



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 pre-synaptic nerve ending
- increase 5-HT availability in the synaptic cleft

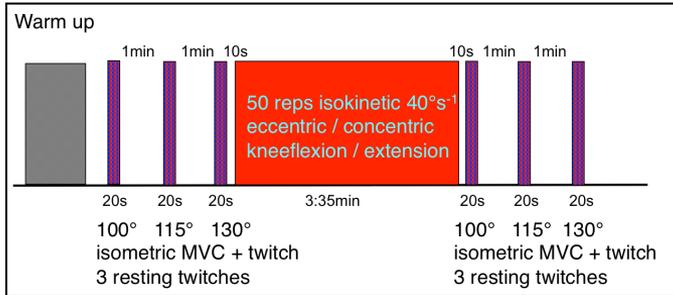
SSRI + endurance type exercises:

- 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

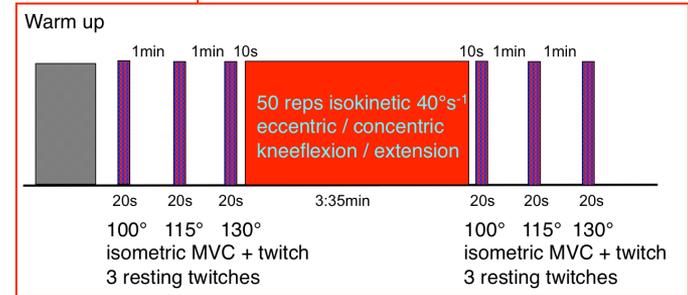
Methods



Pre

2 weeks

Paroxetine (n=18)



4hrs prior

Placebo (n=19)

Post



age [yrs]	bodyheight [m]	bodyweight [kg]	BMI
paroxetine group (n=18)			
23,2 ± 3,03	1,82 ± 0,05	77,68 ± 7,01	23,57 ± 1,83
placebo group (n=19)			
24,0 ± 3,23	1,83 ± 0,07	79,26 ± 6,45	23,55 ± 1,70

Results

table 1: central contribution to MVC

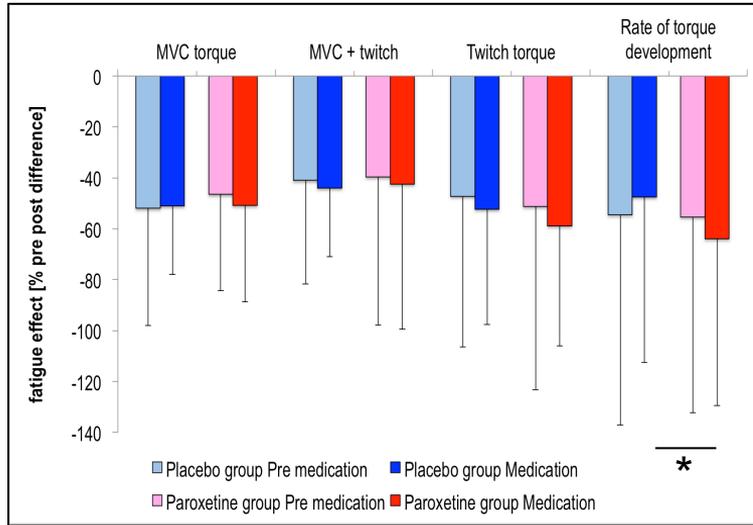


figure 1: percentage of pre – post fatigue parameter alterations

	Placebo Group				Paroxetine Group			
	Pre Medication		Post Medication		Pre Medication		Post Medication	
	unfatigued	fatigued	unfatigued	fatigued	unfatigued	fatigued	unfatigued	fatigued
Level of Activation	82,90%	↓58,7%	77,70%	↓64,2%	84,50%	↓61,5%	77,80%	↓63,3%
Central Activation Ratio	90,10%	↓77,9%	85,80%	↓77,1%	90,80%	↓74,5%	86,20%	↓78,3%

1. the protocol caused distinct central and peripheral neuromuscular fatigue effects
2. paroxetine administration had no significant effect on any of the fatigue parameters



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

Weicker, H., & Strüder, H. (2001). *Amino Acids*.

Meeusen, R., et al. (2000) *Int J Sports Med*.