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# Exploration of Dancers' Post-Injury Psychological Experiences

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**Exploration of Dancers' Post-Injury Psychological Experiences**

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Accepted in Partial Completion
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**Master's Thesis**

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Marisa Fernandez

May 19, 2021

# Exploration of Dancers' Post-Injury Psychological Experiences

A Thesis
Presented to
The Faculty of
Western Washington University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Science

by
Marísa Kelly Rose Fernandez
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## Abstract

Approximately 95% of dancers suffer from musculoskeletal pain, and rates of musculoskeletal injury in professional dancers range between 20% to 84% (Hincapié et al., 2008). In addition to the mechanical disturbances that injuries have on physical functioning, athletic injuries often trigger psychological and emotional distress (Anderson et al., 2004; Wiese-Bjornstal et al., 1998). Sport athletes have reported emotions including frustration, depression, fear, and anger post-injury, among other psychological responses (Johnston & Carroll, 1998; Macchi & Crossman, 1996; Tracey, 2003). Dancers, like sport athletes, face inherent risks for injury due to the artistry and physicality of dancing (Hincapié et al., 2008), yet there is limited research on the psychological responses of dance-related injuries, particularly within modern dancers (Thomas & Tarr, 2009). Thus, the purpose of the present study was to qualitatively explore the post-injury psychological experiences of modern dancers. Participants included eight adult modern dancers (7 women, 1 man; $M_{age}$ = 30.5 years; 75% White) who had suffered a serious injury (≥ 6 weeks recovery time) within the past five years. Data was collected via semi-structured interviews, and all interviews were transcribed verbatim and coded line-by-line through an inductive analysis process. All open codes were sorted into 24 themes. Final themes were organized into seven higher order categories: emotional reactions, behavioral responses, realizations, external factors, loss, acceptance, and other experiences. The present study provides a base of research on the complexity of dance injury experiences and can be used as a guide to aid practitioners to support modern dancers more effectively.

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## Literature Review

Although the physiological implications for the stages of injury rehabilitation for athletes are commonly examined in athletic injury rehabilitation literature, psychosocial aspects of injury are often overlooked (Clement et al., 2015). Following the initial occurrence of an injury, there are myriad cognitive, emotional, and behavioral responses (Lazarus & Folkman, 1984) associated with physiological pain and injury. Post-injury experiences differ depending on how individuals assess and rate their pain and the severity of injury (Lazarus & Folkman, 1984) and at different points in the rehabilitation process (Prentice & Arnheim, 2011). For example, experiences can differ based on whether the pain or injury is a threat (i.e., a primary appraisal), followed by the perception of whether coping with it is possible (i.e., a secondary appraisal). Further, experiences and perceptions can change whether the person is in the acute injury phase, repair phase, or remodeling phase (Prentice & Arnheim, 2011). Much research on the injury experience has been studied with sport athlete populations (e.g., Anderson et al., 2004; Bianco et al., 1999; Bianco, 2001, Wadey et al., 2012; Wiese-Bjornstal et al., 1998). Dancers, like other types of sport athletes, face similar risks for pain and injury due to the artistry and physicality of dancing (Hincapié et al., 2008), yet dancers have not been studied in as much depth in terms of the psychological responses to injury.

Dancers have similarities to other types of athletes, but are also a unique type of artistic athlete (Hincapié et al., 2008), judged on technical abilities, personal style, and subjective movement qualities, rather than a more objective scoring system used for assessment in many other sports. Thus, modern dance is deemed an art form and an athletic experience, with growing popularity in America (Fuhrmann et al., 2010). However, modern dance companies typically have fewer financial and emotional resources compared to ballet companies (i.e., less funding,

fewer dancers, minimal access to medical care). With limited resources as well as a relatively high risk for injury, modern dancers may be particularly vulnerable to insufficient injury education and treatment (Krasnow et al., 1994), much less, psychosocial treatment. Although the athletic injury research is vast, research on experiences post-injury is limited, particularly within dance populations (Anderson & Hanrahan, 2008). The present study aims to broaden the research on post-injury experiences of modern dancers when faced with the adversity of a very serious injury (i.e., an injury [excluding head injuries] that is severe enough to lead to take an individual out of dance for at least six weeks). This literature review includes an overview dance-related injury prevalence and risk factors for injury, several models related to cognitive appraisals of injury, the psychological and emotional aspects of the injury response, as well as behavioral and coping responses, followed by the application of the models for athletes and dancers.

**Dance-Related Injury Prevalence**

Injury can be defined as damage that tissues sustain in response to a physical trauma (Whiting & Zernicke, 2008). Dance-related injuries, similar to other types of injuries, can be either chronic or acute (Tuffery, 1989). Within dance literature, acute injury can be defined as an injury caused by a specific moment in dancing (rehearsal or performance), while chronic injury can be defined as an injury that was exacerbated further by dancing (Tuffery, 1989). Chronic injuries may refer to overuse injuries or injuries that cause constant, recurring pain over a long period of time. When discussing injury in professional dancers specifically, Bronner and colleagues (2003) define injury as a musculoskeletal complaint that results in a financial outlay.

Depending on a variety of circumstances, dancers have varying causes of injury. Musculoskeletal injuries are often caused not only by mechanical disturbances to the physical

body, but also by a relationship with physiological (e.g., bone structure, musculature, etc.) and psychological (e.g., mental health history) genetic predispositions (Kumar, 2001). In a survey study conducted by Bowling (1989) on 141 ballet and modern dancers, the majority of dancers reported their perceived causes of injury as being overtired, overworked, under high pressure, or run down, while others mentioned dancing on an unsuitable floor, a cold environment, improper warm-ups, overly demanding choreography, unhealthy diets, falling during partnering, and being forced to turn-out from the hips. Bowling's (1989) findings parallel those of Tuffery's (1989) study on Morris dancers (a physically vigorous style of folk dance), in which the author speculated that the overall cause of injury included overly vigorous and challenging choreography, improper flooring, and insufficient warm-ups. Several studies include evidence that dancers push themselves beyond their limits and do not allow their bodies to take sufficient breaks (e.g., Bowling, 1989; Tuffery, 1989). Taken together, it appears that dancers often minimize the severity of pain and signs of injury, which may be connected with low body awareness, and pride in personal grit and perseverance. Body awareness can be defined as one's awareness and attention to one's subjective internal body sensations (Mehling et al., 2011). With low body awareness, dancers may in turn not only have an inability to identify injury signs, but also tendencies to minimize the future consequences of injury, leading to long lasting chronic injuries and overall shortened dance careers (Bowling, 1989; Tuffery, 1989). The above challenges for dancers may lead to negative responses to injury that are perhaps unique from other types of sport athletes.

Following the initial occurrence of an injury, dancers may or may not acquire medical treatment depending on several personal, social, and financial factors (Krasnow et al., 1994). To demonstrate, in Bowling's (1989) study, more than 50% of the dancers who reported being

injured stated that they did not rest at all following their injuries, but rather continued on as best as they could, while fewer than 50% sought out medical treatment. In Tuffery's (1989) study, dancers with acute injuries rested and used first aid, but did not initially seek out further medical treatment. According to Robson and Gitev (1991), 43% of dancers who sought out treatment reportedly continued to dance through injury, even when medically advised not to. Barriers to medical treatment may include financial considerations, accessibility to treatment, and psychosocial reasons including fear of loss of employment, dancers' negative perceptions of the medical field, and the social culture within the dance world (e.g., distrust in doctors, overdependence on teachers and choreographers; Krasnow et al., 1994). Consequently, from insufficient injury support and guidance, dancers may have a challenge properly recognizing and addressing the symptoms and signs of injury.

As a result of injury occurrence and limited resources for treatment, dancers may face an increased risk for longer-lasting injuries. In order to overcome barriers to seeking medical treatment in dancers, Krasnow et al. (1994) advised increasing communication between dance teachers and medical staff, providing more opportunity for psychological/counseling services for dancers, and developing a better overall understanding for the limitations dancers may have in terms of resources. There is minimal research on the responses and experiences of dancers' injury experiences, and because much of the research dates back to the 1980's and 1990's; it is unclear if these responses are still typical in dancers today.

**Stress and Risk for Athletic Injury**

Suffering from a serious injury as an athlete not only decreases physical functioning, but often leads to considerable psychological and emotional distress (Anderson et al., 2004; Wiese-Bjornstal et al., 1998). Sport athletes often face several cognitive (e.g., hindering self-

talk), emotional (e.g., fear, anger, frustration, sadness), and behavioral (e.g., coping, adherence/non-adherence to rehabilitation) responses when confronted with the stress of an injury (Albinson & Petrie, 2003; Wiese-Bjornstal et al., 1998). Many authors have presented theoretical models of stress and injury that guide the empirical research related to the psychology of athletic injuries.

For example, Andersen and Williams (1988) proposed the model of stress and athletic injury to describe factors that can either contribute to or help prevent athletic injury. The authors outlined the various factors that often influence injury occurrence, including physical, psychological, social, and stress-related factors. Specifically, a combination of personality characteristics, history of stressors, and coping resources, as well as various psychological interventions, will likely influence individuals' responses to potentially stressful athletic situations. Depending on the outcome of the stress response, injury may result. According to the model, how individuals cognitively appraise the potentially stressful situations will likely have an impact on their personal stress responses (Andersen & Williams, 1988), and ultimately, their risk factors for injury. For example, when two sport athletes experience the same stressful situation, such as demanding training or a high stakes performance, their individual personal stress responses will likely look quite different from one another based on each individual's personality, history of and current stressors, and coping resources (Williams & Andersen, 1998). According to the model, athlete "A" may have previously experienced a stressful situation in the past (e.g., an overly demanding training environment) that was able to be smoothly resolved via adaptive coping resources (e.g., strong social support) and psychological interventions (e.g., cognitive restructuring and relaxation techniques), whereas athlete "B" may have experienced the same stressful situation in the past (e.g., a similarly demanding training environment), with

fewer or maladaptive coping resources (e.g., lack of social support, using alcohol to cope) and/or fewer psychological interventions available to handle the stress. Thus, the risk of injury for athlete "A" and athlete "B" will be inherently different when faced with a similar physical stressor (e.g., physical contact) at practice or during competition. For example, the cognitive appraisals that athlete "A" may have about the situation may include "I can handle the training demands, because I have made it through stressful situations in the past", whereas athlete "B" may think "I will never get through this training, it is too physically demanding."

According to Andersen and Williams' (1988) in addition to cognitive appraisals, attentional disruptions and physiological responses may also be present when faced with a stressor (e.g., sweating, shakiness, quickened heartbeat). When individuals experience extreme physiological responses to stress, their bodies may be less resilient to adapt to changes in their environment, thus increasing potential risk for injury. For example, with intense work demands plus a negative cognitive appraisal, athlete "A" may exhibit heightened muscle tension, leading to a plausible increased risk for injury compared to athlete "B" with an absence of increased muscle tension. Additionally, attentional disruptions (e.g., increased distractibility and a narrowing of visual focus) may increase athlete "A's" risks for injury. Overall, within their model, Andersen and Williams (1988) discuss several factors that may increase injury risk from one individual to another.

To test Andersen and Williams' (1988) stress and injury model within athletic settings, researchers have studied the connection between life events, stress, and different personality variables on the prediction of athletic injury (Wadey et al., 2012). Wadey et al. (2012) tracked the effects of major life events of 694 young adult athletes over two years and compared those who sustained an injury ($n$ = 104) with those who did not ($n$ = 590). The athletes ranged in in

sports and competition levels from recreational to international. The researchers found that there was a positive correlation between major life events and risk for sport injury. More specifically, major life events predicted *risk* for sport injuries, while major (negative) life stress predicted *ultimate* sport injury (Wadey et al., 2012). Although Wadey et al. (2012) examined the effects of major life events on both the prediction of sport injuries, the authors did not directly address the frequency or severity of injury within their study.

In contrast, Hanson et al. (1992) assessed the frequency of injury in 181 Division I and Division II intercollegiate track and field athletes (123 males, 58 females), using measures of stress, anxiety, and coping resources. During the indoor and outdoor track seasons, 63.3% (99) of the total sample were reportedly injured, and 31 reported a lack of full recovery. Both negative and positive life stress positively correlated with injury severity, however, the results did not support the predicted relationship between daily life hassles and injury frequency, nor a relationship between injury occurrence and locus of control (i.e., if it is within a person's control or outside a person's control). Of the total sample, 50% of participants reported their current training was hindered due to prior injury. Hanson et al.'s (1992) findings indicate that certain aspects of Andersen and Williams' (1988) model may be important in the prediction of injury severity and frequency of track and field athletes. In a more recent prospective study conducted on 56 professional soccer players (18 females, 38 males), Ivarsson et al. (2013) found that negative life event stress, daily hassles, and trait anxiety were predictive factors for sport injuries among participants. Based on the findings as well as the limitations of Hanson et al. (1992) and Ivarsson et al. (2013), assessing and understanding the available coping resources for injured sport athletes may help improve emotional responses. The research overall supports a connection between stress and injury.

Given the relationship between stress and risk for injury, Andersen and Williams (1988) argued that having adaptive coping resources can help reduce injury risk, as well as moderate the effects of stress on injury. Adaptive or positive coping may involve having the resources in place to manage stressful situations, for example, the motivation to adhere to rehabilitation. Williams (2001) proposed similar arguments, also suggesting that social support can play an important role in one's coping resources. For example, seeking social support from one's sport team has been found to be a successful coping behavior following an injury (Clement et al., 2013), and an important psychosocial factor for athletes during each stage of injury rehabilitation (Clement et al., 2015). In Clement at el.'s (2015) study on eight NCAA Division II sport athletes, social support primarily came from family members and significant others. According to Bianco (2001), the nature of a stressor and related coping needs help determine the need for social support. Further, the presence of social support and other adaptive coping resources, in addition to personality characteristics, history of previous stressors, and psychological interventions, may greatly impact the risk factors and healing outcomes of an injury.

Overall, there are several factors at play when it comes to assessing risk for and outcomes of athletic injury (e.g., Andersen & Williams, 1988). Personal, social, and environmental sporting factors will all play a unique role in influencing an athlete's risk for injury, and similarly, have an effect on recovery outcomes. Further, stress can be a cause for injury and is also a common response to injury. Stress responses in relation to injury will be discussed further in the following section.

Following the experience of a stressful event (which includes injury) or the onset of an injury, individuals will evaluate (i.e., appraise) their situation, including the level of threat perceived. In a non-sport-specific model, Folkman et al. (1991) described appraisals as a process

through which an individual assesses a given situation in terms of the significance of the situation (a primary appraisal) and their resources available for responding to the situation if a stressful threat is appraised (a secondary appraisal). These concepts are included in the transaction theory of emotions and coping developed by Lazarus and Folkman (1984). Primary appraisals refer to the meaning that an individual places on a specific situation (e.g., Folkman, 1984; Lazarus & Folkman, 1984), such as a dancer tripping on stage and appraising that their dance career is over. According to the authors, these appraisals can be categorized into three options: benign-positive (i.e., having a positive effect on wellbeing), irrelevant (i.e., having no major effect on well-being), or stressful (i.e., involving threat, harm, or challenge to one's wellbeing) depending on the individuals' personal evaluation of the situation (Lazarus & Folkman, 1984). Lazarus and Folkman (1984) proposed that a secondary appraisal process (e.g., mental review of one's available coping resources) then helps direct strategies to handle the initial stressor and the emotions that follow (Dewe & Cooper, 2007). The relationships between the primary appraisal and the secondary appraisal, in turn, help to shape the emotional outcomes of every situation (Folkman et al., 1991). Following one's primary appraisal of a stressful situation such as an injury, several emotions are typically involved (Folkman et al., 1991). For example, appraisals involving a threat may induce emotions of fear, anger, or anxiety. The relationship between individuals' coping resources, situational variables, and coping styles are what help direct the secondary appraisal to a stressful situation (Dewe & Cooper, 2007). Biggs and colleagues (2017) and Dewe and Cooper (2017) noted that the sequence of primary and secondary appraisals is not always in a clear-cut sequential order, but rather, primary and secondary appraisals interweave in complex patterns that involve "simultaneous interchange"

(Biggs et al., 2017, p. 353). Overall, individual perceptions play a notable role in influencing the overall stress response.

