PHYSICAL FITNESS LEVELS OF YOUNG ADULTS WITH AND WITHOUT INTELLECTUAL DISABILITY

Mehmet Yanardag[1], Hulya Arikan[2], Ilker Yilmaz[3] and Ferman Konukman[4]

[1]*Anadolu University, Research Institute for the Handicapped, Eskisehir, Turkey*
[2]*Hacettepe University, Faculty of Health Sciences,*
Department of Physical Therapy and Rehabilitation, Ankara, Turkey
[3]*Anadolu University, Faculty of Sports Science, Eskisehir, Turkey*
[4]*The College at Brockport, State University of New York, Department of Kinesiology,*
Sport Studies & Physical Education, New York, USA

Abstract:

Intellectual disability (ID) and living in residential home settings may be a disadvantage for an active lifestyle and healthy aging. The purpose of this study was to determine physical fitness levels of women with mild intellectual disabilities (n=31; mean age 22.22±3.11 years), clients of residential homes, and to compare them to the levels of their control peers (n=31; 23.16±3.12 years of age). First, cardiovascular disease risk factors (CVD) of the participants were determined based on the information from residential home doctor, participants' health reports, and blood samples. Health-related physical fitness parameters (balance, cardiorespiratory endurance, muscular endurance, and flexibility) were measured, and body composition and anaerobic power were assessed. The significant differences were found between the groups (p<.05) in body mass index, muscular endurance, maximum walking distance, peak VO_2, balance, flexibility, and power. The results of the study indicated that the fitness levels of women with ID were lower than those of their control peers. Women with ID should be encouraged to participate in physical activity programs to improve their physical fitness.

Key words: residential home care setting, women's cardiovascular risk factors, six-minute walking test

Introduction

Intellectual disability (ID) leads to restrictions not only in intellectual functioning, but also in adaptive skills such as communication, self-care, daily living, social skills, community efficiency, self-management, academic skills, leisure skills, and work. This incapacity originates before the age of 18 (American Association on Mental Retardation, 2002). Nowadays it is almost common knowledge that the complex of genetic, environmental and behavioral risk factors influences human health and well-being. Physical inactivity is a serious risk factor for muscles, bone, type II diabetes, overweight and obesity, hypertension, and other systematic and neurological diseases (Vuori, 2004). Genetic disposition and these risk factors together lead to a deterioration in health and accelerate the initiation and progression of diseases such as heart attack, stroke, or cardiovascular disease (CVD). These diseases can be fatal in the general population (Auxter, Pyfer, & Huettig, 2002) and, similarly, these

risk factors affect health status of adults with ID (Draheim, 2006).

In recent decades, elevated awareness of the previously mentioned risk factors in the population without ID has contributed to the decreased risk factors' prevalence and mortality rates. According to the American Heart Association, from 1996 to 2006 the CVD-caused death rates declined by 29.2%, and the stroke death rate fell by 33.5% (American Heart Association, 2010). However, this declining trend has not been observed for adults with ID; the death rate from CVD and respiratory diseases was 47.3% in 1984 and 52.9% in 1993 (Janicki, Dalton, Henderson, & Davidson, 1999).

According to the General Directorate of Services for Persons with Disabilities and Elderly People in 2002 there were 21 residential homes in Turkey for individuals with ID. This number increased to 97 in 2012. This augmentation leads to a greater consideration for the extent of the issues that this population encounters in the settings, such as chron-

ic health conditions, quality of life, and healthcare (http://www.eyh.gov.tr/tr/html/8107/Bilgi+Ban-kasi). Before any systematic intervention that should address the mentioned issues, such as the introduction of therapeutic physical recreational programs, it is indispensable to establish the residential home care patrons' physical fitness profile.

There is a vast evidence-based body of literature stating regular physical exercise and good physical fitness are essential for healthy autonomous life of all adults, of the adults with ID as well (Vuori, 2004). However, cardiorespiratory fitness of this population is low as the prevalence of cardiovascular disease is higher in adults with ID. Moreover, adults with ID have a higher mortality rate than adults without ID (Fernhall, 1993). The mortality rate of adults with mild and moderate ID is approximately 1.7 times higher, and for those with a profound ID it is 4.1 times higher. Therefore, there is no doubt that exercise and physical fitness affect health and work productivity of adults with ID (Fernhall, 1993).

