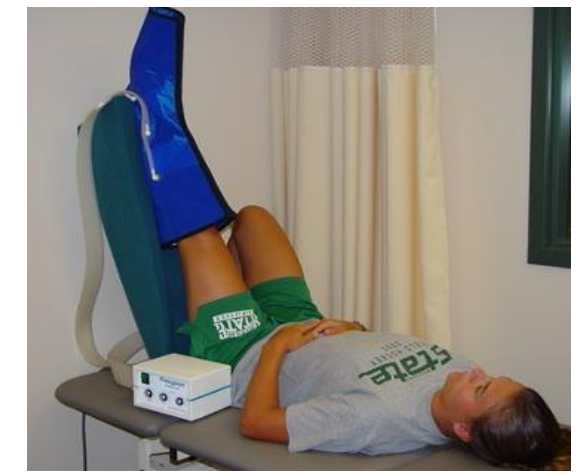




The Effect of Healing Mental Imagery on Recovery Speed and Adherence to Sport-Injury Rehabilitation Programs

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Introduction

Failure to adhere to a rehabilitation program following sport-injury is a frequent problem for the athlete and the sports medicine practitioner. Non-adherence rates can be as high as 60% (Brewer, 1998; Brewer, 1999). Clearly, adhering is associated with more favorable outcomes (Brewer, 1998). Athletic trainers acknowledge problems with rehabilitation adherence by athletes and agree with the need for investigation (Fisher, Mullins, & Frye, 1993). Today, it is common practice for the athlete to receive therapy for the physical aspect of the injury, leaving the mental aspect of the injury untreated. Athletic trainers, who direct the rehabilitation of injury in athletes, are in a unique position to improve the outcome through effective goal setting and guidance on the mental recovery from injury.

The purpose of this study was to examine three different cognitive interventions used by injured athletes to provide information on the effectiveness of mental imagery to augment the rehabilitation process by improving adherence to the program and speed of recovery.

Method

Participants

Athletes (N = 94)

- College (n=42, 44.7%)
- Recreational (n=52, 55.3%)
- Ages 18-35 ($M=24.70$, $SD = 5.12$)
- Male (n=57, 60.6%), Female (n=37, 39.4%)

Sports (N=14)

- Basketball (25), soccer (16), football (12), volleyball (12), triathlon (7), tennis (4), rugby (4), softball (4), ultimate frisbee (3), track & field (2), skiing (2), snowboarding (1), cheerleading (1), and wrestling (1).

Rehab Sites (N=16)

- Clinical (n=73, 77.7%)
- Athletic Training Room (n=21, 22.3%)

Design

Table 1. 3x2 Factorial Design (N = 94)

Injury Severity	Condition 1 Healing Imagery Relaxation	Condition 2 Performance Imagery Relaxation	Condition 3 Relaxation
2	n = 18	n = 16	n = 14
3	n = 16	n = 17	n = 13
Total	n = 34	n = 33	n = 27

Independent Variable
- Treatment Condition (3 levels)

Blocking Variable
- Injury Severity (2 levels)

Dependent Variables (2)

1. Adherence
2. Recovery Speed

Covariates (3)

1. Motivation to Recover
2. Confidence in the Researcher
3. Placebo Correlates

Procedure

- Participants were consecutively recruited as they sustained a sport-related injury and began a rehabilitation program at a clinic or college training room. All participants were met during their first week of therapy. They were randomly assigned to one of three treatment conditions (Table 1). They were met by the principal investigator (PI) to learn effective goal setting for rehabilitation. The assigned imagery script was administered and participants were instructed to listen to it prior to each scheduled therapy session. Participants recorded use of the CD on the cognitive intervention log sheet. Upon completion of rehabilitation and return to competition, the participant completed the discharge survey. The treating therapist also completed a discharge survey which provided information to calculate each dependent variable.

Measures

- Movement Imagery Questionnaire-Revised (MIQ-R, Hall & Martin, 1997). The MIQ-R is a self-report psychological questionnaire that was designed to identify the imagery skill level of the respondent. The respondent is asked to physically perform a skill and then produce the same action in their mind, grading the ease of forming the image. Participants respond to the 8 items on an 8-point Likert scale and receive a total score between 8 and 56. The time it took to form the image was also measured.
- Athlete Demographic Questionnaire
- Cognitive Intervention Log Sheet
- Athlete Discharge Questionnaire
- Treating Therapists Discharge Questionnaire

Hypotheses

Hypothesis I: Adherence will be higher in the healing imagery condition than the performance imagery or the relaxation conditions, after adjusting for mental imagery skill and placebo effects.

Hypothesis II: Recovery speed will be faster in the healing imagery condition as compared to the performance imagery and relaxation conditions, after adjusting for mental imagery skill and placebo effects.

Hypothesis III: Adherence and recovery speed will be negatively correlated.

Results

Table 2. Adjusted Means and Standard Deviations for the Dependent Variables

	N	Mean	SD
Adherence			
Healing Imagery	34	.954	.070
Performance Imagery	33	.932	.068
Relaxation	27	.926	.074
Recovery Speed			
Healing Imagery	34	72.71	42.98
Performance Imagery	33	86.61	45.42
Relaxation	27	81.89	45.87

• It is important to note that the initial plan for a MANCOVA was abandoned due to the transformed variables showing very different distributions. The ANCOVA was utilized to analyze each dependent variable separately. Additionally, motivation to recover, one of the covariates in the design, showed a "ceiling effect" and was not included in the analyses.

• The results showed that adherence (Hypothesis I) and recovery speed (Hypothesis II) were not significantly different for the healing imagery condition, however, adherence and recovery speed did show a significant negative correlation, $r = -.266$, $p = .029$ (Hypothesis III). Further analysis showed that athletes in the healing imagery condition were also using performance imagery.

• Gender, type of athlete (recreational or college), and rehabilitation site (training room or clinic) were examined and found to have no significant differences on either adherence or recovery speed.

• The manipulation check revealed significant differences in the use of healing imagery ($F(2,91) = 29.69$, $p = 1.19 \times 10^{-10}$) and performance imagery ($F(2, 91) = 16.39$, $p = 8.36 \times 10^{-7}$), but not relaxation between the three conditions. A Bonferroni post-hoc analysis showed that for imagery use, the healing imagery condition ($M = 4.26$, $SE = .287$) was significantly higher than the two other conditions (performance imagery, $M = 1.12$, $SE = .291$; relaxation, $M = 1.67$, $SE = .385$). For recall of successful sport memories, the performance imagery ($M = 4.91$, $SE = .228$) and the healing imagery ($M = 4.06$, $SE = .253$) conditions were significantly higher than the relaxation condition ($M = 2.73$, $SE = .453$).

• There were no significant differences between the three treatment conditions on number of days per week they attended therapy, the use of self-talk during rehabilitation, the belief that thoughts could influence recovery, the incidence of thoughts about re-injury, and the hectic nature of life during rehabilitation.

Discussion & Future Directions

• The finding that athletes in the healing imagery condition were also using performance imagery indicates that the treatment scripts may not be specific enough, thus, limiting the ability to find a difference between the treatment conditions. It may also suggest that these two types of imagery augment each other and should be used together in one script.

• Although this study did not find significant differences, the mean trends (Table 2) are in the hypothesized direction and suggest further research.

• Implications for future research included modifying the CD script to follow the athlete through the phases of rehabilitation, increasing the group sample size to improve statistical power, and following up on differences in adherence rates for second- and third-degree injured athletes.

References

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