What are the Non-Medical Factors that go into Return-to-Play Decisions?

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Why is RTP Important?

• The greatest risk for injury is past injury - return-to-play decisions affect injury rates
• For team physicians, RTP is central to our work; it is what we spend most of our time doing
• The treatment of individual cases (case-by-case) limits our ability to understand populations and generalize treatments
Non-medical factors involved in the Return-to-Play decision have substantial effects on medical outcomes!

Do you believe this?

**Example - Sickle Cell Disease**

- Football player with HGb SC disease - transfer student
- Pre-season meeting
  - athletic trainers
  - coaches
  - strength & conditioning staff
  - hematologist
  - team physician
- Mid-season event
  - upper respiratory infection
  - anaerobic “V” squats
  - complete infarction of spleen
Proton density view of low signal areas show the start of myositis ossificans.

Example - Quad Contusion

Example - Patellofemoral Pain

Female triple jumper with 3 month history of right knee pain

T2 weighted axial views show fissure of patellar cartilage with early delamination - March, 2006
October 2006

T2 weighted axial views show full thickness defect & fissuring

Sagittal views show the extent of the cartilage defect

What is the most important factor in making a RTP decision?

Boudier-Revéret et al., BJSM, 2010
Non-medical factors involved in the Return-to-Play decision have substantial effects on medical outcomes!

The Most Important Factor?

• ... is actually not a factor
• It’s an *approach*, a *process*
  • Takes evidence into account but doesn’t wait for it
  • Uses best practices, consensus building
  • Evidence and clinical experience are blended into a decision making process
**RTP: A Decision Based Model**

**Return-to-Play in Sport: A Decision-based Model**

*Clinical Journal of Sport Medicine* 20:379-385, 2010

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Willem H. Meeuwisse, MD, PhD,‡ and Gordon O. Matheson, MD, PhD*  

**The Sociology of Return-to-Play Decision Making: A Clinical Perspective**

*Clinical Journal of Sport Medicine* 20:333-335, 2010

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Willem H. Meeuwisse, MD, PhD,‡ and Gordon O. Matheson, MD, PhD*  

**Return-to-Play Decisions: Are They the Team Physician’s Responsibility?**


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**Decision Making: the Influence Diagram**

- **Representation:**
  - *States of nature* elements are circles
    - Circumstances under which decisions are made
  - *Decision* elements are squares
  - Arrows are used to illustrate when information from one element contributes information to another element
- Integrates and sequences factors, how they interact and when they should be considered in the clinical decision process
Decision-Based RTP Model

Step 1: Evaluation of Health Risk

Medical Factors
- Patient Demographics (e.g. age, sex)
- Symptoms (e.g. pain, giving way)
- Personal Medical History (e.g. recurrent injury)
- Signs (Physical Exam) (e.g. swelling, weakness)
- Lab Tests (e.g. x-ray, MRI)
- Functional Tests (e.g. diagonal hop test)
- Psychological State (e.g. depressed)
- Potential Seriousness (e.g. concussion, tennis elbow)

Risk Evaluation Process

Step 2: Evaluation of Participation Risk

Sport Risk Modifiers
- Type of Sport (e.g. collision, non-contact)
- Position Played (e.g. goalie, forward)
- Limb Dominance (e.g. MSK alignment)
- Competitive Level (e.g. recreational, professional)
- Ability to Protect (e.g. padding)

Decision Modifiers
- Timing & Season (e.g. playoffs)
- Pressure from Athlete (e.g. desire to compete)
- External Pressure (e.g. coach, athlete family)
- Masking the Injury (e.g. effective analgesia)
- Conflict of Interest (e.g. financial)
- Fear of Litigation (e.g. if restricted or permitted)

Step 3: Decision Modification

Return-to-Play Decision

From Evidence to Decision Making

- Extensive literature review
- Categorized variables noted in the literature
- Many factors mentioned, but poor evidence regarding importance
Who are the Respondents?

- Corsica ATPC attendees, 72% M & 28% F
- 42% are ≥ 50 years of age
- 98% are practicing physicians
- Average 13.5 years practicing Sports Medicine
- 65% have published less than 5 papers
- 36% are paid directly by the teams
- 56% affiliated with academic medical center either full-time or part-time
Who are the Respondents?

- 19 hrs/wk (avg.) spent treating sports medicine cases in medical clinics
- 9 hrs/wk (avg.) spent treating sports medicine cases on the sidelines of competitions
- Primary Specialty
  - 28% SM (non-operative), 18% Orthopaedic Surgeons
  - 17% PM&R, 14% FM, 5% Peds
  - 11% volunteer, 25% paid by institution

Ranking of the Medical Factors for the Evaluation of Health Status (Step 1: RTP Decision Model)

1. Medical Factors - Evaluation of Health Risk 0-8

- Psychological State  (e.g. depressed)
- Personal Medical history (e.g. recent injury)
- Potential seriousness of condition (e.g. recurrence, tennis elbow)
- Signs (e.g. pain, giving way)
2. Risk Modifiers - Evaluation of Participation Risk 0-5

3. Decision Modifiers 0-6
**Definition of “Cleared”**

<table>
<thead>
<tr>
<th>Do you use term “cleared” for RTP if.....?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>The athlete is asymptomatic with no elevated risk of re-injury and non risk of long-term sequelae</td>
<td>95%</td>
<td>5%</td>
</tr>
<tr>
<td>The athlete does have symptoms or signs but not of sufficient concern to place athlete at risk for either acute re-injury or long-term sequelae</td>
<td>85%</td>
<td>15%</td>
</tr>
<tr>
<td>The athlete has an increased risk of acute re-injury but no appreciable increased risk of long-term sequelae</td>
<td>24%</td>
<td>76%</td>
</tr>
<tr>
<td>The athlete has no appreciable increased risk of acute re-injury but does have an increased risk of long-term sequelae</td>
<td>26%</td>
<td>74%</td>
</tr>
<tr>
<td>The athlete has an increased risk of both acute re-injury and long-term sequelae</td>
<td>6%</td>
<td>94%</td>
</tr>
</tbody>
</table>

**Non-Medical Factors**

- These are very important to the overall RTP decision process
- Many health care practitioners feel these are not part of their responsibility
- Clearance decisions require the assurance of appropriate monitoring of identified problems
- There is a lot of work to do in this area!
Thank You!