

Free Radicals and Antioxidant Enzymes in Aged Adults after Regular Elastic Band Exercising

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Purpose

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Long-term regular exercise has positive health promotion outcomes. On the contrary, brief intense exercise induces the generation of reactive oxygen species and free radicals; thereby, increasing oxidative stress and causing protein and lipid peroxidation. To test the effects of the regular Senior Elastic Band (SEB) exercises on the generation of free radicals and antioxidant enzyme activities in aged adults.

Method

A prospective experimental design was used. Twenty-five aged adults were recruited from a community care center, southern Taiwan, and were randomly assigned to either an experimental or control group. Twenty-two participants completed the study: experimental group (n = 10) and control group (n = 12). The experimental group performed six-month SEB exercises while the control group kept a non-exercise daily routine. Both groups received blood tests, thiobarbituric acid-reacting substances (TBARS) and the glutathione peroxidase (GPx), 30 minutes before the study began and one hour after the final intervention treatment.

Results

At the end of the six-month SEB exercises, no significant difference in TBARS and GPx values between the experimental and control groups (all p > .05). No significant difference existed in both TBARS and GPx values before and after the six-month SEB exercises either (all p > .05).

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Table 1. Demographic Profiles of the Participants (N = 22)

Variables	SEB (n = 10)		Control (n = 12)		test	p
	n (M)	% (SD)	n (M)	% (SD)		
Gender					0.31 ^a	.675
Male	3	30	5	41.67		
Female	7	70	7	58.33		
Marital Status					1.25 ^a	1.000
Single	0	0	1	8.33		
Married	10	100	11	91.67		
Education					9.72 ^a	.010*
No	5	50	0	0		
Yes	5	50	12	100		
Chronic Illness					0.03 ^a	1.000
No	3	30	4	33.33		
Yes	7	70	8	66.67		
Age	(69.10)	(3.73)	(72.33)	(7.30)	46.00 ^b	.381
Barthel Index	(100)	(0)	(99.58)	(1.44)	55.00 ^b	.771

Note. ^a = Fisher's exact test; ^b = Mann-Whitney U test; * p < .05

Table 2. Between and Within Group Differences on the Free Radicals (TBARS) and Antioxidant Enzymes (GPx) (N = 22)

Variables	Group	Baseline		At the Sixth Month		Wilcoxon	p
		M	SD	M	SD		
		(U)	(p)	(U)	(p)		
TBARS							
	Experimental	3.21	0.68	3.18	0.65	0.51 ^a	.959
	Control	3.12	0.45	3.12	0.59	0.43 ^a	.666
		(57.50) ^b	(.869)	(59.00) ^b	(.947)		
GPx							
	Experimental	38.52	8.04	38.10	8.16	0.56 ^a	.575
	Control	37.78	2.20	38.13	2.82	0.71 ^a	.480
		(56.50) ^b	(.817)	(50.00) ^b	(.510)		

Note. ^a = Within group differences; ^b = Between group differences

Discussion

Regular SEB exercises did not increase the generation of free radicals and antioxidant enzyme activities. The SEB exercise routine could be promoted among aged adults in the community as an exercise option for mitigating aging and increasing disease control.