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## Athletic Trainers Describe Their Use Of Imagery: What, Where, When, And Why

Rachel Phelps

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ATHLETIC TRAINERS DESCRIBE THEIR USE OF IMAGERY: WHAT, WHERE, WHEN,  
AND WHY

By

Rachel Marie Phelps  
Bachelor of Science, University of Mary, 2015

A Thesis

Submitted to the Graduate Faculty

of the

University of North Dakota

In partial fulfillment of the requirements

for the degree of

Master of Science

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May  
2017

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This thesis, submitted by Rachel Phelps in partial fulfillment of the requirements for the Degree of Master of Science from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.



Sandra Short

Committee Chair/Advisor



Martin Short

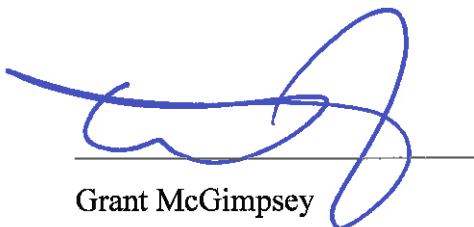
Committee Member



Tanis Walch

Committee Member

This thesis is being submitted by the appointed advisory committee as having met all of the requirements of the School of Graduate Studies at the University of North Dakota and is hereby approved.



Grant McGimpsey

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## **Abstract**

**Objective:** Conduct an in-depth exploration of imagery use by ATs by investigating if ATs use imagery and what, where, when, and why they image.

**Design:** Qualitative design.

**Setting:** Online questionnaire.

**Participants:** 219 ATs (94 females, 124 males, 1 unknown) representing 6 different position titles.

**Main Outcome Measure:** Modified Imagery Use by Athletic Trainers Questionnaire.

**Results:** ATs believed instructors should be the ones to teach them how to use imagery. Results showed that 81% of the sample used imagery but 19% did not use imagery for a variety of reasons (i.e., time, lack of education). Images used by ATs fell into the domains of an AT as stated by the NATA and use imagery mostly before activities and for preparation.

**Conclusions:** ATs do not have formal training in the area of imagery and need more instruction on the subject and ATs want more education on imagery.

**Key words:** imagery, athletic trainers

## **CHAPTER I**

### **INTRODUCTION**

Athletic trainers (ATs) are healthcare professionals who collaborate with physicians and work with the athletic population in sports, industrial, and military settings. Their primary work with injury consists of prevention, evaluation and diagnosis, immediate care, and treatment and rehabilitation (Anderson, Parr, & Hall, 2009). In the treatment and rehabilitation domain, when working with their clients, ATs not only work on the strengthening aspect of rehabilitation but also on the psychological aspects of injury. Doing so requires that they have an understanding of sport psychology.

Sport psychology is defined as the scientific study of people and their behaviors in sport contexts and the practical application of that knowledge (Weinberg & Gould, 2015). One part of sport psychology is the creation and delivery of psychological skills training programs that involve the deliberate use of pre-prepared and structured sequences of specific thoughts and behaviors to regulate psychological states (Eccles & Riley, 2014). One of the most popular psychological skills is imagery.

Imagery is experiences, both sensory and perceptual, that we are self-consciously aware and exist in the absence of the stimulus conditions needed to perform a task (Martin, Moritz, & Hall, 1999). Leading the way for practitioners to design effective imagery interventions, Martin et al. (1999) created an applied model for imagery use in sport (see Figure 1). There are four key components in the model: type of imagery used, outcomes of imagery, the sport situation, and

imagery ability. Centered on Paivio's (1985) framework, there are five types of imagery included in the model: motivational specific (MS) imagery can be used to help set performance goals; motivational general- mastery (MG-M) is effective for coping and mastery of challenging situations; motivational general-arousal (MG-A) imagery represents the feelings of relaxation, stress, arousal, and anxiety; cognitive specific (CS) is the imagery of a specific sport skill; and cognitive general (CG) imagery relates to the strategies of a competitive event. The outcomes of imagery are: skill and strategy learning and performance, modifying cognitions, and regulating arousal and competitive anxiety.

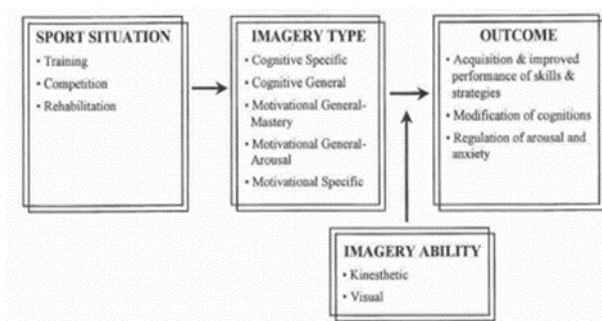


Figure 1. An applied model of mental imagery use in sport (Martin et al., 1999).

According to the model, the type of imagery and outcomes expected may vary based on the sport situation which includes training, competition, and rehabilitation. For example, using imagery during rehabilitation can be used to: facilitate the learning of exercises, set goals and adherence strategies, maintain sport skills and strategies, promote healing, maintain a positive attitude, manage pain, arousal and anxiety levels, and increase self-confidence for recovery. The last component in their model is imagery ability, defined as the ability to visually and kinesthetically image physical movements (Martin et al., 1999). Although everyone has the ability to image, some people are better at it than others (Paivio, 1985). Within the model, Martin et al. considered imagery ability as a potential mediator to explain how the imagery types and

outcomes are related or as a moderator which changes/determines the relationships between imagery types and outcomes.

The applied model of imagery use was revised by Cumming and Williams (2013) to include characteristics of “who” and to differentiate between “what” is imaged and “why” it is imaged based on personal meaning (see Figure 2). They clarified that imagery function will directly affect the affective, behavioral, and cognitive outcomes achieved through imagery. That is, when an individual generates deliberate and purposeful imagery, it should be done with a specific outcome or range of outcomes in mind. The achievement of these outcomes will depend on a couple of factors: what is imaged, how it is imaged for the individual and the situation, and the individual’s ability to image. Imagery is considered to be effective when the outcome achieved matches the intent of the imagery function. For example, if ATs image splinting a broken lower leg before a game to help with confidence; then they will more likely do the task with ease and without mistakes.

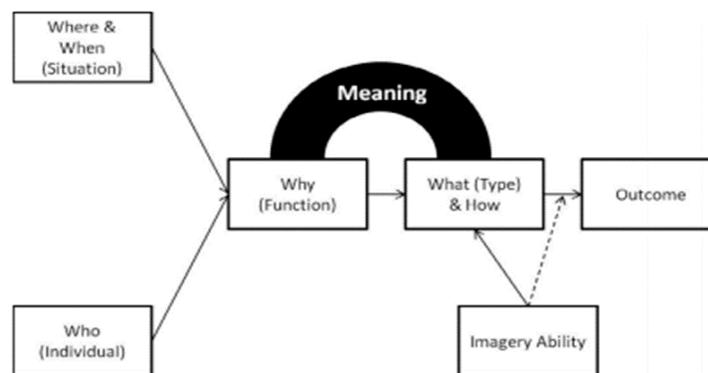


Figure 2. Revised model of mental imagery use in sport (Cumming & Williams, 2013).

Researchers during recent years have focused on how imagery is used in sports, primarily with athletes (for a review see Cumming & Williams, 2013) and coaches (e.g., Short, 2012;

Short, Smiley, & Ross-Stewart, 2005). Athletic trainers are also key personnel to a sports team. Although imagery use by ATs has been researched very little, imagery use by other healthcare professionals has been researched more extensively leading to the belief that ATs may also use imagery. Two examples of other healthcare professionals using imagery are nurses (Speck, 1990; Stephens, 1992) and surgeons (Hall, 2002; Sanders, Sadoski, Bramson, Wiprud, & Van Walsum, 2004). In these studies, the researchers looked at how imagery helped them learn and perform a specific skill set (e.g., surgical skills, injection) and regulate psychological states (e.g., anxiety). Sanders et al. (2004) recommended using imagery in conjunction with physical practice to help learn and perform specific skills. Like surgeons and nurses, ATs have a specific skill set that they need to perform with athletes in the sport setting. An example of a skill and situation an athletic trainer may encounter that could be practiced with imagery is how they would transport and prevent further injury to a football player, who axial loaded during a tackle and suffered a cervical spine injury.

To date, little research has been published on how imagery is used by ATs. Listed in Table 1 are four articles related to how ATs are prepared during their undergraduate education by certified ATs (Cramer-Roh & Perna, 2000; Kampoff et al., 2010; Stiller-Ostrowski, Gould, & Covassin, 2009; Stiller-Ostrowski & Hamson-Utley, 2010). An additional two articles are related to how ATs use imagery with injured athletes (Clement, Granquist, & Arvinen-Barrow, 2013; Hamson-Utley, Martin, & Walters, 2008). Only one research study shows results on how both certified and student ATs actually use imagery (Monsma et al., 2011).

