



Ammonia Inhalants do not Enhance Power Output

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BACKGROUND

Ammonia inhalants (i.e. smelling salts) are a potential ergogenic aid commonly used in powerlifting and bodybuilding with the proposed benefit of increasing muscular strength and power during an exercise bout, however the current efficacy on muscular strength and power is debatable.

PURPOSE

The purpose of this study was to examine the effects of an ammonia inhalant on muscular strength and power during isokinetic leg extensions across the velocity spectrum.

METHODS

Nineteen college aged males and females participated in this study (mean ± standard deviation, height=175.8±11.0 cm, weight=76.4±17.5 kg). Across three trials separated by 48 hours, participants inhaled either an ammonia inhalant, placebo (menthol), or no inhalant directly before performing isokinetic leg extension and flexion muscle actions. For the ammonia inhalant and placebo trials, the substance was placed in an opaque container with a cotton ball over the substance. For the control trial, a cotton ball was placed in the container with no substance beneath it. For all trials, the container was held open, 10cm away from the participant's nose, and they were instructed to inhale through the nose for 3 seconds. Immediately after the inhalation, subjects completed 3 maximal isokinetic leg extension and flexion muscle actions at 60, 120, 180, 240, and 300°·sec⁻¹. Subjects performed the inhalation before each velocity. Peak torque (PT) and mean power (MP) were taken from each velocity. Repeated measures ANOVAs compared the effect of condition and velocity on PT and MP.

CONCLUSIONS

Although it has been proposed that ammonia inhalants may promote acute improvements in muscular strength and power, no improvements were seen in PT or MP across the velocity spectrum in the present study. Despite this, due to the widespread use of ammonia inhalants, future studies should consider assessing its potential psychological effects.

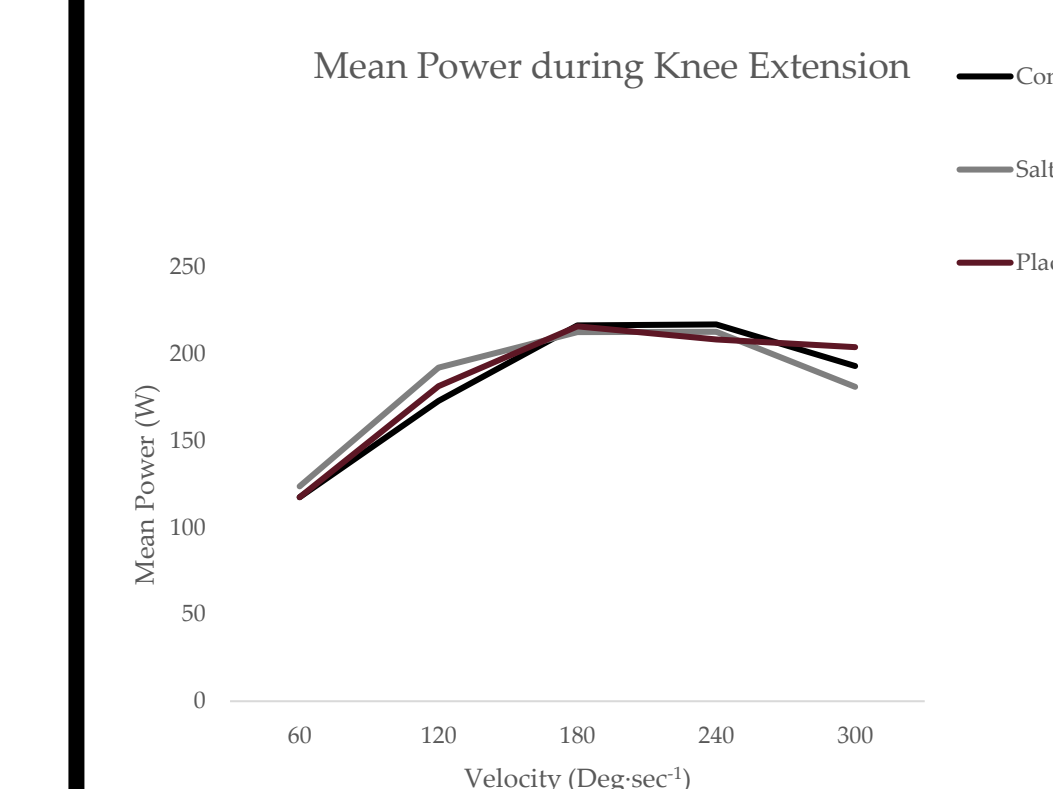
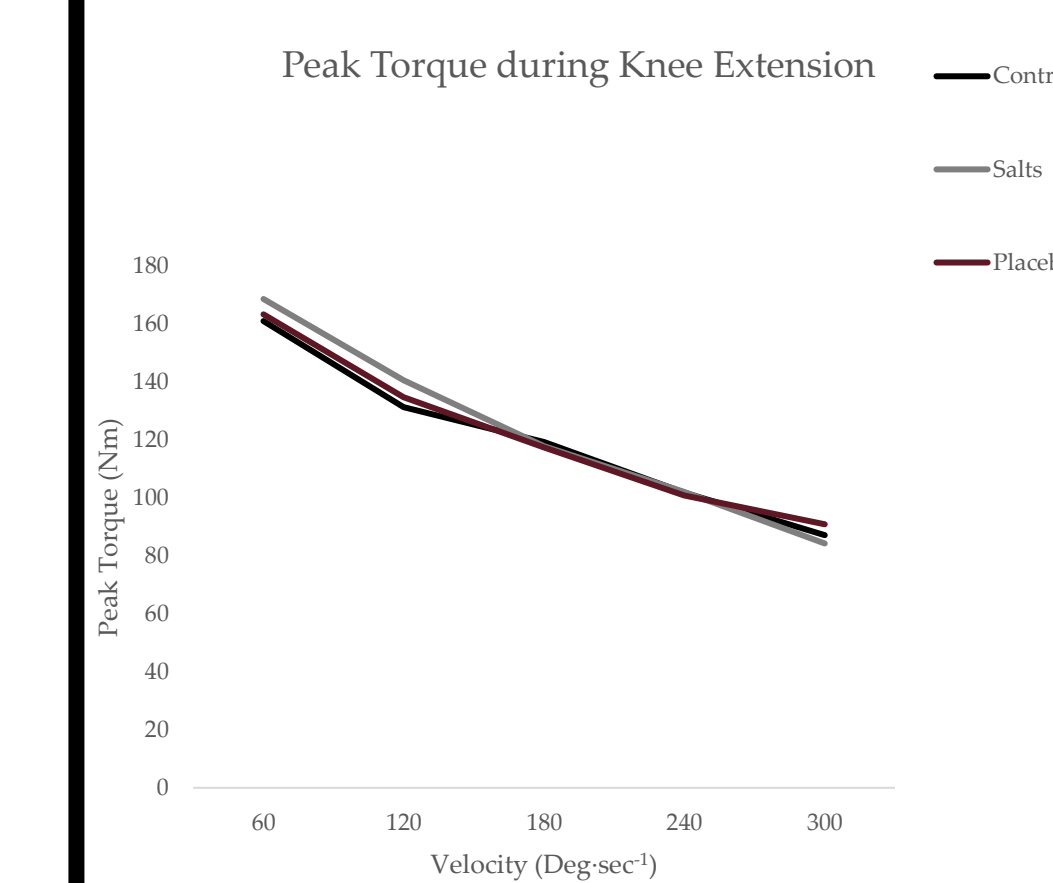
- No differences across conditions for PT or MP.
- Overall, ammonia inhalants do not appear to enhance muscle strength and/or power.
- There may be potential psychological benefits, but future research is needed.

