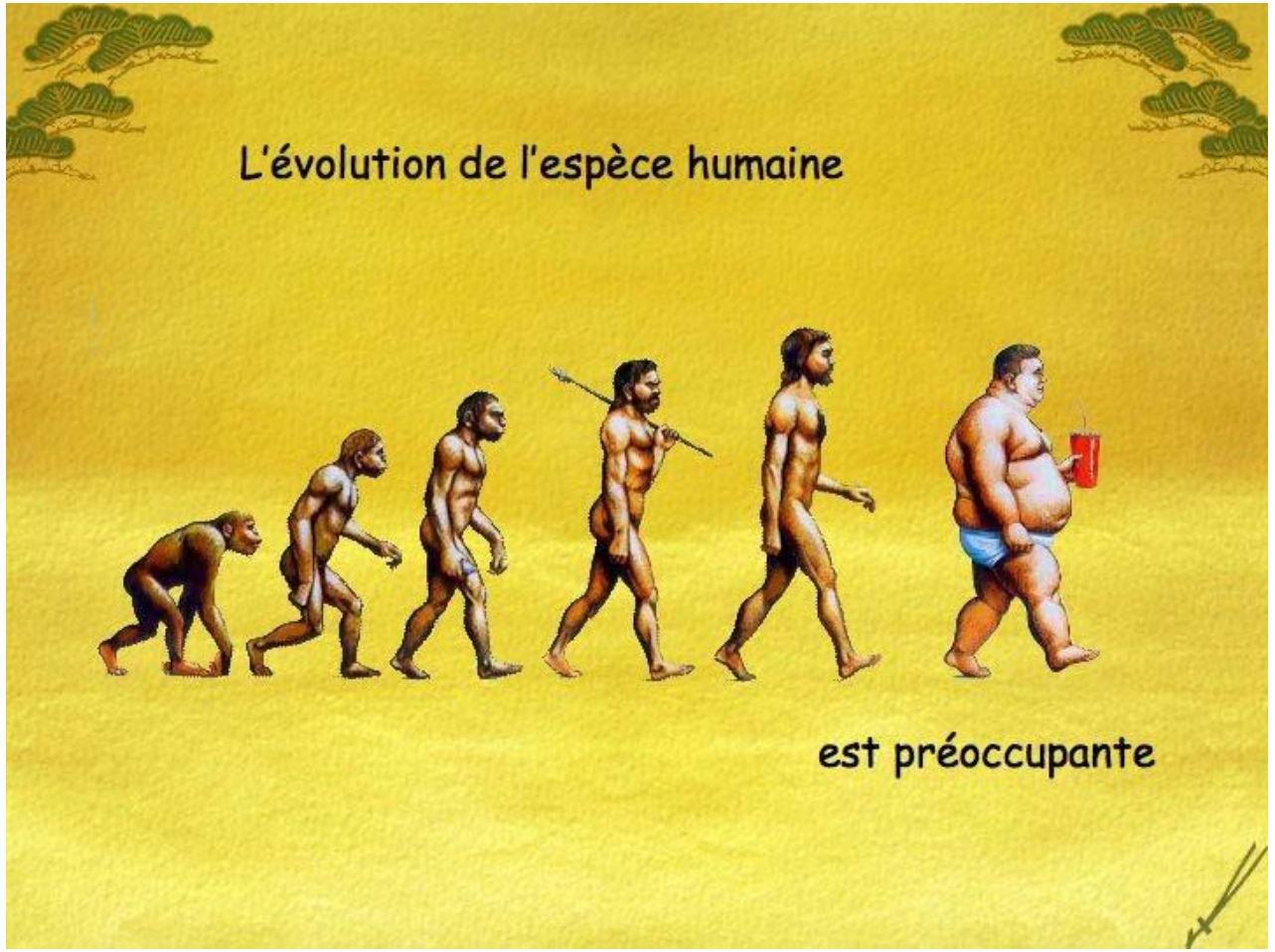
Physical Activity for Dialysis Patients, What is the Benefit?

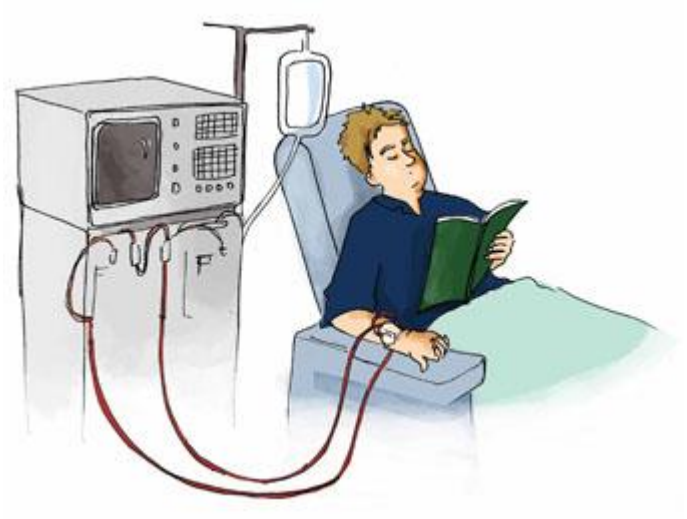
Dr Myriam ROUCHON ISNARD


L'évolution de l'espèce humaine
est préoccupante


STOP
OZY 3671

Dialysis:

Hemodialysis



3 times a week
4 hours
Center / Home

= Times eater

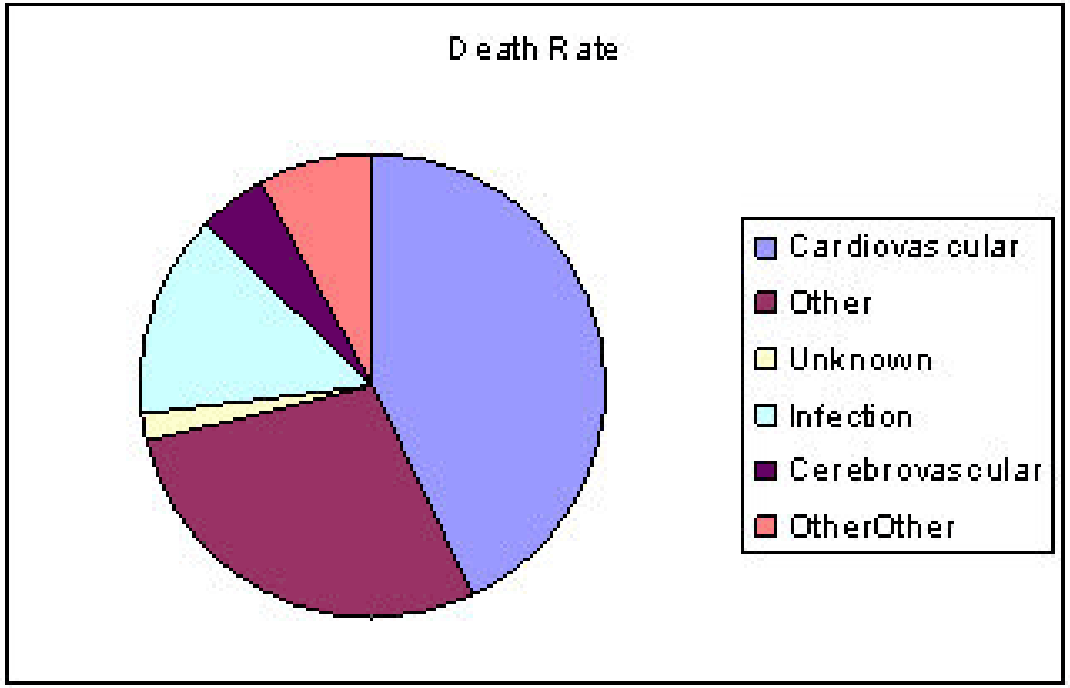
Peritoneal Dialysis

Every day

Home

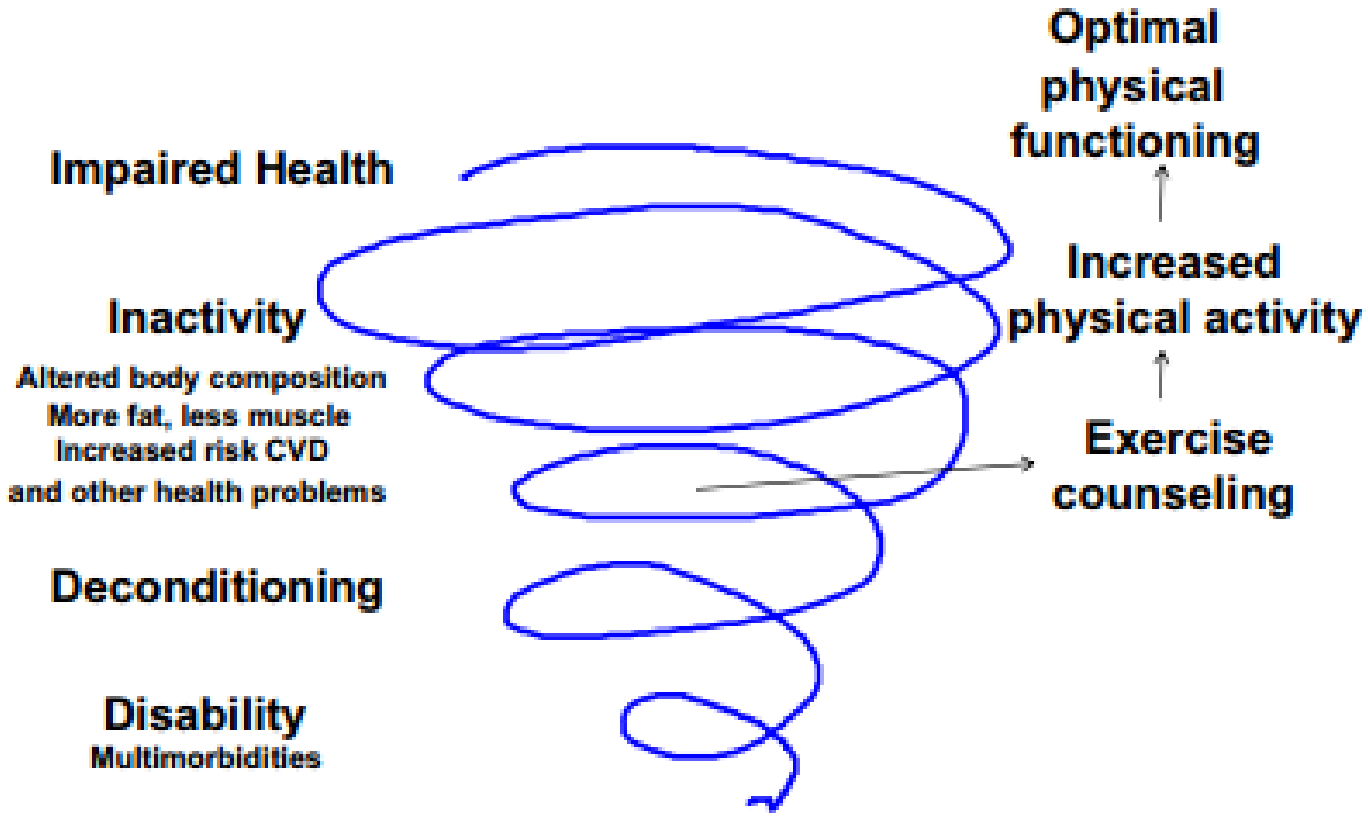
And ….

What Is the Leading Cause of Death in Dialysis Patients?