Knowledge of imagery is a required competency for ATs (Monsma et al., 2011). A study done by Stiller-Ostrowski et al. (2009) looked at the preparation level of recently certified ATs ( $n = 11$ ) in the area of psychosocial intervention using focus groups. Qualitative results showed

Table 1. Imagery Mentions in Athletic Training Literature

<i>Author(s)</i>	<i>Population</i>	<i>Purpose</i>
Cramer-Roh, & Perna (2000)	ATs	Presented the rationale that certified athletic trainers may require structured educational training in the psychological aspects of injury.
Kamphoff et al. (2010)	AT students	Explored athletic training students' perceptions of the importance and effectiveness of psychological skills in the rehabilitation of sport injury.
Stiller-Ostrowski, Gould & Covassin (2009)	AT students	Evaluated the effectiveness of an educational intervention in increasing psychology of injury knowledge and skill usage in AT students.
Stiller-Ostrowski, & Hamson-Utley (2010)	ATs	Assessed ATs satisfaction with educational preparation within the Psychosocial Intervention and Referral content area.
Clement, Granquist, & Arvinen-Barrow (2013)	ATs	Determined perceived psychological responses and coping behaviors athletes may present to ATs, psychosocial strategies currently used with their athletes, psychosocial strategies ATs deem important to learn more about, and ATs' current practices in referring athletes to counseling or sport psychology services.
Hamson-Utley, Martin, & Walters (2008)	ATs and Physical Therapists	Examined attitudes of ATs and Physical Therapists on the effectiveness of mental imagery, goal setting, and positive self-talk on rehabilitation and recovery speed of injured athletes.
Monsma et al. (2011)	ATs and AT students	Examined imagery use by athletic training student and certified athletic trainers using an adapted version of the Sport Imagery Questionnaire



that athletic training education programs were adequately preparing students in the area of psychosocial intervention which included mental skills training to use for themselves and with athletes. Richardson and Latuda (1995) offered four steps on how to add imagery to a rehabilitation program, which they hoped would be used by ATs. Although this protocol was more geared towards helping the athletes learn how to use imagery during an injury; they suggested that the imagery protocol could be used by athletic training professors to help student ATs use imagery to learn different tasks and how they would handle particular situations. The protocol included introducing imagery to athletes, evaluating the athlete's imagery ability, assisting the athlete in developing basic imagery skills, and providing tips on the adjunctive use of imagery in a rehabilitation program. Even though most ATs believed in learning about the psychological aspects of sport during the education process, only about 50 percent of undergraduate AT students reported taking a sport psychology class or having specific training in this area (Kamphoff et al., 2010). Although half of the students surveyed had not taken a class in sport psychology, they all believed that using applied sport psychology techniques with injured athletes was effective.

Researchers have shown that injury rehabilitation programs that include the use of imagery may benefit through higher adherence rates, faster recovery times for the athletes including the maintenance of muscle strength (Clark, Mahato, Nakazawa, Law & Thomas, 2014; Hamson-Utley et al., 2008). Hamson et al. (2008) focused on the use of psychological skills with the athlete during an injury and found that ATs held a positive attitude on the effectiveness of psychological skills to improve the rehabilitation process. Clement et al. (2014) seconded these findings in their research; ATs in the sample population favorably used psychological strategies with their athletes. ATs appear to be mindful of the psychological ramifications that athletes

often experience following an injury and recognize that imagery is a skill that could benefit the athlete when doing their rehabilitation. ATs also expressed a desire to increase their current knowledge and understanding of psychological strategies in order to provide the best care and advice to injured athletes. Learning to use imagery with athletes may help the AT use it for their own purpose.

To date, there has only been one research study done looking at how ATs use imagery for their own benefit or purposes. Monsma et al. (2011) looked at the cognitive and motivational functions of imagery used by certified and student ATs. Participants completed an adapted version of the Sport Imagery Questionnaire (SIQ: Hall, Mack, Paivio, & Hausenblas, 1998) measuring imagery use, function, and direction. The questions included in the SIQ are in five categories based on Paivio's (1985) taxonomy of cognitive and motivational functions of imagery. The five functions are: CS (to help learn and perform new skills), CG (to help learn and perform new strategies), MS (to effect goals/motivation), MG-A (to effect arousal or anxiety), and MG-M (to effect confidence) (Monsma et al., 2011; Short, Monsma, & Short, 2004). They called the modified questionnaire the "Imagery Use by Athletic Trainers Questionnaire" (IUATQ). For each of the 30 questions, the ATs rated how often they used images on a 7-point Likert scale (1 = *rarely* and 7 = *often*) and for those images that they used, they answered "why" they used them (with 5 choices: skills, strategies, goals/motivation, arousal, and confidence). For direction, participants chose either "helps" or "hurts" their performance. Results from their comprehensive study showed that out of the 93 participants, only 23% reported having imagery training, 50% reported using imagery with their athletes, and 86% believed that using imagery enhanced their duties. Descriptive results showed that for imagery use, MG-M was used the most followed by CS, CG, MG-A and MS. For function, participants could select more than

response(to get a clear idea of the many reasons “why” ATs may use certain images), the frequency analyses showed that different ATs use the same image for different functions, and that one image served several functions at the same time. The ATs reasons for using imagery were most often confidence, followed by anxiety, goals, and skills and strategies. Related to direction (i.e., “does the image help or hurt your performance?”), ATs overwhelmingly indicated that their imagery use helped them become a better athletic trainer by rating most images as helpful. There were a few MG-A and CG images that participants perceived as hurting their performance (e.g., continuing with their plan even when performing poorly).

Other results, using the background information questions, showed that gender and the work setting such as sport, industrial, and military, was not related to imagery use, but there was a difference in imagery use and education level with the less educated/experienced using more imagery (Monsma et al., 2011). Overall, the authors concluded that all types of imagery were being used by ATs (mostly for confidence and rehearsing skills and strategies) and that the ATs believed that their imagery use helped job performance.

In sum, ATs are healthcare professionals that work with the athletic population. These professionals use sport psychology techniques like imagery with athletes and they have also been shown to use the psychological skill of imagery for their own benefit. There has only been one quantitative study looking at how imagery is used by ATs for their personal use. In that study, Monsma et al. (2011) stated that it is possible that ATs may be using images for functions not represented by the IUATQ and that researchers could explore this idea further by conducting qualitative studies. The purpose of the present study was to conduct an in-depth exploration of imagery use by athletic trainers by investigating if ATs use imagery and what, where, when, and

why they image using a qualitative research method. Unique to this study is information on why some ATs do not use imagery.

The “4W” format (see Munroe et al., 2000) was used to look at what, when, where, and why athletic trainers use imagery in their professional careers. “What” refers to imagery content, “Where” relates to the location in which imagery is used, “When” refers to the timing of the use of imagery, and “Why” relates to the reasons for using imagery (function). By using the 4W format, other types of images used by ATs that were not included in the forced choice structure of the IUATQ used by Monsma et al. (2011) may be discovered. Other imagery-related questions, such as who advised/encouraged you to use imagery were included. This question has not been looked at before in an imagery study involving ATs and was followed by asking ATs who they believe should be teaching them about imagery. Understanding why ATs use imagery is important because the results could have implications for how to introduce ATs to imagery and to encourage their own use of imagery to learn, practice and perform skills and strategies, modify cognitions and regulate emotional states.

## CHAPTER II

### METHOD

#### Participants

Participants were 219 ATs (94 females, 124 males, one who did not answer this question). Their ages ranged from 22 to 64 years ( $M = 36.50$ ,  $SD = 9.70$ ), and they had been involved in Athletic Training for 17.1 years ( $SD = 9.00$ , Range: 4 - 43). All of the participants were Certified (regular = 213, student = 6). Most worked in collegiate settings (Division I = 44, Division II = 28, Division III = 22, NAIA = 8), and others worked in High Schools ( $n = 69$ ), Hospital/Clinical/Outreach ( $n = 32$ ), and “other” settings ( $n = 16$ ). Table 2 includes other descriptive information such as position, number of years as Certified AT, number of years as Graduate Assistant, and number of years as an undergraduate AT student. The information is presented separately for those who used imagery, those who didn’t and the total sample.

Table 2. Descriptive Statistics for Background Information.

	<i>Do Not Use</i>	<i>Use It</i>	<i>Total</i>
Gender			
Female	19	75	94
Male	23	101	124
No Answer	0	1	1
Age (years)			
Mean	36.6	36.5	36.5
SD	9.2	9.9	9.7
Range	24 – 56	22 – 64	22 – 64
Position			
Assistant Athletic Trainer	7	36	43
Associate Athletic Trainer	2	6	8

Table 2 cont.

	<i>Do not use</i>	<i>Use it</i>	<i>Total</i>
Director of Athletic Training	4	22	26
Department			
Graduate Assistant Athletic Trainer	0	7	7
Head Athletic Trainer	16	76	92
Other	11	27	38
No Answer	2	3	5
Employment Setting			
Collegiate – Division I	4	40	44
Collegiate – Division II	3	25	28
Collegiate – Division III	8	14	22
Collegiate – NAIA	1	7	8
High School	12	57	69
Hospital/Clinical/Outreach	12	20	32
Other	2	11	13
No answer	0	3	3
Certification Status			
Certified – Regular	42	171	213
Certified – Student	0	6	6
# of years Certified AT			
Mean	13.4	12.4	12.6
SD	9.2	8.8	8.8
Range	1 – 34	0 – 41	0 – 41
# of years Graduate Assistant			
Mean	.8	1.3	1.2
SD	.8	1.0	1.0
Range	0 – 2	0 – 6	0 – 6
# of years undergraduate			
Mean	3.7	3.3	3.4
SD	1.1	1.1	1.1
Range	0 – 6	0 – 7	0 – 7
Total # of years in Athletic Training			
Mean	18.2	16.8	17.1
SD	9.5	8.9	9.0
Range	4 – 41	4 – 43	4 – 43

## Measures

The questionnaire consisted of 36 items split into different sections (see Appendix A).

