

Perceptions of Efficacy in the Rehabilitation of Athletic Injuries

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ABSTRACT

Efficacy perceptions are an integral part of psychological functioning (Bandura, 1997). Most research has focused on self-efficacy, however, when entering a rehabilitative setting, all individuals involved (e.g., patient, therapist, doctor, etc.) will hold varying perceptions of the individual's capabilities to recover and return to full function. Each individual evaluation has the potential to differentially influence actual recovery outcomes. The purpose of the present study was to examine efficacy perceptions of injured athletes and the therapists who treated them. Twenty individuals (7 males & 13 females: mean age 39.3 yrs, SD = 10.5) referred for massage therapy treatment due to a sport-related injury participated in the study. Athletes completed two evaluations of efficacy: self-efficacy (perceptions of one's own capabilities to complete necessary rehabilitation behaviors) and proxy efficacy (perceptions of the therapist's ability and the treatment plan to aid in recovery). The therapist evaluated their confidence in the athlete's ability to complete therapy relevant behaviors (therapist efficacy). Athletes indicated a mean self-efficacy score of 91.9% (SD = 8.6) and mean proxy efficacy score of 95.4% (SD = 5.6). Mean therapist efficacy was found to be 96.2% (SD = 2.7). Cronbach's alphas were .96, .93, and .73 respectively. Based on validity examinations, 3 distinct forms of efficacy (self, proxy, and therapist) appear to exist in the rehabilitation setting. It remains to be seen in future research how these judgments influence actual recovery.

Keywords: *perceptions of control, proxy efficacy, self-efficacy, rehabilitation, massage therapy*

Although the physiological and clinical aspects of injury rehabilitation are well-researched, treatments for the psychological recovery of injured athletes are just beginning to be explored (Cornelius, 2002). Most research involving psychological aspects of rehabilitation has focused around three key areas: psychological antecedents of athletic injury (cf. Cornelius, 2002), emotional and behavioral responses to injury (cf. Tracey, 2003), and psychological interventions for helping athletes recover from athletic injuries (cf. Pargman, 1999). Perceptions of capabilities have the potential to influence all three of these areas.

Bandura (1997) suggested that people always strive to control the events that affect their lives. However, individuals will have varying perceptions of their capabilities to control these events. Evaluations of personal capabilities (labeled as self-efficacy by Bandura, 1986; 1997) are recognized as important aspects of behavior change in a number of areas (cf. Bandura, 1997; 2004). Within the physical activity domain, self-efficacy has been found to determine motivation for behavioral change, adherence to exercise programs, and sport performance (Dawson, Gyurcsik, Culos-Reed, & Brawley, 2001). Self-efficacy, defined by Bandura (1997, p. 3) as “capabilities to organize and execute courses of action required to produce given attainments”, will be an important factor in the rehabilitation process.

According to Brewer, Van Raalte, & Petitpas (1999), sport injury rehabilitation occurs within a broad social context involving patient interactions with surgeons, therapists, trainers, staff, patients, family members, and friends. The nature and quality of these interactions may have a profound impact in sport injury rehabilitation (Brewer et al., 1999). Therefore, in addition to appraisals of one’s own ability, evaluations of relevant other’s ability will also influence successful recovery. This type of external control has been referred to as proxy control by Bandura (1986; 1997) and participatory control (Reid, 1984). Bray, Gyurcsik, Culos-Reed, Dawson, & Martin (2001) defined proxy efficacy as confidence in the abilities of a 3rd party to function effectively on one’s behalf. Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, & Cruzen (1993) found that patient’s beliefs about their own control (self-efficacy) as well as beliefs in their doctor’s capabilities (proxy efficacy) influenced recovery from general illnesses.

Members of the health team involved with the athlete in the rehabilitation process will also have unique and varying perceptions of the individual's ability to rehabilitate. Therefore, a third appraisal of efficacy may also be operating in the rehabilitation setting, therapist efficacy. Therapist efficacy may be defined as the health care professional's evaluation of the athlete's ability to complete the behaviors necessary to rehabilitate and recover from the athletic injury. While self-efficacy has been examined extensively in the general health literature (Bandura, 2004), and proxy efficacy has had limited examination in the rehabilitative (Bray & Cowan, 2004) and physical activity domains (Bray et al, 2001; Shields & Brawley, 2004; 2005), evaluations of therapist efficacy are not known. This construct has yet to be evaluated in a rehabilitation setting.