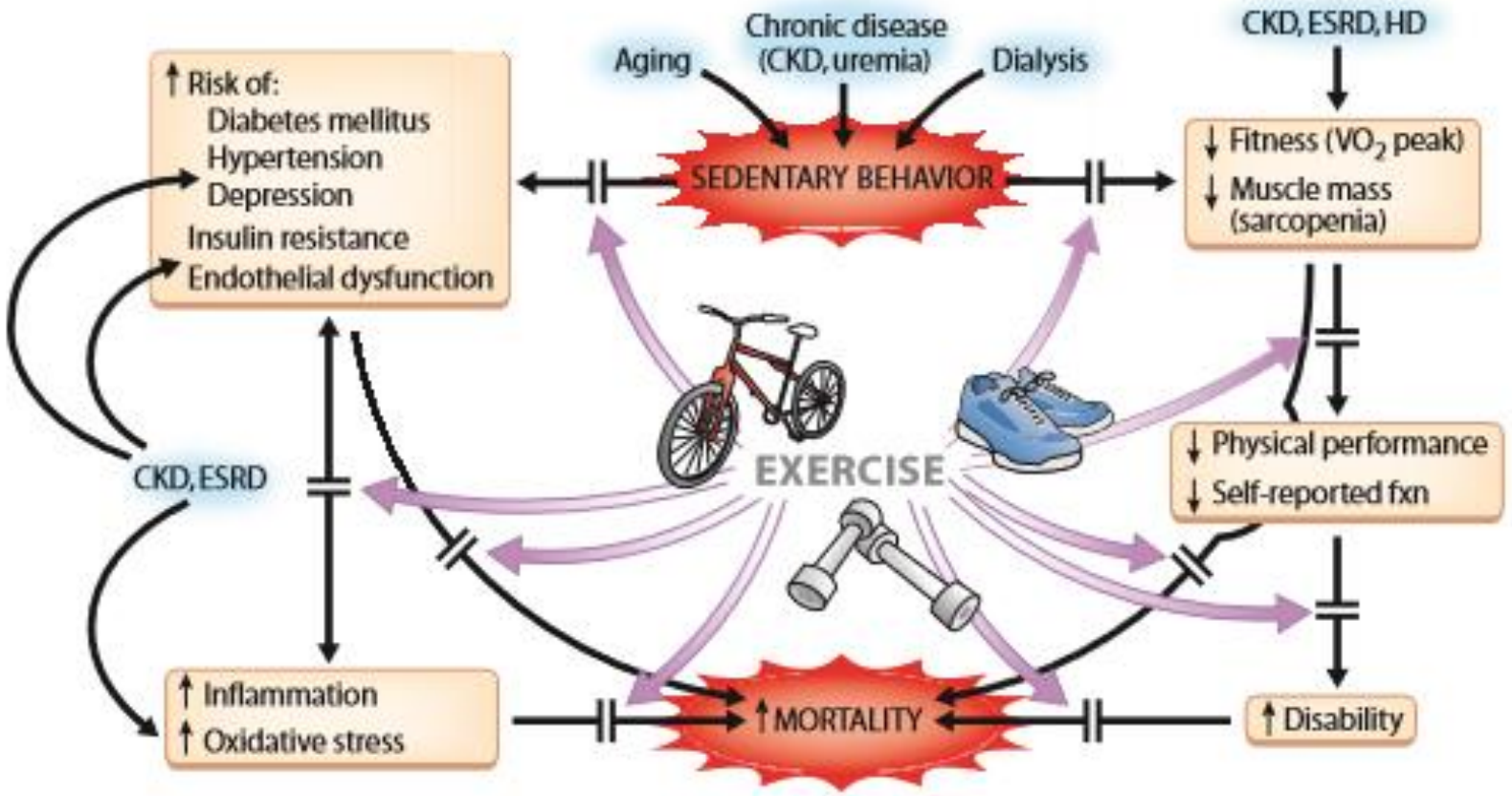


USRDS 2006 Annual Report.

Medscape from WebMD



Whittink H. Manual Therapy 2011; 16: 209-16



Himmelfarb et al. 2000
Bay et al. 2009

Johansen KL. JASN 2007;18:1845-54

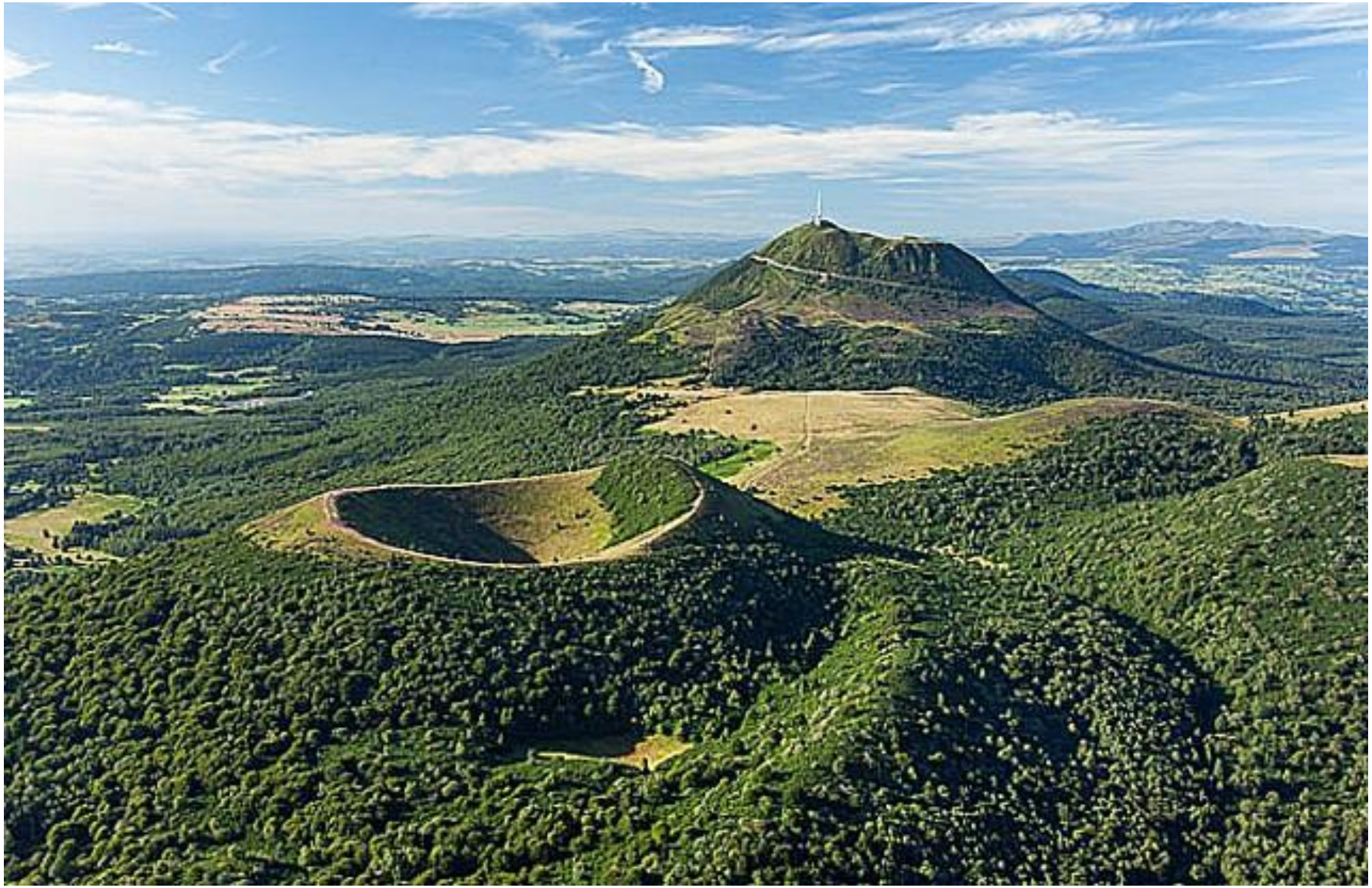
Physical Activity during Dialysis (1)

