Injured Athletes’ Attitudes and Judgments Toward Rehabilitation Adherence

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Abstract: In a follow-up study to certified athletic trainers’ (ATCs’) attitudes and judgments toward injury rehabilitation adherence, previously injured and rehabilitated athletes (n=36) were administered the Athletic Injury Rehabilitation Adherence Questionnaire. The purpose of the study was to compare the results collected from athletes with those collected previously from ATCs. The questionnaire consisted of 60 statements, categorized into seven scales: athletic trainers’ influence, environmental influences, athlete’s personality, pain tolerance, self-motivation, goals and incentives, and significant others. Four additional open-ended questions dealing with successful and unsuccessful rehabilitation strategies also were completed. Athletes’ responses were generally similar to those of ATCs. Factors deemed significant to rehabilitation adherence were: (a) good rapport and communication between athletic trainers and injured athletes, (b) support from athletic trainers and coaches, (c) self-motivation on the part of athletes, and (d) convenience, accessibility, and flexibility of the rehabilitation facility and staff. The greatest deviations between athletes’ and ATCs’ responses were in the areas of self-motivation, pain tolerance, education about injury and rehabilitation exercises, and degree of realistic feedback. Analyses of open-ended question responses reinforced the aforementioned results. The strongest findings derived from these questions were the importance of rapport, communication, and support to rehabilitation adherence. Also, athletes’ distastes for threats and scare tactics were quite evident.

Adherence to treatment regimens, including injury rehabilitation, is an extremely complex issue. It has been argued elsewhere that there are more than 200 variables that influence commitment to prescribed treatments.11 Previous literature, focusing specifically on athletic injury rehabilitation, illustrates that rehabilitation adherence can be understood in terms of: (a) injured athletes’ characteristics (eg, self-motivation), (b) characteristics of the rehabilitation setting (eg, accessibility of the athletic training room), and (c) ATC-athlete interactions (eg, rapport).5,9

In two separate investigations,9,19 ATCs’ attitudes and judgments about a variety of rehabilitation strategies were revealed. ATCs emphasized the importance of rapport with injured athletes, social support, athletes’ self-motivation, and ATCs’ motivational outlook, to mention just a few of the findings. It is significant to point out that ATCs recognize the crucial importance of psychological variables in rehabilitation adherence.

Although important psychological skills and ATC-athlete interaction patterns helpful to treatment adherence have been identified previously, highlighting some of these will be of little value until ATCs consider the applicability of these suggestions to their treatment repertoires. Fortunately, more details about these suggested strategies are available in recent sports medicine literature.3,7-16,18

We propose the partnership idea, the dynamic interaction of ATCs and athletes, as the focus most suited for optimal injury rehabilitation. This, then, highlights the critical need to allow athletes to express their viewpoints concerning the most and least effective rehabilitation strategies.11 Athletes’ beliefs and expectations about such matters as treatment efficacy, athletic trainers’ supervision and motivational support, and their own attributions and motivation will lead to the framing of a very important, naive (not to mean simplistic, but natural and workable) model of injury treatment and rehabilitation. After all, injured athletes are the clients, and they are the ones going through the rehabilitation. To neglect their input is to negate an important source of information.

Although there are limits to self-report data,15 clients (ie, athletes) often can predict with some degree of accuracy their likelihood of adherence.11 It seems equally plausible that they are able to address the factors that personally predispose their adherence to their prescribed treatments.

In this study, we examined formerly injured and rehabilitated athletes’ (hereafter referred to as athletes) attitudes and judgments about factors presumed to influence sport injury rehabilitation adherence. Athletes’ findings then were compared and contrasted with those reported earlier in the injury rehabilitation literature.

Methods

In April 1992, we mailed the Athletic Injury Rehabilitation Adherence Questionnaire and a letter of explanation to
all 108 athletes (103 males and 5 females) from mailing lists provided by ATCs at Colgate University, Cornell University, and Ithaca College. None of these institutions offer athletic scholarships. The criteria for subject selection were: the injury required at least 3 months of rehabilitation and the athlete must have graduated within the last 12 years.

The questionnaire consisted of 60 statements to which athletes were asked to judge their agreement on a five-point Likert scale from "strongly agree" to "strongly disagree." Also, four open-ended questions allowed athletes to indicate the rehabilitation strategies and types of interactions that enhanced and deterred their adherence to rehabilitation programs. The statements were categorized into seven scales derived from previous investigations and literature review.8,11

An analysis of item responses was completed to assess what percentage of athletes agreed with each statement. Successful and unsuccessful rehabilitation strategies and interactions were tabulated.

