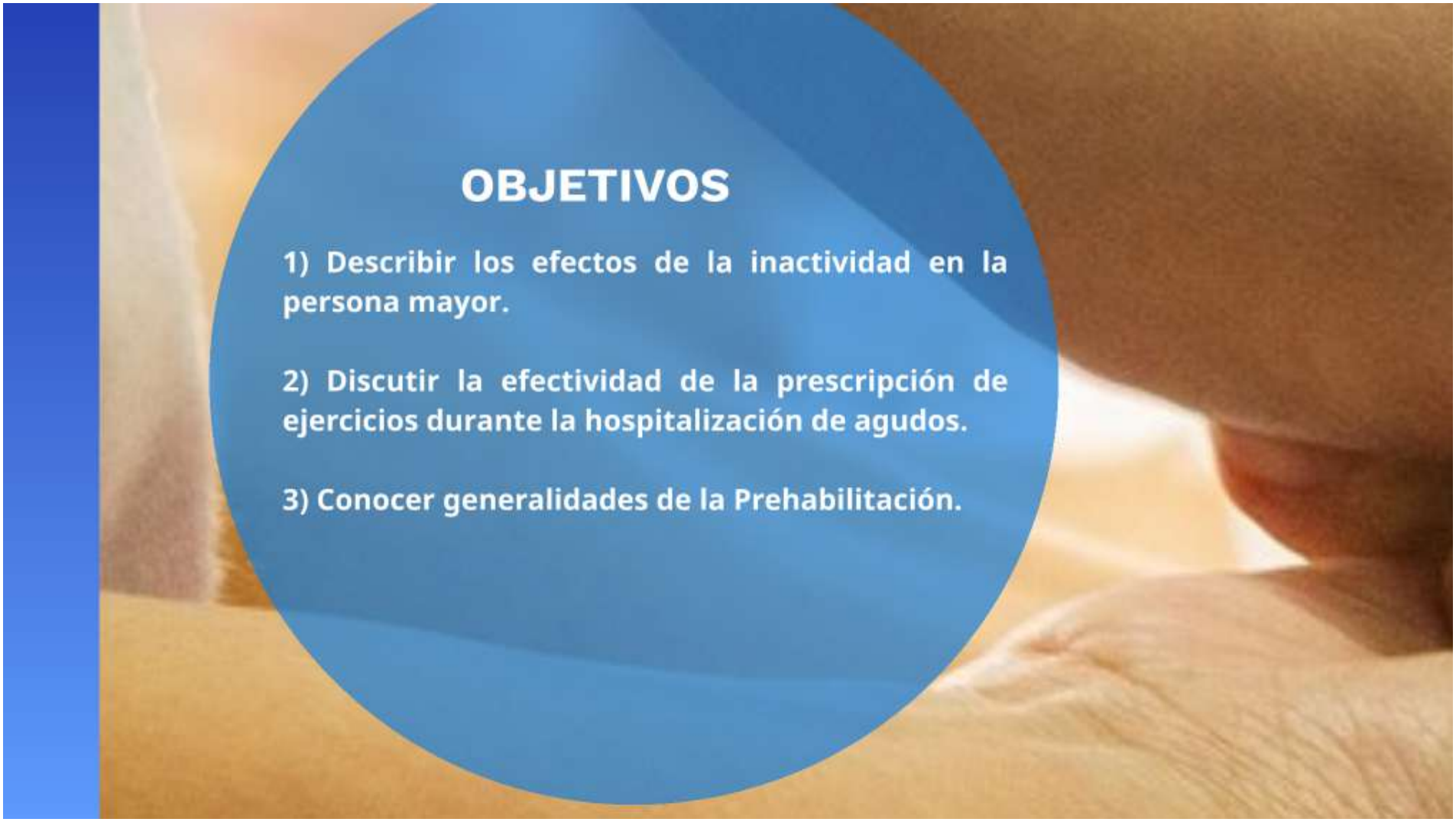