The general purpose of the present study was to evaluate whether three forms of efficacy (self, proxy, and therapist) exist when individuals are referred to a sport massage therapist after sustaining an athletic injury. Although, self-efficacy scales are well-established in specific domains such as exercise (DuCharme & Brawley, 1995), arthritis (Lorig, Brown, Ung, Chastain, Shoor, & Holman, 1989), and chronic disease (Lorig, Stewart, Ritter, Gonzalez, Luarent, & Lynch, 1996), a well-accepted self-efficacy scale has not yet been established in the rehabilitation setting. Similarly, while a proxy efficacy measure exists in the exercise domain (Proxy Efficacy Exercise Questionnaire [PEEQ]; Bray, Gyurcsik, Martin Ginis, and Culos-Reed, 2004), no such measure exists in the sport injury area. Nor does a therapist efficacy scale exist. Therefore, central to the evaluation of the appraisals of efficacy was the development and comparison of the three scales.

Method

Participants

Twenty participants (13 females, 7 males; mean age 39.3 yrs, SD = 10.5) took part in the study. The recruited participants were individuals who were receiving treatment for a running injury from a massage therapist at a sport medicine clinic. Nine participants had been treated by a massage therapist previously for exercise-related injuries. Only

one of the nine participants was being treated for the same injury as previously experienced.

Measures

Background Information

Physical activity patterns, daily functioning, history with massage therapy, and type of injury were evaluated using a series of open-ended and forced-choice response scales.

Efficacy Measures

Central to the purpose of the present study was the development of the three efficacy scales. It was imperative to follow Bandura's (2001) seven guidelines for constructing self-efficacy scales. The following paragraph describes how each recommendation was adhered to during measurement construction.

First, content validity was maintained by having athletes respond to statements phrased in term of "can do". The statements also reflected judgments of capabilities to execute given types of behaviors and did not involve expectations about anticipated outcomes. Second, statements were specific for the domain specification. For example, self-efficacy statements involved behaviors that the athlete had direct control over such as, "confidence in their ability to get to the therapy appointment on time" while proxy efficacy included evaluations of the behaviors that the therapist had control over such as, "confidence in the therapist's correct diagnosis of the injury". Therapist efficacy was based on the therapist's judgments that the athlete would complete certain rehabilitation relevant behaviors such as, "confidence that the patient will complete the treatment plan". Third, all forms of efficacy evaluated gradations of challenge that included statements about impediments and barriers to successfully completing the behaviors. Fourth, the response scales permitted the athletes and therapist to record the strength of their beliefs on a 100-point confidence scale ranging in 10-unit intervals from 0% (not at all confident) to 100% (completely confident). The scale instructions also followed Bandura's (2001) suggested terminology and instructed the participants to "Please rate how confident you are that you can complete the following behaviors as of now. Using the scale below, place the

confidence value appropriate for each behavior immediately after the statement in the space provided". Fifth, response bias was minimized by having efficacy judgments recorded privately without personal identification to reduce social evaluative concerns. Confidentiality of responses was a condition of ethics approval. This was explained to both the athlete and the therapist in an information letter that was read prior to commencement of the study. The therapist was not present when the athletes completed their questionnaires and vice versa. Sixth, all three efficacy measures were pre-tested and ambiguous items were rewritten, discarded or eliminated. The self-efficacy and proxy efficacy scales were piloted with a group of similar athletes. The therapist efficacy scale items were developed using eight sport-related therapists. Even after study completion, items were abandoned that did not fit the desired criteria. This process is described further in the results section. Consistency reliabilities were computed using Cronbach's alpha for each scale (see Table 1). And seventh, Bandura (2001) noted that efficacy scales should have face validity. That is, they should measure what they are purported to measure. Every attempt was made to capture the conceptual and theoretical meanings of personal, proxy, and therapist efficacy. Detail is provided in the results section as to how constructs were adapted to fulfill this agenda

Self efficacy. This measure evaluated athlete's confidence in their ability to complete the behaviors necessary to rehabilitate from an athletic injury. Athletes responded on the 100-point confidence scale described previously to 12 items reflective of specific actions and behaviors that were salient to the therapy domain. Items reflected scheduling behaviors, barriers to treatment, and rehabilitation or treatment behaviors. This assessment was similar to self-efficacy measures utilized elsewhere in the exercise domain (e.g., Bray et al., 2001; Shrigley & Dawson, 2004).