An active lifestyle and regular physical activity are beneficial for cardiorespiratory function and they reduce physiological risk factors such as elevated blood pressure and abnormal serum lipids, thus leading to the decline in mortality rates. Some factors, such as sedentary lifestyle, lower motivation, psychological and physiological reasons could be drawbacks to participation in regular physical activity (Lotan, Yalon-Chamovitz, & Weiss, 2009). Sometimes, these factors may not have been taken into consideration in community settings such as residential care homes where adults with ID live. In general, there is an inverse relationship between heart disease and physical activity during middle age (Graham & Reid, 2000). Thus, physical activity and physical fitness are essential and vital areas of measurement, particularly at this stage of life. There have not been enough studies or documents with data and information about physical fitness profiles of adults with ID in Turkey, especially of those living in residential homes. Therefore, the purpose of this study was to determine physical fitness levels of female adults with intellectual disabilities as compared to the fitness levels of their peers with no such diagnosis.

Methods

Subjects

Thirty-one women with mild ID (Group 1) and thirty-one women without ID (Group 2; control group) were included in this study. The women with ID were recruited from two residential homes. The average age of the participants in Group 1 and Group 2 was 22.22±3.11 years and 23.16±3.12 years, respectively. The level of intellectual disability for Group 1 participants was determined according to

the data from the residential homes' official files and documents of the participants. The participants of Group 2 were hospital employees who did not have any obligation to be regularly involved in any physical activity or a sports program. Prior to the research, the institutional permission was obtained from the director of each residential home and from the National Social Services and Child Protection Agency. Also, a written informed consent was obtained from all the participants and/or their guardians in compliance with the Declaration of Helsinki.

Procedures and sample of variables

Prior to any health-related physical fitness testing, cardiovascular disease risk factors were determined in the subjects of both groups. Information on possible cardiovascular disease risk factors, such as cigarette smoking and alcohol use, hypertension, diabetes mellitus (DM), total blood cholesterol level and obesity of the participants were obtained from either the residential home physicians, their health reports, or from blood samples. Total cholesterol values were considered high if they were >200 mg/dl.

The assessment of participants' health-related physical fitness included the following:

Anthropometric measurements and estimations included participants' body weight, body height, body mass index (BMI), and percentage of body fat. In order to determine body fat percentage of the participants, skinfolds (triceps, biceps, subscapular and suprailiac) were measured using a caliper (Holtain Ltd., UK) on the right side of the body. The same researcher measured all skinfolds. The percentage of body fat was calculated according to Oja and Tuxworth (1995).

The static balance test: This test assesses the ability of a subject to maintain balance on a single leg while standing. The participants place their hands on their hips. They should lift one leg and place its foot on the inside of the knee of the other leg. The participants then close their eyes and maintain balance in this position for as long as possible. The time was recorded in seconds (Cuesta-Vargas, Paz-Lourido, & Rodriguez, 2011).

Sit-ups test: This test measures abdominal muscle strength and endurance. The participants lie down in supine position, with their knees flexed and the plantar surface of the feet placed on the ground. During the sit-ups test, the arms reach to try to touch the knees. The score was recorded as the number of correctly completed sit-ups performed in thirty seconds (Guidetti, Franciosi, Gallotta, Emerenziani, & Baldari, 2010).

Modified push-ups test: This test assesses upper extremity strength and endurance. Participants lie down on the floor in prone position with their hands slightly more than shoulder-width apart. Keeping their knees bent, the participants then elevate their

bodies until the elbows are fully extended. The score was the number of successfully completed push-ups in thirty seconds (Guidetti, et al., 2010).

Sit-and-reach test: This test measures lower back and hamstrings flexibility. The participants were instructed to reach a box placed as far as possible from them while sitting on the ground with their knees extended. The score was recorded as the last whole centimeter of the middle finger on the box. The better of two trials was recorded (Guidetti, et al., 2010).

Lateral trunk flexion flexibility test: The participants stood upright with arms and hands on the lateral side of the thighs. The last whole point of the middle finger was marked. The participants then flexed their body laterally without body rotation, and again the last whole point of the same finger was marked. The length between the two marks was recorded in centimeters. Measurements were recorded on both sides of the body (Oja & Tuxworth, 1995).