The first section included 9 items related to the participant's demographics (e.g., age, gender,

position, employment setting, certification status, and years of experience) and was used to describe the sample. The second section started with the following description of imagery:

*Take a second and think about an apple. Perhaps you want to shut your eyes. Can you see an apple in your mind? Is it red or green? Are you holding it in your hand? Is it cold? Can you taste the tartness of it? Can you hear the sound of the first crunchy bite?*

**USING YOUR MIND IN THIS WAY IS USING IMAGERY.**

*Imagery is an experience that mimics real experience. We can be aware of “seeing” an image, feeling movements as an image, or experiencing an image of smell, tastes or sounds without actually experiencing the real thing. Imagery differs from dreams because we are awake and conscious when we form an image.*

*This survey is about how you use imagery in relation to your athletic training duties (not about eating apples!).*

*Imagery has also been called mental rehearsal or mental practice. Some ways you may use imagery include seeing/feeling yourself practice a specific task in your mind, or seeing yourself responding to an injury during practice or game (and feeling the arousal and other emotions associated with it), or seeing yourself working on an athlete, or rehearsing what you will do or say to an athlete in your mind.*

*Simply stated, we are interested in learning about the images you use while you are engaged in your duties as an athletic trainer. We recognize that you may have used imagery when you were an athlete or in other areas, but for this study, our focus is on how athletic trainers use imagery.*

Questions that follow asked who participants learned imagery from and who they thought should have taught them how to use imagery (e.g., instructors, advisors, athletes, etc.). The next questions (rated on a 0 = *not at all*, 1 = *a little/rarely*, 7 = *very/often*) were about imagery ability (“how well do you feel you are able to image”), confidence in using imagery (“how confident are you in your ability to use imagery?”), and imagery effectiveness (e.g., “how helpful or effective do you feel imagery has been for you” and “has imagery even been harmful to you?”). The scales for the “how helpful (or effective) do you feel imagery has been for you?” included a -1 option (i.e., Not helpful at all, because I don’t use it), a 0 option (i.e., Not helpful at all, but I have/do use it), and other options were 1 = *a little helpful* to 7 = *very helpful*. Participants were then

asked if they used imagery in their role as an AT, and if they responded “no” they were asked to explain why not. If they responded yes, then they were asked additional questions about the senses they used in imagery and their imagery perspective. They also completed the what, where, when, and why questions including specific questions related to Paivio’s (1985) model (e.g., to learn and/or perform new athletic training skills, to help you plan how to do things, to help you deal with nervousness or anxiety, used imagery relative to your confidence, used imagery related to your motivation and/or goals).

All of the items on the questionnaire were based on previous research using the 4W format (e.g., Cumming & Williams, 2013; Munroe et al., 2000; Short et al., 2005) or from other descriptive imagery studies (Monsma et al., 2011; Short, 2012; Short et al., 2004; Short, Tenute, & Feltz, 2005). In terms of the psychometrics for this questionnaire, it had obvious face and content validity, and test-retest reliability using a subset of eight ATs showed consistency in responses over a one week period.

**Procedure.** Once Institutional Review Board (IRB) approval was obtained, the ATs were selected through a bought sample of 1000 names and emails from the National Athletic Trainers’ Association (NATA). To be on the NATA membership list, an AT pays a yearly fee which gives them access to specialized services. They were emailed a request to participate and a link to the survey. Included in the directions was a statement that completing the survey served as providing consent. Typical response times were 20-30 minutes. Follow-up reminders to complete the survey were sent three times.

**Data analysis.** For all categorical data (i.e., personal = gender, current position, employment setting, and certification status; imagery related = “do you think your athletic training teachers/instructors/supervisors should or should have advised/encouraged use of



imagery,” “is imagery harmful (yes/no),” “how did you first learn to use imagery,” “what senses are used,” and “what perspective do you use”) frequency analyses were calculated.

For all quantitative data (i.e., personal = age and years of experience; imagery related = imagery ability, confidence using imagery, imagery effectiveness, and how often do you use imagery) means, SDs, and ranges were computed.

For all open-ended questions (i.e., who they learned imagery from and who they should have taught them to use imagery, how it is harmful, why you don't use imagery, and what, where, when, and why imagery was used) researchers used qualitative analysis. Responses were divided into specific meaning units (Nordin & Cumming, 2005). The meaning units were sorted into more broad categories. These analyses were done by the researchers independently and then together, and disagreements were resolved by discussion. Frequencies were reported to show how many times specific responses were mentioned by ATs.

## CHAPTER III

### RESULTS

#### Background Imagery Information

Questions asked participants who had advised or encouraged them to use imagery for athletic training duties, did they think their athletic training teachers/instructors, supervisors should have advised or encouraged the use of imagery, and who they think should be responsible for advising, encouraging, or teaching ATs to use imagery. For the open ended question “who has advised or encouraged you to use imagery for your athletic training duties” (see Figure 3), 292 meaning units were given from 212 responses.

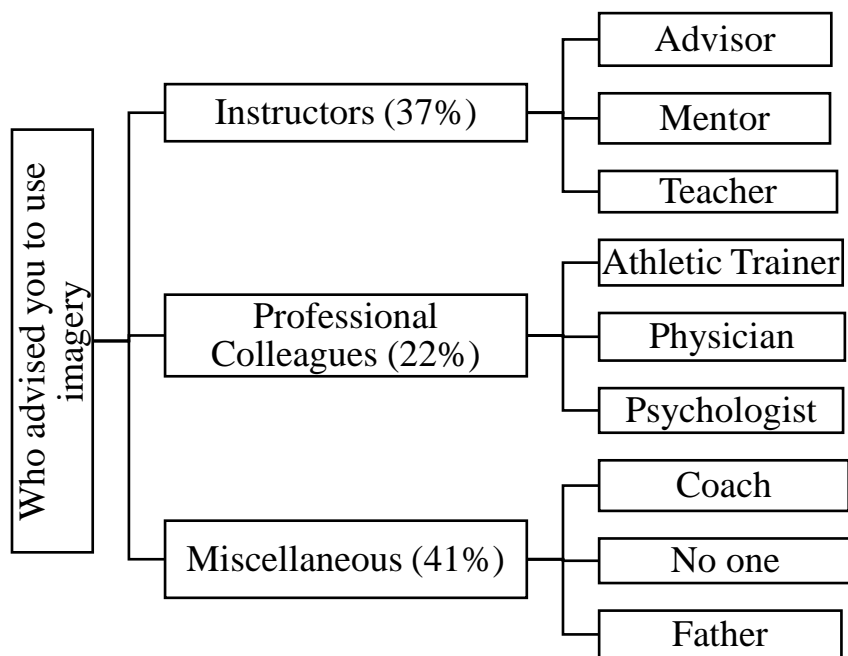


Figure 3. Qualitative data analysis for “Who advised you to use imagery?”

The meaning units were grouped into three categories. The first category was “instructors” ( $n = 109/292$ ; 37%), which included responses such as “advisor,” “mentor,” and “teacher.” The next category was “professional colleague” ( $n = 65/292$ ; 22%), examples of responses were “athletic trainer,” “physician,” and “psychologist.” The last category was “miscellaneous” ( $n = 118/292$ ; 41%), which contained responses like “coach,” “father,” and “no one.” Over all, ATs thought that athletic training teachers/instructors/supervisors should (87% of 218 responses) advise or encourage the use of imagery.

For the open ended question “who do you think should be responsible for advising, encouraging or teaching athletic trainers to use imagery” (see Figure 4) there was 295 meaning units from 197 responses.

