# ACTIVE AGING ON HEMODIALYSIS: AN ADAPTED LOW INTENSITY EXERCISE PROGRAMME IN ELDERLY PATIENTS

*V. Esteve, M. Fulquet, M. Pou, V. Duarte, A. Saurina, J. Carneiro, I. Tapia, M. Ramírez de Arellano.*
*Servei de Nefrologia. Hospital de Terrassa. Consorci Sanitari Terrassa. Barcelona*

## BACKGROUND

- Elderly patients on hemodialysis (HD) are a steady increase group.
- These are characterized by their high complexity, dependency and comorbidity.
- Multiple benefits of exercise in HD patients have been described; although they have not been specifically evaluated in the elderly population

## OBJECTIVES

1.-To analyze the effect of an adapted low intensity intradialytic exercise programme on muscle strength, functional capacity and quality of life in our elderly patients (> 75 years) in HD.

2.-To analyze if an intradialysis training program could improve body composition, nutritional parameters and the hormonal anabolic system in these patients.

## MATERIAL AND METHODS

- A 12 weeks single-center prospective study.
- ET included a combined physical fitness using balls, weights, elastic bands and cycle movements in the first two hours of every HD session.
- C group receieved standard HD care.
- All subjects were evaluated at baseline and at the end of the study using the following data:
  - 1.- Biochemical parameters.
    - *Nutritional data and Lipid profile*
  - 2.- Muscular data:
    - *Maximum length quadriceps strength (MLQS)*
    - *"Hand-grip (HG) dominant arm.*
  - 3.- Functional capacity tests:
    - *"Sit to stand to sit" (STS10)*
    - *"six-minutes walking test" (6MWT).*
  - 4.- Health related Quality of Life (EQ5D)
  - 4.-Body composition:Electrical biompedance
  - 5.- Anabolic Hormonal system:
    - *Insulin Growth Factor-I (IGF-I)*
    - *IGF Binding Protein 3 (IGFBP-3)*
    - *Ratio IGF-I/IGFBP-3.*

## RESULTS

### DEMOGRAPHICAL DATA

*Included patients: 22patients (50% men)*

*Mean age: 83.2 18.4 years*

*Charlson Index:9.5 ± 1.2*

*Time on HD treatment: 44.1± 596 months*

*11 ET group / 11 C group*

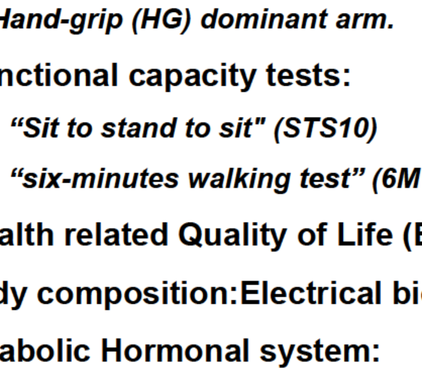



*Figure 1.- Main patients on HD (%) ESRD aethiology*

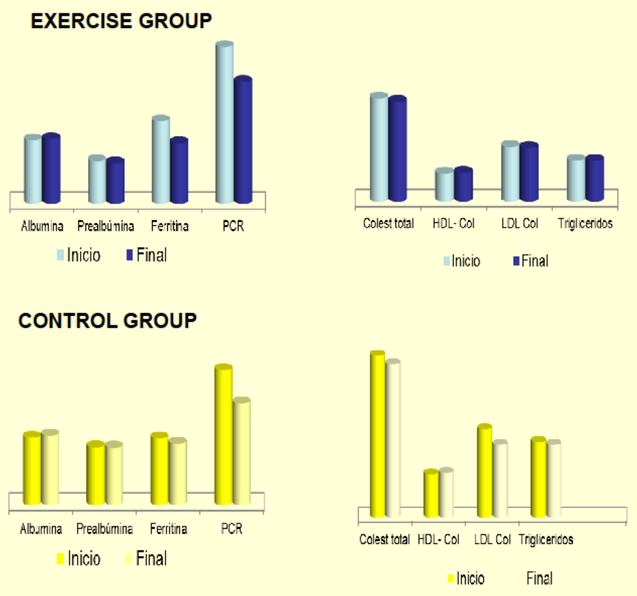
### BASELINE DEMOGRAPHICAL DATA

| | EXERCISE (11 pacients) | CONTROL (11pacients) |
|---|---|---|
| Mean age (years) | 83.9± 3.9 | 82.4 ± 4.6 |
| Time on HD(months) | 37.3 ± 27.4 | 50.9 ± 21.2 |
| Sexo (M) (n) | 6 | 6 |
| Charlson Index | 9.7 ± 1.1 | 9.3 ± 1.4 |
| Diabetes Mellitus | 40.5 % | 27.3 % |
| High Blood Presure | 12.1 % | 18.3 % |

*"No diferences beetwen groups regarding demographical data were found at baseline study"*

*Table 1.- Main baseline demographical data, comorbidities and aethiologies in our HD patients*

