

## PHYSICAL ACTIVITY IN GERIATRICS

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This essay pretends to give directions on those aspects related to the development and application of a physical activity program for elderly people.

### OBJETIVES OF PHYSICAL ACTIVITY IN GERIATRICS

Age involves a reduction in the muscle tone and in the movement amplitude, a degradation in the motor coordination, and a reduction in the respiratory capacities.

Therefore, at 60, it is already seen a reduction in the heart yield and in the respiratory movements (mostly inspiratory) of the thoracic cage.

In order to slow down the exhaustion of the reserve potential of the different organic systems (in short, of the ability to adapt to the increasing needs), the central axis of every treatment must be physical exercise, mostly aerobic; it is also very important to control the dietetic habits, hygiene, etc.

It is basic to start from the correct clinical exam, which will allow us to value any possible alteration that could be a contraindication.

The therapeutic physical activity (preventive, healing, palliative, or recovery) is a professional medical act, which starts from a medical diagnosis, preferentially by a geriatrician, from which a physiotherapeutic diagnosis of functional evaluation is done. The physiotherapist is the one who does the functional valuation, the development of the treatment program and its application.

The program's follow up is an interdisciplinary job between the geriatrician, the family practice physician, the A.P. nurse, the physiotherapist and even the social worker.

It is important to look for sanitarian professionals and to run away from other figures (gym instructors, massagers, "cultural healers"), due to the risks that acting on an ill person or on a reduced capacity person may bring (liability).

### FUNCTIONAL DIAGNOSIS

1) Anamnesis: Personal and familiar health history (ej. Sudden death in close relatives).

2) Apparatus examination:

2.1) Cardiorespiratory Apparatus: T.A.; rest and effort E.C.G.

(Step test: going up/down a 40 cm step during 3 minutes, measure F.C, he must be near to the rest frequency – 60 ppm-).

2.2) Locomotor Ap.: Atrophies, joint mobility, force, resistance, arthralgias, etc.

2.3) Nervous System: Highly related to the latter: value skills, coordination, reflexes, sensitivity, proprioception and kinesthesia.

2.4) General somatic control: Stature, weight, body mass index (BMI).

In case any important alteration is found, the patient will be forwarded to a specialist.

### PROGRAM DEVELOPMENT

It will be supported by the following points:

1) Duration: between 15 to 60 m.

2) Frequency: 3 to 5 times per week.

3) Rising difficulty workout (it starts with low intensity, and progresses within 3 to 4 weeks to achieve the maximum workout).

4) A low intensity workout during an extended duration is chosen, better than the opposite option (same benefit in long term with lower risk).

5) The session will have warm-up, muscle conditioning (strength), aerobic exercise and cooling.

6) The C.F. will oscillate between 75% of the theoretical maximum (C.F. max = 225-age) and a minimum value under which there is no benefit (C.F. min = C.F. rest + 0,6 (fc max-fc rest)).

NB: To be applied in non cardiopat subjects, you must observe the existence of musculo-skeletal pathologies.

7) To do the workout, if possible, in group (10/15 people in semi-circle) adapting when possible the program to an individual level.

8) Exercises must be changed from time to time and not very repetitive (they bore and lose attention). Wait 2 hours after the main meals.

9) The more intensive the workout is, the more effect it will have. But also the greater the risk. Below 15m/session, 3 times/week and C.F. lower than 45% maximum: It is inefficient.

### **XAMPLE OF EXERCISE PROGRAM**

1) Warm-up: 5 m (e.g.: to walk quickly).

2) Flexibility and coordination exercises: 10 m (e.g.: dancing steps, symmetrical and asymmetrical...).

3) " " strength: 10 m (e.g.: use of small gadgets. Avoid isometrics).

4) " " pure aerobics: 30 m (e.g.: Cycloergometer. Avoid contact/stressful sports).

5) Cooling: 5 m (e.g.: to walk slowly).

### **SELECTION OF THE DIFFERENT EXERCISES**

1) Flexibility and coordination:

- Stretchings: mild stretchings. Do not copy other subject's positions, but pay attention to his own.

- Bilateral exercises: Symmetrical and asymmetrical, in order to integrate both brain hemispheres.

2) Muscle strength:

- They must produce mostly isotonic contractions. Isometrical contractions produce a strong increase in the T.A. Deben producir contracciones fundamentalmente isotónicas, las isométricas producen un aumento brusco de la T.A and in the C.F.; if isometric exercises were used (e.g. in postsurgical recovery), it should not be passed the 40% of the maximum strength. If the subject is cardiopath, the 15 or 20%.

- General exercises (maintenance) should be more requested in LEGS more than in ARMS, due to the fewer muscles and resistance of the latter.

3) Aerobic exercise:

- They will be the central axis of the session. They allow to improve the cardiorespiratory and musculoskeletal resistance of the subject.

- Advises: To walk, swim, cycloergometer, etc... always without doing competition and avoiding shock sports (Football, footing, skydiving...).

4) For all types of exercises:

- Due to the fact that the old people's metabolism lasts longer in activating itself and in reaching its maximum performance, you should avoid the extreme hours in the day. We recommend the last hours in the morning or in the afternoon.

5) The exercises:

- May be different and may vary from time to time. You must mix and alternate them along the session to make it funny and amusing; you can use balls, strings, broomsticks, musical rhythms, etc.

- When you combine the exercises with simple order like "up", "forwards"... , you stimulate orientation and attention, combining physical activity with mental activity.

- Abdominal respiration is specially important: They must learn to breath according a abdominal standard and separate the abdominal/thoracic standard, using the nose filter in the inspiration, and the reeducatory expiration (pursed lips: rise in the equal pressure point) in order to achieve the most efficient respiration.

### **CONTINUITY IN THE EXERCISE PROGRAM**

In order to see the cardiovascular benefit, around 4 weeks are required. Remarkable results are seen within 3 months. If the program is abandoned, in 4 weeks time most of the benefit is lost, and in 8 weeks the patient goes back to his original state.