential learning, which suggests that feedback helps students challenge and validate developing knowledge.[51,58] The SQF model of clinical teaching suggests that novice students need more corrective feedback while advanced, or autonomous, learners need more directive feedback.[5] CIs in this study provided more reinforcing feedback (69%) than corrective feedback (30%) to these advanced students. Much of their feedback (42%) was also given to promote improvement in future performance, which is similar to the SQF model's description of directive feedback.[5] These findings are aligned with recommendations in the SQF model, suggesting that this model is applicable to entry-level master's students, and that these CIs followed guidelines for providing effective feedback to their students.

CIs frequently provided feedback on students' communication skills, professional behaviors, and clinical reasoning in addition to their clinical skills, as recommended by the literature.[4,6,61] The participants also described the importance of giving and receiving feedback in these areas, reinforcing the need for CIs to continue providing feedback on more than clinical skills.

Lastly, CIs and students strongly associated feedback with guiding students toward their goals, whether for their future career or smaller goals for their current clinical rotation. The participants often described that feedback helped them know where they were at in relation to a goal, in addition to telling them what they needed to do to reach that goal. These findings also align with recommendations in the literature on classroom[8,9] and clinical[6] education. Some of the students focused more on rotation-specific goals, such as Carl and Maggie, while Brian almost always related feedback to his future role as a clinician. Brian seemed to identify with becoming a clinician more than any other student, so it is not surprising that he related feedback to his future career.

Summary and Implications for Theme #2

The findings related to the importance of feedback reinforce the need for providing feedback to athletic training students during clinical education experiences. One of the most important reasons CIs should provide feedback to students is to help them recognize when they are doing something right or wrong. If a student is doing something incorrectly, feedback should help guide the student towards correct behavior. CIs should also consider providing feedback to students that helps improve their performance and promote learning, even if they were not incorrect. Additionally, feedback should help guide students toward their goals, whether for their clinical education experience or future career. Feedback should also be provided on students' critical thinking and professionalism in addition to their clinical skills.

Educators need to ensure that clinical instructors are providing effective feedback to athletic training students during their clinical experiences. Much of this includes

sharing recommendations for adapting feedback appropriately to student knowledge and experience level.[5] Also, educators need to ensure that students know how to recognize and use feedback to encourage that feedback is positively impacting their learning.

THEME #3: FEEDBACK EXCHANGES ARE INFLUENCED BY SEVERAL FACTORS

Results of this study suggest that several factors influence the feedback exchanges between clinical instructors and students, including the instructor, student, personalities, and the learning environment.

The Clinical Instructor

Approach to teaching

Experts in clinical education have established that good clinical instructors must be able to assess student needs and adapt their teaching accordingly.[23,40,87] CIs in this study discussed different ways of approaching students and adapting their feedback to student needs. These CIs described that they have a general approach to providing feedback to all athletic training students, and then they adapt their feedback according to each student's needs. For example, Peter described that he gave Brian extra tasks and feedback related to the rehabilitation clinic setting because he knew Brian wanted to work in that setting in the future.

Although CIs described that they adapted their clinical teaching to different students, the researcher did not observe this phenomenon. This is likely due to the relatively short data collection period of six weeks. Considering CIs described that their adaptations occurred over the course of a semester or years, these changes would not

have been observed by the researcher. In order to capture these adaptations, clinical instructors would likely need to be observed and/or interviewed while working with different students over several years. Because a similar group of second-year students participated in this study, it is difficult to compare how feedback and clinical teaching may have differed between students at different educational levels.

CIs in this study gave some examples of adapting clinical teaching and feedback to students, but this study did not capture an in-depth understanding of how CIs actually adapt their teaching. All of the CIs closely related feedback to their broader approach to clinical teaching, suggesting that feedback is connected to other teaching strategies. This has been suggested by some educators in athletic training with the SQF model of clinical teaching.[5] Future research needs to include a more in-depth analysis of CIs' approaches and adaptations to clinical teaching, including the use of different teaching strategies. Gaining more understanding in this area may provide educators with more information that can be used to develop teaching strategies for clinical education and train clinical instructors.

Past experiences

When discussing their approach to clinical teaching and feedback, CIs in this study described that their approach was influenced by their past experiences as teachers and learners. Lisa and Meg gave examples of their experiences as students when talking about how they approached students. CIs' often developed their teaching skills based on experiences from past students by trial and error. These findings are similar to those in

ambulatory medicine, where clinical instructors described that when not taught otherwise, their knowledge of learners came from their past experiences as teachers and learners.[23]

Because clinical instructors' past experiences have such a strong influence on their approach to clinical teaching, athletic training educators should expect that CIs are going to teach athletic training students differently. CIs mentioned that their participation in the program's CI training and other workshops also provided a basis for how they teach and provide feedback to athletic training students. Meg, Peter, and Lisa said that the education program's CI training was their only formal training for educating students. Lois described that her undergraduate degree in physical education helped guide her approach to teaching students, in addition to CI training. Because CI training is often the only formal education clinical instructors have, it is important that clinical instructor educators ensure the quality of these workshops. Additionally, initial and continuing CI training may be the only time CIs learn how to provide effective feedback, so this should be included in these workshops. If educators hope to standardize athletic training education, CI training should be consistent across programs and meet minimum standards for the profession.

The Student

Reactions to Feedback

Students in this study generally appeared to listen and use the feedback provided by their CIs. The only student that did not follow this pattern was Chris, who frequently refuted Lisa's feedback or did not change his behavior. Research suggests that some students may have trouble listening and using feedback for various reasons. If students

are accustomed to receiving positive feedback or evaluations in the past, they may have trouble receiving and using critical feedback.[50] This has been noted in the millennial generation of students; because they are accustomed to succeeding they often struggle with critical feedback.[91] This may explain why Chris was sensitive to Lisa's feedback, however none of the other students appeared to have these issues.

Receptivity

Students in this study recognized that their receptivity to feedback influenced the feedback exchange. Students explained that they desire feedback when they are in a new environment or are doing something new. CIs should be perceptive to when students may need more or less feedback.

Students also described that they do not use feedback from their CIs that they disagree with. This is similar to other research on feedback, which has found that students do not use feedback unless it is from a credible source.[10,30] Although students described that they occasionally discounted their CI's feedback, the researcher never observed them discuss this with their CI. If the student disagreed with their CI's feedback they appeared to just move on without addressing the discrepancy. Perhaps if students mentioned their concerns the feedback exchange could become more effective.

The feedback seeking behavior of students is another aspect of their receptivity to feedback. A study investigating medical residents' feedback seeking behavior found that students were more likely to seek out feedback if they thought it would help them reach their goals, improve their behavior, or boost their self-esteem.[33] Although the students in this study all recognized these potential benefits of feedback, they rarely sought out their

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CI's feedback. Maggie was the only student to frequently seek out her CI's feedback, which resulted in 20% of their total feedback exchanges. It is unknown why these students did not seek out their CI's feedback. Perhaps they were content with the feedback they were already receiving. Other barriers such as availability of the CI may have also influenced their ability to seek out feedback. Students should be encouraged to request feedback from their CIs when desired.