Results and Discussion

Of the 100 questionnaires that were deliverable, 36 were returned. Eight questionnaires were undeliverable, and follow-up attempts indicated that there were problems with the accuracy of the mailing lists and with the mail forwarding process. Therefore, the return rate of completed questionnaires was 36% (36/100). The sample consisted of 34 (94%) males and two (6%) females. Perhaps the low return is a result, in part, of the 12-year criterion measure used to generate the population of injured athletes. We chose this timeframe to create a larger population, but it might have allowed the inclusion of potential subjects who were far removed from their sport and injury days. Results and discussion are organized by questionnaire scales.

Athletic Trainer’s Influence

Athletes reinforced ATCs’ earlier findings8 about the significance of injured athlete/athletic trainer interactions; 32 (89%) reported that good rapport is essential for rehabilitation adherence. Across a variety of treatment domains, it seems clear that patients and clients need support, empathy, and special consideration to get them through their ordeals.11,17,19 Unless there is adequate psychological security, rehabilitation progress will be hindered.

As athletes enter the rehabilitation process, there are usually many questions (eg, nature of the injury; type, frequency, intensity, and duration of the rehabilitation regimen; and prognosis for recovery). ATCs, of course, are in a position to answer these questions, and ATCs have reported that explanation of the athlete’s injury and the proposed rehabilitation are crucial treatment adherence determinants.9 Athletes concurred with the importance of this educational phase, but placed more importance on knowledge of the rehabilitation regimen (36 [100%] agreed) than the details of the injury (24 [67%] agreed). ATCs, therefore, might well spend the majority of their educational efforts on what is to be done, rather than what has happened. However, this is not to suggest that all athletes will be less interested in the details of their injuries.

So as not to mislead you about the importance of education, we would be remiss if we did not echo Meichenbaum and Turk's10 synthesis of literature on this topic: the educational phase is necessary, but clearly not guaranteed to increase adherence. But, without this important preliminary step, treatment adherence might well be undermined.

Accuracy of pain and effort appraisal was just as important to athletes as ATCs8 (26 [72%] agreed in each case). Athletes recognized that they need assistance with their interpretations of pain (eg, "good" pain vs. "bad" pain) and the degree of effort necessary to adhere to their rehabilitation.

There is an implication that ATCs might consider increasing workload demands on their rehabilitating athletes because 27 (75%) of the athletes reported that increased ATC demands facilitate adherence. In a previous study,9 ATCs recognized the importance of placing demands on athletes, but perhaps they underestimated the importance of their demands on treatment adherence.

Environmental Influences

The physical location of the athletic training room can either enhance or hinder treatment adherence.1 Athletes totally agreed that easy accessibility facilitates attendance, clearly a first important step in the rehabilitation process. Even though ATCs recognized this fact,9 athletes were even more convinced.

A substantial percentage of athletes (27 [74%]) indicated that crowded athletic training rooms reduce attendance at rehabilitation sessions. Not only that, crowded conditions seem to reduce adherence to the exercise workout, at least in the minds of more than one third (14) of the athletes. In a previous study,9 ATCs revealed similar findings, but not to the same degree (56% agreed that crowded conditions hinder attendance, and 43% indicated that rehabilitation efforts were reduced). At certain times of the day, it is probably an understatement to describe athletic training rooms as hectic. Notwithstanding this less-than-favorable atmosphere, neither athletes in the present study nor ATCs earlier9 judged that a businesslike setting is a training room necessity. Almost two thirds of each sample disagreed that a businesslike atmosphere is more conducive to treatment adherence. Perhaps that simply reflects the reality of athletic training rooms.

Not surprisingly, athletes were almost unanimous (34 [95%]) in supporting the expectation that rehabilitation sessions need to be planned around their schedules.4 It is necessary to fit programs to the athletes, rather than attempt to constrain athletes into competing timeframes. This was similar to earlier ATC responses (92% agreed).9

To their credit, athletes were not as concerned with the length of their rehabilitation sessions as ATCs had indicated earlier.9 Only 13 (36%) of the athletes indicated that a rehabilitation session in excess of 30 minutes would deter adherence, whereas 56% of the ATCs surveyed earlier indicated that sessions longer than 30 minutes would predispose reduced adherence.9
Athlete's Personality

Adherence to injury rehabilitation programs is certainly dependent on injured athletes’ personalities, not solely, but operating in conjunction with the rehabilitation setting and the rapport that exists between athletes and ATCs.\(^7\)

