

Promoting athlete mental health

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Abstract

This study investigated the relationship between reappraisal and suppression with depression and mental wellbeing amongst university athletes. It was hypothesised reappraisal would associate with lower depression and greater mental wellbeing, whereas suppression would associate with greater depression and reduced mental wellbeing. Employing a cross-sectional design, 427 participants (Mage = 20.18, SD = 1.52; 188 males, 239 females) completed questionnaires assessing mental health and strategy use. Hierarchical multiple regressions revealed reappraisal was positively associated, and suppression negatively associated, with mental wellbeing ($\Delta R^2 = 4.8\%$, $\Delta F(2, 422) = 17.01$, $p < .001$, suppression $\beta = -.08$, $p = .028$, reappraisal $\beta = 0.21$, $p < .001$) but neither were associated with depression ($\Delta R^2 = 0.4\%$, $\Delta F(2, 422) = 1.33$, $p = .267$, suppression $\beta = .06$, $p = .114$, reappraisal $\beta = 0.03$, $p = .525$). Results highlight reappraisal as correlated with mental wellbeing in student athletes and therefore, reappraisal could be beneficial for managing stress in sport. Reappraisal may implicate how wellbeing is promoted through sport, but future experimental research is needed to confirm causal relationships.

***Keywords:* reappraisal, suppression, depression, mental health, dual career**

Promoting Athlete Mental Health: The Role of Emotion Regulation

1 **Promoting Athlete Mental Health: The Role of Emotion Regulation**
2
3 Young adults (16-24 years) are at an increased vulnerability for mental illness because
4 of biological, social, and psychological changes (Gore et al., 2011; Kessler et al., 2007; Rigby
5 et al., 2020). Depression is a particular mental health concern for this age group, especially
6 those enrolled in university. In a recent study, Jenkins et al. (2020) found 34.5% of students
7 at UK universities were experiencing depression, with greater prevalence amongst females
8 (37.2%) than males (16.7%). Although university is a challenging environment for young
9 adults, particularly for student athletes who face additional demands and risk factors
10 compared to non-athletes (Drew & Matthews, 2019), it also presents an opportunity for
11 improving the mental health of this at-risk age group.

12 As well as common risk factors such as relationship stressors and academic
13 competition (Hunt & Eisenberg, 2010), having a dual career means student athletes may also
14 experience high expectations from coaches (Hwang & Choi, 2016), burnout (De Francisco et
15 al., 2016), and risk of injury (Appaneal et al., 2009). Although findings are inconsistent, it is
16 generally agreed that student athletes experience similar incidences of depressive symptoms
17 than their non-athlete counterparts (Reardon & Factor, 2010; Sullivan et al., 2019).

18 Despite the prevalence of depressive symptoms in athlete populations, it is thought
19 that sport also has the potential to benefit mental health through psychosocial, behavioural,
20 and neurobiological mechanisms (Lubans et al., 2016; Stubbs & Rosenbaum, 2018).
21 Although understanding of how these mechanisms may promote athlete mental health is
22 limited, participating in university sport could provide student athletes with an opportunity to
23 develop adaptive emotion regulation and behaviours beneficial for adult life, thus helping to
24 reduce their risk for depression (Snedden, 2019). Consequently, understanding the emotional

1 regulation strategies employed by student athletes and how this is associated with mental
2 illness and wellbeing would fill a gap in the literature.

3 Currently, extant sport mental health research focuses on prevalence rates of mental
4 illness in elite sport or understanding the barriers and facilitators for seeking support (Uphill
5 et al., 2016). Recently, the British Association of Sport and Exercise Sciences (BASES)
6 released an expert statement calling for improved mental health literacy (MHL) within elite
7 sport by increasing understanding and recognition of mental illness, enhancing social support
8 seeking, and reducing stigma (Gorczynski et al., 2019). Nevertheless, non-elite athletes also
9 have limited understanding and awareness of mental health and often have negative
10 perceptions of mental illness (Uphill et al., 2016; Vella & Swan, 2021). Therefore, all levels
11 of sport would benefit from research and interventions that aim to protect them from mental
12 illness and promote mental health (Breslin et al., 2019). Consequently, research on emotion
13 regulation use across all competitive levels is needed and will also support calls for action in
14 elite sport.