Personality

Participants in this study described that personality was a factor that influenced their feedback exchanges and general interactions in the clinical setting. CIs and students talked about how it took time to learn how to communicate and interact with each other. Students often described having to "get used to" their current CIs' feedback since their interactions with past CIs were different.

Most of the CIs and students described that they got along well, however Lisa and Chris had a noticeable personality conflict. They described that they had different preferences for giving and receiving feedback, which often led to vague and ineffective feedback exchanges. Most of these preferences stemmed from Chris' difficulty receiving and using constructive feedback. Because he rarely changed his behavior in response to feedback, Lisa became frustrated and began to provide less feedback.

Although no studies in clinical education have investigated the influence of personality on feedback, interpersonal relationships and communication skills have been identified as standards and criteria for selecting and training CIs.[40] Other studies have found that the approachability of the CI may influence teachable moments in athletic

training students' clinical experiences.[92] Knowing more about the potential influence of personalities on clinical education and feedback could help clinical education coordinators pair CIs and students to help promote student learning.

The Learning Environment

Time, setting, and the patient were all parts of the learning environment that influenced the feedback exchanges between CIs and students in this study.

Time

Participants believed that time was a major influence on their feedback exchanges and learning experiences in the clinical setting. Most of the CIs and students said that being too busy was a barrier to giving and receiving feedback. Participants partially attributed this to a high patient volume. Lisa and Chris described how it was difficult to learn from what Chris was doing because they had so many patients to treat. Oftentimes Lisa had to delay feedback until the wrestlers were in practice because they were so busy treating patient after patient. Researchers in athletic training have found that lack of time may have a negative influence on the quality of supervision,[39] and is a barrier to taking advantage of teachable moments during athletic training clinical experiences.[92]

Even if CIs did have time to give feedback to students, students often said they needed time to think about the feedback, which they often did not have. This was also a problem for medical students, who said that there was often so much going on that they could not take full advantage of the feedback they received.[30] This is a concern because although high patient volume provides more learning experiences for students, too much volume may inhibit learning.

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Participants also attributed their lack of time for feedback to the other responsibilities of the CI. This was particularly an issue for Meg and Peter, who said their high administrative workload often affected the way they gave feedback. Research in athletic training has found that CIs in the collegiate setting often experience role strain,[108] which influences how they take advantage of teachable moments.[92] Educators and clinical education coordinators need to consider the other responsibilities of CIs when assigning students to clinical education experiences.

Setting

Although not a consistent theme from the interviews, setting may have influenced the feedback exchanges that occurred between these CIs and students. Each student had different learning opportunities and experiences during their clinical rotations. Although all of the students spent time during their experiences performing rehabilitation skills, not surprisingly the students in the clinic spent more time on these activities. Much of Chris and Carl's time was spent watching practice or waiting in the athletic training facility while the athletic team practiced down the hall. Although actual active learning time was not recorded, it was noticeable that Brian and Maggie spent more time actively treating patients than Chris and Carl. Carl had even less active learning time than Chris due to the lower patient volume.

These observations are similar to a previous study in athletic training, which found that students in the rehabilitation clinic spend more time actively learning than students in the collegiate setting.[45] These differences are likely due to the nature of the setting, where the rehabilitation clinic has regularly scheduled patients and time in the

collegiate setting is often spent observing practices and games. With less active learning time, it is likely that less feedback is also provided. It is not surprising that Carl did the least amount of active patient care during his clinical experiences and Meg provided the least amount of feedback. For example, on their last observation day Carl only interacted with one student-athlete in almost four hours because only one athlete needed assistance. But when he did interact with the athlete, Meg gave him feedback. That was the only feedback she gave that day. While other factors may have caused this lack of feedback, the presence of learning opportunities should be considered as a potential influence on the provision of feedback.

It is interesting that the students in the clinic, Maggie and Brian, mentioned their setting when talking about feedback and the other two students did not. Brian pointed out that he has less down time with Peter because he is in the clinic, whereas in past experiences he has been able to talk with his CI while watching practice. Maggie described that she is doing more patient communication in the clinic, so the feedback she received was focused on patient communication more than it has in the past. These students thought that feedback had a different role in their learning because they were in a different setting. The students in the collegiate setting likely did not mention any difference because they had yet to be assigned to a clinical rotation in the rehabilitation clinic. These findings suggest that setting may influence clinical teaching and feedback exchanges; therefore it is important to continue investigating the use of feedback in multiple clinical education settings.

Patients

CIs and students described that the presence and characteristics of the patient often influence how they delivered and responded to feedback. CIs often provided immediate, corrective feedback in front of a patient when the student was about to harm the patient. CIs described that while they understood the importance of maintaining the student's confidence, they prioritized protecting the patient and maintaining the patient's trust of the student.

CIs also mentioned that they would give the student feedback differently based on who the patient was. CIs gave examples of how they would give corrective feedback to students in front of certain patients but not others. Students also described that they were more comfortable receiving feedback in front of some patients than others. This suggests that the demeanor of the patient and their relationship with the clinician may also influence the feedback exchange. If CIs build good rapport with their patients and involve students in this relationship, feedback exchanges may occur more comfortably in front of the patient.

There is currently no research on the influence of patients on feedback exchanges in clinical education. Suggestions for effective feedback include protecting the student's trust and confidence,[21,28] which could be compromised when giving feedback in front of the patient. Clinical instructors and educators should consider that patients might be another influential factor on CI-student interactions and their feedback exchanges.

Summary and Implications of Theme #3

The results related to this theme suggest that the clinical instructor, student, environment, and personality all influence the feedback exchanges that occur between CIs and students. When providing feedback to athletic training students, CIs should consider the overall learning environment, such as how busy they are and what students are actively doing during clinical education experiences. For example, if a CI is too busy to give feedback throughout the day, she or he should consider debriefing with the student before she or he leaves for the day.

The CI should also consider each student's personality and how they respond best to feedback. Although CIs should not have to adjust everything they do to the student, CIs should consider making small adjustments that help facilitate student learning. Clinical education coordinators need to consider these influential factors when selecting, training, and evaluating clinical instructors and clinical sites.

IMPLICATIONS

The results of this study help fill the gap in the literature related to feedback in athletic training clinical education. Clinical instructors and athletic training students recognize that feedback has an important role in clinical education for several reasons. In addition, CIs and students had similar perceptions of ideal feedback, providing information that can be used to train and evaluate CIs. Several factors influence the feedback exchanges between CIs and students, complicating the use of feedback in this setting.

Athletic training program directors and clinical education coordinators should continue to educate CIs about the importance of feedback in clinical education experiences. CI training needs to include guidelines for giving effective feedback, such as immediate, specific, verbal, and positive. Additionally, CIs should be educated about why they should provide feedback to students, and that feedback should be provided to improve professional behavior and clinical reasoning in addition to performance on clinical skills. Clinical instructor educators should also continue to educate CIs about how to adapt clinical teaching and feedback to students. Educators should also consider teaching students about how to recognize and use feedback to maximize their clinical education experiences. CI training should include discussion and problem solving with case studies to help emphasize the situational nature of clinical teaching and feedback.

