

<b>Paper Category:</b>	Physical activity and exercise
<b>Paper Title:</b> (Arial Font; 14 Pt Size)	<b>The Influence of Resistance Training on Neurological Muscle Quality in Older Adults: A Systematic Review and Meta-Analysis</b>
<b>Abstract Body:</b> (Arial Font; 12Pt Size)	<ul style="list-style-type: none"> <li>• Background</li> <li>• Objectives</li> <li>• Method</li> <li>• Results</li> <li>• Discussions and Conclusions</li> </ul>
<p>(Maximum word limit - 300 words)</p> <p><b>Background:</b> Previous systematic reviews have reported improvements in neurological muscle quality (NMQ) in response to resistance exercise (RET). However, it is unclear whether different methods of assessing NMQ (dividing by muscle volume or cross-sectional area) influence its effectiveness.</p> <p><b>Objectives:</b> To evaluate the impact of RET interventions on diverse modalities for assessing NMQ in the older population.</p> <p><b>Methods:</b> A comprehensive search was conducted in PubMed, Cochrane Library, Web of Science, and Ichushi. The inclusion criteria consisted of randomized controlled trials involving individuals aged <math>\geq 60</math> years, with RET interventions lasting <math>\geq 8</math> weeks and focusing on NMQ. The least invasive program was selected as the comparator (PROSPERO registration number CRD42022357116). Following the systematic literature search, seven independent investigators performed duplicate reviews. Random-effects meta-analyses were employed to determine the standard mean differences (SMD) in NMQ between the intervention and control groups. Additionally, heterogeneity and publication bias were assessed.</p> <p><b>Results:</b> Initially, 4,832 articles were retrieved, of which 65 articles addressed NMQ. Among these, 20 studies incorporated RET, encompassing a total of 707 participants. The assessment methodologies for NMQ included Dual-energy X-ray absorptiometry (DEXA) (n=13), Computed Tomography (CT) (n=2), Magnetic Resonance Imaging (MRI) (n=2), Bioelectrical impedance analysis (BIA) (n=1), and ultrasound (US) (n=2). The effect of RET interventions on NMQ yielded an SMD of 0.67 (95% confidence interval [0.26 to 1.09]; <math>I^2</math>, 79.2%). Subgroup analysis based on NMQ assessment methods revealed the following: DEXA or BIA (0.78 [0.22; 1.30]; <math>I^2</math>, 82.5%), CT or MRI or US (0.39 [-0.10; 0.88]; <math>I^2</math>, 50.2%). The summary of RET interventions seemed to be influenced by potential publication bias (<math>p &lt; 0.001</math>).</p> <p><b>Discussion and Conclusion:</b> While RET interventions demonstrate efficacy in enhancing NMQ, the evaluation of resistance training effects varies depending on the muscle assessment method</p>	

used. Conducting trials with substantial sample sizes and employing diverse assessment modalities to attain comprehensive insights is essential.

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