15 Athlete mental health is often viewed through a lens of mental illness and
16 conceptualised differently across studies (Uphill et al., 2016). Mental wellbeing is also an
17 important feature of mental health that is increasingly recognised and reflected in Keyes'
18 (2002) two-continuum model of mental health. The model posits that mental illness and
19 health exist on two correlated yet distinct dimensions, with wellbeing indicating higher levels
20 of mental health. Accordingly, mental health does not mean an absence of mental illness, in
21 the same way that the presence of depression does not mean the absence of wellbeing and
22 flourishing. Thus, strategies employed to reduce depressive symptoms may not be effective at
23 increasing mental wellbeing or vice versa. There is a lack of empirical research
24 simultaneously investigating negative and positive indicators of mental health within sport,
25 with research only starting to address this gap (Küttel et al., 2021). Aligned with Keyes'

1 (2002) model, there is a need for research to simultaneously measure mental illness and
2 wellbeing to ensure mental health is examined as a complete state. Investigating these
3 dimensions together would ensure optimal mental health is promoted by providing clearer
4 guidance to those working directly with student athletes and offer a less stigmatizing
5 approach to athlete mental health (Uphill et al., 2016).

6 **Emotion Regulation**

7 Emotion regulation is “the processes by which individuals influence which emotions
8 they have, when they have them, and how they experience and express these emotions”
9 (Gross, 1998a, p. 275). The process model of emotion regulation (PMER) is one of the most
10 popular models of emotion regulation and has been used in the developmental and adult
11 literature. As posited by the PMER, there are five families of processes that make up emotion
12 generation, and these are: situation selection, situation modification, attentional deployment,
13 cognitive change, and response modulation (Gross & Thompson, 2007). The first four
14 processes are antecedent-focused (i.e., occurring before the generation of emotion) whilst the
15 final process, response modulation, is response-focused because it occurs after the emotion
16 has been generated. Many emotion regulation strategies fall under these processes; however,
17 this study focused on a cognitive change strategy (reappraisal) and a response modulation
18 strategy (suppression). These strategies were selected because they are frequently used by
19 athletes and reflect the emotional experience and expression of emotion (Kubiak et al., 2019;
20 Uphill et al., 2012).

21 Cognitive change describes strategies that aim to change one’s appraisal of a situation
22 to “alter its emotional significance” (Gross & Thompson, 2007, p.14). Cognitive reappraisal
23 is typically conceptualized as an “adaptive” strategy for mental health and therefore has
24 received substantial interest in emotion regulation literature (Sheppes et al., 2014). Efforts to

1 reappraise would reflect attempts to change how one thinks; for example, instead of allowing
2 anger to develop, the athlete may reframe the situation to elicit a different emotional
3 response. Response modulation describes strategies that aim to regulate one's response to an
4 emotion eliciting situation. A key strategy of response modulation is suppression, which is
5 typically considered a "maladaptive" strategy for mental health (Sheppes et al., 2014).
6 Suppressing emotions within sport may reflect an athlete's attempts to avoid outwardly
7 expressing internal anger. Considerable research demonstrates that reappraising negative
8 emotions such as anger and anxiety are more effective than suppressing them and involves
9 lower physiological, cognitive, and interpersonal costs (Brooks, 2014). Athletes typically use
10 antecedent-focused strategies (e.g., reappraisal) during competition to control intrusive
11 thoughts and anxiety (Balk et al., 2013; Martinet et al., 2015), whereas uses of expressive
12 suppression were found to inhibit performance (Wagstaff, 2014).

13 Sport is a demanding and stressful environment in which athletes experience many
14 emotions during training and competition (Röthlin et al., 2016). To succeed, athletes must
15 regulate emotions effectively as undesirable emotions (i.e., those that the athlete perceives, or
16 appraises, to debilitate performance) may adversely affect performance (Uphill et al., 2012).
17 For example, Lane et al. (2016) found that running performance could be improved if athletes
18 downregulated any unpleasant emotions, such as intense anxiety or anger. In other domains
19 of psychology, emotion regulation has received increased attention as an important feature of
20 mental health (Preece et al., 2018). However, little is known about how athletes' attempts to
21 regulate their emotions in sport is associated with their mental health as the focus of previous
22 research has been on performance-related outcomes (Balk et al., 2013; Martinet et al., 2015;
23 Stanley et al., 2012). Due to the dynamic nature of emotions in sport, this context presents an
24 opportunity for the study of emotion regulation and could subsequently advance our
25 understanding of emotion regulation in other fields of psychology (Uphill et al., 2012).

1 **Study Purpose and Hypotheses**

2 Underpinned by Keyes (2002) model, this cross-sectional study investigated how
3 strategies reflecting separate stages of the PMER (i.e., reappraisal and suppression) are
4 associated with depression and mental wellbeing in student athletes. It was hypothesised that
5 reappraisal would be associated with lower depressive symptoms and greater levels of mental
6 wellbeing, whereas suppression would be associated with greater depressive symptoms and
7 lower levels of mental wellbeing (Aldao & Nolen-Hoeksema, 2010; Hu et al. 2014; Schäfer,
8 2017). This novel investigation was undertaken to extend mental health research in sport by:
9 a) including a full range of competitive levels and not limiting the scope to elite athletes; and
10 b) including indicators of both mental illness and mental health. This study was an initial
11 descriptive study as part of a larger programme of work.

