Using video feedback to measure self-efficacy

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ABSTRACT

When a student has a high sense of self-efficacy, foreseeing success and providing positive guides and supports for performing the skill will usually occur. A low self-efficacy tends to predict failure and anticipation of what could go wrong. Videotape feedback provided to students has reported favorable outcomes. Self-efficacy could alter performance in learning a psychomotor competency skill (PCS). The purpose of this study was a) to assess the self-efficacy of athletic training students in learning to perform a PCS; and b) to measure the impact on self-efficacy by implementing an educational intervention of video feedback in learning to perform a PCS. An intact cohort of level I (lower-level) students within a CAATE-accredited entry-level master athletic training educational program learned and performed an upper body neurological screening. Throughout the study students also completed the *Self-efficacy questionnaire* (n=5 trials/times). Group mean for self-efficacy from baseline (M = 6.14; ± 2.04) to post-intervention (M = 9.51; ± 0.70) increased. One-way ANOVA indicated a significant effect using Wilks' Lambda post hoc, with alpha set at .001 (.05/5 = .001). Significant differences of improved self-efficacy between trials one and four, one and five, and two and five were found, all following the educational intervention. The use of video feedback could increase self-efficacy when learning to perform a PCS.

Keywords: Video feedback, Self-efficacy, Clinical skills, Psychomotor skills

Introduction

Self-efficacy can enhance an individual's accomplishments and perception of what can be achieved. It also allows a person to attempt a challenge with the goal of mastering it, rather than seeing a new challenge as a threat (Bandura, 1994). In an entry-level master (ELM) athletic training education program (ATEP), athletic training students (ATS) are challenged in cognitive, psychomotor, and affective domains throughout the curriculum. Many times the ATS is emotionally challenged when having to perform a psychomotor competency skill (PCS). This can occur in simulated clinical scenarios or real-time clinical applications. Through the cognitive process, self-beliefs of efficacy cause people to initially organize thoughts. It is then that the belief in their efficacy shapes the anticipatory scenario. Individuals with a high sense of self-efficacy, foresee success and provide positive guides and supports for performing the skill. Those with a low self-efficacy, predict failure and anticipate what could go wrong (Bandura, 1994). Athletic training students need to possess a strong sense of self-efficacy in order to stay on task, react appropriately to the situation, and trigger the ability to critically think.

The process of learning a PCS in an ATEP follows the learning over time model. Within this model, ATS are: (a)introduced to a cognitive competency in the didactic setting; (b)instructed how to perform the related psychomotor competency in the laboratory setting; (c)evaluated on the initial cognitive competency as a clinical psychomotor proficiency during a clinical course or during a real-time application; and (d)then again can be reassessed in the proceeding semester. Traditionally, feedback through this learning and application process provided to the ATS is augmented feedback, or verbal knoweldge of results, coupled with written and scored assessments. An untapped, yet emerging trend is the utilization of videotape feedback to train students in performing skills. However, research of its efficacy is still scattered among the multiple modes within the medical community, despite the reported favorable outcomes in other disciplines (Backstein, Adnidis, Regehr, & Reznick, 2004).

In this pilot study, ATS were instructed and asked to perform an upper body neurological screening on a model for two different assessment sessions. Concurrently, the ATS also completed the *Self-efficacy Questionnaire for Upper Body Neurological Screening forms(Self-efficacy form)* on five different occasions. The purpose of this study was twofold: (a) to assess the self-efficacy of athletic training students in learning to perform a PCS; and (b) to measure the impact on self-efficacy by implementing an educational intervention of VFB in learning to perform a PCS. Approval was obtained by the institution's human review board.

Methods

This was a pilot randomized-controlled study using quantitative repeated measures over an 8-hour period. An intact cohort of athletic training students (n=8) within an ELM Commission on Accreditation of Athletic Training Education (CAATE)-accreditated ATEP were involved. The ATS were considered level I students, meaning they were enrolled in the first academic year of a two-year academic program. Cognitive, psychomotor, and clinical competency were minimal based on the progression of the curriculum. None of the ATS had been previously enrolled in a CAATE-accredited ATEP; therefore, they had not received formal instruction. A control group was not used because of the small N size.