- Mortality
  - Sedentary is associated with an increased risk of mortality (11% *vs* 5%) *(O'Hare AM et al. 2003)*
- Myocardic Function
  - Improvement of cardiovascular risk factors after an endurance exercise *(Wilund KR et al. 2010 ; Kouidi et al.1998, Song WJ et al 2012*)
- Vessels
  - **Reduction of systolic and diastolic pressure** during and after dialysis (*Anderson et al. 2004*)
  - **Significant reduction** of anti hypertensive treatment (*Miller BW et al. 2002*)
  - Improvement of restless leg syndrom (*Mortazavi M et al 2013*)

Physical Activity during Dialysis (2)

- Nutrition
  - Improvement of **nutritional status** and **quality of life** (Dialysis and comorbidity → Pro inflammatory state) *(Matsumoto Y et al. 2007)*
- Oxydative Stress
  - Improvement of the **Oxydant Status** (Atherosclerosis, denutrition, inflammation, accelerated aging process) *(Kenneth et al. 2010 ; Pechter et al. 2003; Groussard, Rouchon Isnard et al. 2015)*
- Quality of Life
  - Physical Activity is correlated with reduction of **depression score** *(Harris AH, et al. 2006, Song WJ et al. 2012)*


Plymouth
English Channel
Celtic Sea
Guernsey
Jersey
Caen
Brest
Rennes
Paris
Lille
België
Belgique
Belgium
Lëtzebuerg
Luxembourg
Frankfurt
am Main
Mannheim
Nürnberg
Stuttgart
Strasbourg
München
Basel
Innsbruck
Liechtenstein
Schweiz
Suisse
Svizzera
Switzerland
Angers
Tours
Nantes
Dijon
France
La Rochelle
Limoges
Clermont-Ferrand
Lyon
Genève
Como
Milano
Verona
Venezia
Padova
Grenoble
Torino
Bordeaux
Bay of Biscay
Bologna
Pisa
Firenze
San Marino
Italia
Italy
Toulouse
Montpellier
Carcassonne
Marseille
Gijón
A Coruña
Oviedo
Bilbao
Donostia
Vitoria-Gasteiz
Pamplona
León
Ourense
Andorra
Girona
Corsica
Valladolid
Zaragoza
Barcelona
Roma
Fiumicino



Auvergne Typical Food: Truffade

Physical Activity Program

- Twice a week
- 20-30 minutes
- No resistance

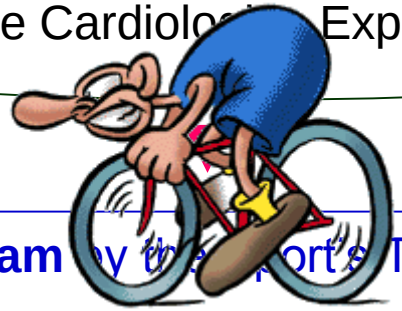
Inclusion of Patients in the Physical Activity Program

Agreement of the patient

Volontarily

Medical Agreement of the Nephrologist: Prescription of PA

Agreement of the Cardiolo[illegible] Explorations if necessary



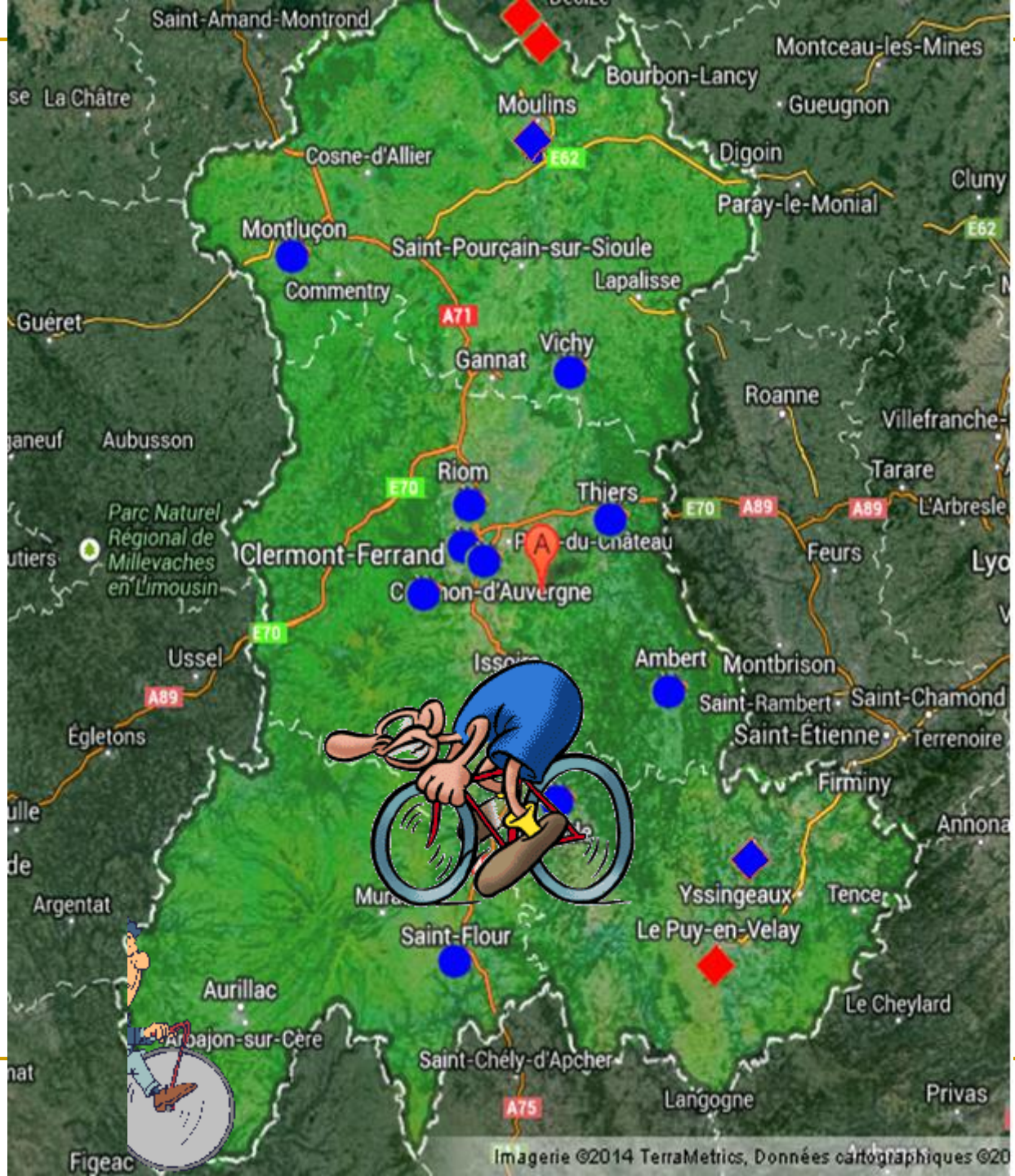
Inclusion in the Program by the Sport's Teacher: Céline Coutard