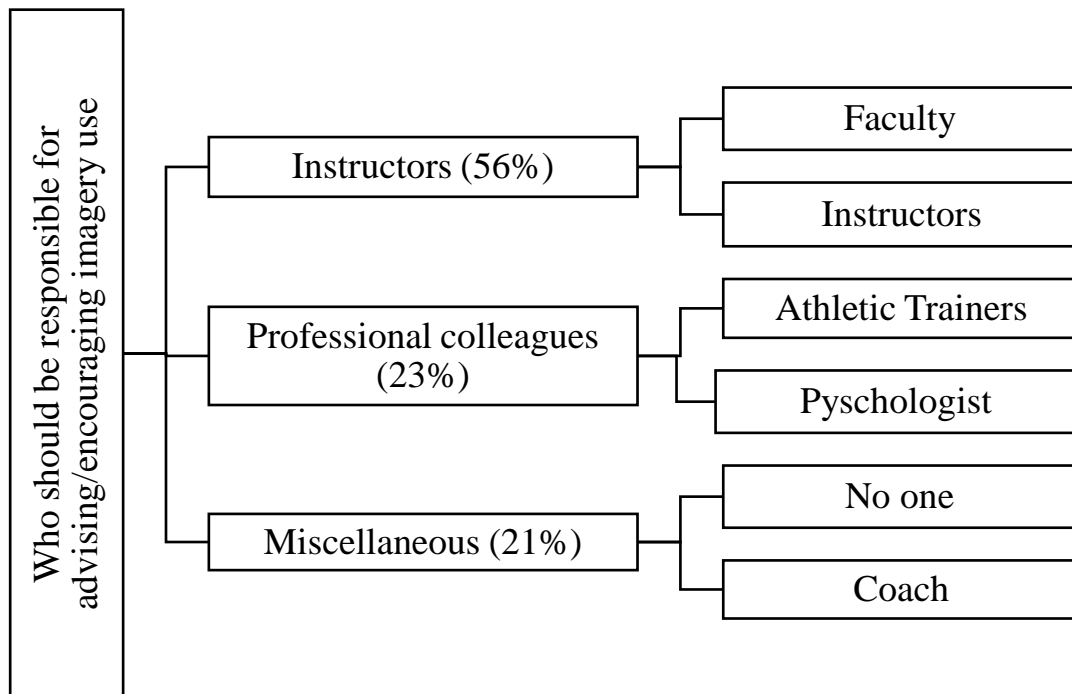


Figure 4. Qualitative data analysis for “Who should be responsible for advising, encouraging or teaching ATs to use imagery?”

The meaning units were grouped into three categories. The first category was instructors ( $n = 164/295$ ; 56%) which included examples such as “faculty,” and “instructors.” The second category was “professional colleagues” ( $n = 68/295$ ; 23%) and example of responses were “athletic trainers,” and “psychologist.” The final category was “miscellaneous” ( $n = 63/295$ ; 21%), which included examples like “coach,” and “no one.”

### Imagery Use

Participants were asked how often they used imagery in their role as an AT. Forty-two participants (19% of the sample) selected that they do not use imagery at all. Responses to the open-ended question “why do you not use imagery” were provided by 36 participants and because they could give multiple reasons there were 43 meaning units that were qualitatively analyzed into four categories (see Figure 5).

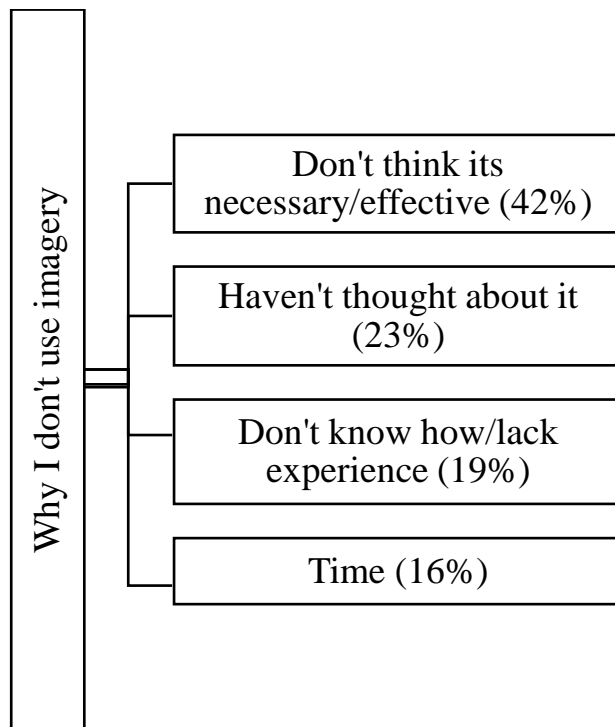


Figure 5. Qualitative data analysis for “Why you don’t use imagery?”

The first category for why you don't use imagery contained responses related to "don't think its necessary/effective" ( $n = 18 / 43$ ; 42%). Example of responses that fit in this category were: "Not clinically practicing," "I'm well trained," and "Why would I imagine doing something instead of just going ahead and doing it, or practicing it in an educational setting?"

The second category for why you don't use imagery contained responses related to "haven't thought about it" ( $n = 10 / 43$ ; 23%). Example of responses that fit in this category were: "not used in my education," "It has never occurred to me to use it as a method to improve my athletic training skills," and "I never think about using it." The third category for why you don't use imagery contained responses related to "don't know how/lack experience" ( $n = 8/43$ ; 19%). Example of responses that fit in this category were: "I don't feel I have enough experience with the subject to use it with my athletes," "It was not introduced to me in that athletic training setting, until now." The fourth category for why you don't use imagery contained responses related to "time" ( $n = 7 / 43$ ; 16%). Example of responses that fit in this category were: "Not enough ATCs," "Do not have enough time to devote to imagery at present time," and "Not enough time to sit and reflect in my job."

Responses to questions about imagery ability, confidence in using imagery, and imagery effectiveness are shown in Table 3.

Table 3. Descriptive statistics for imagery ability, confidence using imagery, and imagery effectiveness.

	<i>Do Not Use</i>	<i>Use It</i>	<i>Total</i>
Imagery Ability			
Mean	3.73	4.85	4.64
SD	2.25	1.51	1.72
Range	0 – 7	0 – 7	0 – 7
Confidence			
Mean	3.12	4.66	4.37
SD	2.20	1.62	1.84

Table 3 cont.

	<i>Do Not Use</i>	<i>Use It</i>	<i>Total</i>
Range	0 – 7	0 – 7	0 – 7
Imagery Effectiveness			
# of -1	29	4	33
# of 0's	4	4	8
Mean	3.11	4.42	4.35
SD	1.76	1.74	1.76
Range	1 – 6	1 – 7	1 – 7

\*Imagery effectiveness had options ranging from -1 to 7; the -1 option was “Not helpful at all, because I don’t use it,” 0 option was “Not helpful at all, but I have/do use it,” and the other options ranged from 1 = *a little helpful* to 7 = *very helpful*. Values are for only those 1-7 scores.

One-hundred and seventy-seven participants selected that they do use imagery (use mean = 3.69, SD = 1.84, Range = 1 – 7). Only these participants completed the rest of the questions. Answers to questions related to how they first learned to use imagery (see Table 4), what senses they use (see Table 5), and what perspective they use (see Table 6). For “how they first learned to use imagery” and “what senses they use” the participant could select multiple answers.

Results for how they first learned to use imagery showed most participants did not learn how to use it from anyone ( $n = 75/238$ ; 32%), but those who did learn about it stated they “learned about it in class” ( $n = 54/238$ ; 23%). For senses, participants selected vision ( $n = 163/355$ ; 45%) for used the most followed by auditory ( $n = 87/355$ ; 25%) and used taste ( $n = 9/355$ ; 3%) the least. Most participants used the internal perspective ( $n = 84/171$ ; 49%) when using imagery as an AT.

Table 4. How did you first learn to use imagery?

	<i># of Responses</i>	<i>% of Responses</i>
Learned in Class	54	23%
Coach	35	15%
Athletic Trainer teacher/instructor	44	18%
Book/manual	17	7%
No one	75	32%
Other	13	5%

Table 5. Senses used when using imagery.

	<i># Use it</i>	<i>% Use it</i>
Vision	163	45%
Smell	18	5%
Taste	9	3%
Touch	78	22%
Auditory	87	25%

Table 6. What perspective does your imagery take?

	<i># Use it</i>	<i>% Use it</i>
Internal	84	49%
External	8	5%
Both	79	46%

**What.** Responses to the open-ended question “what do you image” were provided by 155 participants and because participants could provide more than one answer, 399 meaning units were pulled from the responses (see Figure 6). Eight categories were created from the meaning units provided. The first category was “evaluation and diagnosis” ( $n = 101/399$ ; 25%), which created three subcategories which included “anatomy and physiology” ( $n = 55/101$ ; 54%), “evaluation” ( $n = 27/101$ ; 27%), and “mechanism of injury” ( $n = 19/101$ ; 19%). Example of responses for this category included: “The body and how things are in relation to each other,” “Rehearsal of injury evaluation,” and “Visualize a MOI by what the athlete describes for their MOI.” The second category was entitled “treatment and rehabilitation” ( $n = 108/399$ ; 27%) which included four subcategories: “rehabilitation” ( $n = 55/108$ ; 51%), “taping/wrapping” ( $n = 27/108$ ; 25%), “healing” ( $n = 16/108$ ; 15%), and “positive outcomes” ( $n = 10/108$ ; 9%). Examples of responses to this category included “Role of exercise in rehab and prevention of injuries,” “Direction a particular tape job should be applied,” “Scenes that encourage calm and

confidence,” and “The athlete being able to participate in game without pain or limitations.”

