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## The Impact Grit and Achievement Goal Orientation have on Athletic Training Students' Persistence

### Cover Page Footnote

Doctoral dissertation committee member John "Skip" Cindric, EdD, died October 18, 2020.

## ***The Impact Grit and Achievement Goal Orientation have on Athletic Training Students' Persistence***

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**Purpose:** Athletic training education continues to evolve thereby increasing the importance of student retention. Understanding student motivation through achievement goal orientation and grit scores may help support student's persistence in an athletic training program. The purpose was to determine if a relationship exists between achievement goal orientation and grit to help provide educators a better understanding of their students' reasons for persisting to help improve retention.

**Methods:** An achievement goal orientation survey and grit scale were administered, and quantitative data was analyzed statistically from Commission on Accreditation of Athletic Training Education- accredited programs in good standing for the 2018-2019 academic year. **Results:** A total of 520 professional athletic training students participated. There was a significant main effect ( $F(1,3)=690.0, p<0.001$ ) of goal orientation (mastery (mean $\pm$ SD =  $5.0\pm 0.6$ ), performance-approach ( $3.2\pm 0.7$ ), performance-avoidant ( $2.8\pm 0.7$ ), work-avoidant ( $2.9\pm 0.9$ )) in all athletic training students as all goal orientations were significantly different from one another ( $t\geq(519) 4.4, p\leq 0.001$ ). **Conclusions:** Athletic training students have similar grit scores across all cohorts and classify higher with mastery goal orientation compared to performance-approach, performance-avoidant, and work-avoidant orientations. Educators should understand students' motivation to provide support and challenging tasks for their passion and perseverance for athletic training. **Key Words:** *grit, mastery, performance-approach, performance-avoidant, work-avoidant.*

### ***INTRODUCTION***

Retention of athletic training students in professional academic programs has been recognized as an issue sparking considerable interest.<sup>1</sup> As a matter of fact, retention in undergraduate athletic training programs was self-reported at 81% in professional athletic training programs.<sup>2</sup> Motivation plays a factor in retaining students in these programs and is integral to understand if motivation impacts their persistence in athletic training programs.<sup>3, 4</sup> Program directors understand students possess internal motivation and are goal oriented, but the specific type of goal orientation is unknown.<sup>4</sup> Peer recommends that educators' (academic or clinical) awareness of achievement goal orientation will help motivate athletic training students.<sup>5</sup> However, limited research has been conducted on athletic training student achievement goal orientation and the motivation to persist in a program. Rather, recent scholarship has focused on beliefs of program directors as to why students remain

in programs, and students' beliefs as to why they persist in an athletic training program.<sup>3, 4, 6, 7, 8</sup> Therefore, identifying the different types of goal orientation among students in athletic training programs could allow stakeholders to understand student's motivation as related to persistence.

Research on master-level students indicates that program directors believe students persist due to commitment to the profession and interpersonal relationships.<sup>6</sup> Being committed to an academic major is a long-term goal which can be reflective of having grit for athletic training. Grit is defined as having the passion and perseverance to achieve long-term goals.<sup>9</sup> When studied in coaches, the more grit a coach possessed the more likely they believed the resources available to them would help overcome challenges.<sup>10</sup> In West Point Cadets, cadets with increased grit were more likely to finish training when compared to their cognitive and physical abilities.<sup>11</sup> Although studied in

different disciplines, grit has not been studied in athletic training education and may provide a useful, quantifiable measure of student persistence.

Retention is an issue in athletic training education and motivation plays a role in persistence.<sup>1, 3, 4</sup> However, further knowledge is warranted to analyze students' perspectives on persistence across different cohorts in athletic training programs.<sup>12</sup> In order to fully understand this relationship, research focusing on athletic training students in professional programs and their perceptions of what motivates them to persist through the program requires further investigation. Currently, a gap exists in the education literature that analyzes student achievement goal orientation and grit as it relates to persistence in an athletic training program.

