

Peer Leaders using Transformational Leadership:  
The Effect on Cohesion, Performance, and Outside of Practice Habits

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## Abstract

Studies of peer leadership in collegiate athletics are present within current research, but facts about the most effective peer leadership style are not as available. Also abundant among current research, both in athletics and many other realms, is the positive impact of transformational leadership. The current study is an attempt to analyze the impact of an intervention formed to help peer leaders elicit a transformational style during the course of a collegiate cross country season. The subjects ( $n=15$ ) make up a varsity cross country team based out of a small liberal arts college in Towson, MD. The variables studied consisted of leadership style, cohesion, performance, and outside of practice habits. Pre and post levels were gathered for each variable and large effect-size correlations between variables were found. Effect size was used instead of significance testing due to the small sample size. There was a strong presence of transformational leadership throughout the year, along with high levels of cohesion, both task and social. There was noticeable increase in task cohesion from the beginning to the end of the season. Leadership style and cohesion were positively correlated. Performance increased from beginning to the end of the season, but correlated negatively with leadership style and cohesion. Outside of practice habits saw only minor changes throughout the study, but did correlate positively with cohesion. These results suggest that implementation of such an intervention could result in both desired and undesired effects, but further research is needed to confirm these findings.

# **CHAPTER I**

## **INTRODUCTION**

### **Statement of Problem**

It is often the case that top standing teams are the ones described as possessing the greatest ability to work together towards a goal, both on and off the field. It is also a conception that teams with athletes who motivate each other and have the autonomy to lead prosper in this same way. So, it would be inferred that combinations of transformational leadership, peer leadership, and task cohesion would result in athletic success. This research is an effort to answer such a question: Will peer leaders taking transformational leadership style approach with a collegiate athletic team have an impact on task cohesion and team success in the field of competition?

### **Overview**

In this research, the researcher will attempt to analyze the impact of two closely related leadership styles on both task cohesion and performance in the realm of athletics. These leadership styles – peer and transformational – attempt to allow players on the team to have a role which makes them accountable for team dynamic. In peer leadership, such as having a team captain or captains, a member(s) of the team carries out the leadership position. In transformational leadership, the coach will pass responsibility on to members of the team so that they will have input on aspects of participation on the team. It is simple to see why these two styles can intermingle. Additionally, the researcher will attempt to analyze any impact of task cohesion on performance as well. Task cohesion is defined as the degree to which teammates work together towards a common goal. In this case, the common goal is improved performance.

## **Operational Definitions**

Transformational leadership is a style of leadership where a leader works with subordinates to identify needed change, creating a vision to guide the change through inspiration, and executing the change in tandem with committed members of a group.

Peer leadership is designating a member within the team to carry out a leadership role among their peers.

Task cohesion is defined as the degree to which teammates work together towards a common goal.

In the case of this study, performance will be defined as VDOT, a measure of fitness which reflects duration of time to run the course in cross country competitions.

## **Hypotheses**

It is hypothesized that a transformational styled peer leadership intervention will not affect task cohesion, outside of practice habits, or performance within a collegiate cross country team.

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

In this review of literature, the researcher will attempt to analyze the impact of two closely related leadership styles on both task cohesion and performance in the realm of athletics. These leadership styles – peer and transformational – attempt to allow players on the team to have a role which makes them accountable for team dynamic. In peer leadership, such as having a team captain or captains, the leadership position is carried out by a member(s) of the team. In transformational leadership, the coach will pass responsibility on to members of the team so that they will have input on aspects of participation on the team. It is simple to see why these two styles can intermingle. Additionally, the researcher will attempt to analyze any impact of task cohesion on performance as well. Task cohesion is defined as the degree to which teammates work together towards a common goal. In this case, the common goal is improved performance.

#### **Leadership Styles in Coaching**

There are many different coaching styles and an abundance of research discussing the most effective qualities successful athletes and teams possess. The majority of the literature studies authoritative versus authoritarian styles and, more recently, transformational leadership. Hodge and Lonsdale (2011) took a different approach to looking at coaching style, one that has the possibility of yielding valuable information. These authors studied the relationship between coaching style, motivation type, moral disengagement, and their relation to prosocial or antisocial behaviors. The study yielded results that provide a strong argument for transformational or peer leadership styles. When comparing an autonomy-supportive coaching style to a controlled coaching style, the former had a positive relationship with prosocial



behavior towards teammates and a negative relationship with antisocial behaviors towards teammates. The latter had the exact opposite relationships, meaning it promoted more antisocial behaviors. Autonomous motivation versus controlled motivation presented similar results as autonomy related positively to prosocial behavior, while controlled motivation showed a positive relation to antisocial behaviors. Unsurprisingly, the autonomy-supportive coaching style was positively related to autonomous motivation. As a final note on the important findings divulged from this study, both the autonomy-supportive coaching style and autonomous motivation had negative relationships with moral disengagement, which had strong positive relationships with antisocial behaviors.

