Coll. Antropol. 39 (2015) 2: 411–417
Original scientific paper

Physical Fitness Comparison and Quality of Life between Spanish and Serbian Elderly Women through a Physical Fitness Program

Pedro Jesús Ruiz-Montero[1,2], Alfonso Castillo-Rodríguez[3,4], Milena Mikalački[5] and Manuel Delgado-Fernández[1]

[1] University of Granada, School of Sport Science, Department of Physical Education and Sport, Granada, Spain
[2] University of Granada, Faculty of Education, Granada, Spain
[3] University of Pablo de Olavide, Faculty of Sport, Seville, Spain
[4] International University of La Rioja (UNIR), La Rioja, Spain
[5] University of Novi Sad, Faculty of Sport and Physical Education, Novi Sad, Serbia

ABSTRACT

The aim of this study was to compare the physical fitness and quality of life related to the health of a sample population of older adult women from Spain and Serbia (60–69 years). A total of 127 female participants of physical fitness programs from Spain (64.33±3.26) and Serbia (63.00±2.88) have participated. Physical fitness (PF), quality of life (QoL) and socio-demographic characteristics were evaluated by Senior Fitness Test, SF-36 Health Survey and socio-demographic questionnaire, respectively. The anthropometric characteristic was measured by corporal measurement. The physical fitness program comprised exercise of strength, agility and aerobic capacity, centering on the Pilates' program and Aerobic. Mean body mass index was 33.6±7.4 kg·m^{-2} in the Spanish participants and 25.1±2.6 kg·m^{-2} from the Serbian participants ($p<0.001$). Similarly, mean waist circumference and body weight of Spanish women was higher than Serbian ($p<0.001$; $p<0.05$, respectively). Spanish women perceived lower quality of life dimensions than Serbian women, such as physical functioning, social functioning and general health ($p<0.001$), general health ($p<0.01$) and vitality ($p<0.05$). Serbian participants experienced higher physical fitness, such as upper body flexibility ($p<0.05$), lower body flexibility, agility and aerobic endurance ($p<0.001$). In conclusion, Serbian women were found to have better levels of physical fitness and quality of life than Spanish women. Furthermore, endurance fitness has 73% of explained variance with age, body mass index and fat mass.

Key words: *physical fitness, socio-cultural difference, quality of life, aging, economic development*

Introduction

The ageing of society represents a socio-demographic change which has been increasing in recent decades. Moreover, the Second World Assembly on Ageing[1] concluded that from the present day to 2050, we will see an increase of 10% to nearly 21% in the number of people over the age of 60. Similarly, life expectancy in 27 of the UE countries is 79.2 years and 82.2 years for females[2].

Serbia has a percentage of people over 60 years with 23% of total population[3] and there are not many studies related to health problems in the Balkan countries[4]. However, in Spain 22.4% of the population is over 60 and this demographic group has been the object of research studies such as the one carried out for 20 years with Spanish population and their health issues[5].

This sector of the population does not enjoy full well-being due to the fact that they suffer from physical limitations or chronic cardiovascular diseases which are commonly found in old age[6], both being associated with limitations in functionality[7]. Physical inactivity and sedentary lifestyles are both causes of negative health consequences[8]. The low level of PA in the elderly[9] might be explained by the fact that only 21% of people worldwide over the age of 65 regularly do physical exercise. The physical limitations and chronic diseases caused by sedentary lifestyles can be lessened and reduced in developed countries thanks to physical exercise, and this can produce an increase in QoL[10]. The importance of Pilates method exercises have experienced a improvement and innovation

Received for publication July 28, 2014

since first steps of Joseph Pilates. The present method prevents sarcopenia and maintains the strength in elderly people[11]. Similarly, Pilates method might influence in the reduction of body composition parameters and flexibility of sedentary women with obesity[12].Therefore, regular practice of physical activity is recommended in order to produce health benefits in the elderly[13].