Two females and one male ranging in ages 23 – 27 years from the level II ATS cohort volunteered to serve as models. They were randomly assigned to various time slots throughout the study. The researchers were program directors from two different institutions who together had more than fourteen years of teaching experience. The lead researcher was from the host institution and versed in using Dartfish software. The visiting researcher exclusively scored, bvideo-recorded , and provided the ATS with augmented feedback for the first real-time PCS assessment.

Instruments

Demographical questions (1-7) consisted of the following: age, gender, ethnicity, classification in school, professional credentials, prior student athletic training experience, prior professional athletic training experience. For questions 8-18, participants were asked to circle a value on a 10-point Likert scale, their perception of the study with a one value meaning the participant "did not agree at all" and a ten value meaning the participant "absolutely agree (see Table 1).

The selected PCS and scoring rubric used in this study was an upper body neurological screening examination adapted from the *Evaluation of Orthopedic and Athletic Injuries* textbook, which is a commonly used texbook throughout many of the CAATE-accredited ATEPs. The researchers used this because reliability and validity had already been established, as this is also a textbook referenced by the Board of Certification for athletic training and the *Board of Certification Role Delineation Study, 5th edition.*

Participants were required to verbally identify anatomical structures and describe their actions while performing the upper body neurological examination psychomotor skill. The individual skills assessed were: (Skill 1) verbally identifying and locating the dermatomes of the brachial plexus (C_5 – T_1); (Skills 2-4) verbally describe and perform deep tendon reflexes of the biceps brachii, brachioradialis, and the triceps brachii (C_5 - C_7); and (Skills 5-12) verbally explain myotome assessments by performing either a break test or manual muscle test for the involved muscular actions (C_5 – T1). Some of the nerve roots involved more than one myotome action, therefore scored independently. Scoring for the deep tendon reflex skills involved proper patient positioning, proper practitioner positioning, and correct technique. The myotome skills scored proper patient positioning, proper practitioner positioning, correct stabilization and resisting hand placement, and concentric and eccentric muscular performance of the model.

The educational intervention involved video recording the ATS while performing the PCS so it could be given to the ATS as feedback. The software used to digitize the video recording was Dartfish Connect version 4.5. Dartfish Connect is an analysis software commonly used to assess body mechanics and skill performance. For this study, the researchers only used the capability to embed written feedback into the recorded video and used blank DVR+RW DVDs to distribute to the participants. Written comments ranged from addressing incorrect hand placement to incorrect patient positioning.

The *Self-efficacy form* instrument used was based on instruments from two different studies that measured clinician self-efficacy on the performance of psychomotor skills used in clinical medicine. Permission was obtained to use and adapt the instruments from both authors via e-mail. Lead author, Dr. Douglas Mann, PhD (Mann & Eland, 2005), used the *Spencer Technique Self-efficacy form,* which used percentage values ranging from 0-100 that were representative of the participant's confidence level of performing an increasingly difficult therapeutic psychomotor skill. Dr. Mann chose to use the traditional method of self-efficacy measures that lists a series of tasks that increase in difficulty, but only used the degree of confidence on a probability scale of 100 points. He also excluded the option of the participant responding “yes” or “no” as to whether or not the skill could be performed (Moritz, Felts, Fahrbach, & Mack, 2000). Dr. Seth Leopold, MD, (Leopold, Morgan, Kadel, Gardner, Schaad, & Wolf, 2005), the other author, used a 10-point Likert scale with single-item measures. The psychomotor skills were non-related in level of difficulty; however, they were in logical progression for performing a knee joint injection. Dr. Leopold et al. (2005) also chose not to provide the option of the participant to select “yes” or “no” as to whether or not the skill could be performed. Although the single-item measure is not in practice with what Bandura recommended, it has been adapted in past studies (Moritz et al., 2000). In addition, where Bandura’s concept of self-efficacy is multi-faceted, the researchers chose to report only the scop of what these instruments assessed.