12 Adopting the PMER also offered the potential for new theoretical understanding as
13 sport is a context with limited emotion regulation and mental health research. That is, to
14 improve understanding of whether these strategies serve similar adaptive and maladaptive
15 functions in sport compared to extant non-sport research. By including strategies representing
16 different emotion regulation processes (i.e., cognitive change and response modulation), this
17 study also enabled the comparison of how antecedent-focused vs. response-focused strategies
18 may differently associate with athlete mental health. This research could therefore have
19 important implications for applied sport psychology practice and preventative initiatives for
20 protecting the mental health of student athletes.

21 **Methods**

22 **Participants**

23 The sample consisted of 427 athletes aged 18-25 ($M = 20.18$, $SD = 1.52$), representing
24 a range of sports ($n = 54$). Participants were 188 males and 239 females competing at either

1 elite (those who represent their country; $n = 33$), regional (those who represent their county; n
2 = 209), club (competition at a local level; $n = 131$) or recreational (non-competitive; $n = 53$)
3 level. This information was obtained from the demographic portion of the questionnaire pack.

4 **Measures**

5 ***Emotion Regulation***

6 The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) was used to
7 measure athletes use of reappraisal and suppression during training and competition (Uphill
8 et al., 2012). This 10-item scale has 6 items pertaining to reappraisal, and 4 items to
9 suppression, and asks participants to rate each statement against a 7-point Likert-type scale
10 from 1 (*strongly disagree*) to 7 (*strongly agree*). A mean score was created for each subscale.
11 This study found Cronbach's alpha coefficients of .75 and .68 for reappraisal and
12 suppression, respectively. Previous authors have also found coefficients of .70 or above,
13 demonstrating good internal consistency (Gross & John, 2003; Uphill et al., 2012).

14 ***Depression***

15 The depression subscale of the Depression, Anxiety and Stress Scale-21 (DASS-21;
16 Lovibond & Lovibond, 1995) was used to measure depressive symptomatology. Participants
17 were asked to reflect on how they had felt over the last week when rating each of the 7 items
18 against a 4-point scale from 0 (*did not apply to me at all*) to 3 (*applied to me very much or*
19 *most of the time*). Interpretation of the depression subscale was conducted following the
20 guidance of Lovibond and Lovibond (1995) where normal levels of depression are considered
21 ≤ 9 , and ≥ 28 considered extremely severe once the mean sum of items had been multiplied
22 by two. The depression sub-scale produced a Cronbach's alpha coefficient of .85
23 demonstrating very good internal consistency. Bottesi et al. (2015) reported similarly high
24 Cronbach alphas of .90 within a community sample and .92 within a clinical sample.

1 ***Mental Wellbeing***

2 The Warwick Edinburgh Mental Wellbeing Scale (WEMWBS; Tennant et al. 2007)
3 was used to measure mental wellbeing, an important feature of mental health. Participants
4 rated their recent experiences against a 5-point scale from 1 (*none of the time*) to 5 (*all of the*
5 *time*). A Cronbach's alpha of .86 was found for the present study, similar to that found by
6 Tennant et al. (2007) with a sample of students (.89). Due to researcher error, this scale was
7 reduced to a 13-item scale. Scores were summed and the possible range was 13-65, with
8 higher scores representing greater levels of mental wellbeing.

9 **Procedures**

10 Participants were recruited by methods of convenience (e.g., online announcements
11 and directly approaching sports clubs), following ethical clearance granted by the University
12 of Birmingham, UK. Participants were provided with an information letter, consent form, and
13 were given the chance to ask any questions regarding the study. Following informed consent,
14 participants were provided with a questionnaire pack with additional measures used as part of
15 a wider study. Participants were also reminded that there were no right or wrong answers,
16 they could withdraw at any point, and were provided with a debrief letter. Completion of the
17 questionnaire pack took approximately 30 minutes. Data were then stored in a secure location
18 and on a password protected computer.