The aim of the present study was to compare the PF and the QoL related to health in two samples of women ranged between 60 to 69 years from Serbia and Spain through a fitness program.

Methods

Participants

Participants of present study were recruited from different fitness programs via e-mail, letter or telephone in both countries. Spanish female participants were recruited from a fitness program of »Diputación de Málaga« (Spain) and Serbian female participants belonged to a fitness intervention of Faculty of Sport of Novi Sad (Serbia). One hundred twenty seven participants (74 Spanish and 53 Serbian) were volunteered for this study. They are women and their ages are ranged between 60 and 69 years. The characteristics of participants are detailed in Table 1. Participants were informed of the purpose of this study and voluntarily agreed to participate by signing the informed consent. The inclusion criterions of participants were: i) not to have acute or terminal illness, ii) not have functional mobility limited.

The study was conducted according to the Declaration of Helsinki. The study protocol was approved by the local ethics committee – institutional board.

Measurements

A cross-sectional study was used to assess anthropometric characteristics, physical fitness and quality of life of participants.

We measured weight (Kg) by bioelectrical impedance analysis with a Tanita SC 330s. Waist circumference (cm) was measured with the participant standing at the middle point between the ribs and ileac crest (Harpenden anthropometric tape, Holtain Ltd., Crymych, UK). Height (cm) was measured using a stadiometer (Seca 22, Hamburg, Germany). Body mass index (BMI) was calculated as weight (in kilograms) divided by height (in meters) squared and categorized using international criteria as underweight (BMI<18.5 kg/m2), normal weight (BMI 18.5–24.9 kg/m2), overweight (BMI 25.0–29.9 kg/m2), and obese (BMI ≥30.0 kg/m2).

To assess physical fitness we used the Senior Fitness Test[9] (SFT) because 1) it is relatively easy to administer; 2) requires minimal equipment and space; 3) the tests are safe. The fitness test battery was administered by sport scientists.

Lower body muscular strength

It was assessed by the 30-second chair stand test (30´CS). We counted the number of times that the participant could raise to a full stand from a seated position with back straight and feet flat on the floor, within 30 seconds and pushing off the arms[9].

Upper body muscular strength

This test was conducted with a dumbbell-5 lb for women. The participants were seated the entire test. Each participant performed (alternately with both hands) the test twice allowing a 1-minute rest period between measures (30´AC). The best value of two trials for each hand and mean of both arms was chosen for analysis.

Lower body flexibility

It was assessed by the »chair sit and reach test« (CSR). The participant is seated with one leg extended, slowly bends forward sliding the hands down the extended leg in an attempt to touch (or pass) the toes. The number of centimeters short of reaching the toe (minus score) or reaching beyond it (plus score) was recorded[9]. Two trials with each leg were measured and the best value of each leg was registered, being the mean score of both legs used in the analysis.

Upper body flexibility

It was assessed by the »back scratch test« (BS). This test gives an overall measure of shoulder range of motion. It measures the distance between (or overlap of) the middle fingers behind the back[9]. We measured both hands twice and the best value was registered, being the mean score of both hands computed for analysis.

Agility/dynamic balance

It was assessed by the 8-ft up and go test. The participant stood up from a chair, walk 8 ft to and around a cone, and return to the chair as fast as possible. We recorded the best time of two trials.

Aerobic endurance

It was assessed by the 6-minute walk test. We measured the maximum distance (meters) walked by the patients in 6 minutes along a 45.7-m rectangular course.

The Spanish version[14] and Serbian translation[15] of the SF-36 Health Survey were used to assess QoL. This questionnaire is composed of 36 items, grouped into 8 scales assessing 8 dimensions: physical functioning, physical role, bodily pain, general health, vitality, social functioning, emotional role, mental health, and general health.

Each subscale score is standardized and ranges from 0 to 100, where 0 indicates the worst possible health status and 100 the best possible one.