For this study, the researchers used a 10-point Likert scale with single-item measures like Dr. Leopold, but modified the verbiage that Dr. Mann used on his instrument. The modified instrument was reviewed by six athletic trainers involved in CAATE-accredited programs to receive face validity. Each of the nine questions that were aligned to the psychomotor skills for performing the neuroglical screening began with, “I can perform….” The participants were asked to circle a value ranging from a 1-10, with a one value meaning the participant was “not at all confident to perform” and a ten value meaning the participant was “very confident to perform” the involved skills. The researchers also chose to not include the participants’ ability to answer “yes/no” to psychomotor skill performance.

Procedures

Through signed consent, all members of the cohort volunteered to participate and be filmed throughout the one-day session. The study was conducted in one day in order to try to control the ATS from seeking outside sources of feedback (see Table 2). ATS were not made aware of the nature of the study until the day of the study. It was emphasized that participation or level of performance would not influence their position or grades within the ATEP.

All participants, with the exception of the models, met in a common classroom. The ATS randomly selected numbers (1-8) that was assigned a designated time slot, every half hour on the hour. The number selected became the participants indentification throughout the study. Before instruction began the ATS group completed the baseline *Self-efficacy form* (Trial 1). Both researchers shared in presenting the PCS of an upper body neurological screening using a power point presentation and hands-on approach. All participants were allowed to peer-practice and ask questions throughout the presentation. The first session began thirty-minutes following the conclusion of the instruction session. Before performing the PCS, the ATS was asked to complete the second *Self-efficacy form* (Trial 2).

Psychomotor competency skill performance was filmed in an adjacent classroom that housed the Dartfish Connect software. Located in the classroom was the video camera, tripod, blank MiniDV digital tapes, rubber reflex hammer, additional *Self-efficacy forms*, pens, clipboards, and the guest researcher. To perform the PCS, the ATS had a table and chair for patient positioning. The camera and researcher were set back at least six feet in order to view both the ATS and model as the PCS was being performed. Both researchers agreed that the guest researcher would perform the first real-time skill assessment to try to eliminate the possible anxiety of a known instructor.

ATS were immediately provided augmented feedback from the guest researcher upon the completion of the real-time skill assessment. They did not receive neither a pass/fail nor a numerical score. By not providing scored feedback, the researchers felt this would help control outcome expectancy of the ATS when completing the *Self-efficacy forms.* Outcome expectancy is not considered to be an effective predictor of performance, where efficacy expectancy is an effective predictor (Bandura, 1997).

Upon completion of the first PCS performance, the ATS completed the third *Self-efficacy form* (Trial 3) and walked the videotape to the lead researcher for video analysis. Using the Dartfish Connect software, the researcher digitized the video and broke the PCS performances into three sections; dermatome assessment, deep tendon reflexes, and myotome assessment, then reviewed the skill performance as a whole. As the video was being played, the researcher was able to provide written feedback that was embedded in the video. For feedback reliability, the lead researcher used the same scoring rubric that was used during the real-time skill performance. In the meanwhile, the ATS was asked to remain on-site until the video feedback (VFB) was complete. Upon receiving the DVD, instructions were provided on how to view the video. All ATS were given a two-hour window (from the time of receiving the VFB) to return for the the second skill performance, or educational intervention. The students were asked to view the DVD and encouraged to watch it as many times needed until comfortable with performing the skills. Peer-practice was not discouraged because they all had received the same intervention and rote feedback based on the scoring rubric. All ATS were given the same time slot (first, second, third…eighth) to return for the second PCS performance.

For the post-intervention, or educational intervention, PCS performance, the researchers were randomly assigned four time slots for the real-time recorded sessions. This was done to try to control bias of the researcher scoring the ATS' second performance (Leopold et al., 2005).