One could infer that transformational leadership and autonomy-supportive coaching style are closely related and that autonomous motivation could coincide with peer leadership. Similarly, it could be inferred that prosocial behaviors could be a building block in promotion of task cohesion. These relationships would then present strong evidence for a positive directional relationship between peer leaders carrying out transformational leadership style and task cohesion within a team.

Now for a look at transformational leadership and the benefits that it is deemed to provide. Without diving into research, one has most likely heard the term transformational leadership in the workplace or in an educational setting. It has become an increasingly prevalent term and model. The reasoning behind this is the research: transformational leadership has been shown to relate to “healthier and more effective motivational styles, both for physical activity and health as well for performance, and enhancing aspects such as athletes’ intrinsic motivation and self-determined motivation, perception of competence, self-efficacy, collective efficacy, self-regulatory efficacy for physical and healthy eating, life satisfaction, cohesion, organizational

citizenship behaviors, enjoyment, positive experiences, peak performance, intrinsic satisfaction, commitment and effort, well-being, positive affect, team resilience, and reduction of aggression in sport” (Álvarez, Castillo, Molina-García, & Balague, 2016, p. 324). Obviously, this leadership style has many pros. Álvarez et al. conducted a literature review of their own on transformational leadership that resulted in the mentioned conclusion. A more detailed description of the relationship between transformational leadership, task cohesion, and performance will be discussed in a later section.

### **Peer Leadership**

Leadership style of the coach is a prevalent topic within the research. Conversely the leadership role of the athlete does not receive the same attention (Price & Weiss, 2011). This peer leadership style can reap multiple benefits within the realm of athletics. Both team cohesion and intrinsic motivation have been found to be improved by peer leadership (Álvarez et al., 2016). As previously discussed, it has been shown that qualities such as these within an athletic team promote success.

While attempting to fill the hole in the research relating to peer leadership, Price and Weiss (2011) came to conclusions that this style improved both social and task cohesion. “Collectively, peer leadership behaviors are an important aspect of team functioning that contribute to beliefs of how well team members get along, their ability to accomplish goals, and efficacy to be successful” (p. 60). Price and Weiss further supported their evidence in a 2013 study which came to the same conclusion, but also addressed the topic of peer transformational leadership behaviors. Surprisingly, in this category, it was found that coach transformational behaviors were more effective than peer transformational behaviors, but peer leadership still promoted cohesion (Price & Weiss, 2013). Although peer transformational behaviors were

deemed to less effective than those of the coach, they still related positively to greater enjoyment, intrinsic motivation, group cohesion, and collective efficacy within teams. “Teammates...have the potential to be powerful motivators and inspirational leaders who can influence athletes' psychological responses and team outcomes. Thus, it is crucial that...athletes understand how their leadership behaviors can foster positive outcomes in individual members and the team as a whole” (p. 277).

### **Transformational Leadership**

As it has already been stated that transformational leadership has many benefits, the goal in this section will be to relate this leadership style to task cohesion and athletic performance. Due to the abundance of research on transformational leadership the difficulty of finding such relationships was minimal. Interestingly, it was found that transformational leadership and athletic performance have a positive relationship among the collegiate age group (Charbonneau, Barling & Kelloway, 2001).

Multiple studies sought to find mediating variables among the positive relationships between transformational leadership and cohesion and performance. This included Charbonneau et al. (2001); who found intrinsic motivation as a mediating variable among the positive relationship between transformational leadership and intrinsic motivation. This should not come as a surprise as previous articles mention similar relationships between intrinsic motivation and multiple related variables. Mediating roles such as inside sacrifice (Cronin, Arthur, Hardy & Callow, 2015) and intrateam communication (Smith, Arthur, Hardy, Callow & Williams, 2013) influenced a positive relationship between transformational leadership and task cohesion. Not only did these studies find mediating roles, but each contained data that continued to support the positive transformational leadership-task cohesion relationship as well.

When comparing the relationship of transformational leadership, task cohesion, and performance between high performance and low performance teams, Callow, Smith, Hardy, Arthur and Hardy (2009) found task cohesion more prevalent in the high-performance group than the low. This coincides with later statements that the performance to cohesion relationship tends to be more positive than the cohesion to performance relationship.

Throughout each of these studies, the positive relationship between transformational leadership, task cohesion, and performance is never questioned. While in certain cases it may not be as significant (Callow et al., 2009) the relationship continues to be supported.

### **Task Cohesion**

Within the literature, cohesion among athletic teams is continually touted as an important cog to being successful. The conclusion of a bidirectional positive relationship between cohesion and performance is abundant in current literature (Benson, Siska, Eys, Priklerova & Slepicka, 2016). Cohesion has the subdivisions of task and social cohesion. Cohesion is often looked at as a whole with intermittent derivation into the subdivisions within studies. As the focus of this research is on task cohesion, the attempt will be to find literature that either supports or opposes this bidirectional positive hypothesis in relation to task cohesion.

