

## **The Level of Functional Fitness of Elderly in Southeastern Region of Poland**

by

Magdalena Wiacek<sup>1</sup>, Igor Z. Zubrzycki<sup>2</sup>

*The selected experiments were chosen to evaluate the functional activity of the studied group. Physical variables associated with functional ability were evaluated. The primary objective was to assess whether an older adult is at risk of losing or, as shown in this paper, are already on the edge of losing functional ability. The results clearly show poor strength and functional ability for both lower and upper limbs (i.e., “chair stand” and “arm curl” tests), and extremely poor results for aerobic endurance and overall flexibility (i.e., “chair sit and reach” and “back scratch” tests). The obtained results are in general agreement with the conclusions drawn by previous researchers (Jopkiewicz, 2000). One may also conclude that the results of the experiments are driven by two major facts. The first is the social background of the tested population (Rejeski and Mihalko, 2001), and the second is that the tested group belongs to the so-called war-generation.*

**Key words:** functional fitness, elderly, fitness deterioration

**Running title:** functional fitness of elderly

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<sup>1</sup> - Institute of Physiotherapy, Medical Faculty, University of Rzeszow, ul. Warszawska 26A, 35-205 Reszow, Poland

<sup>2</sup> - Institute of Tourism and Recreation, PWSZ Jaroslaw, ul Czarnieckiego 16, 37-500, Jaroslaw, Poland

## ***Introduction***

Recent advances in medicine, as well as the improvement in the standard of life are factors that influence the average life span of western societies. The average span of life is already above 60yrs for women and 65yrs for men (Census Bureau, 2006). Such a situation has an enormous impact on the socio-economic status of a number of highly developed countries, resulting in substantial changes in financial politics. Together with the with the average life span progressively increasing, the need for a enhanced quality of life has appeared. This suggests that aging should occur simultaneously with the deterioration of functional fitness. Earlier studies have evaluated preventive measures of early functional fitness deterioration in older adults (Rikli and Jones, 1997; Rikli 2000; Jones and Rikli 2002; Ross and Teasdale 2005). These studies focused on correlations between physical activity and disease, such as with diabetes or heart stroke. It is widely known that much of the illnesses and disabilities are avoidable via preventive measures. One such means of prevention is regular physical activity based on an effective exercise program. Such a program should allow for improved mobility. In recent years such a battery of tests, known as a Fullerton functional fitness test was developed (Rikli 2000). As previously mentioned health-age-prevention of losing functional fitness correlations are under investigation in highly developed countries. With a progressively aging Polish population, it is alarming that such studies are in the rudimentary phases. In the studies presented here, a group of 27 women coming from lower socio-economic group were taken to investigate their functional fitness level. Five arbitrary tests (Fullerton battery tests) were chosen to assess the functional fitness of the studied group. These tests evaluated lower and upper body strength, flexibility and aerobic endurance.

## ***Materials and Methods***

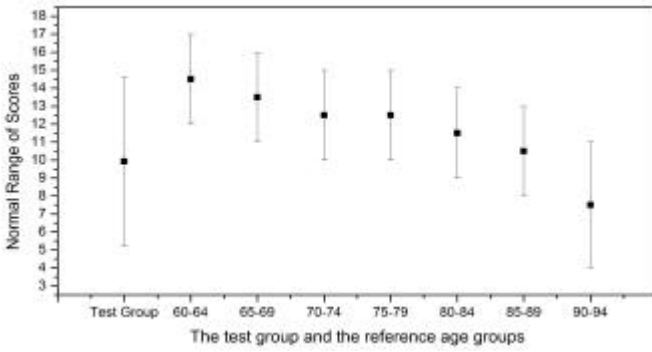
Twenty-seven healthy subjects with informed consent participated in the study. The average age of the participants was  $78.6 \pm 7.78$  years. In effort to assess the level of functional fitness, as well as to avoid the intellectual impact on the outcome of the experiment, the following tests were chosen: 1) "chair stand" (Jones, Rikli et al., 1999), 2) "arm curl", 3) "2-minute step", 4) "chair sit and reach" (Jones, Rikli et al., 1998) and 5) "back scratch". The chair stand tests comprised of a number of full stands completed in 30 seconds. The arm curl employed the number of biceps curls completed in 30 seconds using a dumbbell of 2 kg. The 2-minute step test allowed for measuring aerobic endurance. In this test a number of full steps complete in two minutes was scored. In the chair sit-

and rich test, the subject began in a sitting position with legs extended, and than attempts to reach their toes. In the flexibility test the number of centimetres between the extended fingers and toes is the measure and score. The back scratch test is established with one hand reaching over the shoulder and other hand reaching around and up the back. The score is the number of centimetres between the extended fingers of both hands. All the tests were performed between breakfast and lunch in order to assess functional fitness and to avoid skewing of results by daily activities. The blood pressure and heart rate were measured immediately before each test. Such base line parameters allowed for exclusion of subjects with health contraindications.