The purpose of the research was to determine if a relationship exists between achievement goal orientation and grit in athletic training students enrolled in Commission on Accreditation of Athletic Training Education (CAATE)-accredited professional programs. With the understanding of achievement goal orientations and grit, recommendations can be made to help educators address and promote different student achievement approaches in regard to their motivation which could impact retention rates.

## **METHODS**

Following Institutional Review Board (IRB) approval, a validated achievement goal orientation survey and grit scale were administered through Google Forms.<sup>13, 14</sup> The achievement goal orientation survey was utilized to identify the specific way(s) students were motivated in an athletic training program. Both surveys encompassed achievement goal orientation and grit through Likert scale scoring.

## **Participants**

Purposive sampling was implemented for athletic training students in professional programs, during the 2018-2019 academic

year. Participants consisted of athletic training students in the professional phase of a CAATE-accredited athletic training program. Athletic training students, throughout all entry-level professional athletic training programs, were needed to understand students' persistence and motivation through programs. We contacted all program directors of CAATE-accredited professional athletic training programs for participation via email. Without direct communication with students, response rates relied on the participation of program directors sharing the survey information with their students.

## **Instrumentation**

The instruments used included a validated grit scale and achievement goal orientation survey.<sup>13, 14</sup> Both inventories were merged into one survey for the purpose of the research. The first part of the survey included three basic demographic questions of the participant such as: AT student level (sophomore, junior, senior, or master level) and age. Also, a 'yes' or 'no' question was provided for the participant if they planned to continue in the athletic training program the following academic year but was not analyzed. Once basic demographics were obtained, the participants proceeded to the grit survey. Appendix A contains the full inventory.

To utilize the Grit Scale, Angela Duckworth granted permission for researchers and educators to use the scale for non-commercial purposes.<sup>15</sup> The grit scale was previously evaluated for validity and reliability and found to have an internal consistency score of .84.<sup>14</sup> The grit survey consisted of eight items scored on a five-point Likert-scale. Half of the questions evaluated participant's interest and the other half assessed perseverance of effort. A statement to assess interest included, "I have been obsessed with a certain idea or project for a short time but later lost interest".<sup>9, 14</sup> A statement to evaluate perseverance of effort was, "I finish whatever I begin".<sup>9, 14</sup> The questions to evaluate participants' interest used the following

Likert-scale: 1) very much like me; 2) mostly like me; 3) somewhat like me; 4) not much like me or 5) not like me at all. Questions for perseverance of effort used a variation of the following Likert-scale: 5) very much like me; 4) mostly like me; 3) somewhat like me; 2) not much like me or 1) not like me at all. All scores were added then divided by eight to achieve an overall grit score for the participant. The higher the score (five is the max) the grittier the individual. See Appendix B.

The second part of the survey included a 33-item achievement goal orientation survey which provided an average of each orientation evaluated: mastery, performance-approach, performance-avoidant, and work-avoidant.<sup>13</sup> This survey was tested for reliability and validity.<sup>13</sup> Permission was granted by the original author of the survey, Dr. Christopher Was, to utilize the Achievement Goal Orientation (AGO) survey. The 33-items evaluated are divided into 13 items on mastery orientation, 8 on performance-approach, 7 on performance-avoidant, and 5 on work-avoidant. The following were examples of each of the achievement goal orientation statements: "I am more concerned with improving from week to week than I am in doing better than others in the course." (mastery); "It is important for me to do well compared to others in this class" (performance-approach); "When tests or assignments are returned in this course I do not want others to know how I did" (performance-avoidant) and "I want to do as little work as I have to in this class" (work-avoidant).<sup>13 p. 539</sup> Each item was evaluated on a six-point Likert scale: 1) very untrue; 2) mostly untrue; 3) somewhat untrue; 4) somewhat true; 5) mostly true or 6) very true. The questions in each achievement goal orientation category (i.e., mastery, performance-approach, performance-avoidant, and work-avoidant) were totaled and averaged. All questions assessing mastery goal orientation were totaled and averaged, and the same was completed for performance-

approach, performance-avoidant, and work-avoidant goal orientations, respectively. Therefore, each participant had one score for each achievement goal orientation. The higher the average number to six, for each category, the closer the student identified with a specific goal orientation. Appendix C contains the achievement goal orientation survey.