19 **Data Analyses**

20 Data were coded and analyzed using SPSS version 25. Following cleaning and
21 screening checks for missing data and outliers, 4 univariate and 9 multivariate outliers were
22 removed (Tabachnick & Fidell, 2019). Descriptive and frequency statistics were also
23 produced, followed by two one-way between groups multivariate analysis of variance tests
24 (MANOVA) for investigating differences in reappraisal and suppression use by gender and

1 Missing data for reappraisal ($\chi^2 = 10.39$, $df = 15$, $p = .795$) and mental wellbeing ($\chi^2 =$
2 96.97 , $df = 93$, $p = .368$) were missing completely at random (MCAR; Little, 1998).
3 Suppression had no missing values and although missing values for the depression variable
4 were not MCAR ($\chi^2 = 46.34$, $df = 24$, $p = .004$), only 3.2% of data was missing and thus,
5 expectation maximisation values were used to impute missing data.

6 Descriptive statistics were calculated for the two ERQ subscales (reappraisal and
7 suppression), depression, and mental wellbeing by gender and competitive level and can be
8 seen in Table 1. Average scores for wellbeing ($M = 45.55$, $SD = 6.73$) highlight moderate
9 levels of mental wellbeing within the sample when compared to population norms ($M =$
10 51.61 , $SD = 8.71$; Health Survey for England, 2011)¹. Similarly, when considering depression
11 ($M = 7.63$, $SD = 6.97$), athletes exhibited “normal” levels of depression (Lovibond &
12 Lovibond, 1995).

13 ***Group Differences***

14 Descriptive statistics (Table 1) show that athletes used reappraisal ($M = 4.86$, $SD =$
15 0.83) more than suppression ($M = 3.63$, $SD = 1.05$) within their sports. Further, females used
16 more reappraisal ($M = 4.91$, $SD = 0.84$) whereas males used more suppression ($M = 3.77$, SD
17 $= 1.01$). A MANOVA showed these differences were significant at the multivariate level,
18 Pillai’s trace = .017, $F(2,424) = 3.63$, $p = .027$, $n^2_p = .017$, observed power = 66.9%. At a
19 univariate level, this difference was only statistically significant for suppression following the
20 Benjamini-Hochberg correction, $F(1,425) = 5.19$, $p = .023$, $n^2_p = .012$, observed power =
21 62.3%. Males also reported higher levels of depression and mental wellbeing compared to
22 females, however, these were not significant: mental wellbeing, $t(367) = .888$, $p = .375$, $n^2 =$
23 $.001$ depression, $t(425) = .995$, $p = .321$, $n^2 = .002$.

¹ The scale range for population norms is 14-70, for the present study this range is 13-65.

1 There was a trend for elite athletes to reappraise the most ($M = 5.12, SD = .97$) and
2 recreational athletes to suppress the most ($M = 3.69, SD = 1.14$). Nevertheless, the differences
3 in emotion regulation use between competitive levels were non-significant at the multivariate
4 level, Pillai's trace = .012, $F(6,844) = .817, p = .557, n^2_p = .006$, observed power = 32.7%.
5 Further, there was a trend for elite athletes to report both the highest rates of depression ($M =$
6 $10.48, SD = 8.12$) as well as the lowest rates of mental wellbeing ($M = 44.98, SD = 7.14$).
7 Nevertheless, results revealed that these differences were not statistically significant for
8 depression, $F(3,422) = 2.22, p = .086, n^2_p = .016$, observed power = 56.1%, or mental
9 wellbeing, $F(3,422) = .279, p = .841, n^2_p = .002$, observed power = 10.3%.

10 ***Relationships Between Variables***

11 Results highlight that reappraisal was associated with mental wellbeing and
12 depression through a small, positive relationship with mental wellbeing ($r = .284, p < .001$)
13 and a small, negative relationship with depression ($r = -.149, p = .002$). In contrast,
14 suppression shared a small, negative relationship with mental wellbeing ($r = -.168, p < .001$)
15 and a small, positive relationship with depression ($r = .166, p < .001$). That is, greater
16 reappraisal use was associated with greater wellbeing and lower depressive symptoms.
17 Further, greater suppression use was associated with more depressive symptoms and poorer
18 mental wellbeing. Reappraisal and suppression did not significantly correlate ($r = -.007, p =$
19 $.882$), whereas wellbeing and depression shared a strong and negative relationship ($r = -.600,$
20 $p < .001$). That is, greater levels of mental wellbeing were associated with lower levels of
21 depression.

22 **Main Analyses**

23 ***Depression***

1 A hierarchical multiple regression was conducted to explore correlates of depression
2 (Table 2). Mental wellbeing and gender were entered at step 1 to account for their potentially
3 confounding nature. Together, they explained 36.2% of the variance in depression within the
4 sample population, $F(2, 424) = 120.55, p < .001$. With reappraisal and suppression included
5 at step 2, the model significantly explained 36.6% of the variance in depression, $F(4, 422) =$
6 $61.03, p < .001$. The ΔR^2 of 0.4% suggests emotion regulation strategies contribute a small
7 amount of unique variance after controlling for gender and mental wellbeing, however, this
8 additional variance was not statistically significant, $F \text{ change } (2, 422) = 1.33, p = .267$. In
9 step 2, only mental wellbeing was significantly associated with depression ($\beta = -.60, p <$
10 $.001$), and remained significant following the Benjamini-Hochberg correction.