As Benson et al. (2016) have established, there is an abundance of research supporting bidirectional positive relationship between cohesion and performance. But in regards to elite youth sport this relationship has been challenged. While strong performance positively predicted increased cohesion in this demographic, the opposite relationship did not show the same significant positivity. Although, when subdividing into task and social, task cohesion did

positively relate to improved performance. These findings are interesting; however, it is notable that this was only in one demographic.

Support for the bidirectional positive relationship between these variables was abundant as Benson et al. (2016) had mentioned. An article by Carron, Colman, Wheeler & Stevens (2002) was continually referenced by most literature pertaining to this topic after 2002. Data supported not only the support of the bidirectional positive relationship, but also that task cohesion (while not statistically significant) did have the greatest effect on performance above other types of cohesion when present in coactive sport. Further studies branching off Carron et al. came to similar conclusions. Variations between gender are present in respect to this relationship, but not at a significant level (Eys, Evans, Ohlert, Wolf, Martin, & Van Bussel, 2015). Eys et al. did comment that, although the positive bidirectional relationship was shown, it was found that male teams showed stronger performance to cohesion relationship and female teams showed stronger cohesion to performance relationship. This may account for Benson et al. (2016) supporting that the cohesion to performance positive relationship was nonexistent as the study was comprised of 89% males. Looking at different variables related to this relationship also warranted the bidirectional positive result. The ability to satisfy and retain athletes on a team has a positive relationship with success (Onağ & Tepeci, 2014). These variables – athlete satisfaction and retaining of athletes – were both found to be significantly impacted by cohesion and more specifically task cohesion, further supporting the argument that task cohesion is an important cog in developing a successful team.

### **Summary**

The evidence of positive relationship between each variable and a bidirectional positive relationship between task cohesion and athletic performance is strongly supported. Crossover in

agreement between literature strengthens the argument for the directionality of these relationships. Moving forward into action research, a positive directional hypothesis will most likely be considered. Other considerations may be looking closer at mediating roles between these relationships and attempting to recognize gender differences. These were topics the current literature repeatedly suggested more research on. Overall, it is favorable to find that these particular coaching styles or approaches, according to the literature, are providing coaches and peer leaders with the opportunity to have cohesive and successful teams in the athletic setting.

## **CHAPTER III**

### **METHODS**

#### **Design**

This study is a correlation design that incorporates a pre-test/post-test method for certain variables. The dependent variables are pre-to-post changes in cohesion, outside of practice habits, and performance of the members of the team. The independent variable is the peer leadership process used during the weekly team meetings.

#### **Participants**

The sample of 15 participants is made up of the current Cross Country team at private liberal arts school in Towson, Maryland. There are nine females and six males, of which thirteen are Caucasian, one Hispanic/Latino, and one of unknown race.

#### **Instruments**

The Multidimensional Sport Cohesion Instrument, or MSCI, is a 22-item sport cohesion instrument measuring both task and social cohesion within a team. The instrument uses four common factors among cohesion in sport: one social factor, attraction to the group; and three task factors, unity of purpose, quality of teamwork, and valued roles. The internal consistency of the instrument was found to be high, yielding a .93 alpha reliability coefficient. (Yukelson, Weinberg & Jackson, 1984). The change in cohesion from pre-to-post will be the variable of interest in this study.

The Multifactorial Leadership Questionnaire, or MLQ, is a 45-item questionnaire that measures individual leadership style and is meant to reveal factors that create an effective versus an ineffective leader. It has been dubbed by reviewers as the benchmark measure for

transformational leadership. Reviewers also spoke to the instruments validity, commenting that all elements of the MLQ have a strong focus on leadership style. (Avolio & Bass, 1990) For this study, an abridged 21-item version of the MLQ, Form 6S, with seven factors of three items each was used (idealized influence, inspirational motivation, intellectual stimulation, individual consideration, contingent reward, management by exception, and Laissez-faire style). The questionnaire was completed separately depicting peer leadership and coach leadership.

Performance is measured using the VDOT system from the *Daniels' Running Formula* (Daniels, 2005). The VDOT system is a well-accepted measurement of fitness among the running community. Daniels, a renowned exercise physiologist, developed the VDOT system as a training tool for coaches. The VDOT system uses performance times to assign a pseudo-VO2 max, or a VDOT value, to find appropriate training speeds. In the case of this study, the VDOT values will depict level of fitness based on performance times, higher VDOT values translate to increased fitness.

### **Procedure**

At the beginning of the season the coach will establish that he would like the captains to lead a weekly team meeting to talk about goals for the upcoming week and about outside of practice habits. The outside of practice habits discussed will be hours of sleep per night, number of times in the weight room, hydration, and healthy eating habits for the previous week. From that point on the captains will carry out the meeting each Monday for the next six weeks.