Six-minute walk test (6MWT): This test measures cardiorespiratory endurance. The 6MWT was performed in the sports hall of residential homes. The participants were instructed to walk as far as possible in six minutes. After six minutes, the walking distance was recorded in meters. The participants' systolic and diastolic blood pressure (manual monitor), heart rate (HR) (Telemetry, Polar, Finland), and rate pressure product (RPP) (HR x systolic blood pressure) were recorded before, during, and just after the 6MWT (in 1st, 3rd, and 5th minute of the recovery period while sitting). From the 6MWT scores the individual parameters of peak VO_2 were determined according to the following equation (Cahalin, Mathier, Semigran, Dec, & DiSalvo, 1996):

Peak VO_2 = 0.02 x distance (m) – 0.191 x age (yr) – 0.07 x weight (kg) + 0.09 x height (cm) + 0.26 x RPP (HR x systolic blood pressure) $(x10^{-3})$ + 2.45

Standing long jump test: The purpose of this test is to measure explosive leg power. The participants stood at a starting line on the ground. The participants were asked to take off from and to land on both legs. They were allowed to swing their arms and flex their knees to help propel the body. The longest distance jumped was measured in centi-

meters. The better of two trials was recorded (Guidetti, et al., 2010).

When the women with ID performed physical fitness tests, it was necessary to introduce additional teaching strategies for some test drills to enable the disabled subjects to perform them. Modal prompting was utilized to teach motor skills of the tests. When the modal prompting level was not sufficient, the prompting level was increased to the physical prompt to teach the test movements and enable independent performance (Yanardağ, Yılmaz, & Aras, 2010).

Data were analyzed using SPSS version 10.0.0 (SPSS, Chicago, IL). For the parametric data, *t*-test for independent samples was used to determine whether there were significant differences between Group 1 and Group 2. The 95% confidence interval (p<.05) was considered as statistically significant. Descriptive statistic was used to determine percentage distributions of the non-parametric data.

Results

Table 1 shows *t*-test results for the comparison of the basic demographic and morphological data such as age, body height, body weight, BMI, and body fat percentage (body fat %) for the two groups. The significant differences were found between the groups in body weight and BMI in favor of the control group.

Table 2 shows the differences in physical fitness test results between the groups. Significant differences were found between the two groups in the following test scores: static balance, muscular endurance, cardiorespiratory endurance, flexibility (except for sit-and-reach test), and anaerobic power, all in favor of Group 2.

Table 3 shows the cardiovascular risk factors of both groups. There was no positive hypertension history or persistently elevated blood pressure (>140/90 mmHg), or use of antihypertensive drugs in either group. Also, there was no DM positive history or use of hypoglycemic medicine in either group. Three adults with ID were using medicine for cholesterol. Since their total blood cholesterol level was considered to be high (it was >200 mg/dl), they were listed as hypercholesterolemic after the blood sampling procedure. The percentage distributions indicated that the women with ID had a

Table 1. Mean (±SD) values for physical characteristics of participants

	Group 1 Mean±SD	Group 2 Mean±SD	*t*-test t value	p
Age (year)	22.22±3.11	23.16±3.12	1.18	>.05
Body height (cm)	155.35±7.22	160.88±5.96	3.28	<.05
Body weight (kg)	54.29±8.02	53.08±5.7	0.68	>.05
BMI (kg/m²)	23.08±4.17	20.64±2.78	2.69	<.05
Body fat (%)	28.48±4.76	28.60±5.35	0.98	>.05

Table 2. Mean (±SD) values for between-groups differences in physical fitness

Variable	Group 1 Mean±SD	Group 2 Mean±SD	*t*-test t value	p
Balance test (eyes closed) (s)	9.20±6.82	21.77±8.93	6.22	<.05
Balance test (eyes open) (s)	44.16±19.77	59.35±3.59	4.21	<.05
Sit-ups (number/30 s)	9.12±2.52	11.16±2.59	3.12	<.05
Push-ups (number/30 s)	3.87±1.96	9.41±3.77	7.26	<.05
Six-minute walk test (m)	496.25±71.16	628.87±78.83	6.95	<.05
Peak VO$_2$ (ml/kg/dk)	18.4±1.97	21.36±1.9	6.0	<.05
Sit-and-reach test (cm)	7.83±6.28	8.24±5.05	0.27	>.05
Lateral trunk flexion test (cm)	16.93±3.76	23.11±5.9	4.91	<.05
Standing long jump test (cm)	131.17±22.16	151.58±22.44	3.6	>.05

Table 3. The percent distributions of cardiovascular risk factors across the groups

Risk factors	Group 1 N (%)	Group 2 N (%)
Smoking cigarettes	9 (29)	11 (35.5)
Alcohol use	0 (0)	0 (0)
Hypertension	0 (0)	0 (0)
Hypercholesterolemia	3 (9.7)	0 (0)
Overweight	10 (32.3)	2 (6.5)
Diabetes mellitus	0 (0)	0 (0)

greater tendency towards being overweight than those in Group 2.

