Athlete Coping Strategies Relating to Different Types of Stressors

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Abstract

Coping strategies used by varsity athletes connected to sports-related stressors have been studied but, what has yet to be determined is if the stressor type affects the coping strategies selected by these athletes. Participants consisted of 26 competitive athletes with injuries, 27 competitive athletes with other stressors, 12 non-competitive athletes with injuries and 19 non-competitive athletes with other stressors. Instruments used to measure coping strategies, perception of stress, and athletic identity were the Brief Cope Scale, Perceived Stress Scale, and Athletic Identity Measurement Scale. Although hypothesized that competitive athletes with injuries would utilize unhealthy coping strategies more than other groups, results differed. Participants with other stressors used unhealthy coping strategies significantly more than those with injuries, regardless of athlete type, even though they perceived their stressors as less stressful than participants with injuries. The source of stressor was considered the most important factor in determining which strategies would be used.

Keywords: competitive athlete, injury, other stressors, healthy coping strategies, unhealthy coping strategies, coping strategies, perceived stress, athletic identity
Athlete Coping Strategies Relating to Different Types of Stressors

Regardless of material possessions, career path, or family life, stress impacts everyone’s life every day (Sahlin et al., 2014). Effects of stress can be harmful, so individuals have to find different ways to cope with their distress. There are various ways a person can choose to cope with life stressors, such as healthy, effective strategies or unhealthy strategies that may increase the risk of stress-related disorders (Eisenberg et al., 2012).

Demands and challenges throughout daily life, known as stressors, trigger the human body to react with stress responses (Selye, 1976; Fredrikson, 1991). When stress occurs, this triggers the brain to send stress hormones throughout the body. Of the stress hormones released, cortisol is considered most important in the human body, is often noted as an indicator of stress, and, therefore, can be used to measure response to stress (Harris et al., 2007). This bodily response to stress not only changes the body’s physiological functions but can also affect one’s emotional, mental, and physical reactions (Sahlin et al., 2014). For example, stress symptoms can include depression, sleep disturbances, physical illness, anxiety, dizziness, and fatigue (Sahlin et al., 2014; Selye, 1976). Unfortunately, as researcher Hans Selye (1976) noted, stress cannot be avoided, and, therefore, various factors are taken into consideration when determining how stress will ultimately affect an individual.

Although it may be assumed that people who face more stressors will experience worse adverse effects from stress, research has found that this is not necessarily the case. Evidence suggests that people with lower socioeconomic status and disadvantaged groups experience more stress, resulting in overall lower health (Thoits, 1995). However, Thoits (1995) predicted the adverse health effects were not due to the number of stressors faced but rather, due to a lack of
resources allowing them to develop coping abilities to combat the stressors. This analysis reveals the importance of an individual’s ability to cope with stressors and how the strategies selected impact one's life.

An individual’s way of coping with stressors is known to be the cognitive and behavioral ways they manage both internal and external demands (Lazarus & Folkman, 1984). Previous studies have taken different approaches to categorizing the various coping strategies into different coping styles. One way of categorizing coping strategies has been to divide them into healthy versus unhealthy coping styles (Roth & Cohen, 1986). The original Coping Orientation to Problems Experienced (COPE) Inventory included 60 items divided into 12 healthy and unhealthy categories (Carver et al., 1989). Upon reevaluation, participant samples found the questionnaire to be too long and redundant. Therefore, Carver (1997) revised the COPE Inventory to form the more streamlined and effective Brief Coping Orientation to Problems Experienced Scale (Brief COPE Scale), including 24 questions and 12 categories. Coping strategies listed under the Brief COPE Scale (Carver, 1997) have also been categorized as healthy or unhealthy (Roth & Cohen, 1986).

Healthy coping strategies are beneficial to those who favour this style (Roth & Cohen, 1986). In medical situations, those who use this style are quicker to take appropriate action for their health care which often leads to adaptation and resolution of the trauma (Roth & Cohen, 1986). Healthy coping styles include active coping, planning, religion, using instrumental support, using emotional support, positive reframing, and acceptance (Carver, 1997; Eisenberg et al., 2012). Active coping is a strategy where a person copes by taking direct action toward the stressor to reduce or eliminate it (Carver et al., 1989). A person may use the coping strategy of planning to think about how they may choose to cope with a stressor (Carver et al., 1989). Many turn to
their religion or spirituality when in times of great distress, partaking in praying or meditating to cope (Carver et al., 1989). Instrumental support represents seeking advice or further information from someone like a therapist or a book (Carver et al., 1989). Emotional support is similar to instrumental support, however, a person using emotional support reaches out for empathy or understanding (Carver et al., 1989). Positive reframing is a strategy used to manage the distressing emotions surrounding the stressor rather than the stressor itself (Lazarus & Folkman, 1984). Acceptance is a coping response where the person has accepted that the stressor is occurring in their life and they must attempt to deal with it (Carver, 1997). While healthy coping strategies can create positive change in stressful situations, unhealthy coping strategies often result in negative outcomes (Eisenberg et al., 2012).