Functional Tests

Objectives worked with the Patient

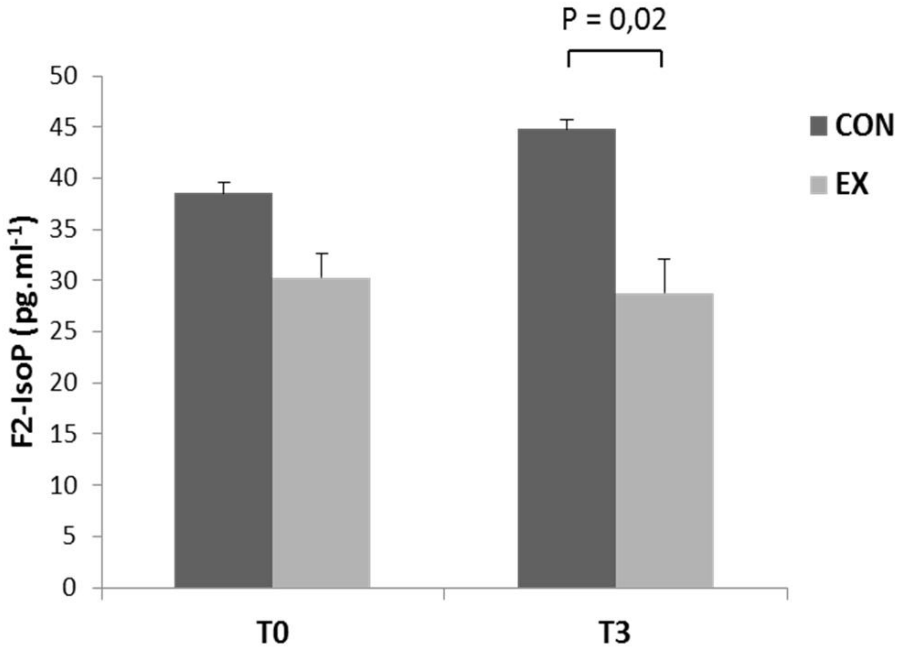
Establishment during the Dialysis by **the Nurses** in charge of the Patient

15 Dialysis centers
500 HD patients
40% cycling
≈ 125 patients



Results at 3 Months

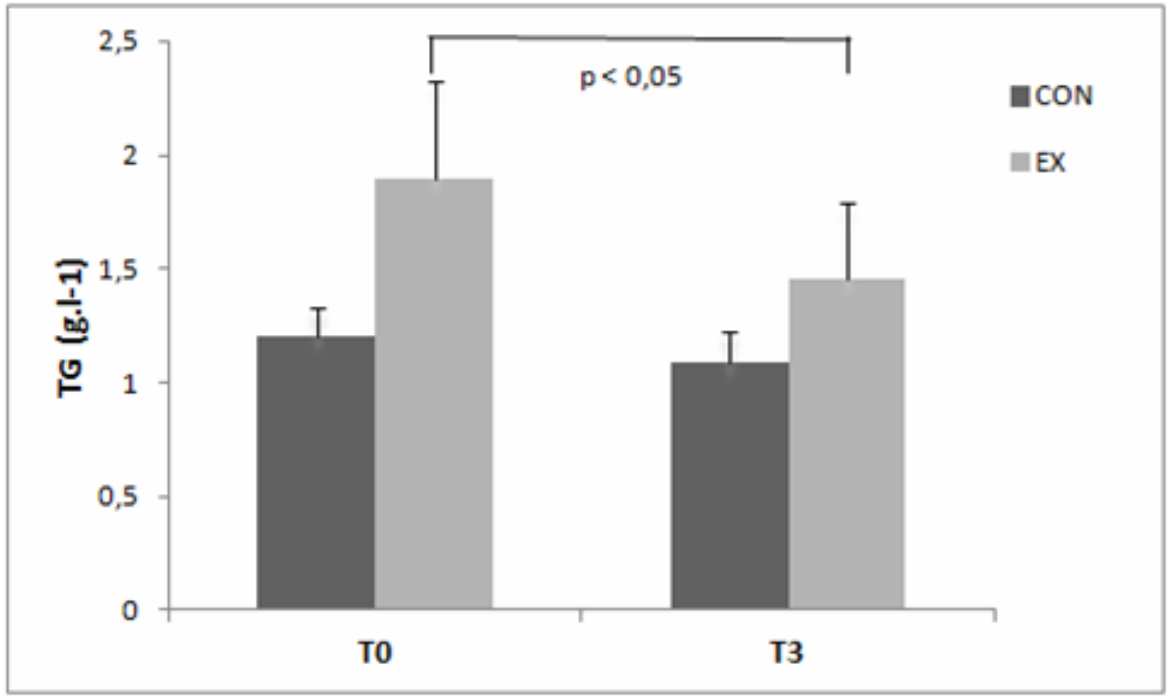
Isoprostanes



Groussard C, Rouchon Isnard M, Appl Physiol Nutr Metab. 2015 Jun;40(6):550-6.

Results at 3 Months

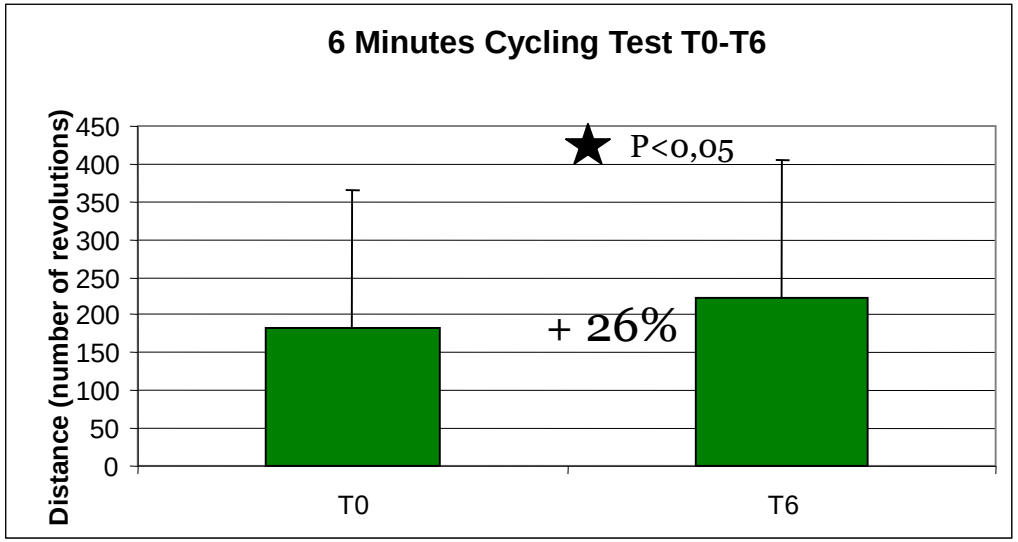
TG level significantly reduced in EX (-23%)