Discussion and conclusions

To enhance the effects of regular physical activity on women with ID and living in residential homes, first their physical fitness levels should be assessed. The results of this study showed that physical fitness test scores of women with ID were lower than those of their peers with no ID.

There are many studies about physical fitness levels of children with ID. These studies have shown that children with ID have lower levels of physical fitness in comparison to children without ID (Chaiwanichsiri, Sanguanrungsirikul, & Suwannakul, 2000; Fernhall & Pitetti 2000; Horvat & Franklin 2001; Pitetti, Yarmer, & Fernhall, 2001; Un & Erbahceci, 2001). Low physical fitness levels findings were interpreted as a combination of low motivation and inactivity in children with ID. There are not as many research studies related to physical fitness of women with ID who live in residential homes as there are of children with ID. Fernall, Tymeson, Millar and Burkett (1989) indicated that the maximal heart rate of adults with ID was lower than expected at about 8-17%. Pitetti and Campbell (1991) compared cardiorespiratory endurance of individuals with and without ID and found that

cardiorespiratory endurance of adults with ID was 20-43% lower than that of the general population. Lower cardiorespiratory endurance was interpreted as related to deficient customary physical activity. Graham and Reid (2000) were assessing cardiorespiratory endurance of middle-aged women and men with ID by the step test from the Canadian Standardized Test of Fitness (CSTF) over a period of 13 years. The results of these measurements showed that the mean predicted VO$_{2max}$ for women was lower than for men, 30 (mL/kg/min) and 36.2 (mL/kg/min) respectively, in 1983, 26.3 (mL/kg/min) and 33.7 (mL/kg/min), respectively, in 1996, and these scores were described as pertaining to the 'poor' category. Additionally, the data were interpreted in such a way that women with ID had a lower level of cardiorespiratory fitness than that expected of females in the general population.

The six-minute walk test is suitable for assessing the predicted peak oxygen uptake (peak VO$_2$) measured during cardiorespiratory exercise testing, and has been widely used for people with insufficient cardiorespiratory endurance (Cahalin, et al., 1996). However, one must have in mind that a lower motivation of adults with ID could be a negative factor in this measurement process. The 6MWT was also used to measure cardiorespiratory endurance in the current study. The recorded distance of 6MWT was 496.25±71.16 m for Group 1, and 628.87±78.83 m for Group 2. Predicted peak oxygen uptake (peak VO$_2$) was calculated after the distance (m) was determined for both groups. Predicted peak VO$_2$ was 18.40±1.97 mL/kg/min for Group 1, and 21.36±1.90 mL/kg/min for Group 2 (Table 2). These results showed a significant difference in both the distance (m) and peak VO$_2$ in favor of Group 2 (p<.05). Based on the findings it can be inferred that the women with ID have a lower cardiorespiratory endurance than the women without ID. The findings on cardiorespiratory endurance in this study were similar to the results of the study by Graham and Reid (2000) in which women with

ID were found to have lower cardiorespiratory fitness than the general population.

Rimmer, Braddock and Fujiura (1994) demonstrated that cardiovascular risk factors were similar for the adults with ID and adults without ID after determining the risk profiles such as blood lipid levels, obesity and smoking cigarettes for the adults with ID in residential homes. Therefore, they emphasized that cardiovascular health of the individuals with ID resembled that of the general population. Rimmer and Rowland (2008) compared health risk behaviors and health status indicators of people with and without disabilities between 2001 and 2003. According to the behavioral risk factor surveillance system, the proportion of obesity in the disability and non-disability population was 31.2 and 19.6%, the smoker rate was 30.5 and 21.7%, and inactivity was 22.4 and 11.9%, respectively. The obtained proportions can be attributed to difficulties many people with disabilities have when they wish to behave in health-promoting way, like participating in regular physical activity, social activities, smoking-cessation classes, or having good nutrition and proper medical care and preventive examinations. Cardiovascular risk factors of the young adults (smoking cigarettes, alcohol use, hypertension, elevated blood cholesterol level, overweight, elevated blood glucose level) were evaluated by health reports and blood sampling procedure in the current study. The results showed that, except for blood cholesterol level and overweight, the percentage of other risk factors was similar in both groups. However, ten adults with ID were overweight (BMI 25-29.9 kg/m^2), so the overweight tendency for women with ID was higher (32.3 % versus 6.5 % for women without ID; Table 3). These results were similar to those reported by Rimmer and Rowland (2008) and Rimmer et al. (1994). The increased number of overweight women with ID in the present study showed that they need more health-promoting behaviors in their daily life routine. Three adults with ID took medicine to treat their blood cholesterol level, so they were listed as hypercholesterolemic after the blood sampling procedure (Table 3).

