

C. Effects of exercising with an Active Passive Trainer on the rate of mobility of frail elderly residents of retirement homes

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Abstract

With advancing age a slowing down in performance is seemingly unavoidable. But it is generally accepted today that physical activity will in all likelihood delay the rate of aging and thus improve the quality of life.

In this study we have checked the benefits gained by exercising against resistance with the APT, in order to improve the walking speed of frail residents in retirement homes.

Twenty-six such residents between the ages of seventy-six and ninety-three were examined. Their walking speed and their pulse rates were measured prior to a program of exercise consisting of twelve 10-15 minute lessons, and at its conclusion. Results showed an average improvement of 29% in the number of active patients.

At the start of the program and at its conclusion a subjective evaluation was made in order to assess the degree of the patient's independence in daily tasks. The categories ranged from independence to total dependence. An increase of 127% in the number of independent patients was shown as well as a reduction of 29% in the number of passive patients.

We may conclude that exercise on the APT improves the mobility rate and therefore the degree of self-sufficiency in the performance of daily tasks.

Introduction

The ever-expanding geriatric population of the world calls for greater attention to the health requirements of the elderly. Older people must be made aware of the fact that increased life span and an enhanced quality of life are dependent on constant activity of both body and mind. It is undoubtedly easier to prevent disease than to treat it, and likewise indisputably cheaper. Therefore sustaining the ability of the elderly to function unaided is an issue of fundamental importance to public health.

Professionals trained in the treatment of the geriatric population are well aware of the direct relation between the mobility of the elderly and their general sense of well-being. Speed of walking is a reliable indicator of self-sufficiency and thus it may be assumed that exercise designed to improve walking and particularly its rate, will serve as a boost in functional performance.

The aim of this study was therefore to examine the improvement in walking speed after

exercising on the active passive trainer (APT). Further objectives were to check the effects of APT exercising on:

1. The pulse rate at rest and after exertion; and
2. The level of daily performance.

Methods Used

Survey Location and Population

This study was done at the physical health institute of the Mish'an Retirement Home in Ramat Efal, during the months of January through May 1995.

Twenty-six elderly patients (three men and twenty-three women) ranging in age from 76 to 93, who had agreed to participate in the study, were examined. Six of them dropped out of various reasons.

All participants in the study suffered from difficulties in walking: 12 walked with the aid of a walker, five used a single cane, one used two canes, and two walked without any walking aids.

Data Collection

The study was carried out in three stages:

- a. A pre-test examination and collection of background data;
- b. 12 twice-weekly exercise sessions on the APT device;
- c. Post-test examination.

Identical checks performed before and after the exercise sessions.

Variables measured were:

- a. Speed of walking;
- b. Pulse rate at rest;
- c. Pulse rate immediately after walking;
- d. The patient's subjective appraisal of his own performance ability.

Results of Walking Speed and Pulse Rate

The results of measurements carried out on all patients before and after the study period.

Patient	Age	Walking Aid	Walking		Speed	Pulse rate		Pulse rate	
			Before	After	%	Before	After	Before	After
1	84	Walker	101	84	20	70	70	78	78
2	89	Walker	53	47	12	84	84	94	90
3	85	Walker	17	12	42	80	80	96	88
4	82	Walker	25	15	67	84	80	96	82
5	80	Walker	13	11	18	68	60	80	62
6	85	Walker	38	21	81	72	72	74	76
7	93	Walker	18	11	64	76	74	90	78
8	84	Walker	48	32	50	80	80	96	88
9	80	Walker	59	43	37	84	82	90	90
10	90	Walker	43	34	26	82	82	96	88
11	82	Walker	52	38	37	78	78	88	84
12	87	Walker	49	35	40	80	80	92	88
13	83	One cane	10	8	25	90	88	94	90
14	86	One cane	7	6	17	68	68	72	70
15	86	One cane	12	9	33	70	70	90	76
16	73	One cane	31	18	72	84	84	98	90
17	78	One cane	38	29	31	78	78	86	86
18	87	Two canes	29	9	222	66	60	70	66
19	85	No aid	12	10	20	83	80	94	88
20	76	No aid	13	11	18	72	74	80	80
Average	84		34	24	42	77	76	88	81

Effects of Exercise on the Walking speed:

The average walking time was reduced from 33.57 seconds before the exercise program to 24.14 seconds after the program, representing a 42% increase in the average walking speed.

Effects of Exercise on Resting Pulse Rate:

No change occurred in the resting pulse rate.

Effects of Exercise on the Pulse Rate after exertion:

The pulse examination immediately after walking the track showed that the average had decreased from 87.7 to 81.3 three quarter to the 20 patients that participated in the exercise program had a lower pulse rate after exertion.

Review of subjective estimate of daily function

Mobility

Level of performance*	Before Exercise Program				After Exercise Program			
	1	2	3	4	1	2	3	4
Getting out of bed	-	4	6	10	-	-	2	18
Getting out of chair		4	7	9	-	-	1	19
Walking	-	2	7	11	-	-	1	19
Climbing stairs	12	1	6	-	-	1	3	16
Climb an incline	2	3	10	4	-	1	3	16
Leaving the ward	10	4	6	1	8	2	1	9
Total Number	25	18	42	35	8	4	11	97

Daily Activities

Level of performance*	Before Exercise Program				After Exercise Program			
	1	2	3	4	1	2	3	4
Putting on socks	1	4	8	7	1	1	5	13
Putting on shoes	1	2	7	10	-	-	2	18
Total Number	2	6	15	17	1	1	7	31

*Level of performance

1-dependent

2-partially dependent

3-partially independent

4-independent

Discussion and Conclusions

Aging is an integral part of life reached only by the lucky few. Studies dealing with the issue of old age show that physical activity by the elderly is the safest and most effective way to "age gracefully".

In this study we have shown that a program of exercise on the APT (exercise against resistance) considerably improves the walking rate in the elderly and frail. Furthermore there is an improvement in level of independence when performing daily activities.