Effects of Coaching Behaviors and Differences in Sport Injury Anxiety Among Cheerleaders

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Abstract
The athleticism required in cheerleading has increased dramatically, yet the amount of training cheerleading coaches receive varies considerably. With the skill complexity increasing, one can speculate that sport injury anxiety would be present. Sport injury anxiety is a sport-specific anxiety that focuses on athletes’ apprehensions about sustaining an injury while participating in their sport. Specifically, a cheerleader’s perception of their coach’s behavior may influence their sport injury anxiety. The current study examined coaching behavior as a predictor of sport injury anxiety as well as differences in sport injury anxiety between sex, stunt position, and team type in cheerleaders. Participants included all-girl and coed collegiate teams and all-star teams. Participants completed an online survey consisting of the Leadership Scale for Sport and the Sport Injury Anxiety Scale. Results indicated the coach’s level of training and instruction was able to predict anxiety related to experiencing pain. Female cheerleaders had higher levels of anxiety related to being perceived as weak, experiencing pain, and having an impaired self-image compared to males. All-girl collegiate members had higher levels of anxiety related to losing athleticism, being perceived as weak, and experiencing pain. Coaches should be educated to help reduce sport injury anxiety especially in female cheerleaders.

Keywords: sex differences, injury, leadership, sport psychology

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Cheerleading is an athletic activity that includes many explosive, technical, and physically demanding skills (Goodwin et al., 2004) and is one of the fastest-growing activities in the United States (U.S.) (Jones & Khazzam, 2017). Cheerleading ranges from sideline support of another sporting event to year-round all-star competitive cheerleading. The complexity of skills in cheerleading has evolved to include stunts, pyramids, basket tosses, and tumbling. These complex stunts traditionally require either one male base (i.e., the person who remains on the bottom and lifts the flyer) and one female flyer (i.e., the person being lifted and tossed in the air) or two female bases, one back spot (i.e., the person in the back of the stunt who lifts the flyer) and one female flyer (Jacobson et al., 2005). Basket tosses involve tossing and catching the flyer in the air by three or four bases. Furthermore, pyramids are multiple connecting stunts, while tumbling is similar to what is performed in a gymnastics floor routine.

According to USA Cheer (2020a), the primary role of collegiate cheerleading is supporting other athletic programs (e.g., football and basketball) by leading the crowd at games and pep rallies while performing stunts, pyramids, and tumbling. Some collegiate cheerleading teams may also participate in competitions. Typically, collegiate teams only compete in one major competition a year. All-star cheerleading differs from collegiate cheerleading in that its primary purpose is competition and it is based out of clubs (U.S. All Star Foundation (USAF), 2021a). Most recently, in July 2021, the International Olympic Committee voted to recognize the International Cheer Union (ICU) and competitive cheerleading (e.g., all-star cheerleading) as a sport (ICU, 2023). All-star teams are formed based on tiers, from beginner (i.e., Tiny Novice Level 1) to elite (i.e., adults at Level 7) (USA Cheer, 2020b). All-star cheerleading involves performing a two-minute-and-thirty-second routine comprised of tumbling, stunts, pyramids, dance, and a cheer segment against other teams at local, regional, national, and worldwide competitions. Level 7 is the highest level of all-star competition and consists of the most difficult skills. The season typically spans ten to eleven months, with five to ten competitions a season.

Over the past two decades, a considerable amount of media attention and research has focused on the dangers of cheerleading and tracking injuries (Boden et al., 2003; Naiyer et al., 2017; Yau et al., 2019). Catastrophic injuries include skull fractures, cervical spine injuries, brain injuries or concussions, paralysis, and death. The National Center for Catastrophic Sport Injury Research (NCCSIR) examined catastrophic cheerleading injuries from July 2002 to June 2017 (Yau et al., 2019). There were thirteen catastrophic injuries occurring in collegiate participants. More specifically, twelve out of the thirteen injuries were to females and ten occurred in flyers. During stunts, pyramids, and basket tosses, the flyer is at risk of being dropped or caught improperly by the bases/back spot, which may result in a catastrophic injury. In comparison, women’s collegiate gymnastics had three catastrophic injuries from Fall 1982 to Spring 2021 (Kucera & Cantu, 2022).

The most common injuries to cheerleaders occur in the ankles and wrists (Foley & Bird, 2013; Stroescu, 2017). For example, in a stunt, both the flyer and bases/back spot are at risk of suffering excesses loads in their joints. Injuries can not only cause physical pain and disability but have affective
consequences, such as anxiety (Kvist et al., 2022). This study aims to address a specific type of anxiety, sport injury anxiety, in cheerleaders.