PRACTICAL APPLICATIONS

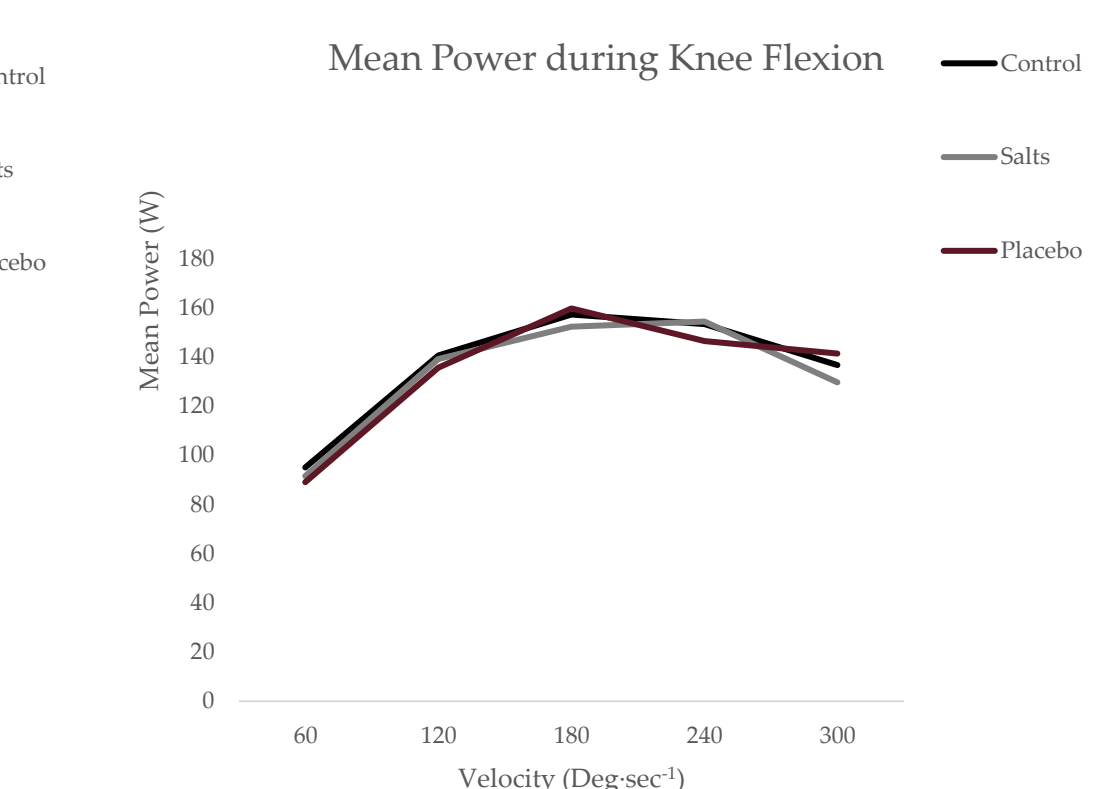
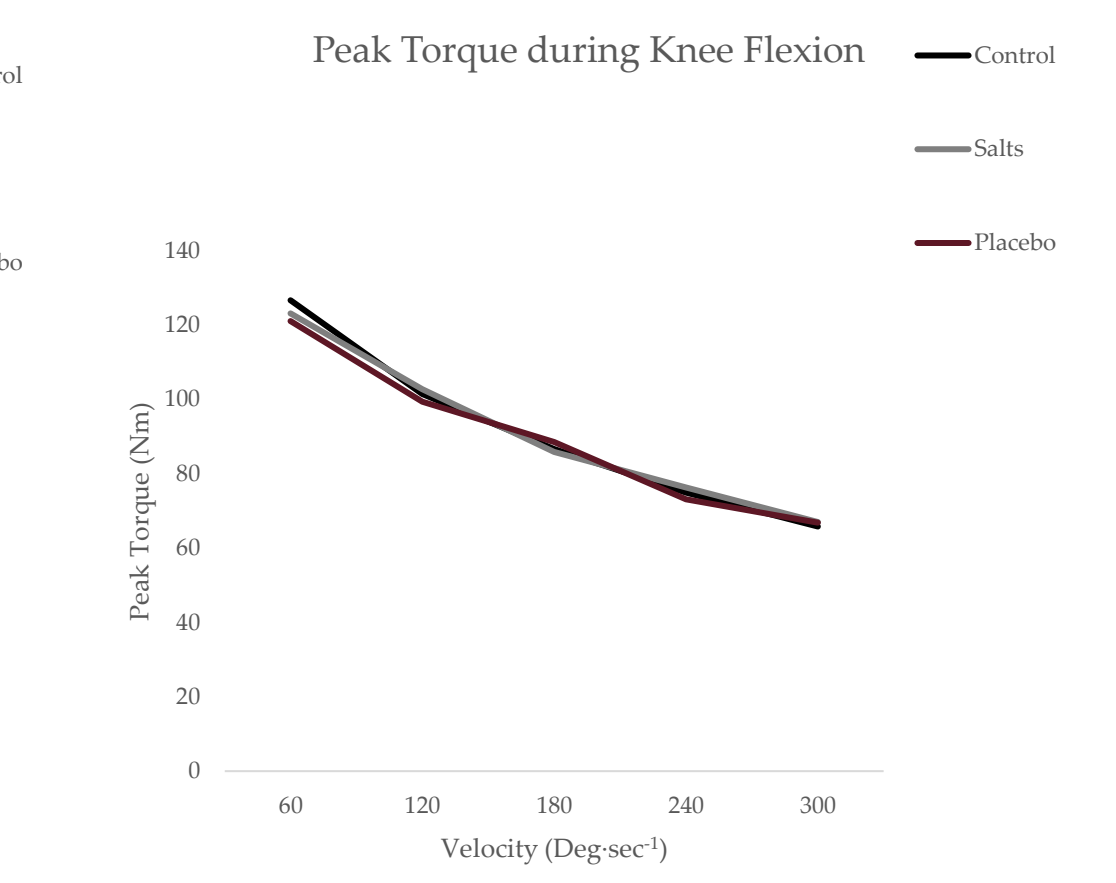
The lack of augmentations in muscular strength and power in the present study suggests that ammonia inhalants have a negligible influence on performance. Although it is possible that ammonia inhalants may provide a psychological benefit, future research is needed to understand this. Strength and conditioning coaches and practitioners should use caution when using ammonia inhalants due to the seeming lack of influence on muscular strength and power.

RESULTS

Leg Extension:



Leg Flexion:



There were no differences across conditions for any variables ($p \geq 0.830$). For leg extension, PT decreased from 60-300°·sec⁻¹ ($p \leq 0.001$), while MP increased from 60-180°·sec⁻¹ ($p < 0.001$), plateaued from 180-240°·sec⁻¹ ($p = 1.000$), then decreased from 240-300°·sec⁻¹ ($p \leq 0.014$). For leg flexion, PT decreased from 60-300°·sec⁻¹ ($p \leq 0.001$), while MP increased from 60-180°·sec⁻¹ ($p \leq 0.002$), plateaued from 180-240°·sec⁻¹ ($p = 1.000$), then decreased from 240-300°·sec⁻¹ ($p = 0.005$).