## Procedures

Google Forms was utilized to administer the survey and manage the data collected. Participants clicked on the provided link and the first page contained the consent form authorized by the University's IRB. The implied consent form included the purpose of the study, why the subject was chosen, length of time the survey was open, and the research benefits. When the participants continued to the next page, he or she provided implied consent to participate in the research study.

Data collection began in the Fall 2018 semester for University/College athletic training students to participate. Prior to beginning, the researcher obtained email addresses of all program directors of professional athletic training programs, master's and bachelor's, in good-standing with the CAATE. The addresses were public information on the CAATE website.<sup>16</sup> At the time the survey was administered, a total of 420 program directors were in the system which met the inclusion criteria.

Similar to previous research, an initial email was sent to all program directors explaining the study during the first week of classes.<sup>2, 6</sup> They were asked to forward the email to their professional-phase athletic training students for participation. Following previous survey research in the field, two weeks after the initial correspondence, a follow-up email was sent to the program directors encouraging student participation with the survey link.<sup>2, 6</sup> Lastly, one week later a final email to the programs directors was sent following past

athletic training education research protocol.<sup>2, 6</sup> One week after the third request, the survey was closed for participation.<sup>2,6</sup> The survey was open for a total of five weeks for participants to respond.

### Analysis

The data was transferred to Microsoft® Excel for Mac (Version 16.10, Redmond, WA) and SPSS Statistics (Version 25, Armonk, NY) for quantitative analysis. To determine statistical significance between dependent variable of grit scores and independent variable of bachelor- and master-level athletic training students, an independent samples t-test was performed. Next, an analysis of variance (ANOVA) assessed statistical significance between grit scores and academic year (sophomore-, junior-, and senior) of the athletic training students.

Differences between achievement goal orientation (mastery, performance-approach, performance-avoidant, and work-avoidant) scores and bachelor- and master-level athletic training students was assessed using a 2 x 4 ANOVA. It was necessary to determine differences, if any, between mastery, performance-approach, performance-avoidant, and work-avoidant scores and athletic training student level (bachelor and master). The ANOVA also allowed us to see differences, if any, between each level of independent variable and achievement goal orientations.

Relationships between athletic training students' grit and achievement goal orientations were also analyzed. A Pearson correlation was conducted between grit scores and mastery, performance-approach, performance-avoidant, and work-avoidant achievement goal orientations among bachelor- and master-level athletic training students, respectively to determine any relationship(s) between athletic training students' grit and achievement goal orientation.

## RESULTS

### Participants

A total of 520 surveys were collected from athletic training students; 426 bachelor-level students (82%) and 94 master-level students (18%). The bachelor-level participants consisted of 116 sophomores (22%), 146 juniors (28%), 164 seniors (32%). The average age of the participants was 21.4 (SD ± 2.73) years and ranged from 18 to 45 years of age. The overall mean age of the athletic training students was 21.4; and the average of each respective cohort included sophomores = 19.7 ± 2.10, juniors = 20.6 ± 2.17, seniors = 21.6 ± 1.55, and master's = 24.1 ± 3.58.

### Response Rate

Athletic training program analytic reports are released in the spring, following the academic year, from the Commission on Accreditation for Athletic Training Education (CAATE). Therefore, at the time of research, the most recent report available was for 2016-2017. According to the 2016-2017 CAATE Analytics Report, a total of 373 athletic training programs and 12,966 students were enrolled in professional programs (bachelor- and master-level).<sup>17</sup> This yielded a response rate of 4% (520 responses/12,966 total students).

In survey research, a large sample size provides better results, but as the size increases, there are lower return rates.<sup>18</sup> The smaller the population the greater the recommended response rate. According to Orcher, a population of 10,000 has a recommended sample size of 370, and a population of 15,000 has a recommended sample size of 375.<sup>18</sup> The current research had an estimated population size of 12,966 and yielded a sample size of 520, which surpassed the recommended sample size for a population of 15,000.