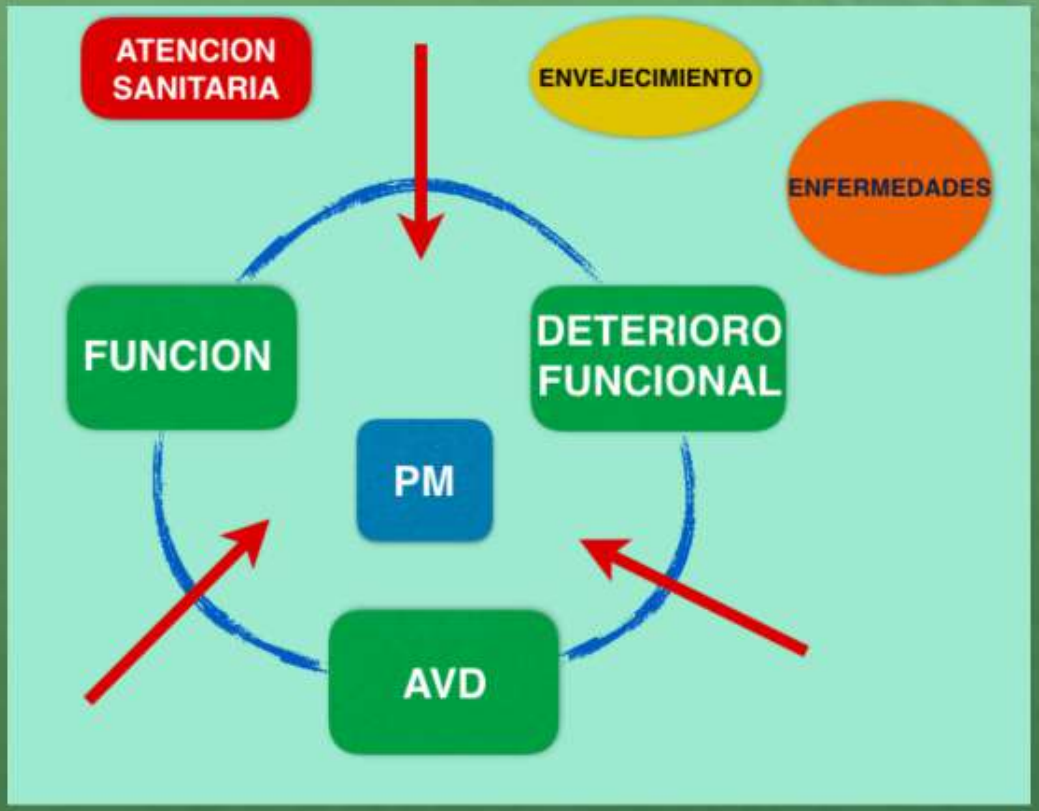