Emotional responses are likely to follow cognitive appraisals of stress (Lazarus & Folkman, 1984). Individual differences in common stress responses and individual coping resources likely play a vital role in emotional responses to stress. Consistent with previous research, Albinson and Petrie (2003) found life-event stress to be the highest positive predictor for mood disturbance on the first day of their study assessing Division I football players. Other researchers have theorized that the emotional response to stress is related to emotional intelligence (Mikolajczak et al., 2007).

Interestingly, trait emotional intelligence has been studied in relation to responses to stress, and Mikolajczak et al. (2007) concluded that an individual's trait emotional intelligence has an effect on one's responses to both laboratory-induced and naturally occurring stressors. Trait emotional intelligence can be defined as "individual differences in the perception, processing, regulation and utilization of information" (p. 1000). Trait emotional intelligence has been found to be a moderator of one's subjective mood, emotions, physical sensations, and behaviors, and individuals with higher emotional intelligence were found to appraise stressful situations as "challenging" rather than "threatening" (Mikolajczak et al., 2007). Mikolajczak et al. (2007) assessed whether trait emotional intelligence similarly moderates the more objective biological (cortisol level) and psychological (mood) responses to stress in a sample of 56 male student participants. Participants were split into two groups: neutral condition (i.e., control group) or stressful condition (i.e., giving a public speech), and the researchers examined the psychological and cortical reactivity. Interestingly, researchers concluded that trait emotional intelligence was negatively correlated with response to stress at biological and psychological

levels. In other words, participants with lower trait emotional intelligence were found to have higher levels of salivary cortisol as well as mood deterioration. These results imply that given the individual differences in trait emotional intelligence, there are a variety of ways that individuals can react emotionally to stress.

Emotional responses to stress will differ based on the initial cognitive appraisal of the stressful situation, and in some cases, individuals may cognitively reappraise situations in order to more effectively manage the stressor (Lazarus & Folkman, 1984). According to Gross (2002), cognitive reappraisals are defined as changes in the way a situation is appraised so as to lessen the emotional impact. Depending on the various adaptations made in the reappraisal process, individuals may transition to feeling more positive emotions, however, if maladaptation occurs, another cycle of coping strategies may be required for an individual to manage the stress, which could lead to negative affect (Edwards, 1992). Cognitive reappraisals involve both situation and individual-focused techniques, and Goldin et al. (2008) argue that cognitive reappraisal affects the early phases of one's emotional processes, while other techniques used later on in the process (e.g., suppression) do not affect the experience of emotion, but solely the behavioral expression. In contrast, Quartana et al. (2010) argue that emotion suppression does in fact have a negative effect on emotional responses. Thus, just as individual and situational differences influence many factors in the appraisal process, emotional responses to stress are also highly subjective and based on personal and situational factors. Models specific to the stress response of athletic injuries have also been theorized and discussed in the literature, some of which are outlined below.

**Stress response models for athletic injury.** Another theoretical model specifically related to the psychological responses to sport injury is the integrated model of response to sport

injury (Wiese-Bjornstal et al., 1998). The authors of the integrated model proposed that individuals' personal and situational factors influence their cognitive appraisals of an injury, which then influence their recovery outcomes and emotional responses. Emotional responses, in turn, will likely impact behavioral responses, which may then cycle back to affect cognitive appraisals. For example, if a dancer perceives an injury as a threat to one's athletic career (cognitive appraisal), fear may proceed (emotional response), which may influence lack of adherence to injury rehabilitation protocols (behavior). The lack of adherence to rehabilitation, in turn, may lead to negative healing outcomes (e.g., setbacks, slowed healing), which then reinforces the original belief that the injury is a threat. Another dancer with a similar injury may not perceive the initial injury as a threat to one's career, but rather as an opportunity for growth. The emotional and behavioral responses of the second dancer would present themselves quite differently (e.g., self-discovery and seeking out new opportunities that present themselves as a result of the injury) as compared with the individual perceiving the injury as a threat.

Although many athletes may appraise an injury as a threat, others may have less adverse responses to an injury. In a study on 12 elite-level skiers who had recovered from a severe injury or illness, Bianco et al. (1999) noted that the study findings were consistent with Wiese-Bjornstal and colleague's (1998) theory; overall, the skiers perceived their sport injury to be a stressful event, and personal and situational factors played a role in injury response. Additionally, several cognitive stressors, emotional stressors, cognitive strategies, and behavioral strategies were listed as second order themes in the results, and both appraisal and coping were an ever-evolving processes that were affected by rehabilitation progressions. Based on Bianco et al.'s (1999) study on skiers, factors such as injury and individual personality differences, in addition to social and environmental sporting factors, influenced how individuals perceived the stress or injury

occurrence. Given these findings, it appears as though sport athletes will have varying levels of physiological, emotional, and behavioral responses to injuries based on several individual, social, and environmental circumstances.

In addition to individual differences in initial cognitive appraisals of stress and injury in sport, people may also cognitively appraise pain differently depending on personal and situational factors (Clement et al., 2015; Mainwaring & Finney, 2017), as each individual has a varying level of pain tolerance (Minev et al., 2017). Albinson and Petrie (2003) argued that although the integrated model pointed to the effects that situational and personal factors have on emotional responses being mediated by cognitive processes, research is limited on the strength of this connection (Albinson & Petrie, 2003, p. 307). In other words, the extent to which cognitive processes affect emotional responses is in need of further investigation. Additionally, there is little research on these connections in different types of dancers, thus, there are still several unknowns in terms of dancers' cognitive and emotional responses to injury.

The integrated model of response to sport injury (Wiese-Bjornstal et al., 1998) can be used as a framework for assessing not only individual differences in overall response to injury, but also in changes over time in one's personal cognitive appraisals, recovery outcomes, and emotional responses based on various phases of rehabilitation. Three phases of physiological injury rehabilitation have been conceptualized by athletic trainers as the acute injury phase, repair phase, and remodeling phase (i.e., injury onset, recovery phase, and return-to-sport; Prentice & Arnheim, 2011). These three phases have been used to help researchers identify various trends that take place in each phase, and the psychosocial responses to injury during each phase (Clement et al., 2015). Overall, the theoretical models proposed can aid in the process of

understanding individuals' personal experiences and responses when it comes to suffering an injury.

Qualitative studies on responses to injury have been effective at adding to the literature on athletic injury models. Psychosocial responses to injury during the three phases of sport rehabilitation as outlined by Prentice and Arnheim (2011) include the acute injury phase, repair phase, and remodeling phase. Kamphoff et al. (2013) has since integrated psychosocial theories to the phased approach of injury recovery, considering the three phases as: reaction to injury, reaction to rehabilitation, and reaction to return to sport. Clement et al. (2015) followed the phased approach framework in a qualitative study design. Participants included eight Division II athletes (four females, four males) from a variety of sports in the National Collegiate Athletic Association (NCAA) who had recovered from an injury that took them out of their sport for at least six weeks. The researchers utilized semi-structured interviews to focus on subjective experiences, and they identified the following themes: changes in cognitive appraisals, emotional responses, and behavioral responses over the three phases of injury. Participants' initial predominantly negative cognitive appraisals (e.g., "I never thought that I would be able to throw again") depended on the perceived severity of their injuries. The initial negative cognitive appraisals tended to lead to especially negative emotions (e.g., hysteria, shock, anger), but shifted towards more positive emotions over time as the athletes moved through the phases of rehabilitation. Further, athletes' perceptions of the severity of their injury during the acute injury phase played a role in influencing how negatively they cognitively appraised the situation, as well as how negative their emotions were as a result. In contrast, athletes with initial hopes or beliefs that their injuries were less severe often perceived their injuries as less negative. The behavioral response of seeking social support was another theme identified during the early

phases of rehabilitation. Frustration was found to be the most common emotional response in athletes during the repair phase. Additionally, during the repair phase the athletes noted a sense of caution in returning to play and the continued seeking of social support. During the final remodeling stage, athletes reported some feelings of reinjury anxiety, an excitement to return to sport, and an appreciation of what they had learned during rehabilitation. Clement et al. (2015) noted that their study findings support the integrated model of response to sport injury (Wiese-Bjornstal et al., 1998). There appears to be support for different experiences between the different phases of sport injury, however, these experiences may differ depending on the sport context.

Similar to Clement et al.'s (2015) study, Bianco et al. (1999) examined three distinct phases of injury recovery: injury-illness phase, rehabilitation recovery phase, and return to full activity phase, yet focused on just athletes from one sport. Twelve elite-level skiers who had recovered from a debilitating illness or a severe sport injury were interviewed (8 still active competitive skiers, 4 retired skiers). The researchers found that skiers experienced varying levels of stress depending on their phase of recovery and their personal and environmental factors, supporting Lazarus and Folkman's (1984) model. Not only were skiers' experiences during each of the three stages inherently different (across the stages), but the transition between phases was also dependent on their individual decisional processes (Bianco et al., 1999). A limitation of the study included the timing of the study having taken place during a preseason training camp in which only the still active skiers were involved in, which could have led to different responses from active skiers ($n$ = 8) versus retired skiers ($n$ = 4), and the focus on solely elite-level skiers, thus posing a threat external validity or generalizability of the study. Following a phased approach to injury rehabilitation appears to be a common theme in the psychosocial responses to

injury in sport athlete participants. Because no dancers were included in either of the qualitative studies incorporating the phased approach to rehabilitation, it is unknown whether dancers have similar distinct phases in their experiences related to injury compared to other types of sport athletes. Additionally, it would be effective to study a specific type of athlete who is still performing or competing.

In summary, individuals appear to have different experiences with recovery from injury over time in distinct phases, and those experiences can be categorized in cognitive, emotional, and behavioral categories. One's individual perceptions, or appraisals, of the injury influence these responses. Details on these categories of responses to injury are included in the following sections. Beyond models of athletic injury responses, research specifically focused on different cognitions, emotions, and behaviors specific to injury and pain responses is readily available in the literature and is summarized in the below section. However, most studies related to this topic include general sport athletes (e.g., Bianco, 2001; Johnston & Carroll, 1998; Tracey, 2003), with fewer studies on dancers specifically (e.g., Anderson & Hanrahan, 2008).

**Cognitive Responses to Pain and Injury**

The way in which individuals interpret their pain or injury experiences are known as their cognitive appraisals. Cognitive appraisals of injury or pain can range from examples such as, "this injury could ruin my entire career", to "an ankle sprain is not so bad." Cognitive appraisals play a large role in the resulting emotions and behaviors (Weise-Bjornstal et al., 1998). When it comes to injury, individuals will also assess and rate their threat level based on personal and situational factors (Lazarus & Folkman, 1984). In short, factors such as type of injury and individual personality differences, as well as social and environmental factors, will have an effect on how individuals perceive stress, pain, and the overall injury experience.

The way sport athletes and dancers appraise pain can play a major role in injury experience and reactions to injuries (Anderson & Hanrahan, 2008). Additionally, different types of pain can be appraised differently. Anderson and Hanrahan (2008) studied how dancers appraise pain. Specifically, the authors discussed two types of pain in their study: *performance* pain and *injury* pain, on 51 professional contemporary and ballet dancers (34 females and 17 males) with an average age of 25.9 years. Performance pain can be described as pain that is benign, regular for athletes to experience, short-lived, acute, within the athlete's control, and sometimes even sought after as a sign of growth, hard work, or satisfaction. Injury pain, on the other hand, can be described as more severe or debilitating pain, is typically associated with more serious acute or chronic injuries, and is usually out of the athlete's control.

Dancers, like other sport athletes, are often pushed to extreme limits, and cross the line from performance pain to injury pain without necessarily being able to fully differentiate between the two. Participants in Anderson and Hanrahan's (2008) study responded to several pain-related questionnaires, and the authors found that, interestingly, type of pain and pain severity did not affect dancers' pain appraisals or coping styles. Dancers with performance pain (no matter the severity) reported dancing through pain more often than dancers experiencing injury pain. The study was limited by the subjectivity of pain experiences, the challenges of differentiating between chronic pain and acute pain, and the overall small sample size. Overall, how individuals tolerate and appraise pain, the type of injury, and the stage of injury recovery all may affect the psychological response to injury (Sullivan et al., 2002). Given that athletes reported less pain overall compared to sedentary individuals (Sullivan et al., 2000) and the general lack of literature on responses to injuries in dancers, it is unknown if these factors play a role in individual experiences with injury.

One specific type of cognitive appraisal of pain and injury is catastrophizing, or dwelling on pain and/or perceptions of one's coping inability (Tripp et al., 2007). Catastrophizing has reportedly been a recurring theme in research on pain and injury. In a study on 29 non-athlete participants (19 females, 10 males) diagnosed with fibromyalgia, Gracely et al. (2004) found pain catastrophizing to be positively associated with heightened brain activity in areas that are associated with the anticipation of pain (i.e., the cerebellum and the medial frontal cortex), attention to pain, motor control, and emotional factors of pain. The researchers concluded that based on the results, pain catastrophizing influences pain perception via increased emotional responses to pain (Gracely et al., 2004). In another study on 50 sedentary college students (33 women, 17 men), Sullivan et al. (2002) examined the efficacy of catastrophizing measures as predictors for intolerance to activities following delayed onset muscle soreness Participants engaged in various repeated concentric and eccentric muscle actions in order to induce delayed onset muscle soreness. Overall, the researchers concluded that catastrophizing reduced participants' maximum weight-lifted in conditions where movement was associated with pain. In other words, participants' experiences of pain, depending on the context, will likely play a role in how pain catastrophizing will then impact one's behavior. Additionally, pain catastrophizing may affect subsequent behavior other than performance, and may be an important element to consider when analyzing dancers' responses to injury pain.

Catastrophizing of pain has been studied in sport specific samples, and researchers found that catastrophizing was fairly consistent among athletes and sedentary individuals (Sullivan et al., 2000). For both athlete and sedentary participants (N = 140), individuals tended to intensify their threats of pain, and perceived pain intensity as out of their control and results implied a positive relationship between catastrophizing and perceptions of pain intensity. In other words,

when individuals perceive their pain to be more intense, pain catastrophizing is likely to result. Interestingly, the athletes in the study ($n$ = 54) perceived laboratory-induced pain to be less intense compared to reports made by sedentary individuals ($n$ = 54). Several researchers have studied pain catastrophizing in relation to athletic injury response. Focusing specifically on recreational athletes from a variety of sports (22 women, 27 men, $M_{age}$ = 29.5 years), Tripp et al. (2007) measured pain catastrophizing as a primary variable in the sample of 49 previously injured recreational athletes who had undergone and recovered from anterior cruciate ligament (ACL) surgery, and assessed how their fear of reinjury, pain catastrophizing, and negative affect (i.e., fear, anxiety, anger) related to their confidence in their ability to return to sport, and their ultimate success in returning. The researchers found that the fear of reinjury was inversely associated with return-to-sport. Overall, negative mood and fear of reinjury were predictive factors for sport confidence and reported success in returning to sport, respectively. One study limitation included the focus on ACL injuries not necessarily being generalizable to other types of injuries. Although ACL injuries may occur in other sport contexts, the literature on dance injuries has not focused specifically on one type of injury.

In one study on dancers and pain catastrophizing, Anderson and Hanrahan (2008) found, when the 51 professional ballet and contemporary dancers in their study appraised pain as a threat, they were more likely to catastrophize their pain, and use avoidance coping. Interestingly, Mainwaring et al. (2001) reported that ballet dancers appeared to have lower coping skills and higher levels of catastrophizing compared to other types of sport athletes, perhaps due to the nature of the way dancers are trained to cope with pain and injury. Overall, there are several connections between catastrophizing and pain appraisals. When individuals appraise pain as highly intense or threatening, catastrophizing is likely to result (Mainwaring et al., 2001). When

one catastrophizes pain, negative emotional and behavioral responses may follow. Pain catastrophizing is, thus, an important cognitive response to consider when an individual suffers an injury, as it may play a role in subsequent psychological responses. Gathering subjective information from previously injured dancers regarding their perceptions and responses to pain and injury, may add to the research on how injury-related pain is perceived among dancers.

