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Self-Protective Changes in Athletic Identity Following Anterior Cruciate Ligament Reconstruction

Britton W. Brewer and Allen E. Cornelius

Springfield College, Yannick Stephan, University of Grenoble, Judy Van Raalte, Springfield College

Abstract

Objectives—This study was designed to examine the possibility of self-protective changes in athletic identity (AI) being initiated after the occurrence of a severe injury.

Method—People (72 men and 36 women) undergoing anterior cruciate ligament (ACL) surgery and rehabilitation were asked to complete a measure of AI prior to surgery and measures of AI and rehabilitation progress at approximately 6, 12, and 24 months after surgery.

Results—A repeated-measures ANCOVA controlling for age and gender indicated that AI decreased significantly across the 24-month period following surgery, with the most substantial decline occurring between 6 and 12 months postsurgery. Significantly greater decreases in AI were observed among participants whose rehabilitation progress was slowest from 6 to 12 months postsurgery.

Conclusions—The findings suggest that some participants reduced their identification with the athlete role in response to the threat to a positive self-image posed by their ACL injuries and the difficulties they encountered in postoperative rehabilitation.

Keywords

knee surgery; self-identity; injury; sport

Sport involvement can prompt high levels of commitment from participants. Athletes invest substantial amounts of time and effort in sport participation and, in return, may come to derive a sense of who they are as people from performance of the athlete role (Brewer, Van Raalte, & Linder, 1993). Identification of the self as an athlete is not without potential costs, however, when athletes experience events that threaten their involvement in sport. For example, individuals strongly identified with the athlete role are at increased risk for adjustment difficulties following sport injury (Brewer, 1993; Manuel et al., 2002) and sport career termination (Grove, Lavallee, & Gordon, 1997; Webb, Nasco, Riley, & Headrick, 1998).

Research showing that athletic identity is a risk factor for poor adjustment to events that threaten performance of the athlete role has considered athletic identity as a dispositional, trait-like characteristic. Although the self-concept in general and athletic identity in particular tend to be fairly stable (Brewer et al., 1993; Markus, 1977; Swann, 1985), the self is also a flexible

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Please address correspondence to: Britton W. Brewer, Department of Psychology, Springfield College, Springfield, MA 01109 USA, Telephone: +1-413-748-3696, Fax: +1-413-748-3854, bbrewer@spfldcol.edu.

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and malleable structure that is susceptible to developmental and situational influences (Cantor, Markus, Niedenthal, & Nurius, 1986; James, 1910; Markus & Kunda, 1986). In support of the idea that the self is a dynamic, mutable entity in the sport context, athletic identity tends to decrease with age (Brewer, 1993; Brewer et al., 1993) and after sport career termination (Lavalley, Gordon, & Grove, 1997) and investment in a career outside of sport (Shachar, Brewer, Cornelius, & Petitpas, 2004).

There is also evidence that athletes decrease their self-investment in sport when they encounter circumstances that threaten their performance of the athlete role. Brewer, Selby, Linder, and Petitpas (1999) found that over the course of an intercollegiate (American) football season, players who were dissatisfied with their performance tended to reduce their athletic identity to a greater extent than those who were satisfied with their performance. Such divestment of athletic identity can be interpreted as a form of self-protection, a powerful human motive to maintain a positive self-concept (Sedikides, 2007). By psychologically disengaging themselves from a threatened domain of the self, people can protect themselves from negative domain-relevant feedback and outcomes that imply a negative self-evaluation in that domain (Major & Schmader, 1998). Devaluing a domain of the self increases the likelihood that the threat (i.e., negative outcomes or feedback received) is no longer viewed as relevant or important to how people define themselves (Schmader, Major, & Schmader, 2001). Thus, by decreasing their identification with the athlete role in the face of a poor competitive season, the football players in the Brewer et al. study may have been protecting their self-esteem by distancing themselves (or, more precisely, their *selves*) from their perceived failure on the gridiron.