11 ***Mental Wellbeing***

12 A second hierarchical multiple regression was conducted to explore correlates of
13 mental wellbeing (Table 2). Depression and gender were entered at step 1, explaining 36.2%
14 of the variance $F(2, 424) = 120.41, p < .001$. Step 2 included reappraisal and suppression and
15 was significant $F(4, 422) = 73.26, p < .001$. The inclusion of these two variables, coupled
16 with the variables entered at step 1, explained 41% of the observed variance in wellbeing.
17 Therefore, reappraisal and suppression contributed a further 4.8% to this variance $\Delta R^2 =$
18 $4.8\%, F \text{ change } (2, 422) = 17.01, p < .001$. Depression ($\beta = -.56, p < .001$) and gender ($\beta = -$
19 $.09, p = .013$) remained significant correlates in step 2 with reappraisal and suppression also
20 providing a new significant contribution to the model (reappraisal $\beta = .21, p < .001$;
21 suppression $\beta = -.08, p = .028$). These findings remained significant following the Benjamini-
22 Hochberg correction.

23 **Discussion**

1 The aim of the study was to understand the relationship between reappraisal and
2 suppression with athletes' experiences of depression and mental wellbeing. The results
3 highlight that these strategies play an important role in mental wellbeing but not depression in
4 this context. This finding could have implications for how we promote mental health in sport
5 and may also contribute to our understanding of emotion regulation in clinical and non-
6 clinical psychology (Uphill et al., 2012). Nevertheless, further experimental research is
7 needed to confirm causal relationships, particularly as the ΔR^2 (4.8%) was small.

8 Consistent with the PMER and previous findings, student athletes reported using both
9 strategies during training and competition (Stanger et al., 2018; Uphill et al., 2012). Elite
10 athletes have been found to favour antecedent-focused strategies when competing, which
11 provides a greater mental capacity for focusing on the task at hand (Martinet et al., 2015;
12 Molina et al., 2018). Extending this finding in the present study, all levels of athletes (i.e.,
13 recreational, club, regional, and elite) reported a greater use of reappraisal than suppression in
14 training and competition. Therefore, as a novel contribution to the PMER, this study suggests
15 that in a sporting context, athletes indicate a preference for antecedent-focused strategies.

16 Similar to previous findings, there were no gender differences in reappraisal use;
17 however, males' use of suppression was significantly greater than females (Gross & John,
18 2003). This finding may reflect notions of masculinity in that the expression of certain
19 emotions is often deemed unacceptable (Brody, 2000). Nevertheless, the effect size ($n^2_p =$
20 .012) for gender differences in suppression was small, suggesting only 1.2% of the variance
21 could be explained by gender. Therefore, there are likely other factors influencing athletes'
22 use of strategies that require further investigation. Surprisingly, there were non-significant
23 gender differences in depression and mental wellbeing scores, despite male athletes using the
24 ostensibly "maladaptive" strategy of suppression more so than females. The present finding
25 contrasts to previous studies in athlete and non-athlete samples which more typically report

1 that females experience greater levels of depressive symptomatology (Tahtinen &
2 Kristjansdottir, 2018). Therefore, it may be argued that, despite males using more
3 suppression, this does not increase their risk of experiencing higher depressive symptoms and
4 the potential benefits of sport participation hold true, independent of gender.

5 **Depression**

6 In other fields of psychology, research indicates that reappraisal is an adaptive
7 strategy whereas suppression is a maladaptive strategy for depressive symptomatology in
8 general populations (Aldao & Nolen-Hoeksema, 2010; Hu et al., 2014; McRae & Gross,
9 2020) and specifically within university students (Gross & John, 2003; Haga et al., 2009).
10 Nevertheless, this study found neither strategy to be associated with depression. Thus, the
11 results align with recent arguments that reappraisal may not always be adaptive (Brockman et
12 al., 2017), and further suggests that suppression may not always be maladaptive for
13 depressive symptomatology. A key difference between previous research and the present
14 study was the focus on student athletes. These findings have implications for university
15 students who engage in sport and use suppression, as they may not experience the same
16 maladaptive effects associated with depression as non-athletes. Nevertheless, these findings
17 should be interpreted cautiously, and future research would benefit from investigating
18 whether contextual and individual differences moderate the relationship.