The captains will begin each meeting by assessing outside of practice habits. They will establish that they are assessing these habits in an effort to help those who are struggling with outside of practice habits and not to be demeaning. They will ask members of the team the



average number of hours of sleep per night, how many times the team members have lifted in the past week, and finally rate both their hydration and healthy food choices for the week. The captains will then assess for weak points among the data and ask the team members what they think can be done in order to improve outside of practice habits. A plan will be devised by the team and established as part of the goals for the week.

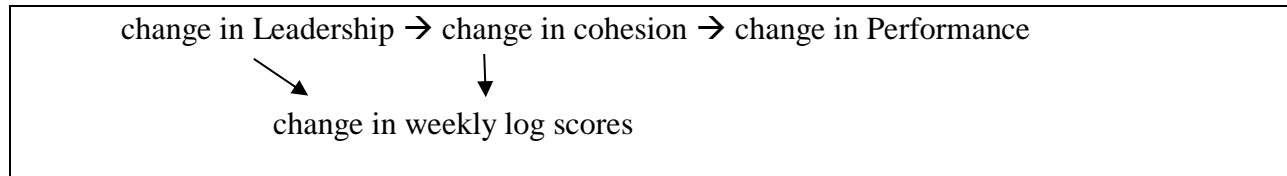
Next the captains will ask the team members to come up with two additional team goals for the week. They will be allowed five minutes to discuss among themselves and then goals will be set. Captains will be able to participate among the discussion.

Finally, the team members will be asked to complete the Multidimensional Sport Cohesion Instrument (MSCI) to assess the level of cohesion felt among the team, and the Multifactorial Leadership Questionnaire (MLQ) in order to assess whether team members feel they are being led in a transformational style. This will not be completed each week, but prior to the initial meeting and after the final meeting. Performances from each meet that falls within the six weeks will be documented to assess for trends in performance.

Data will be collected by the researcher and entered into an Excel spreadsheet. The data file will be imported into the Stata 13.1 statistical package for analysis (StataCorp, College Station, TX, revised December 2016). The analyses will be descriptive and inferential, and will include Pearson correlations to measure relationships among the independent and dependent variables.

The following schematic summarizes the projected paths of relationships:

**Table 1.** *Projected Path of Relationships*



## **CHAPTER IV**

### **RESULTS**

The purpose of this study was to evaluate the effect of peer leaders using a transformational style of leadership on task cohesion and performance. Some additional variables came into play with the questionnaires used as part of the intervention. All summary data tables were placed at the end of the chapter.

#### **Effect Size**

Effect Size is a statistical tool that is especially useful with small samples. When the number of subjects is limited, as in the current action research study, effect size offers a practical alternative to traditional significance tests. The original sample consisted of 15 students. Not every student participated in all indicators, thereby truncating the number available for analyses. The number of students with both variables to be correlated varied from a low of six to a high of 14.

With such small samples, significance tests of null hypotheses lack the power to detect population relationships among outcomes. Quite possibly, there exist sample correlations that would be identified as significant at the customary 5% level were the samples sufficiently large. Even large sample correlations might not reject the null hypothesis because of the very small samples available to the researcher. Effect size provides a direct estimate of the magnitude of the relationship observed in the sample, regardless of the number of subjects. The Pearson correlation ( $r$ ) is interpretable as an effect size of the relationship between two measured variables, such as leadership and cohesion. According to guidelines established by Cohen (1992), Pearson correlations greater than 0.50 (positive or negative) represent a large effect size, independent of the sample size. As for pre-to-post changes, Table 5 shows the values that signify

very small, small, medium, large, and huge effect sizes. According to Sawilowsky (2009) effect sizes medium or greater in these cases could be significant changes within a larger study. Note that effect size can also show that a miniscule sample correlation that was statistically significant only because of a huge sample is really of no practical significance.

Advanced statistical tools such as path analysis for describing the relationships among leadership, cohesion, weekly processes, and performance could not be used with this study because of the paucity of subjects. Effect size applied to individual sample correlations was the best method available.

### **Presence of Transformational Leadership**

The Multifactor Leadership Questionnaire Form 6S was used to measure the presence of transformational leadership. There are seven factors of leadership that the questionnaire addresses. These seven factors are components of transformational leadership. The results of these questionnaires can be interpreted as such: higher scores translate to increased presence of transformational leadership. Each of the seven factors received scores between 0-4. Both Table 1 and Table 6 show that there was negligible change in presence of transformational leadership for both peer leaders and coaches from the beginning to the end of the season. Table 1 shows the descriptive data, and Table 6 the effect size in relation to pre to post change for presence of transformational leadership. While there was one factor for both peer leaders and coaches that reached medium effect size in pre-to-post change, transformational leadership as a total only had a pre-to-post change of small effect size. Although there was little change, these statistics show that both peer leaders and coaches scored high (3 or above) for five of the seven factors at the beginning of the season, and in six of seven factors at the end of the season. This indicates a strong presence of transformational leadership throughout the year.