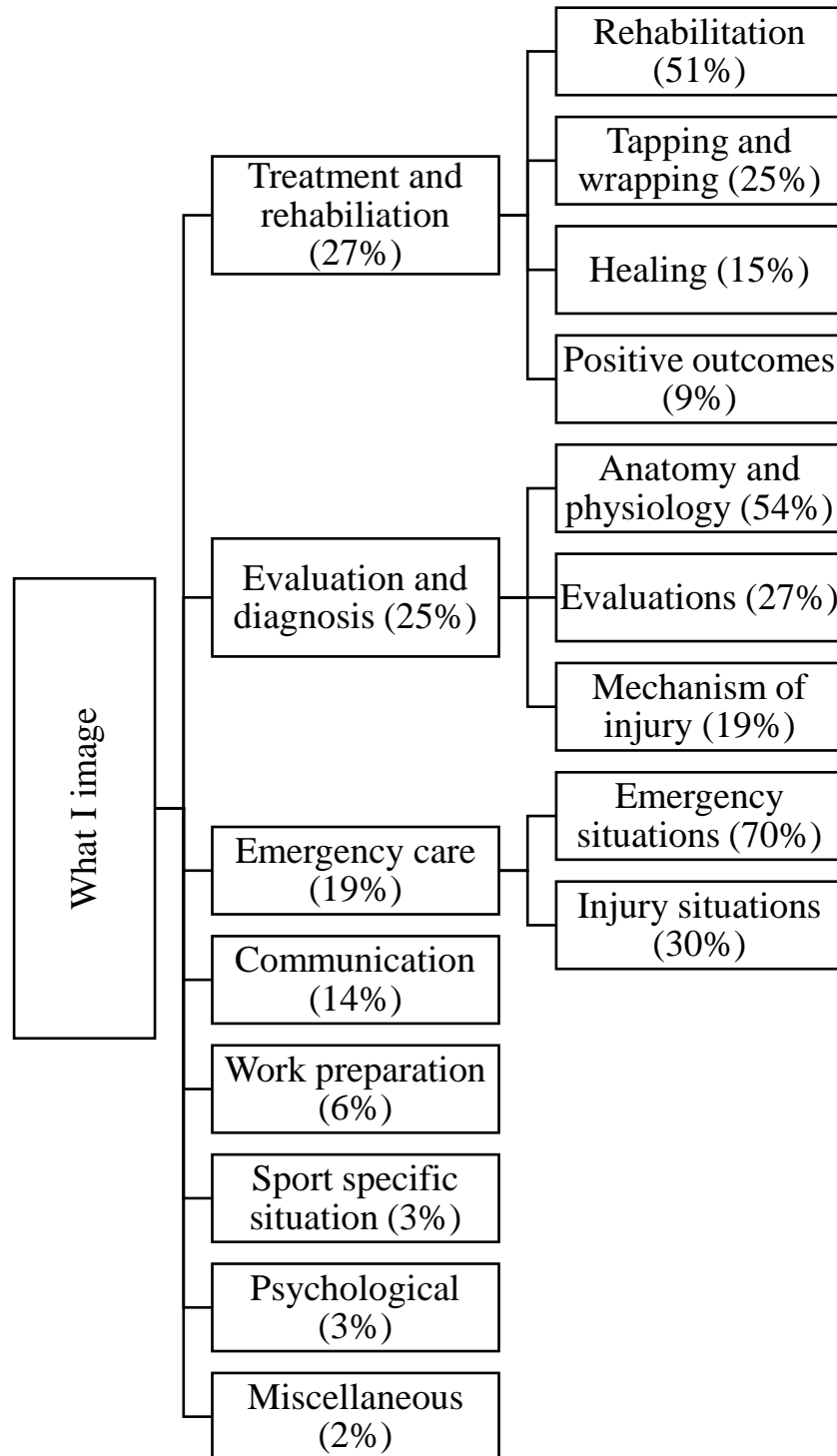


Figure 6. Qualitative results for “What do you image?”



The next category was “emergency care” ( $n = 77/399$ ; 19%) which consisted of two subcategories: “emergency situations” ( $n = 54/77$ ; 70%) and “injury situation” ( $n = 23/77$ ; 30%). Examples of responses for “emergency care” included “Head injuries that require CPR and spine boarding,” “To replay a particular injury – what would the athlete have been doing to cause that particular injury, etc.,” and “How to handle limb threatening situations.” The fourth category was “communication” ( $n = 57/399$ ; 14%), and examples of responses for this category included “Response of preparing to deal with a coach,” “I may play out through imagery having to explain to parents an especially difficult injury and the athletes’ plan of care in order to give them the best information possible,” and “What information I will relate to an MD.”

The fifth category was “work preparation” ( $n = 25/399$ ; 6%) which included responses such as “Personally I only use imagery to help map out my day- what I have to do, where I have to go,” “Mental preparation on a road trip for pregame prep as to what potential injuries may exist,” and “Packing my kit.” The sixth category was “sport specific situations” ( $n = 12/399$ ; 3%) which included “Picture yourself coming down from the rebound,” “Sport specific movement patterns during rehab,” and “Situational imagery- making cuts/imagery on defenders to make moves around objects.” The seventh category was “psychological” ( $n = 11/399$ ; 3%) which included responses like “Overcoming psychological issues related to athletes life,” “Situations that bring on anxiety,” and “For athletes who are having stress about a procedure or exam.” The last category “miscellaneous” ( $n = 8/399$ ; 2%) included responses such as “Creating solid community and civic opportunities,” “Psychomotor skills are the most predominant in my use of imagery,” and “Coaches that stimulate fear.”

Questions related to Paivio’s (1985) model showed that ATs use imagery the most for CG followed by CS, MG-M, MG-A and MS (see Table 7). Examples of responses given for different types of items ATs image for the five types of imagery did not show any new information that the main 4Ws did not already show and were not reported.

Table 7. Descriptive results for IUATQ subscales

	<i># Responses</i>	<i>% of 0's</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>
CS	169	11	3.96	1.93	1-7
CG	170	8	4.18	1.92	1-7
MG-A	169	20	3.46	2.11	1-7
MG-M	166	25	3.55	1.99	1-7
MS	169	31	3.46	1.99	1-7

\*Mean, SD, and Range calculated without including those who selected 0 (never use)

**Where.** Responses to the open-ended question “where do you use imagery” were provided by 146 participants and there were 332 meaning units because participants could provide more than one answer to the question (see Figure 7). The units were qualitatively analyzed into eight categories. The first category was “at work” ( $n = 107/332$ ; 32%) which created into three subcategories. The first subcategory was “in athletic training room” ( $n = 71/107$ ; 66%); examples of responses include: “in the athletic training room,” and “in clinic with patients.” The second subcategory “at office” ( $n = 20/107$ ; 19%) includes responses such as: “in office,” “at doctor’s office,” and “at coach’s office.” The final subcategory was “at work” ( $n = 16/107$ ; 15%) and examples of responses include: “inside at work,” and “at work.” The second category for “where do you image” was “at sport venue” ( $n = 79/332$ ; 24%) which included four subcategories: “on the field” ( $n = 55/79$ ; 70%), “on the court” ( $n = 9/79$ ; 11%), “at the gym” ( $n = 5/79$ ; 6%) and “miscellaneous” ( $n = 10/79$ ; 13%). Examples of responses for “miscellaneous” include: “hockey rink,” “on sideline,” and “on slopes.” The third main category was “at home” ( $n = 65/332$ ; 19%) which formed two subcategories: “at home” ( $n = 55/65$ ; 85%), and “in bed”

( $n = 10/65$ ; 15%). The fourth category was “transportation” ( $n = 43/332$ ; 13%) which included two subcategories: “in car” ( $n = 37/43$ ; 86%) and “on bus” ( $n = 6/43$ ; 14%). The fifth category was “everywhere” ( $n = 22/332$ ; 7%). The sixth category was “at school” ( $n = 12/12$ ; 100%) and contained responses like “at school,” “on campus,” and “in the classroom.”

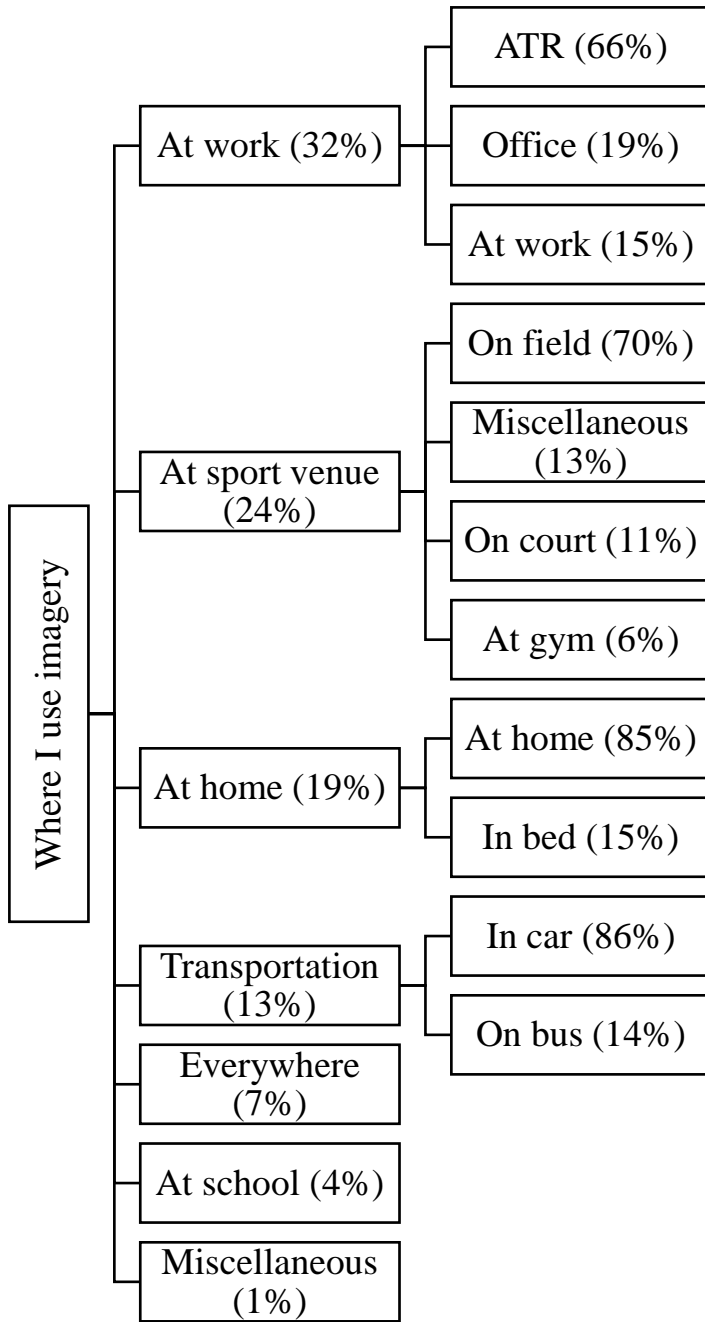


Figure 7. Qualitative results for “Where do you use imagery?”