Regardless of pain perceptions, throughout the athletic injury rehabilitation process, several authors have reported on the shifting in cognitions on injuries in general over time as individuals move through various stages of recovery. A few common cognitive appraisals that female collegiate athletes (from a variety of sports) have reported through qualitative interviews immediately following *initial* injury occurrence include being "cognitively aware" of the risks of sport participation, yet still shocked that they actually ended up suffering an injury (Tracey, 2003, p. 283). The presence of both injury awareness and shock caused athletes to perceive a sense of "fear of vulnerability", "loss of independence", and "uncertainty" (Tracey, 2003, p. 183), or a feeling of helplessness. Although no denial of injury was reported, some of the athletes did note "downplaying the seriousness of the injury" (Tracey, 2003, p. 284). Interestingly, the author noted that as the rehabilitation process continued, participants described their experiences as "obstacles to overcome" and "significant learning experiences" (Tracey, 2003, p. 288), which reflects previous researchers' reports (Ievleva & Orlick, 1991; Rose & Jevne, 1993) in which athletes described their recovery as an "opportunity to learn important lessons about themselves…. inner strength and commitment, and learning not to take being healthy for granted in the future" (Tracey, 2003, p. 288). The author concluded that athletes in the study described their learning as a very personal experience. In Bianco's (2001) study on social support and recovery in injured skiers, the shock factor and realization of the injury consequences did not

fully hit many of the participants until they returned home sometime after initial injury occurrence. Johnston and Carroll (1998) noted that in their study on 16 severely injured sport athletes from a variety of sports, common themes during the predominant period of rehabilitation (i.e., the longer period after the initial diagnosis, before return-to-sport phase) included the concentration of the rehabilitation process, which in many cases was cognitively appraised negatively by participants. Based on the findings reported by Tracey (2003), Bianco (2001), and Johnston and Carroll (1998), recurring themes in cognitive appraisals of athletic injury included shock, disbelief, denial or downplaying of injury severity/consequences, a focus on rehabilitation, and gratitude for the support of others. Based on the aforementioned studies, researchers have found that different cognitions occur in different individual athletes in terms of injury experiences. Due to the minimal research on dancers, it is unknown as to whether there are individual differences between different types of dancers.

**Emotional Responses to Pain and Injury**

According to Deci (1980), an emotion is a reaction to an event or a stimulus that can be either real or imagined. Emotional responses to stress not only depend on the severity of a stressful situation, but also greatly depend on several individual factors (Mikolajczak et al., 2007). Emotional responses to pain and injury parallel emotional responses to stress; individuals' emotional responses to injury are influenced by both genetic factors and personality characteristics (Kumar, 2001). Overall, emotional responses are a function of several personal and situational factors.

In addition to emotional responses to stress, there are different influences on emotional responses to physical pain (Lazarus & Folkman, 1984). Gracely et al. (2004) noted that pain catastrophizing has been found to be positively correlated with the negative emotion of

depression. Emotional suppression can also influence emotional responses to pain. In a study conducted on 47 healthy university female students, Quartana and colleagues (2010) found that in participants who suppressed their feelings of anger during an "anger provoking speech" (Quartana et al., 2010, p. 211) followed by a painful task, participants reportedly felt angrier after the pain related task. In other words, the grouping of self-reported emotion suppression in combination with physical pain (from a cold pressor pain task) led to higher reports of anger and higher perceived pain intensity. The results imply that suppressing ones' emotions, in combination with the physical experience of pain, may lead to a more intense experience of pain and ultimately stronger negative emotions (e.g., anger). In another study assessing 109 young adult females, Fox and colleagues (2019) found that in participants who exhibited self-criticism, mood improvements were reported in response to experimentally induced pain. The researchers concluded that the presence of self-critical tendencies within participants had a positive effect on emotional responses to pain. The results imply that pain may be less aversive to individuals with high self-criticism, perhaps due to the notion that highly self-critical people may think that they "deserve" pain and punishment (Fox et al., 2019). Based on the results from the aforementioned studies, emotional responses to pain are also highly individual and based on a variety of personal and situational factors. One limitation of both studies involved the use of laboratory-induced pain rather than naturally occurring pain experiences; investigating the emotional responses that follow naturally occurring pain would thus benefit from further research. Additionally, the research overall is limited in that there are minimal studies on the experiences of pain and injury in modern dancers. Thus, it is unclear what will influence the emotional responses of pain associated with dancing injuries.

Experiencing an athletic injury, like the experience of high stress or pain, often leads to several emotional responses. To illustrate, 74% of the 1000 athletic trainers in Clement and colleagues' (2013) study reported that their athletes experienced psychological effects following injury, and emotional responses to injury included anxiety or stress and anger. Interestingly, the 10 Division III injured collegiate athletes in Tracey's (2003) study noted enjoyment and appreciation of the attention and assistance they received from others following injury occurrence; however, the enjoyment did not last long and soon led to feelings of frustration.

Tracey (2003) qualitatively investigated cognitive appraisals and emotional responses relating to sport injury and the rehabilitation process immediately following an injury. The researcher assessed how athletes' cognitions about their injuries influenced their emotional responses at the three different data collection times (i.e., 24 to 72 hours post-injury onset, one-week post-injury and three weeks post-injury). Each injury was unique in terms of body part as well as severity, although all injuries were reported to be moderate to severe. Procedures involved the participants answering written open-ended questions probing at responses about their emotions following injury. The written assessment was followed by a semi-structured in-depth interview that took place 24-72 hours following the initial injury occurrence. The procedures were repeated for each athlete, one- and three-weeks post-injury. Participants initially appraised their injuries as negative and felt depressed at the onset, and then eventually shifted their efforts towards focusing on recovery during rehabilitation. Overall, Tracey (2003) found that the post-injury thoughts and cognitive appraisals reported by the participants had a large impact on participants' emotional responses. These findings support Lazarus and Folkman's (1984) theory that cognitive appraisals greatly impact subsequent emotional responses. The findings from Tracey's (2003) study can be paralleled with those of Johnston and Carrol's (1998)

study on athletic injuries, as well as Macchi and Crossman's (1996) study on professional ballet dancers.

In contrast to Tracey's (2003) study, Johnston and Carroll (1998) took a different approach of utilizing an unstructured interview to understand athletes' emotional experiences from injury onset to full recovery and return-to-sport, rather than simply the first three weeks post-injury. The researchers specifically investigated emotional responses to athletic injuries, assessing 16 severely injured competitive and recreational athletes. The researchers found that shock, anxiety, disbelief, and denial in terms of injury severity were the commonly reported themes at the initial onset of injury. By the end of the rehabilitation process, a common theme reported was impatience prior to returning to sport. During athletes' return-to-sport phase, fear of reinjury and lower sport confidence were reported. During the rehabilitation phase, several participants experienced heightened emotions in relation to observing other athletes/teammates participating in sport (e.g., jealousy, resentment). Overall, Johnston and Carroll (1998) found that during early injury rehabilitation phases, anger, frustration, and depression were common in participants, likely due to a disruption to one's normal lifestyle. In the final stage of rehabilitation, participants expressed impatience to return to sport, leading to frustration and depression.

Although few studies have been conducted on reactions to injury in dancers, Macchi and Crossman (1996) interviewed 26 professional ballet dancers' emotional responses to injury. The dancers reported several negative emotions including fear, distress, depression, and anger, that slowly transitioned into higher levels of optimism and excitement as rehabilitation progressed. In total, 42% of participants indicated a change in attitude regarding ballet following their injury response experiences. Specifically, these dancers noted a shift in their levels of caution post-

injury, and varying levels of emotional disturbance depending on individual factors (Macchi & Crossman, 1996). The researchers found that frustration and feelings of slow short-term athletic progress were common within dancers on their paths to injury recovery, but there were no major long-term effects from injury on ultimate athletic progress. A more recent study on dance injury experiences, Reel et al.'s (2018) interviewed 13 severely injured professional dancers and specifically assessed the relationship between dance-related injury experiences and disordered eating. The researchers found that several emotional responses to injury, including one theme titled "negative emotions associated with injury", and another being "anxiety and uncertainty around future involvement." Based on the studies above, using a qualitative approach to research can be an effective method of obtaining data on the more personal experiences of injury. Yet, modern dancers' experiences remain unknown, as less research has been conducted on modern dance as compared with ballet. Although different types of dancers have similarities and overlap in training, ballet is a more rigid form of dance, and thus may lead to different emotional responses than modern dancers. Additionally, few researchers have studied dancers at different levels of modern dancers; the majority of studies have been conducted on professional dancers. Because professional dancers only equate to a small portion of all modern dancers, an important consideration is to expand the dance injury literature to assess the psychological experiences of injury on other levels of dancers.

**Fear of reinjury.** Researchers have identified the fear of reinjury, or *kinesiophobia*, to be a common emotional response following injury (Bianco et al., 1999; Bianco, 2001; Hsu et al., 2017; Johnston & Carroll, 1998). For example, Johnston and Carroll (1998) reported the fear of reinjury as a predominant emotional response in participants during the return-to-sport phase of recovery. Bianco et al. (1999) found that the fear of reinjury in their skier participants was

connected with skiers' doubts about mental and physical readiness and was noted as a concern by participants who admitted to a premature return-to-sport. On the other hand, skiers who ensured their full recovery prior to returning to sport were reportedly confident in their physical strength, which in turn led to *not* fearing reinjury, but feeling mentally prepared to return to skiing (Bianco et al., 1999). Overall, the fear of reinjury in athletes appears to be prevalent most during the return-to-sport phase of recovery, with confidence in physical and mental preparation lowering athletes' reported reinjury fears.

In a review of literature, Hsu et al. (2017) discuss the implications for fear of reinjury in athletes, but the research on fear of reinjury remains limited within dance populations. The researchers found that fear of reinjury following sport injuries can have negative effects on recovery, lower self-report function, and in some cases, hinder full return to sport. More specifically, Tripp et al. (2007) found that the fear of reinjury was negatively correlated with ultimate return-to-sport in a sample of 49 recreational athletes post-ACL reconstruction surgery and after full recovery. In other words, whether an athlete fully recovered physiologically from injury, the potentially looming fear of reinjury may still be present emotionally, and thus has the power to play a remarkable role in the athlete's abilities to successfully accomplish future athletic goals. In Tracey's (2003) study, however, due to the early acknowledgement and ultimate acceptance of injury that the participants expressed, thoughts about the fear of reinjury were not reported to be a concern. Rather, participants were more concerned about the loss of playing time and fitness level due to injury. Tracey (2003) noted that perhaps the reason the participants did not fear reinjury was due to the time of the data collection; if the participants were closer to returning to play, the fear of reinjury may possibly become a stronger emotion (Tracey, 2003).

Implications of fear of reinjury in sport include rehabilitation challenges leading to negative healing outcomes, and possibly a longer delay or even full prevention in athletes returning to sport. Based on several personal factors, difference emotional responses including the fear of reinjury, should impact every athlete or dancer equally, even when suffering from the same physiological injury (Wiese-Bjornstal et al., 1998). Although research on dancers is limited compared to research on other types of sport athletes, dancers also experience several emotional tolls when faced with the adversity of injury (Anderson & Hanrahan, 2008; Macchi & Crossman, 1996; Reel et al., 2018). Taken together, researchers have found that both sport athletes' and dancers' emotional responses (not in comparison to one another, but both separately) were different depending on the phase of injury in which they were in (Johnston & Carroll, 1998; Macchi & Crossman, 1996). More research is needed on specific types of dancers' emotional responses to injury.

**Behavioral Responses to Athletic Pain and Injury**

Behavioral responses to pain and injury often indirectly follow initial cognitive appraisals through emotional responses (Lazarus & Folkman, 1984). Within the literature, behavioral responses to stress or injury are often conceptualized and assessed by one's coping behavior. Coping behavior, or coping, refers to a response directed at reducing the emotional, physical, and psychological burdens that are associated with daily struggles and general life stress (Snyder, 1999). According to DeNelsky and Boat (1986), coping skills refer to an individual's ability to adapt and manage various circumstances that arise in one's life. Pearlin and Schooler (1978) argue that coping skills help protect people from psychological harm following challenging life experiences. Individuals also have different coping *styles*, which reflect one's tendencies to react in certain ways after facing a challenging situation (Compas, 1987). Lazarus and Folkman (1984)

defined coping as shifting cognitions and behaviors in order to manage stressors that are often highly stressful on an individual. A coping intervention is based on the relationship between an individual and the ways in which that individual cognitively appraises the environment that causes stress (Lazarus & Folkman, 1984). Within the coping research, there are both general models of coping with stress, and models focused specifically on athletic coping post-injury.

**Coping models, types, and styles.** The transactional theory of emotions and coping (Lazarus & Folkman, 1984) focuses on how individuals appraise potentially stressful situations and their ability to cope with such stress. When an individual is able to cope with a perceived threat, positive stress (eustress) may result; whereas negative stress (distress) may be present when an individual cannot cope with a stressful situation (Lazarus & Folkman, 1984). The authors postulate that coping involves a continuous shifting of cognitions and behaviors, in order to manage the many taxing demands and pressures that humans face (Lazarus & Folkman, 1984). One limitation of the model is that it was created for general life stress, thus may not directly relate to *athletes'* responses to athletic injury.

In terms of stress-related coping, there are a myriad of coping styles. Among the theoretical coping models is an approach-avoidance model of coping with stress (Roth & Cohen, 1986). Using avoidance as a way of suppressing anxiety-inducing stimuli refers to "repression," and typically directs individuals away from a threat. Sensitization, on the other hand, is an orientation *towards* a threat and towards anxiety-inducing stimuli (Roth & Cohen, 1986). Both approach and avoidance modes of coping have strengths, depending on individual preferences and tendencies. Approach styles of coping typically involve taking advantage or specific action towards resolving a situation, leading to more controllability of the situation (e.g., self-responsibility, emotional and cognitive awareness). Avoidance coping techniques, on the other

hand, may reduce anxiety in a stressful situation, yet may also include social withdrawal and denial in order to protect oneself from the intensity of stress (Roth & Cohen, 1986). Mullen and Suls (1982) found that approach strategies tended to be effective when long-term outcome measures were involved (i.e., attention led to stronger physical adaptations when participant responses were measured not *immediately* after a stressor, but after a considerable amount of time from the initial stressor). Avoidant strategies (i.e., focusing one's attention away from a stressor such as avoiding physical therapy exercises), on the other hand, were effective when immediate outcome measures were involved (i.e., rejection led to stronger physical adaptations when participant responses were measured *immediately* following a stressor). Ultimately, both approach and avoidance coping styles can be adaptive, depending on the individual circumstance (e.g., the stress of a sport injury).

In order to glean a deeper understanding of individuals' tendencies to actively resolve and work through stressful situations (i.e., the approach coping style), or avoid the problem at hand and focus more on the associated emotions (i.e., the avoidance coping style), Moos (1997) created the Coping Responses Inventory: a measure of approach and avoidance coping skills. Based on the findings from use of the inventory, there are several different methods of coping. A different approach for studying coping outlined by Moos (1997) emphasized the *methods* of coping that different individuals utilize, rather than simply the *focus* of coping (i.e., whether the methods people use to cope primarily involve cognitive or behavioral efforts; Moos, 1997). Approach coping is typically *problem-focused*, involving cognitive and behavioral attempts to resolve stressors, whereas avoidance coping is typically *emotion-focused*, geared towards avoiding thinking about the stressors themselves, and focusing more on the emotions involved (Moos, 1997). In contrast to Roth and Cohen's (1986) findings, Moos (1997) further explored

approach versus avoidance coping in relation to problems and emotions and utilized the Coping Response Inventory to further develop research on the topic. Although both researchers found approach and avoidance coping to have adaptive qualities, Moos' (1997) findings expanded in greater detail on the differences between problem-focused and emotion-focused coping.

Problem-focused coping versus emotion-focused coping has more recently been discussed in comparison to approach versus avoidance coping (Biggs et al., 2017). Problem-focused coping refers to coping strategies that direct focus on managing or altering a stressor, whereas emotion-focused coping refers to coping strategies that direct focus on regulating emotions that emerge as a result of a stressor (Biggs et al., 2017; Lazarus & Folkman, 1984; Nicholls & Polman, 2007). Problem-focused coping may involve an injured athlete taking action to recover (e.g., completing rehab exercises) and reduce the physical (and psychological) challenges of injury (e.g., icing). Emotion-focused coping may involve ignoring an injury and attempting to dull the depression of not playing (e.g., by drinking alcohol).

