ESSR Journal Club

Covered Article: “Synergy between Acute Intermittent Hypoxia and Task-Specific Training”
Authors: Joseph F. Welch, Tommy W. Sutor, Alicia K. Vose, Raphael R. Perim, Emily J. Fox, and Gordon S. Mitchell
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1) Discuss the implications of cross-talk inhibition following acute intermittent hypoxia (AIH).

2) What is the role of Ca²⁺ in the task-specific circuits of motor plasticity?

3) Discuss the evidence that there is synergy between AIH and task-specific training (TST) in their combined influence on motor plasticity. What additional experiments are needed to address this issue?

4) Where is it hypothesized that AIH and TST converge in the neural network model of motor plasticity?

5) What neurotrophin is hypothesized to be common to intracellular signaling pathways of motor plasticity for both AIH and TST?

6) Discuss potential methods to examine TST of the respiratory system and how these could be implemented to examine the potential synergy between combined AIH and TST.

7) Graph the hypothesized association between brain-derived neurotrophic factor (BDNF) and plasticity. Mark where the following treatments likely reside: a) AIH alone, b) TST alone, c) combined AIH and TST?

8) Explain how synergy may exist between combined AIH and TST due to interactions between glutamatergic and BDNF systems.

9) Discuss the potential of augmenting AIH-TST synergy through pharmacological manipulations.