### Grit and Achievement Goal Orientation Scores

Grit scores were calculated utilizing the Grit Scale based on a 5-point Likert scale.<sup>14</sup> The maximum grit score is five indicating high grit,

and the lowest score of 1 specifying low grit. Average grit scores for bachelor-level athletic training students were  $3.78 \pm .48$  and master-level athletic training students were  $3.71 \pm .41$ . Achievement goal orientations (AGO) were divided into four classifications for each cohort (bachelor and master): mastery, performance-approach, performance-avoidant, and work-avoidant. Bachelor-level athletic training students' mean averages

were mastery  $5.01 \pm .55$ , performance-approach  $3.28 \pm .69$ , performance-avoidant  $2.84 \pm .73$ , and work-avoidant  $3.01 \pm .93$ . Master-level athletic training students' mean values were mastery  $5.04 \pm .59$ , performance-approach  $3.12 \pm .79$ , performance-avoidant  $2.78 \pm .79$ , and work-avoidant  $2.87 \pm .91$ . See Table 1 for a complete breakdown of each cohort.

| Variable | Sophomore,<br>Mean $\pm$ SD | Junior,<br>Mean $\pm$ SD | Senior,<br>Mean $\pm$ SD | Masters<br>Mean $\pm$ SD |
|----------|-----------------------------|--------------------------|--------------------------|--------------------------|
| Age      | 19.7 $\pm$ 2.10             | 20.6 $\pm$ 2.17          | 21.6 $\pm$ 1.55          | 24.1 $\pm$ 3.58          |
| Grit     | 3.86 $\pm$ .44              | 3.74 $\pm$ .51           | 3.76 $\pm$ .48           | 3.71 $\pm$ .41           |
| Mastery  | 5.21 $\pm$ .51              | 5.01 $\pm$ .53           | 4.87 $\pm$ .54           | 5.04 $\pm$ .59           |
| PerfApp  | 3.18 $\pm$ .65              | 3.23 $\pm$ .71           | 3.38 $\pm$ .69           | 3.12 $\pm$ .79           |
| PerfAv   | 2.78 $\pm$ .78              | 2.89 $\pm$ .70           | 2.84 $\pm$ .75           | 2.78 $\pm$ .79           |
| WorkAv   | 2.78 $\pm$ .96              | 3.03 $\pm$ .87           | 3.16 $\pm$ .92           | 2.87 $\pm$ .91           |

**Table 1.** Participants' Achievement Goal Orientation and Grit Descriptive Statistics (Abbreviations: PerfApp, Performance-Approach; PerfAv, Performance-Avoidant; WorkAv, Work-Avoidant.)

### Grit Scores

The highest grit score one can achieve is a five, and the mean scores for bachelors-level were  $3.78 \pm .48$  and  $3.71 \pm .42$  for masters-level. As a result, no statistical or practical significance was found between the groups (Independent Samples t-test,  $p=.18$ ). Also, no statistical significance was discovered between grit scores between sophomore-, junior-, and senior-level athletic training students (ANOVA,  $p=.09$ ). Athletic training students' grit scores tended to be similar across all cohorts and did not differ between bachelor- and master-level students.

### Achievement Goal Orientation Classification

The average of each achievement goal orientation classification (Mastery, Performance-Approach, Performance-Avoidant, Work-Avoidant) among bachelor- and master-level athletic training students were analyzed. The averages of each of the bachelor-level students AGO were Mastery  $5.02 \pm .55$ , Performance-Approach  $3.28 \pm .69$ ,

Performance-Avoidant  $2.84 \pm .73$ , and Work-Avoidant  $3.01 \pm .93$ . The master-level students mean AGO were Mastery  $5.04 \pm .59$ , Performance-Approach  $3.12 \pm .79$ , Performance-Avoidant  $2.78 \pm .79$ , and Work-Avoidant  $2.87 \pm .91$ . The analysis of variance yielded no statistical significance of AGO between bachelor- and master-level students ( $p= .36$ ). Therefore, differences between student cohort and achievement goal orientation classification were not present.

