Benefits of Chinese Qigong Mind-Body Exercise Program on Salivary Biomarkers and Physical Functions in Older Adults

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ABSTRACT

Chinese Qigong mind-body exercise such as Five Animal Frolics have been shown to improve quality of life, physical functions, cognitive functions, and mental health in older adults with various chronic health conditions. However, there is a lack of comprehensive understanding of the biological mechanisms underlying the health effects after exposing to conventional and mind-body exercise. PURPOSE: The purpose of the study is to profile the changes associated with salivary biomarkers and physical functions after exposure to a 12-week five animal frolics, Chinese Qigong mind-body exercise program in community-dwelling older adults. METHODS: Thirteen community-dwelling adults who attended the Senior Nutrition Program at Salvation Army Peacock Center were recruited (average age 77y, BMI: 30.13±3.32kg/m²). The participants completed a 12-week Five Animal Frolics exercise program. Saliva samples and Short Physical Performance Battery (timed repeated chair sit-to-stand test) for physical function were collected from the participants at baseline, 6-week mid-test, and 12-week post-test. Salivary cortisol, IgA, and uric acid were measured using ELISA. Salivary data were corrected by salivary flow rates (FR) of participants. Data were analyzed in SPSS using paired t-test to compare mid- and post-tests to the baseline, and reported as Mean±SD. RESULTS: Sit-to-stand test time showed significant reduction after the 12-week’s exercise program (Pre:12.68±2.45s vs. Mid:11.92±3.59s, p>0.05, Cohen’s d=−0.28; vs. Post:10.73±2.21s, p<0.01, Cohen’s d=−0.75). All salivary biomarkers did not change after 6-week and 12-week exercise program (p>0.05). Salivary cortisol levels showed mild increase after 12-week exercise intervention before FR correction (Pre:0.25±0.17μg/dL vs. Mid:0.25±0.15μg/dL, Cohen’s d=−0.03; vs. Post:0.30±0.13μg/dL, Cohen’s d=−0.20) and after FR correction (Pre:0.75±0.56 ng/min vs. Mid:0.82±0.51 ng/min, Cohen’s d=−0.14; vs. Post:0.99±0.60 ng/min, Cohen’s d=−0.27). Salivary IgA decreased after 12-week exercise program before FR correction (Pre:513.49±244.23μg/mL vs. Mid:406.46±196.82μg/mL, Cohen’s d=−0.48; vs. Post:389.99±189.11μg/mL, Cohen’s d=−0.45) but increased after FR correction (Pre:123.38±74.48μg/min vs. Mid:112.32±63.64μg/min, Cohen’s d=−0.16; vs. Post:178.42±147.13μg/min, Cohen’s d=0.56). Salivary uric acid decreased at mid-test before FR correction (Pre:5.08±2.26mg/dL vs. Mid:4.13±2.13mg/dL, Cohen’s d=−0.43; vs. Post:5.40±2.13mg/dL, Cohen’s d=0.06) and reduced at post-test after FR correction (Pre:15.23±12.94μg/min vs. Mid:15.25±14.45μg/min, Cohen’s d=0.001; vs. Post:12.34±6.01μg/min, Cohen’s d=−0.29). CONCLUSION: Chinese Qigong is an effective mind-body exercise to improve physical function by decreasing sit-to-stand time. It may be a promising exercise training format to increase salivary IgA and decrease uric acid, but large-scale clinical trial is required for further investigation.