## **Cohesion**

The Multidimensional Sport Cohesion Instrument measured cohesion in a similar way to how leadership was measured, the higher the score on the MSCCI the greater the cohesion. Scores ranged from 0-11. The questions addressed four dimensions of cohesion, one dimension depicting social cohesion and the other three task cohesion. In this particular study there was a small decrease in social cohesion and a noticeable increase in task cohesion. Table 2 shows the mean MSCCI scores for all participants both pre and post, and also the change exhibited by those who were able to complete the questionnaire on both occasions. As with the case of leadership style, scores were consistently high for cohesion both at the beginning and end of the season. Scores at the lowest were 8.5 out of 11 for pre scores and 9 out of 11 for post scores. When evaluating the effect size of the changes in cohesion, as seen in Table 7, all factors and total cohesion scores were of small effect size. One factor of task cohesion had an effect size of 0.43, total task cohesion had an effect size of 0.32, and total cohesion an effect size of 0.33, these fall in the higher range of small effect size.

## **Outside of Practice habits**

Outside of practice habits were measured through weekly logs. Table 3 shows the averages of students' week to week outside of practice habits. There were minor changes in three of the four outside of practice habits. Both hours of sleep and healthy eating habits increased. Hours of sleep increased by 0.50 indicating an added 30 minutes of sleep per night. Participants rated their healthy eating habits on a scale from zero to ten and it increased 0.32 points from beginning to end of the season. Hydration ratings decreased 0.36 points (zero to ten scale) from beginning to end of the season. Each habit had an increase, indicating better habits, between the third and fourth week of the season only to drop again towards the conclusion of the season

(sixth week). Of these changes only hours of sleep reached a change of medium effect size (Table 8).

### **Performance**

Comparing competitions from the beginning of the season to those at the end there was an increase in performance. The competitions used were those that were run on identical courses. In cross country, student-athletes are often running on all different courses with different elevation profiles and surfaces. This makes it difficult to judge a trend in performance. In this case, during the season there were two pairs of competitions that were run on the same courses. The second and sixth competitions of the season were run on the same course. There were also two time trials, both two miles in duration and run on the same 400-meter track, that took place during the season. One was completed at the beginning of the season and the other at the end. VDOT values (Daniels, 2005) for Meet 2 and Meet 6, along with those for Time Trial 1 and Time Trial 2 were used for correlation with the other variables. Table 4 holds the descriptive statistics that show improvement in the case of both pairs of competitions from beginning to end of the season. The increase in the time trial VDOT scores was much greater than the increase in VDOT scores between Meet 2 and Meet 6. Table 9 shows the effect size of these changes, the change between the two time trials reached medium effect size.

### **Leadership Correlations with Cohesion**

After assessing each variable's descriptive statistics, variables were compared in order to assess the sought-after relationships. Large effect sizes between leadership style and post cohesion data, both task and social, suggest a link between leadership style and team cohesion. Correlations were stronger at the end of the season for peer leaders, while the opposite trend was

seen for coaches. These trends suggest an increased relationship between cohesion and leadership style when peer leaders lead with a transformational style. On the contrary, correlation between coach leadership style and cohesion decreased from beginning to the end of the season. Because there was a constant presence of transformational leadership from the coaches, even greater than that of the peer leaders, this suggests that transformational leadership style does not increase correlation with cohesion in the case of coach to athlete interactions.

### **Leadership and Cohesion Correlations with Performance**

There were very few correlations between either leadership or cohesion and performance. Large effect correlations that were present were all negative. This is surprising considering leadership style had strong positive correlations with cohesion and cohesion had strong positive correlations with performance. However, correlation is not transitive. That is if variable A relates to variable B, and variable B relates to variable C, it does not necessarily follow that variable A will relate to variable C.

### **Leadership and Cohesion Correlations with Outside of Practice Habits**

Outside of practice habits were evidenced by weekly logs. As previously mentioned there was little change from beginning to end of the season for outside of practice habits. When correlating leadership style and cohesion against the outside of practice habits, there were a number of large effects. When looking at Table 10, which holds all correlations with large effects, there were many between cohesion and outside of practice habits and few between leadership and outside of practice habits. Peer leadership style had only one correlation with a large effect and it was a negative relationship with the lift scores at the beginning of the season. Coach leadership style had correlations of large effect with hydration scores, which was

negative, and with healthy eating habits scores, which was positive. Cohesion had 15 total and 14 positive correlations spanning across all outside of practice habits, social cohesion vs. hydration was the only negative correlation. Of the 15 large effects, both task and social cohesion had correlations among each of the outside of practice habits.