Sport injury anxiety can be defined as a sport-specific anxiety as “the tendency to respond with cognitive or somatic anxiety in sport situations where injury is seen as possible and/or likely” (Cassidy, 2006a, p.83). Cassidy (2006a) focuses on a set of negative appraisals that an athlete must make in order for injury anxiety to occur. More specifically, the athlete must first view the situation as threatening, i.e., injury likely; second, they must believe that they do not have the skills or resources available to handle the situation; and third, they believe that an injury would produce aversive consequences (Cassidy, 2006a; Rex & Metzler, 2016). Seven different subfactors of sport injury anxiety are prominent in athletes including anxiety related to losing athleticism, being perceived as weak, experiencing pain, loss of social support, related to reinjury, letting down important others, and having an impaired self-image (Cassidy, 2006a; Cassidy, 2006b; Rex & Metzler, 2016).

When an athlete is injured, this could result in a loss of strength, skill, or ability and decreases in fitness, which can lead to anxiety over loss of athleticism (Cassidy, 2006b). Athletes experiencing anxiety related to being perceived as weak may feel that their teammates think they are faking the injury or not “toughing it out.” Athletes who experience multiple injuries, chronic injuries, or perceive their injuries to be severe can experience anxiety related to experiencing pain. When an athlete is injured and unable to participate, they might experience a loss of social support from coaches, teammates, and friends. Related to the loss of social support, is the anxiety of letting important others down such as teammates, coaches, family members, and significant others (Cassidy, 2006b; Udry et al., 1997). Anxieties about reinjury when returning to sport or sustaining a similar injury is a concern for athletes (Cassidy, 2006b; Clement et al., 2015; Taylor & Taylor, 1997). Finally, since injured athletes are unable to participate at their full levels, they may develop a negative body image, leading to anxiety about self-image (Cassidy, 2006b; Chan & Grossman, 1998).

The literature examining sex differences on sport injury anxiety has revealed contradictory results. Cassidy (2006a) reported significant differences between male and female athletes in terms of sport injury anxiety. Female athletes’ scores on the Sport Injury Anxiety Scale (SIAS) were higher than their male counterparts. In particular, females reported higher levels of anxiety related to being perceived as weak, experiencing pain, reinjury, and having an impaired self-image. However, Kaplan & Andre (2021) found that Turkish male athletes reported significantly higher scores on anxiety related to being perceived as weak, experiencing pain, losing social support, and reinjury. Finally, Tomalski (2013) found no sex differences in collegiate athletes on any of the subscales of the SIAS. Due to the inconsistent findings within other sports, further research is warranted. Since cheerleading involves both sexes and different teams, i.e., collegiate and all-star, it is important to determine if there are any differences in terms of sport injury anxiety.

The relationship between coaches and athletes is an integral part of all sport. The behaviors of coaches impact the athletic environment and influence performance, achievement, skill acquisition, enjoyment, group processes, coping strategies, and the psychosocial growth of athletes (Cook et al., 2021; Cumming et al., 2006; Nicolas et al., 2011). The coach-athlete relationship is defined as the
situation in which coaches’ and athletes’ feelings, thoughts, and behaviors are interconnected (Jowett, 2007; Jowett & Ntoumanis, 2004). Interactions between the coach and athlete consist of attempts to influence the behavior of one another (Jowett & Arthur, 2019). The coach-athlete relationship is a dynamic and active process that is divided into dimensions including closeness, commitment, complementarity, and co-orientation according to the 3 + 1C’s conceptual model (Jowett, 2007). Closeness pertains to the affective bond that is formed between the coach and athlete and is reflected in feelings of trust, respect, and appreciation. Commitment reflects the intention of the coach or athlete to maintain their relationship over time. Complementarity refers to a behavioral connection between the coach and athlete that is cooperative and effective. A positive complementarity includes behaviors such as being responsive in training, being friendly, and being at ease. Co-orientations reflects shared knowledge and common ground about shared goals, belief, and values, which can be established through open communication. Co-orientation involves the degree to which coaches and athletes are co-oriented in the ways they view and understand the quality of the relationship. Athletes who report poor relationships with their coaches experience higher levels of anxiety (Davis & Jowett, 2014).

Due to the safety risks involved in cheerleading, it is vital that coaches recognize and address issues pertaining to sport injury anxiety. However, many cheerleading coaches may not be attuned to the psychological aspects of cheerleading, which could lead to sport injury anxiety (George, 2022). Any one of these subfactors of sport injury anxiety may be directly or indirectly linked to coaching behaviors. Vella et al. (2011) found, through qualitative interviews focusing on positive youth development, that competence is the most basic requirement of coaches using a progressive and systematic approach to skill development. Furthermore, positive affect and confidence were reported as important aspects for athletes. Coaches see themselves as responsible for developing sport-specific and non-sport-specific self-efficacy.

Unfortunately, the amount of training cheerleading coaches receive varies considerably because many cheerleading squads are not competitive or considered a sport, instead, they are relegated to the realm of athletic activities. In fact, the National Collegiate Athletic Association (NCAA) does not write the rules for cheerleading and the only mandatory training is a safety certification course by USA Cheer for collegiate coaches (NCAA, 2020; Yau et al., 2019). As a result of this gap in training, cheerleading coaches may arrive at the gym with a variety of beliefs about coaching behaviors.