Procedures

Contents were treated as upper and lower body strength exercises, agility and specially, Aerobic Capacity and Pilates. The frequency of sessions was twice a week in the afternoon and lasting 45 minutes per session. Each exercise was performed in both Spain and Serbia of the same way by supervision of specialists. The cross-sectional study was carried out with samples homogeneous of the 2 European countries and similar weather but one of them is non-included within UE (Serbia).

When the participants agreed to collaborate, they were given socio-demographic and clinical questionnaires to verify if they were eligible under the criteria of inclusion and exclusion. This way allows ensuring that participants were not taking any medications and had no functional mobility problems. Subsequently, we assessed the height, weight and proceeded to take the test SF -36 Health Survey, before to performer any physical activity in order to avoid fatigue or excessive motivation can influence the responses of the participants.

SFT test tests were conducted during the same week to all participants. We need two sessions to complete the battery. We have carried out in both countries in a covered room with temperature ranging between 17–22°C. Before the tests, were conducted formal and non-exhausted warm.

Statistical analysis

Firstly, we analyzed the Kolmogorov-Smirnov test to check the normal distribution of the sample. The descriptive analyzes were carried out to check the characteristics of the participants and comparison of means for independent samples (nationality). Secondly, we have assessed a correlation coefficient Spearman's ρ-test to determine the relationships between variables of fitness and quality of life. Finally, linear regression test of stepwise model was run between variables. The significance level was of $p<0.05$.

SPSS for Windows v.17.0 program (Chicago, SPSS Inc.) was used to perform statistical analysis.

Results

Clinical characteristics of the present study are specified by nationalities in Table 1. The clinical characteristics such as height, waist circumference, body mass index ($p<0.001$) and weight ($p<0.05$) showed differences, except for age and fat mass.

Table 2 shows the results of each performed SFT test from the Serbian and Spanish population in two types of

TABLE 1
CLINICAL CHARACTERISTICS OF THE STUDY PARTICIPANTS

		Spanish (N=74)	Serbian (N=53)	p-value[a]
Age	(year)	64.33±3.26	63.00±2.88	0.301
Weight	(kg)	78.44±18.99	65.96±8.16	<0.05
Height	(cm)	152.60±4.76	162.10±5.59	<0.001
WC	(cm)	105.70±14.23	90.38±11.36	<0.001
BMI	($kg \cdot m^{-2}$)	33.57±7.39	25.08±2.63	<0.001
FM	(%)	37.12±12.75	36.90±5.17	0.948

WC- Waist circumference, BMI- Body Mass Index, FM- Fat mass
[a] p values calculated by Mann Whitney U-Test

units. Firstly, the record is shown in absolute values of each of the tests, and then, the value is shown in »years«, in line with the protocol for variable calculations. In this table, we have found significant differences between the types of population.

Serbian women have better physical function, general health, vitality, social function and mental health than that found in Spanish women ($p<0.05$, Table 2). In the remaining variables of the SF-36 Health Survey test, Serbian women also have higher values than Spanish women, although these are non- significant (role physical, bodily pain, emotional role, and health development).

Below, Table 3 shows various correlations between SFT and the variables of QoL (SF-36). In this regard, it is worth pointing out a strong relationship between physical function and the tests carried out by »CSR mean«, »6minut_totalmeter« and »8 feet up & go« ($\rho=0.64, 0.65, 0.59$, $p<0.01$, respectively.)

However, with respect to the relationship between body characteristics and QoL variables we should point out a strong relationship between skeletal muscle mass (SMM) and vitality ($\rho:0.55$, $p<0.01$). In addition, the participant's bodily pain and fat mass have an inverse ($\rho:0.37$, $p<0.05$). Finally, body weight and BMI have similar inverse relationships with physical function, physical role and mental health states ($\rho:-0.39$ and -0.55, -0.40 and -0.39, -0.44 and -0.58, $p<0.05$; respectively).