In order to determine whether an individual's coping strategies are effective at managing the associated stressor, that individual will tend to cognitively reappraise a situation (Lazarus & Folkman, 1984). For example, one may appraise a situation initially as stressful, then over time and as the environment changes, reappraise the situation as irrelevant, and eventually as benign-positive (i.e., having a positive effect on an individual's well-being; Lazarus & Folkman, 1984). In other words, the appraisal would progress from being highly stressful to having a more positive associated emotion. Ultimately, depending on the environment and an individual, the stress and coping processes are continuous and constantly in flux (Lazarus & Folkman, 1984). Thus, people will have their own unique experiences both positively adapting to and coping with changes in their physical environment, as well as struggling to cope with various stressors.

According to Biggs et al. (2017), emotion-focused coping strategies have been described as maladaptive strategies as compared with problem-focused coping strategies. Although researchers argue that emotion-focused coping techniques may be maladaptive and connected to adverse outcomes (Folkman & Moskowitz, 2004), Lazarus and Folkman (1984) argue that neither problem-focused coping nor emotion-focused coping are innately ineffective nor effective. In a review of literature, Nicholls and Polman (2007) assessed various athletic coping studies and concluded that problem-focused coping is most effective when athletes feel they have personal control (i.e., autonomy), and emotion-focused coping is most effective when an individual has little or no control. In sum, it appears that the connection between individual appraisals, environmental situations, and coping strategies are a greater factor in determining the success of various individual coping techniques (Biggs et al., 2017; Cummings & Cooper, 1998; Dewe & Cooper, 2007; Folkman & Moskowitz, 2004).

Trait versus transactional coping are additional varying perspectives on coping. Nicholls and Polman (2007) conducted a meta-analysis specifically examining the differences between the two perspectives. The trait perspective suggests that athletes have preferred coping styles; the transactional perspective suggests that athletes' coping strategies depend primarily on how their current situation is appraised, and how effective their various coping strategies were in the past (Nicholls & Polman, 2007). Partial evidence was found in support of the trait theory of coping in swimmers, during training but not in competition (Crocker & Isaak, 1997). Additionally, Krohne and Hindel (1988) found that table tennis players had consistent coping styles, supporting the trait approach of coping. Anshel and colleagues (1996; 1997; 2001), on the other hand, found that athletes' stressors influenced the type of coping they subsequently used, suggesting that the transactional (or process) perspective of coping may be more prevalent in athletes overall. Gould

et al. (1993), Holt and Hogg (2002), and Poczwardowski and Conroy (2002) found that in response to the same stressor, multiple athletes used several different coping responses, also supporting the transactional perspective of coping. In a sample of 178 female athletes from a variety of sports (ranging from 16-28 years-old), Haney and Long (1995) found that effective athletic coping strategies (e.g., higher levels of self-efficacy and appraisals of control) were positively associated with improved performance and performance satisfaction in participants. Similarly, Pensgaard and Duda (2003) found that perceived coping effectiveness (i.e., how effective individuals believed their coping strategies were) was positively related to objective competitive results in a sample of 61 Olympic athletes. Because there is often a large time span between initial stress occurrence and researchers speaking to athletes about their coping experiences, a shift in memory recall may lead to skewed reports by athletes, which was a limitation among several studies (Nicholls & Polman, 2007). Additionally, the research on coping in athletics rarely includes studies on dance populations, particularly modern-dance populations. Thus, focusing on a sample of modern dancer's behavioral responses to injury (e.g., behaviors, coping mechanisms) will add to the existing research on athletic injury coping.

**Models of athletic coping with injury.** In addition to general coping models, there are athlete-specific coping models aimed at focusing on post-injury athletic coping. Udry (1997) developed the injury response model stemming from the transactional theory (Lazarus & Folkman, 1984), focusing specifically on athletic injury coping responses. Within Udry's (1997) model, the first factor presented involves the occurrence of an injury, the second factor is how an athlete appraises the injury in terms of the perceived control and the perceived severity of the injury, followed by an emotional response, a coping response, and ultimately a behavioral response. Udry (1997) also incorporated situational factors as precursors into the model that

could conceivably influence appraisals and responses. An example of situational factors in Udry's (1997) model is how much or what types of social support an individual may have. For example, if a dancer were to have high levels of social support prior to an injury experience, their cognitive appraisals, coping responses, and recovery outcomes could be influenced differently than a dancer who had low levels of social support prior to injury. A dancer with a broken ankle, for instance, who is receiving social support may think to themselves "I can manage this because my friends are willing to drive me places and bring me my crutches." A dancer without social support, on the other hand, may think "I cannot get to my rehabilitation because I am unable to drive with my broken ankle, and no one else can drive me." Thus, these two dancers would likely have different coping responses, rehabilitation adherence, and recovery outcomes. In sum, according to Udry's (1997) model, individual coping strategies and styles related to injury are unique to each athlete based on several factors.

Although not a formal model of coping with athletic injury, Lazarus and Folkman's (1984) model has been applied to athletes' injury-related stress and abilities to cope. Albinson and Petrie (2003) conducted a study of Division I injured and non-injured football players in order to investigate the connection between primary and secondary appraisals of injuries in athletes, and athletes' use of coping strategies post-injury. Depending on the athletes' primary and secondary appraisals of their injuries, a variety of coping strategies were noted. Overall, the researchers found that athletes who appraised their injuries as stressful, had similar views of their injuries at a later time point. For example, athletes who perceived more intense challenges in coping with injuries were more likely to perceive future injuries as stressful. On the other hand, secondary appraisals were found to have a positive correlation with future primary appraisals. One major limitation outlined by the authors was that their study did not assess athletes

throughout the entirety of the rehabilitation process, and they suggested that future researchers examine athletes' cognitive, emotional, and behavioral responses of injury further into the rehabilitation stages, until ultimate return-to-sport (Albinson & Petrie, 2003). Overall, primary and secondary appraisals both play an important role in determining behaviors and coping mechanisms in response to injury.

**Types of coping styles in athletic injury.** In addition to individual coping styles utilized to help manage general life stress, researchers have studied the styles in which athletes specifically cope when faced with an athletic injury. In order to examine the avoidance coping style within sport injury settings, Carson and Polman (2010) studied 27 professional union rugby players who had received ACL-reconstruction surgery followed by 6-12 months of rehabilitation. Using a mixed methodology study design, participants wrote diary entries related to their coping strategies, completed questionnaires related to injury rehabilitation stages, and answered semi-structured interview questions based on their cognitions, emotions, and coping techniques typically used during the rehabilitation process. Carson and Polman (2010) found that similar levels of both cognitive and behavioral avoidance coping strategies were used among the participants during their recoveries. Specifically, the researchers found that the use of behavioral avoidance coping (e.g., taking up a new hobby to distract from the injury, refusing to watch team games), as well as cognitive avoidance coping (denial, thought stopping) were prevalent in participants throughout the process of rehabilitation. These findings contrast Udry's (1997) model, in that some athletes of similar sport/injury may respond in similar avoidant ways. To further the dance-injury research on cognitive, emotional, and behavioral responses post-injury, conducting a similar study on dancers' responses to injury would help shift the perspective to focus on a different sample of participants.

Coping behavior with injured sport athletes has also been categorized by controllability factors. Gould et al. (1997) studied elite-level skiers who suffered from season-ending injuries. After analyzing the qualitative data from 21 participant interviews, the researchers found themes that included coping strategies and facilitating factors. Participants reported that working towards and accomplishing goals, maintaining a positive focus, dealing with emotions, and seeking social resources were a few of the most cited coping strategies and facilitative factors. Specifically, the researchers identified coping strategies used by athletes, which were operationalized as techniques that were within the athletes' control (e.g., goal setting and progress tracking), and facilitating factors that were outlined as factors that were outside of the athletes' control (e.g., having another teammate who was injured at the same time, and thus a rehabilitation partner). The difference between coping strategies and facilitating factors depended primarily on the level-of-control that an athlete had in terms of their injury circumstances. Overall, the researchers concluded that these strategies were primarily adaptive, which correspond with the findings from Gould et al. (1993) on elite-level figure skaters.

Within injury-related studies assessing participants' shifting responses (cognitive, emotional, behavioral) throughout phases of rehabilitation, Clement et al. (2013) and Johnston and Carroll (1998) found a theme of athletes experiencing difficulty adhering to rehabilitation treatment. Johnston and Carroll (1998) noted that during the main phase of injury rehabilitation in their study, the lowered rehabilitation adherence rates may have been in part due to participants' depression that related to negative thoughts about rehabilitation. Additionally, despite the impatience in returning to sport, multiple participants did not want to risk an unreasonably early return to sport (Johnston & Carrol, 1998). Overall, athletes' behavioral responses and coping strategies shifted with each post-injury phase.

In addition to studying athlete participants' first-hand experiences of coping with injury, examining athletic trainers may be a beneficial at gleaning another perspective on athletic injuries. Clement et al. (2013) studied the perceived coping behaviors and psychological responses athletes might show to athletic trainers, and psychosocial strategies athletic trainers use with athletes following an injury. Using both quantitative and qualitative measures to survey a sample of 215 athletic trainers (129 female, 86 male) who worked in a variety of athletic settings (e.g., within high school, clinic, college or university, and professional sports), the authors found that several adaptive and maladaptive athlete coping behaviors were reported as common by trainers. Of the total sample of athletic trainers, 74.4% reported their athletes to be affected psychologically in response to their injuries. Positive attitude, compliance and adherence to treatment, and seeking social support were some of the successful athlete coping behaviors reported by athletic trainers (Clement et al., 2013). Unsuccessful coping behavior, on the other hand, included low adherence to treatment, low motivation and effort, and a negative attitude. Athletic trainers also mentioned that learning more about motivation, realistic goal setting, and effective communication were the three most highly rated psychosocial strategies recommended for athletes. Interestingly, in a study on elite-level skiers, Bianco (2001) found that setting realistic performance goals and rebuilding confidence in participants was an effective way of coping through the fear of reinjury (during the return-to-sport phase of recovery). Notwithstanding the findings from Clement et al. (2013), focusing directly on injured athletes' or injured dancers' self-reported experiences will likely garner a more comprehensive understanding as far as the distinctive experiences they personally face after injury.

In addition to emotional responses to injury influencing resultant behavioral responses, it appears that coping responses can, in turn, influence emotional responses. The use of coping

skills can have positive consequences on emotional responses to injury. To illustrate, Green and Weinberg (2001) quantitatively measured coping skills, social support, and athletic identity in relation to mood disturbance and physical self-esteem in a sample of 30 injured recreational athletes from a variety of sports (athletes who sustained injuries that took them out of their sport for at least six weeks). The coping skills assessment included the ability to control arousal, respond well to corrective feedback, and the ability to set specific goals and problem solve. Green and Weinberg (2001) found a negative correlation between coping skills and levels of mood disturbance. In other words, higher levels of coping skills were related to lower levels of mood disturbance post-injury. Studying injury responses in an open format, like qualitative study, may help identify all of the connections between different responses to injury in dancers. Due to the limited coping research on modern dancers, practitioners would benefit from further research on whether dancers overall exhibit adaptive or maladaptive coping strategies.

**Social support and athletic injury coping.** Social support has been a recurring theme found to play a role in post-injury experiences and has influenced coping strategies and healing outcomes (Bianco et al., 1999; Bianco, 2001). Social support, as a broad concept, can be defined as exchanges and interactions between people that "focus upon the relevance and significance of human relationships" (Turner & Avison, 1985, p. 882). According to Pearson (1986), social support helps provide individuals with information, advice, and other resources that may aid in the coping process. According to Bianco (2001), examples of social support for injured athletes incudes emotional support (e.g., reassurance, encouragement, empathy, consoling), informational support (e.g., advice, words of wisdom, shared injury experiences), or tangible support (e.g., organizing/offering transportation, providing food or running errands for injured athlete). Social support was found to have dynamic effects (i.e., both positive and negative effects, depending on

the time measured) on general coping over time in a study by Mccoll et al. (1995), conducted on non-athlete participants with spinal cord injuries. The researchers found that the effects of social support shifted depending on the participants' stage of rehabilitation and adjustment to changes in one's environment. Additionally, the researchers found that the participants' perceived available social support directly affected future coping. For example, the presence of social support at one-month post-medical discharge had a positive effect on participants' coping at four months post-discharge. Interestingly, however, the researchers noted a shift in the trend with social support at four months post-discharge negatively affecting coping at 12 months post-discharge. In other words, according to the authors, social support received at four months post-injury negatively influenced participants' coping at 12-months post-injury. Perhaps the disconnect in social support and coping was due to the fact that individuals were overly dependent on the social support, but further research is needed in order to develop a further understanding on these specific social support implications. Based on these findings, the authors discussed the dynamic effects of social support and the potential difference in perceptions of injured athletes depending on the phase of recovery they are in, in relation to the social support received (Mccoll et al., 1995). Thus, social support seems to affect coping in a variety of ways, depending on the stage of rehabilitation a recovering individual is in.

Social support typically plays a role in an athlete's injury appraisal as well as coping response (Udry, 1997). Social support may influence an athlete's response to injury by means of moderating negative life stress, acting as a coping resource (Green & Weinberg, 2001), and may guide the emotional adjustment that individuals face when struck with an injury (Gottleib, 1983; Pearson, 1986; Pilisuk & Froland, 1978). Interestingly, Bianco (2001) noted that in qualitatively studying social support and recovery in injured skiers, many participants appreciated the support

received from teammates and coaches, however, others reportedly would have preferred not to talk about their injury implications and were uncomfortable with the "all the fuss" of the social support (Bianco, 2001, p. 380). Several other researchers have found buffering effects between social support and negative life stress (Hardy et al., 1991; Petrie, 1993; Smith & Smoll, 1991).

In addition to the connections reported between social support, the appraisal process, and coping, social support in the general population has also been found to be associated with higher positive affect (Jones et al., 2003; Stephens et al., 2002) and life satisfaction (Jones et al., 2003; Newsom & Schultz, 1996). Interestingly, social support was found to be a discriminator for the severity of injuries, but not for the frequency of injuries in a study by Hanson et al. (1992) on track and field athletes. In other words, social support was found to have a moderating effect on injury severity. Conversely, Mitchell et al. (2014) found that social support had a positive effect on the psychological response of sport injury in a study on 319 sport athletes from 33 differing sports (using measures including questionnaires on social support, stressors, and athletic injury responses). Perceived available social support and actual received social support were found to lead to a more adaptive relationship between stressors and psychological responses to sport injuries (Mitchell et al., 2014).

Taken together, social support is related to psychological and/or coping responses of injured athletes. Similar to the various types of athletes who participated in these studies, dancers are also in highly intense and physically demanding performance situations, increasing the likelihood of injury risk (Paparizos et al., 2005). Because several researchers have studied social support in relation to *athletic* injuries (Mitchell et al., 2014; Hanson et al., 1992; Clement et al., 2013; Clement et al., 2015), identifying relationships between social support and injury within dance populations is a logical and necessary topic to investigate.

In order to test the effects of varying levels of social support in relation to injury in ballet dancers, Patterson et al. (1998) conducted a prospective study on 46 ballet dancers (uninjured at the onset of the study). The researchers found that in pre-injured dancers, high or low levels of social support did not directly predict injury occurrence; however, ballet dancers who perceived high levels of social support reported feeling protected against life stress, and those who perceived low levels of social support were reportedly more vulnerable to the effects of life stress. Interestingly, stressful life events accounted for approximately 50% of injury variance in participants with reportedly low levels of social support. The authors speculated that the reason social support may be important for these populations of dancers could be due to the competitive and demanding ballet environment. Based on the results, the researchers concluded that having stronger social support in dance communities may be an effective way to cope with general stress, as well as the stress of injury. The authors noted that in order to account for limitations of their study, future studies may benefit by including questioning injured dancers on whether social support aids in the coping process following dance-related injury (Patterson et al., 1998). In sum, whether there was a presence or absence of social support may be an interesting question to pose to injured modern dancers.