Evidently, that assertion seems reasonable because a moderately large segment of both athletes (21 [58%]) and ATCs (55%)\(^9\) acknowledged that the athlete's personality is not the most important factor predisposing adherence. Adherence literature is replete with reports that person factors (ie, personality traits) are not in themselves useful predictors of adherence/nonadherence behavior.\(^1,11,14\) However, the one that holds promise as being most useful is athletes’ beliefs (eg, self-appraisal, self-expectancy, and self-efficacy).\(^9\)

A majority of athletes (28 [78%]) revealed the importance of accurately appraising how hard they are working on their rehabilitation, exactly the level of agreement reported earlier by ATCs.\(^9\)

Athletes recognized that a generally pessimistic belief or attitude about rehabilitation effectiveness predisposes treatment dropout (30 [83%]), a finding seen earlier in studies with ATCs\(^6,10\) and interpreted more fully by Hafen et al.\(^10\)

On the other hand, the "depression" that results from being injured and/or not recuperating as hoped is not seen as a very significant adherence factor by either athletes (only 5 [14%] agreed) or by ATCs (15%).\(^9\) This finding in no way denigrates the application of the Kübler-Ross model of grief to injury rehabilitation,\(^12,13,16\) but it does suggest that athletes’ feelings (ie, personality states) are not as debilitating as their more permanent beliefs and expectations.

Although it is expected that athletes will approach their rehabilitation cautiously to reduce the chance of reinjury, this likelihood does not play such an important part in the rehabilitation adherence equation as ATCs reported earlier.\(^9\) One quarter of ATCs surveyed indicated that fear of reinjury during rehabilitation is likely to cause treatment dropout; athletes, on the other hand, reported lesser agreement (4 [11%]).

Generalizations from the exercise adherence literature\(^7\) indicate or imply that self-motivated athletes will more likely adhere to their prescribed treatments. However, only approximately half of the athletes (20 [56%]) and the ATCs (49%)\(^9\) reported that those who initiate and pursue their rehabilitation with minimal directions adhere better. Rehabilitation requires participation from ATCs (eg, education, appraisal, and motivation) and support from others (eg, coaches), all very recognizable by athletes and ATCs. This reiterates the point made earlier about the dimensionality and complexity of the rehabilitation adherence issue.

Self-Motivation

Self-motivation applied to injury rehabilitation reveals itself in athletes’ capacities to initiate and perform their workouts in the absence of any outside support. To that end, 33 (92%) of the athletes reported that rehabilitation adherence is related directly to their willpower (ie, strength of character, intrinsic motivation, and self-motivation). In an earlier study,\(^9\) ATCs supported this finding, but to a lesser degree (78% agreed).

On the surface, it might appear that athletes tended to undermine their position on the importance of self-motivation by indicating that: (a) regular monitoring by athletic trainers aids adherence (32 [89%] agreed), (b) athletic trainer supervision promotes greater effort (35 [97%] agreed), and (c) even the mere presence of an athletic trainer enhances the quality of the rehabilitation workout (35 [97%] agreed). Just because athletes recognize the very significant contributions athletic trainers make to the rehabilitation process (eg, education, scheduling, and supervision), that does not contradict their earlier assertions. It seems clear, however, that self-motivation is not powerful enough to carry athletes through the difficulties and complexities of rehabilitation (eg, negative affect, slow progress, and pain).

Self-motivated rehabilitative efforts seem to be based on a number of principles. Athletes need to feel that the rehabilitation will be successful (34 [95%] agreed). Also, the prescribed exercises must be perceived as justifiable (35 [97%] agreed). An effort orientation or attribution (ie, hard work accounts for success) is more salient than an ability attribution (ie, talent accounts for success) (31 [86%] agreed). Although there is some intuitive appeal to the belief that more successful athletes (eg, starters and star players) would adhere better to their prescribed treatments, a substantial segment of athletes (14 [39%]) disagreed with that premise. In an earlier study, ATCs reported a similar reservation (36% disagreed).\(^9\)

ATCs did not seem to give athletes quite enough credit for the amount of motivation they bring to the rehabilitation process.\(^9\) Only 40% of ATCs
agreed that athletes will initiate and pursue their prescribed treatment without athletic trainer supervision, contrasted to 22 (61%) of the athletes. Likewise, ATCs (76%) accentuated the significance of rehabilitation progress to prevent dropout, whereas only 22 (61%) of the athletes placed that much importance on progress. This does not at all mean that rehabilitation progress is unimportant, but simply that athletes are not all consumed with the necessity of progress.

