

Research Oriented on Exercise in Older Populations

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Purpose: Changes in the respiratory system are relevant as deterioration of pulmonary function is associated with increased mortality. Mat-Pilates is a cost-effective practice, its emphasis on breathing techniques and core engagement holds potential for managing respiratory pathologies. This study examined the effects of 12-week Mat-Pilates exercise programme on forced vital capacity (FVC) in women over 60 years.

Methods: Fourteen women aged 68.21 ± 3.87 years old, who have not practiced exercises for at least four months, took part in the study. The 12-week Mat-Pilates intervention consisted of two weekly 60-minute sessions of light-to-moderate intensity. Exercises, including shoulder bridge, The Hundred, double-leg, one-leg circle, plank, swimming, roll-up, single-leg stretch, side-kicks, The Cat, The Mermaid, and spine stretch were performed, with particular focus on specific breathing: vigorous exhalation through the mouth followed by a full nasal inhalation.

Forced vital capacity (forced expiration time (FET), forced vital capacity (FVC), forced expiratory volume in the first second (FEV1), FEV1/FVC, peak expiratory flow (PEF)) was assessed before and after the intervention, with *Spirodoc*, version 6.1, from Medical International Research. Participants had their noses blocked with a clip and exhaled through their mouths into the spirometer tube. Maximum inspiration was performed, followed by maximum expiration and then another maximum inspiration. Paired samples *t*-tests were conducted to assess the effect of the intervention on the ventilatory parameters.

Results: A significant decline [mean difference = -10.92 ± 17.66 ($t(12) = -2.23$, $p = 0.046$)], with a moderate effect size (Hedges' $g = -0.58$; 95% confidence interval (CI) = 0.01–1.13) in FET and an increase in PEF [mean difference = 6.38 ± 9.08 ($t(12) = 2.54$, $p = 0.026$)] with moderate effect size (Hedges' $g = 0.70$; 95% CI = 1.30–0.08) were found. No other significant results were found for lung function parameters.

Discussion: Results suggest improved strength and efficiency of the respiratory muscles resulting in less effort to perform respiratory tasks and greater strength and speed of exhaled air probably due to the core-centric and controlled breathing patterns integral to Pilates exercises.

Conclusion: A 12-week low impact Mat-Pilates intervention seems to effectively strengthen respiratory muscles and could be of relevance for health in the mitigation of age-related deterioration of pulmonary function, contributing to improved respiratory efficiency, and should be encouraged among elderly women.

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