Proxy efficacy. This measure evaluated a patient's confidence in the therapist's treatment skills as well as their ability to plan and prescribe the correct treatment plan necessary to gain a pain-free recovery. Thirteen items reflected the athlete's judgments of the competence of the therapist and the prescribed treatment plan. This measure followed similar behaviors that were developed for exercise leaders (Bray et al., 2001). All statements were evaluated using the confidence scale described previously.

Therapist efficacy. Therapists evaluated their confidence in the athlete's ability to complete specific behavioral strategies that included prescribed treatment plan behaviors, scheduling behaviors and overcoming barriers to therapy. However, no similar measures were found in the literature to adapt the construction of this scale. Sixteen items were rated by the therapist using the same 100% confidence scale outlined previously.

Procedure

Prior to the commencement of the study, research procedures were reviewed and accepted by the appropriate Research Ethics Board (REB). All athletes were referred to a registered sport massage therapist (registered with the Canadian Massage Therapy Organization [CMTO]) by a recognized Sports Medicine Doctor. The therapist was the same for each athlete. On the athlete's first visit, athletes completed a questionnaire evaluating background information, self and proxy efficacy. At this time, the massage therapist evaluated the athlete, constructed the treatment plan that was described fully to the athlete, and reported therapist efficacy.

Data Analysis

Descriptive statistics were used to evaluate background information, activity levels, daily functioning, massage history, and injury details. As Cronbach and Meehl (1955) observed, construct development is an ongoing process that requires a number of methods. As such, the three efficacy measures were developed using the recommendations of Bandura (2001) and evaluated in three ways. First, means and variations were calculated. Second, the internal consistency of the scales was assessed using an interreliability coefficient (Cronbach's alpha). Table 1 provides means, SD, and Cronbach's alphas). Third, the content validity of all three constructs was evaluated by three experts. Two experts have extensive knowledge of self-efficacy while one of the experts held expertise in the field of sport rehabilitation psychology.

Results

Descriptive Results

Athletes indicated that their injury had been limiting their physical activity for an average of 1.6 months (SD = 1.0). Before the injury, 50% of the participants felt that they had a high level of fitness and 70% of patients engaged in regular activity of varying types. Only 50% of participants were participating regularly at the current time. Eleven participants also indicated that pain was limiting their overall daily functioning (55%). The injuries that the athletes were experiencing were diverse but mostly located in the leg or arm region. The prescribed treatment plan varied individually but all plans involved massage 2 times/week for a 2-4 week period accompanied with stretching, and heat/cold therapy. The therapist evaluated all athletes as having completely recoverable injuries. All athletes indicated that they understood the prescribed treatment plan.

Means, Variations, Internal Consistency

Means, standard deviations, and reliability coefficients are presented in Table 1. All three judgments in capabilities were found to be high (>91%). Cronbach's alpha demonstrated acceptable internal consistency for all three measures. However, it is interesting to note that the lowest reliability was found for therapist efficacy, a construct with the least scrutiny in the published literature and currently in the rudimentary stage of development.