The use of unhealthy coping strategies can cause adverse health effects (Eisenberg et al., 2012). Unhealthy coping strategies include self-blame, substance use, denial, behavioural disengagement, and self-distraction (Carver, 1997; Eisenberg et al., 2012). Self-blame is an unhealthy extension of internal locus of control extending to events in which the individual blames themselves for negative things that happen to them (Carver, 1997). Substance use, such as alcohol and illicit drugs, may be used as a way to cope with the impact of stress (Carver et al., 1989). Denial is the opposite of the healthy coping strategy of acceptance and occurs when someone coping with a stressor pretends that the event did not happen (Eisenberg et al., 2012). Behavioural disengagement is akin to acting helpless or giving up (Carver et al., 1989). Self-distraction is when a person ignores the problem and tries to find ways to take their mind off the issue (Carver et al., 1989). Although many coping strategies are associated with being healthy or unhealthy, not all strategies can be considered one or the other (Carver et al., 1989; Eisenberg et al., 2012).
Of all the coping strategies listed in the Brief COPE Scale, literature has not included enough information on humour and venting strategies to be considered associated directly with healthy or unhealthy coping strategies (Carver et al., 1989; Carver, 1997; Eisenberg et al., 2012). Therefore, these strategies cannot be grouped with healthy or unhealthy coping strategies and must be analyzed separately. Further research will help determine whether these two strategies correlate with other healthy or unhealthy coping strategies, or if they are more susceptible to situational cues and therefore, should be analyzed in their own category. Although many factors influence the selection of an individual’s coping style, research has indicated that perception makes There is not one single factor that determines the selection of a person’s coping style, however, research has indicated that perception makes a crucial contribution to this process (Cohen, Kamarack & Mermelstein, 1983).

This research will contribute information to this relationship and see if they are correlated to healthy or unhealthy coping strategies or if they are more susceptible to situational cues and therefore, should be analyzed in their own category.

Perception of a stressor is considered a key contributing factor in determining how stress will inevitably affect the body and lead to a coping strategy selection (Cohen, Kamarack & Mermelstein, 1983). The Perceived Stress Scale (PSS, Cohen, Kamarack & Mermelstein, 1983) has been used to measure levels of perceived stress in particular situations and examines relationships between subjects such as job satisfaction and sleep quality, or pregnancy and depression (Chiu et al., 2016). Goltzke et al. (2017) found that pregnant women who viewed their pregnancy with high perceived stress were more likely to cope using evasive, unhealthy coping strategies and less likely to use positive, healthy coping. Women who used adaptive coping strategies were less likely to experience depression during their pregnancy whereas,
women who used unhealthy coping strategies such as denial and substance abuse were more likely to suffer from a depressive disorder (de Tychey et al., 2005). Since perception is just one principal factor in understanding the impact of stress and the selection of coping strategies, it is crucial to determine if other components have similar influence over certain groups and their reactions (Wheaton, 1983)

An area of personality that can affect how a person adapts to stress and selects coping strategies is their self-concept (Lee-Flynn et al., 2011). Self-concept can help people adapt to stressful situations but, if threatened, can be detrimental (Campbell, 1990). One group that encounters stressors relating to their self-concept is athletes. If an athlete is injured and cannot participate in their sport, this prevents them from fulfilling an aspect close to their identity, threatening their self-concept. Although they are not the only group that experiences stressors that threaten their identity, they can be used as a model group for future research on coping with stressors. Athletes are more accessible than other groups in this category, such as singers who can no longer sing or dog groomers who develop an allergy to dogs. While a review of athletes’ coping strategies relating to sports stressors, such as injury, has been evaluated in the literature (Chiu et al., 2016), research has not yet been completed to see if athletes use these same coping strategies with non-sports related stressors. This unique threat and easy accessibility make athletes an appealing group to investigate when analyzing coping strategies across different types of stressors.

Although sustaining injuries are not exclusive to athletes, this group appears to react more negatively to physical injuries (Green & Weinberg, 2001). When injured, athletes experience psychological and emotional reactions such as depression and reduced self-esteem more severely than their non-athlete counterparts (Green & Weinberg, 2001).
believe the increased prevalence of harmful psychological reactions to injuries is related to the level that a person identifies as an athlete, although, more research is recommended to confirm this assumption. As unhealthy coping styles are known to result in poor outcomes such as emotional distress and disease morbidity, surveying athletes about their athletic identity and their coping styles will help further solidify this explanation (Eisenberg et al., 2012).

An individual’s level of athletic identification is measured by the Athletic Identity Measurement Scale (AIMS) (Brewer et al., 1993). The identity of a person involved in athletics focuses on their role as an athlete, whereas a non-athlete does not necessarily attach themselves to that identity (Rotella & Heyman, 1993). This means when an injury happens to an athlete, and they are unable to participate in their sport, their identity may be threatened, causing further distress. However, if a non-athlete has the same injury and does not participate in that sport, their identity may remain constant and unquestioned (Green & Weinberg, 2001).