19 Within this study, athletes exhibited “normal” levels of depression (Lovibond &
20 Lovibond, 1995), similar to that reported by Drew and Matthews (2019) in their student-
21 athlete sample. Those experiencing depression are thought to regulate emotions
22 maladaptively (Joorman & Gotlib, 2010) and therefore, the ‘normal’ levels of depression
23 reported in the present study may explain why strategies were not associated with changes in
24 depressive symptomatology (Aldao & Nolen-Hoeksema, 2010). This finding aligns with
25 arguments that effective emotion regulation depends on the context and needs of the

1 individual (Gross, 2015). If athletes exhibit normal levels of depressive symptomatology, it
2 appears that using reappraisal and suppression to regulate their emotions has neither adaptive
3 nor maladaptive associations, and therefore could be used for performance without
4 maladaptive consequences. Nevertheless, it is necessary for future research to investigate this
5 relationship in athletes presenting with elevated levels of depressive symptoms before
6 conclusive recommendations can be made.

7 **Mental Wellbeing**

8 Consistent with previous studies, reappraisal was associated with higher mental
9 wellbeing after controlling for depression, suggesting that the adaptive benefits of reappraisal
10 on mental wellbeing were upheld even for those presenting with higher depressive symptoms.
11 Contrastingly, suppression was significantly associated with lower mental wellbeing after
12 controlling for depression and gender differences, suggesting that athletes' use has
13 maladaptive consequences for mental wellbeing.

14 These findings support the PMER by demonstrating a different pattern of association
15 for antecedent-focused vs. response-focused emotion regulation with the mental health
16 measures, and that antecedent-focused strategies typically have a greater relationship with
17 mental health outcomes than response-focused strategies (Gross, 1998a; Gross, 2001). That
18 is, athletes' use of reappraisal had greater associations with increased mental wellbeing than
19 did suppression with reduced mental wellbeing. Previous findings suggest reappraisal
20 requires less cognitive effort and is associated with enhanced sport performance (Gross,
21 2001; Martinet et al., 2015). Consequently, it may be beneficial to promote reappraisal when
22 dealing with stressors in sport, rather than focusing on reducing suppression, as it would
23 enable athletes to preserve cognitive effort for focusing on task-relevant cues in training and
24 competition. This could then enable sport as a context in which athletes are able to develop
25 effective emotional regulatory abilities and more specifically, use reappraisal adaptively for

1 performance benefits whilst protecting their mental health. Since athletes reported similar
2 levels of reappraisal use regardless of gender and competitive level, interventions promoting
3 the use of reappraisal may not need to consider such individual differences. Nevertheless,
4 future research would benefit from adopting qualitative methods that capture the experiences
5 and perspectives of student athletes to further investigate this suggestion.

6 A possible explanation for the maladaptive effects of using suppression on mental
7 wellbeing could be that one's suppression of emotions does not result in a reduced mental
8 experience of those emotions (Gross & John, 2003). Due to cultural and contextual needs,
9 there are many occasions where an athlete might need to suppress their emotional expressions
10 in pursuit of their goals (i.e., to avoid being carded, kicked off a team, losing focus), and in
11 this context, it is plausible that using suppression flexibly could be adaptive for performance,
12 despite the potential detriments to mental wellbeing. Nevertheless, expressive suppression
13 has typically been found to reduce performance (Wagstaff, 2014). Further, the beta weight for
14 suppression was small in the present study, suggesting this emotional regulation strategy was
15 associated with small decreases in mental wellbeing and thus, additional research is required
16 to investigate the nuances of suppression and its relationship with athlete mental health.
17 Nevertheless, the finding provides some preliminary evidence that suppression used to
18 manage stressors in sport performance may have adverse associations with mental wellbeing.
19 Therefore, it may be beneficial for clinicians and others who work with athletes to target
20 those who habitually suppress and support them to reappraise effectively.

21 These findings tie together two BASES expert statements considering the role of
22 emotion regulation in sport (Lane et al., 2012) and mental health promotion for elite athletes
23 (Gorzynski et al., 2019), as it highlights that strategies used for performance goals and
24 outcomes are also associated with mental health outcomes. It appears beneficial to encourage
25 athletes to use reappraisal when coping with stressful sporting situations as it is associated

1 with adaptive properties for performance and mental wellbeing. Reappraisal has also been
2 found to be adaptive in other contexts (Gross & John, 2003) and therefore, if athletes can use
3 this strategy effectively within the stressful sporting context, then they may also be better
4 equipped to transfer these skills and effectively manage stressors in wider life.

