Acute effects of Paroxetine administration on parameters of neuromuscular fatigue
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The serotonergic system is known to modulate central fatigue manifestations.

Paroxetine (SSRI) chronically
• blocks the reuptake of 5-HT into the presynaptic nerve ending
• increase 5-HT availability in the synaptic cleft

SSRI + endurance type exercises:
• time to exhaustion
• task failure
• cognitive skills

In a neuromuscular context central and peripheral fatigue effects are differentiated by comparing stimulated and voluntary muscle activations

The purpose of the presented study was to identify the role of the serotonergic system within a neuromuscular fatigue protocol which involved a pre – post maximum contraction approach
Methods

**Paroxetine (n=18)**

- **Warm up**: 1min 1min 10s 10s 1min 1min
  - 20s 20s 20s 3:35min 20s 20s 20s
  - 100° 115° 130° isometric MVC + twitch
  - 3 resting twitches
  - 100° 115° 130° isometric MVC + twitch
  - 3 resting twitches

- **4hrs prior**
  - 100° 115° 130° isometric MVC + twitch
  - 3 resting twitches

**Placebo (n=19)**

- **Warm up**: 1min 1min 10s 10s 1min 1min
  - 20s 20s 20s 3:35min 20s 20s 20s
  - 100° 115° 130° isometric MVC + twitch
  - 3 resting twitches

**Pre**

<table>
<thead>
<tr>
<th>age [yrs]</th>
<th>bodyheight [m]</th>
<th>bodyweight [kg]</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>paroxetine group (n=18)</td>
<td>23,2 ± 3,03</td>
<td>1,82 ± 0,05</td>
<td>77,68 ± 7,01</td>
</tr>
<tr>
<td>placebo group (n=19)</td>
<td>24,0 ± 3,23</td>
<td>1,83 ± 0,07</td>
<td>79,26 ± 6,45</td>
</tr>
</tbody>
</table>
Results

Table 1: Central contribution to MVC

<table>
<thead>
<tr>
<th></th>
<th>Placebo Group</th>
<th>Paroxetine Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre Medication</td>
<td>Post Medication</td>
</tr>
<tr>
<td></td>
<td>unfatigued</td>
<td>fatigued</td>
</tr>
<tr>
<td>Level of Activation</td>
<td>82.90%</td>
<td>↓58.7%</td>
</tr>
<tr>
<td>Central Activation Ratio</td>
<td>90.10%</td>
<td>↓77.9%</td>
</tr>
</tbody>
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1. The protocol caused distinct central and peripheral neuromuscular fatigue effects

2. Paroxetine administration had no significant effect on any of the fatigue parameters

Figure 1: Percentage of pre – post fatigue parameter alterations
Conclusions

Paroxetine is known to acutely inhibit serotonin release, thus deteriorating presynaptic neurotransmission. This might explain the reduced exercise capacity after paroxetine administration. However these findings of Weicker et al. 2000 were not evident in our results

They rather support the findings of Meussen et al. 2001 of no interference of SSRI with performance.

The analysis of data on chronic SSRI administration will probably yield neuromuscular effects which might then be attributed to augmented serotonin availability.

References