Previous studies have focused on determining the coping styles of competitive athletes when facing stress in athletically based scenarios, such as playing sports (Anshel, 1996; Krohne & Hindle, 1988). While playing a sport, athletes are faced with constant, acute stressors such as penalties and jeering from spectators. These stressors require competitive athletes to constantly find a way to cope to avoid adverse effects such as decreased motivation and burnout (Anshel, 1996). Finding successful ways to cope with these stressors appears to have a direct effect on athletic performance. In a study by Anshel (1996) unhealthy, avoidance based coping strategies were considered to be beneficial to athletes as it helped them ignore the acute stressors faced during their performance. Anshel (1996) went as far as to say that if athletes use healthy, approach coping strategies during sports to deal with acute stressors, rather than unhealthy, avoidance coping strategies, they may be less productive and perform poorly. The selection of
unhealthy coping strategies by competitive athletes was also reflected in a study by Krohne and Hindel (1988). Results showed that elite tennis players selected avoidance coping strategies more often than their competitors of lesser skill. Although athletes have been a focal point for many studies, there remains to be gaps in current literature regarding their preferred coping styles and reaction to stressors.

Although current literature has focused its attention on competitive athletes and their coping styles, research still needs to be conducted to understand how athletes and non-athletes compare in similar situations. This research would be required to recognize how non-athletes cope with injuries and how athletes cope with stressors that do not threaten their self-concept and identity.

Furthermore, the comparison between athletes and non-athletes addressed in previous research has rarely incorporated all levels of athleticism and often solely focuses on intercollegiate athletes (Storch et al., 2005; Young et al., 2017). Much research has divided athletes into the following categories, intercollegiate athletes and non-athletes (Storch et al., 2005). However, if an athlete decides to play a sport outside of their school or their sport is not available at the college or university level, they are considered a non-athlete. To incorporate more data from miscategorized athletes, a study by Young et al. (2017) expanded their athlete categories to include recreational athletes who competed in sports outside of the school. Although there was an improvement from considering only varsity athletes as athletes, it still did not account for the range of athletic involvement among a young, university-aged population. Therefore, adding a category for recreational athletes would allow for a more detailed analysis of how various levels of athletes cope with different stressors.
For the current study, athletes were evaluated to determine if stressor type affected the coping strategies selected to cope with stress. Competitive athletes were operationally defined as those who competed on high school sports teams, club teams, travel teams, National or Provincial teams, athletic competitions, or participated in some professional athletic training. The definition of a recreational athlete was someone who participated in recreational or intramural sports, trained three or more times a week for self-improvement or personal fitness, or trained for or participated in athletic events at a level not listed in the competitive athlete level. Finally, non-athletes were defined as those who did not fall into either of the earlier categories. This study assessed the connection between the different levels of athletes and the coping styles they selected when dealing with stressors relating to injuries and other stressors using the Brief COPE Scale (Carver, 1997). This assessment also focused on determining if a participant’s athletic identity and perceptions of stress contributed to their coping strategy selections using the AIMS (Brewer et al., 1993) and PSS (Cohen et al., 1983) questionnaires. Questions on the Brief COPE Scale, relating to humour and venting, were evaluated separately to determine their connection to healthy and unhealthy coping strategies. It was anticipated that competitive athletes with injuries would use more unhealthy coping strategies than competitive athletes with other stressors and non-athletes and recreational athletes with either other stressors or injuries. This prediction was derived from the assumption that competitive athletes would score high on athletic identity and perceive their injury as very stressful, due to their strong athletic identity and perception of their injury. It is also expected that recreational athletes with injuries will utilize more unhealthy coping strategies than non-athletes in both injury and other stressor categories. Humour and venting scores were not expected to have a strong correlation to either unhealthy or
healthy coping strategies however, were predicted to have a stronger, positive correlation with unhealthy coping strategies.

**Method**

**Participants**

The sample was composed of 84 participants, ages 18 to 35 ($M = 19.63, SD = 2.90$). Students enrolled at Brescia University College in London, Ontario in the Psychology 1010a, 1015b and 2855 courses were eligible to participate. Any students who were not enrolled in 1 or more of these 3 courses were not eligible for participation. Participants were recruited through Sona where they read the Recruitment Description shown in Appendix A. Participants were not compensated for their time but were granted course credit.

**Materials**

The Recruitment Description (Appendix A) was included on the Sona site allowing participants to gain understanding of the study prior to participation. The letter of information and consent included background information about the study including the length, procedures, benefits and risks (Appendix B). The entire survey was completed by participants through the website Qualtrics using the following hyperlink: https://uwo.eu.qualtrics.com/jfe/form/SV_2mkOuthXluPtvKd. The first group of questions presented was used to collect demographic information, including the participant’s age and gender, and categorical information, to determine what type of an athlete they were (Appendix C). The next subgroup of questions asked participants if they experienced an injury in the past 5 years which prevented them from participating in their sport or daily activities. If they answered yes, they were asked what the injury was, the degree it interfered with their sport or daily activities, and then were directed to the first questionnaire. If they answered no, the participants
were asked to think of a stressor they experienced in the last 5 years, asked to identify it and its level of interference in their daily activities. Three questionnaires were administered to all participants during the study. As the experiences discussed occurred in the past, the questions in these three questionnaires were edited from present to past tense.

