Effects of an 8-week constraints-based coaching intervention on emergent behaviour in Mini Tennis

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[Image credit: https://www3.lta.org.uk/lta-mini-tennis]

Joe Stone, Anna Fitzpatrick & Keith Davids
What is Mini Tennis?

Lawn Tennis Association
Mini Tennis Red

8 years and under

25%
Mini Tennis Orange

8-9 years

50%
Mini Tennis Green

9-10 years

75%
Full Ball (Yellow)

11+ years

100%
Study 1: Mini Tennis Match Play

48 Children, Match Play, Notational Analysis

Results: Shot Type

Percentage of Total Shots (%)

Mini Tennis Stage

- MTR
- MTO
- MTG
- FB

Forehand vs. Backhand
Running Around The Ball

Video
Aim: Study 2

• Mini Tennis scaling could lead to a neglect on backhand development in the early stages (Fitzpatrick et al. 2017)

Aim

• Focus on Mini-Tennis Red stage
• Manipulate constraints during 8-weeks of mini tennis with a focus on backhand development
• Examine the movement behaviours which emerged
Method: Study 2

- Two groups

- **Control** ($n = 8$, age $= 7.2 \pm 0.6$ years)

- **Experimental** ($n = 8$, age $= 7.4 \pm 0.4$ years)
Method: Pre-Test and Post-Test

Match Play

- Completed three standard MT Red matches of ‘first to 10 points’ (LTA, 2017), against three randomly assigned participants

Tennis Specific Skill Test (Farrow & Reid 2010)

- Maintain three groundstroke rallies for as long as possible with the coach
- Technical assessment of stroke production using four aspects (preparation, backswing, forwardswing & impact, follow-through)
Pre-Test Results

- Control: Forehand
- Control: Backhand
- Experimental: Forehand
- Experimental: Backhand

Forehand the dominate shot type
Practice Sessions

- **1 hour** practice per week for **8 weeks**
- **Same** practice sessions for **control** and **experimental** group

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction and group warm-up</td>
<td>6</td>
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<tr>
<td>Skill practice 1</td>
<td>12</td>
</tr>
<tr>
<td>Skill practice 2</td>
<td>12</td>
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<tr>
<td>Competition/points-based activity</td>
<td>15</td>
</tr>
<tr>
<td>Fun, skill-based game</td>
<td>10</td>
</tr>
<tr>
<td>Cool down and session review</td>
<td>5</td>
</tr>
</tbody>
</table>
Experimental Manipulations

- **Bonus points** were awarded by the coach if a participant created a perturbation using their backhand.
• The control group played 117.0 (± 7.7) strokes per session, the experimental group played 120.3 (± 8.3) strokes per session ($p > 0.05$)

• Therefore, differences in outcome variables were not attributable to differences in frequency of actions practiced
Post-Test Results

- Control: Forehand
- Control: Backhand
- Experimental: Forehand
- Experimental: Backhand

Group x Time Interaction ($p < 0.01$)
Pre-Test

Video
Post-Test: Experimental Group

Video
TSST: Rally with Coach

Group x Time interaction
($p < 0.05$)

Pre-test

Post-test

Rally Length (shots)

Control

Experimental
TSST: Technical Skill

Group x Time interaction
($p < 0.05$)
The **disparity** between the percentage of **forehands** and **backhands** performed during match-play was reduced in the **experimental** group.

**Careful consideration** needs to be applied when manipulating/scaling **constraints** in practice.
Questions