The final category for “where do you image” was “miscellaneous” ( $n = 4/332$ ; 1%) and contained responses like “where I see a situation unfolding,” “public setting,” and “in a quiet room.”

*When.* Responses to the open-ended question “when do you use imagery” were provided by 135 participants and because participants could give multiple reasons, there were 290 meaning units. The units were qualitatively analyzed into three categories (see Figure 8). The first category for when you use imagery was “work activities” ( $n = 199/290$ ; 69%) which contained three subcategories: “before activity” ( $n = 98/199$ ; 49%), “during activity” ( $n = 73/199$ ; 37%), and “after activity” ( $n = 28/199$ ; 14%). Examples for “before activity” included: “before a presentation,” “before a football game,” “during pre-season when setting everything up.” Examples of responses that fit into “during activity” were: “during athletic events,” “at work,” and “when evaluating an athlete.” Examples of responses provided for “after activity” were: “after athletic events,” “on way home from work,” and “after attending to an athlete.” The second category for when you use imagery contained responses related to “outside of work” ( $n = 70/290$ ; 24%) and contained three subcategories: “around bedtime” ( $n = 33/70$ ; 47%), “downtime” ( $n = 25/70$ ; 36%), and “trigger” ( $n = 12/70$ ; 17%). Examples of responses provided by participants for “around bedtime” were: “before going to bed,” “even in the middle of the night when I awaken and have something on my mind,” and “while in bed.” The third subcategory “downtime” included responses of: “during quiet moments,” “self-meditation in office,” and “when eating.” The final subcategory called “trigger” include those responses such as: “when something triggers a thought in the office,” “sometimes while watching tv/movies,” and “when I’m just thinking about things I need to do.” The final category was called “non-descript” ( $n = 21/290$ ; 7%) and which responses like “all the time” (e.g., “all the time,” “every

chance I get,” and “I am constantly using imagery”).

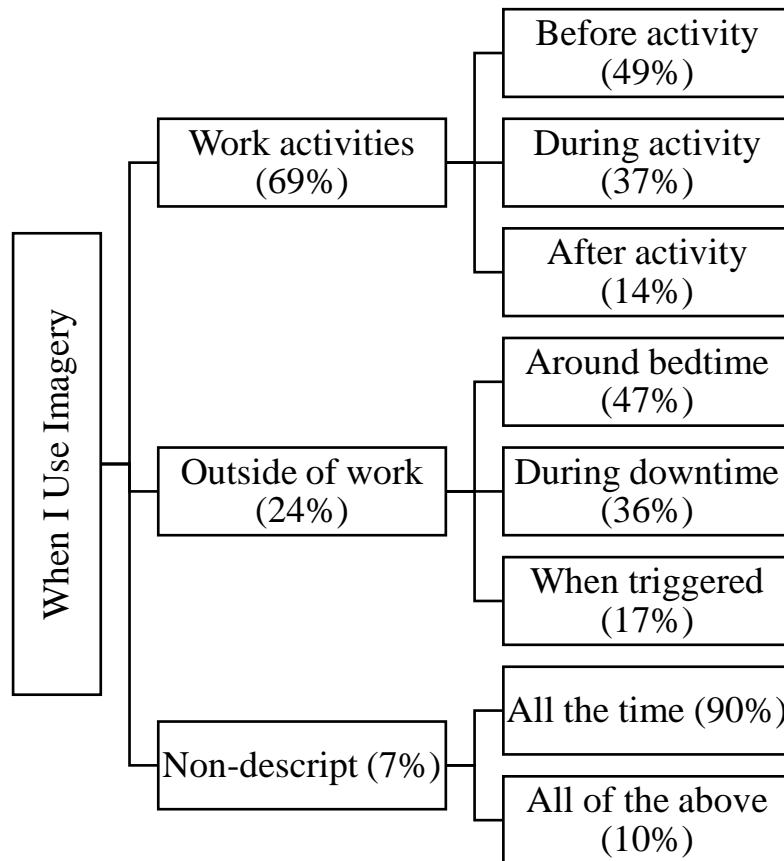


Figure 8. Qualitative results for “When do you use imagery?”

*Why.* Responses to the open ended question “why do you use imagery” were provided by 157 participants and because they could give multiple answers to the question, there were 225 meaning units (see Figure 9). These meaning units were grouped into eight different categories. The first category was “prepare for situations” ( $n = 67/225$ ; 30%) and examples of responses included “it is a way to prepare yourself for any possible situation by going over ‘what if’ in your head,” “to prepare for what may happen and how I can best handle the situation,” and “there are times when a specific event may never happen but you want to still be prepared in the event that it may.” The second category was “help to learn” ( $n = 45/225$ ; 20%), and some of the responses included: “it helps me comprehend what exactly is going on. I am a visual learner, and have

always been able to visualize (use imagery) for just about anything,” “I use it for review of things I have already learned and am trying to remember or making sure that I know for an important situation,” and “it helps me come up with something that could work better than something that is already being done.” The third category was “psychological states” ( $n = 37/225$ ; 16%) which included examples that mentioned goal setting and other psychological states such as confidence. Examples included “to help keep calm when in an emergency situation,” “gives me confidence in what I am talking about or what I am performing,” and “to challenge myself to do better in the future.” The next category was “to help athletes” ( $36/225$ ; 16%) which included responses such as “it gives you more of a visual of what is happening in the body,” “to get athletes to think positive thoughts,” and “to help them visualize healing.” The fifth category was “help with evaluations” ( $n = 14/225$ ; 6%) and some examples of responses included “to assist in identifying possible injuries and their severity,” “when palpating the injury - I see the problem then palpate to feel the problem and use imagery to see what is going on,” and “it helps me be able to get to the root of what is causing a problem with an athlete when they hurt.” The next category was “it works” ( $n = 14/225$ ; 6%) which included responses such as “I have seen it work, so I have begun using it in my clinical practice,” “...imagery works for me. I find my ability to use imagery when practicing new techniques increases my proficiency,” and “I am not sure why, I just always have and continue to because I find it helpful.” The seventh category was “communication” ( $n = 9/225$ ; 5%), and included things related to communicating with coaches, athletes, and parents (e.g., “to help people understand an injury or a situation,” “how to better explain concepts to visual learners,” and “it gives me a chance to develop a clear description to parents when their son or daughter has been injured”). The final category was “miscellaneous” ( $n = 3/225$ ; 1%) which included these responses “to encourage,” “it’s cheap and

easy,” and “not sure.”

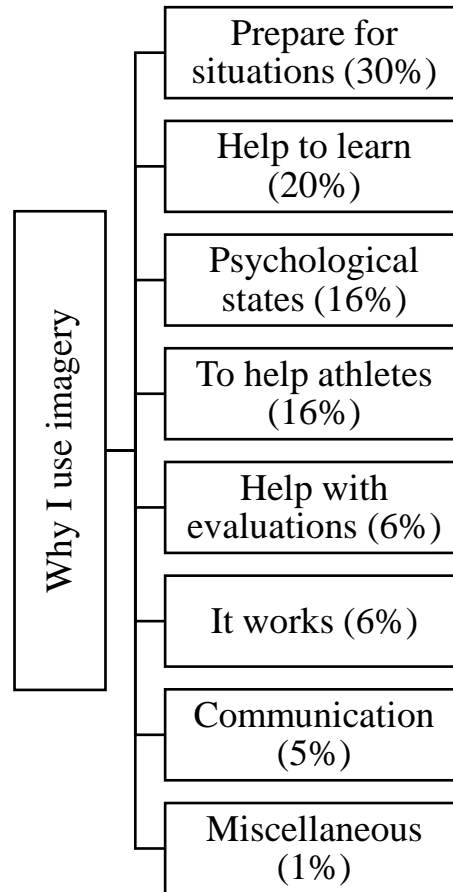


Figure 9. Qualitative results for “Why do you use imagery?”