#### *Descriptive Data Tables*

**Table 2.** Mean Scores for Multifactor Leadership Questionnaire (MLQ)

Factor	Peer			Coach		
	Pre	Post	Change	Pre	Post	Change
Influence	3.56	3.67	-.04	2.98	3.25	0.24
Motivation	3.25	3.43	0.11	3.50	3.19	-0.21
Stimulation	2.86	3.07	0.22	3.07	3.19	0.15
Consideration	3.33	3.50	0.18	3.07	3.36	0.21
Reward	3.14	3.43	0.07	3.17	3.50	0.21
Exception	3.58	3.40	-0.33	3.26	3.36	0.06
Laissez-faire	2.92	2.43	-0.45	2.48	2.39	-0.00
Combined	3.23	3.28	-0.03	3.08	3.18	0.10
Number Cases	12	10	9	14	12	11

Note: pre-to-post change based only on students with pre and post data

**Table 3.** Mean Scores for Multidimensional Sport Cohesion Instrument (MSCI)

Factor	Pre	Post	Change
Quality (Task)	8.51	9.00	-0.34
Attachment (Social)	9.34	9.91	-0.29
Unity (Task)	8.66	9.38	-0.16
Value (Task)	8.71	9.61	0.27
Combined Task	8.63	9.33	1.15
Combined MSCI	8.81	9.47	-0.13
Number cases	14	12	11

Note: pre-to-post change based only on students with pre and post data

**Table 4.** Mean Scores for Weekly Logs

Activity	Week1	Week2	Week3	Week4	Week5	Week6	Change
# Lifts	1.11	1.33	1.58	1.08	1.00	N/A	-0.13
Hrs. sleep	6.75	6.75	7.08	7.04	7.50	7.17	0.50
Hydration	7.57	7.50	7.83	8.08	7.27	7.50	-0.36
Eat healthy	7.18	7.83	7.29	7.25	7.23	7.42	0.32
# Cases	14	12	12	12	13	12	11

Note: pre-to-post change based only on students with pre and post data

**Table 5.** Mean Performance Scores

Score	N	Mean
Time Trial 1 VDOT	11	39.19
Time Trial 2 VDOT	9	43.36
Pre-Post Time Trial VDOT	7	7.5
Meet 2 VDOT	8	42.19
Meet 6 VDOT	8	41.58
Pre-post Meet 2 and 6 VDOT	5	1.36

Note: pre-to-post change based on students with pre and post data



## Pre-to-Post Effect Size Tables

**Table 6.** *Cohen's d rules of thumb for interpreting the effect size calculation*

d statistic	Degree
.01-.19	Very small
.20-.49	Small
.50-.79	Medium
.80-1.19	Large
1.20-1.99	Very large
2.0+	Huge

**Table 7.** *Cohen's d Effect Sizes for Pre-to-Post Mean Differences: Leadership*

	Peer		Coach	
Factor	Effect Size	Degree	Effect Size	Degree
Influence	.19	Very small	.40	Small
Motivation	.49	Small	.73	Medium
Stimulation	.27	Small	.14	Very small
Consideration	.39	Small	.42	Small
Reward	.36	Small	.38	Small
Exception	.39	Small	.19	Very small
Liaises-faire	.64	Medium	.11	Very small
Total	.19	Very small	.38	Small

**Table 8.** *Cohen's d Effect Sizes for Pre-to-Post Mean Differences: Cohesion*

Factor	Effect Size	Degree
Quality (Task)	.23	Small
Attachment (Social)	.24	Small
Utility (Task)	.30	Small
Value (Task)	.43	Small
Total	.32	Small
Task	.33	Small

**Table 9.** *Cohen's d Effect Sizes for Pre-to-Post Mean Differences: Weekly Logs*

Factor	Effect Size	Degree
Number Lifts	.11	Very small
Hours of Sleep	.51	Medium
Hydration Ratings	.08	Very small
Healthy Eating	.20	Small

**Table 10.** *Cohen's d Effect Sizes for Pre-to-Post Mean Differences: Performance*

Factor	Effect Size	Degree
Time Trials	.53	Medium
VDOT	.10	Very small

*Correlation Tables*

**Table 11.** *Leadership and Cohesion: Correlations at Least |. 50/*

Variable 1	Variable 2	N	Correlation
Pre Peer Leadership	Post Cohesion	9	.54
	Post Cohesion Social	9	.60
	Post Cohesion Task	9	.52
Post Peer Leadership	Post Cohesion	10	.59
	Post Cohesion Social	10	.57
	Post Cohesion Task	10	.58
Pre Coach Leadership	Post Cohesion	11	.81
	Post Cohesion Social	11	.81
	Post Cohesion Task	11	.80
Post Coach Leadership	Post Cohesion	12	.71
	Post Cohesion Social	12	.64
	Post Cohesion Task	12	.73