We can see different correlation coefficients. It should be highlighted that age, WC and BMI are inversely related to all physical fitness tests, though they are more significant with the CSR and BS tests ($p<0.01$). However, height is positively related to the tests from the set of SFT ($p<0.01$, Table 3).

Lastly, two different models have been found through linear regression tests with the dependent variable of »CF_6minut_totalmeter« (a: R2 adjust =0.67, SEE =64.27, $p<0.05$, b: adjust R2 =0.73, SEE =58.70, $p<0.05$), carried out with the step by step method (stepwise) between the 6 minute test (m) and body characteristics. The calculations are as follows: a) CF_6minut_totalmeter =812784 + (9.998 * Height) – (7.491 * Weight) + (8.227 * FM) and b) CF_6minut_totalmeter = 1035,717 – (4.721 * Age) – (1.16 * BMI) + (6.722 * FM).

TABLE 2
SENIOR FITNESS TEST (SFT) AND QUALITY OF LIFE (SF-36 HEALTH SURVEY) IN SERBIAN AND SPANISH WOMEN

		Spanish (N=74)	Serbian (N=53)	p-value[a]
30´´CS	(nº repetitions)	12.76±2.97	14.00±3.12	0.351
30´´AC right	(nº repetitions)	18.40±3.55	21.25±3.96	0.102
30´´AC left	(nº repetitions)	18.90±3.97	21.13±4.19	0.220
30´´AC mean	(nº repetitions)	18.90±3.34	21.19±3.94	0.175
BS Right	(cm)	–6.21±9.26	1.21±5.14	<0.05
BS Left	(cm)	–10.81±9.61	–1.05±5.56	<0.05
BS mean	(cm)	–8.51±9.01	0.08±4.90	<0.05
CSR Right	(cm)	–0.167±16.53	51.66±6.35	<0.001
CSR Left	(cm)	–0.143±16.35	52.40±6.49	<0.001
CSR mean	(cm)	–0.155±16.31	52.03±6.36	<0.001
“8 feet up & go”	(seconds)	6.37±1.40	5.07±0.54	0.149
6min walk test	(m)	436.5±68.32	598.01±58.47	0.466
		Quality of life (SF-36 Health Survey)		
Physical functioning		60.00±23.45	86.25±7.44	<0.001
Physical role		58.33+44.95	84.38+35.20	0.120
Bodily pain		52.71+19.94	58.50+12.98	0.371
General health		49.19+18.26	73.50+11.70	<0.01
Vitality		50.24+38.49	55.00+8.45	<0.05
Social Functioning		57.74+12.17	81.25+16.37	<0.001
Emotional role		66.67+44.72	79.17+35.36	0.442
Mental health		39.24+21.45	66.50+8.54	<0.001

30´´CS- 30s chair stand (lower body), 30´´AC- 30s arm curl (upper body), BS- back scratch test, CSR- chair sit and reach
[a] Significant difference between nationalities, Senior Fitness Test (SFT) and quality of life (SF-36 Health Survey) (Mann Whitney U-Test)

TABLE 3
RHO OF SPEARMAN CORRELATION COEFFICIENT BETWEEN SENIOR FITNESS TEST (SFT[A]) WITH BODY COMPOSITION[B] AND QUALITY OF LIFE (SF-36 HEALTH SURVEY[C])