No significant main effect was noted between groups of students, bachelor versus master, and achievement goal orientation ( $p=.105$ ). However, a significant main effect between achievement goal orientation classification ( $p<.001$ ) of all athletic training students existed. All athletic training students showed a difference in achievement goal orientation classification, but athletic training student level did not matter. Paired samples t-tests between achievement goal orientation domains demonstrated students were higher in mastery over performance-approach,

performance-avoidant, and work-avoidant ( $p < .001$ ). The analyses demonstrate athletic training students tended to identify higher with mastery orientation and student-level did not play a factor.

### **Achievement Goal Orientation and Grit Correlation**

When examining all professional athletic training students' ( $n=520$ ) grit and AGO, each relationship was statistically significant. There was a moderately weak positive correlation between grit and mastery goal orientation ( $r = .379$ ,  $p < .001$ ), weak negative correlations between grit and performance-approach ( $r = -.212$ ,  $p < .001$ ), and moderately weak negative correlations among grit and performance-avoidant ( $r = -.358$ ,  $p < .001$ ) and grit and work-avoidant ( $r = -.391$ ,  $p < .001$ ). The correlations demonstrated if athletic training students were higher in grit, they also classified higher in mastery goal orientation. In comparison, if athletic training students were higher in grit, they tended to be lower in performance-approach, performance-avoidant, and work-avoidant goal orientations.

### **DISCUSSION**

Based on the previous literature and assumptions, it was confirmed mastery goal orientation was the top achievement goal orientation for athletic training students. However, based on previous research it was assumed grit would be different across cohorts and increase with age, but it did not. There were no differences between cohorts for achievement goal orientation or grit which differed from our original expectations.

Grit scores were not significantly different between bachelor- and master-level ( $p = .18$ ) or sophomore-, junior-, senior-level ( $p = .09$ ) athletic training students. In previous research with grit scores, it was noted older adults reported higher grit scores compared to their younger counterparts, which may have indicated grit increased with age/experience.<sup>14</sup> The same results were not

found with this research. Grit scores of athletic training students decreased overall with age. Sophomore-level average grit score was  $3.86 \pm .44$ , junior-level was  $3.74 \pm .51$ , senior-level was  $3.76 \pm .48$ , and master-level  $3.71 \pm .41$ . Duckworth and Quinn's research focused on participants aged 25 and greater, which was an older population compared to the athletic training students average age of  $21.4 \pm 2.73$  for our study.<sup>14</sup> Therefore, our study contained younger participants which prevented comparison between the two studies.

Future research on grit in athletic training warrants studying across experience level to establish professional grit. Analyzing grit scores across the profession would add to the theory grit grows or does not grow with age or experience. Athletic trainers may possess similar levels of grit, based on the journey, to achieve certification. Although the results did not correspond with past research, it indicated athletic training students, across the cohorts, had similar grit scores.

When achievement goal orientation was analyzed between bachelor- and master-level athletic training students there were no significant differences ( $p = .36$ ) between mastery, performance-approach, performance-avoidant, or work-avoidant goal orientations. The findings indicated achievement goal orientations did not differ significantly between bachelor- and master-level athletic training students. It could imply athletic training students have similar motives for approaching academic tasks and do not differ based on level in an athletic training program. A value of 3.5 or higher, on a six-point Likert scale, indicated a high classification for the specific achievement goal orientation. All cohorts of athletic training students were classified higher with mastery goal orientation (sophomore= $5.21 \pm .51$ ; junior= $5.01 \pm .53$ ; senior= $4.87 \pm .54$ ; entry-level master= $5.04 \pm .59$ ) compared to all other achievement goal orientations. Similar classifications may indicate athletic training

students want to learn and master the content for the long-term application versus absorbing the knowledge to do well on tests and look superior to their peers. Overall, the research demonstrated athletic training students classified higher with mastery goal orientation and there were no significant differences between student level in an athletic training program.