The first questionnaire included 28 questions selected from the Brief Coping Orientation to Problems Experienced (COPE) inventory (Carver, 1997) (Appendix D). The Brief COPE is a quantitative, Likert, self-report survey that measured participant’s use of healthy, unhealthy, and other coping strategies when dealing with either an injury or another stressor. The higher the score in each category, the more the participant used that strategy.

The Perceived Stress Scale (PSS) (Cohen, et al, 1983) is a quantitative, Likert, self-report survey which consisted of 14 questions (Appendix E). This questionnaire was used to gain information on the level of perceived stress that participants had during their injury or the stressful time in their lives. The higher the score, the more the stressful the participant perceived their stressor to be.

The Athletic Identity Measurement Scale (AIMS) (Appendix F) was also administered to participants through Qualtrics. AIMS is a 10-question quantitative, Likert, self-report survey. The survey measured the level of athletic identity in participants at the time of their previously identified injury or stressful event. The higher the score, the more the participant identified with an athletic identity.

The dependent variables are the total score a participant achieves on all healthy coping style questions from the Brief COPE, the total score a participant achieves on all unhealthy coping style questions from the Brief COPE, the summed score a participant attains on the PSS and the overall score a participant achieved on the AIMS. The results from the Brief COPE assessed
whether healthy or unhealthy coping styles were more common in each of the varying conditions. The results from the PSS allowed further understanding of the level of stress that the participants perceived during the injury or stressful time. The AIMS results were used to further hypothesize the effect of athletic identity in various stressful situations.

**Procedure**

A web-based survey was presented using Qualtrics computer software and distributed to potential volunteers via Sona. Participants were first prompted with a recruitment description (Appendix A) through Sona which briefly outlined the research being conducted. They then clicked on the survey link which led them to the Letter of Information (Appendix B), followed by the survey. Participants were required to read and agree to the letter of information and informed consent form prior to gaining access to the survey. If participants declined to provide their consent, the study was terminated. Participants were able to access the survey and complete it at their convenience. After indicating informed consent, participants completed demographic questions, followed by qualifying questions to determine which of the 6 conditions they fell under (Appendix C). These conditions were competitive athletes with injury, competitive athletes with other stressors, recreational athletes with injury, recreational athletes with other stressors, non-athletes with injury, and non-athletes with other stressors. Once it was determined which level of athlete they were, participants answered whether they had an injury that prevented them from participating in athletics or daily activities. If they previously had this injury, they would answer the remaining questions based on their experience with that injury but, if not, they chose another stressor they experienced to base their answers to the remaining questions on. Once the participant’s condition was determined, the Brief COPE questionnaire (Appendix D) was presented to participants, followed by the PSS (Appendix E) and finally, the
AIMS (Appendix F) to determine their level of athlete identity. The final screen presented the debriefing information to the participants (Appendix G). After students participated, I manually awarded their credits through Sona. Participants were able to withdraw from the study at any time. The Sona program embedded participants’ numbers into the Qualtrics data output and indicated that, while this information could be used to identify a participant for withdrawal, the survey responses were cleaned and subsequently never stored with the file containing the participant’s number and participant’s name.

Results

Recreational athletes and non-athletes were combined into a single category because of too few participants in the recreational athlete category (n = 9). Therefore, data was analyzed using 2x2 (type of athlete x type of stressor) between groups ANOVAs. The first variable was type of athlete with two levels including competitive athlete and non-competitive athlete. The second variable was type of stressor with two levels including injury and other stressors. This provided the study with four conditions including competitive athlete – injury (n = 26), competitive athlete – other stressor (n = 27), non-competitive athlete – injury (n = 12), and non-competitive athlete – other stressor (n = 19).

An analysis of unhealthy coping strategies was completed. The main effect of type of stressor was significant, \(F(1, 80) = 12.36, p < .001, \eta_p^2 = 0.13\). Participants with other stressors (\(M = 26.65, SD = 6.46\)) participated in significantly more unhealthy coping strategies than those with injuries (\(M = 21.21, SD = 6.04\)) (Figure 1). It was predicted that there would be an interaction between type of athlete and type of stressor but, this interaction was not significant (p = .49).
Figure 1

_Graph Representing Mean Unhealthy Coping Strategy Scores & Different Types of Stressors_

*Note.* Scores for Unhealthy Coping Strategies were rated on a scale of 0-50 with a higher score meaning that they chose to cope with an unhealthy strategy more often.
No significant differences between type of athlete, type of stressor or an interaction of both variables were found when analyzing healthy coping strategies scores ($p > .05$).