	CSR right	CSR left	BS right	BS left	30´CS	30´´AC right	30´´AC left	Test »8 feet up & go«	6 min-walking
Weight (Kg)	–0.16	–0.15	–0.30*	–0.29*	–0.23	–0.09	–0.02	0.18	–0.22
Height (cm)	0.72**	0.73**	0.54**	0.39**	0.20	0.30*	0.26*	–0.45**	0.64**
Waist circumference	–0.55**	–0.57**	–0.71**	–0.57**	–0.34**	–0.31*	–0.26*	0.53**	–0.59**
BMI	–0.63**	–0.62**	–0.67**	–0.56**	–0.36**	–0.24	–0.16	0.45**	–0.64**
Fat mass	0.01	0.03	–0.15	–0.08	–0.13	0.18	0.19	–0.18	0.03
Age	–0.75**	–0.75**	–0.69**	–0.55**	–0.44**	–0.56**	–0.53**	0.71**	–0.77**
Physical functioning	0.64**	–0.57**	0.55**	–0.50**	0.29**	0.12	0.15	–0.59**	0.65**
Physical role	0.49**	–0.58**	0.29**	–0.18**	0.13**	0.01	0.03	–0.30**	0.21**
Bodily pain	0.45**	–0.34**	0.50**	–0.43**	0.34**	–0.14	0.06	–0.39**	0.35**
General Health	0.21	0.05	0.12	–0.05	–0.04	0.23	0.14	–0.06	0.12
Vitality	0.34*	–0.24*	0.38*	–0.27*	–0.14*	–0.01	0.06	–0.14*	0.13*
Social Functioning	0.46*	–0.18*	0.34*	–0.37*	–0.01*	0.31	0.21	–0.39*	0.34*
Emotional role	0.21	–0.35	0.13	–0.16	0.01	0.27	0.29	0.01	0.11
Mental health	0.30**	–0.04**	0.04**	–0.04**	0.34**	0.15	0.14	–0.54**	0.46**

*p<0.05, **p<0.01
[a] 30´´CS- 30s chair stand (lower body), 30´´AC- 30s arm curl (upper body), CSR- chair sit and reach, BS- back scratch
[b] BMI- body mass index

Discussion

The present study shows differences in a physical fitness program whose content were based on Pilates and aerobic exercises which was carried out twice a week. These disparities were observed between variables related to physical fitness, perceived health of participants and body parameters, both in the Spanish and Serbian samples. Serbian women showed higher levels of physical fitness and quality of life than Spanish women.

An explanation might be due to the lifestyle lead by Serbian population which differs somewhat with respect to the Spanish. In the first, the use of a personal vehicle may not be as marked as in the second. This might be due to the fact that the Serbian sample lives in a city where their day-to-day lives take place (work, family, daily needs, etc...). The less economically developed countries tend to have a higher concentration of employment in the cities[16]. Whereas, the Spanish sample resides in small, restricted towns. According with other studies[17], they must use a vehicle as a form of transport in order to acquire certain resources or other social demands, among other things, to spend more time at home watching television[18], making them less active on the whole. But most important aspect is that Serbia's economic resources differ greatly from those found in Spain. Serbia's GDP per capita places its economy in 78th position in the world ranking. In contrast, the Spain's GDP is in 14th position[19]. Serbian participants might use public transport more or walk to places instead of using personal transport as it is more attractive economically speaking. Moreover, using public transport implies more energy expenditure than travelling by car[20]. Consequently, the Serbian samples commute implies more physical activity, which suggests that there is more exertion of physical fitness throughout their day-to-day lives, being able to be more active in their leisure time, resulting in maintaining their body weight[21].

The PF evaluation, including through primary care, is always problematic due to the relationship between health, socioeconomic, demographic and cultural factors[22]. As regards to QoL, it must be noted that it has a subjective value when it can be modified by cultural context. The health benefits of Spanish participants score lower than the Serbian participants in all SF-36 domains. There is a great difference between the two samples in the domain of mental Health as an integral part of the mental component. Although it is worth mentioning that the largest differences can be observed in the domains related to the physical component, specifically in physical function, physical role and general health. Given that the average age is slightly higher in the Spanish sample, this may be associated with the increase in the physical component domain in the SF-36 scores, according to literature[23]. Despite this, Spanish women also have a suitable QoL since the domains are all above average, with the exception of mental health and general health. Samples of both countries perform PF in a structured manner, through a physical education program, being related to an improved QoL as well as physical, social and emotion perception[24].

