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Department of Higher Education  
Yangon University of Distance Education**

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## **A Study on the Health Status and Physical Fitness of Elderly People at Home for the Aged (Hninzigone), Yangon**

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### **Abstract**

A cross sectional analytical study was done to determine the general health status and physical fitness of elderly people of 145 elderly people (51 men and 94 women) at Home for the Aged (Hninzigone), Yangon, because they were fit for this survey after the preliminary assessment. After physical examination and fitness tests, more than 90% of the elderly people had normal blood pressure while less than 10% was provisionally diagnosed as mild hypertension. BMI (Body Mass Index) showed that 55% of the elderly respondent had a healthy weight but in waist-hip ratio, 89% of the respondents are within the normal and only 11% fall within the obesity. Body fat percentage calculation revealed that half of elderly respondent were fit for their age. Only 25.5% in men and 7.4% in women were obese for their age. Majority of elder people were below averages in arm curl test. Nearly half of the population was normal in 30-second chair stand test. Eighty-two elderly men and women were above averages in back scratch test. More than half of the elderly people were below averages in chair sit-and-reach test. Majority of the elder people are below averages in 8-foot up-and-go test. More than half of the elderly people were within normal in the 2-minute walk-in-place test. Three out of six tests (arm curl, chair sit and reach and 8-foot up and go tests) were below averages than international standard scores for elderly people. Thirty second chair stand test and 2-min walk-in-place test are within normal range of international standard scores for elderly people and fortunately back-scratch test was above averages than international standard scores for elderly people. Thus, the data from this preliminary study will serve as a base-line data for future large population-based studies on the health status and physical fitness of elderly people in Myanmar.

### **1. Introduction**

The population of Myanmar has been rapidly aging over the last three decades. Percentage of persons older than 60 years increased from 6.37 in 1980 to 8 in 2013. In Myanmar, one study had been done on assessment of body composition of elderly but lack of studies on physical fitness of elderly.

With the projected growth in the older adult population, preventing or delaying physical disability in later years has become a national goal. Evidence suggests that physiological decline, especially that associated with physical inactivity is modifiable through proper assessment and activity intervention. Recognizing the need for a tool to evaluate the functional fitness performance of older adults, researchers at California State University, Fullerton, developed and validated a new fitness test battery especially for older adults: the Senior Fitness Test.

Assessment tools used hitherto, i.e. the Katz index, the Lawton scale, the Barthel index or the Euro fit tests for adults conducted using cycle-ergometer, did not meet the expectations of researchers and practitioners. Physical fitness parameters such as strength, flexibility, coordination and endurance cannot be determined using these tools. They do not specify fitness parameters like strength and muscular endurance, mobility, dexterity, speed, body balance, motor coordination, reaction time, flexibility etc. All these parameters can be measured by the Fullerton Functional Fitness Test, invented by Roberta E. Rikli and C. Jessie Jones in the Lifespan Wellness Clinic at California State University in Fullerton. It used six items to assess these parameters; arm curl test to indirectly assess the upper body strength, 30 seconds chair stand test to assess lower body strength, back scratch test to assess upper body flexibility, chair sit-and-reach test to assess lower body flexibility, 8-foot up-and-go to assess the agility/dynamic balance and 6-minute walk trial describes, indirectly, the level of aerobic endurance and step-in-place test was performed instead of 6-minute walk trial in case of persons, who use orthopedic devices during walking, as well as in case of persons with

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difficulties associated with maintenance of balance. It is suitable even for patients with cardiovascular disease.

Hninzigone Home for the aged, Yangon, is a non-profit humanitarian non-governmental organization in Myanmar. Its mission is to provide accommodation and care for about two hundred helpless and homeless aged senior citizens in the evening years of their lives. Monitoring the level of functional fitness is especially important for elderly people above 60 years for preventing many diseases, occurrence of immobilization and reduction of mortality rate, thus, the study aims to assess the present level of physical fitness of the elderly.