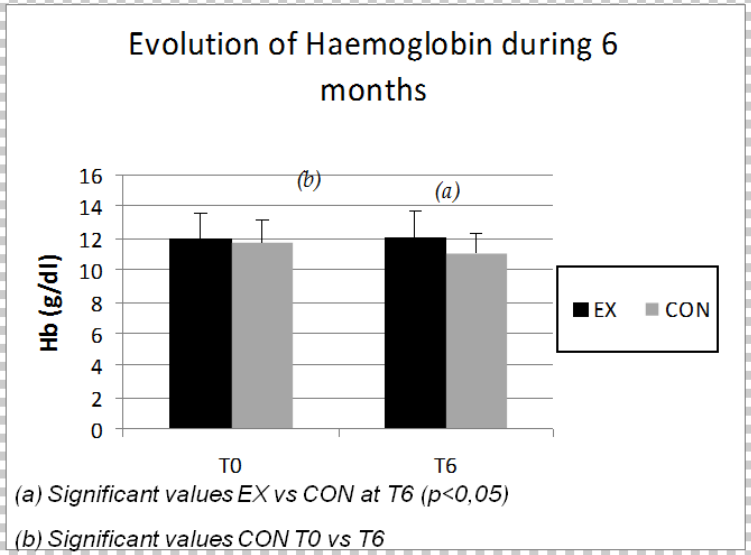
Groussard C, Rouchon Isnard M, Appl Physiol Nutr Metab. 2015 Jun;40(6):550-6.

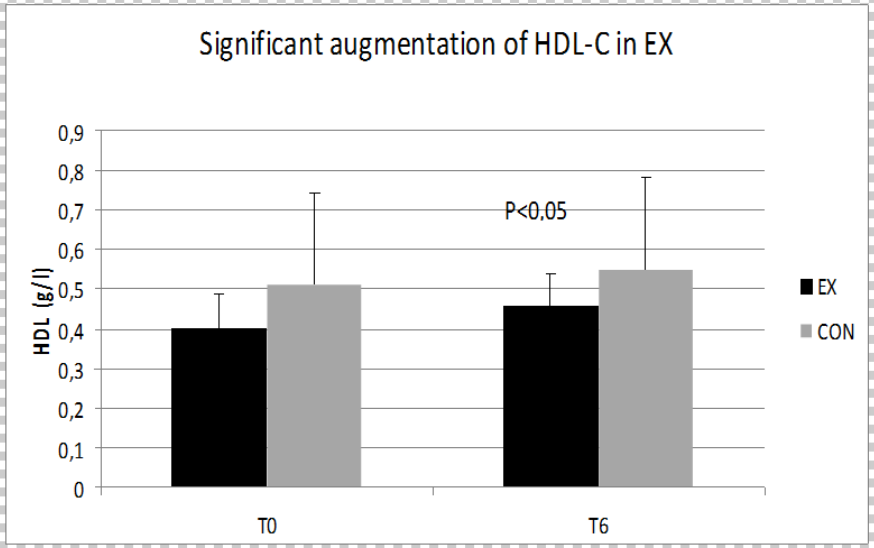
Results at 6 Months

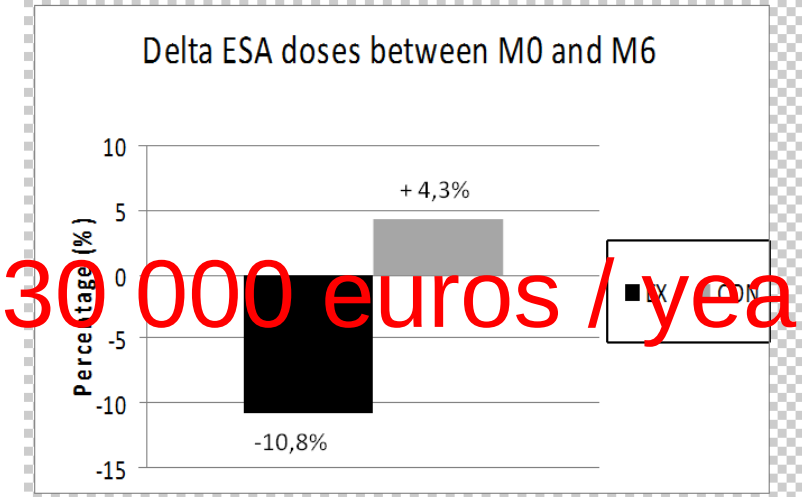
- 6’ cycling test
  - Evaluation of the functional capacity of the patient.
  - Adaptated from the 6’Walk Test.
  - Easily reproductible during dialysis.



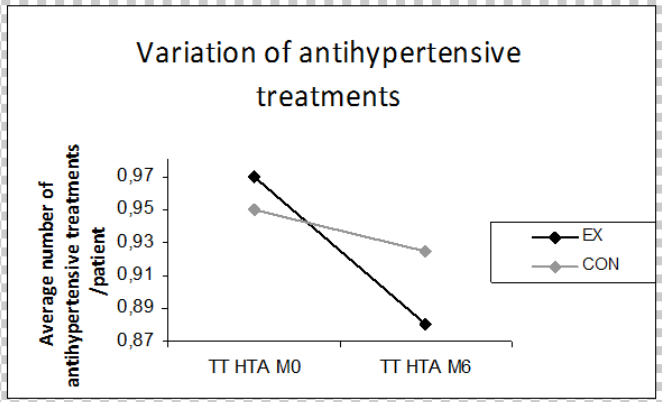
Rouchon Isnard M, ASN 2014.