The level of daily activities performed and a low level of QoL is related to obesity[25]. However, the rate of overweight (Serbian) or obese (Spanish) does not prevent them doing exercise or having an active lifestyle. A study conducted on older Caucasians concluded that obese men with a high fitness levels had less mortality risks[27] than those who did not do exercise. This fact can also be found in our study, where women have high levels of BMI ($p<0.001$) and waist circumference ($p<0.001$) but also adequate values of certain physical capacities (Table 2), thereby causing confusion[28].

The Spanish participants present higher rates of obesity than the Serbian participants, but this does not mean they fare worse physically. Studies in Germany and the United States have shown a higher prevalence of obesity rates in people living in rural villages and towns compared to those living in cities[29]. Similarly, the Spanish participants reside in villages >10,000 inhabitants of Malaga. However, the Serbian participants reside in Novi Sad (Serbia), <250.000 inhabitants[30]. Therefore, the results of the body characteristics of Spanish participants corroborate the studies of the authors mentioned above. Besides this, it is worth highlighting the peculiarity of the geographical location of the two samples analyzed in this study. One of them belongs to Spain, placed in twenty-third position in the ranking of Human Development Index with a value of 0.89 compared to the first position, Norway 0.96. Serbia is in the position 64th with a value of 0.77.

These data may further substantiate body values obtained by the Spanish sample, considerably worse than the Serbian sample in terms of health markers. And a study carried out on countries in Central and South America, obtained as a result an increase in the prevalence of obesity in countries that were less developed than others, due to rapid changes in the structure of the diet and a decrease in the physical activity levels of its inhabitants[31].

Despite this, an overweight value cannot be considered a negative or risk factor. The results of a study carried out on a sample of four thousand Chinese residents of Hong Kong over the age of 65 years, with a higher average of body mass and percentage of fat-free fat mass were associated with lower mortality risks[32]. These results are also consistent with the study carried out on 13,000 elderly men and women from the Cooper Clinic[33] in which obese individuals or people with cardiovascular risk factors but high fitness levels correlated with reduced mortality and cardiovascular risks.

In the present study, a link has been observed between different physical capacities and body composition and the age of participants. This relationship confirms that ageing is associated with significant changes in body composition and obesity is associated with a deterioration of physical fitness in the upper and lower body.

Moreover, age is inversely associated with the physical capacities assessed by the SFT based upon a coefficient force of $\rho=-0.44$ to 0.75 ($p<0.01$). These results confirm

the reduced levels of AF as the ageing process progresses. The physical capacity levels of the Serbian sample levels correspond to the link established between the level of physical activity and improvement of physical capacity, but the same could not be said for the Spanish sample. Finally, the muscle strength and aerobic capacity, evaluated in the SFT, decreases from 32% to 44% between the ages of 60 to 90[34].

Conclusion

This study concludes that the sample of Spanish participants has a lower QoL and PF than that found in Serbian participants of the same age range and similar characteristics. The variables of PF are associated with the participants' physical characteristics in this study. The strength of upper and lower body is appropriate for the age range of each sample and causes the level of agility, balance and motor ability (test »eight feet up & go«) to be different from other existing associations. Therefore, this suggests the need to work specific strength in upper and lower limbs to improve agility and dynamic balance not associated with body composition, weight and WC in women with the same characteristics as those of the present study. At the same time, it has been established that resistance capacity is determined by a 73% of explained variance in age and BMI.

Several limitations of this study need to be mentioned. First, the study was conducted just with women and thus, quality of life and physical fitness with male patients would be needed. Second, our participants were volunteers, which could have affected the representativeness of the study sample and unequal distribution among age status categories. Moreover, the mean age of both samples is very similar and they are in the range 60–69 years. Further research on elderly female participants with larger range of age is required to discuss the present findings between these both countries.

Acknowledgements

Part of the present research is an agreement between Sport Area of Malaga County Council and Research Group CTS-545 »Physical Activity, Sport and Ergonomics for Quality of Life« from University of Granada (Spain).