### **Objectives of the study**

#### **General Objective:**

- To assess physical fitness of Myanmar elderly people from Home for the Aged (Hninzigone), Yangon.

#### **Specific Objectives:**

(1) To determine anthropometric measures of elderly men and women (2) To determine functional fitness of elderly men and women (3) To compare anthropometric measures and functional fitness between elderly men and women

### **Methods of the Study**

This study is a cross sectional descriptive study in Hninzigone Home for Aged. Data were analyzed by using Statistical Package for Social Science (SPSS).

### **Scope and Limitation**

There are nearly 200 elderly men and women in Hninzigone Home for Aged, among them 145 elderly persons are selected based on the below inclusion and exclusion criteria of the elderly who are above 60 years of age with the support of specific requirements.

## **2. Research Methodology**

This study is a cross sectional descriptive study in Hninzigone Home for Aged. The sample size determination was based on the below inclusion and exclusion criteria of the elderly who are above 60 years of age with the support of specific requirements.

#### Inclusion criteria

All the elderly men and women (> 60 year of age), who can walk and dress unaided and have lived for at least for 3 months at Home for the Aged (Hninzigone), Yangon.

#### Exclusion criteria

Participant's bad general feeling at the day of study, Chest pain (discomfort) 3 days before the study, ECG evidence of ischemia and arrhythmia, Arterial blood pressure exceeding 160/100 mmHg at the day of study, Musculoskeletal disorder and Medical officer of Hninzigone Home for the Aged, Yangon, recommended not to perform the test.

#### Equipment required/ Research Procedures

Electrocardiographic machine (ECG-1103, Care well Co., Ltd), Mercury sphygmomanometer (ALPK 2, Japan), Stethoscope, Timer, Stadiometer, Measuring tape for measurement of waist and hip circumferences, Calibrated weighing scale (Mechanical personal scale-model BR 9808), Skinfold caliper (GIMA, Italy), Handle weighs 5 lb and 8 lb and 12 inches (30 cm) ruler

Before starting the test, primary screening such as blood pressure (BP) measurement and routine 12 Lead Electrocardiogram (ECG) were done and elderly will be selected according to inclusion and exclusion criteria. Then, filling out proforma, anthropometric measurements (height, weight, waist and hip circumferences, skin fold thickness) were done by well-trained technician. BMI, waist hip ratio and body fat composition were calculated. The testing location was equipped with drugs to deal with emergencies and medical officer standby. Then, referral to Yangon General hospital will be arranged. Prior to commencing the functional fitness tests, the examined person will be instructed to perform the tasks as good as possible after taking a rest and relax as required for about 20- 30 minutes. Appropriate safety

was secured by proper positioning of the devices used during the testing procedure. Before the tests are started, a five- to ten-minute warm-up was conducted as well as general stretching exercises were performed.

Prior to the commencement of and after the termination of the trials, arterial blood pressure and heart rate were measured. Performance of particular parts of the functional fitness tests were preceded by a demonstration and the examined person were preliminarily checking his ability to perform particular tests in order to get familiar with their proper course. The performance of the tests will be begun with the arm curl, subsequently- the back scratch, the 30-second chair stand test, the chair sit and reach, the 8 feet trial, and the last 2-minute walk in place will be performed. It will be terminated in case the examined person reports dizziness, nausea, excessive fatigue, pain, or if the examiner notices other alarming symptoms.

**Table (2.1) Range of Scores - Men**

	70-74 yr	75-79 yr	80-84 yr	85-89 yr	>90 yr
Chair stand (no. of stands)	12-17	11-17	10-15	8-14	7-12
Arm Curl (no. of respondent)	14-21	13-19	13-19	11-17	10-14
2-Min Step (no. of steps)	80-110	73-109	71-103	59-91	52-86
Chair Sit-&-Reach (inches +/-)	-3.5 - +2.5	-4.0 - +2.0	-5.5- +1.5	-5.5- +0.5	-6.5 - -0.5
Back Scratch (inches +/-)	-8 - -1	-9 - -2	-9.5 - -2	-10 - -3	-10.5 - -4
8-Ft Up-&-Go (seconds)	6.0 - 4.2	7.2- 4.6	7.6- 5.2	8.9 - 5.3	10.0- 6.2

*Source: WHO Standard International Normal Values*

Normal range of scores for men, with normal defined as the middle 50% of the population. Those scoring above this range would be considered above average for their age and those below the range as below average.