**Dancers' Experiences with Pain and Injury**

There have been a few studies on dancers' coping responses to pain and injury, albeit limited in scope. In order to examine ballet dancers' coping styles in response to pain, Encarnacion et al. (2000) examined possible differences in relation to gender and skill level. Participants were 135 ballet dancers of varying levels, with a mean age of 19.2 years, consisting of 114 females and 21 males. The Sports Inventory for Pain (Meyers et al., 1992) was given to participants, which includes items on coping, cognitive, catastrophizing, avoidance, and body

awareness subscales. The cognitive and coping subscales were designed to measure the positive components of athletes' or dancers' pain and coping styles. The researchers found small differences in pain coping between academy and professional ballet performers (i.e., differences in level). Based on responses from professional and academy-level dancers, the professional dancers were more likely to be prepared to experience pain, and thus did not feel the need to "tough it out" (Encarnacion, 2001, p. 23) under painful circumstances. Females, when compared with males, had higher overall coping and cognitive scores. Encarnacion et al. (2000) concluded that despite several limitations of the study, ballet dancers exhibited different pain coping styles compared to those of other sport athletes in previous studies (Koltyn et al., 1998; Meyers et al., 1992; Reed et al., 1994). According to Anderson and Hanrahan's (2008) study results, dancers who appraised pain as threatening were more likely to use catastrophizing pain coping styles. In other cases, dancers may simply ignore pain and injury signs by the use of avoidance coping (Mainwaring et al., 2001). Overall, the most typical coping mechanisms used by dancers remain unknown, as there are a variety of factors involved in the coping process and a lack of research on dance-related injuries.

In order to help dancers improve their coping skills to mitigate injury risk and/or cope with a pre-existing injury, researchers have attempted psychological skills training interventions with dancers. Noh and colleagues (2007) designed a psychological intervention for 35 young female ballet dancers ($M_{age}$ = 16.77 years) in order to examine whether coping skills (e.g., autogenic training, imagery) would reduce future injury rates. Noh et al. (2007) found that after the end of the 48-week intervention period, the multiple coping skills condition had the greatest improvements in ultimate coping scores. The researchers noted that a combination of self-talk, imagery, and relaxation effectively enhanced ballet dancers' coping skills and injury reduction.

The results imply that teaching dancers (particularly those with low coping skills to begin with) several coping interventions can be an effective technique for reducing incidence rates and duration of dance injuries.

In another study regarding psychological skills training/interventions, Skvarla and Clement (2019) investigated the effects of a short-term psychological skills training program on injuries and self-reported coping skills in 28 college-aged dancers ($M_{age}$ = 19.77). Of the sample, 13 dancers were reportedly injured at the time of study. Participants were split into two groups; one group participated in the 6-week PST program (including diaphragmatic breathing, progressive muscle relaxation, relaxation and coping imagery, performance imagery to build motivation and confidence, and mindfulness-based stress management), and the other group was a control. Following the implementation of the 6-week PST program, there were no observed significant quantitative differences between the groups, although the participants in the treatment group did have slightly increased coping skills over time. The results from Skvarla and Clement's (2019) study contrasted those of Noh et al's (2007) study, in which the researchers concluded that teaching multiple coping interventions may be effective at reducing dance injury rates. Skvarla and Clement's (2019) study findings may have been due to the faults and limitations of the study design. In order to inform effective treatment interventions, researchers must first expand on the limited current literature on dancers' post-injury experiences, including common ways dancers tend to cope with injury without intervention. For example, to gain a deeper understanding of dancers' post-injury experiences prior to developing treatment protocols, qualitative semi-structured interviews will be an effective research method.

A final study related more specifically to dancers' post-injury experiences, is Reel et al.'s (2008) qualitative study on 13 injured professional female dancers ($M_{age}$ = 23 years old; 10 ballet

dancers, 3 modern dancers). In their study, researchers specifically investigated the dancers through a cultural and environmental lens, assessing relationships between injuries and disordered eating in female dancers. Dancers in the study were all female, professional-level, and ranged in age from 18 to 38 years-old. The researchers interviewed the dancers on their injury experiences when faced with a serious injury (i.e., an injury that took them out of dance training for at least four weeks). Reel et al. (2018) found that dancers reportedly reduced nutritional intake during injury experiences, reported a variety of negative emotional experiences, felt uncertainty and anxiety in the future of their dance involvement, and had various coping responses to injury (e.g., modifying eating behavior, exercising other parts of the body, involvement in alternative interests, focusing on other aspects of artistry, and seeking social support). Interestingly, the authors stated that in order to depersonalize their injuries and protect self-identity as dancers, participants reported their injured body parts as being distinct and separate from their whole selves. Reel et al.'s (2018) study is one of the few to qualitatively explore dancers' injury experiences, assessing not only the injury-related responses, but also the connection between injury and disordered eating behavior. Due to the majority of the sample in this study being ballet dancers, further studies are needed that focus more closely on modern dancers' experiences, in other to consider differences based on style of dance.

Because most dance-injury studies focus on ballet dancers specifically, Markula (2015) conducted a qualitative study on 14 contemporary (i.e., a style quite similar to modern) dancers' injury experiences in relation to the body and dance identity within the culture of contemporary dance. The author took a Deleuzian perspective (i.e., a philosopher who critiqued the structures believed to influence contemporary inequality) when interviewing participants. Moreover, the author specifically focused questions on injury experiences within the social context of power

and micro-level subtleties of the contemporary dance system (or "strata"; Markula, 2015, p. 848). After interviewing 14 semi-professional contemporary dancers, the authors found some consistencies with previous dance-injury research. Similar to Reel et al.'s (2018) findings, the contemporary dancers reportedly blamed themselves for becoming injured due to poor body awareness or carelessness. Markula (2015) concluded that despite the dancers' injuries, they attempted to ignore their injuries and continue to dance in spite of them, as they stated that their passion for dance was stronger than their injury care or concern in healing. Because the samples of both Reel et al. (2018) and Markula (2015) consisted of female dancers only, further examination of all genders' dance injury experiences would be beneficial. Additionally, further developing studies on modern dancers in which injury impacted the timing of their dance training and performance (i.e., injuries that were severe enough to take dancers out of their training for at least six weeks) would help build the research on the psychological-specific effects of injury. Because limited research overall has been conducted on dance-related injury experiences, researchers would benefit from examining modern dancers' post-injury psychological experiences in more depth.

## Conclusion

Based on the literature reviewed above, there are a multitude of psychological factors that affect not only dance-related injury risks, but also the complex response process that sport athletes and dancers experience after they incur an injury. The way in which sport athletes and dancers cognitively appraise pain and injury, can in turn lead to emotional responses (e.g., frustration, fear of reinjury, anxiety), followed by behavioral responses, or coping (Lazarus & Folkman, 1984; Udry, 1997). While several researchers have applied the cognitive appraisal and coping models within athletic populations (i.e., sport athletes) to understand injury experiences,

research on dancers remains limited. Hamilton and colleagues (2006) argue that because physical health tends to be the focus within many dance populations (i.e., university dance programs, dance companies, etc.), psychological health may be overlooked. Psychological health, in addition to physical health, is just as crucial to a dancers' overall wellbeing, and should be taken as seriously as physiological components of health (Hamilton et al., 2006). Learning more about dancers' psychological experiences and responses to injury could inform mental performance consultants, as well as dance educators, on how better to support their dance clientele. Although similar to other types of sport athletes in many regards, modern dancers are a unique type of artistic athlete (Hincapié et al., 2008) who are judged on more subjective movement qualities, technical abilities, and personal style, rather than the more objective scoring systems used for assessment in other sports. Additionally, due to modern dancers' high-risk levels for injury and relatively limited financial and emotional resources when experiencing injury, modern dancers may be particularly vulnerable to insufficient attention when injured (Krasnow et al., 1994). As such, dancers' injury-related coping experiences may be unique in comparison to those of other sport athletes because dancers often do not have access to or attention from athletic trainers, medical support, and funding.

In order to glean meaningful information about participants with fairly limited previous research, a qualitative study can be an effective method. In athletic injury studies, qualitative explorations have been effective at presenting information about sport athletes' personal experiences when faced with the adversity of an injury. The purpose of the present study is to qualitatively explore the post-injury psychological experiences of adult modern dancers who have since recovered from their injuries. The present study will add to the literature by identifying themes common in modern dancers' post-injury experiences, as the large majority of

dance-related research has been conducted on ballet dancers, or specific sub-groups of modern dancers (e.g., females, professional modern dancers; Reel et al., 2018). The qualitative study design allows for a deeper understanding of dancers' unique experiences following an injury (severe enough to take them out of dance for at least six weeks). Ultimately, the goal of the present study is not only to broaden the research, but to help sport psychologists, mental performance consultants, and dance educators know how to support injured dancers experiencing psychological distress and/or challenges as a response to a severe injury.

## Introduction

Approximately 95% of dancers suffer from musculoskeletal pain, and rates of musculoskeletal injury in professional dancers' range between 20% to 84% (Hincapié et al., 2008). Dancers face inherent risks for injury due to the artistry and physicality of dancing (Hincapié et al., 2008). Psychologically, dancers experiences with injury may include various emotional responses (e.g., Reel et al., 2018), loss of self-identity, and disordered eating behaviors (e.g., Markula, 2015; Reel et al., 2018), yet research on the psychological responses to dance-related injuries remains limited. less so on modern dancers. Dancers' psychological responses to injury may be similar to athletes. In addition to a decrease in physical function, suffering from a serious injury as a sport athlete often leads to substantial psychological and emotional distress or maladaptive coping such as non-adherence to rehabilitation or excessive alcohol consumption (Anderson et al., 2004; Wiese-Bjornstal et al., 1998). Individual differences in perceptions may influence the psychological reaction to injury.

In recognition of the various psychological responses of injury, Wiese-Bjornstal et al. (1998) developed the integrated model of response to sport injury, outlining individuals' personal and situational factors that influence their reactions to injury. More specifically, according to the model, personal and situational factors influence an athlete's cognitive appraisals of the injury, which then influence their emotional responses, which ultimately affects the athlete's behavior related to the injury their coping with the injury, and recovery outcomes. For example, if an individual perceives an injury as a threat to one's athletic career (cognitive appraisal), fear and hopelessness may ensue (emotional response), perhaps followed by non-adherence to rehabilitation (behavior). The lack of adherence to rehabilitation, in turn, may lead to negative healing outcomes, and reinforce the belief that the injury is a threat.

Although many sport athletes may appraise an injury as a negative event, others may have less adverse responses. For example, Wiese-Bjornstal et al. (1998) found that individuals with positive mood state profiles prior to injury, as opposed to those with negative mood state profiles, had more positive responses following an injury occurrence. In support of the integrated model, Bianco et al. (1999) found that cognitive, emotional, and behavioral responses resulted following an injury, and both appraisal and coping were ever-evolving processes affected by rehabilitation progressions. In short, factors such as type of injury and individual personality differences, in addition to factors within social and environmental sporting environments, will influence how individuals perceive stress or injury occurrence. Subsequently, researchers surmise that sport athletes will have varying levels of cognitive, emotional, and behavioral responses based on individual circumstances (Wiese-Bjornstal et al., 1995). Behavioral responses can affect later outcomes of the recovery cycle based on an individual's level of adherence (or non-adherence) to injury rehabilitation (Wiese-Bjornstal et al., 1995).

Behavioral responses to athletic injury are often conceptualized and assessed by one's coping behavior. Coping behavior, or coping, refers to the emotional, physical, and cognitive responses directed at reducing the emotional, physical, and psychological burdens that are associated with daily struggles and general life stress (DeNelsky & Boat, 1986; Lazarus & Folkman, 1984; Snyder, 1999). Coping skills may help protect people from psychological harm following challenging life experiences (Pearlin & Schooler, 1978).

Individuals also have different coping *styles*, which reflect one's tendencies to react in certain ways facing a challenging situation (Compas, 1987). There are both problem-focused coping and emotion-focused coping styles that individuals will use to either sensitize or suppress themselves from a perceived threat (Lazarus & Folkman, 1984; Roth & Cohen, 1986). When an

individual can effectively cope with a perceived threat (e.g., an injury), positive stress (eustress) may result, whereas negative stress (distress) may be present when an individual cannot cope with a stressful situation (Lazarus & Folkman, 1984). Within coping research, there are both general models of coping with stress (e.g., Lazarus & Folkman, 1984; Roth & Cohen, 1986), and models focused specifically on athletic coping post-injury; (e.g., Udry, 1997), yet there is limited research on modern dancers' coping with injury.

The integrated model of response to sport injury (Wiese-Bjornstal et al., 1998) can be used as a framework for assessing not only individual dancer's differences in overall response to injury, but also in changes over time in personal cognitive appraisals, emotional responses, and recovery outcomes, based on various phases of rehabilitation. Three phases of physiological injury rehabilitation have been conceptualized by athletic trainers: acute injury phase, repair phase, and remodeling phase (i.e., injury onset, recovery phase, and return-to-sport; Prentice & Arnheim, 2011). . These three phases have been used to help researchers identify various trends that take place in each phase, and the psychosocial responses to injury during each phase (Clement et al., 2015). The phases of rehabilitation have been studied in relation to different types of sport athletes, while fewer injury studies overall have been conducted on dancers, most of which do not utilize a phased approach (e.g., Macchi & Crossman, 1996; Reel et al., 2018). Due to the limited overall research on injured dancers, it is unknown as to whether dancers would follow similar phases of rehabilitation as sport athletes. Overall, the theoretical models proposed may help guide the process of understanding individual dancer's personal experiences and responses when it comes to suffering from an injury.

Physical health tends to be the focus within many dance populations (i.e., university dance programs, dance companies, etc.) and psychological health may be overlooked (Hamilton

et al., 2006). Learning more about dancers' psychological experiences and responses to injury could inform mental performance consultants and medical professionals, as well as dance educators, on how better to support their dance students and clientele. Moreover, understanding psychological experiences that dancers have in response to injury will help guide professionals in providing effective techniques to support injured dancers beyond solely physical rehabilitation. Although similar to other types of athletes in many regards, dancers are a unique type of artistic athlete (Hincapié et al., 2008) who are judged and viewed on more subjective movement qualities, technical abilities, and personal style, rather than the more objective scoring and point systems used for assessment in several other sports. Additionally, according to Krasnow et al. (1994), due to dancers' high-risk levels for injury and relatively limited financial and emotional resources, modern dancers may be particularly vulnerable to inadequate attention when injured. Ojofeitimi and Bronner (2011) argue that modern dance companies are often strained by the financial costs of injury. Modern dancers' injury-related coping experiences may also be unique in comparison to those of other sport athletes because they often do not have access to athletic trainers, medical support, or adequate funding (Krasnow et al., 1994). Further development of the dance injury research would allow for a greater foundation of knowledge on the ways in which dancers are affected by injuries, as well as how to effectively support injured dancers.

Although there has been some prior research presented on dancers' post-injury psychological experiences, the majority of the research focuses specifically on ballet dancers, or on mixed samples of ballet and modern/contemporary dancers. For example, Macchi and Crossman (1996) interviewed injured professional ballet dancers and found that negative emotions including fear, distress, depression, and anger, slowly transitioned into higher levels of optimism and excitement as rehabilitation progressed. Other researchers have focused solely on

ballet dancers of varying levels, investigating participants' coping styles in response to pain and found that professional-level dancers were more likely to be prepared to experience pain, and thus coped differently than academy-level dancers (Encarnacion et al., 2000). Within a competitive ballet environment, Patterson et al. (1998) found that in addition to physical factors, psychosocial factors (e.g., levels of social support) impacted injury vulnerability in ballet dancers. In another dance injury study, Reel et al. (2018) conducted a qualitative study on injured professional dancers (10 ballet dancers, 3 modern dancers), and found that dancers reduced nutritional intake during injury experiences and felt anxiety and uncertainty in future dance involvement. Additionally, Reel et al. (2018) reported that dancers' coping responses included exercising other parts of the body, involvement in alternative interests, focusing on other aspects of artistry, and seeking social support. In addition, Markula (2015) studied 14 injured female contemporary dancers (i.e., a style very similar to modern dance), and found that dancers blamed themselves for their injury experiences and continued to dance despite injury. Overall, researchers investigating ballet and contemporary dancers' injury experiences have found a variety of psychological responses in participants. Because few researchers have directly investigated modern dancers' responses and experiences when faced with injury, expanding the literature further on modern dance populations would be effective in understanding if there are any unique characteristics of modern dancers compared to other sport athletes or ballet/contemporary dancers in injury-related experiences. Although many high-level modern dancers have experience and training in ballet, there are distinct differences between the two dance forms in terms of training, choreography, and dance culture when specializing in one or the other (Clabaugh & Morling, 2004). Modern dance is slightly less formally structured than

classical ballet, and more focused on dancers' personal movement interpretation with an emphasis on improvisation, the body's response to gravity, and fewer constraints (Mazo, 2000).

