The Female Athlete: Predictors of Sport-Injury Rehabilitation Adherence

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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
  – adverse effects on team cohesion
The Problem (cont.)

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

• Psychologically based female specific factors relating to sports-injury have been researched but many have yet to be explained
Predictors of Adherence

• Independent 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)
Dependent Variable

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

• Convenient Sample
• United States Women’s Soccer
  – Subjects
    • 18 Females, Ages 16-21 years (mean = 19.7)
    • Injury sustained from participation in sport
  – Rehab criterion
    • >=6 sessions (7-26, mean=14.5)
  – Injuries
    • 4 knee(22%), 1 shoulder(6%), 8 ankle(44%), & 5 thigh(28%)
Data Composition (cont.)

• Instruments of Measurement
  – 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, ethnicity
  – Attendance at rehabilitation sessions
## Sample Questions from the RAQ

### Table 1. Sample Items from the Rehabilitation Adherence Questionnaire and Scoring

<table>
<thead>
<tr>
<th>Item</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 elite female athlete will be:
  • Social Support
  • Self-motivation
  • Pain Tolerance
    – Listed in order of importance
Hypothesis #2

- Social support will be the most salient predictor of rehabilitation adherence of the elite female athlete
Descriptive Statistics

• Dependent Variable
  – Adherence Overall (83%)
    • Adhere (A) = 15
    • Non-Adhere (NA) = 3 (17%)
Descriptive Statistics (cont.)

- Predictors: Mean (Standard Deviation) Comparisons

  » Adhere (n =15)          Non-adhere (n =3)
  
  - Environment: 2.73(sd=.474)  2.88(.510)
  - Perc’d Exertion: 2.23(sd=.530)  2.50(.000)
  - Social Support: 2.33(sd=.154)  2.30(.100)
  - Self-motivation: 2.37(sd=.259)  2.25(.219)
  - Pain Tolerance: 2.70(sd=.315)  2.61(.191)
  - Scheduling: 2.83(sd=.437)  2.94(.344)
Results

• 6 predictors composed a model to predict sport-injury rehabilitation adherence (27% variance)
  – Social support
  – Self-motivation
  – Pain tolerance
  – Scheduling
  – Perceived exertion
  – Environment
## Examining Variable Inter-Correlations

### Correlations

<table>
<thead>
<tr>
<th></th>
<th>ADH</th>
<th>ENV</th>
<th>EXRT</th>
<th>SS</th>
<th>SM</th>
<th>S</th>
<th>PT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADH</td>
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<td></td>
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<tr>
<td>ENV</td>
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<td></td>
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<tr>
<td>SS</td>
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<td>.193</td>
<td>.051</td>
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<td></td>
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<tr>
<td>SM</td>
<td>.143</td>
<td>-.327</td>
<td>.570*</td>
<td>.082</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>-.061</td>
<td>.677**</td>
<td>-.147</td>
<td>.363</td>
<td>-.088</td>
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<tr>
<td>PT</td>
<td>.058</td>
<td>.184</td>
<td>-.086</td>
<td>-.14</td>
<td>-.036</td>
<td>.180</td>
<td>1</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).
Problematic Predictor Selection: Variance

INJURY
- Ankle
- Knee
- Shoul
- Thigh

ADHERENCE

N = 1
0.00
2
7
4
1
3

2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
Conclusion

• Hypothesis #1: Not supported
  – A model with social support, self-motivation and pain tolerance only accounted for 3% of the total variance
  – A model with all six predictors accounted for 27% of the variance

• Hypothesis #2: Not Supported
  – Social Support was not the most important variable predicting adherence
Discussion
Limitations

• Sample convenience
  • Random sampling
  • Access to elite athletes
  • Conclusions rest within this sample

• Sample size (n= 18)
  • sample is too small to make any salient conclusions

• Sport Specificity
  • Soccer only
Future Research Direction

• Expand focus to include subjects from other elite sports
  • Basketball, field hockey, crew, softball

• Additional predictors
  • Mood state
  • Role of position on the team
  • Individual v. Team sport athletes
    – Golf v. Soccer
Future Research (cont.)

- Androcentrism: Does it have an effect on the injury rehabilitation of women in sport?

- Cultural Differences
  - Asian
  - African
  - Hispanic