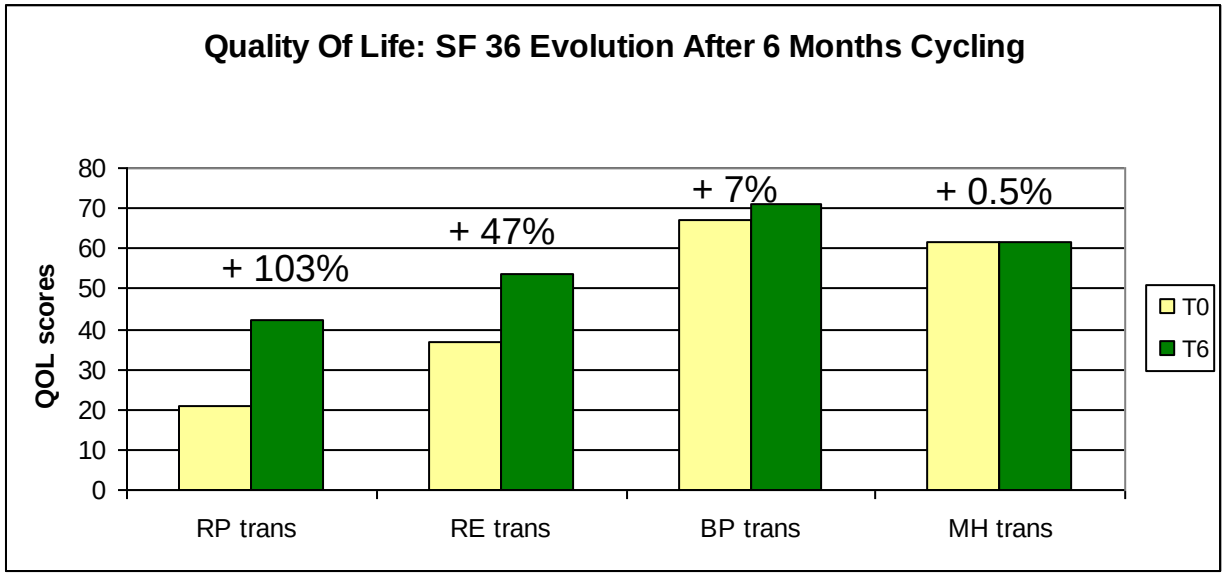
- 130 000 euros / year



	Cardiovascular Hospitalizations	Total Hospitalizations
EX	2	19
CON	3	8

Rouchon Isnard M, ASN 2014.

Quality Of Life: SF 36 QD



- Improvement of the limitations due to Physical status (RP) and Psychological status (RE)

-BP : Body Pain

-MH : Mental Health

Rouchon Isnard M, ASN 2014.

1 Year Regular Perdialysis Cycling

	CON (n = 40)		EX (n = 40)	
	M0	**M12**	**M0**	**M12**
Age (years)	67,65 ± 13,4		66,8 ± 10,6	
Gender	23m, 17f		27m, 13f	
Charlson comorbidity index	5,22		5,23	
Ischemic cardiopathy	3 (7,5%)		7 (17,5%)	
Diabetes	12 (30%)		12 (30%)	
Hypertension	33 (82,5%)		34 (85%)	
Anti HTA treatments	1,35 ± 1,02	1,22 ± 1,02	1,85 ± 1,08	1,55 ± 0,85 *
Hemoglobin ($g.dl^{-1}$)	11,79 ± 1.01	11,35 ± 1,21	11,70 ± 1,17	12,06 ± 1,11 **
ESA doses	89,63 ± 77,3	120 ± 155,7	110,83 ± 70,8	103,06 ± 57,3
Time on dialysis (month)	63,6 ± 11.31		63,4 ± 3.53	
Dialysis prescription (h/week)	12,11 ± 0,08		12,38 ± 1,41	

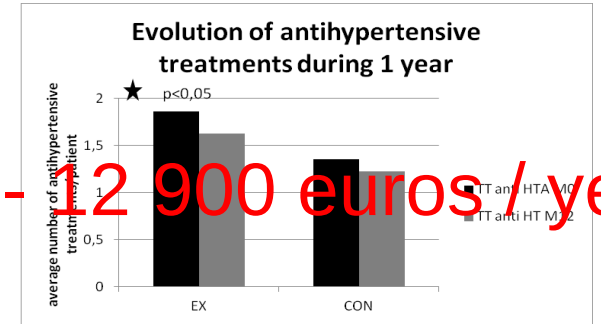
Values are mean ± SD. CON : Control group ; EX : exercising-group
* : difference between M0 and M12, $p < 0,05$
**: difference between EX and CON at M12, $p< 0,05$

1 Year Regular Perdialysis Cycling

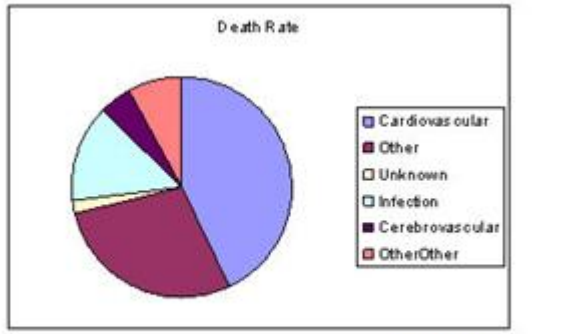
Number of Hospitalization for Cardiovascular Reasons	Hospitalization = number of hospital stays
EX	3
CON	20

1 Year Regular Perdialysis Cycling

Figure 1: **Evolution of the number of antihypertensive treatments / patient**



- 12 900 euros / year

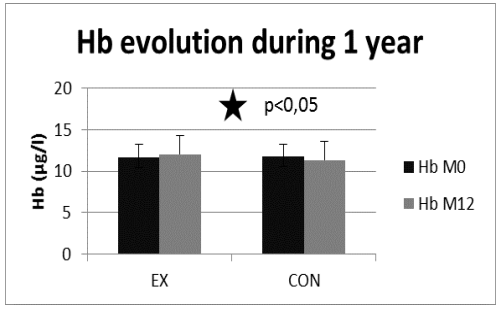


USRDS 2006 Annual Report.

Medscape from WebMD

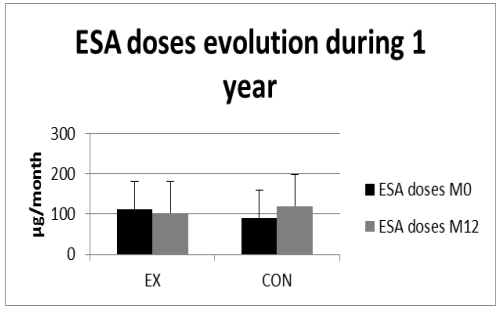
*: significant difference between M0 and M12 in EX, p < 0,05