PRESCRIPCIÓN DE EJERCICIOS DURANTE LA HOSPITALIZACIÓN DE AGUDOS: ¿ SE PUÉDE?
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OBJETIVOS
1) Describir los efectos de la inactividad en la persona mayor.
2) Discutir la efectividad de la prescripción de ejercicios durante la hospitalización de agudos.
3) Conocer generalidades de la Prehabilitación.


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INTRODUCCION…



Tratado de Médicina Geriátrica, Relevancia del Ejercicio físico en el anciano,Capítulo 33,Wojtek Chodzko-Zajko,A. Schwingel, C. Bouzón

HISTORIA

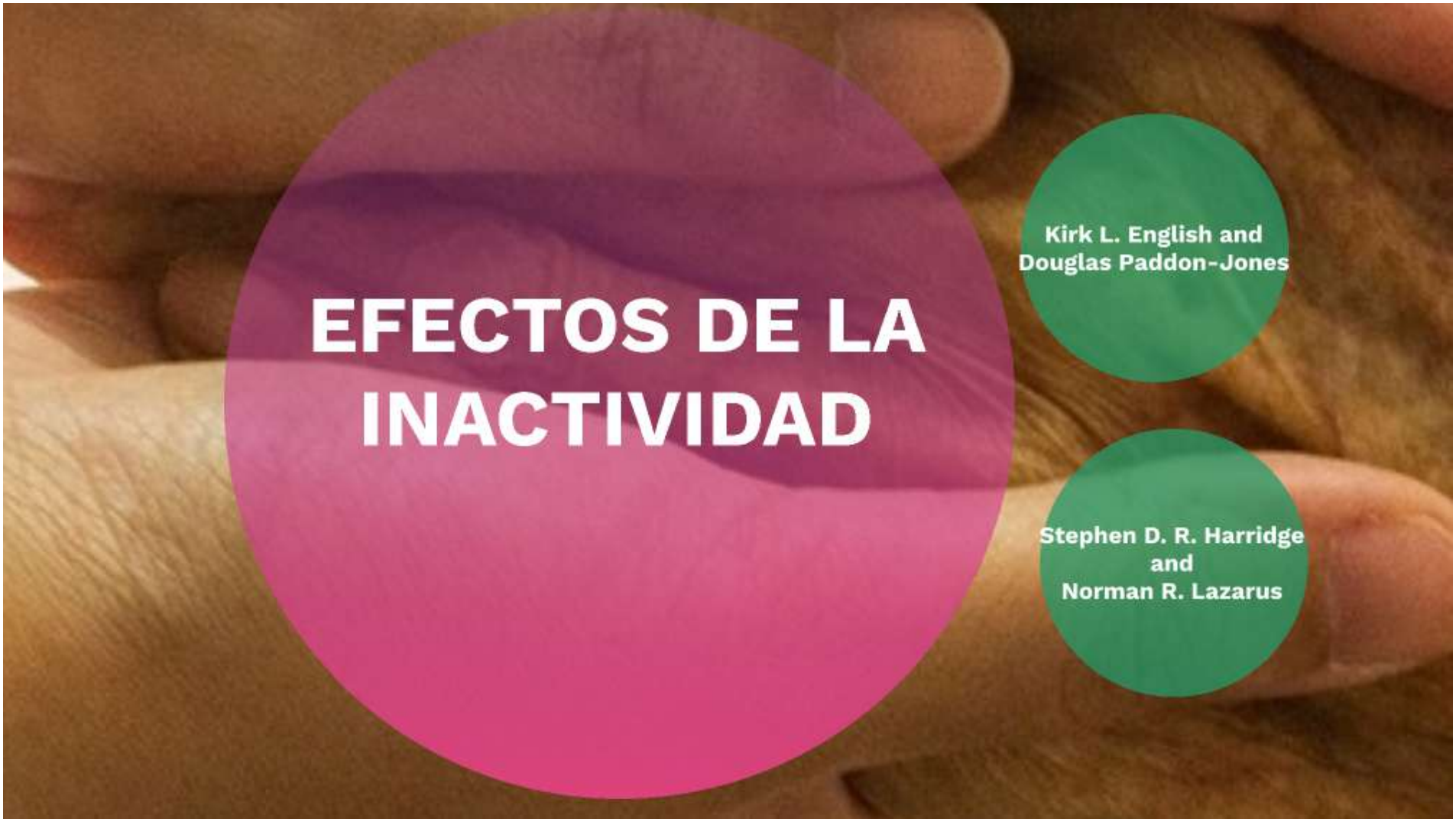
- 1960 Bengt Saltin et al., Dallas, realizan un estudio sobre el Reposo y evaluaron disminución de la aptitud CV-R debida al reposo en cama por 3 semanas.

-1996, OMS en, The Heidelberg Guidelines for promoting physical activity among older persons , reconce los beneficios del ejercicio físico.

- 2002, 2003 World Health Survey (OMS) refleja : inactividad física H 27 .5 % Y M 32.9 %. Grupo etáreo predominante: personas mayores.

atado de Médicina Geriátrica, Relevancia del Ejercicio físico en el anciano,Capítulo 33,Wojtek Chodzko-Zajko,A. Schwingel, C. Bouzón


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EFECTOS DE LA INACTIVIDAD
Kirk L. English and Douglas Paddon-Jones
Stephen D. R. Harridge and Norman R. Lazarus

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Curr Opin Clin Nutr Metab Care. Author manuscript; available in PMC 2012 February 9.

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Curr Opin Clin Nutr Metab Care. 2010 January ; 13(1): 34–39. doi:10.1097/MCO.0b013e328333aa66.

Protecting muscle mass and function in older adults during bed rest

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pt

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Masa Muscular

- **Le Blanc et al. pérdida de 2.6 Kg masa magra, 119 días de reposo en varones jóvenes, de estos, 2.4 Kg eran MI (0.14 Kg /semana 1).**

- **Paddon - Jones et al. , pérdida de 2.4 Kg depués de 28 días de reposo en cama (0.10 Kg / semana 1).**

- **Kortebein et al. observaron una pérdida de 0.95 Kg de masa magra de la pierna después de 10 días de reposo en AM sanos. (0.63 Kg / semana 1).**

Fuerza

- **Manini et al. definieron intervalo para mantener movilidad 1.35 - 1.72 Nm/Kg. Al limitar movilidad había reduccion a 1.13 H y 1.02 M.**

- **Kortebein et al. , AM en reposo experimentan disminución de 1.42 a 1.2 Nm/Kg**