Athletic training faculty should consider CI and student personalities when pairing CIs and students for clinical education experiences. Matching CIs and students well can help facilitate effective feedback exchanges and promote student learning, although more information is needed in this area. Clinical instructor educators should consider the overall learning environment when considering clinical sites, including patient volume, other duties of the CI, and potential learning opportunities for students. CIs should also be taught how to continue to give good feedback in challenging learning environments.

LIMITATIONS

One limitation of this study was the small number of participants and the purposeful sampling procedures. This limits the extent to which the findings can be

generalized to other athletic training programs. Also, all the participants in this study were Caucasian, therefore findings may not be applicable to more diverse instructor-student dyads. The use of rich description provides information that can help researchers and educators apply these findings to other situations. The six-week data collection period is also a limitation, as the researcher was unlikely able to capture changes that occur in clinical teaching and feedback over time. Future research studies should explore how these components of student learning experiences transform throughout their education. Participants' past experiences in teaching and learning may have influenced their opinions and behavior. Participants were asked about these past experiences during the interviews to expose any differences that may have influenced their behavior.

Due to the nature of qualitative research, the researcher's bias may have been present throughout the research process. Several strategies were used to minimize the researcher's bias, including peer debriefing, member checking, and rich description. Because only audio recording was used, nonverbal feedback was manually recorded by the researcher during observations. It is possible that some nonverbal feedback was missed by the researcher and not included in the study, however the researcher is confident that all nonverbal feedback was captured. Lastly, participants may have changed their behavior because they were participating in a research study, known as the Hawthorne effect.[49]

DELIMITATIONS

This study was limited to one entry-level master's athletic training program in the southeastern United States. Because of the small number of participants and type of

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program, the results of this study may not be transferrable to undergraduate athletic training programs or programs in other areas of the country. Only rehabilitation clinic and collegiate clinical education settings were used for this study, therefore similar results may not be found in other clinical education settings. In addition, only 1:1 CI-student ratios were examined in this study . Lastly, this study was limited to second-year master's athletic training students, so the findings may differ for students at different educational levels.

RECOMMENDATIONS FOR FUTURE RESEARCH

Although students in this study were generally satisfied with their CI's feedback and these CIs and students had similar perceptions of feedback, more information is needed on other athletic training programs. Future research should continue to assess the feedback that is occurring in different athletic training programs. If students and CIs continue to have accurate opinions of the feedback that is occurring, researchers may be able to put more value on their perceptions of feedback. More research on feedback in athletic training will provide more support for the way CIs are educated and evaluated.

Results of this study and other studies suggest that personalities influence CI-student interactions and their subsequent feedback exchanges. More information is needed about the impact of personalities and how clinical education coordinators can pair CIs and students to facilitate learning. Additionally, more knowledge in this area can be used to educate CIs and students about how to work together to promote student learning.

Although not a specific aim of this study, the researcher observed that Lisa, the only first-year CI in the study, had some unique challenges different from the other CIs,

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including confidence and learning how to find her identity as a CI. While this may have been specific to this individual, other studies have found differences in the feedback novice CIs provide compared to more experienced CIs.[44] Researchers should continue to investigate the experiences of novice CIs in comparison to more experienced CIs. Gaining more insight into these experiences can provide information for preparing new CIs.

Another component of feedback that was only partially addressed in this study was students' responses to feedback. The researcher observed that most students had positive responses to feedback, and both CIs and students said that students usually used their CI's feedback. However, students described certain situations where they were more or less receptive to feedback, and one student often disregarded his CI's feedback. Athletic training educators need to focus their efforts toward learning about student responses to feedback, otherwise feedback exchanges become incomplete. Research in this area should investigate when and how students respond to their CI's feedback, both initially and long-term.

The results of this study and others demonstrate that several characteristics of the learning environment influence CI-student interactions and student learning experiences. Researchers need to continue investigating the roles that patient volume, supervision, CI workload, and similar factors have on student learning and feedback. Learning more about these factors can help clinical education coordinators select appropriate clinical sites and CIs, in addition to improving existing clinical sites. In addition, the current study only examined CI-student interactions that were one-on-one. Considering that one

CI may supervise up to eight students, future research should also examine how feedback exchanges may differ when a CI is supervising multiple students. The role of peer feedback should also be considered when examining CI-student interactions that include multiple students.

As recommendations for effective feedback are implemented into CI training and evaluation, future research studies need to examine the effectiveness of these tools. Understanding more about the length, content, and format of educational workshops can help athletic training educators develop effective training sessions that help meet student learning outcomes. Similarly, if students are educated on the recognition and use of feedback the effectiveness of these educational sessions should also be evaluated and shared.

RECOMMENDATIONS FOR PRACTICE

Several recommendations for athletic training educators and clinical instructors have been described throughout the discussion of the findings. Table 2 below summarizes these key recommendations for educational practice.

Table 2. Recommendations for Practice

Educators	Should teach CIs how to provide effective feedback to athletic training students, which is typically immediate, specific, positive, verbal, and discussion-based.
	Should emphasize to CIs that ideal feedback is situational, and CI training should include discussion and case studies to help illustrate this point.
	Need to teach students how to recognize and use feedback.
	Need to consider CI and student personalities, patient volume, setting, and CI role strain when selecting, training, and evaluating CIs and clinical sites.
Clinical Instructors	Should be aware of who is present when giving feedback, and they should try to maintain student trust when giving feedback in front of others.
	Should provide feedback to help students determine when they are right or wrong, in addition to helping continually improve their performance and guide them towards goals.
	Need to consider the entire learning environment when giving feedback, such as student active learning time and the presence of the patient, and adapt feedback accordingly.

CONCLUSION

Feedback is a pedagogical strategy that helps promote student learning, and is a valuable for students as they transform and apply their knowledge during clinical education experiences. CIs and students recognize the importance of feedback during clinical education. CIs and students believe that feedback has several purposes in clinical education, and generally agree that feedback should usually be immediate, specific, and positive. Several factors influence feedback exchanges between CIs and students, making each CI-student relationship and feedback exchange unique. Athletic training educators can use this information when training and evaluating CIs. In addition, the exploratory nature of this study exposes several areas where further research is needed.

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APPENDIX A. PERMISSION LETTER TEMPLATE

October 15, 2009

Institutional Review Board
Office of Research Compliance
UNCG
2718 MHRA Bldg
Greensboro, NC 27402-6170

To Whom it May Concern,

I am writing this letter to provide permission for Sara Nottingham to conduct the observation, videotaping, and interviews in the UNCG Athletic Training Room and associated facilities for the research study titled: "Understanding the Interactions between Students and Approved Clinical Instructors in the Athletic Training Clinical Education Setting."

I understand the project proposal will be reviewed and approved by UNCG Institutional Review Board for Research Involving Human Participants prior to data collection.

If you need further information in support of this project please contact me at _____.