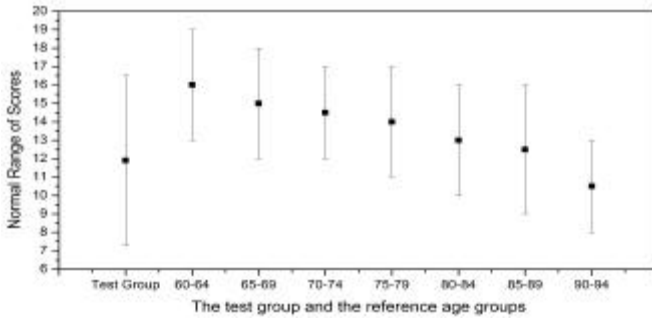
### ***Results and Discussion***

The results of the five tests 1) “chair stand”, 2) “arm curl”, 3) “2-minute step”, 4) “chair sit and reach” and 5) “back scratch” are shown in Figs. 1-5. The statistical analysis of the experimental data gave the following results:  $9.92 \pm 4.7$ ,  $11.9 \pm 4.6$ ,  $42 \pm 23.4$ ,  $4 \pm 7.9$ ,  $28.7 \pm 26.8$  for “chair stand”, “arm curl”, “2-minute step”, “chair sit and reach” and “back scratch” tests, respectively. The main feature established was a much greater variability in our results, as compared to previously published data. This may be due to a broadening age of the studied group with a SD of 7.78 as compared to a SD = 5 for the reference data. However, variability can also be an effect of the significant differences in the level of fitness for the studied group. The analysis of the results of the “chair stand” test (Fig 1), showed that the lower body strength of the studied group (average age of 78.6 yrs), corresponded roughly to a reference group of age 85-89. The upper body strength of the experimental group was in the range of the reference group of age 90-94. The results of the endurance test (2-min step), and flexibility test (chair sit and reach, back scratch) were significantly worse than those observed for all the reference groups in US.

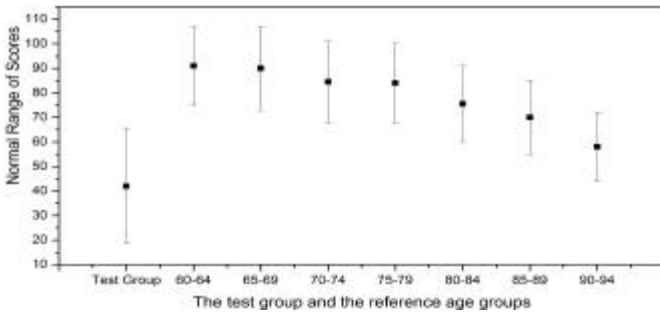
The obtained results clearly show that the level of functional fitness for the measured variables of endurance, lower and upper body strength, and flexibility are much lower than observed in the US. When only taking into account the variables of strength, the Polish population is comparable with US. The significant deterioration of the two variables of flexibility and endurance are likely due to a highly sedentary lifestyle of the studied group (Powell and Eleazer 1993).

**Fig. 1**

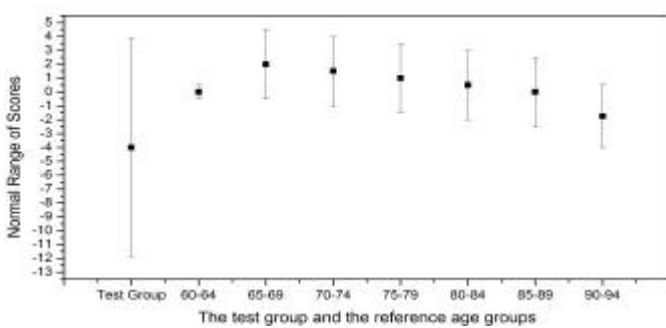
*The analysis of the results of the “chair stand” and the comparison of the obtained results with those previously presented in the literature*

**Fig. 2**

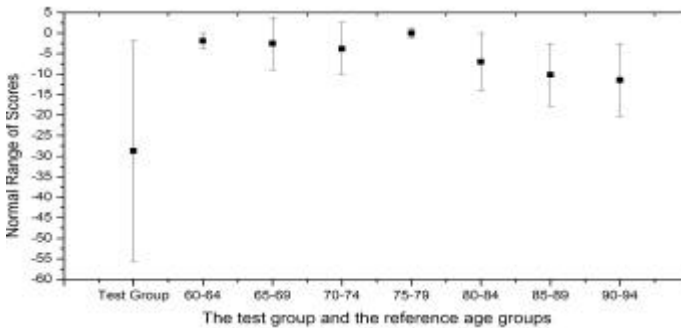
*The analysis of the results of the “arm curl” and the comparison of the obtained results with those previously presented in the literature*

**Fig. 3**

*The analysis of the results of the “2-minute step” and the comparison of the obtained results with those previously presented in the literature*

**Fig. 4**

*The analysis of the results of the “chair sit and reach” and the comparison of the obtained results with those previously presented in the literature*

**Fig. 5**

*The analysis of the results of the “back scratch” and the comparison of the obtained results with those previously presented in the literature*

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### **Acknowledgement:**

The authors would like to thank Prof. A. Kwolek and Prof. J. Kitowski, University of Rzeszow for the financial support of the research.

### **Corresponding Author:**

#### **Magdalena Wiacek**

Institute of Physiotherapy, Medical Faculty, University of Rzeszow,  
ul. Warszawska 26A, 35-205 Rzeszow, Poland

e-mail.: [ifizjot@univ.rzeszow.pl](mailto:ifizjot@univ.rzeszow.pl)

Phone: +48 17 872 19 20

*Authors submitted their contribution of the article to the editorial board.*

*Accepted for printing in Journal of Human Kinetics vol. 16/2006 on October 2006.*