Leadership style correlates with Team Cohesion

**Table 12.** *Leadership/Cohesion and Weekly Logs: Correlations at Least |. 50/*

Variable 1	Variable 2	N	Correlation
Pre Lift	Pre Peer Leadership	12	-.53
Post Lift	Pre Cohesion	12	.53
	Pre Cohesion Social	12	.53
	Pre Cohesion Task	12	.53
Pre Hydrate	Pre Cohesion	14	.64
	Pre Cohesion Social	14	.65
	Pre Cohesion Task	14	.63
Post Hydrate	Pre Coach Leadership	11	-.50
	Post Cohesion Social	12	-.54
Pre Eat Healthy	Post Cohesion	11	.60
	Post Cohesion Social	11	.64
	Post Cohesion Task	11	.58
Post Eat Healthy	Pre Coach Leadership	11	.66
	Post Coach Leadership	12	.65
	Pre Cohesion	11	.50
	Post Cohesion	12	.64
	Post Cohesion Social	12	.60
	Pre Cohesion Task	11	.51
	Post Cohesion Task	12	.64

Number lifts, hours sleep, hydrate ratings, and healthy-eating ratings correlate with aspects of performance.

**Table 13.** *Leadership/Cohesion and Performance: Correlations at Least |. 50/*

Variable 1	Variable 2	N	Correlation
Post Peer Leadership	Time Trial 2 VDOT	7	-.50
Pre Cohesion	Meet 2 VDOT	7	-.50
Pre Cohesion Social	Meet 2 VDOT	7	-.71
Pre Cohesion Task	Meet 2 VDOT	7	-.54

Leadership style and cohesion correlate with aspects of weekly log activities

## **CHAPTER V**

### **DISCUSSION**

In examining the results of this study, the original hypothesis that a transformational styled peer leadership intervention would not affect either cohesion or performance was not supported. While the lack of sample size in this study does not allow it to be generalizable, there were large effect correlations to support the possibility of relationships between these variables. The following discussion of the results will mirror the format in which the results were presented. Each individual variable will be discussed followed by the correlations between these variables. With the number of variables and possible relationships being presented it was felt that this was the clearest way to assemble the discussion for the reader. As an aside, it should be noted that the researcher had an extra level of insight into these results as the assistant coach of the studied team.

#### **Presence of Transformational Leadership**

The results of the MLQ 6S questionnaires found that both coaches and peers lead with transformational style on this team. There was not an increase with the application of the intervention, suggesting that the team did not feel that the intervention added to the transformational qualities of either the peer leaders or the coaches.

According to the team members, the peer leaders who were selected at the beginning of the season by the coaching staff led in a transformational way from the onset of the season. Coaches had no additional interactions with student-athletes related to the study aside from the first weekly meeting when the assistant coach explained the process of the weekly meetings. This passage of leadership to the peer leaders and the members of the team may have influenced the high coach MLQ 6S scores early in the year. What can be inferred from the MLQ 6S scores

is that transformational style of leadership was already present in the case of this team, and the intervention had little to no effect on these scores.

### **Cohesion**

As with transformational leadership, the results showed that cohesion was already present on this team at the time that this study began. Although the effect sizes of the changes were small, as previously mentioned some values fell at the upper end of the small effect size range. While it cannot be said that these effect sizes would warrant significant changes in a larger sample, further more robust study could show the intervention to have an impact on cohesion, and more specifically task cohesion. Social cohesion remained relatively unaffected throughout the study, suggesting no relationship between the intervention and social cohesion.

### **Outside of Practice Habits**

Evaluation of outside-of-practice habits was not a variable that was originally going to be presented in the study. The five-item questionnaire containing these items was more to create visible evidence of the weekly meetings. After assessing these five-item questionnaires, the researcher concluded that this data could add some pertinent data to the study.

In one instance, outside of practice habits could be thought of as a product of task cohesion, and secondly show a culture of accountability. When originally forming this study, positive culture was the sought-after variable by the researcher. Leadership and cohesion were found to be the closest measurable markers for positive culture. Accountability is another possible marker that can play into a positive culture.

Scores were mediocre among outside of practice habits. Average number of lifting sessions in a week ranged from 1.00 to 1.58 when the suggested amount was 2 to 3. Average

hours of sleep per night ranged from 6.75 to 7.5, when the suggested amount was 7.5 or above. Hydration and healthy eating ratings ranged from 7.18 to 8.08 out of 10. There was an increase of medium effect size in hours of sleep from beginning to end of the season. This suggests the possibility of a relationship between outside of practice habits and the intervention.

### **Performance**

Performance had the most noticeable increase across the season. Correlations which will be discussed momentarily address whether the other variables had any relationship with this fact. What can be said about the increases in performance is that they were drastic in several cases. An average increase of 7.5 VDOT points from the first time trial to the second is incredible, while the 1.36 point increase from Meet 2 to Meet 6 is much more fathomable. The drastic change from Time Trial 1 to Time Trial 2 resulted in a medium effect size.