Table 1: Means, Standard Deviations and Reliability Coefficients of Person, Proxy, and Therapist Efficacy

Construct	# if Items	Mean	Standard Deviation	Cronbach's Alpha
Personal efficacy	12	91.9%	8.6	.96
Proxy efficacy	13	95.4%	5.6	.93
Therapist efficacy	16	96.2%	2.7	.73

Content Validity

In order to ensure content validity, upon review by the experts, various items were removed from each efficacy measure. Although it was established by evaluating the injury data that the therapist assessed all injuries as completely recoverable, items reflecting actual outcome (e.g., complete or pain free recovery) were removed from all three efficacy scales as it was perceived as capturing outcome expectations rather than behavioral strategies (see Bandura's [2001] first recommendation). Self-efficacy was originally developed as a seventeen item scale, however, four items were eliminated due to the outcome expectation issue. One item was removed from the proxy efficacy measure as it was viewed by the experts to reflect perceptions of adherence and not therapist ability. Two items were eliminated from the treatment efficacy measure due to reflecting outcome expectations about recovery. Four items were removed from the treatment efficacy measure as they evaluated the therapist's confidence in their own ability to diagnose and prescribe the right treatment plan. After content validity evaluations and item trimming, self-efficacy became a 12-item scale ($\alpha = .96$), proxy efficacy became a 13-item scale ($\alpha = .93$) and treatment efficacy became a 16 item scale ($\alpha = .73$).

Discussion

In this study, the purpose was to evaluate whether three distinct forms of efficacy existed while individuals were treated by a massage therapist for sport-related injuries. It is interesting that in a rehabilitation setting, where perceptions of control are often decreased due to the nature of debilitation or uncertainty (cf. Thompson et al., 1993), athletes judged themselves as capable of executing desired plans of action as well as perceiving the therapist as completely capable of working on their behalf. In return, the massage therapist also evaluated the athlete as being capable of completing behaviors that would lead to a desirable outcome of recovery and painlessness.

Construct validity assessment indicated that three separate forms of efficacy were assessed and that they captured the theoretical distinction among concepts that was originally intended. The acceptable reliability

coefficients also demonstrated that the items evaluated within each scale were perceived as similar by the athletes.

In the rehabilitation of athletic injuries, assessments of capabilities are likely to influence successful recovery. The most widely used and accepted model of the rehabilitation process (Wiese-Bjornstal and colleagues, 1995; 1998) includes the cognitive appraisal process of self-perceptions, beliefs, and cognitive coping. All of these cognitive appraisals will involve evaluations of efficacy. However, in the physical activity domain, most evaluations of efficacy have centered on the self. Only recently have other forms such as proxy efficacy been evaluated (see Bray and colleagues 2001; 2004). Christensen, Wiebe, Benotsch, and Lawton (1996) found that renal patients were more likely to adhere to behavior change if they had confidence in the capabilities of the health care professionals assisting them (proxy efficacy). The present study demonstrated that perceptions of proxy efficacy also exist in sport rehabilitation.

A content review of the therapist efficacy scale suggested that a fourth type of efficacy may exist in the rehabilitation setting. Therapist self-efficacy considers the therapist's judgments of their own capabilities to diagnose and treat the specific injury. Anecdotally, many therapists indicate that they have more confidence treating certain injuries over others. For example, therapists gain reputations as being an expert in football or running related injuries. How then does a therapist inefficacious about their own competencies affect the athlete's eventual recovery? This is an interesting line of study for future research.

In this exploratory study, the purpose was to evaluate (or identify) three distinct aspects of individual efficacy perceptions in the rehabilitation setting. The measures employed were in the preliminary stage of development and there is need for further research to establish reliability.

Reliability in measures will only be established through replication studies using the constructs developed in the present study.

Limitations of the present study involve a low sample size and small variability in recovery probability. Specifically, all three appraisals may have been high due to the fact that all injuries had a prognosis of complete recovery. By evaluating injuries and outcomes that vary in severity, construct validity will continue (Cronbach & Meehl, 1955). Future research must also attempt to evaluate how psychological

appraisals of efficacy influence behavioral outcomes indicative of successful rehabilitation.

Perceptions of control are a robust predictor of human behavior in the health domain. Within the sport therapy domain, there appears to be a number of specific efficacy appraisals at work (self, proxy, and therapist). However, currently it is unknown how these judgments relate to actual recovery behaviors. It is important for therapists to remember that their evaluations of an athlete's ability to recover will ultimately affect their ability to do so in some way. This relationship and the relationship between self and proxy efficacy and behavior remains to be captured in future research.

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