Figure 2: **Hb evolution**



*: significant difference at M12 between EX and CON, p < 0,05

Figure 3: **ESA doses evolution**

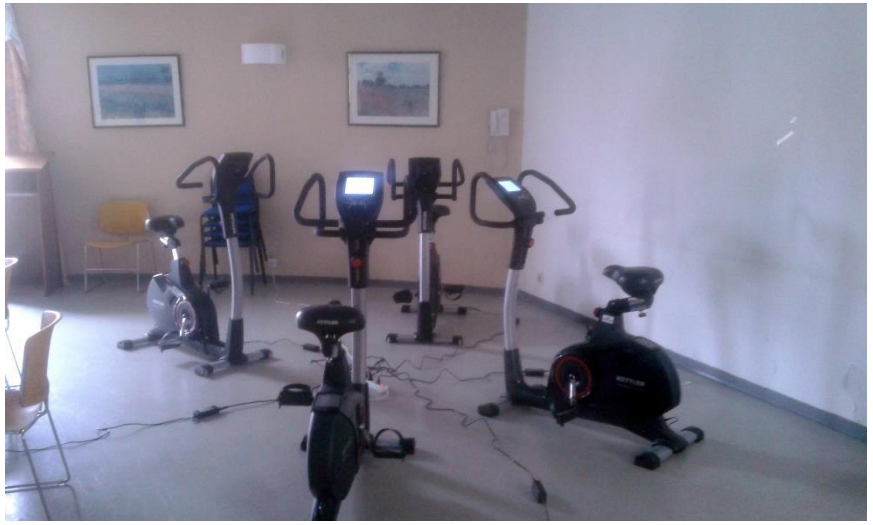


What feel the patients?

- « The dialysis seems faster now I'm cycling! »
- « Walk is easier now»
- « I've bought a bicycle to continue at home»
- « My legs are lighter, I feel more flexible »

Peritoneal Dialysis

- Protocole 3 months.



Physical Activity for Transplanted Patients?

Jonah Lomu

All Black

2004

Post Transplantation
Education Program
for Transplanted Patients

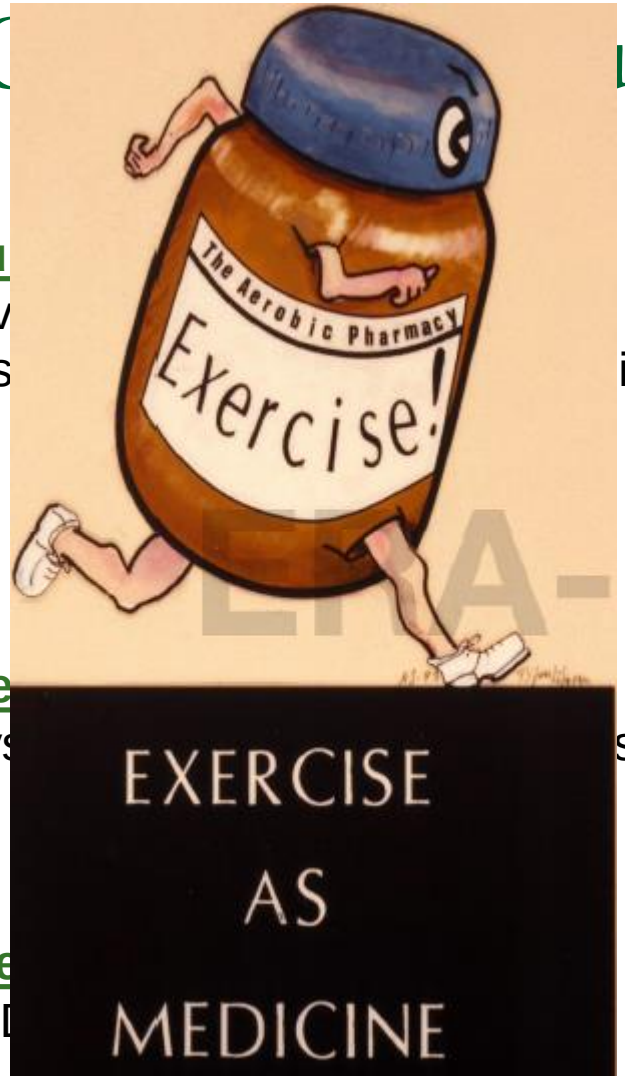
2015

K/DOQI, KDIG uidelines

K/DOQI Clinical Practice Gu

Many dialysis patients are sev

The goal for physical activity s intensity for 30 minutes most, if not all, days per week.



KDIGO Clinical Practice Guide

People with CKD undertake phys st 30 minutes 5 times per week.

ERBP Clinical Practice Guideline

For patients with Diabetes and CKD perform individualized exercising 0,5-1 hour at least 3 times a week

Recommandations for patients with CKD

	Treatment goal	Comments
Smoking cessation	Smoking cessation (1D)	Ample level evidence is available of the benefits of smoking cessation for reduction in cardiovascular risk in the general population. In CKD smoking is associated with disease progression,[49] although no specific data support cessation of smoking to delay CKD progression
Dietary sodium reduction	Lowering intake to <2 g (<90 mmol) sodium daily (corresponds to <5 g salt) (1C)	Individuals with CKD should receive expert dietary advice and information in an educational programme tailored to the severity of CKD and required interventions on salt, phosphate, potassium, and protein intake (1B). Dietary sodium restriction might enhance the effects of ACE inhibitors and ARBs to lower albuminuria and prevent CKD progression[50–53]
Dietary protein restriction	Lowering of protein intake to 0·8 g/kg of ideal bodyweight daily in adults with diabetes (2C) or without diabetes (2B) and eGFR <30 mL/min per 1·73m²	A high protein intake (>1·3 g/kg of ideal bodyweight daily) should be avoided in adults with CKD and at risk of progression (2C). Individuals with CKD should receive expert dietary advice and information in an educational programme, tailored to the severity of CKD and required interventions on salt, phosphate, potassium, and protein intake (1B)
Weight management	Achievement of BMI 20–25 kg/m², according to country-specific demographics (1D)	..
Physical activity	Encourage physical activity compatible with cardiovascular health and tolerance, aiming for at least 30 min five times per week (1D)	A 13% reduction of all-cause mortality was found among patients with CKD who did the minimum amount of exercise (average 15 min of moderate intensity) compared with those who did no exercise at all. The effect is expected to be much greater when patients undertake 30 min of exercise five times per week[54]

Each recommendation is graded (1, recommended; 2 suggested; no number, not graded) and the quality of the supporting evidence is rated (A, high; B, moderate; C, low; D, very low), according to guidelines.[45,55] CKD=chronic kidney disease. ACE=angiotensin-converting enzyme. ARBs=angiotensin-receptor blockers. eGFR=estimated glomerular filtration rate. BMI=body-mass index.

Gansevoort R et al. Lancet 2013; 382:339-52,

CONCLUSION

- Physical Activity is a simple way to improve cardiovascular factors
- It allows people to create social connections
- And it saves money…

Thank you for your attention

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