Sincerely,

Name
Title
Facility

APPENDIX B. PARTICIPANTS

Clinic

Dyad 1

CI

Lois, ATC Female 6th year ACI

Student

Maggie Female 2nd yr. student

Dyad 2

CI

Peter, PT, ATC Male 6th year ACI

Student

Brian Male 2nd yr. student

Intercollegiate

Dyad 1

CI

Meg, ATC Female 6th year ACI

Student

Carl Male 2nd yr. student

Dyad 2

CI

Lisa, ATC Female 1st year ACI

Student

Chris Male 2nd yr. student
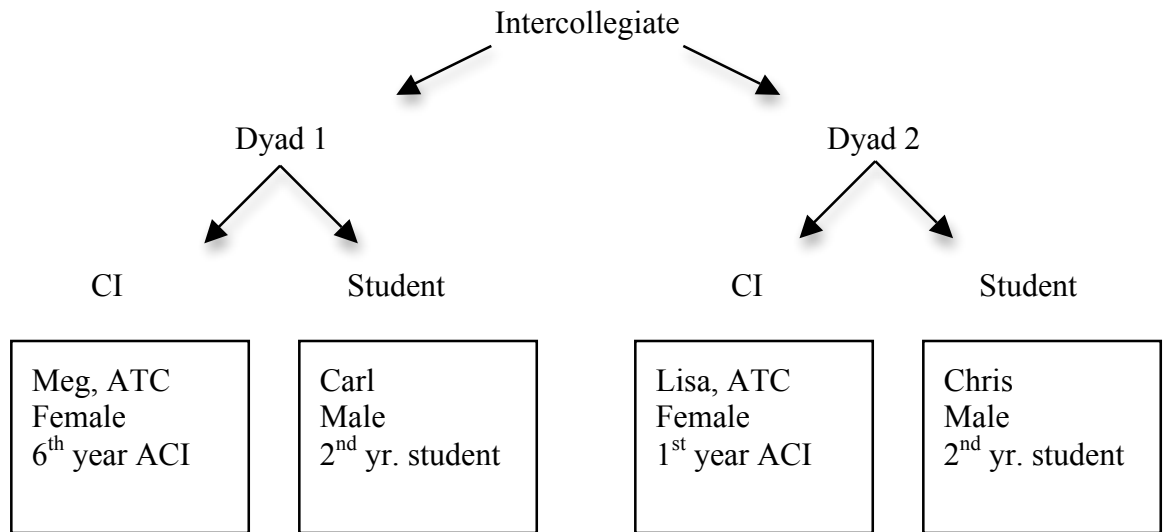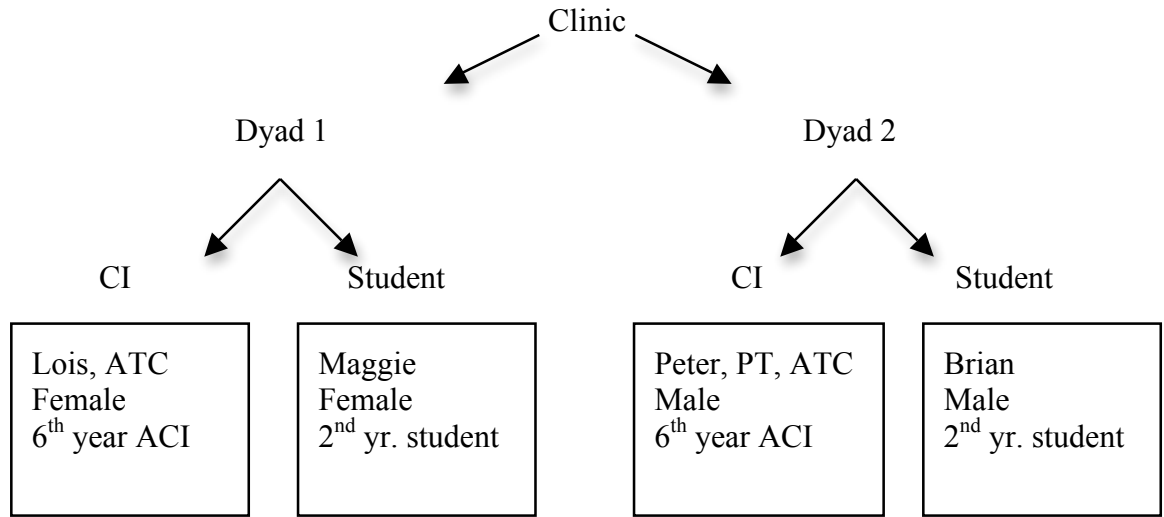
APPENDIX C. CONSENT FORM

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT

ACI/STUDENT FORM

Project Title: <u>Understanding the Interactions between Students and Approved Clinical Instructors in the Athletic Training Clinical Education Setting</u>

Project Director: <u>Sara Nottingham, MS, LAT, ATC</u>

Participant's Name: _____

Research Description
This is a research project. The purpose of this study is to gain an understanding of the interactions that occur between students and Approved Clinical Instructors in the athletic training clinical education setting. Subjects will be ACIs and students affiliated with the University of North Carolina at Greensboro Athletic Training Education Program. After agreeing to take part in the study, participants will be observed, audio-taped and interviewed regarding their interactions in the athletic training education setting. Because your voice will be potentially identifiable by anyone who hears the tape, your confidentiality for things you say on the tape cannot be guaranteed although the researcher will try to limit access to the tape as described below. Observation and audio-taping will take part during normal clinical rotation hours that the student is at the clinical site. The total observation and audio recording time will take approximately 15-40 hours total on five-ten different occasions, depending on the time the student spends at the site on the audio-taping days. After observation, the student and ACI will participate in separate interviews that will take less than one hour each. The entire data collection period should last between 4-7 weeks.

Risks and Benefits
The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants. The majority of the research activities will take place during regular ACI-student interactions; therefore they should not pose any more risk than these activities already have. The interview questions will focus on these interactions and will not seek any personal or high-risk information; therefore they should not pose any more risk than everyday activities as a clinical instructor or student. There are no direct benefits to participants in this study, and there are no costs to you or payments made for participating in this study. The information produced from this study may help Approved Clinical Instructors, Athletic Training Educators, and students gain more understanding of the interactions that occur between ACIs and students, which can potentially improve the quality of

clinical education for athletic training students.

Confidentiality
Consent forms and data produced from this study will be kept for seven years in a locked file cabinet under the supervision of the researcher. Audio files stored on a computer will be password-protected. Names and personal identifiers of the participants and data collection locations will not be disclosed when data is disseminated. These names will be replaced with pseudonyms. All information obtained in this study is strictly confidential unless disclosure is required by law.

Consent
You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you. If you have any concerns about your rights, how you are being treated or if you have questions, want more information or have suggestions, please contact Eric Allen in the Office of Research Compliance at UNCG at (336) 256-1482. Questions, concerns or complaints about this project or benefits or risks associated with being in this study can be answered by Sara Nottingham, who may be contacted at slnottin@uncg.edu.

By signing this consent form you are agreeing that you have read it, or that it has been read to you and you fully understand the contents of this document and are openly willing to consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate, or have the individual specified above as a participant participate, in this study described to you by Sara Nottingham.