The ATS was asked to complete the fourth *Self-efficacy form* (Trial 4) before performing the PCS. Both researchers used the same procedures from the first real-time session for scoring and providing feedback . The models were again randomly assigned time slots for the second session. Upon completion of PCS performance, the ATS was asked to complete the fifth and final *Self-efficacy form* (Trial 5) and delivered the recorded session. With this session, the ATS only received augmented feedback following the real-time session. They did not receive VFB. The demographic questionnaire was administered three days after the study.

Results

All analytical procedures were conducted using SPSS version 17.0 (SPSS, Inc., Chicago, IL). Pairwise comparisons between groups were made using one-way analysis of variance with repeated measures. Significance was set at the $p < .05$ level for all comparisons. Post-hoc test Wilks' lambda was at the $p < .01$ level for all comparisons. Cross-tabulations were run on demographical data. Because self-efficacy was being measured, skill performance scores were not reported.

Of the eight ATS within the intact cohort four males held professional credentials; one possessed state licensure as a Texas licensed athletic trainer (LAT), two possessed personal training certifications from different professional organizations, and one possessed an NREMT credential. All but one ATS reported having prior student experience on the high school and/or college level. Only one reported having previous professional experience. Ages for the participants ranged from 23 - 27 years ($M = 24$, $SD \pm 1.51$), seven male and one female with mixed ethinicities (4 caucasian, 2 hispanic, and 2 African-American). Although one ATS reported having prior professional experience, the other ATS reported just as high self-efficacy values in the performance of the PCS.

Crosstabulation was run to look at the following: ATS possessing a professional credential, prior ATS experience, versus prior professional experience to prior knowledge of the PCS, performance on first assessment, and confidence level matching performance on the first assessment. Of the four ATS that possessed professional credentials, the following numbers were reported with values ≥ 7, or above the average value; one for having prior knowledge of the PCS, two thought they would perform well during the first assessment, and three felt their confidence level matched their performance during the first assessment. For the seven out of eight ATS who reported having prior student athletic training experience on the high school or college level, their reported number with values ≥ 7 were; two reported having prior knowledge of the PCS, five thought they would perform well during the first assessment, and six felt their confidence level matched their performance during the first assessment. The one ATS who reported having prior professional experience reported with values ≥ 7 for all three questions.

Before instruction, the baseline self-efficacy (Trial 1) mean level for the group was 6.14 (±2.04) of 10 points on the Likert scale for the upper body neurological screening. Respectively, the group self-efficacy values increased across the five trials, or for each time the *Self-efficacy form* was completed (see Figure 1). Individual ATS self-efficacy values did not all increase across the five trials.

The results for the one-way ANOVA indicated a significant trial effect using Wilks' Lambda as a post hoc test (see Table 3). Follow-up tests were conducted to evaluate the five pairwise differences among the group trial self-efficacy values, with alpha set at .001 [.05/5(trials) = .001] to control for Type I error over the five pair-wise comparisons. Significant differences between trials one and four, one and five, and two and five were found, all following the educational intervention. There were no significant differences between trials one and two, one and three, two and three, two and four, three and four, three and five, and four and five. The difference in means between trials one and four, one and five, and two and five for self-efficacy was .174, $F(4,4) = 4.763$, $p < .08$, partial $\eta^2 = .826$. The result of these comparisons showed weak support of the research hypothesis.

Discussion

The objectives of this study were to assess the self-efficacy of athletic training students in learning to performa pyschomotor competency skill and to measure the impact on self-efficacy by implementing an educational intervention of video feedback in learning to perform a PCS. This was accomplished by asking the ATS to complete the *Self-efficacy form* on five different occasions throughout the study. Locating, identifying and verbalizing dermatome locations, demonstrating deep tendon reflexes for the baseline *Self-efficacy form* received low self-efficacy mean values ≤ 7, but never dropped below a seven for the other four trials. Although the ATS were not scored in the ability to elicit a reflex, it is still a difficult skill to perform. Myotome, or manual muscle testing skills received higher self-efficacy values ≥ 7 within the group throughout all trials. Having a visual diagram of what would be expected and allowed to practice with the researchers and peers seemed to have improved the self-efficacy values across each trial.