A special thanks to all the women from Fitness Program of Malaga County Council (Diputación Provincial de Málaga; Programa de Condición Física de Mayores) and Novi Sad (Faculty of Sport and Physical Education) who participated in this study, and to any inconvenience it may have caused them. Also, to the final year students at the Faculty of Sport and Physical Education, University of Novi (Serbia) and the colleagues from this Faculty who provided participants, material and space for this research.

REFERENCES

1. UNITED NATIONS, Report of the Second World Assembly on Ageing (UN, Madrid, 2002). – 2. EUROPEAN UNION, The EU in the world 2013. A statistical portrait (Publications Office of the European Union, Luxembourg, 2012). – 3. SENOHRADSKI K, MARKOVIC-DENIC L, LESIC A, BUMBASIREVIC V, BUMBASIREVIC M, Osteoporos Int, 24 (2013) 1759. – 4. MIHAJLOVIĆ J, PECHLIVANOGLOU P, MILADINOV-MIKOV M, ŽIVKOVIĆ S, POSTMA MJ, BMC Cancer, 13 (2013) 18. – 5. PALACIOS-CEÑA D, ALONSO-BLANCO C, JIMENEZ-GARCIA R, HERNANDEZ-BARRERA V, CARRASCO-GARRIDO P, PILENO-MARTINEZ E, FERNANDEZ-DE-LAS-PENAS C, BMC Public Health, 11 (2011) 799. – 6. YOEM HA, FLEURY J, KELLER C, Geriatr Nurs, 29 (2008) 133. – 7. FERRUCCI L, GURALNIK JM, STUDENSKI S, FRIED LP, CUTLER GB, WALSTON JD, J Am Geriatr Soc, 52 (2004) 625. – 8. IKEZOE T, ASAKAWA Y, SHIMA H, KISHIBUCHI K, ICHIHASHI N, Arch Gerontol Geriat, 57 (2013) 221. – 9. RIKLI RE, JONES CJ, JAPA, 7 (1999) 162. – 10. ACSM, ACSM´s Guidelines for Exercise Testing and Prescription, 8th edition (Lippincott William & Wilkins, Philadelphia, 2009). – 11. RUIZ-MONTERO PJ, CASTILLO-RODRÍGUEZ A, MIKALACKI M, COKORILO N, KOROVLJEV D, Clin Interv Aging, 31 (2014) 243. – 12. CAKMAKCI O, Coll Antropol 35 (2011) 1045. – 13. United States Department of Health and Human Services, Physical activity guidelines Advisory Committee report (United States Department of Health and Human Services, Washington, DC, 2008). – 14. ALONSO J, PRIETO L, ANTÓ JM, Med Clin, 104 (1995) 771. – 15. SF-36 Health survey (Original version) Language Recalls. Available from: URL: http://www.qualitymetric.com – 16. DISSANAYAKE D, MORIKAWA T, Transportation Research Board, 1805 (2002) 45. – 17. CERVERO R, MURAKAMI J, Environ Plan A, 42 (2010) 400. – 18. SUGIYAMA T, SALMON J, DUNSTAN D, BAUMAN A, OWEN N, Am J Prev Med, 33 (2007) 444. – 19. International Monetary Fund. World Economic Outlook Database. Available from: URL: http://www.imf.org/external/pubs/ft/weo/2012/02/weodata/index.aspx. – 20. MORABIA A, MIRER FE, AMSTISLAVSKI TM, EISL HM, WERBE-FUENTES J, GORCZYNSKI J, GORANSON C, WOLFF MS, MARKOWITZ SB, Am J Public Health, 100 (2010) 2388. – 21. SUGIYAMA T, DING D, OWEN N, Am J Prev Med, 44 (2013) 169. – 22. KING AC, STOKOLS D, TALEN E, BRASSINGTON GS, KILLINGSWORTH R, Am J Prev Med, 23 (Suppl) (2002) 15 – 23. RAMÍREZ R, LÓPEZ CA, TRIANA HR, IDARRAGA M, GIRALDO F. APUNTS Medicina de l´sport, 157 (2008) 14. – 24. HO TJ, LIANG WM, LIEN CH, MA TC, KUO HW, CHU BC, CHANG HW, LAI JS, LIN JG, J Alternative Complementary Med, 13 (2007) 1077. – 25. ARTERBURN D, CRANE P, SULLIVAN S, J Am Geriatr Soc, 52 (2004) 1907. – 27. MCAULEY P, PITTSLEY J, MYERS J, ABELLA J, FROELICHER VF, J Gerontol A Biol Sci Med Sci, 64 (2009) 695. – 28. MCAULEY PA, SUI X, BLAIR SN, Circulation, 122 (2010) 455. – 29. JACKSON JE, DOESCHER MP, JERANT AF, HART LG, J Rural Health, 21 (2005) 140. – 30. Statistical Office of the Republic of Serbia. Available from: URL: http://webrzs.stat.gov.rs/WebSite/public/ReportView.aspx. – 31. FILOZOF C, GONZALEZ C, SEREDAY M, MAZZA C, BRAGUINSKY J, Obes Rev, 2 (2001) 99. – 32. WOO J, YU R, YAU F, AGE, 35 (2012) 973. – 33. BLAIR SN, CHURCH TS, JAMA, 292 (2004) 1232. – 34. GOUVEIA ER, MAIA JA, BEUNEN GP, BLIMKIE CJ, FENA EM, FREITAS, DL, J Aging Phys Activity, 21 (2013) 1.