Also, the lack of statistical significance between achievement goal orientations could indicate students may be characterized by more than one achievement goal orientation. According to Harackiewicz et al., students may be selective in their goal patterns based on the task, which could lead to individuals having multiple achievement goal orientations.<sup>19</sup> Overall, it was evident all athletic training student levels, as a cohort, averaged high (> 3.5 on a six-point Likert scale) achievement goal orientation scores at the mastery level (sophomore= $5.21 \pm .51$ ; junior= $5.01 \pm .53$ ; senior= $4.87 \pm .54$ ; entry-level master= $5.04 \pm .59$ ). Past research indicated successful students (GPA > 2.00) were more likely to adopt mastery goal orientation.<sup>20</sup> In many athletic training programs, it is necessary for students to maintain a specified grade point average in order to matriculate through a program, therefore based on previous research it is not surprising to see higher average scores with mastery orientation.

Although the average scores for mastery-goal orientation were higher than performance-approach, performance-avoidant, and work-avoidant goal orientations, a significant difference between bachelor- and master-level students did not exist ( $p = .36$ ). This could indicate athletic training students approach academic tasks in similar ways across cohorts. Also, the average ages of the athletic training students were close (bachelor= $20.8 \pm 2.07$ ) and master= $24.1 \pm 3.58$ ) and would not imply a large age gap difference. Mastery-goal orientation was the orientation which best describes the athletic training students in the sample. However, it does not eliminate

students from adopting multiple goal orientations depending on the task, as discussed by Harackiewicz et al.<sup>19</sup> In light of educational reform, moving to a master's program, it appeared there were no significant differences in student approaches to academic tasks regarding achievement goal orientation.

When examining the different cohorts' AGO scores, the lowest average for mastery was the senior-level students ( $4.87 \pm .54$ ) compared to sophomore ( $5.21 \pm .51$ ), junior ( $5.01 \pm .53$ ), and entry-level master ( $5.04 \pm .59$ ). It could indicate sophomores and entry-level master students were new to the program and eager to be in the major, demonstrating they wanted to gain as much knowledge possible for their future. In contrast, the seniors were close to graduation and may have completed the least amount of work as indicated in the work-avoidant orientation being the highest among the senior cohort. To date this has not been studied in athletic training education or across a large age range to decipher if achievement goal orientation changes with age or differs among athletic training students.

When analyzing the relationships between grit and achievement goal orientation amongst athletic training students, a significant relationship existed. All bachelor- and master-level athletic training students illustrated a moderately weak positive correlation between grit and mastery goal orientation, which indicated as students' grit increased so did their mastery goal orientation. In contrast, negative relationships existed between grit and performance-approach, performance-avoidant, and work-avoidant goal orientations.

The results supported previous literature recognizing relationships between grit and achievement goal orientation in college students. Akin and Arslan discovered a similar

negative correlation between grit and performance-approach and performance-avoidant goal orientations ( $r = -.37$ ,  $r = -.55$ ).<sup>21</sup> Also, a positive correlation between learning-approach goal orientation (also known as mastery) and grit was recognized ( $r = .47$ ) by Akin and Arlan.<sup>21</sup> These findings were comparative to the present research as the participants are college-age, however, the settings were in different countries and disciplines. It is acceptable to recognize the importance of the research, but no comparative literature is available in athletic training education.

### Limitations

One potential limitation to the study was the smaller response rate to the survey. Although 520 athletic training students responded, it was only 4% of the possible population. It can be challenging to generalize the results across all athletic training students without responses from 100% of the athletic training student population. As discussed in the results, the response rate did exceed the recommended sample size indicated by Orcher, however generalization can be difficult.<sup>18</sup>

Another limitation occurred through the communication process seeking student participation. Due to the Family Educational Rights and Privacy Act (FERPA), the researcher could not directly contact the athletic training students and completed all communication through program directors of Commission on Accreditation of Athletic Training Education (CAATE)-accredited athletic training programs, in good standing. During communication with program directors, bounce-back emails and emails from program directors indicating they had withdrawn their accreditation, or the email addresses were no longer in-service restricted communication. This limitation was not in our control, however affected the potential response rate for the study.

