INTRODUCTION

- Exercise induced muscle damage (EIMD) is characterised by muscle soreness, acute inflammation and impaired muscle function.
- The symptoms of EIMD can persist for several days, which can hamper an athlete’s recovery.
- Emerging evidence suggests that supplementation with antioxidant rich foods can attenuate exercise-induced inflammation, which might hasten the recovery of muscle function.
- Red beetroot (Beta Vulgaris Rubra) is a rich source of nitrate and phenolic acids, and also contains a group of bioactive pigments known as betalains, which possess potent antioxidant and anti-inflammatory functions.
- Thus, beetroot supplementation might facilitate recovery following strenuous exercise.

AIMS

- To investigate whether differing dosages of beetroot juice would attenuate muscle damage and accelerate the recovery of muscle function following a single bout of strenuous eccentric exercise.

METHODS

- This study employed a double blind, placebo controlled, independent groups design.
- Thirty recreationally active males (see Table 1) were allocated to consume a higher dose of beetroot juice (H-BT; 250 ml), a lower dose beetroot juice (L-BT; 125 ml), or an isocaloric placebo immediately after, 24 and 48 h following 100-drop jumps.
- Muscle function (maximal voluntary contraction: MVC, countermovement jump: CMJ, reactive strength index: RSI), muscle soreness (pressure-pain threshold: PPT) and blood indices of inflammation (IL-6, IL-8 and TNF-α) and skeletal muscle damage (creatine kinase: CK) were measured pre, post, 24, 48 and 72 h following the drop jumps.
- A mixed model ANOVA was used to test for group differences; all data are presented as mean ± SD.

RESULTS

Main effects for time were observed for CK, MVC, CMJ, PPT and RSI indicating that muscle damage was present (P > 0.05). CMJ recovered quicker in H-BT vs. PLA at 48 and 72 h post exercise (Figure 1; P < 0.05). PPT was greater in both H-BT and L-BT vs. PLA at 24, 48 and 72 h post exercise. There were no group differences between MVC, RSI, CK, IL-6, IL-8 and TNF-α.

<table>
<thead>
<tr>
<th>Group</th>
<th>Baseline MVC (N)</th>
<th>Age (Years)</th>
<th>Height (m)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-BT</td>
<td>602 ± 144</td>
<td>22 ± 6</td>
<td>180.3 ± 5.7</td>
<td>74.89 ± 6.12</td>
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<tr>
<td>L-BT</td>
<td>596 ± 112</td>
<td>21 ± 3</td>
<td>175.4 ± 8.7</td>
<td>76.09 ± 8.88</td>
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<tr>
<td>PLA</td>
<td>602 ± 133</td>
<td>21 ± 3</td>
<td>178.5 ± 8.4</td>
<td>77.11 ± 11.70</td>
</tr>
</tbody>
</table>

No differences were detected between groups for any variable (P > 0.05)