Signature: _____ Date: _____

APPENDIX D. FIELD NOTE RECORD SHEET

Date:	Site:	Participants:		Obs Start:	Obs end:
		Observation code:			
Real Time	Running Time	Field Note		Note Type	Notes/Codes

APPENDIX E. INTERVIEW GUIDE CHANGES

Changes to student interview:
- Altered wording of question #10 to improve clarity. Changed from "describe the ideal form of feedback" to "describe the most ideal feedback" because word "form" led to confusion.
- Added question #11 to allow participant to share anything related to the subject that was not covered in previous questions because I found myself asking it anyway.

Changes to CI interview:
- Altered wording of question #9 to improve clarity. Changed from "describe the ideal form of feedback" to "describe the most ideal feedback" because word "form" led to confusion.
- Added question #10 to allow participant to share anything related to the subject that was not covered in previous questions because I found myself asking it anyway.

Notes:
- A common request was to clarify what I meant by "roles" of CI and student in question #2. If asked I will clarify by rephrasing: "as in what responsibilities or functions do you and your CI take on during your interactions."

APPENDIX F. CI INTERVIEW GUIDE

Main Questions
1. Tell me about your interactions with your athletic training student during their clinical education experiences.
2. Tell me about the roles that you and your student have during your interactions.
3. How would you define feedback?
4. How would you describe the role of feedback in athletic training clinical education?
5. In what ways do you provide feedback to athletic training students?
6. How do you think your students respond to the feedback that you give them?
7. What factors influence your approach to providing feedback to athletic training students?
8. Do you face any challenges when providing feedback to athletic training students? If so, what are they?
9. If there is an ideal way to provide feedback to athletic training students, describe what that might look and/or sound like.

Member Checking
10. Member Checking (3 audio clips)
    a. Tell me about this interaction between you and your athletic training student in this segment.
    b. Tell me about why you chose to provide feedback to the student in this segment.
    c. What factors influenced the way you provided feedback to your student in this segment?

Closing
11. Do you have any other comments you would like to share regarding feedback?
12. It appears that these are a few key points that emerged from your responses: (list/describe). Would you agree with this? Are there any key points you think I have missed?

Background information
13. What educational activities related to clinical teaching have you participated in, including courses, workshops, or conferences?
14. What are your credentials related to your current position (i.e. ATC, PT, etc)?
15. How many years of experience do you have as a Certified Athletic Trainer?
16. How many years of experience do you have as an ACI?
17. If you were a Clinical Instructor (CI) before becoming an ACI, how many years did you have that role?
    About how many students have you supervised as an ACI?

APPENDIX G. STUDENT INTERVIEW GUIDE

Main Questions
1. Tell me about your interactions with your current ACI during your clinical education experiences.
2. Tell me about the roles that you and your ACI have during your interactions.
3. How would you define feedback?
4. Please describe the feedback given to you by your ACI.
   a. What do you think about this feedback?
5. Describe the most helpful feedback given to you by your ACI.
6. Describe the least helpful feedback given to you by your ACI.
7. Do you use the feedback given to you by your ACI? How?
8. How would you describe the role of feedback during your clinical education experiences?
9. What factors influence the way you respond to feedback given by your ACI?
10. If you could describe the most ideal feedback you could possibly get from an ACI, what would that be?

Member Checking
11. Member Checking (3 audio clips)
    a. Tell me about this interaction between you and your ACI in this segment.
    b. What do you think about the feedback your ACI provides in this segment?
    c. How did you respond to this feedback? Why?

Closing
12. Do you have any other comments you would like to share regarding feedback?
13. It appears that these are a few key points that emerged from your responses: (list/describe). Would you agree with this? Are there any key points you think I have missed?

Background information
14. How many years have you been involved in athletic training, including observation experiences?
15. How many ACIs have you had in the past?
16. How many clinical rotations have you had in the past?

APPENDIX H. TIMELINE OF PROCEDURES

Week(s)	Data Collection Procedures	Data Analysis Procedures
1-2	Contact participants, consent, schedule data collection days	
2-4	Brief observation sessions	
4-7	Audio-recording observation sessions	Transcription of feedback from audio-recording sessions
7-8	Interviews	Continued transcription of feedback from audio-recording sessions
8-13		Initial coding of all data (open, axial)
13-14		Peer debriefing round 1 Ongoing analysis
14-17		Selective coding Ongoing analysis
17		Peer debriefing round 2 Final member check follow up Finalization of themes and coding

APPENDIX I. AUDIO TRANSCRIPTION FORM

Date:	Site:	Participants:		Obs Start:	Obs end:
		Observation code:			
Real Time	**Running Time**	**Feedback Statement**		**Notes**	**Codes**

APPENDIX J. CODING PROCESS

Open Coding

1. Initial read of each interview. Brief summary written for each.
2. Second read of interviews. All potentially relevant ideas underlined.
3. Third read of interviews. More specific ideas underlined, notes written in margins.
4. Created list of all main points from each interview. Created list of frequent words and initial codes from each interview.
5. Developed initial coding scheme from interviews by combining codes from each interview.
6. Categorized field notes into Observations (O), Reflections (R), Methods (M), and Feedback (F).
7. Read audio transcripts. Underlined significant ideas and wrote notes in margin.
8. Read field notes. Underlined significant ideas and wrote notes in margin. Notes relevant to feedback statements were transferred/connected to audio transcripts (i.e. nonverbal feedback).
9. Re-read audio transcripts with field notes and maps. Wrote more notes and started developing codes with combined information.
10. Wrote descriptive snapshot of each case based on interviews, audio transcripts, observations, and field notes.
11. Developed initial coding scheme from audio transcripts. Compiled codes per day, then per pair, then for all pairs.
12. Combined coding schemes for interviews and audio transcripts. Combined similar codes and grouped by characteristics, perceptions, and influences.
13. Developed open coding scheme legend with letters and numbers.

Axial Coding

14. Circled words and phrases in interviews related to initial codes and labeled in margins. Added any potentially significant codes not in initial scheme. Added similar words that fit into a code on the code legend sheet.
15. Axial coded all audio transcripts through same process as interviews.
16. Printed all data on colored paper, transferred codes to colored paper so data could be stacked by code.
17. Examined codes by research question. Combined or removed codes depending on number and relevance to category and/or research question. Codes not found across most or all participants were moved for discussion in case studies.
18. Re-examined data to refine coding scheme. Selected three most representative quotes for each code.
19. Categories and codes were finalized for first peer debriefing/auditing session. Categories and codes were described according to research questions and cases and supporting data were included as evidence for coding scheme.
20. Peer debriefing analytic memos and member check summaries were sent to peer debriefers and participants, respectively.

<u>Selective Coding</u>

21. Codes were counted for each participant/case to ensure support across multiple data sources. Coding scheme was revised based on number/significance of codes and categories, and peer debriefer comments. Raw data were re-examined as needed to refine codes. No changes were needed based on member checks.
22. Abstract themes were developed to encompass all categories and codes.
23. Abstract themes were described with the researcher's interpretation and linked to literature. Summaries were sent to peer debriefers along with description of changes to coding scheme for second review.
24. Final review of abstract themes, categories, and codes and meeting with peer debriefers. Coding scheme finalized.