The baseline and second trial (pre-instruction assessment) self-efficacy values were lower, but increased well above the mean for trials three through five. In Moritz et al. (2000)

meta analytic review, they report that discrepancies can occur between efficacy beliefs and performance because there is no comparison, or baseline. It was thought prior experience had an influence on higher self-efficacy values, but it did not, nor did possessing a professional credential.

In addressing the second purpose of the study, although the group size was small and a control group was not used, the study demonstrated that the educational intervention of video feedback may increase the self-efficacy of an athletic training student when learning to perform a newly taught psychomotor competency skill withing a CAATE-accredited entry-level master athletic training education program ($p < .001$). Many of the ATS did report having previous experience as a student athletic training student, but still had a reported increase of self-efficacy mean values from the baseline to the final trial. The individual ATS self-efficacy mean values that did drop for the third trial could have been because completion of the *Self-efficacy form* followed the first real-time assessment in which the researcher provided augmented feedback. Even though numerical scores were not given, if the ATS did not perform to the level he/she expected, this may have lowered the ATS self-efficacy reported values of being able to perform the PCS. Although participant four's self-efficacy mean value dropped on the fourth trial, respectively the values were trial three ($M = 9.78, \pm 0.44$), trial four ($M = 9.67; \pm 0.50$), and trial five ($9.89; \pm 0.33$). The cause for participant two's self-efficacy mean value to drop from the fourth trial mean ($M = 9.00; \pm 0.50$) and the fifth trial ($M = 8.78; \pm 0.67$) still is not noteable.

However, the majority of the ATS self-efficacy values and mean values were noticeably higher for the fourth and fifth trial. Other than the success of the educational intervention, another possible cause could have been that the ATS thought they knew the criteria for which they would be assessed. Having been assessed by the visiting researcher, the ATS may have had a higher self-efficacy for performing the PCS the second time (Bandura, 1997).

Feedback has been identified as being crucial to clinical learning situations that require the application of psychomotor competency skills throughout medical education (Monica van de Ridder, Stokking, McGaghie, & J ten Cate, 2008). Monica van de Ridder et al. (2008) described in their study elements of strong feedback. They included: well observable tasks and competencies; expert observer and feedback provider; highly specific information; explicit standard; personal observation; explicit aim of performance improvement; and plan to re-observe. Utilization of VFB on the performance of PCS in any medical education program would fit all of these elements.

Athletic skill performance is an area that has found significant improvements of skill acquisition with the use of VFB. In varying studies complex spatiotemporal skill demands were evaluated based on the feedback provided to the participant. Participants were given a video-tape of the skill performances as a means of feedback. In all of the studies, all participants showed significant improvement when compared to the control groups (Guadanoli, Holcom, & Davis, 2002; Hodges, Chua, & Franks, 2003; Zetou, Kourtesis, Getsiou, Michalopoulou, & Kioumourtzoglou, 2008).

The use of VFB as an educational intervention is supported in Pololi and Price's (2000) study that investigated the perception that autonomy correlates with self-efficacy, and that autonomy aids in the preparation of becoming self-directed in learning. Hays (as cited in Paul, Dawson, Lanphear, & Cheema, 1998) believed that self-directed learning can cultivate the ability to critically self-evaluate skills while developing a student's professional growth. Video feedback's value is that it enables the learner to view the PCS performance at his/her own discretion and pace with the combination of a self-assessment and an external expert observer.

Moreover, studies of separate authors [Watt, Franks, and Caleindo and Kopacz (as cited in Backstein et al., 2004)], found VFB combined with expert feedback resulted in significant skill improvement.