When analyzing the results from the PSS, it was found that the main effect of the type of stressor was significant, $F(1, 80) = 3.99$, $p = .049$, $\eta^2_p = 0.05$. Participants with injuries ($M = 40.53$, $SD = 6.00$) perceived significantly more stress than those with other stressors ($M = 37.72$, $SD = 6.19$) (Figure 2).

When analyzing the AIMS data, the main effect of type of athlete was found to be significant, $F(1, 79) = 45.19$, $p < .001$, $\eta^2_p = 0.36$. Competitive athletes ($M = 39.79$, $SD = 15.26$) scored significantly higher than non-competitive athletes on the AIMS ($M = 19.39$, $SD = 9.42$).

Data was further explored with correlational analysis.

Healthy coping strategy scores showed a significant, weak, positive correlation with PSS, $r(84) = .35$, $p = .001$ (Figure 3), and a significant, weak, positive correlation with venting, $r(84) = .28$, $p = .01$ (Figure 4).

Unhealthy Coping Strategy scores showed a significant, weak, negative correlation with the PSS, $r(84) = .36$, $p < .01$ (Figure 5), and a significant, weak, positive correlations with other coping strategy scores, $r(84) = .28$, $p = .009$, humour scores, $r(84) = .22$, $p = .049$, and venting scores, $r(84) = .23$, $p = .033$ (Figure 6).

Other Coping Strategy scores show significant, strong, positive correlations with humour scores, $r(84) = .83$, $p < .001$, and venting scores, $r(84) = .74$, $p < .001$.

PSS scores showed a significant, weak, negative correlation with venting, $r(84) = .23$, $p = .033$.

There were no significant correlations with AIMS scores ($p > .05$).
Figure 2

*Graph Representing Mean Perceived Stress Scores & Different Types of Athletes & Stressors*

![Graph showing mean perceived stress scores for competitive and non-competitive athletes with injury and other stressors.](image)

*Note.* Scores for Perceived Stress were rated on a scale of 0-70 with a higher score meaning their stressor was perceived as more stressful.
Figure 3

Correlation between the Healthy Coping Score and the Perceived Stress Score

Note. Each dot represents an individual participant. Scores for Healthy Coping were scored on a scale of 0 to 70. The higher the Healthy Coping score, the more often the participant chose to cope in a healthy way. Scores for Perceived Stress were rated on a scale of 0-70 with a higher score meaning their stressor was perceived as more stressful.
Figure 4

*Correlation between the Healthy Coping Score and the Venting Coping Strategy*

![Graph showing the correlation between Healthy Coping Score and Venting Coping Strategy]

*y = 1.0868x + 41.768*

*R² = 0.0775*

*Note.* Each dot represents an individual participant. Scores for Healthy Coping were scored on a scale of 0 to 70. The higher the Healthy Coping score, the more often the participant chose to cope in a healthy way. Scores for the Venting Coping Strategy were rated on a scale of 0-10 with a higher score meaning the participant used venting more often when coping with stressors.
Figure 5

Correlation between the Unhealthy Coping Score and the Perceived Stress Score

Note. Each dot represents an individual participant. Scores for Unhealthy Coping were scored on a scale of 0 to 50. The higher the Unhealthy Coping score, the more often the participant chose to cope in an unhealthy healthy way. Scores for Perceived Stress were rated on a scale of 0-70 with a higher score meaning their stressor was perceived as more stressful.
Figure 6

*Correlation between the Unhealthy Coping Score and the Venting Coping Strategy*

*Note.* Each dot represents an individual participant. Scores for Unhealthy Coping were scored on a scale of 0 to 50. The higher the Healthy Coping score, the more often the participant chose to cope in a healthy way. Scores for the Venting Coping Strategy were rated on a scale of 0-10 with a higher score meaning the participant used venting more often when coping with stressors.
Discussion

The purpose of this study was to determine if athletes reacted differently than other groups to varying types of stressors as measured by the coping strategies from the Brief COPE Scale (Carver, 1997). It was predicted that competitive athletes who experience an injury would use more unhealthy coping strategies than competitive athletes who experience other stressors and non-competitive athletes and recreational athletes with other stressors or injuries. It was hypothesized that recreational athletes with injuries would utilize more unhealthy coping strategies than non-competitive athletes in both injury and other stressor categories. Also, the scores of the coping strategies humour and venting were predicted to have a weak positive correlation with unhealthy coping strategies. The results showed some support of these ideas however, many unexpected results appeared as well.

Results from the Brief COPE Scale showed there was no significant difference in how often a participant chose to cope using healthy coping strategies regardless of their athlete type, stressor type, or an interaction of both.

For unhealthy coping strategies, there was a significant difference in participants choosing to cope in unhealthy ways depending on their type of stressor. Those coping with stressors other than injuries resorted to using unhealthy coping strategies more often than those with injuries. Although the interaction between type of injury and athlete group was not significant, competitive athletes scored lowest of all four groups on their use of unhealthy coping strategies.