Grove, Fish, and Eklund (2004) reported similar findings in a study of female basketball, field hockey, and volleyball players vying for spots on state all-star teams. Compared to their pre-selection levels of athletic identity, players who were not selected for the respective teams showed decreased identification with the athlete role, whereas players who were selected for teams demonstrated no changes in their level of identification with the athlete role. As with the football players in the Brewer et al. (1999) investigation, the participants who did not make the all-star teams may have been attempting to separate themselves from perceived failure in the sport domain by reducing their investment in the athlete role as a source of self-worth. Evidence in support of the adaptive value of divestment of athletic identity was obtained by Lavalley et al. (1997), who found that greater reductions in athletic identity following retirement were associated with success in coping with sport career termination. Further, Lally (2007) demonstrated that some intercollegiate sport participants diminish their athletic identity proactively to ease the transition out of competitive sport involvement and minimize the likelihood of experiencing identity-related adjustment difficulties.

Based on the decrements in athletic identity observed in athletes after they have terminated competitive sport involvement (Lavalley et al., 1997), invested in a career outside of sport (Shachar et al., 2004), and experienced sport team deselection (Grove et al., 2004), similar divestment of identification with the athlete role would be expected to occur following an injury of sufficient magnitude to threaten sport participation. A torn anterior cruciate ligament (ACL) is an example of such an injury, as it typically involves reconstructive knee surgery and a lengthy postoperative rehabilitation period for physically active individuals (Marzo & Warren, 1991). Although reconstructive surgery offers hope to athletes with ACL tears, the benefits of surgery to sport participation are not immediate. It is common for individuals to experience physical restrictions and to encounter psychological challenges such as mood disturbance (Morrey, Stuart, Smith, & Wiese-Bjornstal, 1999), pain (Tripp, Stanish, Coady, & Reardon, 2004), and reinjury anxiety (Aeschlimann, Bauer, Etter, Gysin, & Seiler, 2002; Kvist, Ek, Sporrstedt, & Good, 2005) during rehabilitation. From a self-protection perspective, decreasing one's athletic identity after ACL surgery could help to preserve self-esteem in the face of a formidable threat to short- and potentially long-term sport participation. Further, greater

decrements in identification with the athlete role would be expected for those individuals who are experiencing a slow postoperative recovery and, therefore, an elevated level of threat to sport involvement. The purpose of the current study was to test these predictions in a sample of physically active people who tore their ACL and underwent reconstructive surgery and rehabilitation.

Method

Participants

Participants were 108 individuals (72 men and 36 women) ranging in age from 14 to 54 ($M = 29.38$, $SD = 9.93$) years who were scheduled for ACL reconstructive surgery. Most participants reported that they were White (90%) and involved in sport at the competitive (47%) or recreational (49%) level (4% of participants indicated that they were non-athletes).

Measures

Demographic and injury-related information (e.g., gender, age, race/ethnicity, ACL surgery date) was obtained with a questionnaire. Athletic identity was assessed with the Athletic Identity Measurement Scale (AIMS; Brewer & Cornelius, 2001), a questionnaire on which respondents rate the extent to which they agree with 7 statements about affective, behavioral, and cognitive aspects of identification with the athlete role on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores on the AIMS correspond with stronger and more exclusive identification with the athlete role. Brewer and Cornelius presented support for the internal consistency of the AIMS ($\alpha = .81$) and documented a correlation of .96 between the AIMS and an earlier 10-item version of the instrument, for which a .89 test-retest reliability coefficient over a one-week period was obtained (Brewer et al., 1993). Rehabilitation progress was measured with a single item (McDonald & Hardy, 1990) on which participants were asked to rate their percent rehabilitated from 0% to 100%.

Procedure

As part of a broader investigation of rehabilitation adherence after ACL surgery approved by the institutional review board presiding over the research, participants (and their parents or guardians for minors) completed an informed consent form and a battery of self-report instruments that included the questionnaire requesting demographic and injury-related information, the AIMS, and the rehabilitation progress item at their preoperative physical therapy appointment. At approximately 6, 12, and 24 months following their ACL surgery, participants returned to their physical therapist's office to fill out a series of self-report instruments that included the AIMS and the rehabilitation progress item. Participants were paid 15 dollars for each batch of questionnaires that they completed.