Even in light of the degree of self-motivation athletes judged they possess, there are still a couple of cautionary notes for ATCs’ consideration. First, to assume that athletes will rehabilitate on their own once they know their rehabilitation regimens is apparently faulty. Few ATCs (14%) tended to believe this, and this was replicated by athletes themselves (5% [14%]). This fact supports a commonly held belief that homework assignments or unsupervised workouts are probably suspect as far as their effectiveness is concerned. Second, there is the issue of quantity vs. quality workouts. There was good consensus between ATCs and athletes on the difference between merely attending rehabilitation sessions and working hard. A substantial segment of ATCs (80%) agreed that attendance is no guarantee of workout effort, a finding reinforced by 25 (70%) of the athletes. These points merely reinforce the necessity of direct ATC involvement, regardless of the degree of athletes’ self-motivation.

Goals and Incentives

Neither athletes (13 [36%]) in this study nor ATCs (36%) in an earlier study agreed that long-term benefits are more important than short-term outcomes in promoting treatment adherence, but both groups recognized that the knowledge of long-term benefits enhances adherence. The latter finding was supported even more strongly by athletes (34 [94%] agreed) than by ATCs (83% agreed).

Long protracted rehabilitation (eg, following knee surgery) is a difficult process at best, and the questions and concerns of long-term recovery are omnipresent. ATCs can assist rehabilitating athletes by offering them encouragement, directing their attention to positive aspects and planning selected activities (eg, exercises and testing protocols) that demonstrate more immediate progress. Athletes indicated their agreement (30 [83%]) with the significance of seeing immediate results, but they did not agree (21 [58%]) to the extent ATCs did (86%) that positive feedback, regardless of actual progress, facilitates treatment adherence. Apparently realistic positive results are more salient to athletes than contrived positive results, even though the intent of both is to secure rehabilitation adherence.

Threats and scare tactics as motivators were not supported strongly by either ATCs or athletes, but athletes’ responses were even less favorable. ATCs were somewhat undecided about the effectiveness of threats (47% agreed; 35% disagreed) and scare tactics (30% agreed; 49% disagreed) in promoting treatment adherence. Athletes reported stronger disagreement about the effectiveness of both threats (21 [58%]) and scare tactics (20 [56%]). Of all the motivational strategies that are useful to enhance rehabilitation adherence, threats and scare tactics appear to be the choice of last resort, if a choice at all.

Athletes revealed the importance of their rehabilitation to them in the degree to which they prioritized their workout sessions. They reportedly do not look for excuses to miss their appointments (32 [88%] agreed). Only one (3%) athlete disagreed that rehabilitation was less than a high priority. Previously, ATCs revealed positive impressions of athletes’ incentive values for rehabilitation, but their responses did not reach the levels reported by athletes. The differences between the two groups are typified by their responses to the question of how faithful athletes will be to their rehabilitation if they are unable to return to competition for the remainder of the season. Only eight (22%) of the athletes judged return to competition to be an important precursor of rehabilitation, compared to 53% of the ATCs. Apparently, return to competition is not as significant to athletes as might be surmised.

Significant Others

Of all the variables that have been shown to impact treatment adherence, few parallel the importance of social support. Therefore, it is not surprising that both athletes and ATCs reported unanimous or nearly unanimous agreement that coaches and athletic trainers were essential for rehabilitation adherence. Somewhat surprisingly, however, was the reduced importance of teammate support. Only approximately 60% of the athletes in this study and ATCs in a previous study agreed that teammate support is essential to prevent dropout.

Complicating these findings are again almost unanimous agreement between athletes and ATCs that it is important for injured athletes to feel that they are still an integral part of their teams. Apparently, there are several possible dynamics at work here. Because coaches and ATCs are in leadership roles, athletes expect them to offer support as part of their responsibilities. Fortunately, ATCs seem prepared to deliver such support to athletes. Anecdotal evidence about support given by coaches to injured athletes is more mixed; some coaches are quite interested in follow-up support, while others seem oblivious to the necessity. ATCs are in the unique position to orchestrate coach involvement with injured athletes’ rehabilitation progress. Social support strategies have been offered elsewhere, and we suggest ATCs consider their effectiveness to rehabilitative efforts.

It is equally possible that athletes do not expect teammates to offer support because: (a) teammates cannot understand the physical and psychological ramifications of the injury, (b) teammates typically shy away from or are hardened to others’ injuries, and/or (c) teammates do not even consider what an important supportive role they could play with their injured colleagues. Attitudinal shifts on the part of coaches and teammates might well encourage healthy athletes to offer motivational support for those athletes undergoing injury rehabilitation.

