THE EFFECT OF RESISTANCE TRAINING ON POTENTIATION IN CRICKET PACE BOWLING

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INTRODUCTION
Throwing with a heavier ball during a warm-up has been shown to acutely potentiate throwing velocity with a regular mass ball. However, the effects of resistance training on the capacity to elicit potentiation with a weighted implement has not been studied, and was therefore the purpose of this study.

METHODS
Twelve male community-standard pace bowlers completed an eight-week training program, twice per week, comprising either resistance training (RT), or traditional cricket training (TCT). Both groups completed two warm-up conditions (heavy-ball bowling and regular-ball bowling) followed by a pace bowling test, on separate days (4-7 days apart), before the commencement of training, and after completing the training program. The test involved 24 deliveries: 20 at “match-intensity”, two at “maximal-effort”, and two that were a “change-down”. The purpose of the two warm-up conditions was to assess potentiation of delivery speed, as measured by a sports radar gun. A “potentiated” delivery was one that met or exceeded the smallest worthwhile change of mean ball speed in the match-intensity deliveries (2.2 km/h), or peak ball speed in the maximal-effort deliveries (3.2 km/h), when comparing the difference in delivery speed from the two warm-up conditions.

RESULTS
The RT group displayed a large improvement in the amount of potentiated deliveries, along with large improvements in mean and peak delivery speeds, while the TCT group exhibited moderate to small decreases in these measures (Table 1).

Table 1 - Number of potentiated deliveries, along with mean and peak delivery speeds in both testing periods for each training group. Data presented as mean ± SD, along with Cohen’s d effect sizes.

<table>
<thead>
<tr>
<th></th>
<th>Resistance Training (n = 6)</th>
<th>Traditional Cricket Training (n = 6)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
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<tr>
<td>Potentiated deliveries (n)</td>
<td>3.0 ± 3.0</td>
<td>9.5 ± 7.1</td>
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<tr>
<td>Mean delivery speed (km/h)</td>
<td>-0.9 ± 1.7</td>
<td>2.0 ± 2.9</td>
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<tr>
<td>Peak delivery speed (km/h)</td>
<td>-1.7 ± 2.6</td>
<td>1.5 ± 2.0</td>
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DISCUSSION
The heavy-ball warm-up was effective in increasing the magnitude and frequency of potentiation in mean and peak delivery speed for the RT group only. This study reiterates the importance of training strength for eliciting greater potentiation. The improvement of strength through possible hypertrophy of fast twitch fibres and / or improved recruitment, firing rate, and synchronisation of fast twitch motor units may have influenced the potentiation of mean and peak delivery speed for the RT group.

PRACTICAL APPLICATIONS
A heavy-ball bowling warm-up may be effective in eliciting greater potentiation for longer periods, providing the pace bowler has developed general and specific strength first. This acute enhancement in mean and peak delivery speed provides a short-term advantage for the pace bowler, providing their control over delivery trajectory is not compromised.