Normal range of scores for women, with normal defined as the middle 50% of the population. Those scoring above this range would be considered above average for their age and those below the range as below average.

**Table (2.2). Range of Scores – Women**

	70-74 yr	75-79 yr	80-84 yr	85-89 yr	>90 yr
Chair stand (no. of stands)	10-15	10-15	9-14	8-13	4-11
Arm Curl (no. of respondent)	12-17	11-17	10-16	10-15	8-13
2-Min Step (no. of steps)	68-101	68-100	60-91	55-85	44-72
Chair Sit-&-Reach (inches +/-)	-1.0 - +4.0	-1.5 - +3.5	-2.0 - +3.0	-2.5- +2.5	-4.5 - +1.0
Back Scratch (inches +/-)	-4.0 - +1.0	-5.0 - +0.5	-5.5 - +0.0	-7.0 - -1.0	-8.0 - -1.0
8-Ft Up-&-Go (seconds)	7.1 - 4.9	7.4- 5.2	8.7- 5.7	9.6 - 6.2	11.5- 7.3

*Source: WHO Standard International Normal Values*

### 3. Findings and Discussion

#### 3.1 Characteristics of the Respondents

The following table (3.1) shows gender, age group and educational level of the respondents.

**Table (3.1). Characteristics of the Respondents**

Number of the Respondents=145			
		Frequency	Percentage
Gender of the Respondent	Male	51	35.2
	Female	94	64.8
Age Group of the Elderly People	70-74 year	25	17.2
	75-79 year	52	35.9
	80-84 year	40	27.6
	85-89 year	19	13.1
	over 90 year	9	6.2
Educational Level of the Respondents	Primary school	51	35.2
	Middle school	34	23.4
	High school	38	26.2
	Graduated	22	15.2

Source: Survey Result, September, 2017

Among the elderly, 145 were fit to be included in the survey after the preliminary assessment. Among 145 elderly, female contributes to 64.8% (94). Based on the age of the elderly, it was classified into 5 groups: 75-79 year showing up 35.9% of the total population, 80-84 year showing up 27.6% of the total population, Primary school is the highest composition 35.2% and Graduate is the lowest one 15.2%.

### 3.2 Heart Rates and Blood Pressure

This section contains respondent's heart rates and blood pressure in order to detect the Hypertension of the elderly men and women.

#### 3.2.1 Heart Rate

This study reveals the heart rate of the 145 elderly men and women. Normal Heart rate was between 65 and 100 beat per minute. If it is less than 65/min, one has the condition called bradycardia (slow heart rate) and if it is more than 100/min, called tachycardia (rapid heart rate).Bradycardia and Tachycardia are sometimes normal physiological condition until that person suffered from significant symptoms.

According to the results, most of the elder people have normal heart rate before they go to exercise (activity state) and round about 4% are both bradycardia and tachycardia.

#### 3.2.2 Blood Pressure

To name Hypertension (High Blood Pressure), both systolic and diastolic blood pressure is important and essential but diastolic blood pressure is more specific than systolic one.

According to the research, 95.17% of diastolic blood pressure is within normal range and 4.83% is suffered from mild hypertension.

In this study, 56.55% of systolic blood pressure is within normal range and 43.45% is filled into mild hypertension. Therefore, more than 90% of the elderly people have normal blood pressure while less than 10% has provisionally diagnosed as mild hypertension. (It may sometimes be white coat hypertension; most of the people get high blood pressure during consultation with medical doctors and staff).

