A Preliminary Investigation of Spatial Ability and Spatial Anxiety in Prosthetics and Orthotics Students

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Abstract

Spatial ability is crucial in STEM and medical fields, including prosthetics and orthotics (P&O), which focuses on designing, fabricating and fitting of prostheses and orthoses. However, spatial ability in P&O practitioners remains unexplored. This study examined spatial ability in P&O master's students using mental rotation and cross-sectioning tasks, and assessed spatial anxiety, including imagery anxiety, mental manipulation anxiety, and navigation anxiety. At orientation, female students reported higher overall spatial anxiety, but there were no gender differences in spatial ability. Mental manipulation anxiety was negatively correlated with cross-sectioning ability in females ($r = -0.44$, $p = 0.009$) but not in males ($r = -0.08$, $p = 0.080$). After six months, female spatial anxiety decreased, and overall cross-sectioning ability improved. Gender differences in spatial anxiety decreased, though navigation anxiety remained higher in females ($t(46) = 2.60$, $p = 0.01$). P&O program participation appears to improve spatial ability and reduce spatial anxiety.

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