5 **Clinical Implications**

6 Overall, the results of this study indicate that neither reappraisal nor suppression were
7 associated with mental illness (depression), but both were related to positive mental health
8 (mental wellbeing). Further, reappraisal was a greater correlate of improved mental wellbeing
9 than suppression was for reduced mental wellbeing. The findings consequently extend
10 literature adopting the PMER in sport by considering how strategies used for performance
11 goals also relate to mental illness and mental health outcomes. In line with the majority of the
12 literature, antecedent-focused strategies are associated with greater mental wellbeing than
13 response-focused strategies.

14 These findings contribute to Keyes' (2002) arguments around the two-continuum
15 model of mental health as it highlights the importance of, and further supports the argument
16 for including mental wellbeing in mental health research (Uphill, et al., 2016). Based on the
17 present results, if interventions for improving athlete mental health focused solely on
18 reducing mental illness (e.g., depression), then limited change would occur. By comparison,
19 focusing on using these strategies for improving mental wellbeing may be more beneficial
20 within the sport context. Furthermore, whilst athletes displayed "normal" levels of depression
21 and thus were not described as clinically depressed, they only exhibited moderate levels of
22 mental wellbeing. This lends support to the argument that an individual who is free of mental
23 illness does not automatically have high mental health (Keyes, 2002). Improving one's
24 mental wellbeing may also be protective against mental illnesses (Keyes, 2014) and therefore,
25 it may be beneficial to promote understanding of flourishing (high mental wellbeing with low

1 mental illness), which would improve athlete MHL and potentially reduce mental health
2 stigma in sport.

3 An important implication of this study is that those working with athletes need to be
4 aware of the emotion regulation strategies athletes are using and the effects on indicators of
5 their mental health. This suggests a need for clinical sport psychology research to continue
6 uncovering factors that relate to increased or decreased risk for depression or poor mental
7 wellbeing. It is important to move beyond gathering prevalence rates to also include
8 individual and environmental level indicators (e.g., coaching styles, sport type) that can offer
9 a more nuanced understanding of how sport can better protect and promote athlete mental
10 health. A further clinical implication of this study is that it supports literature arguing that
11 sport may offer support for mental health treatment (Pascoe et al., 2020). Research suggests
12 waitlists for professional mental health support are often long and thus, treatment is delayed
13 (MacDonald et al., 2020). Consequently, if young people participate in sport, it is possible
14 they can learn how to use strategies adaptively and help prevent the onset of mental illness.
15 Nevertheless, further longitudinal studies investigating the effectiveness (i.e., how successful
16 the strategy is at attaining regulatory goals; McRae & Gross, 2020) of strategies and MHL
17 training for stakeholders would be required. This longitudinal research would also benefit
18 from investigating whether emotion regulation strategies are antecedents or outcomes of
19 mental illness and wellbeing in the sport context.

20 **Strengths and Limitations**

21 A strength of this study is its contribution to filling a gap in the literature by
22 considering the relationship between emotion regulation use and mental illness and mental
23 health outcomes in student athletes. This study has also highlighted the importance of
24 considering both positive and negative indicators of mental health in sport psychology
25 research as strategies were found to be associated with mental wellbeing but not depressive

1 symptomatology. Therefore, it may be beneficial for future studies to adopt Keyes (2002)
2 model to ensure a holistic understanding of athlete mental health is captured and improve the
3 MHL in sport.

4 A limitation of the present study is in the methods of data collection as issues with
5 retrospective recall and social-desirability bias may have been present. Mental health stigma
6 is a major issue within sport (Gorzcynski et al., 2019) and may have been a barrier for
7 accurate reporting of athletes' mental wellbeing, symptoms of depression, and use of emotion
8 regulation strategies. Nevertheless, responses were anonymous, and participants were
9 reminded that there was no right or wrong answer which may have helped minimise this risk.
10 Further, there were only significant group differences in suppression use between male and
11 female athletes, however, the effect size was small, suggesting that gender explained a small
12 amount of the variance in suppression. Consequently, future research could benefit from
13 investigating other variables that may explain the variance in suppression, such as differences
14 between fine and gross motor sports where suppression use may be related to different goals.
15 A further limitation included the gender imbalance in the sample, and future studies would
16 benefit from addressing such imbalances.