Weight increase is common until 50 years of age (Spirduso, 1995). Increased muscle mass or body adiposity may cause weight increase. Therefore, Body Mass Index (BMI) and percentage of body fat should be evaluated in conjunction with changes in body weight. Inactive lifestyles and obesity tendency of people living in residential home settings have to be evaluated by fat density and body composition. Graham and Reid (2000) found that BMI of the women with ID was 24.4±6.7 kg/m^2 in 1983 and 27.0±5.6 kg/m^2 in 1996. In the current study, the results of skinfold measurements were not different between the groups: 28.48±4.76 in Group 1 and 28.6±5.35 in Group 2 (p>.05). However, in

BMI values the significant difference occurred between the groups: 23.08±4.17 kg/m^2 for Group 1 and 20.64±2.78 kg/m^2 for Group 2 (p<.05). Although similar body fat percentage and body weight values were found in both groups, BMI values differentiated between Group 1 and Group 2. The contradiction could be related to the lower body height (cm) of the Group 1 subjects (Table 1). Pitetti, Rimmer, and Fernhall (1993) emphasized that inactive lifestyle of people with ID can with age lead to a higher prevalence of obesity and increased body fat percentage, and the trend is accelerated by gaining body weight.

Muscular endurance is essential for the performance of daily life and recreational activities, as well as for work capacity. Lower muscular endurance could restrict physical activity patterns of individuals with ID. A positive correlation has been determined between muscular endurance and industrial work performance, so that muscular endurance has to be evaluated correctly (Pitetti, 1990). Graham and Reid (2000) measured muscle endurance using push-up and sit-up tests and found that the average number of the performed push-ups and sit-ups for women with ID was 11.7±11.4 and 10.6±7.6, respectively. All performance scores were evaluated as poor. In the present study, the upper extremity muscle endurance was evaluated by the push-up test. The results showed the mean number of push-ups to be 3.87±1.96 for Group 1 and 9.41±3.77 for Group 2. There was a statistically significant difference in favor of Group 2 in the push-ups test (p<.05). The abdominal muscle endurance was measured by the sit-ups test. The mean number of sit-ups was 9.12±2.52 for Group 1 and 11.16±2.59 for Group 2. The results of the test were significantly different in favor of Group 2 (p<.05). The findings of both tests showed that muscular endurance of the women with ID was lower than that of the women in Group 2. Therefore, endurance exercises should be an indispensable part of exercise prescription for women with ID living in residential care homes. The results of this study were similar to those reported by Graham and Reid (2000).

Muscle flexibility is affected by physical inactivity, sex, age, muscle imbalance, and joint and cartilage structures. Muscle flexibility is necessary for the unrestricted performance of daily life activities in the ID population. Chaiwanichsiri et al. (2000) determined that children with ID had flexibility lower than children in the general population. Graham and Reid (2000) reported trunk flexibility test results to be 22.7±7.5 cm for women with ID, and this score was described as "below the minimum". In the current study, there were no significant differences (p>.05) between the two groups in the sit-and-reach test, the scores being 7.83±6.28 cm for Group 1 and 8.24±5.05 cm for Group 2. The reason for so close flexibility test scores could be

related to similar intensities of forward flexion patterns in the sagittal plane the subjects of both groups perform routinely in their lives. However, the lateral trunk flexion flexibility test results were significantly different in favor of Group 2 (p<.05); right side 16.93±3.76 cm for Group 1 and 23.11±5.9 cm for Group 2. The differences in lateral trunk flexion flexibility test scores are likely to be related to a lower intensity of movement patterns in the frontal plane during daily life activities in Group 1.

Balance is an essential motor skill that promotes body awareness, motor planning, bilateral motor integration, and fine motor control (Kurtz, 2008). Guidetti et al. (2010) showed that in inactive adults with ID balance skills were poorer than in active adults with ID. In the present study, both balance skills tests were significantly different in favor of Group 2 (p<.05). The average time of the balance test with eyes open was 44.16±19.77 s for Group 1 and 59.35±3.59 s for Group 2. The mean time of the balance test with eyes closed was 9.20±6.82 s for Group 1 and 21.77±8.93 s for Group 2. The findings showed that balance exercises should be a part of exercise programs for women with ID and living in residential homes.

