

Respiratory Muscle Training and Shoulder Conditioning for Optimising Ventilatory and Functional Performance in Young Cadets: A Narrative Review

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ABSTRACT

Optimal ventilatory function and functional performance are crucial for National Cadet Corps (NCC) cadets to meet physical training demands. Respiratory Muscle Training (RMT) using devices like the AeroFit trainer and shoulder flexibility and strengthening exercises have individually shown benefits in enhancing pulmonary function and musculoskeletal performance. However, limited research exists on their combined effects in cadet populations. This narrative review synthesised existing literature on RMT and shoulder conditioning interventions in young adults, athletes, and military personnel. Databases including PubMed, PMC, and Google Scholar were searched using keywords: "AeroFit respiratory trainer," "respiratory muscle training," "shoulder flexibility," "strengthening exercises," "ventilatory function," and "functional performance." Studies assessing pulmonary outcomes (FEV₁, FVC, inspiratory muscle strength) and functional performance measures (6-minute walk test, endurance tests) were included. Evidence gaps and potential

synergistic mechanisms were identified. RMT significantly improves inspiratory muscle strength and exercise capacity. Shoulder flexibility and strengthening exercises enhance thoracic mobility, posture, and accessory respiratory muscle recruitment. Limited studies explored combined interventions, but evidence suggests a potential synergistic effect on ventilatory efficiency and functional endurance. Cadet-specific research is sparse, highlighting the need for randomised controlled trials in this population. Integrating AeroFit respiratory training with shoulder flexibility and strengthening exercises may offer a promising approach to improve both ventilatory function and functional performance in NCC cadets. This review identifies a clear research gap and provides a rationale for conducting RCTs to determine efficacy and implementation strategies in cadet training programs.

Keywords: AeroFit respiratory trainer, Functional performance, Shoulder exercises, Ventilatory function

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