Limitations

The small group size and 7:1 ratio of male: female was a limitation. However, because of the graduate cohort design, the numbers will be small if this study were repeated within a graduate ELM ATEP. It would be recommended to include undergraduate ATEPs using the different classifications and/or genders as the between-subjects factor. Cecil and Pinkerton (2000) found in a study involving gender differences, that men had lower self-efficacy and difficulty in making decisions to refuse sexual intercourse. Where this current study did not involve this subject matter, it would be interesting to see if gender difference influences self-efficacy when performing a newly taught PCS within ATEPs. Within the same study of Cecil and Pinkerton (2000), they analyzed the two sources of self-efficacy, confidence and difficulty rankings, and found a significant correlation. With the learning over time model approach in ATEPs this would seem easy to evaluate.

Another limitation was the time it took to digitize the video using the Dartfish Connect software. It is not apparent that it is the fault of the software, in as much as it may be the capability of the computer. Once the lead researcher realized the additional time it took to digitize and burn the finished product, multiple computers were used. Another researcher could be used to only digitize the video.

It would be recommended if the study were to be repeated over a semester or longer, for the *Self-efficacy form* to ask the ATS what grade he/she felt they would earn in the related course, or individual PCS performance, even though this goes against Bandura's (1997) philosophy. In addition, asking the ATS (if a score were given to the ATS) if the earned score accurately reflected the PCS performance(s). This facet has been investigated by many researchers interested in student self-efficacy (Pajares, 1996). However, Pajares (1996) found the greater the complexity of the performance critera, judgments of competence is not needed. Because of the complexity of the upper body neurological screening examination, the researchers did not address this issue. If self-efficacy were to be evaluated of the ATS for the performance in a course, then it would be necessary to be specific with the questions developed for the self-efficacy questionnaire

The practical implication from the results of this study is that video feedback can positively influence the self-efficacy of an ATS when learning a new PCS. Video feedback along with augmented, or direct feedback can enhance the learning of a psychomotor skill performance. Self-efficacy is one of many factors that influence a student's motivation and perseverance in academic activities and achievement (Burgoon & Grange, 2007). Studies within athletic training education have shown positive influences of enhancing self-efficacy for the ATS in clinical education (Peer & McClendon, 2002); therefore, should be considered in all facets of the ATEP when preparing the entry-level athletic trainer.

References

1. Bandura, A. (1994). Self-Efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior,* (Vol. 4, pp.71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], *Encyclopedia of mental health.* San Diego: Academic Press, 1998).
2. Bandura, A. (1997). *Self –efficacy: The exercise of control.* New York: Freeman.
3. Backstein, D., Agnidis, Z., Regehr, G., & Reznick, R. (2004). The effectiveness of video feedback in the acquisition of orthopedic technical skills. *The American Journal of Surgery, 187,* 427-432.
4. Burgoon, J. & Grange, N. (2007) Course-long examination of medical studetns self-efficacy for the anatomy curriculum and its relationship to academic performance [Abstract]. *The Federation of American Societies for Experimental Biology, 21*(5), A215-A216.
5. Cecil, H. & Pinkerton, S. D. (2000). Magnitude: An important dimension of self-efficacy. *Journal of Applied Social Psychology, 30*(6), 1243-1267.
6. Guadagnoli, M., Holcomb, W., & Davis, M. (2002). The efficacy of video feedback for learning the golf swing. *Journal of Sports Sciences, 20*, 615-622.
7. Hodges, N., Chua, R., & Franks, I. (2003). The role of video in facilitating perception and action of a novel coordination movement. *Journal of Motor Behavior, 35*(3), 247-260.
8. Leopold, S. S., Morgan, H. D., Kadel, N. J., Gardner, G. C., Schaad, D. C., & Wolf, F. M. (2005). Impact on educational intervention on confidence and competence in the performance of a simple surgical task. *The Journal of Bone and Joint Surgery, Incorporated, 87-A*(5), 1031-1037.
9. Mann, D. D. & Eland, D. C. (2005). Self-efficacy ini mastery learning to apply a therapeutic psychomotor skill. *Perceptual and Motor Skills, 100,* 77-84.
10. Monica van de Ridder, J. M., Stokking, K. M, McGaghie, W. C., J ten Cate, O. T. (2008). What is feeback in clinical education? *Medical Education, 42,* 189-197.
11. Moritz, S.E., Felts, D. L., Fahrbach, K. R., & Mack, D. E. (2000). The relation of self-efficacy measures to sport performance: A meta-analytic review. *Research Quarterly for Exercise and Sport, 71*(3), 280-294.
12. Pajares, F. (1996). *Measuring and mismeasuring self-efficacy: Dimensions, problems, and misconceptions.* Paper presented at the meeting of the American Educational Research Assocation, New York, NY.
13. Paul, S., Dawson, K, Lanphear, J., & Cheema, M. (1998) Video recording feedback: a feasible and effective approach to teaching history-taking and phsyical examination skills in undergraduate paediatric medicine. *Medical Education, 32*, 332-336.
14. Peer, K. & McClendon, R. (2002). Sociocultural learning theory in practice: Implications for athletic training education. *Journal of Athletic Training, 37*(Suppl. 4), S136-S140.
15. Pololi, L. & Price, J. (2000). Validation and use of an instrument to measure the learning environment as perceived by medical students. *Teaching and Learning in Medicine, 12*(4), 201-207.
16. Zetou, E., Kourtesis, T., Getsiou, K., Michalopoulou, M., & Kioumourtzoglou, E. (2008, September). The effect of self-modeling on skill learning and self efficacy of novice female beach-volleyball players. *Athletic Insight: The Online Journal of Sport Psychology, 10*(3). Retrieved January 12, 2009, from http://www.athleticinsight.com/