17 This is an initial cross-sectional study investigating the relationships between emotion
18 regulation strategies and indicators of mental health and mental illness at a single time point.
19 Cross-sectional studies can provide only a 'snapshot' of a given phenomenon at one time
20 point to discover whether two or more variables are related (Levin, 2006), and are
21 particularly beneficial in the initial stages of a research area (Spector, 2019). The cross-
22 sectional design employed in the present study therefore does not allow for causation to be
23 tested and no conclusions can be made as to whether a cause-and-effect relationship exists or
24 its nature (e.g., does using suppression cause symptoms of poor mental wellbeing or does
25 experiencing symptoms of poor mental wellbeing lead athletes to using more suppression). It

1 is also not possible to know whether emotion regulation use occurs before possible symptoms
2 of depression and mental wellbeing or vice versa. Consequently, the findings from this study
3 represent the first stage of research into the phenomenon and we recommend researchers
4 adopt a longitudinal design to clarify the direction of these observed relationships. Key
5 questions to be addressed in future studies include: does emotion regulation predict wellbeing
6 and depression, does depression and wellbeing predict emotion regulation use, or are these
7 relationships reciprocal in nature? In sum, the present study highlights the potential value of
8 conducting further research (e.g., experimental, qualitative) into athletes' use of emotion
9 regulation strategies in relation to indicators of mental health and illness.

10 In conclusion, this study provides a novel contribution and a foundation for future
11 research by capturing a snapshot of the relationship between athletes use of reappraisal and
12 suppression on their mental wellbeing and depressive symptoms. Whilst reappraisal was
13 associated with greater changes in wellbeing than suppression, suppression may still serve
14 maladaptive functions for wellbeing. Therefore, to promote mental wellbeing in sport and
15 reduce mental illness, athletes and those who work with them need to better understand the
16 impact that strategies used for performance can have on their mental health at a critical age
17 period in life. Further, this study has contributed to MHL research by highlighting potential
18 risk factors for poor mental wellbeing. Future studies should continue to draw upon the
19 PMER and Keyes two-continuum model of mental health to investigate these relationships
20 with other emotion regulation strategies used in sport. This research may open up avenues for
21 sport as a non-pharmacological treatment for mental illness and for those who use emotion
22 regulation strategies maladaptively. More specifically, using reappraisal within the sport
23 context may be a useful mental health promoting strategy.

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- 23

1 **Table 1**

2 *Means and Standard Deviations for ERQ, Depression, and WEMWBS by Gender and*
 3 *Competitive Level.*

Variable(s)	Depression (<i>M</i>)	Depression (<i>SD</i>)	Mental Wellbeing (<i>M</i>)	Mental Wellbeing (<i>SD</i>)	Reappraisal (<i>M</i>)	Reappraisal (<i>SD</i>)	Suppression (<i>M</i>)	Suppression (<i>SD</i>)
Gender								
Male	8.00	7.09	45.88	7.33	4.80	0.82	3.77*	1.01*
Female	7.33	6.87	45.28	6.23	4.91	0.84	3.54*	1.06*
Total	7.63	6.97	45.55	6.73	4.86	0.83	3.64	1.05
Competitive Level								
Elite	10.48	8.12	44.98	7.14	5.12	0.97	3.66	1.12
Regional	7.40	7.08	45.45	6.89	4.86	0.79	3.68	1.05
Club	7.12	6.51	45.94	7.11	4.79	0.86	3.56	0.98
Recreational	8.00	6.63	45.21	4.78	4.87	0.83	3.69	1.14
Total	7.63	6.97	45.55	6.73	4.86	0.83	3.64	1.04

4 *Note.* Score ranges as follows: reappraisal and suppression 1-7, depression 0-42, mental
 5 wellbeing 13-65.

6 * $p < .05$

7

1 **Table 2**

2 *Hierarchical multiple regression for associations with depression (Model 1) and mental*
 3 *wellbeing (Model 2).*

Variable(s)	<i>B</i>	<i>SE</i> <i>B</i>	β	<i>t</i>	<i>p</i>	<i>R</i>	<i>R</i> ²	ΔR^2
Model 1:								
depression								
Step 1						.602	.362	.362
WEMWBS	-.62	.04	-.60	-15.48	< .001			
Gender	-1.05	.54	-.08	-1.92	.055			
Step 2						.605	.366	.004
WEMWBS	-.62	.04	-.60	-14.52	< .001			
Gender	-.98	.55	-.07	-1.78	.076			
Reappraisal	.22	.34	.03	.64	.525			
Suppression	.39	.26	.06	1.46	.144			
Model 2: mental								
wellbeing								
Step 1						.602	.362	.362
Depression	-.58	.09	-.60	-15.48	< .001			
Gender	-.99	.53	-.07	-1.88	.061			
Step 2						.640	.410	.048
Depression	-.54	.04	-.56	-14.52	< .001			
Gender	-1.28	.51	-.09	-2.5	.013			
Reappraisal	1.67	.31	.21	5.45	<.001			

Suppression	-.54	.25	-.08	-2.21	.028
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1

2