The Relationship Between Hop Distance and Control in ACLR Players

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Introduction

Pro football squad - 1 ACL injury every second season
(Ekstrand J., 2014)

To assess return to play status:

- Isokinetic peak force (strength)
- Jump/hop distance (power)

Quality of movement control is often overlooked
(Paterno et al 2010)
Introduction

Excessive knee valgus is a risk factor in ACL injury (Hewett et al. 2005)

Landing technique (Laughlin et al. 2011)
‘Soft’ landing - $\downarrow$ ACL force by 11%

Lateral trunk flexion increases knee valgus moment (Kimura et al. 2014)

Is movement control distinct from movement performance?
Study Aim and Methods

To examine the relationship between single leg hop for distance and landing control in ACLR patients

30 field sport athletes 6 months post patellar tendon ACLR
25.4 ± 2.3yrs; 182.3 ± 4.6cm; 80.7 ± 6.0 kg
Methods

Qualitative assessment

Start with 5 points, 1 deducted for:

- Loss of control at the knee
- “ at the pelvis
- “ at the torso
- Loss of balance on landing
- Poor load absorption

(Classification: 0-2 = poor control; 3-5 = good control)

Independent t-test, $P < 0.05$
Results

- Good control: n = 16
- Poor control: n = 14
Results

No significant ($P > 0.05$) difference in jump distance

<table>
<thead>
<tr>
<th>Good control (n = 14)</th>
<th>Poor control (n = 16)</th>
<th>Difference</th>
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<tbody>
<tr>
<td>171.3 ± 25.0cm</td>
<td>168.8 ± 23.8cm</td>
<td>2.5cm ($P = 0.79$)</td>
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Discussion

Power generation and movement control are distinct qualities

Implication:

Important to assess dynamic movement control as a distinct return to play criteria

An overreliance on performance outcome may result in a return to play with deficient control and an increased injury risk

(Myer et al 2005, Hewett et al. 2013)
Excerpt from ACLR Report
47% of the ACLR patients tested exhibited poor landing control 6 months post surgery

[6.5 months before return to team training in pro football (Ekstrand J., 2014)]

Move toward function based rather than time based return to play criteria
Potential Limitations

2 classifications of control - ‘good’ or ‘poor’

Qualitative assessment of landing

Used 3D clips to assess control
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