Table 1
ATS Feedback on Study Questionnaire

Question		Mean 1-10 Likert	SD
8.	I was knowledgeable of performing an upper quarter neurological screening examination prior to the study.	5.00	±2.73
9.	I thought I would perform well during the first assessment.	6.88	±2.42
10.	I thought I would perform better after viewing the video feedback.	8.88	±1.13
11.	I felt like the video feedback helped me prepare more than the verbal feedback did for the second assessment.	7.87	±1.81
12.	I felt like the verbal feedback helped me prepare more than the video feedback did for the second assessment.	7.63	±1.77
13.	I feel like neither the video, nor the verbal feedback helped me prepare for the second assessment.	1.75	±0.89
14.	I felt like the Dartfish Connect video software was easy to use.	8.87	±0.99
15.	I feel that the verbal feedback from my first assessment was accurate.	8.50	±1.20
16.	I feel that the video feedback from my first assessment was accurate.	8.50	±1.07
17.	I feel my confidence level matched my performance for the first assessment.	8.13	±1.73
18.	Do you feel that the presence of the video camera negatively affected your performance?	2.13	±1.56

Table 2
Self-Efficacy Study Design

Baseline Self-Efficacy Questionnaire (Trial1) completed by ATS Instructional session of Psychomotor Competency Skill
Pre-Educational Intervention
ATS reported for first skill assessment Pre-Instruction Self-Efficacy Questionnaire (Trial 2) completed by ATS ATS performed Psychomotor Competency Skill (1st time) Post-Instruction Self-Efficacy Questionnaire (Trial 3) completed by ATS Videotape of Psychomotor Competency Skill (educational intervention) was analyzed and given to the ATS to use for review.
Post-Educational Intervention
ATS reported back two hours later to perform second skill assessment. Pre-Intervention Self-Efficacy Questionnaire (Trial 4) completed by ATS ATS performed Psychomotor Competency Skill (2nd time) Post-Intervention Self-Efficacy Questionnaire (Trial 5) completed by ATS Demographic survey completed by ATS

Table 3: Estimates

Measure:MEASURE_1

Trials (Self-efficacy Form completed)			95% Confidence Interval	
	Mean	Std. Error	Lower Bound	Upper Bound
1	6.139	.720	4.437	7.841
2	8.319	.463	7.225	9.413
3	8.556	.429	7.542	9.569
4	9.111	.289	8.427	9.796
5	9.514	.247	8.931	10.097