### 3.3 Body Mass Index

According to the research finding, of all the 145 respondents, based on the BMI calculation, 80 are within the average weight, 23 were underweight, 33 are overweight, and 9 are obesity which shown that 55% of the elderly respondent had a healthy weight.

### 3.4 Waist Hip Ratio

The next section reveals the waist and hip ratio of the elderly men and women.



According to the finding, 89% of the respondents were within the normal of waist hip ratio and only 11% fall within the obesity.

### 3.5 Body Fat Percentages

The next part is the body fat percentages of the elderly persons.

Concerning the research results, both male and female body fat percentages of the respondents. Among the 51 male respondents, 13 fall within the obese category, 14 under acceptable and 24 under fitness category. Among the 94 female respondents, 60 were under fitness, 27 under acceptable and only 7 under obese.

### 3.6 Functional Fitness for Elderly

Functional fitness test for elderly were categorized based on the gender and age group of the respondents for each test.

#### 3.6.1 Arm Curl Test

This test is used to measure the power of the forearm and arm of upper extremities.

**Table (3.2).Arm Curl Test Per Age Group Per Gender Among Respondents**

Age Group	70-74		75-79		80-84		85-89		Above 90	
Gender	M	F	M	F	M	F	M	F	M	F
Below Averages	4	15	7	27	3	15	5	7	6	2
Normal	2	4	9	8	10	10	3	4	0	1
Above Averages	0	0	0	1	2	0	0	0	0	0
Total	6	19	16	36	15	25	8	11	6	3

Source: Survey Result, September, 2017

In the above table (3.2), majority of elder people (91) are below averages when compare with international standard scores for elderly men and women. Only three people (one female and two male) were above averages for arm curl test. Half of the people are within normal in 80-84 age groups but in all age group, only 51 elderly people were within normal range.

#### 3.6.2 30-second Chair Stand Test

This test is used to detect the power of the leg (especially thigh) of the lower extremities.

**Table (3.3).30-second Chair Stand Test Per Age Group Per Gender Among Respondents**

Age Group	70-74		75-79		80-84		85-89		Above 90	
Gender	M	F	M	F	M	F	M	F	M	F
Below Avg;	3	5	4	10	3	4	2	2	3	2
Normal	2	11	10	20	7	13	6	5	2	1
Above Avg;	1	3	2	6	5	8	0	4	1	0
Total	6	19	16	36	15	25	8	11	6	3

Source: Survey Result, September, 2017

According to the table (3.3), nearly half of the populations (77 elderly people) were normal. And fortunately, 30 elderly people were above averages of the international standard scores for elderly men and women. The rest (38 men and women) were below averages.

#### 3.6.3 Back Scratch Test

Back scratch test was used to measure the flexibility of the forearm and arm of upper extremities.

**Table (3.4). Back Scratch Test Per Age Group Per Gender Among Respondents**

Age Group	70-74		75-79		80-84		85-89		Above 90	
Gender	M	F	M	F	M	F	M	F	M	F
Below Avg;	2	6	4	10	5	7	3	4	2	0
Normal	1	6	3	3	2	4	1	0	0	0
Above Avg;	3	7	9	23	8	14	4	7	4	3
Total	6	19	16	36	15	25	8	11	6	3

Source: Survey Result, September, 2017

According to the table (3.4), 82 elderly men and women were above averages in this test and 20 people were within normal while the rest (43 people) are below averages.

**3.6.4 Chair Sit-and-Reach Test**

This test measured the flexibility of abdomen and lower parts of the body.

**Table (3.5), Chair Sit-and-Reach Test Per Age Group Per Gender Among Respondents**

Age Group	70-74		75-79		80-84		85-89		Above 90	
Gender	M	F	M	F	M	F	M	F	M	F
Below Averages	5	12	6	20	6	10	2	3	3	0
Normal	0	4	8	9	5	7	2	4	1	2
Above Averages	1	3	2	7	4	8	4	4	2	1
Total	6	19	16	36	15	25	8	11	6	3

Source: Survey Result, September, 2017

In the table (3.5), it is shown that more than half of the elderly people (67) were below averages in comparison with normal standard scores internationally. 36 men and women were above averages and 42 are within normal range.