APPENDIX K. CODING SCHEMES

Open Coding Scheme

Purpose of Feedback (Pu)		
Code Number	Code Name	Other words
1	Growth	empower, encourage, guide, grow, help
2	Learning	thinking, thought, challenge
3	Discussion	dialogue, discussion, provoke, conversation
4	Information	clarify, information, guiding, suggestion, recommendation
5	Confirm	strengths, right, reinforce
6	Correct	weaknesses, correct, intervene, wrong
7	Change	improve, suggest improvement, alter performance, recommend/suggest
8	Alert	prompt, suggest, aware, signal
9	Goals	criterion-based, expectations, meet goals, relation to goals, future
10	Evaluate	
Content of Feedback (C)		
Code Number	Code Name	Other words
1	Professional Behaviors	patient interactions, professionalism
2	Skills	
3	Clinical Reasoning	critical thinking, decision making, reasoning, sequencing
Tone of Feedback (To)		
Code Number	Code Name	Other words
1	Negative	harsh, not supportive, critical, criticism, demeaning
2	Positive	supportive
3	Praise	compliment
4	Constructive	constructive
5	Direct	
6	Purposeful	
7	Clear	
8	Indirect	

Format of Feedback (Fo)		
Code Number	Code Name	Other words
1	Formal	
2	Written	
3	Kinesthetic	application, hands-on
4	Verbal	
5	Nonverbal	visual
6	Question	questioning
7	Self-evaluation	introspective, self assessment
8	Patient	from patients
9	Seeking	
10	Other	Student
Quality of Feedback (Q)		
Code Number	Code Name	Other words
1	Necessary	critical, crucial, important, huge, significant
2	Good	impactful, helpful, effective, beneficial
3	Bad	unhelpful, detract
Timing of Feedback (Ti)		
Code Number	Code Name	Other words
1	Delayed	
2	Immediate	prompt
Specificity of Feedback (S)		
Code Number	Code Name	Other words
1	General	
2	Specific	
3	Supported	evidence, literature, reference, support, resource, reason, reasoning
Frequency of Feedback (F)		
Code Number	Code Name	Other words
1	Absence	
Privacy of Feedback (Pr)		

Code Number	Code Name	Other words
1	public	front of patients, front of others
2	private	away from patients, away from others

Influences (If)

Code Number	Code Name	Other words
1	Delivery	
2	Classroom	class vs. clinical
3	Busy	other responsibilities, patient volume, time
4	Situation	setting
5	Outside Factors	outside stressors, mood
6	Preference	
7	Personality	
8	Experience	past experience, program
9	Confidence	CI confidence, patient confidence, student confidence
10	Patient	patient outcomes, harm, patient discomfort
11	CI feedback	
12	Objective	criteria
13	Subjective	opinion
14	Supervision	

Reaction (Re)

Code Number	Code Name	Other words
1	Disagree	refute, defensive, shrug it off
2	Agree	confirm, take seriously
3	Process	absorb, reflect
4	Interpret	interpretation, understand, significance, transfer, use, ask questions, practice
5	Emotion	disheartening, overwhelming, personal, take personal, feel good, fear
6	disengaged	
7	Receptive	

Roles (Ro)

Code Number	Code Name	Other words
1	Observation	
2	Autonomy	responsibility, opportunities, independent
3	Entry-Level	

4	Collaboration	share responsibility, equals
5	Professional	clinician, future role
6	menial	

Approach (A)

Code Number	Code Name	Other words
1	General	system, method
2	Adjust	individualized, progression, building, get comfortable, confident in

Interpersonal (Ip)

Code Number	Code Name	Other words
1	Disrespect	attitude
2	Frustration	annoyed, irritated
3	Challenge	
4	Age	

Goals (G)

Code Number	Code Name	Other words
1	Learning	knowledge, big picture, broad thinking, critical thinking
2	Communication	
3	Confidence	
4	Comfort	trust
5	Mistakes	
6	Proactive	
7	Capable	understanding, knowing

Axial Coding Scheme

RQ #1: Characteristics	
Theme	**Subtheme**
Purpose	
	Provide Information
	Confirm
	Correct
	Promote Change
Timing	
	Immediate
Specificity	
	General
	Specific
	Supported
Reaction to Feedback	
	Agree
	Interpret/Use
Content of Feedback	
	Clinical skills
	Clinical reasoning
Form of Feedback	
	Verbal
	Non-verbal
	Self-evaluation
Privacy of Feedback	
	Public
	Private
RQ #2: Student Perceptions	
Theme	**Subtheme**
Purpose of Feedback	
	Growth/Improvement
	Promote learning
	Discussion
	Confirming
	Corrective
	Signal Change
	Goals/future
	Promote confidence
Content	
	Skills

	Critical thinking/Profess
Tone	
	Positive
	Negative
Role in education	
Timing	
	Delayed
	Immediate
Frequency	
Specificity	
Past Experiences	
Form	
	Verbal
	Written

RQ #3: CI Perceptions

Theme	Subtheme
Purpose of feedback	
	Growth/improvement
	Discussion
	Providing information
	Confirming
	Corrective
	Goals/future
Content	
Tone	
Role in education	
Timing	
Form	
	Written
	Nonverbal

RQ #4: CI Influences

Theme	Subtheme
Time	
Personality	
Past experiences	
Patient	
Approach	
	General
	Adapt

RQ #5: Student Influences	
Theme	**Subtheme**
Time	
Setting	
Personality	
Receptivity	
Privacy	
Case Studies	**Meg & Carl (A1)**
Listening vs. Understanding feedback	
Comfortable	
Formal evaluation as Feedback	
Case Studies	**Lisa & Chris (A2)**
Discussing professional behaviors	
Misunderstanding of the relationship	
Negative reaction to feedback	
Self-confidence	
Case Studies	**Lois & Maggie (C1)**
Questioning as feedback	
Seeking feedback	
Discussion	
Case Studies	**Peter & Brian (C2)**
Classroom vs. clinical knowledge	
It's okay to make mistakes	
Focus on learning and knowledge	

Selective Coding Scheme

Theme #1	Feedback has several components
RQ #1: Characteristics	
Category	**Sub-Category**
Timing	
	Immediate
Specificity/Detail	
	General
	Specific
Form of Feedback	
	Verbal
	Non-verbal
Privacy of Feedback	
	Public
	Private
RQ #2: Student Perceptions	
Category	**Sub-Category**
Purpose of Feedback	
	Discussion
Tone	
	Positive
	Negative
Timing	
	Delayed
	Immediate
Frequency	
Specificity	
Form	
	Verbal
	Written
RQ #3: CI Perceptions	
Category	**Sub-Category**
Purpose of feedback	
	Discussion
Content	
Tone	
Timing	
Form	

	Written
	Nonverbal
Theme #2	Feedback is important for several reasons
RQ #1: Characteristics	
Category	**Sub-Category**
Purpose	
	Confirm/reinforce
	Correct
	Promote Improvement in Future Performance
Content of Feedback	
	Clinical skills
	Clinical reasoning
RQ #2: Student Perceptions	
Category	**Sub-Category**
Purpose of Feedback	
	Growth/Improvement
	Promote learning
	Confirming
	Corrective
	Signal Change
	Goals/future
Content	
	Skills
	Critical thinking/Professionalism
Role in education	
RQ #3: CI Perceptions	
Category	**Sub-Category**
Purpose of feedback	
	Growth/improvement
	Providing information
	Confirming
	Corrective
	Goals/future career
Role in education	
Theme #3	**Feedback exchanges are influenced by several factors**
RQ #1: Characteristics	
Category	**Sub-Category**

