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Reply to: Cognitive reserve - a predictor for the onset of postoperative delirium in older people?

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Dear Editor, I appreciate Zhu and colleagues' comments on our report that higher levels of cognitive reserve, measured using participation in cognitive leisure activities, reduced risk and severity of post-operative delirium in older surgical patients.^{1, 2} They suggest that muscle function could not only be a target for delirium preventive strategies but also that muscle function could serve as a cognitive reserve measure. The concept of cognitive reserve postulates that some individual characteristics help maintains cognitive function in the face of accumulating brain pathology.³ Classical definitions of cognitive reserve incorporate both passive and active mechanisms.³ Early work proposed that higher cognitive reserve provides an anatomic buffer (also termed brain reserve) by which greater neuronal or synaptic loss secondary to brain injury or pathology can be sustained before manifesting clinical symptoms.^{3, 4} In active models, cognitive reserve is thought to cope with brain damage by actively utilizing various mechanisms such as recruiting pre-existing cognitive networks, improving efficiency of brain processing, or by enlisting compensatory brain networks.³ Activities that enhance muscle function may have modest effects on improving or maintaining cognitive function in aging;⁵ however, this association does not equate to being a good measure of cognitive reserve. Under both passive and active cognitive reserve models,³ muscle structure and biology are distal to the underlying cognitive processes and brain substrates that may more directly contribute to cognitive reserve. Hence, while I agree that leisure activities that increase cognitive reserve should be explored as a delirium preventive strategy, I do not agree that muscle function is a good proxy for characterizing cognitive reserve.²

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Board Member		x
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