Within the athletic injury literature, much of the research has been conducted on collegiate-level (i.e., elite) sport athletes from a variety of sports (e.g., Clement et al., 2015; Tracey, 2003; Tripp et al., 2007). Responses to injury depend on several individual (e.g., personality characteristics), sport-specific (e.g., sporting environments), and situational factors (e.g., access to social support), and thus, it is unclear whether modern dancers will have similar psychosocial responses to injury compared to other types of sport athletes. Additionally, because dance injury research has focused on professional-level dancers (e.g., Macchi & Crossman, 1996; Reel et al., 2018), studying multiple levels of dancers will be important in terms of understanding a wider scope of experiences. Finally, due to the specific psychological effects that head injuries have on individuals (e.g., Prien et al., 2018), either focusing solely on head injuries, or excluding head injuries altogether, will be important considerations for researchers to make when assessing athletic injury experiences.

Modern dancers tend to be a particularly underrepresented group in the dance-injury literature (Thomas & Tarr, 2009). Due to the need for further information on post-injury experiences in different types of dancers, the purpose of the present study was to qualitatively explore the post-injury psychological experiences of adult modern dancers. Given the lack of information on modern dancers' experiences post-injury, a qualitative study design allowed for an open and detailed investigation of personal experiences following an injury. Adult modern dancers who had a history of serious, non-head injury within the last five years were interviewed on their perceived cognitive, emotional, and behavioral experiences from injury onset through the rehabilitation and recovery process.

## Methods

### Participants

The present sample consisted of eight participants ($M_{age}$ = 30.5 years; *SD* = 10.9), all of whom were adult modern dancers (7 women, 1 man), with 23.6 average years of modern dance training (*SD* = 4.79). Participants ranged in dance training and performance levels from college (*n* = 3; dancers who took classes and performed at universities), community (*n* = 2; dancers who took classes and performed in community settings as volunteers), and professional (*n* = 3; dancers whose primary source of income came from dancing). Participants had a range in the type of modern dance training, including Limon technique, Graham technique, and Horton technique. Participants identified as Black/African American (*n* = 1), Asian/Chinese American (*n* =1), and White (*n* = 6). Types of injuries included muscle sprains, broken bones, nerve damage, torn ligaments, and dislocated joints (head injuries were excluded). To be included in the study, all injuries must have been severe enough to take the participants out of regular dance training or performance for a minimum of six weeks, although it was not necessary that dance was the root cause of the injury. Additionally, all participants must have been fully recovered or medically cleared to return to dance by the time of the study. The average length of time passed since the injury onset was 2.9 years, and the average length of time in rehabilitation was 4.4 months (minimum = 2 months; maximum = 10 months). Of the total sample, eight reportedly received both medical treatment and physical therapy for their injuries, four received surgery (including two participants receiving an additional surgery due to complications). All eight participants reported no professional emotional/counseling support services as a part of their recovery process. Four participants' injury experiences overlapped with the timing of the global pandemic due to COVID-19.

## Data Collection Measures

Participants were asked open-ended interview questions (see Appendix E) using a semi-structured interview guide based on the initial prompt, "Walk me through your injury and recovery experiences, starting from the initial onset of your injury through your recovery process." Next, the principal researcher asked participants about the psychological experiences that they recalled during the injury and rehabilitation process, prompting for thoughts, emotions, behaviors, and coping techniques, based on Wiese-Bjornstal et al.'s (1995) cognitive appraisal model of injury. Finally, the principal researcher prompted participants to describe their social support received during the injury and recovery experience, based on previous research indicating that social support has been found to play a role in injury appraisals and coping responses (e.g., Bianco et al., 1999; Bianco, 2001; Udry, 1997).

## Procedure

Prior to beginning data collection, the researchers obtained Institutional Review Board approval (see Appendix B) and completed human subjects training. The principal researcher has training and experience as a dancer, but has not personally experienced a serious injury. Given this experience, the principal researcher then recruited participants through convenience and snowball sampling via emails (see Appendix F): the principal researcher requested that known dance contacts pass along the study information to dancers, however no personal contacts or close friends of the principal researcher participated in the study. Participants who enrolled in the study were also asked to share the study's information with other dancers through additional snowball sampling. In addition, emails were sent to university dance departments, local dance studios, and social media posts (see Appendix G) were shared on online dance research platforms via Facebook. The principal researcher phone called all interested participants and

screened them to assess whether they fit inclusion criteria. Each participant was then sent an informed consent form (see Appendix D) to review and verbally consent to prior to the interview. Participants were interviewed individually by the principal researcher over the platform Zoom, with all interviews verbally recorded using a separate audio recording device. Interviews lasted an average of 33:06 minutes long, with a range of 23:30 to 49:05 minutes in length. All participants received a compensation of one $15.00 electronic gift card for participating.

**Data Analysis**

All interviews were audio recorded and transcribed verbatim, with the exception of filler words like “ah,” “so,”, “like,” and “um.” Inductive thematic analysis (Braun & Clarke, 2006) was used to analyze participant interview responses. Following interview response transcription and the principal researcher becoming familiar with the data, transcriptions were coded line-by-line through an inductive analysis process. The principal researcher then sorted all codes into possible themes (i.e., patterned response; Braun & Clarke, 2006). The principal researcher and secondary researchers then met to discuss the coding decisions, and reduce and finalize the themes. Consensus in the coding process was eventually reached after the principal and secondary researchers analyzed and discussed the qualitative data and interview transcripts. Titles of themes were created based on the patterned meaning of the participants responses, and short phrases were used to title the themes (Braun & Clarke, 2006).

## Results

Each participant shared detailed accounts of their injury and recovery experiences. Through the inductive analysis coding process, the primary researcher organized all codes related to participants’ injury experiences into 41 preliminary themes, then reduced to 35 after

three researchers reached a consensus, and then to 24 themes to reduce redundancy. The final 24 themes (see Table 1) were organized into seven higher order categories: emotional reactions, behavioral responses, realizations, external factors, loss, acceptance, and other experiences.

**Emotional Reactions**

Dancers discussed several emotional reactions throughout the course of their injury and recovery experiences, and there was a variety of stimuli for the emotions. The emotional reactions higher order category consisted of eight themes (See Table 1). Of the eight themes, the most common was fear/anxiety/confusion ($n$ = 8). Three dancers reported fear of reinjury, with two reporting high levels of anxiety regarding their reinjury. For example, "The anxiety never really went away…even when I got back onstage, there was just that little bit of me that was paranoid that I was going to reinjure something" (P4). Another prominent fear involved concerns related to surgery ($n$ = 3). "My biggest fear was probably someone cutting into me majorly" (P7). Two dancers reported confusion: one mentioned feeling, "Mostly just confusion and fear [at injury onset]" (P2).

Surprise/shock was the second most common emotional response reported by the dancers ($n$ = 6). Shock was reported at initial injury onset ($n$ = 3). For example, "Right after my injury, I went into a major state of shock" (P3), as well as before surgery for one participant, "with the first [surgery] I was still in shock the whole time" (P5). One dancer reported feeling surprised to walk without pain, and another reported feeling surprised by the prospect of surgery.

Third, frustration/annoyance was reported ($n$ = 5), particularly in relation to recovery progress and feeling restless to get back into dancing as soon as possible. Additionally, one dancer reported "a lot of frustration at my insurance and the things you have to jump through just to get basic care" (P2), while another stated "it became very frustrating that the things I knew

how to do for myself weren't working" (P4). A similar, yet distinct emotional theme was disappointment (*n* = 3); disappointment was reported relating to missed dance/performance opportunities (*n* = 3), disappointment in lack of training (*n* = 1), and disappointment in knowing how long recovery would take (*n* = 1).

Anger/upset (*n* = 3) was reported in terms of the timing of injury and incorrect diagnosis information. One dancer stated, "I was just angry, I was just irritated that my body did this" (P6). In terms of embarrassment/guilt (*n* =2), the same dancer stated, "At first, I was completely embarrassed, because it was this brand-new company…" (P6), and another reported feeling guilty about another dancer having to step into the new performance role last minute to replace her.

Sadness/grief was reported by 50% of the dancers. Sadness included missing out on college dance experiences (*n* = 2), and grief in the non-linear recovery process (*n* = 4). For example, "I mean just like any crisis I suppose, you go through those stages of grieving… you can't just say it's 'this step, this step, this step' – you know?" (P7), and "I didn't have some sort of linear [recovery] path… it was a lot of positives, like, 'I'm moving forward,' and then regression, like 'I don't know that I'm gonna come back from this'" (P4). As far as dancers' experiences with gratitude/hope (*n* = 4), one individual mentioned feeling thankful for the new relationship with dance post-injury, as well as their body's ability to walk. Another dancer mentioned feeling "a lot of gratitude… for my body that was healing…. And a lot of gratitude for the people…" (P7). Hopefulness was reported (*n* = 3) during the injury and recovery process; one participant stated "I had moments of hope and… 'I can still do this'" (P5). Overall, emotional reactions to injury were the most commonly expressed injury-related experiences

among the participants, and were reportedly triggered by a variety of stimuli including missing out on opportunities to dance, the prospect of surgery, and unknowns regarding injury severity.

**Behavioral Responses**

Dancers reported several behavioral responses and coping mechanisms to injury that were primarily adaptive but, in some cases, were somewhat maladaptive. The behavioral responses higher order category included three themes (See Table 1). Movement engagement (*n* = 8) was reported by all participants, and either involved staying involved in dance in other ways and/or engaging in alternative physical activity as a means of coping. One dancer discussed her coping strategies as, "Showing up when I can even if it means I'm sitting on the side, and I can still be the rehearsal director or edit the dance or be involved in other ways" (P2), and "I turned to yoga a lot instead of dance, because it was a lot of the jumping aspect of dance that I felt like I couldn't do" (P8). Another dancer stated that in addition to engaging in specific physical therapy exercises for injury recovery in order to cope, "I would at least still go to the gym and maybe do a couple upper body things or just small movements" (P3).

Another behavioral response that more than half of dancers reported as a coping mechanism was quiet activity engagement (*n* = 5). Quiet activity engagement included reading, journaling/writing, meditation, TV watching, sleeping more, relaxation, and taking time for oneself. For example, one dancer reported: "I'd sleep a lot, because just carrying that kind of pain around during the course of the day, it just wore me out" (P7), and another mentioned,

> I did a lot of Netflix binging, which was still pretty cool because I did not have a lot of time to relax [pre-injury], so that did actually help to just sit and chill and do something I want to do without having anybody asking me for stuff. (P5)

A final behavioral response was compensatory behavior ($n$ = 5), which in some cases appeared to include maladaptive coping responses. Compensatory behavior included a tendency to push oneself to come back to dance too soon, disordered eating behaviors, alcohol consumption as a means of coping, avoidance of dance-related involvement, or self-harm behaviors. These behaviors were either new to the dancer or were past behaviors that returned. Participant 7 stated, "it was nice to get to a night where we were going to knock a few beers back, because you know – a little anesthesia – goes a long way" (P7). In terms of disordered eating patterns, one participant stated,

> I think a big coping mechanism for me was to – since I couldn't control this [injury] – I think my disordered eating really came out – like if I couldn't control this injury dance thing, I was going to control what I was eating. (P4)

Another participant shared,

> Because my mental health throughout the first couple months [of the injury] was not good. And I think that having all that happen also made me want to revert back to a lot of the mental health issues that I've had in the past.… I struggled with eating disorders and self-harm behaviors. (P1)

Several of the aforementioned behavioral responses included coping mechanisms used by the participants throughout their injury and recovery periods.

**Realizations**

In terms of injury experiences, realizations were common among participants, whether regarding learning and discovering something new from the recovery process or developing an increased awareness regarding injury severity. The realizations higher order category consisted of five themes (See Table 1). All eight dancers reported some level of

awareness/acknowledgement of hardship that came with being injured. Under the awareness of hardship theme, a few participants mentioned having naturally high levels of body awareness as a dancer which in turn affected their injury awareness, and others mentioned recognizing the importance of taking time to heal properly and fully before returning to dance, to avoid the risk of relapse. One example of finally acknowledging the hardship of injury, at the point in which one dancer recalled making the official decision to have surgery, the individual stated,

> At that point of time it was a bit of an admission of defeat, because normally I'd be able to just muscle my way through and get strong again and get past it, and too – it was humbling to know 'you can't do this – you're done.' (P7)

The same dancer later shared a more philosophical viewpoint related to both awareness as a dancer, and overall human experience,

> [Dance] is an amazing blend of things that really becomes a part of who you are. To see that start to get taken away, in a way it's almost like having a preliminary view of what it's going to be like to get really old and eventually die. (P7)

In addition, several participants ($n$ = 6) expressed learning lessons or making discoveries about themselves in some way through their injury experiences. For example, participants expressed having a new perspective on their individual capabilities, and a new perspective on surgery. One dancer stated, "I realized I had to take time out of class to continue to train and heal my injury because it still impacts me to this day" (P3). The dancer went on to say, "I didn't realize that that small imbalance in my ankle again was a chain reaction to the rest of my body…. I think the injury is really what started my interest in really paying attention to the body" (P3). Another dancer stated, "In a way [being taken out of dance] is almost like a good learning

experience even though it's harder than hell – what a weird epiphany to actually be able to get fixed and start to work harder" (P7).

Perceptions/beliefs in healing ability were stated by four of the participants in relation to their injury experiences. Beliefs in this theme included the belief that the body will bounce back or not. One dancer discussed the belief that the body would heal, "give it a couple of weeks, it works itself out, keep doing what you're used to doing – your body's going to bounce back" (P4). On the other hand, another stated to themselves, "no, you're going to hurt yourself" (P5) regarding jumping back into dancing after being sedentary. Another participant stated that at first, they would say to themselves, "I got this, I can fix this myself" (P7), however, as the injury progressed the belief shifted to the realization that "this ain't good, it's going to take me a while to dig myself out of this hole" (P7). Another participant, on the other hand, commented on her recognition of her ability to move forward, "In order to get myself out of the frustration and anger, I would tell myself, 'it's happening for a reason' and that 'this doesn't define my dance career'" (P3).

Pain experiences fell under the category of realizations, as seven participants reported a recognition of unique pain experiences during their injury and/or recovery process. Three participants stated that being a dancer involved training to 'tough it out' during dance. Participant 8 stated, "I have been trained and conditioned to be so like – having a high tolerance of pain I was like 'I'm fine, it'll go away in a couple of days" (P8). Another participant stated, "It's really different to go into something expecting pain, and it's almost like I've conditioned myself to expect pain" (P1). Participant 1 went on to say,

> Wow, I feel like I'm making up even a little bit of this pain, just because it's what is expected. And I don't want to fully admit that I'm able to do things without pain, because

> what if it comes back? Or what if I'm actually in pain and I'm just telling myself that I'm not? So, I think that the expectation of pain, even post-injury, is a lot. (P1)

In other words, the expectation of pain was a notable experience that affected individuals' thought processes. Other participants reported feeling strong pain at injury onset, or pain intense enough to hinder the ability to walk properly or sleep. Interestingly, only one participant reported feeling no pain during the injury experience. Overall, pain was a recurring common experience reported by 87.5% of participants.

Fifty percent of participants mentioned feeling motivated regarding their injury experiences, whether it was determination, motivation to go to physical therapy, or heightened motivation post-surgery. One participant reported feeling motivated to go to physical therapy, and stated, "[I would say to myself]: 'I have to do this', so I actually was able to shorten my healing time by a couple of weeks, which was super cool" (P3). Overall, realizations as a higher order category involved injury-related growth, self-discovery, pain experiences, or an increased level of awareness or motivation as a result of the injury and recovery experience.