Reaction to Feedback	
	Agree/Use

RQ #4: CI Influences	
Category	**Sub-Category**
Time	
Personality	
Past experiences	
Patient	
Approach	
	General
	Adapt

RQ #5: Student Influences	
Category	**Sub-Category**
Time	
Personality	
Receptivity	
Privacy	

Case Studies	**Meg & Carl (A1)**
Listening vs. Understanding feedback	
Comfortable	
Formal evaluation as Feedback	

Case Studies	**Lisa & Chris (A2)**
Discussing professional behaviors	
Misunderstanding of the relationship	
Negative reaction to feedback	
Self-confidence	

Case Studies	**Lois & Maggie (C1)**
Questioning as feedback	
Seeking feedback	
Discussion	

Case Studies	**Peter & Brian (C2)**
Classroom vs. clinical knowledge	
It's okay to make mistakes	
Focus on learning and knowledge	

APPENDIX L. MEMBER CHECKING

The following information is a summary of the findings of my research study. These are the main points that emerged from the study based on the observations, audio recording, and interviews for all participants.

The purpose of sharing this document with you is to make sure that your actions and opinions were accurately captured in my research study. After you read through the document, please let me know if your voice was <u>not</u> heard or accurately represented in this summary. Keep in mind that this is the information collected from all participants, so something may be listed in this document that you did not do or say.

At the end of the document there is a section that represents some themes that emerged from the interactions between only you and your CI/student. Please let me know if these comments are accurate or not. As a reminder, your personal identification is kept confidential and no one besides the researcher and athletic training education program director know of your real identity.

Once again, I thank you for your time and willingness to participate in this study.

<u>Characteristics of Feedback:</u> These categories are based on what I observed during my time with all of the CI-student pairs.
- Feedback was usually given to correct or reinforce students' behavior. It was also given to provide additional information to students that can help them in the future, even when they weren't doing anything wrong.
- Feedback was generally given during or immediately after a student performed a skill. Immediate feedback was typically given for performing skills, whereas feedback on professional behaviors was typically given later.
- Feedback was given with different degrees of specificity. Sometimes feedback was very general, such as good job, where the statement could have been applied to any situation. Feedback was also more specific, where the CI provided detail as to what the student did and why. Even more detailed was when the CI provided a reason for providing the feedback, or information to support their statement. Specific feedback was provided more frequently than general feedback.
- Students typically showed some sort of response to the feedback given by their CI, whether it was simply agreeing or acknowledging the feedback, or actually using it right away. Students rarely outwardly disagreed with their CI's feedback, but it did occur on occasion.
- Feedback was mostly provided on students' clinical skills and clinical reasoning, and sometimes on their professional behaviors.
- CIs delivered feedback in multiple forms, including verbal, non-verbal, and by prompting self-evaluation of students. Almost all the feedback given was verbal.
- Feedback was provided to students both in public and private settings, about 50% of the time for each.

<u>Perceptions of Feedback:</u> These categories represent CIs' and students' thoughts about the feedback they gave and received, in addition to feedback in general. This information primarily came from the interviews.

- Student Perceptions
    - Feedback is helpful for students in several ways. They often get feedback that helps them grow and improve, corrects or confirms their behavior, helps them gain confidence, and helps them reach their goals. Feedback given by their CIs also helped them learn and led to more discussion with their CI.
    - Students described that their CIs give feedback not only on clinical skills, but feedback about their critical thinking and professionalism is also frequently given.
    - Students said that their CIs give a balance of negative and positive feedback, and they described that both are helpful to their learning.
    - Students describe that feedback has an important and necessary role in their clinical education because it helps them learn and recognize when they are doing something right or wrong.
    - Students prefer immediate feedback to delayed feedback because it is easier to remember what they did and use the feedback to improve.
    - Students talked about the frequency of feedback, but were unable to describe an ideal frequency. They said that too much feedback and no feedback is ineffective, but no specific amount was given.
    - Feedback that has more detail or evidence is more helpful to students than general feedback because it gives them more information to use in the future.
    - Students compare CIs when talking about feedback and their clinical experiences, suggesting that their past experiences are the basis of their knowledge of clinical teaching.
    - Verbal feedback is more helpful to students than written feedback, usually because it is given immediately after or as they are doing something.
- CI Perceptions
    - CIs give feedback for several reasons, often to correct students, reinforce what they are doing, or provide information about what they are doing. Feedback is given to help students improve, prompt discussion with students, and guide them toward their future goals.
    - CIs discussed giving feedback on several areas of students' performances, including professional behaviors, clinical reasoning, and specific clinical skills.
    - CIs mentioned they are cognizant of the tone of the feedback they give to students. They try to create a positive interaction with students by giving a balance of positive and negative feedback.
    - CIs believe that feedback has a crucial role in athletic training student development, especially because it helps them recognize when they are doing something right or wrong.

- CIs prefer to give immediate feedback because it is easier to remember what the student did, and it is important to correct incorrect behavior right away. However, time or the presence of a patient often limited their ability to give immediate feedback.
- CIs discussed giving a balance of verbal, nonverbal, and written feedback. They often associated written feedback with formal documents required by the program.

Influences on Feedback: These categories represent the factors that influence the ways CIs give, and students receive, feedback. This information also primarily came from the interviews.
- Student Influences
  - Time was a factor for the way students responded to feedback. They described that a lack of time or a high patient volume limited their ability to think about and use feedback, and sometimes they thought their CIs didn't give feedback because they didn't have time.
  - Students mentioned that the setting influenced the feedback they received. Students in the clinic thought that feedback was focused more on rehab and patient interaction than their past experiences in the athletics setting. Students in the athletics setting thought the high patient volume influenced the way they responded to feedback.
  - Personality influences the way students and their CIs interact, and personality influences how they respond to feedback.
  - Students respond to feedback better if they are receptive to it in the first place. Students want feedback more in certain situations (such as new experiences), so they are more likely to listen and use it. When students disagree with what their CI is telling them, they are less likely to listen to or use the feedback.
  - Students prefer not to receive negative feedback in front of a patient, and they are less receptive to feedback given in this way.
- CI Influences
  - Most CIs described that lack of time was a barrier to giving feedback or influenced the way they gave feedback to students. A high administrative load was one factor that led to this time limitation.
  - All of the CIs mentioned that they feedback they gave was influenced by their personal preference or personality and/or the student's personality.
  - CIs brought up their past experiences with other students or their own experiences as a student when discussing their approach to providing feedback and their general interactions with students.
  - The patient often influences how and when CIs give feedback to students. This includes the presence of a patient, who the patient is, and if the patient is being harmed (or has the potential to be harmed) by the student's actions.

- o CIs discussed having a systematic approach to their interactions with students and often the way they gave feedback. While CIs usually start out with a systematic approach to students, they often adapt this based on the students needs.