Results

Participant retention was 75% (53 men and 28 women), 69% (51 men and 34 women), and 80% (56 men and 30 women) for the 6-, 12-, and 24-months post-surgery assessments. Complete data sets across all four assessment episodes for the variables were obtained for 58 participants (35 men and 23 women). No significant differences were observed between participants with complete data sets and those with incomplete data sets in terms of age, $t(105) = 0.18$, $p > .05$, and preoperative athletic identity, $t(105) = -1.85$, $p > .05$. Subsequent analyses were performed only on participants with complete data sets.

Changes in Athletic Identity Over Time

Changes in AIMS scores were examined using a repeated measures analysis of covariance (ANCOVA), with age and gender as covariates. As shown in Figure 1, AIMS scores decreased significantly over time, $F(3, 165) = 3.79, p < .05$, partial eta-squared = .06, and the linear trend was significant, $F(1, 55) = 7.49, p < .05$, partial eta-squared = .12. Bonferroni adjusted pairwise comparisons showed that although preoperative AIMS scores (Time 1, $M = 32.14, SD = 8.83$) and 6-month AIMS scores (Time 2, $M = 31.62, SD = 8.23$) were not significantly different and 12-month AIMS scores (Time 3, $M = 29.07, SD = 8.47$) and 24-month AIMS scores (Time 4, $M = 28.45, SD = 8.09$) were not significantly different, all other differences were statistically significant.

Relationship Between Recovery Progress and Changes in Athletic Identity

To examine the relationship between recovery progress and changes in athletic identity following ACL surgery, a hierarchical regression analysis was conducted in which changes in AIMS scores between 6 months postsurgery and 12 months postsurgery (i.e., the period during which the most substantial changes in athletic identity were observed) were regressed on preoperative AIMS scores, age, and gender in the first step and change in percent rehabilitated over the same 6-month period in the second step. The regression equation for the full model was statistically significant, $F(4, 57) = 2.58, p < .05, R^2 = .16$. Change in percent rehabilitated accounted for a significant proportion of variance in AIMS change scores over and above that accounted for by preoperative AIMS scores, age, and gender, $F_{change}(1, 53) = 7.28, p < .01, R^2 = .12$. The positive beta weight (0.35) for change in percent rehabilitated indicates that participants with smaller increases in percent rehabilitated from 6 to 12 months postsurgery (i.e., slower recovery progress) had greater decreases in athletic identity over the same period. A graphic illustration of the relationship between change in AIMS scores and change in percent rehabilitated is presented in Figure 2.

Discussion

As hypothesized and in accord with a view of the self as flexible and malleable (Cantor, Markus, Niedenthal, & Nurius, 1986; James, 1910; Markus & Kunda, 1986), individuals undergoing ACL surgery decreased their identification with the athlete role over a two-year observation period. Similar decrements in athletic identity have been documented following such identity-threatening events as sport career termination (Lavalley et al., 1997), poor seasonal sport performance (Brewer et al., 1999), deselection (Grove et al., 2004), and investment in a career outside of sport (Shachar et al., 2004). The finding that decreases in athletic identity were most pronounced for participants experiencing slow recovery progress is consistent with research affirming the centrality of bodily states to athletes' self-definitions (Stephan & Brewer, 2007) and suggests that a portion of participants initiated a self-protective mechanism to preserve their self-esteem in response to circumstances that threatened their sport involvement. By devaluing the athletic aspect of themselves, these individuals may have made the lack of rehabilitation progress less relevant or important to how they define themselves, thereby constituting a sport-specific illustration of a process conceptually akin to the psychodynamic notion of defense mechanisms that protect the ego from anxiety (Snyder, 1988).

The most substantial decrease in athletic identity occurred between 6 and 12 months postsurgery, a period of time during which ACL surgery patients return to sport under most rehabilitation protocols. A possible explanation for this finding is that although participants may have expected to have had their physical capabilities limited during the initial phases of rehabilitation and recovery, it was not until the return-to-sport phase that at least some of the participants were confronted with the knowledge that their ability to perform sport tasks was below the level expected. Thus, the divestment of athletic identity observed may have reflected

a shift in self-definition in response to a changing social reality (Turner, Oakes, Haslam, & McGarty, 1994). Because sport performance expectations were not measured directly, however, this explanation is largely speculative.