**3.6.5 8-Foot Up-and-Go Test**

The power of the muscle of lower leg of lower extremities was determined in this test.

Source: Survey Result, September, 2017

**Table (3.6), 8-Foot Up-and-Go Test Per Age Group Per Gender Among Respondents**

Age Group	70-74		75-79		80-84		85-89		Above 90	
Gender	M	F	M	F	M	F	M	F	M	F
Below Averages	4	14	9	29	11	21	5	10	2	1
Normal	1	4	5	6	4	4	3	1	3	2
Above Averages	1	1	2	1	0	0	0	0	1	0
Total	6	19	16	36	15	25	8	11	6	3

According to the table (3.6), majority of the elder people (106 men and women) were below averages in 8-foot up-and-Go test. Only 6 elderly people are above averages in this test and 33 elderly men and women are within normal in this muscle power test.

**3.6.6 The 2-minute Walk-in-place Test**

This test was used to measure for flexibility and power of both knee joints (especially for dominant one).

Source: Survey Result, September, 2017

**Table (3.7). 2-minute Walk-In-Place Test Per Age Group Per Gender Among Respondents**

Age Group	70-74		75-79		80-84		85-89		Above 90	
Gender	M	F	M	F	M	F	M	F	M	F
Below Averages	0	1	0	1	0	0	0	0	1	0
Normal	2	9	9	19	8	12	5	8	2	1
Above Averages	4	9	7	16	7	13	3	3	3	2
Total	6	19	16	36	15	25	8	11	6	3

In table (3.7), more than half of the elderly people (75 men and women) were within normal when compare with international standard scores for elderly men and women and

followed by 67 men and women that were above averages than international standard scores. Only 3 people were below averages in this test.

#### 4. Conclusion

In conclusion, among the elderly, 145 were fit to be included in the survey after the preliminary assessment. Among 145 elderlies, male contributes to 35.17% (51) and female contributes to 64.58% (94). Based on the age of the elderly, it was classified into 5 groups: 70-74 year showing up 17.24% of the total population, 75-79 year showing up 35.86% of the total population, 80-84 year showing up 27.59% of the total population, 85-89 year showing up 13.10% of the total population and those who are above 90 year contributed 6.21% of the total population. Educational levels of the respondents were divided into four categories, Primary school, Middle school, High School and Graduated Level.

Most of the elder people have normal heart rate before they went on exercising (activity state) and round about 4% are both bradycardia and tachycardia. More than 90% of the elderly people had normal blood pressure while less than 10% has provisionally diagnosed as mild hypertension. (It may sometimes be white coat hypertension, most of the people get high blood pressure during consultation with medical doctors and staffs). Fifty-five percentage of the elderly respondent had a healthy weight according to the BMI (Body Mass Index) results. Eighty-nine percentage of the respondents were within the normal of waist hip ratio and only 11% fall within the obesity.

Both male and female's body fat percentages of the respondents showed 13 fell within the obese category, 14 under acceptable and 24 under fitness category. Among the 94 female respondents, 60 are under fitness, 27 under acceptable and only 7 under obese. Three out of six tests (arm curl, chair sit and reach and 8-foot up and go tests) were below averages than international standard scores for elderly people. Thirty seconds chair stand test and 2-min walk-in-place test were within normal range of international standard scores for elderly people and fortunately back-scratch test was above averages than international standard scores for elderly people. Thus, the data from this preliminary study will serve as a base-line data for future large population-based studies on the health status and physical fitness of elderly people in Myanmar.

#### ABBREVIATIONS

cm	centimeter	HC	hip circumference
BMI	body mass index	lb	pound
BP	blood pressure	min	minutes
BSF	bicep skinfold	mm	millimeter
ECG	electrocardiogram	TSF	tricep skinfold
g	gram	WC	waist circumference
		Yr	year

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