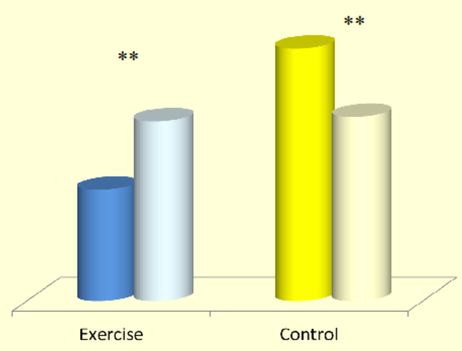
### NUTRITIONAL AND LIPID DATA




*"No diferences beetwen groups regarding nutritional and lipid profile biochemical data (not shown) were found at the end of the study"*

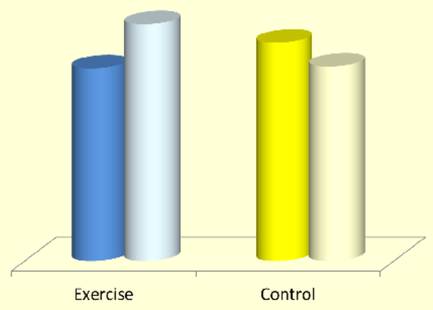
### MUSCULAR DATA

*Statistical significance; p<0.05*




| HG | INITIAL | FINAL | P-value |
|---|---|---|---|
| Exercise | 16.6 ± 8.7 | 18.2 ± 8.9 | 0.019 |
| Control | 19.9 ± 9.3 | 18.3 ± 10.7 | 0.011 |

*Figure 2.- Hand Grip Dominant Arm (HG). Changes scores (pre-post) during the study*




| MQLS | INITIAL | FINAL | P-value |
|---|---|---|---|
| Exercise | 10.5 ± 7.6 | 12.9 ± 10.1 | 0.061 |
| Control | 11.9 ± 7.5 | 10.3 ± 5.6 | 0.442 |

*Figure 3.- Maximun Length Quadriceps Strength (MLQS). Changes scores (pre-post) during the study*

### FUNCTIONAL CAPACITY TESTS

| | INITIAL | FINAL | P-value |
|---|---|---|---|
| STS 10 | | | |
| Exercise | 29.9 ± 10.6 | 25 ± 7.8 | 0.004 |
| Control | 44 ± 14.3 | 45.9 ± 13.8 | 0.265 |
| 6MWT | | | |
| Exercise | 234.4 ± 117.7 | 274.7 ± 144.9 | 0.004 |
| Control | 213.9 ± 104.4 | 210.8 ± 126.5 | 0.813 |

*Figure 4 . – Functional capacity Tests: Sit to stand to sit 10 and 6MWT. Changes scores (pre-post) during the study*

### BODY COMPOSITION

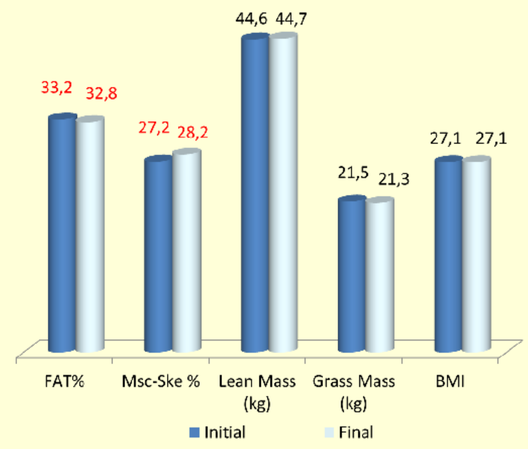



*Figure 5 . – Body composition (BIA): Diferences in ET group during the study*

### HEALTH–RELATED QUALITY OF LIFE

| EQ-5D | INITIAL | FINAL | P-value |
|---|---|---|---|
| Exercise | 49 ± 19.1 | 59.5 ± 20.3 | 0.049 |
| Control | 58.9 ± 31.4 | 52.8 ± 31.3 | 0.243 |

*Figure 5 . – Health-related Quality of Life (EuroQol-5D): Health visual scale. Changes scores (pre-post) in the study*

### ANABOLIC HORMONAL SYSTEM

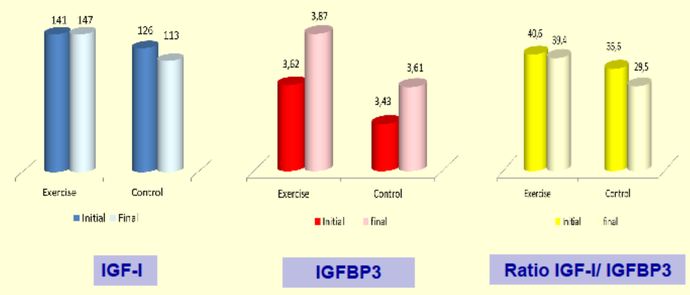



*Figure 6 .–Hormonal Anabolic system: Diferences beetwen groups during the study ( ng/ml values expressed)*

## CONCLUSIONS

1.-An adapted low intensity exercise programme improved muscle strength, functional capacity and quality of life in our elderly patients on HD and stand out the benefits of exercise in HD patients, even in this elderly population.

2.- Although exercise training was beneficial in terms of physical function and muscular strength, we did not found relevant changes on nutrtional data, body composition and the hormonal anabolic system in our elderly HD patients.

3.- Despite an elderly HD patient, we should consider to implement an adapted low intensity intradialytic exercise as a part of comprehensive care.

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