Coaches are leaders and coaching-effectiveness can be maximized through understanding leadership. Within sport, one of the major models of leadership is the multidimensional model of sport leadership (Chelladurai & Saleh, 1978, 1980). This model provides a framework for examining the cognitive and affective processes that mediate an athlete’s reaction to their coach’s behavior. Within the multidimensional model, the focus is on the leader, the participants, and the situation in which the participants are placed (Chelladurai, 1993). The model includes the following three aspects of coaching behaviors: actual leader behavior, preferred leader behavior, and required leader behavior. The preferred coaching behavior is a result of an interaction between situational characteristics and individual characteristics. The actual behavior of the coach is impacted directly by the coach’s personal characteristics including age, sex, personality ability, and experience, additionally being dictated by the
situational characteristics. Furthermore, the required behavior of the coach is dictated by the parameters set by situational characteristics. According to Chelladurai (1993), it is predicted that a positive outcome is likely if the three aspects (actual, preferred, required) align.

Research examining the multidimensional model of leadership has utilized the Leadership Scale for Sport (LSS) that includes five categories of coaching behaviors: (1) autocratic style, (2) democratic style, (3) social support, (4) positive feedback, and (5) training and instruction (Chelladurai & Saleh, 1980). The training and instruction dimension examines the way coaches go about improving the performance of their athletes, as well as instructing the athletes on skills, the techniques of the sport, and coordinating members’ activities. Democratic behavior allows greater athlete participation in decisions pertaining to group goals, practice methods, and strategies. On the other hand, autocratic behavior involves independence in decision making and stresses personal authority. Social support is characterized by a concern for the welfare of athletes, positive atmosphere, and warm interpersonal relations with members. Lastly, positive feedback reinforces an athlete by recognizing and rewarding good performance.

When coaches use positive feedback, demonstrate training and instruction, show social support, and employ a democratic style, athletes experience more positive achievements, such as feelings of pride, fun, accomplishment, seeking challenges, perseverance, and lower levels of anxiety and burnout (Cruz & Kim, 2017; Wang et al., 2009). More specifically, collegiate athletes who have high trait anxiety may have higher levels of fear of failure and fear of negative evaluations want coaches to be positive, supportive, encouraging, provide informationally based feedback and instruction, as well as exhibit a democratic leadership style (Horn et al., 2011). Likewise, collegiate athletes who reported that their coaches were strong in training and instruction, provided positive information-based feedback exhibited lower levels of tension and sport anxiety (Amorose & Horn, 2010; Baker et al., 2000). Therefore, an individual’s perception of their coach’s behavior may influence the athlete’s sport injury anxiety, especially in cheerleading.

The purpose of the current study was to examine perceived coaching behaviors as a predictor of sport injury anxiety, as well as differences in sport injury anxiety between sex, stunt position, and team type in cheerleaders. More specifically, the following hypotheses were tested in this study: (1) Cheerleaders who perceive that their coaches had lower levels of training and instruction, democratic behavior, social support, and positive feedback would be more prone to anxiety related to being perceived as weak. (2) Cheerleaders who perceived that their coaches had lower levels of training and instruction, democratic behavior, social support, and positive feedback would be more prone to anxiety related to experiencing pain. (3) Cheerleaders who perceived that their coaches had lower levels of training and instruction, democratic behavior, social support, and positive feedback would be more prone to anxiety related to reinjury. (4) Female cheerleaders would have higher levels of anxiety related to being perceived as weak, experiencing pain, having an impaired self-image, and reinjury than male cheerleaders. (5) Flyers would have higher levels of anxiety related to experiencing pain, having an impaired self-image, and reinjury when compared to bases/back spots. (6) All-girl collegiate team members would have higher anxiety related to losing athleticism, being perceived as weak,
experiencing pain, and having an impaired self-image compared to coed collegiate teams and all-star team members.

**Method**

**Participants**

Data was collected from a total sample of 152 participants. The participants included male \((n=53)\) and female \((n=99)\) cheerleaders from coed collegiate teams \((n=56)\), all-girl collegiate teams \((n=46)\), and all-star level 7 teams \((n=50)\). The mean age of the participants was 20.43 years \((SD=2.49)\). Most participants \((n=71)\) had over 10 years of experience and were a base/back spot \((n=106)\). Almost all the participants had experienced at least one or more injuries \((n=133)\) with the most recent injury occurring less than two weeks \((n=10)\), two weeks to one month \((n=9)\), one to three months \((n=27)\), three to six months \((n=23)\), six months to one year \((n=17)\), and over a year ago \((n=47)\) from participation in the study.

**Measures**

**Demographic and Athlete History Information**

Participants provided their age, sex, team type, years of experience in cheerleading, and years on their current team. In addition, participants were also asked to provide information related to their position on the team and their injury history.