## **CHAPTER IV**

### **DISCUSSION**

There is little research on the study of imagery use by ATs despite its inclusion in the NATA psychosocial competencies (NATA, 2011). The competency is focused on describing psychological techniques that can be used by the AT for use with patients during injury rehabilitation and return to activity processes. As pointed out by Monsma et al. (2011), if ATs use imagery in their own learning and practice, then they would be more competent and inclined to advocate its use with their patients (i.e., encouraging athletes to use imagery during treatment). For that reason, the purpose of the present study was to conduct an in-depth exploration of imagery use by athletic trainers primarily using the 4W (what, where, when and why) qualitative method.

The results showed that 81% of the sample of certified ATs used imagery. While we interpret this value to be high, it's hard to compare to research done with other samples (e.g., athletes, coaches, surgeons, nurses) because frequency of use values were reported in those studies rather than the absolute value used in this study (yes/no). Our format, along with using zero points on other measurement items, gives a clearer picture of actual imagery use. Among those who said they used imagery, most of them also found it to be effective (mean score 4.42 on 1-7 scale). The relationship between use and effectiveness is consistent with past research (e.g., Ross-Stewart & Short, 2009; Ross-Stewart, Short, & Kelling, 2014; Short, Olson, & Short, 2007). This finding makes intuitive sense as most people won't use techniques that they don't



find effective.

Furthermore when asked “why” they use imagery, “it works” was given as an explanation. Although not as descriptive as we may have liked, this response is actually consistent with past research as well. Coaches who used imagery as athletes were more likely to use imagery for their coaching duties and to advise their athletes to use imagery (Short, Olson, & Short, 2007). To be able to say it “works” means that the ATs in this study have experience using imagery which follows that they would be more likely to use imagery in multiple settings and situations. What we are suggesting is that imagery use is more of a life skill rather than a situation-specific competency.

The generalization that ATs who use imagery would be more likely to advise their athletes to use imagery has some support: “help them visualize healing,” and “to help decrease pain.” But, a limitation that the questions were focused on how ATs use imagery themselves- not how they advise others to use it. Future research, should look at how ATs teach others to use imagery, this would include athletes and students. Interestingly, from past research, we know that how often coaches advised their athletes to use imagery was correlated with how often the coaches used imagery themselves and their knowledge and confidence in their ability to advise athletes to use imagery (Ross-Stewart, Short, & Kelling, 2014). Generalizing those results to this study, we should see that ATs who used imagery would be more likely to advise others to use imagery. A limitation for this study is that we did not ask directly how they tell other people to use it.

Key elements that came from the “why” sort showed that many ATs use imagery to help them learn how to be an AT. Some of the categories include preparing for a situation, help to learn, and help with evaluations. By having these categories it shows that the participants did not

just start using imagery after becoming certified but also during the education process. Examples such as “there are times when a specific event may never happen, but you want to still be prepared in the event that it may,” and “review correct procedures of doing things,” shows that the learning process never ends because of all the different scenarios that may occur throughout one’s career.

Also looking at the “why” we were able to pull out responses related to psychological states and communication, which is more related to service aspect of the job. In the psychological states, we saw that ATs used those for things such as “calming nerves,” and “setting a positive mind frame.” However, the communication reason is something that stands out the most when looking at the results. ATs have many conversations with a variety of different people (e.g., athletes, coaches, parents, etc.). ATs tend to rehearse conversations in order “to help athletes understand the rehabilitation process better,” and others previously mentioned in the results section.

The current study showed different functions through the open-ended question of why do ATs use imagery related to Paivio’s (1985) model. This question showed more ATs use imagery for the functions of preparing, learning, and psychological states. This shows that there are discrepancies because of the method used by each study respectively. We know that the same image can be used for different functions, and different images can be used by different people for the same function.

There seems to be a relationship between why ATs use imagery and the content of their images (“what”). They are using imagery to prepare, learn, etc., and the images are mostly related to evaluation and diagnosis, treatment and rehabilitation, emergency care, and work preparation. Many of the ATs stated that they image emergency situations the most. This result

could be due to the fact that many times ATs do not have to use their skills for emergency situations, so using imagery for those rare situations helps them keep the skills fresh and ready to go when needed.

Unique to the current study, we considered why ATs do not use imagery. This question had not been looked at in previous research. As shown in the results, there were four main reasons to why ATs said they do not use imagery. The main reasons seem to come from a lack of education during their undergraduate programs about imagery. One way to fix this problem is for education programs, with the help of the NATA, to focus more on teaching future ATs about imagery. The other main reason was related to time constraints and the examples were related to not having adequate staffing for the amount of athletes they see/have. “Lack of time” is a common barrier for many things (e.g., exercise, etc.) and is more of an excuse than an actual reason. A way to get around this barrier is to schedule out the day and make time for it, just like people make time for exercise. Other results showed that those who didn’t use imagery had lower perceived imagery ability, lower confidence in their ability to use imagery, and thought that imagery was less helpful. These results make sense – why use a technique that you don’t think is effective? – but likely ties into the lack of education they are receiving about imagery during their preparation. Increasing a person’s confidence in their ability to use imagery has been shown to increase imagery use (Silbernagel, Short, & Ross-Stewart, 2007) and the more you use imagery, the better you are able to use it.

For ATs there are specific domains that their work focuses on (e.g., prevention, evaluation and diagnosis, immediate care, treatment and rehabilitation). After analyzing the “what” section of the questionnaire, many of the descriptions of image content, fit into the domains of athletic training. The two most frequently mentioned domains were treatment and

rehabilitation and evaluation and diagnosis. These results would make sense because an AT's typical day consists of doing rehabilitation and evaluating injuries. Based off of results, ATs use imagery for motivational purposes and cognitive purposes similar to past research with athletes, coaches, and dancers (Martin et al., 1999; Monsma et al., 2011; Nordin & Cumming, 2005; Short 2012). When studying "what" ATs used imagery, Monsma et al. gave choices to choose from in their survey with ATs based on Paivio's (1985) model.

Overall results based off items related to Paivio's (1985) framework were similar to past studies with ATs and athletes (Monsma et al., 2011; Short et al., 2005; Short et al., 2004). Monsma et al. (2011) found that the most frequently used imagery were MG-M, CS, CG, MG-A, and MS. In the current study, the top three most frequently used were the same, however the order was CG, CS, MG-M, MG-A, and MS. Looking at CG (mean 4.18 on a 1-7 scale) shows that ATs are using imagery but not very often. Actually, all of the means are close to the midpoints of the scales showing that imagery isn't used that often by ATs. Of course we believe that it should be used more often because it is an effective technique. Being able to mentally practice skills can be as effective as the physical practice, similar to results found in Sanders et al. (2004) with the performance of surgeons.

Results for where ATs use imagery, showed they mostly used it at work in the athletic training room. These findings were similar to those shown in other studies related to imagery use in the 4W format. For example in Nordin and Cumming (2007), they found that dancers at any level tend to use imagery in the dance context (e.g., near the stage, in the studio, etc.).

An interesting result from the "when" showed that ATs used imagery during work activities specifically before activity (preparation for games/practice). This does not coincide with past research that used the 4W format. Munroe et al. (2000), and Short et al. (2004) showed

that most athletes or exercisers use imagery during their respective activities. This finding is interesting because it coincides with the results found in “why” with preparation aspect.

For the “when” section, a category that was pulled out was “triggers.” This category has been seen in previous research related to exercisers and non-exercisers (Short, Hall, Engel & Nigg, 2004). This category showed certain things can trigger the person to use imagery instead of having a set image to think about. Triggers to use imagery have incredible behavior changing effects- Libby, Shaeffer, Eibach, and Slemmer (2007), had people image voting and showed that people who imaged voting were more likely to actually vote. If you trigger an AT to check supply inventory on a weekly basis, then they may be more likely to do this behavior.

Another question not looked at in previous research with ATs was “has imagery ever been harmful to you” and if the participant answered yes they explained how it had been harmful. An interesting result from this particular question was that participants who stated they use imagery found it to be harmful, not those who do not use imagery. Although there were only a few who stated imagery was harmful, no responses were related to affecting their work performance. Some examples of responses included “spouse cheating on me” and “personal - post traumatic injuries.” Where research related to exercisers and non-exercisers, showed participants imaged negative images related to exercise (e.g., “becoming flushed”) (Short et al., 2004).

Regarding how ATs are taught to use imagery, most of the sample (41%) indicated that they learned to use imagery from parents, coaches, “no one,” and other sources categorized as miscellaneous, followed by instructors and colleagues. The forced choice question also revealed “no one” as a popular source. These results are actually consistent with Monsma et al. (2011) who showed that the ATs and AT students most often picked “other” or “don’t know” as where

they first learned to use imagery. In this study, additional results showed that the sample believed it's the responsibility of the instructors in AT programs to teach ATs how to use imagery for their own use. This result is similar for coaches, according to Short, Olson, and Short (2007) it seems that coaches acknowledge the potential performance-enhancing effects of imagery use by their athletes but need to be taught how to use imagery with their athletes.

