Predictors of Adherence to Sport Injury Rehabilitation Programs: A Multi-center Trial

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The Problem

- Injured athletes not adhering to rehabilitation programs
  - adverse effect on rehabilitation goals
  - unfavorable rehabilitation outcomes
  - increased time missed from competition
  - depression & other mood disturbances
The Problem (cont.)

• Many variables can influence rehab adherence
  – Over 200 (Meichenbaum, 1987)

• Psychologically based issues relating to sports-injury are not well understood and have yet to be explained
Predictors of Adherence

• Subject Level Variables
  – Social Support
  – Self-Motivation
  – Perceived Exertion
  – Pain Tolerance
  – Scheduling
  – Environment

• Predictors were selected from previous research: Duda et al. (1989), Fisher et al. (1988), Byerly et al. (1994), Udry (1997), Fields et al. (1995) & Hamson & Sheu (in preparation)
Predictors of Adherence (cont.)

• Clinic Level Variable
  – Patient Volume

• Definition of Adherence
  – Adhere: attended all rehabilitation sessions
  – Non-Adhere: did not attend all sessions
Data Composition

• 6 clinics in the Chicagoland area

• Mixed sample of recreational & collegiate athletes
  – Male and female subjects
    • (39F, 55M, Ages 18-80 years)
  – Injury sustained from participation in sport
  – Rehab criterion: >=6 visits (6-51, mean=20.5)
  – Injuries included: knee(53%), shoulder(16%), ankle(15%), hip(6%) & back(10%)
Data Composition (cont.)

• Instrument
  – Rehabilitation Adherence Questionnaire (RAQ)
    • 4-point scale (1-4)
    • 40 questions
      – pain tolerance (11), scheduling (6), environment (3), social support (10), perceived exertion (2), self-motivation (8)
  – Patient Demographic Survey
    • gender, age & athletic participation level
  – Attendance at rehabilitation sessions
Descriptive Statistics

• Response Variables
  – Adherence Overall
    • Adhere (A) = 38
    • Non-Adhere (NA) = 56
    • Overall adherence rate = 40%

  – Clinic    A    NA    Total    Pt Vol
    • C1    12    7    19    147
    • C2    4    8    12    305
    • C3    5    11    16    298
    • C4    8    8    16    57
    • C5    6    8    14    192
    • C6    3    14    17    251
Descriptive Statistics (cont.)

- Predictors: Adhere vs. Non-adhere (ave)
  - Environment: 3.58  2.14
  - Perceived Exertion: 3.12  1.85
  - Social Support: 2.73  1.64
  - Self-motivation: 3.30  2.02
  - Pain Tolerance: 3.43  1.98
  - Scheduling: 2.96  1.73
### Table 1. Sample Items from the Rehabilitation Adherence Questionnaire and Scoring

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Exertion: I nearly always work at 100% effort.</td>
<td>(4)</td>
<td>(3)</td>
<td>(2)</td>
<td>(1)</td>
</tr>
<tr>
<td>Pain Tolerance: My rehab program was physically painful.</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Self-motivation: I enjoyed doing my rehab program.</td>
<td>(4)</td>
<td>(3)</td>
<td>(2)</td>
<td>(1)</td>
</tr>
<tr>
<td>Social Support: I found rehab to be very lonely and isolating.</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Scheduling: My rehab program took up too much of my time.</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Environment: The training room makes me nervous.</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
</tbody>
</table>

**SA= strongly Agree**  
**A= Agree**  
**D= Disagree**  
**SD= Strongly Disagree**
Hypothesis #1

• Predictors of adherence in the clinically rehabilitated recreational athlete will be:
  – Social Support
  – Self-motivation
  – Pain Tolerance

  • Listed in order of importance
Hypothesis #2

• The multi-center trial will reflect differences between the clinics in the following ways:
  – Patient Volume
    • Clinics with higher patient volumes will have higher non-adherence rates
Conclusion

• 4 predictors composed a model to predict sport-injury rehabilitation adherence
  – self-motivation
  – pain tolerance
  – scheduling
  – patient volume (clinic level)
Conclusion (cont.)

• Hypotheses Review
  – H1: not supported
    • Social support did not make the model
    • Scheduling makes sense in the clinical population
  – H2: supported
    • As the patient volume increases, adherence rates decrease
    • Class Size Theory (site this!)
Implications: Exercise Program Adherence

- The same set of predictors may shed light on why individuals don’t adhere to exercise programs: self-motivation, pain tolerance, scheduling
- Where does social support fit into this picture?
Future Research Direction

• Additional predictors
  – Mood state
  – Level of Participation
• Individual v. Team sport athletes
  – Golf v. Basketball
• Differences in Gender
• Cultural Differences
  – Asian athletes