**Leadership Scale for Sports**

The perceived version of the Leadership Scale for Sports (LSS) (Chelladurai & Saleh, 1980) was used to assess the way athletes perceive leadership behaviors in the head coach. The LSS is a 40-item questionnaire. Athletes respond to each item by selecting one of the Likert-type response categories of “always,” “often,” “occasionally,” “seldom,” or “never” ranging from 1 to 5 accordingly. All items on the scale begin with “My coach...” The LSS includes five subscales: (1) autocratic behavior (work relatively independently of the athletes), (2) democratic behavior (asking for the opinion of athletes on important coaching matters), (3) social support (looking out for the personal welfare of the athletes), (5) positive feedback (express appreciation when an athlete performs well), and (5) training and instruction (pay special attention to correcting athletes’ mistakes).

The perceived version of the LSS is a valid and reliable measure. Cumming et al. (2006) determined the internal consistency for the subscales: training and instruction \((\alpha = .92)\); democratic \((\alpha = .76)\); social support \((\alpha = .89)\); and positive feedback \((\alpha = .89)\). For the current study, Cronbach alpha coefficients ranged from .71 - .92 and are considered acceptable (Nunnally, 1967).

**Sport Injury Anxiety Scale**

The Sport Injury Anxiety Scale (SIAS) was used to assess the athlete’s sport injury anxiety (Cassidy, 2006a; Rex & Metzler, 2016). The SIAS is a 21-item questionnaire. Athletes respond to the Likert-type item by selecting one of the responses of “not applicable,” “strongly disagree,” “disagree,” “neutral,” “agree,” “strongly agree” ranging from 0 to 5 accordingly. All questions on the scale begin
with “When I am injured…” The SIAS contains seven subscales; (1) anxiety related to losing athleticism (I am losing athletic potential), (2) anxiety related to being perceived as weak (some people think I am being lazy), (3) anxiety related to experiencing pain (I experience throbbing pain), (4) anxiety related to losing social support (some people turn away from me), (5) anxiety related to letting important others down (I am letting my teammates down), (6) anxiety related to reinjury (I worry the same injury will happen again), and (7) anxiety related to having an impaired self-image (I feel anxious about how my body looks).

Cassidy (2006a) determined the reliability of the measure with Cronbach’s alphas. Overall, the scale alpha was very high ($\alpha = .95$). Subscales were also acceptable: anxiety related to losing athleticism ($\alpha = .89$); anxiety related to experiencing pain ($\alpha = .89$); anxiety related to being perceived as weak ($\alpha = .90$); anxiety related to the loss of social support ($\alpha = .87$); anxiety related to reinjury ($\alpha = .87$); anxiety related to letting down important others ($\alpha = .86$) and anxiety associated with having an impaired self-image ($\alpha = .81$; Cassidy, 2006a). For the current study, Cronbach alpha coefficients ranged from $.72 - .85$ and are considered acceptable (Nunnally, 1967).

**Procedure**

After IRB approval, a convenient sample of coaches, primarily in the southeast region of the U.S., were contacted to gain access to participants. An email with a flyer was sent to the coaches. The flyer included information regarding the study, along with a link to the survey. The coaches were asked to forward the email to their cheerleading teams. To participate in the study, the cheerleaders simply clicked on the link taking them to the survey, hosted by Survey Monkey. This link included the informed consent, the LSS, the SIAS, and the demographic survey. After completing the survey, participants were thanked for their participation in the study.

**Data Analysis**

Three hierarchal regressions with two blocks were performed to predict anxiety related to being perceived as weak, experiencing pain, and reinjury while controlling for severity and recency of injury. Both severity and recency of injury were entered in 1st block as control variables followed by the five LSS subscales (i.e., training and instruction, autocratic, democratic, social support, and positive feedback) in the 2nd block.

Three multivariate analyses of covariances (MANCOVAs) were also conducted to determine the difference between sex, stunt position (i.e., flyers and bases/backspots) and team type (i.e., all-girl, coed, and all-star) in sport injury anxiety levels while controlling for severity and recency of injury, which may influence sport injury anxiety. Post hoc analyses were performed when appropriate. Partial eta squared ($\eta_p^2$) was used as a measure of effect size. Statistical significance was set at $p < 0.05$.

**Results**

Three hierarchal regressions with two blocks were performed to predict anxiety related to being perceived as weak, experiencing pain, and reinjury while controlling for severity and recency of injury. Neither severity nor recency of injury were significant predictors in the first step, explaining
only 0.2% of the variance ($p > 0.05$). When anxiety related to being perceived as weak and experiencing pain were entered into the equation after the control variables there was not a significant change in $R^2$ (see Table 1). When anxiety related to experiencing pain was entered into the equation after the control variables a significant regression equation was found ($F(7,144) = 2.23, p < 0.05$), with an $R^2$ of 0.098. Participants’ predicted anxiety related to experiencing pain is equal to $2.491 + 0.258 \text{ (training and instruction)}$. The coach’s level of training and instruction was a significant predictor of anxiety related to experiencing pain.