MODELO EDAD - PERDIDA MASA MAGRA EN EPISODIOS DE ENFERMEDAD AGUA

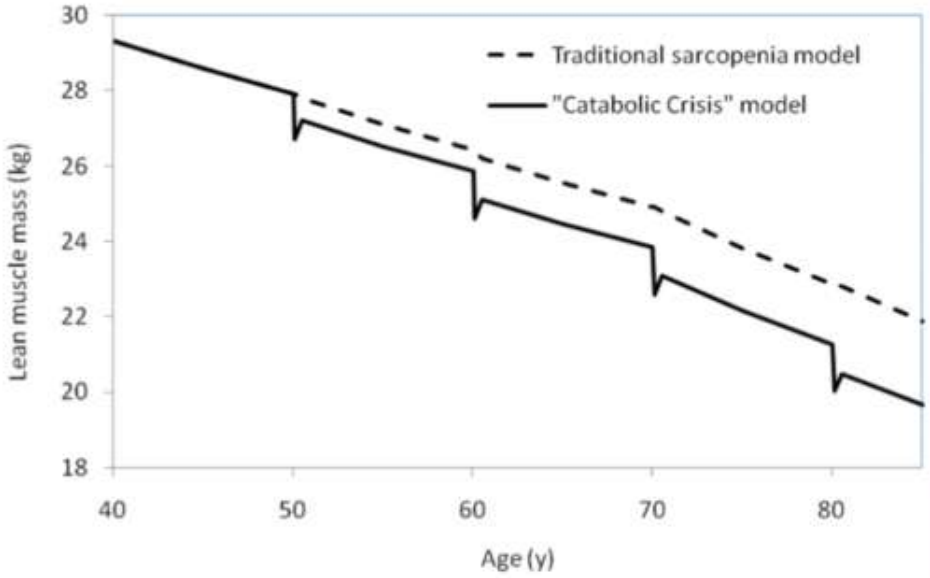


Figure 1.
Proposed model of age-related muscle loss punctuated by episodes of acute illness or injury and characterized by accelerated muscle loss and incomplete recovery.

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REVIEWS

PHYSIOLOGY 32: 152–161, 2017. Published February 22, 2017; doi:10.1152/physiol.00029.2016

Physical Activity, Aging, and Physiological Function

Stephen D. R. Harridge and Norman R. Lazarus

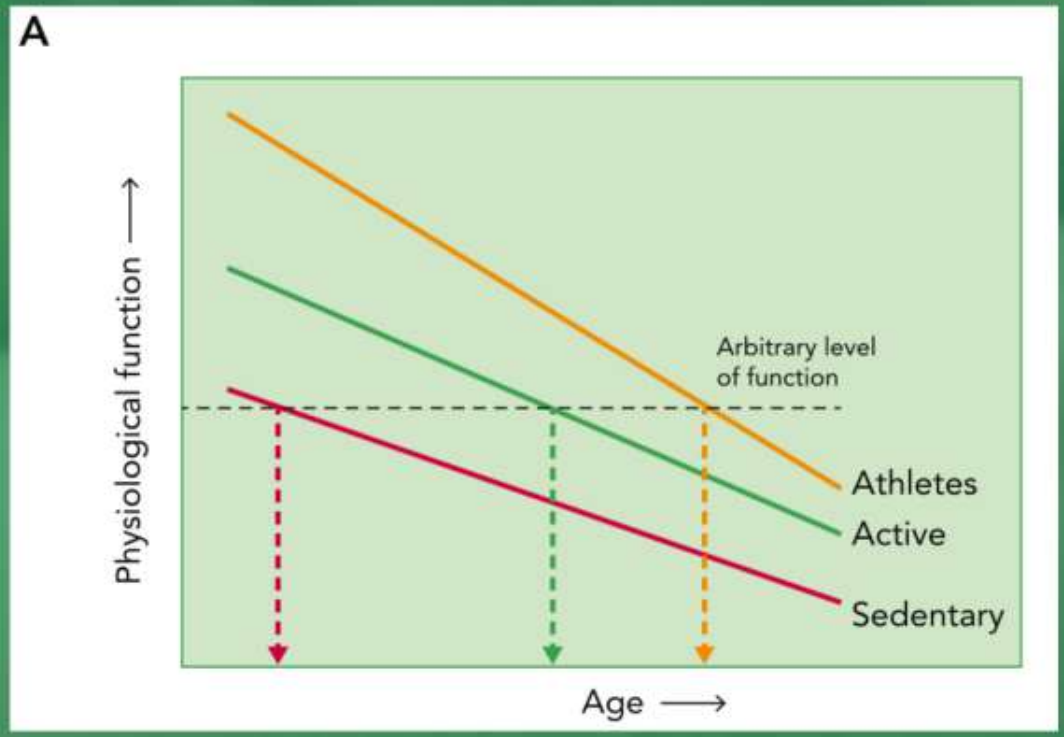
Centre of Human & Aerospace Physiological Sciences, Faculty of Life Sciences & Medicine, King's College London, London, United Kingdom
s.harridge@kcl.ac.uk

Human evolution suggests that the default position for health is to be physically active. Inactivity, by contrast, has serious negative effects on health across the lifespan. Therefore, only in physically active people can the inherent aging process proceed unaffected by disuse complications. In such individuals, although the relationship between age and physiological function remains complex, function is generally superior with health, well being, and the aging process optimized.