Competitive athletes with injuries were expected to participate in unhealthy coping strategies more often than any other category partially due to their predicted strong athletic identity, evaluated using the AIMS (Brewer et al., 1993), and a strong negative perception of
their injury, measured by the PSS (Cohen et al., 1983). Although the results agreed with past research in that AIMS scores accurately differentiated between those who considered themselves athletes vs. non-athletes (Rotella & Heyman, 1993), the assumption that competitive athletes with injuries would perceive injuries as more stressful than any other level of athlete, or any other type of stressor, was not supported by the results. Instead, data showed that participants who experienced an injury found it to be significantly more stressful than those who experienced other stressors such as a death in the family, or a breakup, regardless of their athlete type.

Podlog et al. (2013) believed that a contributing factor to competitive athletes avoiding unhealthy coping strategies during injury recovery was the drive and support to return to their sport. To return to sport as quickly as possible, athletes often undergo rehabilitation and recovery. Throughout this process, doctors and physiotherapists prescribe exercises and encourage healthy coping strategies to the injured athletes to foster motivation and recovery (Podlog et al., 2013). Although the injury itself can be perceived as stressful and damaging to their self-identity, these strategies help them to focus on their future athletic goals, even if they cannot compete yet. These positive future expectations and goals are something that people many with other stressors, such as death, a breakup, or divorce, do not experience.

When studying competitive athletes in previous research, intercollegiate athletes are recruited and evaluated (Storch et al., 2005; Young et al., 2017). For this study, the scope of competitive athletes was expanded to include participation in activities such as high school sports and professional athletic training. These changes could have affected the results in that the level of competitiveness in the participants questioned may not have been at as high a level as in other research.
A discrepancy between the hypothesis and results to the predicted hypotheses could have been caused by sex differences. In past research analyzing athletes and their coping styles, males were included as participants (Crocker & Graham, 1995; Hoar et al., 2010). Because all participants in the current study were female, this left for the potential for biased results. Studies, where both male and female athletes were evaluated, showed that female athletes were more likely to cope using healthy strategies, such as seeking social support, and less likely to use unhealthy coping strategies, like aggression, compared to their male counterparts (Crocker & Graham, 1995; Hoar et al., 2010). Therefore, the lack of male participants may have altered the results and could account for the differences in predicted outcomes.

Unfortunately, with the low number of participants in the recreational athlete categories, these participants had to be combined with the non-athlete categories. Therefore, this study could not make any analytical discoveries based on these groups as individual groups. This meant that answers to the hypothesis of whether recreational athletes with injuries used unhealthy coping strategies more than non-competitive athletes in both injury and other stressor categories could not be uncovered.

In addition to evaluating the coping strategies of athletes, this study assessed whether the coping strategies of humour and venting should be included as healthy or unhealthy strategies of coping. It was hypothesized that they would positively correlate with unhealthy coping strategies but that this connection would not be strong. The results aligned with this hypothesis. More interesting was that venting was also positively correlated with healthy coping strategies. These weak correlations contribute to the fact that humour and venting still have not been associated with either healthy or unhealthy coping strategies and should continue to remain this way (Carver et al., 1989; Eisenberg et al., 2012).
These results are intriguing because they show that even if a participant identifies as an athlete, an injury they perceive to be more stressful than other stressors and affects participation in their sport, does not increase their likelihood of using unhealthy strategies to cope. The PSS revealed a positive correlation with healthy coping and a negative correlation with unhealthy coping. This means the more stressful a participant perceived their stressor to be, the more likely they were to use healthy coping strategies and were less likely to use unhealthy coping styles. What seems to matter more, in this case, is the source of the stressors, i.e., injuries vs. worrying about marks, death, or family troubles.

One limitation the study faced was the limited number of participants in particular categories. There were a lower number of participants in the non-athlete categories than the competitive athlete categories and an extremely low number of participants in the recreational athlete categories. Because of this limitation, these two categories had to be combined and may have distorted the data. For example, those considered recreational athletes will have competed in a sport or athletic competition in the past five years, similar to competitive athletes and dissimilar to non-athletes. These differences could cause the results of the newly formed, combined group to be closer than anticipated to the competitive athletes and result in an outcome that is not significantly different.

Furthermore, depending on the timing of the injury or other stressor, and given the unprecedented stress brought on by the ongoing pandemic, a ceiling effect of some stress measures could have appeared in the results as well.

This study has contributed to the overall knowledge of how athletes react to different stressors and how stressors affect the coping strategies selected. Participants perceived injuries as more stressful but used more unhealthy coping strategies when dealing with other stressors.
These results provide a base for further research to discover what leads participants to use healthy coping strategies when the stressor is highly stressful and what leads to unhealthy coping strategies when stressors are not as stressful. It also provides a further connection of how humour and venting relate to healthy and unhealthy coping strategies and how they may be incorporated in future studies. To reduce limitations in future studies, it is recommended to edit the athlete categories to make competitive athletes more exclusive, allowing recreational athletes to be considered a separate category from non-athletes. Ideally, any future research should not be conducted during or following stressful situations affecting the local population, such as natural disasters or a global crisis, to avoid any ceiling effect when evaluating stress.