Table 1 reveals the athletic training techniques and interactive strategies that athletes judged most helpful with
their rehabilitation. The rapport factor is clearly uppermost in athletes' minds. Repeatedly, athletes referred to athletic trainers' caring attitude for, honest approach to, and encouragement of all aspects of the rehabilitation. These findings very clearly reinforce those discussed earlier, and they parallel quite closely the results reported elsewhere by ATCs.9,19

Athletes were given the opportunity to propose the strategies and interactions they judged would enhance their rehabilitation adherence. As seen in Table 2, the largest response was "none" (16 [44%]). Some athletes, however, seemed to recognize the importance of education about rehabilitation details and athletic trainer attention and supervision. Relative to the partnership concept proposed earlier, these suggestions from athletes, if implemented, would enhance their participation in the rehabilitation process.

Athletes revealed a high degree of satisfaction with athletic trainers' strategies and interactions because 28 (78%) of the athletes reported no unsuccessful practices. Miscellaneous complaints were registered (lack of athletic trainer interaction, unknowledgeable athletic trainer, student athletic trainer given too much responsibility, no set schedule, inadequate monitoring of progress, negative feedback, and inadequate assistance with pain appraisal), but each of these was mentioned only once.

When athletes were asked to offer rehabilitation strategies that would not have worked for them, 21 (58%) indicated that threats and scare tactics are not effective. These results add further support to the problematic nature of negative motivation. Rehabilitation without direct athletic trainer supervision was mentioned by five (14%) of the athletes, again consolidating earlier discussion. Numerous other items were mentioned, but none that exceeded a single entry.

**Conclusion**

For the most part, athletes' responses to various aspects of injury rehabilitation mirror those of ATCs. Athletic trainer-athlete rapport, with all that it encompasses, stands out as a primary factor in the treatment adherence equation. Athletes' self-motivation is important and appears to be of greater magnitude than ATCs suspect, but it is not sufficient to ensure adherence by all athletes. Realistic pain appraisal by athletes, with ATCs' help, is also important for adherence. Pain, however, does not interfere with the rehabilitation process as much as might be suspected.

Athletes have offered us a naive model of injury rehabilitation. The challenge is to eliminate the barriers to treatment adherence and accentuate those strategies and interactions that will promote enhanced injury rehabilitation adherence.

**Acknowledgements**

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<tr>
<th>Strategies/Interactions</th>
<th># of Responses*</th>
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<tr>
<td>Caring Athletic Trainer Attitude</td>
<td>15 (42%)</td>
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<tr>
<td>Honest Approach (prognosis, pain)</td>
<td>9 (25%)</td>
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<tr>
<td>Encouragement</td>
<td>7 (19%)</td>
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<tr>
<td>Goal Setting</td>
<td>7 (19%)</td>
</tr>
<tr>
<td>Monitor Progress</td>
<td>5 (14%)</td>
</tr>
<tr>
<td>Athletic Trainer Personality</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>Flexible Scheduling</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Fast Beginning</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Presence of Audience</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Trust in Athletic Trainer</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Explanation of Rehabilitation</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Personalize Treatment</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Set Specific Schedules</td>
<td>1 (3%)</td>
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<tr>
<td>Equipment Availability</td>
<td>1 (3%)</td>
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<tr>
<td>Convenient Rehabilitation Location</td>
<td>1 (3%)</td>
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<tr>
<td>Athletic Trainer Present During Rehabilitation</td>
<td>1 (3%)</td>
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*Not all athletes offered a response; some offered multiple responses.

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<th>Strategies/Interactions</th>
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<tr>
<td>None</td>
<td>16 (44%)</td>
</tr>
<tr>
<td>Detailed Explanations</td>
<td>5 (14%)</td>
</tr>
<tr>
<td>More Attention</td>
<td>4 (11%)</td>
</tr>
<tr>
<td>More Athletic Trainer Supervision</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>Pain Appraisal</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>More Motivation</td>
<td>2 (6%)</td>
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<tr>
<td>Outside Rehabilitation Arrangements</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>Reinforce Adherence</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Recognize Time Demands</td>
<td>1 (3%)</td>
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<tr>
<td>Goal Setting</td>
<td>1 (3%)</td>
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<tr>
<td>Additional Rehabilitation Sessions</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Start Rehabilitation Earlier</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Better Equipment Availability</td>
<td>1 (3%)</td>
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</table>

*Not all athletes offered a response; some offered multiple responses.
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References