Adults with ID have to solve some tasks involving self-care and to manifest certain social and leisure skills as part of their daily life activities. These activities require not only strength and cardiorespiratory endurance, but anaerobic power as well. In the event that a woman with ID wants to perform a task in a unit of time, anaerobic power values have to be above the defined level. Therefore, anaerobic power should be measured in adults with ID. Guidetti et al. (2010) found, using the standing long jump (SLJ) test, that inactive adults with ID had lower explosive leg power than active adults with ID. The mean distance (cm) of the SLJ test was 75.6±32.0 cm for the inactive adults with ID and 119.7±38.7 cm for the active adults with ID. In the current study, explosive leg power was also as-sessed by the SLJ test. There were significant differences in favor of Group 2 (p<.05). The mean distance (cm) of the SLJ test was 131.17±22.16 cm for Group 1 and 151.58±22.44 cm for Group 2. In the current study the ID group achieved better results than both the active and inactive ID groups in the Guidetti's study (2010) in terms of the SLJ test performance. The differences could be related to a lower age group (age group was 19−25 years in our study, and 18−45 years for Guidetti's study) and severity of ID: all the participants were classified as having mild ID in our study; in the Guidetti's study the participants were classified as having mild (38%), moderate (22%), severe (38%) and profound (3%) ID.

Physical fitness of adults with ID has to be of an adequate level to enable performance of every-day tasls and recreational activities, reduction of dependence and increments of professional effectiveness. Despite several limitations, such as the characteristics of participants (e.g. motivation, communication and interaction skills) and the measurements that were applied, the current study provides an evidence and rationale to health professionals in their efforts to stimulate the participation of the ID population living in residential homes in physical activity programs. To overcome the noticed shortcomings of the study, further studies should apply a different test battery, and include the other gender and wider age-span of the individuals with ID. Before any participation in physical fitness programs, the population with ID has to be examined for physical fitness profiles, and cardiovascular risk factors should be determined. It is possible that poor cardiorespiratory fitness and a sedentary lifestyle could lead to an early onset of cardiovascular disease and increased incidence of the disease. Therefore, future studies may focus on the correlation between cardiovascular fitness of adults with ID and early cardiovascular disease, and the effects of the prescribed exercise on physical fitness parameters for adults with ID living in residential homes.

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Correspondence to:
Dr. Mehmet Yanardag
Research Institute for the Handicapped,
Anadolu University, Eskisehir, Turkey
Phone: 90 222 3350580-4987
Fax: 90 222 3352914
E-mail: myanardag@anadolu.edu.tr

RAZINA TJELESNE PRIPREMLJENOSTI MLADIH ODRASLIH OSOBA S INTELEKTUALNIM POTEŠKOĆAMA I BEZ NJIH

Intelektualne poteškoće i život u domu mogu nepovoljno utjecati na aktivan životni stil i zdravo starenje. Cilj ovog istraživanja bio je utvrditi razinu tjelesne pripremljenosti žena s lakšim intelektualnim poteškoćama (n=31; prosječna dob 22,22 ± 3,11 godina), korisnika domova za nemoćne te ih usporediti s vrijednostima njihovih vršnjakinja u kontrolnoj skupini (n=31; dob 23,16 ± 3,12 godina). Na temelju podataka dobivenih od liječnika iz domova te zdravstvenih izvješća sudionika i analiza uzoraka krvi, najprije su određeni rizični faktori za razvoj karidiovaskularnih bolesti. Izmjereni su parametri zdravstvenog fitnesa (ravnoteža, kardio-respiratorna izdržljivost, mišićna izdržljivosti i fleksibilnost) te su procijenjeni sastav tijela i anae-robna izdržljivost. Dobivene su značajne razlike između skupina (p<=0,05) u indeksu tjelesne mase, mišićnoj izdržljivost, maksimalnoj prehodanoj udaljenosti, vršnom VO_2, ravnoteži, fleksibilnosti i snazi. Rezultati istraživanja pokazuju da je razina tjelesne pripremljenosti žena s intelektualnim poteškoćama bila niža od razine dobivene u kontrolnoj skupini njihovih vršnjakinja. Žene s intelektualnim poteškoćama trebalo bi poticati da sudjeluju u programima tjelesne aktivnosti kako bi poboljšale svoju fizičku pripremljenost.

Ključne riječi: *dom za nemoćne, kardiovasku-larni čimbenici rizika kod žena, test hodanja* šest minut*a*