Overall, the limitations did not discredit the information discussed, rather it provided suggestions to improve upon in future research areas. Also, many of the limitations were discussed throughout the literature within survey research that included Likert-scales and open-ended questions. Moving forward it would be relevant to address the limitations for future research opportunities.

### Future Research

In the future, it would be noteworthy to study grit over time with athletic training students and professionals throughout their careers to analyze if it changes with experience and age, which is supported in the grit literature. Another area to review would be assessing grit in students seeking acceptance in an athletic training program. Grit has been a strong predictor in retention literature and could be utilized as an assessment tool for future students. Also, grit could be analyzed with acceptance rates into athletic training programs to analyze relationships or interactions. Athletic training programs could study the level of grit athletic training students have compared to students not accepted into a program. This may demonstrate a level of grit students possess to be accepted and persist in an athletic training program. Based on the indications, educators could tailor their activities to growing grit within students through various classroom and clinical activities.

Within the study, grit was analyzed between each cohort (sophomore, junior, senior, masters) of athletic training students, but achievement goal orientation was analyzed by bachelor- and master-levels. Future research may discuss the differences between each level of athletic training students instead of the large groups. Moving forward with entry-level masters, it may be important to look at each cohort (i.e., first-year, second year) to decipher any differences. The differences may show athletic training students possess

different achievement goal orientations throughout their academic career or all students identify the same based on similar long-term goals.

### Conclusions and Implications

Grit was not significantly different between athletic training cohorts and did not coincide with previous literature. However, the age in athletic training students was not as widely ranged compared to the previous grit research, therefore, it could have explained the lack of statistical significance. In contrast, athletic training students may have possessed similar grit for the program and profession. Students in athletic training programs typically go through an acceptance phase, which provided them with an in-depth understanding of the expectations and grit to persist through a program.

There were no statistically significant differences between achievement goal orientations in bachelor- and master-level athletic training students. The averages of achievement goal orientations were much higher in the mastery area compared to performance-approach, performance-avoidant, and work-avoidant goal orientations. It could have implied athletic training students understood the importance of approaching tasks to understand the content and continuing to learn when it was difficult.

The results supported previous literature when analyzing the relationship between grit and achievement goal orientations. It demonstrated if students had higher grit, they would also have a higher mastery goal orientation. Students who persevered through difficult situations to achieve long-term goals also wanted to retain knowledge for future implications. Gritty students appeared to not be grade chasers, avoid looking incompetent, or doing the minimum to achieve tasks. Therefore, it is important to recognize these traits within athletic training students to encourage passion and

perseverance throughout athletic training programs. Educating and instilling grit may help improve retention in athletic training as grit has a fundamental construct of persistence. This could provide athletic training educators with valuable information about their students.

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## Appendix A: Opening Demographics

### Opening Demographics

*Circle the most accurate response as it pertains to you.*

1. Please select your AT student level:

*Sophomore*

*Junior*

*Senior*

*Entry-Level Master's*

2. Age: \_\_\_\_\_

## Appendix B: Short Grit Scale<sup>14</sup>

*Directions for taking the Grit Scale: Here are a number of statements that may or may not apply to you. For the most accurate score, when responding, think of how you compare to most people -- not just the people you know well, but most people in the world. There are no right or wrong answers, so just answer honestly!*

1. New ideas and projects sometimes distract me from previous ones.  
Very much like me  
Mostly like me  
Somewhat like me  
Not much like me  
Not like me at all
2. Setbacks don't discourage me.  
Very much like me  
Mostly like me  
Somewhat like me  
Not much like me  
Not like me at all
3. I have been obsessed with a certain idea or project for a short time but later lost interest.  
Very much like me  
Mostly like me  
Somewhat like me  
Not much like me  
Not like me at all
4. I am a hard worker.  
Very much like me  
Mostly like me  
Somewhat like me  
Not much like me  
Not like me at all
5. I often set a goal but later choose to pursue a different one.  
Very much like me  
Mostly like me  
Somewhat like me  
Not much like me  
Not like me at all
6. I have difficulty maintaining my focus on projects that take more than a few months to complete.  
Very much like me  
Mostly like me  
Somewhat like me  
Not much like me  
Not like me at all
7. I finish whatever I begin.  
Very much like me  
Mostly like me  
Somewhat like me  
Not much like me  
Not like me at all
8. I am diligent.  
Very much like me  
Mostly like me  
Somewhat like me  
Not much like me  
Not like me at all