In addition to elucidating the process by which the changes in athletic identity documented in the current study occurred and specifying the mechanisms responsible for the changes, a logical topic for future research is to determine the extent to which decreasing identification with the athlete role in response to threatening events has adaptive value in terms of psychological adjustment. The question of whether, for example, the divestment of athletic identity in response to the physical challenges of ACL surgery and rehabilitation shown in this study or the sport performance problems demonstrated in previous investigations (Brewer et al., 1999; Grove et al., 2004) is associated with benefits in self-esteem or emotional functioning merits empirical attention.

Data from several cross-sectional studies suggest that reductions in athletic identity of the sort observed in the current study would have a beneficial effect on adjustment. Heidrich, Forsthooff, and Ward (1994) found that people with cancer who had low discrepancies between their actual and ideal selves were less depressed than those who had high self-discrepancies. By decreasing their identification with the athlete role, participants recovering slowly in the current study may have been attempting to align their self-views with their physical capabilities, thereby minimizing the discrepancy between their self-definitions as athletes and their diminished physical state. Research in the sport realm has shown that reducing athletic identity is associated with better success in coping with sport retirement (Lavalley et al., 1997) and greater life satisfaction for former athletes who have pursued careers outside of sport (Shachar et al., 2004). Longitudinal studies including identity and adjustment variables are needed to verify the proposed time-order relationship between identity change and adjustment.

Beyond the main strengths of the current study, which include the prospective, longitudinal research design, the repeated assessments of both athletic identity and rehabilitation progress, and the size of the sample retained over the two-year study period, there are several limitations that should be considered when interpreting the results. First, because there was no control group of participants without ACL injuries, it is possible that the decrease in athletic identity simply a manifestation of the trend for older individuals to have lower athletic identity scores than younger individuals (Brewer, 1993; Brewer et al., 1993). The *differential* decrease in athletic identity as a function of poor rehabilitation progress, however, argues against maturation effects accounting for the current findings. Second, although self-report is arguably the most feasible, direct, and appropriate source of information on personal identity, it should be noted that this study relied exclusively on self-report data. Alternate data sources (e.g., ratings from significant others, behavioral proxies) should be considered in future research. Third, despite the longitudinal approach adopted, the analyses are correlational. Consequently, no causal inferences can be made about the results. It is unclear, for example, whether the observed decline in athletic identity was caused by poor rehabilitation progress or the poor rehabilitation progress occurred as a result of disidentification with the athlete role (and the diminished sport-related motivation it might bring). A third variable, such as depression, could conceivably have influenced levels of both athletic identity and rehabilitation progress. For example, due to the negative general cognitive outlook characteristic of depressed mood, participants experiencing depression at the time of the assessment conducted at 12 months post-surgery might have tended to view their progress in a pessimistic light and perceive themselves as less identified with the athlete role. Further longitudinal research with more frequent assessments of key variables is needed to disentangle the time-order relationships among athletic identity, rehabilitation progress, and other potentially influential factors.

Overall, the findings of the current study highlight the dynamic nature of the self in the context of sport and, in so doing, support a view of adjustment to sport injury and its concomitants as a process involving personal, situational, cognitive, behavioral, emotional, and recovery outcome variables (Wiese-Bjornstal et al., 1998). In particular, associations among the passage of time (a situational factor) and cognitive appraisals of athletic identity (a personal factor) and rate of recovery (a recovery outcome factor) were documented. In addition to noting the physical changes that occur over the course of ACL surgery and rehabilitation, sport rehabilitation professionals should be aware that alterations in self-identity may be occurring as well and that these changes may serve a self-protective function. Cognizance of the interplay between physical and psychological changes may allow practitioners to better serve the athletes under their care.

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Figure 1.
Changes in AIMS scores over time.

Figure 2.
Relationship between change in AIMS scores and change in percent rehabilitated from 6 months postsurgery to 12 months postsurgery.