These results show that ATs are not being taught how to use imagery, however Clement, et al. (2013), showed that many ATs appear to have the desire to gain more education and a greater understanding of imagery so that they may provide the best care possible. Imagery education programs have been proven to work with coaches in increasing their efficacy in imagery and encouragement of imagery use for their athletes (Callow, Roberts, Bringer, & Langan, 2010). Richardson and Latuda (1995) had come up with a protocol on how to add imagery to a rehabilitation program which was geared towards helping athletes learn how to use imagery during an injury. It was suggested to be used with ATs as well to teach them how to use imagery for particular situations. One change that would need to be made to the current protocol is changing the prompts to focus on images related to athletic training rather than images related to what an athlete may be doing in rehab. The prompt could be as simple as suggesting that AT instructors say to AT students "I want you to visualize a compound fracture of the lower leg. Then see how you would splint the fracture before sending them in the ambulance to a physician." The prompts given in Richardson and Latuda (1995) for how to teach an athlete to use imagery during rehabilitation can remain the same. Examples given included "I want you to close your eyes and picture your knee. Now I want you to bring into focus the area the doctor told you was injured. Picture the x-ray and the unattached ligaments. Once you have these in focus, concentrate on one ligament at a time," and "I want you to imagine yourself physically

going through plays in your mind. Take one play at a time but experience all the aspects of the play. Then add to the mind-practice, going through the plays with teammates and opponents. Go through each play one at a time, just as you saw it practiced on the field.”

## **Limitations**

In addition to the limitations already mentioned (hard to compare to past research), another limitation to this study is the potential for response bias- those ATs who used imagery may have been more likely to respond than those who did not. The response rate for this study was 219 out 1000 emails sent or 21.9%. This number is slightly lower than other response rates for emailed questionnaires. Short, Olson, and Short (2007) and Short and Kelling (2007) both has response rates around 30%.

Clear that some of the participants were confused when responding to this questionnaire. More specifically, we wanted to know about how they used imagery, and responses were how they told athletes to. For example, “.... stimulate correct contraction of a muscle,” and “decrease fear of performing the activities that were involved with the injury.” Future research should examine how ATs advise others to use imagery (e.g., students, athletes, etc.). In the current study it was shown ATs use imagery with others but through this new question, it would show what ATs say or do to help other use imagery on their own with some guidance.

## **Conclusion**

Although most of the ATs did not have formal training for using imagery, it is obvious that many of the ATs in this study use imagery. Many of the images used by the ATs involved preparing for situations which included conversations, emergency situations, evaluations, etc. In

conclusion it is important that instructors teach future ATs to use imagery to give them another tool to use in profession.



## APPENDIX A

### How Certified Athletic Trainers Use Imagery

This first set of questions is all about you...

1. Your age
2. Gender (pick one):
  - Male
  - Female
3. Current Position Title (pick one):
  - Director of Athletic Training Department
  - Head Athletic Trainer
  - Associate Athletic Trainer
  - Assistant Athletic Trainer
  - Graduate Assistant Athletic Trainer
  - Other (please specify)
4. Current Employment Setting (pick one):
  - Collegiate – Division I
  - Collegiate – Division II
  - Collegiate – Division III
  - Collegiate – NAIA
  - High School
  - Hospital/Clinical/Outreach
  - Industrial
  - Military
  - Other (please specify)
5. Certification Status (pick one);
  - Certified – regular
  - Certified – student
  - Not certified
6. Number of years as a Certified Athletic Trainer
7. Number of years as a Graduate Assistant Athletic Trainer
8. Number of years as an Undergraduate Athletic Training Student
9. Total Number of years you have been involved in Athletic Training

Now we are finished with the background information type questions and are moving into the imagery questions:

*Take a second and think about an apple. Perhaps you want to shut your eyes. Can you see an apple in your mind? Is it red or green? Are you holding it in your hand? Is it cold? Can you taste the tartness of it? Can you hear the sound of the first crunchy bite?*

*USING YOUR MIND IN THIS WAY IS USING IMAGERY.*

*Imagery is an experience that mimics real experience. We can be aware of “seeing” an image, feeling movements as an image, or experiencing an image of smell, tastes or sounds without actually experiencing the real thing. Imagery differs from dreams because we are awake and conscious when we form an image.*

*This survey is about how you use imagery in relation to your athletic training duties (not about eating apples!).*

*Imagery has also been called mental rehearsal or mental practice. Some ways you may use imagery include seeing/feeling yourself practice a specific task in your mind, or seeing yourself responding to an injury during practice or game (and feeling the arousal and other emotions associated with it), or seeing yourself working on an athlete, or rehearsing what you will do or say to an athlete in your mind.*

*Simply stated, we are interested in learning about the images you use while you are engaged in your duties as an athletic trainer. We recognize that you may have used imagery when you were an athlete or in other areas, but for this study, our focus is on how athletic trainers use imagery.*

10. Who has advised or encouraged you to use imagery for your athletic training duties? For example, your instructors, teachers, advisors, colleagues, athletes, etc. Please list the people in the box below – not by name – but by their position. If no one ever has, please type “no one” for your response.
  
11. Do you think your athletic training teachers/instructors/supervisors should (or should have) advised/encouraged the use of imagery?
  - Yes
  - No
  
12. Who do you think should be responsible for advising, encouraging or teaching athletic trainers to use imagery?
  
  
13. In general how well do you feel you are able to image?  
Pick a number using the rating scale below where:  
  
0 = not well at all  
1 = A little  
7 = Very well  
0 1 2 3 4 5 6 7

14. In general, how confident are you in your ability to use imagery?  
Pick a number using the following rating scale

- 0 = Not confident at all
- 1 = A little confident
- 7 = Very confident

0 1 2 3 4 5 6 7

15. In general, how helpful (or effective) do you feel imagery has been for you?  
Pick a number below using the following rating scale:

- 1 = Not helpful at all, because I don't use it
- 0 = Not helpful at all (but I have/do use it)
- 1 = A little helpful
- 7 = Very helpful

-1 0 1 2 3 4 5 6 7

16. Has imagery ever been harmful to you?

- Yes
- No

17. If imagery has been harmful to you, please explain how. You may want to include examples of the images that you think have been harmful.

18. How often do you use imagery in your role as an Athletic Trainer?  
Pick a number where:

- 0 = Not at all
- 1 = Rarely
- 7 = Often

0 1 2 3 4 5 6 7

19. If you answered 0 (or not at all) for the question above, why do you NOT use imagery?

If you answered "0" for the question on the previous page and wrote a response for why you do not use imagery, then you can stop completing this survey now.

IF you indicated that you do use imagery (by responding with a number from 1 to 7 in the question above), then please continue on with this survey. The rest of the questions ask for more information about your imagery use.

20. What do you image? List all the things that come to mind. Remember, we are only interested in how you use imagery in your role as an Athletic Trainer.

21. How did you first learn to use imagery? Check all that apply

- Learned in a class
- Coach (from my sport experiences) taught me
- Athletic Training teacher/instructor taught me
- From a book/manual
- No one taught me how, it's something I have always done
- Other (please specify)

22. Why do you use imagery? Type in a response in the box below

Imagery can serve different functions for Athletic Trainers, and in the following sections we are asking you to elaborate on the reasons why use imagery.

23. First, rate how often you use imagery to help you learn and/or perform new athletic training skills.

For example, perhaps you have imaged yourself doing a perfect tape job.

Use this scale:

0 = Not at all

1 = Rarely

7 = Often

0 1 2 3 4 5 6 7

24. Please list some examples of skills you have used imagery to help learn and/or perform.

25. This time, rate how often you use imagery to help you plan how to do things.

For example, strategic planning for game set-up or event coverage.

Use this scale:

0 = Not at all

1 = Rarely

7 = Often

0 1 2 3 4 5 6 7

26. Please list some examples of how you used imagery for planning.

27. Now rate how often you use imagery to help you deal with nervousness or anxiety.

For example, perhaps you have imaged yourself staying calm in a stressful situation.

Use the same rating scale:

0 = not at all

1 = Rarely

7 = Often

0 1 2 3 4 5 6 7

28. Please describe how you have used imagery to help deal with nervousness or anxiety.

29. Rate how often you use/used imagery relative to the confidence you have in yourself as an athletic trainer?

For example, perhaps you have imaged yourself giving a perfect injury presentation to a visiting doctor.

Use the same scale:

0 = Not at all

1 = Rarely

7 = Often

0 1 2 3 4 5 6 7

30. Please list some examples of how you used imagery for your self-confidence.

31. Rate how often you use/used imagery related to your motivation and/or goals?

For example, perhaps you have imaged what it would be like to be a Head Athletic Trainer or work with certain team/athlete.

Use the same scale:

0 = Not at all

1 = Rarely

7 = Often

0 1 2 3 4 5 6 7

32. Please list some examples of situations where you have used imagery related to your motivation and/or goals.

33. When using imagery which of the following senses do you use? (check all that apply)

- Vision (seeing things)
- Smell (smelling things)
- Taste (tasting things)

- Touch (feeling things)
  - Auditory (hearing things)
  - Other please specify
34. What perspective does your imagery take? (pick one)
- Internal – You see things through your own eyes
  - External – You are watching yourself, as if on TV
  - Both – You switch between depending on the task
35. Where do you use imagery?
- Please provide responses in the box below – list all the places that come to mind (for example, on the field, in the athletic training room, at home, etc.)

36. When do you use imagery
- Please provide responses in the box below. Examples of responses may include before, during, after a practice, before, during, after an event, while attending to an athlete, before I go to bed, etc.

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