**External Factors**

External factors as a higher order category was named due to the connection between injury experiences and external factors including interpersonal relationships, financial resources, and the global pandemic. Within the external factors higher order category, four themes were included (See Table 1). Interpersonal trust/support ($n$ = 8) was the most common theme within external factors, with all participants reporting social support as a large part of their injury experience. Social support was described by participants as a factor that strongly influenced the ability to cope with the injury experience. Moreover, participants highlighted support and encouragement from friends, family, romantic partners, dance colleagues, and in some cases,

choreographers, directors, or dance teaches. In addition to social support, several participants felt a level of trust in their medical professionals. Three participants stated the importance of having support systems including friends who have also gone through an injury experience. Participant 1 stated: “I think it’s really important to have people who understand the way that your body works, and also the way that dance works – that are your support systems” (P1). Another dancer shared feeling particularly supported by “friends who had been injured too, to be able to talk to them about it. Because friends who haven’t been injured...they just don’t get it. It’s nothing on them it’s just they haven’t been there” (P2), and similarly, “understanding and empathizing with my other friends who have also been injured in the past…” (P3).

In addition to interpersonal trust/support, another common theme was interpersonal protections ($n$ = 5), which included having an awareness of the effect of an individual’s injury on others, or an avoidance in showing emotions to others so as to not frighten them. Participant 5 stated: “I tried not to show any emotion or anything like that” (P5), and another said: “I didn’t want to feel like a burden to them, because I kind of already was, in the fact that they needed to literally come help me get my legs in and out of bed multiple times a day” (P1). A third participant reported that, “the hardest thing was to have to tell the choreographer ‘I’m hurt’” (P2).

The COVID-19 pandemic influence ($n$ = 3) was noted as an additional factor that affected injury and recovery experiences for three of the four participants whose injuries overlapped with the timing of the pandemic. Despite the inherent hardships that individuals faced during the pandemic, one dancer mentioned that coping was easier due to the pandemic and stated, “I think that the biggest blessing, dare I say, because I hate COVID more than anything…but not having the pressure of everyone around me dancing…. that’s been, I would say, the biggest blessing in

all of this" (P1). Another dancer mentioned that the timing of the pandemic influenced the emotional recovery experience, "I mean, emotional recovery tied into it since dance is my career, and especially COVID… that impacted it as well" (P3), while a third dancer's physical recovery plan was shifted because the personal training business at which they were using for rehabilitation had to close due to the pandemic.

Three dancers also mentioned financial/work-related concerns ($n$ = 3), which was grouped under external influences because work expands beyond solely internal processes of an individual. These participants with work-related concerns mentioned having limited funds for medical treatment, feeling concerned about losing income, and missing out on what was happening at work while the injury limited the dancer from being present. Overall, external factors were found to have an impact on all participants in some way, despite the differing effects on each participant.

**Loss**

Loss as a higher order category included loss of self-identity as dancer/career decisions ($n$ = 6) and loss of independence ($n$ = 3) as themes. Several participants reported feeling a threat to their self-identity as a dancer, as well as challenges with dance career-related decisions post-injury. Participant 7 stated, "we all get attached to our bodies", and Participant 1 stated, "there were probably three weeks of me needing help to do anything [physical], and I'm [usually] super independent….it was crazy, and also humiliating, and painful too." Three participants mentioned feeling concerned or unsure about dance career decisions, and/or the effect that the injury would have on future success as a dancer. Another notable trend was the relationship between feeling attached to one's identity as a dancer, yet also feeling a dissonance in terms of

whether a career in dance is feasible or even desired. One participant recognized the dissonance between identifying as a dancer, yet questioning a long-term dance career:

> My thoughts on dancing at that point were more along the lines of 'my heart's not in it right now,' and 'I don't know if I'm going to have it in me to fully come back from this surgery,' because I knew it would take a lot of work and a lot of me caring about dance enough to come back from it. Which is funny, because I also don't really know what else I would do with my life. (P1)

Similarly, another participant stated,

> I didn't know what my identity was. Like what was I supposed to be doing, and who am I if I can't *be* a dancer…not coming from a place of survival, but coming from a place of 'what is my self-worth? What is my identity? What is my career here? (P4)

Loss of independence ($n$ = 3) was reported in terms of feeling a new sense of inability to do things for oneself due to the injury's effect on the body. Loss of independence was connected with emotions such as humiliation, discomfort, and sadness. One participant stated, "And so literally not being able to do anything by myself was kind of crushing for me, because I don't like having to rely on people" (P1). Loss of identity and loss of independence were both found to be recurring themes among the participants in relation to their injury experiences.

**Acceptance**

Acceptance as a higher order category included one common theme. Seven participants reported delayed diagnosis experiences/injury acceptance ($n$ = 7). Interestingly, 75% of participants reported having to wait a long time to receive an official injury diagnosis. Two dancers reportedly received an incorrect initial injury diagnosis, and one participant reported receiving an incorrect injury *severity* diagnosis. Several participants stated that they realized the

injury was severe at the onset, prior to official diagnosis. After initial injury onset, several dancers questioned their own injury severity, or questioned whether surgery would be necessary. After consulting with medical professionals and processing the unknowns of the situation, participants eventually came to accept the injury severity and in some cases, the decision that surgery was worth it. One dancer expressed a feeling of acceptance regarding the inevitable loss of ability to execute certain movements: "I know I'm not going to be doing massive grande jetes and stuff, and I'm cool, I've been there done that, you know. But just to be able to get back in there and – you know, just do some plies…" (P7). In other words, the participant ultimately acknowledged the fact that dancing would never quite be the same and found a new level of acceptance in simple movements.

### Other Experiences

Other experiences that did not fit into another higher order category included miscellaneous experiences ($n$ = 3). For example, one dancer reported feeling self-critical as a dancer and giving personal blame for the injury, and another reported feeling regretful of not resting more or taking better care of the body in younger years and feeling humbled by the injury experience. These miscellaneous experiences were clearly important pieces of the participants' individual stories but did not have notable overlap with that of other participants' experiences.

## Discussion

The primary purpose of the present study was to explore modern dancers' post-injury psychological experiences, in order to develop a more comprehensive understanding of the unique injury experiences of modern dancers, and assess the results in relation to past research on other types of sport athletes and ballet/contemporary dancers. The present study is the first qualitative investigation that focused specifically on the post-injury experiences of adult modern

dancers. Participants' responses resulted in several common themes and higher order categories regarding overall injury and recovery experiences, some of which were similar to what previous researchers have reported within sport athlete participants and in some cases, ballet dancers (e.g., Bianco et al., 1999; Bianco, 2001; Johnston & Carroll, 1998; Macchi & Crossman, 1996; Tracey, 2003), while others were unique to the modern dancers in the present study. Previous qualitative injury researchers had focused more specifically on sport athletes from a variety of competitive sports (e.g., skiing, soccer, rugby, lacrosse, track and field; e.g., Bianco, 2001; Tracey, 2003). Additionally, past researchers have taken different approaches as far as the structure of the interviews; several injury studies have followed a phased approach to recovery, specifically assessing participants' responses during *each stage* of recovery to full return-to-sport (e.g., Clement et al., 2015; Johnston & Carroll, 1998; Macchi & Crossman, 1996; Prentice & Arnheim, 2011). The researchers of the present study, however, focused on participants' general psychological experiences from the injury onset through full recovery. The dancers in the present study did not report on specific differences in their experiences in *each* stage of recovery, but rather, their memories overall from injury onset through recovery (i.e., memory recall of dancers did not delineate from stage to stage).

According to Folkman et al. (1991), following an individual's primary appraisal of an injury, several emotions are typically involved. For example, appraisals involving a threat may induce emotions of fear, anger, or anxiety. The relationship between individuals' coping resources, situational variables, and coping styles are what help direct the secondary appraisal to a stressful situation (e.g., the injury; Dewe & Cooper, 2007). Although injury researchers have commonly described cognitions, emotions, and behaviors of one's experience (Lazarus & Folkman, 1984; Wiese-Bjornstal et al., 1998), the dancers' reports in the present study could not

be categorized solely within those three themes. Rather, the dancers' stories encompassed a broader range of post-injury experiences, including unique experiences in terms of injury-related growth and learning.

Several of the emotional reactions reported in the present study have similarly been reported by sport athlete participants (e.g., Bianco et al., 1999; Bianco, 2001; Johnston & Carroll, 2998; Tracey, 2003), and in some cases, by dancers (Macchi & Crossman, 1996; Markula, 2015; Reel et al., 2018). For example, sport athletes reported a feeling of "uncertainty" and "fear of vulnerability" following an injury in Tracey's (2003) study, indicating a level of confusion and fear/anxiety. A common emotional response to injury in sport athletes includes the fear of reinjury (Bianco et al., 1999; Bianco, 2001; Hsu et al., 2017; Johnston & Carroll, 1998), which was reported by 37.5% of participants in the present study. In a study on injured professional ballet dancers, Macchi and Crossman (1996) found that participants reported feeling fear, distress, depression, and anger early on in their rehabilitation process. Over time, the emotions transitioned into optimism and excitement as the recovery process progressed (Macchi & Crossman, 1996), which parallels the theme of gratitude/hope in the present study. The sample of skiers in Bianco's (2001) study reported a delay in the shock factor regarding the consequences of the injury situation, which was noted by one participant in the present study (P2), whereas others reported feeling shocked and surprised immediately after injury onset.

Due to the prevalence of emotional reactions that dancers reported as an injury response, it is worth noting that models of grief have been developed and discussed in relation to injured athletes. For example, Kübler-Ross (1969) theorized a model on five stages of grieving, including: denial, anger, bargaining, depression, and acceptance. The model was initially theorized in terms of the grieving process associated with death and dying, however, since then,

it has also been conceptualized in terms of grieving the athletic injury experience (e.g., Harris, 2003; Van der Poel & Nel, 2011). Similarly, Tunick et al. (1996) developed a model influenced by Kübler -Ross (1969), focused more specifically on injured and disabled athletes. The five stages in Tunick et al.'s (1996) grief response include: shock, realization, mourning, acknowledgement, and coping. Despite the clear order of the stages in both models, individuals may experience the stages in different orders, or perhaps, only experience some of the five stages (Kübler -Ross, 1969; Tunick et al., 1996). In the present study, the dancers reported several responses that related to the stages of grieving from both models, including shock, anger, acceptance, sadness/grief, awareness/acknowledgement of hardship, and behavioral responses (i.e., related to coping). Moreover, the dancers in the present study expressed emotional reactions and other injury responses that aligned in part with both grief response models and some contrasting emotional reactions (e.g., gratitude/hope), thus, neither model tells the whole story of the dancers' post-injury experiences. According to Mehling et al. (2011), it appears that dancers often minimize the severity of pain and signs of injury, which may relate to pride in personal grit and perseverance, or perhaps denial. Based on the findings in the present study, facing the adversity of an injury leads to highly complex psychological responses and experiences, which do not follow one consistent linear pattern.

Within the present study, all participants reported receiving professional medical services (e.g., medical doctor visits, physical therapy, surgery, etc.) for their injuries, yet none of the eight participants reported receiving professional *emotional* support for their injury experiences. Despite the most common higher order category being emotional reactions to injury (i.e., consisting of the most themes), participants did not seek out emotional services from professional providers. Interestingly, several participants mentioned that they wish they had

sought out or received such services. There is not a clear reason as to why participants did not seek such support; perhaps participants felt as though the emotional support offered by friends and family was sufficient, the emotional responses may not have reached clinical concern, perhaps the social culture or stigma in the dance world demoting seeking out emotional support, or possibly financial challenges were limiting factors (Krasnow et al., 1994). The findings regarding dancers' emotional reactions and lack of professional emotional support can be used as a reminder to practitioners that emotional support and healing may be just as important as physical rehabilitation when faced with the adversity of an injury. In addition to intrapersonal reactions and experiences, dancers had interpersonal experiences that were meaningful to them during their injury.

Despite the lack of emotional support during their injury, all dancers in the present study reported some level of realizations (often involving growth) as a part of their injury experiences. Several individuals reported on specific lessons learned from the injury and recovery process, which relates to previous findings on sport athletes' reported personal discovery and learning (e.g., to not take things for granted) as a result of injury (Ievleva & Orlick, 1991; Rose & Jevne, 1993; Tracey, 2003). Relatedly, stress-related growth has been described as a physical or psychological growth experience after facing a trauma or stressful event (Tedeschi & Calhoun, 2004). Stress-related growth has recently gained further acknowledgement within athletic injury research (e.g., Kampman et al., 2015; Roy-Davis, 2017; Wadey et al., 2011). For example, Salim et al. (2016) found that sport athletes with high levels of hardiness experienced stress-related growth following an athletic injury; participants with a reported emotional outlet were able to experience positive affect following injury. Research on stress-related growth in terms of dance injuries, on the other hand, is limited. The findings of the present study indicate that dancers and

sport athletes may have similar stress-related growth experiences when it comes to injury, however, further research is needed on the topic in order to assess dancers in relation to other types of sport athletes

Pain experiences during injury had psychological effects on some dancers in the present study. Because of the subjectivity in pain experiences with athletic injury due to the physical and psychological factors involved (Minev et al., 2017), pain has different effects on each individual (Anderson & Hanrahan, 2008). Anderson and Hanrahan (2008) discussed how dancers are often pushed to major physical limits and may not notice pain intensifying due to the typical experience of pain as a dancer. Similarly, a few of the dancers in the present study reported they had naturally high pain tolerances as dancers, and in some cases, conditioned themselves to expect pain during their injury experiences. On the other hand, dancers also reported feeling pain to the point of debilitation, and the worst pain that they had ever experienced due to the injury. Interestingly, despite the prevalence of pain catastrophizing reported in previous athletic and dance injury research (e.g., Anderson & Hanrahan, 2008; Mainwaring et al., 2001; Tripp et al., 2007), it was not evidenced that the dancers in the present study catastrophized their pain or injury experiences. Overall, the inherent subjectivity of pain and the differences in individuals' ways of appraising pain (Anderson & Hanrahan, 2008; Clement et al., 2015; Minev et al., 2017) likely influenced dancers' pain experiences in the present study.

The most common finding within the external factors that overlaps between the present study and previous research findings is the influence of social support on the overall injury experience (e.g., Bianco, 2001; Johnston & Carroll, 1998; Tracey, 2003). Interpersonal trust/support was reported by all of the participants in the present study, with a focus on social support from family, friends, significant others, dance company members, and dance

teachers/choreographers. A common report in the present study and previous studies includes feeling gratitude for the support of others (Bianco, 2001; Johnston & Carroll, 1998; Tracey, 2003). Several researchers have discussed social support in terms of athletic injury coping (e.g., Bianco, 2001; Green & Weinberg, 2001; Mitchell et al., 2014). On the other hand, interpersonal protection was also a common theme in the present study, which included reports of feeling concerned about sharing the details about the injury to others. Tracey (2003) similarly reported that their sport athlete participants stated feeling concerned about coaches' responses to the news of an injury diagnosis, in fear of losing playing time or losing a spot on a team. In contrast, in the present study, the concerns around sharing details about injury to others were reported more as not wanting to be a burden or an inconvenience to others, rather than a concern about being replaced. For the most part, the dancers in the present study reported having trusting relationships with dance colleagues and choreographers, and perhaps were less fearful of losing a spot in companies and dance engagements due to the strong foundation in relationships.

The loss that was reported in the present study (loss of independence and loss of identity as dancer/career decisions) had overlap with findings from previous studies. For example, Tracey (2003) similarly discussed the finding of loss of independence as well as loss of identity (within a sample of sport athletes) as a response to athletic injury. In a qualitative study in which researchers investigated injured dancers and disordered eating behaviors, Reel et al. (2018) reported that dancers felt uncertainty in terms of future dance involvement, which aligns with the findings in the present study in terms of career decisions. Delayed diagnosis experiences/injury acceptance was another common theme in the present study that Tracey (2003) also found in injured sport athletes. Downplaying the seriousness of injury was reported by Tracey (2003), and

did not directly refer to denial, but rather, related more closely to the delayed acceptance in injury that participants reported in the present study.