Stressor type most significantly affected how participants selected their coping strategies and did not depend on athlete type. This finding suggests that a person’s choice to participate in healthy or unhealthy coping strategies does not depend on if they are a high-level athlete or not, but rather the situation that they are facing. Further understanding the connection between stressors and well-being can help implement learning strategies providing people with knowledge on how to avoid the use of unhealthy coping strategies and utilize healthy strategies to produce positive outcomes and long-term health benefits (Roth & Cohen, 1986).
References


Appendix A

Recruitment Description

This research project investigates how people cope with various stressors. Specifically, I am examining if coping styles vary depending on the type of stressor. The study involves completing one questionnaire on stress and coping, and it will take approximately 25 minutes. You will earn 1 credit for participating.
Appendix B

Questionnaire

Dealing with Different Types of Stressors

Letter of Information and Consent

<table>
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<th>Project Title</th>
<th>Dealing with Different Types of Stressors</th>
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<td>Dr. John Mitchell, School of Behavioural and Social Sciences, 519-432-8353 x 28116, <a href="mailto:jbmitche@uwo.ca">jbmitche@uwo.ca</a></td>
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<tr>
<td>Thesis Researcher</td>
<td>Michelle Loft, School of Behavioural and Social Sciences, <a href="mailto:mloft4@uwo.ca">mloft4@uwo.ca</a></td>
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1. **Invitation to Participate**  As a student in Psychology 1010a, 1015b, and 2855, you are being invited to participate in this research study, at Brescia University College, about how participants react to different types of stressors. This study will be not be conducted by your professor and has no bearing on your mark in Psychology 1010a, 1015b, and 2855. You do not have to participate in this study as part of this course.

2. **Why is this study being done?** The purpose of this study is to determine how participants cope with various types of stressors that may interfere with everyday activities vs. other types of stressors.

3. **How long will you be in this study?** It is expected that this study will take approximately 25 minutes to complete.

4. **What are the study procedures?** If you agree to participate, you will be asked to complete a questionnaire asking you to rate how you reacted to a certain stressor in your life.

5. **What are the risks and harms of participating in this study?** There are no known or anticipated risks or discomforts associated with participating in this study. If you become upset
or distressed by any of the questions asked in this study, resources are available to help at Psychological Services at Western (https://www.uwo.ca/health/psych/index.html), the 24-hour Good2Talk confidential helpline (1-866-925-5454), or see Western’s Mental Health & Wellness Resource Guide (https://www.uwo.ca/health/MHWRG2018.pdf).

6. **What are the benefits of participating in this study?** You may not directly benefit from participating in this study, but information gathered may provide benefits to society as a whole which include increasing knowledge of how people react to varying types of stressors.

7. **Can participants choose to leave the study?** Participation in this study is completely voluntary and is not required as part of Psychology 1010a, 1015b and 2855. You can withdraw even after you have given consent, without penalty, by contacting the Principal Investigator and Thesis Researcher. If you wish to withdraw and have your information removed, please let the Principal Investigator (Dr. John Mitchell; jbmitche@uwo.ca) and the Thesis Researcher (Michelle Loft; mloft4@uwo.ca) know by March 31, 2021, after which it will no longer be possible to leave the study.

8. **How will participants' information be kept confidential?** While we do our best to protect your information there is no guarantee that we will be able to do so. The Principal Investigator will keep any personal information about you in a secure and confidential location for a minimum of 7 years. A list linking the participant number with the participant’s name will be kept by the Principal Investigator in an encrypted file on a password-protected computer, separate from the file with the survey responses. The Thesis Researcher will store a password-protected file with the survey responses on a password-protected computer. Data will not be linked with a participant’s name. If the results of the study are published, your name will not be used. Your data may be retained indefinitely and could be used for future research purposes (e.g., to answer a new research question). By consenting to participate in this study, you are agreeing that your data can be used beyond the purposes of this present study by either the current or other researchers. Representatives of Brescia University College’s Research Ethics Board may require access to your study-related records to monitor the conduct of the research.

9. **Are participants compensated to be in this study?** Participants in Psychology 1010a, 1015b and 2855 will receive 1 credit in their course for participating.

10. **What are the rights of participants?** Your participation in this study is voluntary. You may decide not to be in this study, without penalty, even after you have given consent. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study by letting the Principal Investigator (Dr. John Mitchell; jbmitche@uwo.ca) and thesis researcher (Michelle Loft; mloft4@uwo.ca) know by March 31, 2021, after which it will no longer be possible to leave the study. If you choose not to participate or to leave the study, it will have no effect on your mark or academic standing in any course. You do not waive any legal right by signing this consent form.
11. **Who do participants contact for questions?** If you have questions about this research study please contact Dr. John Mitchell, Brescia University College, 519-432-8353 x 28116. If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Research Officer at Brescia: Dr. Jen Pecoskie, jpecosk@uwo.ca, 519-432-8353 x28044. The Research Officer is not part of the study team. Everything that you discuss will be kept confidential.

12. **Consent.** You indicate your voluntary agreement to participate by responding to the questionnaire.