Table 1

Results of Regression Analysis Including Anxiety Related to Being Perceived as Weak, Experiencing Pain, and Reinjury

<table>
<thead>
<tr>
<th>Variables</th>
<th>Weak</th>
<th>Pain</th>
<th>Reinjury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>$\beta(t)$</td>
<td>$\beta(t)$</td>
<td>$\beta(t)$</td>
</tr>
<tr>
<td>Recency</td>
<td>0.015(0.149)</td>
<td>-0.191(-1.94)</td>
<td>-0.059(-0.59)</td>
</tr>
<tr>
<td>Severity</td>
<td>0.017(0.171)</td>
<td>0.181(1.84)</td>
<td>0.035(0.34)</td>
</tr>
<tr>
<td>Step 2</td>
<td>$\beta(t)$</td>
<td>$\beta(t)$</td>
<td>$\beta(t)$</td>
</tr>
<tr>
<td>Training and Instruction</td>
<td>0.034(0.286)</td>
<td>0.293(2.59)*</td>
<td>0.073(0.624)</td>
</tr>
<tr>
<td>Autocratic</td>
<td>-0.136(-1.36)</td>
<td>0.179(1.85)</td>
<td>-0.070(-0.697)</td>
</tr>
<tr>
<td>Democratic</td>
<td>0.005(0.053)</td>
<td>0.191(1.91)</td>
<td>0.052(0.506)</td>
</tr>
<tr>
<td>Social Support</td>
<td>0.179(1.52)</td>
<td>-0.096(-0.837)</td>
<td>0.034(0.288)</td>
</tr>
<tr>
<td>Positive Feedback</td>
<td>-0.081(-0.6)</td>
<td>-0.117(-0.89)</td>
<td>0.025(0.185)</td>
</tr>
<tr>
<td>Overall Model F</td>
<td>1.07</td>
<td>2.23*</td>
<td>0.822</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.003</td>
<td>0.054</td>
<td>-0.008</td>
</tr>
<tr>
<td>Standard Error</td>
<td>1.04</td>
<td>0.068</td>
<td>0.945</td>
</tr>
</tbody>
</table>

*denotes significance level at $p < 0.05$

A one-way MANCOVA was calculated by examining sex differences on sport injury anxiety. The covariate of severity and recency of injury did not significantly influence the sport injury anxiety. A significant main effect was found for sex ($Wilk's \tilde{\lambda} = 0.851$, $F(7,142) = 3.56, p < 0.001$, $\eta^2_p = 0.149$). Follow up univariate ANOVAs indicated significant differences in levels of anxiety related to being perceived as weak ($F(1,148) = 6.66, p < 0.01$), anxiety related to experiencing pain ($F(1,148) = 15.01, p < 0.01$), anxiety related to social support ($F(1,148) = 4.01, p < 0.05$), anxiety related to reinjury ($F(1,148) = 5.52, p < 0.05$), and anxiety related to having an impaired self-image ($F(1,148) = 8.63, p < 0.01$) (see Figure 1). Comparison of the mean scores for each of the significant dependent variables suggests that females ($M = 2.73, SD = 1.01$) reported higher anxiety related to being perceived as weak ($M = 2.73, SD = 1.01$) compared to males ($M = 2.73, SD = 1.01$); females ($M = 3.89, SD = 0.75$) reported higher anxiety related to experiencing pain compared to males ($M = 3.34, SD = 0.87$);
females ($M = 3.23, SD = 0.91$) reported higher anxiety related to social support compared to males ($M = 2.93, SD = 0.71$); females ($M = 3.60, SD = 0.90$) reported higher anxiety related to reinjury compared to males ($M = 3.22, SD = 0.98$); and females ($M = 2.90, SD = 0.98$) reported higher anxiety related to having an impaired self-image compared to males ($M = 2.38, SD = 0.96$).

**Figure 1**

*Mean Sex Differences in Sport Injury Anxiety Subscales: Anxiety Related to Being Perceived as Weak, Experiencing Pain, Social Support, Reinjury, and Having an Impaired Self-Image*

![Figure 1](image)

*denotes significance level at $p < 0.05$  **denotes significance level at $p < 0.01$

A one-way MANCOVA was calculated by examining stunt position differences on sport injury anxiety. The covariate of severity and recency of injury did not significantly influence the sport injury anxiety. A nonsignificant main effect was found for sex ($Wilk’s \hat{\lambda} = 0.945, F(7,144) = 1.19, p = 0.31, \eta^2_p = 0.055$). Follow up univariate ANOVAs indicated significant differences in levels of anxiety related to having an impaired self-image ($F(1,150) = 4.88, p < 0.05$). Comparison of the mean scores for each of the significant dependent variables suggests that flyers ($M = 2.99, SD = 0.92$) reported higher scores compared to bases/back spots ($M = 2.6, SD = 1.01$).
A one-way MANCOVA was calculated by examining team type differences on sport injury anxiety. The covariate of severity and recency of injury did not significantly influence the sport injury anxiety. A significant main effect was found for team type ($\text{Wilk's } \lambda = 0.812, F(14,142) = 2.24, p = 0.007, \eta^2_p = .099$). Follow up univariate ANOVAs indicated significant differences on anxiety related to losing athleticism ($F(2,149) = 3.41, p = 0.036, \eta^2_p = 0.044$), anxiety related to being perceived as weak ($F(2,149) = 7.03, p = 0.001, \eta^2_p = 0.086$), anxiety related to experiencing pain ($F(2,149) = 6.47, p = 0.002, \eta^2_p = 0.080$). Anxiety related to letting down important others was trending towards significance ($F(2,19) = 2.91, p = 0.057, \eta^2_p = 0.038$) (see. Figure 2).

**Figure 2**

*Mean Team Type Differences in Sport Injury Anxiety Subscales: Anxiety Related to Losing Athleticism, Being Perceived as Weak, and Experiencing Pain*

Tukey’s HSD post hoc analyses were performed to examine individual mean difference comparisons across the team types (i.e., all-girl, coed, and all-star). On the subscale of anxiety related to losing athleticism, results revealed that all-girl was significantly different from all-star ($p = 0.027$). Comparison of the mean scores for each of the significant dependent variables suggests that all-girl
reported higher scores compared to the mean of all-star \((M = 3.12, SD = 1.15)\). On the subscale of anxiety related to being perceived as weak, results revealed that all-girl was significantly different from coed \((p = 0.029)\) and all-star \((p = 0.01)\). Comparison of the mean scores for each of the significant dependent variables suggests that all-girl \((M = 3.015, SD = 0.80)\) reported higher scores compared to the mean of coed \((M = 2.50, SD = 1.11)\) and all-star \((M = 2.26, SD = 1.05)\). On the subscale of anxiety related to experiencing pain, results revealed that all-girl was significantly different from coed \((p = 0.002)\) and all-star \((p = 0.044)\). Comparison of the mean scores for each of the significant dependent variables suggests that all-girl \((M = 4.04, SD = 0.72)\) reported higher scores compared to the mean of coed \((M = 3.47, SD = 0.78)\) and all-star \((M = 3.64, SD = 0.90)\).

**Discussion**

The current study examined perceived coaching behaviors as a predictor of sport injury anxiety, as well as differences in sport injury anxiety between sex, stunt position, and team type in cheerleaders. The results failed to support the first hypothesis: the LSS subscales were not significant predictors for injury anxiety related to being perceived as weak. Specific behaviors of the coach are expected to influence the cognitive appraisal of the athlete, which will in turn affect the amount of anxiety (Baker et al., 2000; Smith et al., 1998). The Smith et al. (1998) conceptual model of sport performance anxiety states that the athlete makes a cognitive appraisal of demands, resources, consequences, and the personal meaning of the consequences. It further states that a negative appraisal of these variables may lead the athlete to feel unprepared or ill-equipped to handle the demands of the situation and fearful of the consequences in a negative manner (Smith et al., 1998). The role of the coach has an impact on the cognitive appraisals the athlete makes (Cruz & Kim, 2017; Horn et al., 2011; Wang et al., 2009). However, the current study did not support this notion in that coaching behaviors were not seen as a predictor of sport injury anxiety related to being perceived as weak.

Instead, the results of the current study may have been influenced by the interpersonal relationship between the athlete, in this case, the cheerleader, and the coach. Such relationships may impact the degree of sport anxiety an athlete feels (Baker et al., 2000). Sources of anxiety have been attributed to the coach-athlete interactions that occur during training and competition (Davis & Jowett, 2014). For example, the use of negative coaching behaviors, such as insulting or abusive behaviors, would be expected to generate greater anxiety. In this study, the athletes’ interpersonal relationships with the coaches may not have been influential enough to affect injury anxiety related to being perceived as weak. For instance, some all-star team members often come and go from the gym with little interaction with the coach.

In the second hypothesis, only the coaches’ level of training and instruction was found to be a significant predictor of injury anxiety related to experiencing pain. As discussed previously, a cognitive appraisal is made by the athlete when they are experiencing an injury or when an injury is likely. The current study found results similar to those of Cassidy and Morgan (2005) with the appraisal pattern related to anxiety about experiencing the pain associated with the injury itself and/or with the
rehabilitation. In the present study, cheerleaders who perceived that their coaches had lower levels of training and instruction tended to report higher levels of injury anxiety related to the experience of pain.

Cheerleading coaches who have participated in various workshops and training typically have a better understanding of skill progression and psychological readiness (George, 2022). Coaches with higher levels of training may be able to observe pain behaviors and changes in the movement execution (Barrette & Harman, 2020). Baker et al. (2000) investigated the relationship between coaching behaviors and sport anxiety. The authors found that the behaviors by the coach that focused around competition were significant predictors of sport anxiety, including total anxiety, concentration disruption, and worry were all found to increase as competition strategies behaviors decreased (Baker et al., 2000). Therefore, if the coach spends more time concentrating on preparing the athlete for performances, the level of anxiety related to experiencing pain will decrease by increasing the concentration and decreasing the level of anxiety.