The team studied in this case had many first time cross country competitors who had to walk portions of the first time trial, resulting in much slower times and lower VDOT scores. Exposure to consistent training for these athletes could have allowed for the drastic increase in fitness level. Those who ran in both Meet 2 and Meet 6, a much tougher course and the setting for the conference championship (Meet 6), were more seasoned student-athletes more typical members of a college program. These student-athletes are much less likely to see such drastic changes. According to Daniels (2005), a rational increase in VDOT is one point every three weeks. Considering the season is 12 weeks, this equates to a maximum of a four point increase within a season, and that is a fantastic season. The 1.36 point increase for the more seasoned athletes from Meet 2 to Meet 6 presents a more typical progression.

Another factor that could have certainly played a role in the drastic increase from time trial one to time trial two was the weather. Time Trial 1 was run in August on an 80 plus degree day high humidity, while Time Trial 2 was run on a day in the 50-degree range with little humidity, much more conducive to running. Nonetheless, the entire group had an increase in fitness from beginning to end of the season. Again, there can be no connections made between the intervention and this increase, but presents the possibility of one.

### **Leadership Correlations with Cohesion**

Based on the results of this study there is a strong positive correlation between transformational leadership style and cohesion. This strong positive correlation is present with both task and social cohesion. Peer leadership style did not have as strong of a correlation with cohesion as coach leadership style, but the strength of the correlations did increase from beginning to the end of the season. These correlations suggest that the intervention had an impact on how peer leadership effected cohesion. Giving peer leaders consistent opportunities to lead allowed them to have greater effect on the team. This may indicate that this weekly team meeting led by peer leaders with a transformational style can have positive effects in regard to team cohesion, both task and social.

### **Leadership and Cohesion Correlations with Performance and Outside of Practice Habits**

There were only a few strong negative correlations between leadership or cohesion and performance. This suggests that higher levels of transformational leadership or cohesion on a team results in lower levels of fitness. Remember that performance was measured using VDOT, a measure of fitness, and not time, as might be inferred in the case of racing. Higher VDOT

equals greater fitness and increased performance, so a positive relationship with transformational leadership and cohesion would have been the desirable finding in this case.

While it was found that leadership had little effect on outside of practice habits, the larger takeaway from examining outside of practice habits was the positive correlation with cohesion. Aside from transformational leadership style and cohesion, this was the only other positive and what would be a desired correlation in the case of this team.

### **Limitations**

The greatest limitation of this study was the sample size. Not only was it small to begin with at 15 student-athletes, but class schedules and other extracurricular activities conflicted with the time of the weekly meeting. This caused student-athletes to frequently be absent from meetings and data to be lost. Upon scheduling of the weekly meeting, it was found that this was the best time for student-athletes to meet regularly with the greatest participation. The small sample size also did not allow for division of the original subjects into an intervention group and a control group, so there was no control.

Another limitation of this study was the convenience sample, there was no randomization with the studied sample. This, on top of the small sample size and even smaller pool of data, does not allow for any of these findings to be generalizable. The pool of available data led to the use of Effect Size (ES) rather than traditional significance testing. While ES limits being able to generalize findings, it enables a measurement of the actual treatment impact on the students sampled for the study. In this way, ES is aligned with the goals of action research.

## **Connections to Existing Literature**

The most obvious connection between the existing literature and the study presented were the findings about leadership style and its effect on cohesion. Both Hodge and Lonsdale (2011) and Álvarez et al. (2016) found that transformational leadership style results in increased cohesion, just as was suggested by the present study. Also mirroring the suggestions of the findings in this study were the findings of two Price and Weiss studies. Not only did Price and Weiss (2011) find that peer transformational leadership improved cohesion, but also that coach transformational leadership was even more effective than was peers using the same style (2013).

On the other hand, connections between the findings in this study and those of previous studies in regard to leadership style/cohesion and their effect on performance are conflicting. Several studies including Carron et al. (2002) and Eys et al. (2015) supported a bidirectional positive relationship between cohesion and performance, while the present study suggested a negative relationship between the same variables. Obviously findings in this study on one unique collegiate cross country team do not warrant questioning of the more robust previous literature, but it does ask the question, why did this team elicit negative correlations in this instance?

## **Implications**

Some of the findings in this study, while not generalizable, are worth more exploration in larger more robust studies. These findings, which include: the possible effects of the intervention on each of the variables and the correlations between variables, the positive correlation between transformational leadership style and cohesion, the positive correlation between cohesion and outside of practice habits, and the negative correlations between transformational leadership style/cohesion and performance, could all have major implications at the coaching level.



Weekly team meetings led by peers using transformational leadership style could increase cohesion within a team, and cohesion can increase accountability for outside of practice habits. If this is the case, then teams could greatly benefit from his intervention. Of course, further study into the negative relationship shown between leadership/cohesion and performance would also have to be explored. If teams are improving in cohesion and outside of practice habits, but this does not translate to more performance success, is this truly a sought-after result? Or why might a team not benefit from strong cohesion? Only future and more robust studies into these descriptive statistics and correlations can suggest actual relationships in regards to the intervention.

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