Citation for published version


DOI

https://doi.org/10.1007/s00167-018-4867-9

Link to record in KAR

https://kar.kent.ac.uk/67001/

Document Version

Other

Copyright & reuse
Content in the Kent Academic Repository is made available for research purposes. Unless otherwise stated all content is protected by copyright and in the absence of an open licence (eg Creative Commons), permissions for further reuse of content should be sought from the publisher, author or other copyright holder.

Versions of research
The version in the Kent Academic Repository may differ from the final published version. Users are advised to check http://kar.kent.ac.uk for the status of the paper. Users should always cite the published version of record.

Enquiries
For any further enquiries regarding the licence status of this document, please contact: researchsupport@kent.ac.uk

If you believe this document infringes copyright then please contact the KAR admin team with the take-down information provided at http://kar.kent.ac.uk/contact.html
INTRODUCTION

Anti-gravity treadmills are being increasingly used after knee surgery to reduce ground reaction forces during walking and running.1,2 Antigravity treadmills have been shown to be safe and feasible to use in early rehabilitation following total knee replacement.2 However, there are no studies on the use of antigravity treadmills in a knee osteochondral population despite their increasing inclusion in rehabilitation guidelines.

AIM

The purpose of this study was to assess the impact of an anti-gravity treadmill return to running programme on self-efficacy and subjective knee function following knee osteochondral surgery.

METHOD

Two otherwise healthy female endurance runners who had undergone knee osteochondral surgery were recruited.

Patient A - 39 year old 9 months post-Bone Marrow Aspirate Concentrate (BMAC)4 for a left knee femoral cartilage grade 3-4 defect 3 cm²

Patient B - 54 year old 11 weeks post-surgery for a partial lateral meniscectomy and chondroplasty.

An anti-gravity treadmill (Figure 1) was used to manipulate loading during a graduated phased return to running (Table 1).

Self-efficacy was evaluated using the Self-Efficacy for Rehabilitation outcomes scale (SER)5 and the Knee Self-Efficacy Scale (K-SES).6 Subjective knee function was evaluated using the Knee injury and Osteoarthritis Outcome Score (KOOS).7

TABLE 1. Example anti-gravity treadmill rehabilitation programme

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Percentage Body Weight (%</th>
<th>Running Speed (mph)</th>
<th>Running Time (mins)</th>
<th>Rating of Perceived Exertion (RPE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90</td>
<td>7</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>80</td>
<td>7</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>70</td>
<td>8</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>60</td>
<td>8</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>50</td>
<td>8</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>40</td>
<td>8</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

Summary: Patient A

- SER increased 57%
- K-SES present increased 89%
- K-SES future increased 65%
- KOOS Sport/Rec subscale showed a clinically important improvement8

Summary: Patient B

- SER increased 18%
- K-SES present increased 33%
- K-SES future increased 33%
- KOOS Sport/Rec and QoL subscales showed clinically important improvements8

CONCLUSIONS

The programmes resulted in improved knee and rehabilitation self-efficacy and subjective knee function following osteochondral repair of the knee.

These case reports illustrate the importance of considering self-efficacy in individualising rehabilitation after knee osteochondral surgery and highlights the potential role for anti-gravity treadmills in enhancing self-efficacy and subjective knee function in preparation for a return to sport.

REFERENCES


CONTACT INFORMATION

Dr Karen Hambly, School of Sport and Exercise Sciences, Medway Building, University of Kent, Chatham Maritime, Kent ME4 4AG, UK

k.hambly@kent.ac.uk  @karenhambly