

STUDIES IN PHYSICAL CULTURE AND TOURISM

Vol. 13, Supplement, 2006

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## PHYSICAL FITNESS OF ELDERLY PEOPLE IN POLAND IN COMPARISON WITH THE POPULATION OF THE UNITED STATES

### INTRODUCTION

In recent years researchers' interest in the issues of the elderly has been growing. This is related to demographic changes which have caused an increase in the population of the elderly. Physical fitness at an older age determines its quality and is necessary to maintain an independent lifestyle [1, 2, 5, 6, 7]. There have been few studies in the area of physical fitness, in particular, studies using fitness tests, and not only questionnaires. The aim of the study was to compare physical fitness of men and women in Poland aged over 60 years with their U.S. counterparts.

### METHODS

The research material consisted of results of a functional physical fitness test [4] carried out on men and women over 60 years of age. In total 274 people were examined: 125 women and 149 men. The mean age of the studied women was  $74.0 \pm 7.7$  years, and of the studied men  $72.1 \pm 6.4$  years. The subjects were selected from among residents of old people's homes of permanent and day care and from senior clubs located in Poznań.

The statistical analysis made use of non-parametric tests as distributions of individual variables were not normal. The U-Mann and Whitney test for unrelated groups was used. The calculations were made in the Calculation Centre of the University School of Physical Education in Poznań using the Statistica 5.1 software package.

### RESULTS

Tables 1 and 2 present the results of the comparative analysis between the mean test results of the subjects and the population of elderly residents of the United States.

The functional fitness of the studied women differed from that of the population of American women in terms of dynamic balance/agility in all age categories and in terms of strength of the lower ( $p < 0.01$ ) and upper body ( $p < 0.05$ ) in the oldest age category. In men statistically significant differences were noted between the mean results of the subjects and U.S. residents in the dynamic balance/agility test in age categories 60-69 years and 70-79 years, and flexibility of the upper body for men aged 70-79 at  $p < 0.01$ .

### DISCUSSION

The mean results of the test of strength of the lower and upper body in the age categories of 60-69 years and 70-79 years of the studied women were similar to the results of American women. Significantly better results were noted in the Polish women in the category of 80 years and over as compared to American women. In men, the mean results of the subjects in two strength tests were similar in all age categories to the results of U.S. residents. In the aerobic endurance test both women and men under study had lower results than their American counterparts, but the differences were not statistically significant. The results were similar in the case of flexibility tests in men, except for the age

**Table 1.** Comparative analysis of mean results obtained in individual tests of functional physical fitness of Polish and American women (results of American population following Rikli, Jones 1999)

Age categories	60-69 years		70-79 years		80 years and over		
	Poland	USA	Poland	USA	Poland	USA	
1. Strength of the lower body [number]	n=34	n=1622	n=60	n=2177	n=31	n=948	
	$\bar{x}$	14.8	13.9	11.5	12.7	12.5	10.5
	test	1.1577		-2.0236		3.0285**	
2. Strength of the upper body [number]	n=34	n=1632	n=60	n=2211	n=31	n=994	
	$\bar{x}$	17.1	15.5	13.5	14.3	14.8	12.4
	test	1.9904		-1.1465		2.0646*	
3. Aerobic endurance [m]	n=34	n=973	n=60	n=1241	n=31	n=507	
	$\bar{x}$	459.2	580.8	376.7	531.9	361.0	434.8
	test	-2.7539		-6.5142		-1.7178	
4. Flexibility of the lower body [cm]	n=34	n=1628	n=60	n=2204	n=31	n=997	
	$\bar{x}$	1.9	2.0	-2.1	1.3	-2.1	0.0
	test	-1.9670		-3.5990		-1.2613	
5. Flexibility of the upper body [cm]	n=34	n=1622	n=60	n=2192	n=31	n=988	
	$\bar{x}$	-1.2	-1.0	-6.2	-1.9	-6.8	-3.3
	test	0.8238		-0.8668		0.8131	
6. Dynamic balance/agility [s]	n=34	n=1627	n=60	n=2182	n=31	n=945	
	$\bar{x}$	7.3	5.5	9.0	6.1	9.5	7.8
	test	2.5033*		4.7317**		2.6953*	

\*p&lt;0.05; \*\*p&lt;0.01

**Table 2.** Comparative analysis of mean results obtained in individual tests of functional physical fitness of Polish and American men (results of the American population on the basis of Rikli, Jones 1999)

Age categories	60-69 years		70-79 years		80 years and over		
	Poland	USA	Poland	USA	Poland	USA	
1. Strength of the lower body [number]	n=52	n=690	n=78	n=932	n=19	n=405	
	$\bar{x}$	15.4	15.6	14.8	14.3	12.1	11.6
	test	-0.28279		1.094384		0.427666	
2. Strength of the upper body [number]	n=52	n=687	n=78	n=938	n=19	n=416	
	$\bar{x}$	16.9	18.6	16.7	16.8	14.7	14.7
	test	-2.35748		-0.31864		0.041912	
3. Aerobic endurance [m]	n=52	n=425	n=78	n=524	n=19	n=238	
	$\bar{x}$	452	645.6	499.8	587.0	451.4	487.7
	test	-6.63638		-2.77834		-1.69633	
4. Flexibility of the lower body [cm]	n=52	n=689	n=78	n=928	n=19	n=418	
	$\bar{x}$	-8.9	0.2	-9.7	-0.7	-17.9	-2.4
	test	-5.3398		-5.82783		-5.36512	
5. Flexibility of the upper body [cm]	n=52	n=685	n=78	n=919	n=19	n=412	
	$\bar{x}$	-9.8	-3.9	-8	-5.0	-11.8	-6.1
	test	0.0138		3.769262**		2.50839	
6. Dynamic balance/agility [s]	n=52	n=690	n=78	n=928	n=19	n=405	
	$\bar{x}$	7.3	5.0	6.5	5.6	8.3	6.9
	test	4.672702**		4.054235**		1.512968	

\*p&lt;0.05; \*\*p&lt;0.01

category of 70-79 years in the test of flexibility of the upper body, where the results of the studied men were significantly lower. In the test of dynamic balance/agility the studied population achieved significantly lower mean results than the elderly in the USA, except for the oldest category of men.

The functional physical fitness of the studied women examined using the Senior Fitness Test [4] did not differ significantly from the fitness of American women in terms of strength, aerobic endurance and flexibility. In tests of strength of the upper and lower body the women in the oldest age category obtained even better results than the American women. In the balance test the Polish women obtained worse results than American women. No significant differences were found in physical fitness between men from Poland and the USA. Only the tests of flexibility of the upper body in the category of 70-79 years and dynamic balance/agility in categories of 60-69 years and 70-79 years showed significant differences.

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