**Appendix C: Achievement Goal Survey<sup>13</sup>**

Please take your time and answer each statement honestly using the Likert scale given below.

| 1           | 2             | 3               | 4             | 5           | 6         |
|-------------|---------------|-----------------|---------------|-------------|-----------|
| Very Untrue | Mostly Untrue | Somewhat Untrue | Somewhat True | Mostly True | Very True |

1. I challenge myself with goals for a test based on my past exam results  
1    2    3    4    5    6
2. I believe that if one does not try hard in a class, but still does well, they must be smart  
1    2    3    4    5    6
3. I am more concerned with improving from week to week than I am in doing better than others in the course  
1    2    3    4    5    6
4. I am afraid that if I ask the instructor for help they may not think I am very smart  
1    2    3    4    5    6
5. I want to do as little work as I have to in this class  
1    2    3    4    5    6
6. It is important for me to do well compared to others in this class  
1    2    3    4    5    6
7. Even when I am doing well in this course I continue to work hard to improve my understanding of the material  
1    2    3    4    5    6
8. In this class I prefer material that arouses my curiosity, even if it is difficult to learn  
1    2    3    4    5    6
9. I feel that effort that leads to improvement increases ability  
1    2    3    4    5    6
10. When others ask how I did on test or assignments in this course I often lie and say I did better than I actually did  
1    2    3    4    5    6
11. I believe that intelligence is something you are born with  
1    2    3    4    5    6
12. I want to do well in this class so that my friend, family, instructor, and other will recognize my ability  
1    2    3    4    5    6
13. When test or assignments are returned in this course I do not want others to know how I did  
1    2    3    4    5    6
14. My goal in this course is to do my best, even if others are doing better  
1    2    3    4    5    6
15. I often worry about doing poorly in this class  
1    2    3    4    5    6

16. When exams or assignments are returned in this class I immediately want to compare my scores to others in this course  
1 2 3 4 5 6
17. I worry more about getting bad grades than I do about understanding the material  
1 2 3 4 5 6
18. I try to improve my test and assignment scores throughout the semester  
1 2 3 4 5 6
19. I feel that one can increase their mental abilities through effort  
1 2 3 4 5 6
20. If I know I am getting an A in a class without much effort I will slack off  
1 2 3 4 5 6
21. I like my classes best when there is not much to learn  
1 2 3 4 5 6
22. Getting a good grade in this course is more important than understanding the material covered  
1 2 3 4 5 6
23. I just want to do as much as I have to in order to get by in this class  
1 2 3 4 5 6
24. I feel that if someone tries hard in class, but does poorly, they are not very intelligent  
1 2 3 4 5 6
25. My only goal for this course is to get the best grade in the class  
1 2 3 4 5 6
26. I will try my best for every exam even if I know I do not need to try hard for a good grade  
1 2 3 4 5 6
27. Doing well on an exam or assignment encourages me to do even better the next time  
1 2 3 4 5 6
28. My primary goal in this course is to avoid getting a bad grade  
1 2 3 4 5 6
29. Understanding the content of this course is more important than just getting a good grade  
1 2 3 4 5 6
30. I am more interested in doing better than the other students in this class, than doing my best  
1 2 3 4 5 6
31. In this class I prefer material that challenges me  
1 2 3 4 5 6
32. I am more concerned with doing my best than doing better than others  
1 2 3 4 5 6
33. I feel that having to try hard to do well in a class is evidence of lack of ability  
1 2 3 4 5 6