[Note: Participants only received their own case study results, they did not see other participants' findings]

[Meg & Carl]
Case Study: These categories represent some key points that only emerged from your interactions with you and your CI/student, in addition to the general themes described above. No other participants' information is represented here. This information came from the observations, audio tapes, and interviews.
- A focus of this CI-student interaction was making sure the student was comfortable with what he was doing. The CI described that she wants to make sure she and her student are comfortable with him performing a skill or doing something before he does it. The student also described that his CI would check to make sure he was comfortable with something before doing it.
- One theme that emerged within this CI-student pair was the student's response to feedback. The student described that he listened and "took in" feedback so he could learn from it. The CI also believed that the student listened to the feedback, but questioned how well students understand the significance of feedback to their future.
- Both the CI and student in this pair frequently mentioned formal evaluation documents required by the program, including global evaluations, clinical rotation objectives, and mid and end of the year evaluations. This pair associated these evaluation forms with feedback more than any other group.

[Lisa & Chris]
Case Study: These categories represent some key points that only emerged from your interactions with you and your CI/student, in addition to the general themes described above. No other participants' information is represented here. This information came from the observations, audio tapes, and interviews.
- Most of this CI-student pair's feedback exchanges included a lot of discussion on the student's professional behaviors, including time management, professional dress, and communication skills. This feedback was often delayed and given in a private setting.
- There appears to be a misunderstanding of the relationship between this CI and student. This misunderstanding seems to stem from their close proximity in age and a mis-match of personalities. The feedback exchanges between this CI and student often include a lot of constructive criticism, sometimes negative, that the student has trouble receiving and using. This CI-student pair often described their interactions as "challenging," "disrespectful," "critical," and "harsh."

- This student was very reactive to the CI's feedback, as shown in both interviews and the observations. The student often had a defensive reaction to the CIs, feedback, and he appeared to not always listen or use the feedback.
- Both the CI and student had their own concerns related to self-confidence. This included being worried about not knowing something they should.

[Lois & Maggie]
Case Study: These categories represent some key points that only emerged from your interactions with you and your CI/student, in addition to the general themes described above. No other participants' information is represented here. This information came from the observations, audio tapes, and interviews.
- This CI used a lot of questioning when providing feedback, as observed and described in the interviews. This was often done to prompt thinking and self-evaluation by the student.
- This student frequently sought out her CI's feedback by prompting discussion or asking her CI's opinions on what she was doing.
- The feedback exchanges between this CI and student often included long discussions that often occurred between patients or when they stepped away from the patients they were treating.

[Peter & Brian]
Case Study: These categories represent some key points that only emerged from your interactions with you and your CI/student, in addition to the general themes described above. No other participants' information is represented here. This information came from the observations, audio tapes, and interviews.
- This CI and student frequently mentioned differences between what the student learned in the classroom compared to the clinical setting. The student often questioned what he learned in the classroom because of the evidence-based focus of what he was learning in the clinic. The CI described that this occurs because of the advanced and unconventional clinical techniques he often uses.
- An emphasis of this student's clinical experience was learning that it was okay to make mistakes because that leads to learning. Both the CI and student emphasized this.
- A focus of this pair was learning, knowledge, and evidence-based practice. This was evident in the feedback exchanges and their general interactions. Feedback was often given on the student's ability to clinically reason, and feedback was often supported by evidence.

APPENDIX M. REPRESENTATION OF CODING SCHEME BY PARTICIPANTS

RQ #1: Characteristics					
Category	**Sub-Category**	**Meg**	**Lisa**	**Lois**	**Peter**
Purpose					
	Confirm/reinforce	9	10	22	20
	Correct	1	14	8	3
	Promote Improvement in Future Performance	3	14	15	5
Timing					
	Immediate	7	15	29	23
Specificity/Detail					
	General	3	5	10	14
	Specific	4	18	25	9
Reaction to Feedback					
	Agree/Use	3	15	23	2
Content of Feedback					
	Clinical skills	7	7	28	16
	Clinical reasoning	0	5	2	7
Form of Feedback					
	Verbal	7	20	33	21
	Non-verbal	2	10	4	9
Privacy of Feedback					
	Public	5	10	15	21
	Private	2	9	19	2
RQ #2: Student Perceptions					
Category	**Sub-Category**	**Carl**	**Chris**	**Maggie**	**Brian**
Purpose of Feedback					
	Growth/Improvement	11	25	7	35
	Promote learning	11	10	3	5
	Discussion	1	4	4	5
	Confirming	7	12	7	14
	Corrective	4	6	2	21
	Signal Change	3	7	3	10
	Goals/future	2	17	4	25
Content					
	Skills	4	1	5	2
	Critical thinking/Professionalism	1	11	9	13
Tone					

	Positive	0	13	8	9
	Negative	5	16	0	10
Role in education		1	8	3	1
Timing					
	Delayed	1	2	6	5
	Immediate	6	1	3	15
Frequency		2	0	3	14
Specificity		0	4	2	8
Form					
	Verbal	4	0	2	6
	Written	4	1	4	6
RQ #3: CI Perceptions					
Category	**Sub-Category**	**Meg**	**Lisa**	**Lois**	**Peter**
Purpose of feedback					
	Growth/improvement	14	10	9	1
	Discussion	16	9	2	0
	Providing information	6	2	2	3
	Confirming	11	0	2	4
	Corrective	19	10	5	9
	Goals/future career	15	5	3	10
Content		16	3	2	2
Tone		8	1	7	1
Role in education		1	2	2	0
Timing		13	11	1	4
Form					
	Written	8	1	0	1
	Nonverbal	4	4	1	1
RQ #4: CI Influences					
Category	**Sub-Category**	**Meg**	**Lisa**	**Lois**	**Peter**
Time		9	2	0	3
Personality		2	6	1	1
Past experiences		3	6	0	4
Patient		6	1	5	2
Approach					
	General	2	0	4	2
	Adapt	7	3	6	17
RQ #5: Student Influences					
Category	**Sub-Category**	**Carl**	**Chris**	**Maggie**	**Brian**
Time		3	5	0	5

Personality		0	4	8	3
Receptivity		1	8	7	11
Privacy		0	3	3	12
Case Studies	**Meg & Carl (A1)**	**Meg**	**Carl**	**Audio**	
Listening vs. Understanding feedback		16	6		
Comfortable		5	4		
Formal evaluation as Feedback		8	3		
Case Studies	**Lisa & Chris (A2)**	**Lisa**	**Chris**	**Audio**	
Discussing professional behaviors		0	0	16	
Misunderstanding of the relationship		19	18		
Negative reaction to feedback		14	19	4	
Self-confidence		4	3		
Case Studies	**Lois & Maggie (C1)**	**Lois**	**Maggie**	**Audio**	
Questioning as feedback		3	1	4	
Seeking feedback				12	
Discussion				6	
Case Studies	**Peter & Brian (C2)**	**Peter**	**Brian**	**Audio**	
Classroom vs. clinical knowledge		3	6		
It's okay to make mistakes		1	4		
Focus on learning and knowledge		6	9		