   - [ ] Yes
   - [ ] No
Appendix C

Demographic and Categorical Information

Which Sex do you identify with?

- [ ] Male
- [ ] Female
- [ ] Prefer Not to Say
- [ ] Please self identity: _____________

What is your age?

________________________________________________________________

End of Block: Demographics

Start of Block: Athletics

Please select all that apply: In the past 5 years have you competed on any of the following:

- [ ] College or University varsity sports team
- [ ] High school sports team
- [ ] Club team (e.g. track and field)
Travel sports team (e.g. hockey, soccer)

National or Provincial sports team

Competed in Athletics Competitions (e.g. CrossFit Games, Bodybuilding)

Professional Athletic Training relating to competition

None of the Above

In the past 5 years have you experienced an injury that has prevented you from participating in sports or daily activities? (e.g. broken bone, fracture, pulled muscle, concussion)

- Yes
- No

Please confirm what the injury was.

__________________________________________________________________

How often did this injury interfere with your participation in sport or daily activities?

- Never
- Rarely
Please think of that injury you had and answer the following questions according to how you coped with your experience.

How often did this injury interfere with your participation in sport or daily activities?

- Never
- Rarely
- Occasionally
- Frequently
- Always

Please think of this situation/stressor and answer the following questions according to how you coped with your experience.
Please select all that apply: In the past 5 years have you competed on any of the following:

- [ ] Recreational/Intramural sports teams (e.g. flag football, dodgeball)
- [ ] Trained 3 or more times a week for non-competitive purposes
- [ ] Competed recreationally in endurance sports such as marathons, triathlons, long-distance cycling, or IRONMAN races
- [ ] None of the Above

In the past 5 years have you experienced an injury that has prevented you from participating in sports or daily activities? (e.g. broken bone, fracture, pulled muscle, concussion)

- [ ] Yes
- [ ] No

Please confirm what the injury was.

________________________________________________________________

How often did this injury interfere with your participation in sport or daily activities?

- [ ] Never
- [ ] Rarely
Please think of the injury you had and answer the following questions according to how you coped with your experience.

Please think of a situation where you were particularly stressed in the past 5 years (e.g. a breakup, an argument, looming deadlines). What was this situation/stressor?

____________________________________________________________________________________

How often did this injury interfere with your participation in sport or daily activities?

○ Never

○ Rarely

○ Occasionally

○ Frequently

○ Always

Please think of this situation/stressor and answer the following questions according to how you coped with your experience.
In the past 5 years have you experienced an injury that has prevented you from participating in daily activities? (e.g. broken bone, fracture, pulled muscle, concussion)

- Yes

- No

Please confirm what the injury was.

________________________________________________________________

How often did this injury interfere with your participation in daily activities?

- Never

- Rarely

- Occasionally

- Frequently

- Always

Please think of the injury you had and answer the following questions according to how you coped with your experience
Please think of a situation where you were particularly stressed in the past 5 years (e.g. a breakup, an argument, looming deadlines). What was this situation/stressor?

________________________________________________________________

How often did this injury interfere with your participation in sport or daily activities?

- Never
- Rarely
- Occasionally
- Frequently
- Always

Please think of this situation/stressor and answer the following questions according to how you coped with your experience.
Appendix D

Brief COPE Scale

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COPE Subscales (Item Numbers)

**Healthy Coping Strategies**

Active Coping (1, 15)
Planning (2, 16)
Religion (4, 18)
Using Instrumental Support (5, 19)
Using Emotional Support (6, 20)
Positive Reframing (7, 21)
Acceptance (8, 22)

**Unhealthy coping styles**

Self-Blame (3, 17)
Substance Use (11, 25)
Denial (12, 26)
Behavioural Disengagement (13, 27)
Self-Distraction (14, 28)

**Other strategies**

Humour (9, 23)
Venting (10, 24)
Appendix E

Perceived Stress Scale

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Appendix F

Athletic Identity Measurement Scale

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Appendix G

Debriefing Form

Dealing with Different Types of Stressors

Thank you for your participation in this study. The purpose of this study was to determine if there is a connection between the coping styles used by athletes when dealing with stressors related to an injury and coping styles used when dealing with other stressors. What we predicted was that competitive athletes with injuries will show more unhealthy coping styles than non-athletes and recreational athletes with other stressors or injuries due to their strong athletic identity and coping style. We also predicted that recreational athletes would exhibit more unhealthy coping styles than non-athletes in both injury and other stressor categories. This was carried out by having participants answer questions about their coping styles, their perceived stress during the injury or stressor, and their athlete identity.

As a reminder, your results are confidential to the experimenters.

If you have become upset or distressed by any of the questions asked during this study, resources are available to help at Psychological Services at Western (https://www.uwo.ca/health/psych/index.html), the 24-hour Good2Talk confidential helpline (1-866-925-5454), or see Western’s Mental Health & Wellness Resource Guide (https://www.uwo.ca/health/MHWRG2018.pdf).

Here are some references if you would like to read more:

