The roles of acceptance and catastrophizing in rehabilitation following anterior cruciate ligament reconstruction

John Baranoff, Stephanie J. Hanrahan, & Jason P. Connor

1 School of Psychology, The University of Queensland
2 School of Human Movement Studies, The University of Queensland
3 Discipline of Psychiatry, The University of Queensland
4 Centre for Youth Substance Abuse Research, The University of Queensland

Original Article (Third Revision)

Correspondence concerning this article should be addressed to:
John Baranoff
The University of Queensland
School of Psychology
Brisbane QLD 4072 Australia
(email: johnbaranoff@gmail.com).

Acknowledgements (removed from manuscript for peer review):
J.P.C. is supported by a National Health and Medical Research Council (NH&MRC) of Australia Career Development Fellowship (1031909).

Manuscript Statistics
Word count for abstract = 202
Manuscript word count (excluding abstract and references) = 3238
Number of references = 30
Number of tables = 3
Number of figures = 0
Abstract

Objectives: The purpose of this study was to determine if pain catastrophizing and experiential acceptance predicted depression, pain intensity, and maladaptive behaviour following anterior cruciate ligament reconstruction.

Design: Patients who had undergone anterior cruciate ligament surgery completed assessment within 2 weeks of surgery ($N = 44$) and again 6 months post surgery ($N = 26$).

Methods: Predictor measures were the Pain Catastrophizing Scale and the Acceptance and Action Questionnaire. Outcome measures included the depression scale of the Depression Anxiety and Stress Scale, numerical rating scale of pain intensity, and the alcohol and substance misuse subscale of the Brief Coping Orientations to the Problem Experience inventory. Demographic variables and athletic identity were also measured.

Results: Higher pain catastrophizing scores were associated with greater pain intensity and depressive symptoms in the 2 week post operative period. Lower acceptance scores in the 2 week post-operative period were predictive of more severe depression scores at 6 months, even after controlling for early post-operative depression and athletic identity. Lower acceptance was also associated with greater use of alcohol and other substances, reportedly to cope with the stress of being injured.

Conclusions: This study highlights the importance of acceptance in an athletic population undergoing rehabilitation after ACL reconstruction.

Keywords: athletic injuries, psychology, knee injuries, psychometrics
The roles of acceptance and catastrophizing in rehabilitation following anterior cruciate ligament reconstruction

Introduction

Anterior cruciate ligament (ACL) rupture is a common and debilitating injury among athletes, and rehabilitation following surgical reconstruction involves a relatively prescribed process of physical therapy that typically improves function and decreases pain. Although return to competitive sport usually commences between six and nine months following surgery, approximately two-thirds of athletes who undergo ACL reconstruction (ACLR) rehabilitation do not return to pre-injury level of competitive sport by 12 months. Investigation of the psychological aspects of ACLR rehabilitation may provide further information about barriers to return to function.

Pain intensity following ACLR has been shown to have a negative effect on rehabilitation outcomes. A large number of chronic pain studies have demonstrated strong positive associations between catastrophizing, pain intensity, and measures of depression, anxiety, and disability. Catastrophizing is characterised by negative thoughts associated with the anticipation of threat, and has been investigated in a small number of studies focused on ACLR rehabilitation. A higher level of catastrophic thinking is associated with greater pain intensity and poorer knee function during the post-operative phase, and with poorer knee function and greater pain intensity at six to 12 months.

Pain acceptance is a construct of increasing interest in chronic pain research, and has been associated with adjustment difficulties and reduced function in the context of chronic pain. There are now over 100 studies examining pain acceptance in chronic pain. Given that pain typically improves over the course of ACLR rehabilitation, a more general conceptualisation of acceptance may have greater relevance to ACLR rehabilitation than the narrower domain of chronic pain acceptance.

Acceptance, as defined in acceptance and commitment therapy, involves a willingness to experience negative private events such as thoughts, emotions, and sensations in the pursuit of important goals and activities. Hayes et al. have described in detail the theoretical and empirical underpinnings of the experiential acceptance construct. There is evidence that experiential
acceptance correlates with measures of psychopathology. Low scores on experiential acceptance are associated with greater avoidant coping behaviours and, in turn, are related to higher anxiety in student populations. Higher levels of acceptance, as measured by the Acceptance and Action Questionnaire, also correlate with higher levels of hope, positive affect, and spiritual wellbeing in patients undergoing medical rehabilitation following spinal cord injury, stroke, amputation, and orthopaedic surgery. By contrast, lower acceptance has been associated with more severe depression and negative affect.

The role of experiential acceptance has not been investigated in the sport injury rehabilitation context. Specifically, the relationships between acceptance and depressed mood and maladaptive behaviours in sport injury rehabilitation require investigation. Depression and pain intensity may impede progress in rehabilitation and, therefore, are dependent variables relevant to the rehabilitation context. In addition, alcohol and other substances are sometimes used to numb emotions and block unwanted thoughts during physical rehabilitation. Alcohol use has been associated with coping in athletic populations, and several studies have shown that acceptance may relate to alcohol use in veteran populations. However, no studies have explored the relationship between acceptance and the use of alcohol and other substances to cope with injury in an athletic sample.

A strong and exclusive athletic identity has been consistently associated with higher levels of depression and distress during sport injury rehabilitation. Therefore, examining the predictive capacity of a measure of acceptance after accounting for the effects of athletic identity represents a strong test of the utility of the acceptance construct in sport injury rehabilitation.

The aim of the current study was to assess the roles of catastrophizing and acceptance in relation to depression, pain intensity, and substance use to cope with injury within 2 weeks post surgery and after 6 months of ACLR rehabilitation. The primary hypothesis was that higher pain catastrophizing scores would be associated with greater pain intensity and depression in the 2 weeks after surgery. By contrast, lower acceptance was hypothesized to be associated with greater pain intensity and depression in the 2 weeks after surgery; further, lower acceptance was hypothesized to predict higher depression and pain intensity at 6 months after accounting for depression, pain intensity, and athletic identity at 2 weeks post-surgery. A secondary hypothesis was that lower
acceptance would be associated with greater alcohol and substance use, as this is a way of disengaging from the stress of being injured.

**Methods**

Individuals who had undergone ACL surgical reconstruction completed assessment within the first 2 weeks following surgery (mean = 7.4 days; N = 44; 27 male) and a subset of the questionnaires again at 6 months post surgery (mean = 6.4 months; N = 26; 12 male). Participants also completed a consent form and provided demographic and sport participation information. The mean age of participants was 27 years (SD = 9.4 years) and the mean time between injury and surgery was 7 weeks 6 days (SD = 9 weeks 4 days; mode = 2 weeks). The most common primary sports of the participants in order of frequency were Australian rules football (n = 13; 29.5%), netball (n = 8; 18.2%), and basketball (n = 6; 13.6%). Five participants (11.4%) reported reconstruction using an allograft and 39 (89 %) reported use of an autograft. For 4 participants (6.8%), this was their second ACL reconstruction. At the initial assessment, the measure of athletic identity and both predictor variables (acceptance, catastrophizing) and outcome variables (depression, pain intensity, and alcohol and substance use as coping) were administered; 6 months after surgery, patients were administered outcome measures only.

The Acceptance and Action Questionnaire (AAQ) was used to measure experiential acceptance. The nine items include "I am able to take action on a problem even if I am uncertain what is the right thing to do" and "My thoughts and feelings get in the way of my success" (reverse scored). Participants are asked to rate the truth of statements as they apply to themselves on a scale of 1 (never true) to 7 (always true). Cronbach's alpha for the AAQ has been reported as 0.70 and was 0.72 in the present study. The test re-test reliability of the AAQ over a four month period was reported to be 0.64. The AAQ has been shown to have good concurrent validity with measures of psychopathology and quality of life. In this study, the AAQ was scored such that higher scores indicated greater acceptance.

Catastrophizing was measured using the 13-item Pain Catastrophizing Scale (PCS). Participants are asked to rate on 13 items how often they have particular thoughts when they feel pain and then rate the frequency of each thought on a scale of 0 (not all) to 4 (all the time). An example
question is "I become afraid that the pain will get worse". Three subscales have been identified:
rumination, helplessness, and magnification, although the aggregate score is most commonly used in
both ACL rehabilitation and chronic pain studies.\textsuperscript{6,10} Higher scores on the PCS indicate greater
catastrophizing. Cronbach's alpha for the total PCS has previously been reported as 0.87,\textsuperscript{7} and was
0.83 in the present study. The test re-test reliability was reported to be 0.75 across a 6-week period
and 0.70 across 10 weeks.\textsuperscript{7} The PCS has been shown to significantly correlate with measures such as
fear of pain, pain intensity, and negative affectivity.\textsuperscript{7}

The 7-item Athletic Identity Measurement Scale (AIMS) was used to measure the degree to
which individuals identify themselves as athletes in areas that relate to social identity, exclusivity, and
negative affectivity.\textsuperscript{20} Questions (e.g., "I consider myself an athlete") are rated on a 7-point scale from
1 (strongly disagree) to 7 (strongly agree). Higher scores on the AIMS indicate a stronger athletic
identity. Cronbach's alpha has been reported to be 0.80\textsuperscript{20} and was 0.84 in the present study. The test
re-test reliability of the AIMS was $r = 0.89$ over a two week period.\textsuperscript{22}

A numerical rating scale (NRS) was used to assess pain intensity. The scale was from 0 (no
pain) to 10 (worst possible pain), and has previously been used in studies of ACL rehabilitation.\textsuperscript{5} In
the present study of ACL rehabilitation, participants were asked to report on the pain intensity they
experienced during activity.

The depression scale of the Depression Anxiety and Stress Scale 21 (DASS 21) contains
seven items (e.g., "I couldn’t work up the initiative to do anything"). Each question has a four point
response scale from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time)
and measures depressive symptoms over the previous week. Higher scores on the depression scale
indicate more severe depression. Adequate convergent and discriminant validity have been
reported.\textsuperscript{23} Lovibond and Lovibond reported the depression scale to have an internal consistency of
0.91.\textsuperscript{23} Cronbach's alpha for the depression scale in the present study was 0.85.

The Brief Coping Orientations to the Problem Experience (COPE)\textsuperscript{24} inventory is a 28-item
scale that assesses a range of coping styles and has been widely used in health research. Each question
has a four point scale ranging from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot).
The alcohol and substance was modified to refer to the extent to which alcohol and substances were
being used to cope with the sports injury (e.g., "Since I have been injured I've been using alcohol or other drugs to make myself feel better"). Higher scores indicated greater reported use of alcohol and other drugs to cope with sports injury. Carver et al.\textsuperscript{24} reported internal consistency of 0.90 for the substance use subscale; cronbach's alpha in the present study was 0.83.

Human ethical approval was obtained. At their first physiotherapy appointment after surgery, patients were invited to participate in the study. Participating patients ($N = 44$) completed the assessment questionnaire (0 - 2 weeks after surgery; mean = 7.4 days), and were invited to participate in a follow-up survey that assessed outcome variables. Of the 44 patients, 26 completed the follow-up questionnaire six months post surgery.

T-tests were performed on all variables at Time 1 to compare individuals who completed outcome measures at both time points with those who completed Time 1 assessment only. Paired $t$-tests and Cohen's $d$ effect sizes were conducted to analyse the difference between Time 1 and Time 2 on outcome measures (i.e., depression, pain intensity, and alcohol and substance use for coping). For effect sizes, greater than 0.2 is a small effect, greater than 0.5 is a medium effect, and greater than 0.8 is a large effect.\textsuperscript{25} Next, zero order correlations were calculated between predictors at Time 1 and outcome variables at Times 1 and 2. A power calculation (GPower 3.1) for the correlation analysis with a power of 0.8 (recommended by Cohen\textsuperscript{25}), and a large effect size (based on Hayes et al.\textsuperscript{14}, McCracken & Eccleston\textsuperscript{26}), produced a minimum sample of 26 (critical $t = 2.06; \text{df} = 24$).

Finally, any significant correlations between predictors at Time 1 and outcome variables at Time 2 were further explored with hierarchical multiple regressions to determine whether the predictor at Time 1 remained a significant predictor of the outcome variable at Time 2, even after accounting for the effects of related variables at Time 1. A further power calculation for the hierarchical regression analysis with a power of 0.8 and an estimated large effect (based on McCracken & Eccleston\textsuperscript{26}), produced a minimum sample of 25 (critical $F= 4.35; \text{df} = 20$).

**Results**

At Time 1, there were no statistically significant differences between participants who responded at both time points and those who participated at Time 1 only in terms of age, gender, time between injury and surgery, acceptance, catastrophizing, depression, pain intensity, alcohol and
Table 1 contains the mean scores and standard deviations for variables at Times 1 and 2. Paired t-tests and Cohen's d effect sizes are also presented in Table 1. Significant changes were observed for pain intensity (p < .01) and alcohol and substance use to cope with injury (p = .02). Depression increased from Time 1 to Time 2; however, this change was not statistically significant (p = .50).

Table 2 contains the results of zero order correlations between predictors at Time 1 and outcome variables at Times 1 and 2 and among predictors at Time 1. Lower acceptance at Time 1 showed a significant correlation with higher alcohol and substance use at Time 1 and greater depression at Time 2. Higher catastrophizing at Time 1 showed a significant correlation with greater depression and pain intensity at Time 1. Stronger athletic identity showed a significant correlation with greater depression at both Times 1 and 2. It is worth noting that neither age nor gender significantly correlated with any of the criterion variables.

Table 3 contains the results of a hierarchical multiple regression using acceptance as the focal predictor and depression as the criterion. Acceptance, when entered into the regression at Step 2, was a significant predictor of depression at Time 2; it accounted for 21% of additional variance in depression at Time 2 after accounting for athletic identity, depression, and catastrophizing at Time 1 (all control variables at Step 1 accounted for 33% of variance in depression at Time 2). Catastrophizing and depression at Time 1, when entered at Step 1 of the regression simultaneously with athletic identity, were not significant predictors of depression at Time 2. Athletic identity, when entered at Step 1, was a significant predictor of depression at Time 2.

Discussion

Higher pain catastrophizing was significantly correlated with higher pain intensity and depressive symptoms in the 2 weeks after surgery, but not 6 months later. This finding in the immediate post-operative phase parallels the pain literature where pain catastrophizing and pain intensity have shown a strong positive association in numerous studies of chronic pain and post-operative pain. The non-significant result at 6 months may have been due to the way in which the measure of catastrophizing made reference to pain. Although the immediate post-operative phase is

196 substance use as coping, and athletic identity; all ts(42) < 1.0, all ps > 0.3.
197
198 Table 1 contains the mean scores and standard deviations for variables at Times 1 and 2.
199 Paired t-tests and Cohen's d effect sizes are also presented in Table 1. Significant changes were
200 observed for pain intensity (p < .01) and alcohol and substance use to cope with injury (p = .02).
201 Depression increased from Time 1 to Time 2; however, this change was not statistically significant (p
202 = .50).
203 Table 2 contains the results of zero order correlations between predictors at Time 1 and
204 outcome variables at Times 1 and 2 and among predictors at Time 1. Lower acceptance at Time 1
205 showed a significant correlation with higher alcohol and substance use at Time 1 and greater
206 depression at Time 2. Higher catastrophizing at Time 1 showed a significant correlation with greater
207 depression and pain intensity at Time 1. Stronger athletic identity showed a significant correlation
208 with greater depression at both Times 1 and 2. It is worth noting that neither age nor gender
209 significantly correlated with any of the criterion variables.
210 Table 3 contains the results of a hierarchical multiple regression using acceptance as the focal
211 predictor and depression as the criterion. Acceptance, when entered into the regression at Step 2, was
212 a significant predictor of depression at Time 2; it accounted for 21% of additional variance in
213 depression at Time 2 after accounting for athletic identity, depression, and catastrophizing at Time 1
214 (all control variables at Step 1 accounted for 33% of variance in depression at Time 2).
215 Catastrophizing and depression at Time 1, when entered at Step 1 of the regression simultaneously
216 with athletic identity, were not significant predictors of depression at Time 2. Athletic identity, when
217 entered at Step 1, was a significant predictor of depression at Time 2.
218 Discussion
219 Higher pain catastrophizing was significantly correlated with higher pain intensity and
220 depressive symptoms in the 2 weeks after surgery, but not 6 months later. This finding in the
221 immediate post-operative phase parallels the pain literature where pain catastrophizing and pain
222 intensity have shown a strong positive association in numerous studies of chronic pain and post-
223 operative pain. The non-significant result at 6 months may have been due to the way in which the
224 measure of catastrophizing made reference to pain. Although the immediate post-operative phase is
characterised by high pain on movement, pain is not as prominent later in rehabilitation. Therefore, a
tendency to catastrophize in the presence of pain may become less relevant to outcomes as
rehabilitation progresses. Alternatively, the cognitive content associated with catastrophizing may be
more related to concurrent depression than later depression in ACLR rehabilitation.

The results support the hypothesis that experiential acceptance is associated with adaptive
outcomes in rehabilitation after ACLR. Lower acceptance 2 weeks after surgery was predictive of
greater depression 6 months later, even after controlling for early post-operative depression,
catastrophizing, and athletic identity. Lower acceptance was also correlated with greater alcohol and
substance use as a coping strategy.

A large number of studies have shown a positive association between chronic pain acceptance
and measures of adjustment.11,12 This study extends the body of research on the role of acceptance by
highlighting the importance of acceptance in rehabilitation after ACL reconstruction. Acceptance
involves a willingness to experience uncomfortable emotions and sensations in the pursuit of
meaningful activities. The opposite of experiential acceptance is experiential avoidance: the
avoidance of uncomfortable emotions and sensations, which, in turn, limits engagement in meaningful
activities. Experiential avoidance is not always problematic and, in some situations, can be adaptive
(e.g., distraction used for short periods of time). However, experiential avoidance may be
problematic when it leads to inflexible behaviour. Experiential avoidance has been shown to correlate
strongly with psychopathology in both clinical and non-clinical samples.14,15 This study extends these
findings to a sport injury population; for those with high experiential avoidance (low acceptance),
depression may be a persistent problem in rehabilitation. Experiential avoidance is thought to affect
psychopathology via several mechanisms. For example, thought suppression may serve to
paradoxically increase the frequency and distress associated with the adverse experience,27 and
avoidant behaviour may limit individuals’ contact with pleasant events. Consequently, there may be
an increase in mood disturbance and depression due to limited engagement in meaningful activities.

Although use of alcohol and other substances as a coping strategy to deal with ACLR
significantly increased from Time 1 to Time 2, experiential acceptance was more closely associated
with substance use at Time 1. The factors that contributed to alcohol and substance use 6 months post-
surgery appear to have less to do with experiential acceptance than in the early postoperative stage. Therefore, it appears that what initiates substance use immediately after surgery may not maintain it.

Consistent with previous sport injury rehabilitation research, athletic identity showed a strong negative correlation with concurrent and later depression. The case for the utility of experiential acceptance as a measure in ACLR rehabilitation was strengthened by the acceptance measure adding unique variance to the prediction of depression over and above athletic identity.

This study has some limitations. A measure of knee function as a criterion would have allowed a broader examination of the role of experiential acceptance in ACLR rehabilitation. Future researchers also may want to consider investigating the relationship between acceptance and adherence. Previous studies have examined predictors of adherence in sport injury rehabilitation generally and in ACL rehabilitation specifically. Recently, Brewer et al. found that situational factors (mood, pain, and stress) were better predictors of adherence in sport injury rehabilitation than personal factors (neuroticism, athletic identity, and optimism/pessimism). However, previous studies have not examined acceptance as a predictor of adherence. In this study, individuals were asked to rate the extent to which they were using alcohol and other substances to cope with injury; assessment of pre-injury levels of alcohol and substance use would have allowed further validation of the self-report measure. Finally, approximately 60% of individuals who completed Time 1 assessment also completed assessment at Time 2. The generalizability and reliability of the findings to other sport injury samples requires further validation.

In this post-surgical sample, acceptance, from the acceptance and commitment therapy perspective, has been shown to be inversely related to later symptoms of depression. Nevertheless, additional longitudinal studies are required to confirm the finding in other injury samples. The identification of individuals who are likely to have adverse outcomes during post-surgical sport injury rehabilitation may assist health practitioners and athletic support staff in providing appropriate treatment. Specifically, by knowing which individuals may have difficulty in ACLR rehabilitation, support and interventions that target the processes linked to adverse outcomes can be provided. Treatment that aims to influence acceptance should theoretically also influence relevant outcomes such as depressive symptoms, alcohol and substance use, as well as adherence to treatment.
Acceptance-based intervention protocols for chronic pain and sport performance could be adapted for use with individuals undergoing ACLR rehabilitation. For athletic populations, specific content that focuses on addressing common themes in sport injury rehabilitation may be useful (e.g., acceptance when faced with setbacks in relation to competition goals, acceptance when dealing with time out from participation in sport, and acceptance in the context of return to sport/fear of re-injury). Mahoney and Hanrahan conducted some preliminary work in this area but a full trial of an ACT-based protocol is warranted. Further, the development of an acceptance measure that is specific to the sport injury context may increase the predictive validity and utility of acceptance.

**Conclusion**

This study demonstrated that general experiential acceptance is a potentially important construct in ACLR rehabilitation. A large body of research supports the utility of measures of chronic pain acceptance and acceptance-based interventions in chronic pain rehabilitation. Future research is warranted to assess the role of acceptance-focused treatment in sport injury rehabilitation and to develop measures of acceptance that are specific to the sport injury context.

**Practical implications**

- Assessment of the tendency for pain catastrophizing may identify individuals who will experience higher pain intensity and mood disturbance in the early post-operative phase.
- Assessment of acceptance may identify individuals who will have difficulty with depressive symptoms at six months after surgery.
- Assessment of acceptance may identify individuals who use maladaptive coping strategies such as using alcohol and other substances as a way of disengaging from the stress of being injured.

**Acknowledgements**

No financial support was provided for this study.
References


Table 1

Means, standard deviation, ranges, paired t-test results and effect sizes for predictor and criterion variables at Time 1 and Time 2 of ACLR

<table>
<thead>
<tr>
<th>Variable</th>
<th>Time 1 (SD) (n = 44)</th>
<th>Time 1 (SD) (n = 26)</th>
<th>Time 2 (SD) (n = 26)</th>
<th>T</th>
<th>p &lt;</th>
<th>Effect size d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance</td>
<td>31.8 (6.1) 22-49</td>
<td>31.7 (5.6) 22-43</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Catastrophizing</td>
<td>11.3 (9.8) 0-46</td>
<td>12.1 (10.3) 1-46</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Athletic Identity</td>
<td>31 (9.0) 7-45</td>
<td>31.6 (8.8) 16-45</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Depression</td>
<td>8.6 (7.4) 0-26</td>
<td>9.6 (11.6) 0-26</td>
<td>11 (11.6) 0-40</td>
<td>-0.68</td>
<td>0.50</td>
<td>0.32</td>
</tr>
<tr>
<td>Pain Intensity</td>
<td>5.2 (2.3) 2-9</td>
<td>5.0 (2.0) 2-9</td>
<td>3 (1.9) 0-6</td>
<td>4.41</td>
<td>0.00</td>
<td>0.96</td>
</tr>
<tr>
<td>Alcohol and substance use</td>
<td>2.9 (1.3) 2-8</td>
<td>3.0 (1.4) 2-8</td>
<td>3.6 (1.9) 2-8</td>
<td>-2.48</td>
<td>0.02</td>
<td>0.54</td>
</tr>
</tbody>
</table>
Table 2
Pearson product moment correlations between predictors at Time 1 and outcomes at Times 1 and 2 and among predictors at Time1.

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depression</td>
<td>Pain</td>
</tr>
<tr>
<td>Depression Intensity</td>
<td>0.50**</td>
<td>-0.08</td>
</tr>
<tr>
<td>Acceptance</td>
<td>0.03</td>
<td>0.11</td>
</tr>
<tr>
<td>Catastrophizing</td>
<td>0.35*</td>
<td>0.38*</td>
</tr>
</tbody>
</table>

* p < 0.05 (2 tailed), ** p < 0.01 (2 tailed)
Table 3
Hierarchical regression using depression at Time 2 as a criterion.

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>B</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Athletic Identity</td>
<td>0.38</td>
<td>-</td>
<td>1.8</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Depression time</td>
<td>0.3</td>
<td>-</td>
<td>1.4</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Catastrophizing</td>
<td>0.36</td>
<td>0.33*</td>
<td>-0.03</td>
<td>-0.16</td>
<td>0.88</td>
</tr>
<tr>
<td>Step 2</td>
<td>Athletic Identity</td>
<td>0.42</td>
<td>-</td>
<td>2.4</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Depression time</td>
<td>0.21</td>
<td>-</td>
<td>1.1</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Catastrophizing</td>
<td>-0.12</td>
<td>-0.72</td>
<td></td>
<td></td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>Acceptance</td>
<td>0.54</td>
<td>0.21**</td>
<td>0.48</td>
<td>2.9</td>
<td>0.01</td>
</tr>
</tbody>
</table>

* $p < 0.05$ (2 tailed), ** $p < 0.01$ (2 tailed)