Athletes frequently hear the words “no pain, no gain, no fame” from their coaches (Hann, 2000; Weinberg et al., 2013). Athletes are also taught to be mentally tough and encouraged to tolerate pain and take risks (Ivarsson et al., 2018). Likewise, many cheerleaders also hear these same words. For instance, cheerleaders face psychological pressures to have the hardest tumbling passes and highest jumps in fear of being placed in the back of the group during performances (Foley & Bird, 2013). A critical aspect of the overall experience of pain is how significant others, i.e., teammates and coaches, react to the athlete’s expression of pain. Over time, pain and emotion become increasingly intertwined. Often coaches may interpret pain-linked emotional displays as a lack of motivation, integrity, or toughness. Therefore, it is likely that athletes have learned to repress their feelings and anxiety related to experiencing pain to maintain the illusion of being tough and competitive. Thus, accounting for this fact that in the current study, cheerleaders who perceive their coaches to have lower levels of democratic behavior, social support, and positive feedback did not report higher levels of injury anxiety related to experiencing pain. By increasing coach-athlete communication about the athlete’s anxieties related to experiencing pain, the athlete may experience greater levels of closeness with the coach, commitment to the relationship, and performance as a result (Jowett, 2007). Establishing open channels of communication will enhance co-orientation within the coach-athlete relationship by allowing coaches and athletes to know and understand each other.

The results of the current study failed to support the third hypothesis that the LSS subscales were not significant predictors of anxiety related to reinjury. Clement and colleagues (2015) found that negative cognitive appraisals when returning to sport are a precursor to reinjury anxiety. Overall, psychosocial interventions facilitate positive emotional states following an injury (Gerrarelli et al., 2020). Some of the most common methods included increasing the education of those injured through goal setting and discussions with medical professionals (Hsu et al., 2017), increasing the use of positive self-talk (Podlog et al., 2011), incorporating imagery (Cupal & Brewer, 2001; Maddison et al., 2012), and relaxation techniques (Cupal & Brewer, 2001; Yoon & Yoon, 2014). Ensuring that there is a foundation for solid social support is also important when rehabbing an injured athlete (Hsu et al., 2017). Therefore, it seemed logical that in the current study, cheerleaders of coaches who had less
training, offered less support, and employed a more autocratic style of coaching would tend to be more anxious about reinjury.

Several factors may account for the fact that the above rationale was not supported by the results of this study. These factors include the individual characteristics and attitudes of the cheerleaders in the study, as well as the individual coping styles to which they are predisposed. According to Chelladurai (1984), the preferred behavior of coaches is strongly affected by the individual characteristics of the athletes, including their attitudes toward authority, individualism, self-esteem, and the need for independence. The current study did not survey the attitudes of the participants nor did it investigate the coping styles of the participants. Therefore, it is not known if these factors played a role in mediating the athletes’ perceptions of their coaches’ behavior.

The fourth hypothesis on sex differences was supported. Female cheerleaders scored significantly higher than males on the sport injury anxiety subscales related to being perceived as weak, experiencing pain, loss of social support, reinjury, and having an impaired self-image. These results support the findings by Cassidy (2006a), in which female athletes reported higher levels of anxiety related to being perceived as weak, experiencing pain, reinjury, and impaired self-image. These differences may have occurred for several reasons. First, female athletes tend to report higher levels of anxiety (Brawman-Mintzer & Lydiard, 1996) and sport anxiety (Correia & Rosado, 2019) than men. More specifically, females perceived more risk of injury than males (Reuter & Short, 2005; Short et al., 2005). Additionally, Storch et al. (2005) compared the psychosocial maladjustment of a sample of elite intercollegiate athletes to a sample of their non-athlete peers. Storch et al. (2005) found that female athletes reported having significantly higher levels of social anxiety than either male athletes or male and female non-athletes. In terms of experiencing pain, females in the current study reported higher levels compared to males. These results are consistent with previous research demonstrating that women experience more pain (Keogh, 2015). Previous research found that women evaluated the pain of a hypothetical injured athlete as being more intense than men (Wander et al., 2011; Sheffield et al., 2020). Therefore, it is not surprising that females reported significantly higher than males on some of the sport injury anxiety subscales in the current study.

Furthermore, the findings in the current study indicated female cheerleaders reported higher levels of anxiety associated with having an impaired self-image is also not surprising. Female athletes must often confront many body-image issues that male athletes do not. In today’s society, the new ideal girl is both masculine and feminine (Adams & Bettis, 2003; Cunningham et al., 2022). The new model of cheerleading includes both masculine and feminine traits and skills: masculine because of the complex tumbling and stunting skills, and feminine because of the dance elements and the uniforms (Adams & Bettis, 2003). Additionally, female cheerleaders are often faced with weight regulations set by their coaches, while males do not. With female cheerleaders’ identities being regularly evaluated by others, it seems possible that the females may internalize these negative evaluations and begin to question themselves (Cassidy, 2006a; Krentz & Warschburger, 2013)

The fifth hypothesis that flyers would have higher levels of anxiety related to experiencing pain, having an impaired self-image, and reinjury when compared to bases/back spots was partially
supported. Only anxiety related to having an impaired self-image was significantly higher for flyers. These results may be explained according to Torres- McGehee et al. (2012) that flyers have the greatest body image dissatisfaction when wearing revealing uniforms, such as those with bare midriffs. More specifically, flyers are selected due to their small size and are expected to maintain a light weight to prevent injuries to the base/back spot. In most aesthetic sports, there are pressures and a desire to be thin, yet appear physically fit (Byrne & Mclean, 2002; Kosmidou et al., 2017). Since flyers are on the top of the stunt, they may receive more media attention and close-ups, which may also contribute to the anxiety related to impaired self-image.

