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Title: Does tolerance of neuro-muscular electrical stimulation (NMES) relate to gender in patients with an acute exacerbation (AE) of chronic obstructive pulmonary disease (COPD)?

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Body: INTRODUCTION: The maximum intensity tolerated using NMES is relatively unknown in patients with an AECOPD. Previous data suggest that healthy males are able to tolerate higher intensities than females. The aim of this study was to compare the tolerance of NMES in patients admitted with an AECOPD between males and females. METHODS: 188 patients hospitalised with an AECOPD were recruited [85 male, MRC 4 (IQR 4-5), mean (SD) age 70.7 (± 9.3) years, FEV₁ 1.38L ± 0.71 , BMI 26.7 ± 7.0]. NMES was applied daily to both quadriceps muscles (30 mins, frequency 50Hz, pulse duration 300usec) for the duration of hospital stay. RESULTS: 175 patients completed the NMES intervention. A statistically significant difference between genders was seen in the intensity tolerated at both baseline and at discharge ($p \leq 0.01$) as well as change in intensity. This change remained significantly different when correcting for baseline intensity ($p=0.001$) There was no significant difference in the number of sessions completed during hospitalisation between genders.

Table 1

	MALE	FEMALE	DIFFERENCE BETWEEN GROUPS MEAN (95% CI)
No. of Inpatient Sessions	3 (IQR 1-5)	2 (IQR 1-4)	$z = -0.766$
Intensity at Baseline (mA)	18.97 \pm 6.9	15.44 \pm 7.6	3.53 (1.3 to 5.7) *
Intensity at Discharge (mA)	24.3 \pm 9.3	18.4 \pm 7.9	5.93 (3.4 to 8.5) *
Change in Intensity (mA)	5.3 \pm 7.2	2.9 \pm 4.5	2.49 (0.6 to 4.3) *

* $p \leq 0.01$ Key: mA, milliamps; IQR, interquartile range

CONCLUSION: The intensity of NMES is tolerated at significantly higher levels in males. This may have clinical implications for NMES prescription and relate to outcome measures (eg. strength).