P. J. Ruiz-Montero

University of Granada, School of Sport Science, Department of Physical Education and Sport, Campus Universitario de Cartuja, s/n, CP 18071, Granada, Spain
e-mail: pedrorumo@ugr.es

USPOREDBA TJELESNE KONDICIJE I KVALITETE ŽIVOTA IZMEĐU ŠPANJOLSKIH I SRPSKIH STARIJIH ŽENA KROZ KONDICIJSKI PROGRAM

S A Ž E T A K

Cilj ovog istraživanja bio je usporediti tjelesnu kondiciju i kvalitetu života vezane za zdravlje uzorku populacije starijih odraslih žena iz Španjolske i Srbije (60–69 godina).Ukupno 127 žena sudjelovalo je u kondicijskom programu iz Španjolske (64,33±3,26) i Srbije (63,00±2,88). Tjelesna kondicija, kvaliteta života i socio-demografska obilježja su ispitana pomoću »Senior Fitness« testa, SF-36 zdravstvenog upitnika i socio-demografskog upitnika. Mjerene su antropometrijske karakteristike tijela. Kondicijski program čine vježbe snage, agilnosti i aerobnog kapaciteta, usredotočujući se na pilates i aerobik. Srednja vrijednost indeksa tjelesne mase bila je 33,6±7,4 kg • m^2 među španjolskim sudionicima i 25,1±2,6 kg • m^2 kod srpskih sudionica ($p<0,001$). Isto tako, srednja vrijednost omjera opsega struka i tjelesne težine španjolskih žena bila viša od srpskih ($p<0,001$, odnosno $p<0,05$). Španjolske žene dimenzije kvalitete živote smatraju manjima nego srpske žene, poput tjelesnog funkcioniranja, socijalizacije i općeg zdravlja ($p<0,001$), opće zdravlje ($p<0,01$) i vitalnost ($p<0,05$). Srpske sudionice imale su veću tjelesnu kondiciju, poput fleksibilnost gornjeg tijela ($p<0,05$), fleksibilnost donjeg tijela, agilnosti i aerobne izdržljivosti ($p<0.001$). Zaključno, otkrilo se da Srpkinje imaju bolju razinu tjelesne kondicije i kvalitete života od španjolskih žena. Nadalje, kondicijska izdržljivost ima 73% objašnjene varijance dobi, indeksa tjelesne mase i masnog tkiva.