The last hypothesis that all-girl collegiate team members would have higher anxiety related to losing athleticism, being perceived as weak, experiencing pain, and having an impaired self-image compared to coed collegiate and all-star team members was partially supported. All-girl collegiate teams reported significantly higher anxiety related to losing athleticism compared to all-star teams. Furthermore, all-girl teams displayed higher anxiety related to being perceived as weak and experiencing pain compared to coed and all-star teams.

Typically, stunts for all-girl teams require two bases and a back spot compared to coed stunting with one male base and one female flyer (Jacobson et al., 2005). Often, all-girl collegiate teams are compared to their coed counterparts in terms of the stunts performed and the height of the basket tosses. During the late-nineteenth and early-twentieth centuries, cheerleading was a masculine activity that was institutionalized and respected across college campuses (Adams & Bettis, 2003). As cheerleading opened to women, it became a feminized activity (Mortiz, 2011). Emphasis was placed on physical attractiveness and sex appeal. Therefore, while performing masculine activities, such as stunts and basket tosses, all-girl collegiate cheerleaders may be perceived as being inadequate (McDowell & Schaffner, 2011). These factors may contribute to anxiety related to being perceived as weak and experiencing pain, especially when faced with an injury for all-girl collegiate cheerleaders. Besides facing gender stereotypes, all-girl collegiate cheerleading is also often overlooked as a sport (Adams & Bettis, 2006; Meltsakos, 2013). Despite making substantial time and energy investments within cheerleading, “spirit squads” are not considered a sport, according to the NCAA. However, all-star cheerleaders, who practice year-round and are solely focused on competition, are viewed as athletes (Mortiz, 2011). Therefore, it is expected that these cheerleaders have lower anxiety to being perceived as weak, losing athleticism, and experiencing pain.

Limitations and Future Research

Within the current study, there were several limitations from the data collected that may have accounted for the results. First, there may be differences in the level and difficulty of the skills performed by the cheerleader. This could contribute to the level of sport injury anxiety. The cheerleaders performing more high-risk stunts and tumbling may experience different levels of injury anxiety compared to those performing less risky skills. Also, this study did not examine the impact of either pre- or post-injury factors on the psychological response to injury. The pre-injury factors include personality characteristics, history of stressors, coping resources, and interventions (Anderson &
Williams, 1988). The post-injury factors, on the other hand, include personal and situational factors (Wiese-Bjornstal et al., 1998). These individual psychological responses to injury may have impacted how each athlete perceives sport injury anxiety.

Some caution should be used when interpreting the results of this study because the time of the season during which data was collected varied. Some teams had just finished their season, while others were still in season. Moreover, the various collegiate divisions were not included. Also, participants may have responded a certain way since the survey came from their coach, despite being told that their answers were anonymous. Finally, the current study only examined cheerleaders over the age of eighteen. Therefore, the results of this study cannot be generalized to a younger population. Future research should address these limitations.

Future research could focus on strategies and interventions that can be created, which may decrease sport injury anxiety in cheerleaders, especially female cheerleaders. Interventions may include working with athletes that are at high risk for injury based on their SIAS score and reducing the sport injury anxiety in athletes with current injuries. Future research could also examine coping strategies for sport injury anxiety in cheerleaders. Finally, interventions designed to enhance coaches’ and athletes’ knowledge of sport injury anxiety and its effects on performance could be conducted.

Additionally, a qualitative study examining the level of sport injury anxiety in cheerleaders will provide a closer examination of what the athlete is feeling and thinking in a particular situation or setting. Qualitative studies would provide a holistic picture of the cheerleaders’ insights and interpretations. This may assist in creating an appropriate training and education program for coaches. Future research should also examine the difference between male and female coaches and the impact this plays on sport injury anxiety. Furthermore, there is also a need to investigate sport injury anxiety in various age groups within cheerleading, as well as in different sports.

Conclusion

The study provided further insight into sport injury anxiety, specifically with cheerleaders. Only the coach’s level of training and instruction was able to predict anxiety related to experiencing pain in cheerleaders. However, clear sex differences were found in the levels of sport injury anxiety. Female cheerleaders reported significantly higher on the sport injury anxiety subscales related to being perceived as weak, experiencing pain, loss of social support, reinjury, and having an impaired self-image. Only anxiety related to having an impaired self-image was significantly higher for flyers. Finally, all-girl collegiate members had higher levels of anxiety related to losing athleticism, being perceived as weak, and experiencing pain. This study provided insight into sport injury anxiety in cheerleading; however, further research is needed.
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