One particularly unique characteristic of the present study was the timing of the interviews in relation to the global health pandemic, COVID-19. Three out of four of the participants who suffered an injury during the pandemic reported notable differences in experiences as compared to those who were injured prior to the pandemic. Due to COVID-19 being the first global health pandemic since sport psychology literature has developed, pandemic influences are not present in prior athletic injury-related research findings. Interestingly, the pandemic influenced dancers differently in the present study. Of the four dancers whose injuries overlapped with COVID-19, one reported feeling blessed by the timing of the pandemic with their injury. Moreover, the influences of COVID-19 affected the dancers in unique ways. Additionally, within the present study the concerns regarding lack of financial resources and work-related concerns were reported by dancers. Due to the general lack of funding and often limited financial resources available for modern dancers (Krasnow et al., 1994), financial and work-related concerns may be particularly prevalent within dance populations.

In addition to the external factors in the present study, dancers reported on several behavioral responses to injury, including movement engagement, quiet activity engagement, and compensatory behavior. Previous researchers studying sport athletes' and dancers' injury experiences have reported similarities and differences in terms of behaviors and coping mechanisms. For example, Clement et al. (2013) found that athletic trainers reported that sport athletes' coping mechanisms ranged from adherence to rehabilitation and seeking out social support, to low rehabilitation compliance and a lack of effort. Interestingly, despite some levels of deterred motivation in dancers in the present study, all dancers reported adhering to physical

therapy and several dancers reported both engaging in dance in alternative ways or engaging in alternative physical activity. On the other hand, some dancers reported compensatory coping behavior such as disordered eating, alcohol consumption, and returning to dance too soon. These behaviors appeared to be more maladaptive in nature compared to the two aforementioned behavioral responses. These findings appear to be consistent with Reel et al.'s (2018) findings on professional dancers, in which the authors reported that dancers reduced calorie intake as a behavioral response to injury. In the present study, disordered eating behavior was reportedly used as a way of feeling in control of something during a time when several other factors (i.e., injury) were not in the dancers' control.

**Conclusion**

As the first study to qualitatively explore modern dancers' post-injury psychological experiences, the present investigation helped provide a framework for future modern dance research. The current study adds to the literature of psychological experiences related to dancers' serious injuries. A few new themes that were identified specific to the dancers in the study included COVID-19 pandemic influences and financial/work-related concerns. Several of the emotional reactions, interpersonal trust/support, loss, and realizations that the dancers reported had similarities to reports made by sport-athletes in previous studies (e.g., Bianco, 2001; Kampman et al., 2015; Reel, 2018; Roy-Davis, 2017; Tracey, 2003; Wadey et al., 2011). The present study provided insight into specific and detailed accounts made by a sample of injured modern dancers and can act as a guide for future sport psychology researchers and practitioners, since dancers continue to be an underrepresented group in the current literature.

Given the structure and design of the present study, there were several limitations. Due to the qualitative study design with a small sample size and 75% identifying as White participants,

the findings cannot be generalized to all modern dancers. Participants also differed greatly in age type of injury, and injury severity/need for surgery. The impact of COVID-19 affected 50% of participants, and thus, the injury experiences of those participants were inherently different. Future researchers investigating modern dancers' injury experiences may consider studying a larger sample size including a more diverse and underrepresented population of dancers, as well as differences between career ending injuries versus acute injuries. Additionally, conducting a study that includes both sport athlete and dance participants may be an effective way to broaden the current research and specifically examine the similarities and differences between different types of athletes. One strength of the present study was the inclusion of modern dancers at different training levels (e.g., college, community, professional), as previous dance injury research tends to focus primarily on professional-level dancers. Future researchers may benefit from investigating further possible differences between dancers at different training levels, including differences in pain perception and expectations/experiences/tolerance of pain depending on dance training level. For example, dancers who train at university or other elite-levels may have different experiences compared to dancers who *are paid* for their dancing. Perhaps dancers who get paid will feel as though they must deny their pain or injury in order to make a living, whereas college dancers who do not plan on continuing dance beyond college may have different experiences when faced with an injury. Thirdly, researchers may consider further investigation on stress-related growth in dancers following an injury. According to Wadey et al. (2019), practitioners may benefit from facilitating a more transformative healing process when working with injured athletes, focusing on injury-related growth as a result of the injury experience. Based on the findings from both the present study and Wadey et al.'s (2019)'s findings, if practitioners focus on growth after injury with dancers, there may be the potential for

an enhancement in dancers' levels of understanding and awareness, injury-related growth, acceptance, less hesitation in seeking social support when injured, and perhaps a successful return-to-dance experiences (e.g., limited fear in returning, quicker return-to-dance). Based on the findings of the present study, injuries are highly complex experiences that influence not only the physical body, but also several psychological experiences in a variety of modern dancers. Thus, the present study can help provide a base of research on the unique experiences of modern dancers and offer suggestions that practitioners can take into account in order to more effectively support injured modern dancers.

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**Table 1**

*Higher Order Categories and Corresponding Themes.*

| Higher Order Category | Theme |
|---|---|
| Emotional Reactions | Disappointment |
| | Sadness/Grief |
| | Frustration/Annoyance |
| | Anger/Upset |
| | Surprise/Shock |
| | Gratitude/Hope |
| | Fear/Anxiety/Confusion |
| | Embarrassment/Guilt |
| Behavioral Responses | Movement Engagement |
| | Quiet Activity Engagement |
| | Compensatory Behavior |
| Realizations | Perceptions/Beliefs in Healing Ability |
| | Motivation |
| | Lessons Learned |
| | Pain Experiences |
| | Awareness/Acknowledgement of Hardship |
| External Factors | Interpersonal Trust/Support |
| | Interpersonal Protections |
| | COVID-19 Pandemic Influence |
| | Financial/Work-Related Concerns |
| Loss | Loss of Independence |
| | Loss of Identity as Dancer/Career Decisions |
| Acceptance | Delayed Diagnosis Experiences/Injury |
| | Acceptance |
| Other | Miscellaneous Experiences |

## Appendix A

## Journal of Applied Sport Psychology Submission Guidelines

When preparing manuscripts for submission in the *Journal of Applied Sport* Psychology, "all parts of the manuscript should be typewritten, double-spaced, with margins of at least one inch on all sides. Articles will be no more than 30 double-spaced pages in length for quantitative submissions and 35 for qualitative submission (including tables, figures and references). They should also include a title page, a 250-word abstract, 50-word lay summary, up to three implications for practice and complete references. Lay summaries should be included after the abstract and key words. Insert a line space after the abstract, and then include a heading (Lay Summary:) and then the lay summary text. Implications for Practice should be included after the lay summary. Insert a line space after the lay summary, and then include a heading (Implications for Practice:) and then finally the text in bullet point format. The title of the manuscript should reappear on the first page of the text. Authors should also supply a shortened version of the title suitable for the running head, not exceeding 50-character spaces. The discussion section of the manuscript should provide suitable attention to the applied implications arising from the findings of the work. Research notes with novel or interesting descriptive quantitative or qualitative data (15 pages including references, tables, figures, 100-word abstract) are welcomed submissions. Manuscripts, including tables, figures and references, should be prepared in accordance with the Publication Manual of the American Psychology Association (Seventh Edition, 2020). Manuscripts which do not adhere to these guidelines will be returned to the authors on submission. Authors are to avoid the use of sexist, racist, and otherwise offensive language. Where relevant the cultural characteristics of any sample population studied should be described in the participant section of the method. Manuscript copies should be clear and legible and all figures must be camera ready."

From:
https://www.tandfonline.com/action/authorSubmission?journalCode=uasp20&page=instructions

## Appendix B

### Western Washington University Internal Review Board Approval

The Western Washington University (WWU) Institutional Review Board (IRB) designee determined that your project meets the requirements outlined in §45 CFR 46 and WWU institutional procedures to receive the following exemption determination: Exempt Category 2

This determination means that your research is valid indefinitely, as long as the nature of the research activity remains the same. You may begin recruitment and data collection. After 6 years, according to the University's retention schedule, this exemption file will be deleted. After this point, you will no longer be able to make modifications to this protocol.

This exemption is given under the following conditions:

1. The research will be conducted only according to the protocol.
2. The research will be conducted in accordance with the ethical principles of Justice, Beneficence, and Respect for Persons, as described in the Belmont Report, as well as with federal regulations and University policy and procedure.
3. PIs, Faculty Advisors, PI Proxies, and any individual interacting or intervening with human subjects or their identifiable data must be appropriately trained in human research subject protections (CITI Basic Social/Behavioral Research – Basic/Refresher course), research methods, and responsible conduct of research prior to initiating research activity.
4. The Principal Investigator will retain documentation of all past and present personnel, including documentation of their training(s).
5. The Principal Investigator will ensure that all personnel training(s) remain(s) up to date.
6. IRB approval will be obtained prior to making any modifications that affect the research study's eligibility for this exemption category or fundamentally change the research. This includes changes to the Principal Investigator (PI), PI Proxy, or Faculty Advisor (if applicable), subject population, recruitment methods, compensation amounts or methods, consent procedures or documents, or changes in study materials that deviate from the approved scope.
   The following types of changes can be made without submitting a modification: Adding or removing research personnel other than the PI, PI Proxy, or Faculty Advisor (if applicable), edits in spelling, punctuation, and grammar on study materials (not including consent forms), minor wording changes to study materials (not including consent forms) that do not change the overall content and resulting comprehension, and adding or editing questions in questionnaires that are within the scope of the questions currently approved.
7. All research records (the application determination packet, correspondence with the IRB, any other IRB-related determinations, signed consent forms, and documentation of research personnel trainings in human research subject protections) will be maintained in accordance with WWU's guidelines for document retention.

8. The IRB will be promptly informed of any issues that arise during the conduct of the research, such as adverse events, unanticipated problems, protocol deviations, or any issue that may increase the risk to research participants.
   Thank you for your attention to these details. If you have questions at any point, please review our website (www.wwu.edu/compliance) or contact a Research Compliance Officer.

   Research Compliance Officer: Stephanie Richey
   Exemption timestamp: 12/2/2020

## Appendix C

## Screening Survey/Inclusion Criteria

These questions help us see whether you are eligible to participate in the study. We will not keep these responses for our research.

1. Is your main dance style modern?
2. Have you suffered a (non-head) injury that took you out of your modern dance training/performance for at least 6 weeks (it is okay if dance was not the cause of the injury)?
3. Were you dancing consistently (classes, rehearsals, or performances) when the injury took place?
4. Were you at least 18 years old when your injury took place?
5. Have you since recovered from your injury and returned to dance or been medically cleared to return to dance again?

## Appendix D

### Informed Consent to Participate
### Western Washington University; Master's Thesis on Dancer's Post-Injury Experiences

You are being asked to participate in a research study. Your participation is voluntary. This form will give you information to help you decide whether to participate. Please read carefully and ask questions about anything that is unclear. When all questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." Please keep a copy of this consent form for your records.

**Purpose:**
The purpose of this research study is to identify and understand various post-injury experiences in modern dancers, with the intent of broadening the general understanding of injury-related psychological experiences. The goal of conducting the study is to help strengthen the research on post-injury experiences in dancers and inform practitioners in injury psychological rehabilitation techniques.

**Tasks**
This study will involve an audio-recorded semi-structured interview (approximately 25-45 minutes) taking place over Zoom. The researchers ask that you respond to the questions as honestly as you can, and with as much detail as you feel comfortable. You may refuse to answer any questions on the interview if you are not comfortable responding.

**Risks/Benefits**
There are no expected risks of participation in this study, however, some questions may cause emotional discomfort during recall of injury experiences. The benefit is that your participation will aid in the process of furthering the research on dance-related injury experiences.

**Compensation**
In appreciation of your time, participants will receive a $15.00 Amazon e-gift card.

**Data and Privacy**
All data will be stored securely. We take every precaution to protect your information, though no guarantee of security can be absolute. We believe the chances of you being identified are low due to the protections in place for your privacy. Your identifying information will not be reported in the results of the study. Your audio-recording will be transcribed and identifying information be removed from the transcript. Any links between your data and contact information, including your audio file, will be destroyed at the end of the study. Your data, with identifiers removed, may be used or distributed for future research without your additional informed consent.

**Withdrawal**
You may choose to withdraw yourself from the study at any point without consequences.

**Future Results**

If you are interested in reading the future results of this study, the principal researcher can send you a link to an electronic copy after final analysis.

**Questions**

Marisa Fernandez is currently a WWU graduate student in Sport and Exercise Psychology. Should any questions or concerns arise regarding this study, please reach out to Marisa directly via email at fernanm2@wwu.edu, or her advisor: Linda Keeler, EdD at keelerl2@wwu.edu. If you have questions about your rights as a research participant, you can contact the Western Washington University Office of Research and Sponsored Programs (RSP) at compliance@wwu.edu or (360) 650-2146.

**Consent**

By saying "I agree to participate" before the interview you are saying that you have read this form, are 18 years old or older, and agree to participate.

## Appendix E

## Interview Questions

1. What is your age (in years)?
2. What gender do you identify as?
3. What ethnicity/ethnicities do you identify with?
4. What age did you start dancing?
5. What have been your main types of dance?
6. How many years have you trained in *modern* dance specifically?
7. Which type of modern is your primary type?
8. What was the date of your injury?
9. What type of injury did you sustain?
    a. Any other injuries? (If multiple injuries were incurred within the past five years, report on the most severe)
    b. How were you injured?
10. How long ago did you return to dance? How long did your recovery take?
11. Walk me through your injury and recovery experiences, starting from the initial onset of your injury through your recovery process.
    a. Prompt for thoughts?
    b. Prompt for emotions?
    c. Prompt for behaviors/coping techniques?
        i. If not already touched upon: Please tell me about any social support received during your recovery, and how that affected your coping?
12. What else can you tell me about your experiences with that injury and injury recovery?
13. What type of treatment, if any, did you receive during your injury/injury recovery? (E.g., medical, psychological, etc.)?

## Appendix F

## Recruitment Email

Hello,

My name is Marisa Fernandez, and I am a graduate student at Western Washington University in the Kinesiology: Sport and Exercise Psychology Master's program. I am conducting a study exploring the psychological experiences of modern dancers following a dance disrupting injury. I would greatly appreciate it if you could forward this email to any adult modern dancers you know who have suffered (and since recovered from) an injury (excluding head injuries) in the past 5 years, in order for them to have the opportunity to participate in this study. It is not required that dance was the main cause of injury, however, it is required that the injury took the dancer out of their regular dance training/performance for at least six weeks. Participation in this study includes engaging in an interview with the principle researcher (myself) and answering questions regarding one's psychological experiences that followed the injury. The purpose of my study is to learn more about dancers' experiences after injury, in order to help practitioners understand how to support injured dancers. I would appreciate it if you could also forward this email to anyone else who may know modern dancers who could be interested in participating in my study. Participation is voluntary and all participant identifying information will remain private. All participants who fit the inclusion criteria (listed below) and consent to participate will be compensated with a $15.00 electronic Amazon gift card. Please email me at fernanm2@wwu.edu if you have any questions, or are interested in participating in this study.

Inclusion Criteria: All of the below must be accurate for inclusion in the study.

- Your main dance style is/was modern dance.
- You suffered a (non-head) injury that took you out of your modern dance training/performance for at least 6 weeks (it is okay if dance was not the cause of the injury)

- Your injury happened within the past 5 years.
- You were dancing consistently (classes, rehearsals, or performances) when your injury took place.
- You were at least 18 years old when your injury took place.
- You have since recovered from your injury and returned to dance or were medically cleared to return to dance again.

Thank you for your time,

Marisa Fernandez

fernanm2@wwu.edu

## Appendix G

## Recruitment Social Media Posting

Interested in Participating in a Qualitative Research Study (taking place via remote interviews)?

Calling all modern dancers who fit these inclusion criteria:

- Your main dance style is/was modern dance.
- You suffered a (non-head) injury that took you out of your modern dance training/performance for at least 6 weeks (it is okay if dance was not the cause of the injury)
- Your injury happened within the past 5 years.
- You were dancing consistently (classes, rehearsals, or performances) when your injury took place.
- You were at least 18 years old when your injury took place.
- You have since recovered from your injury and returned to dance or were medically cleared to return to dance again.

All participants who fit the inclusion criteria and consent to participate will be interviewed remotely and compensated with a $15.00 electronic Amazon gift card. Please email me at fernanm2@wwu.edu if you have any questions, or are interested in participating in this study.