DISMINUCIÓN DE LA FUNCIÓN FISIOLÓGICA CON LA EDAD

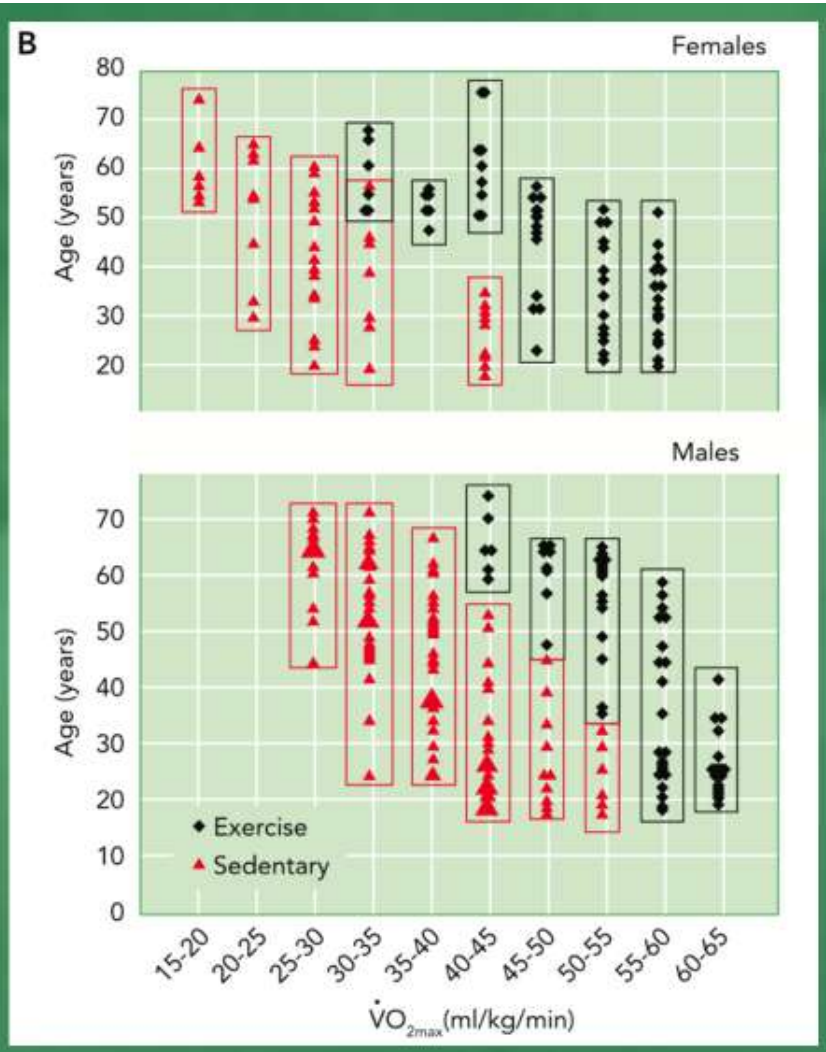
FIGURE 1. Depiction of the trajectory of age-related decline in physiological function

A: depiction of the trajectory of age-related decline in physiological function (such as $\dot{V}O_{2\,max}$ or muscle power) in master athletes, active indivduals, and sedentary people. The graph depicts that the age-function relationship is moved upward and to the right as levels of activity increase. This results in a higher age for the same level of physiological function. The graph also depicts the highest values for any age occuring in the master athletes but also a relatively greater loss in $\dot{V}O_{2\,max}$ in athletes, associated with a decline in training load. Linear declines in function are shown for illutrative purposes but should not be assumed. *B*: $\dot{V}O_{2\,max}$ values taken from Wilson and Tanaka (Ref. 93; men, *bottom*) and Tanaka and Seals (Ref. 86: women, *top*) have been allocated to bandwidths of functional equivalence (5 $ml \cdot kg^{-1} \cdot min^{-1}$). The data for men represent mean values from studies used in the meta-analysis, and for women each data point represents the raw value for a given individual. The graphs separate vigorous exercisers and sedentary people, and show that bandwidths representing different functional equivalence encompass a wide range of ages. Note that the data points plotted are only those that could be discerned from the original publication and that a number of points are overlaid (50).

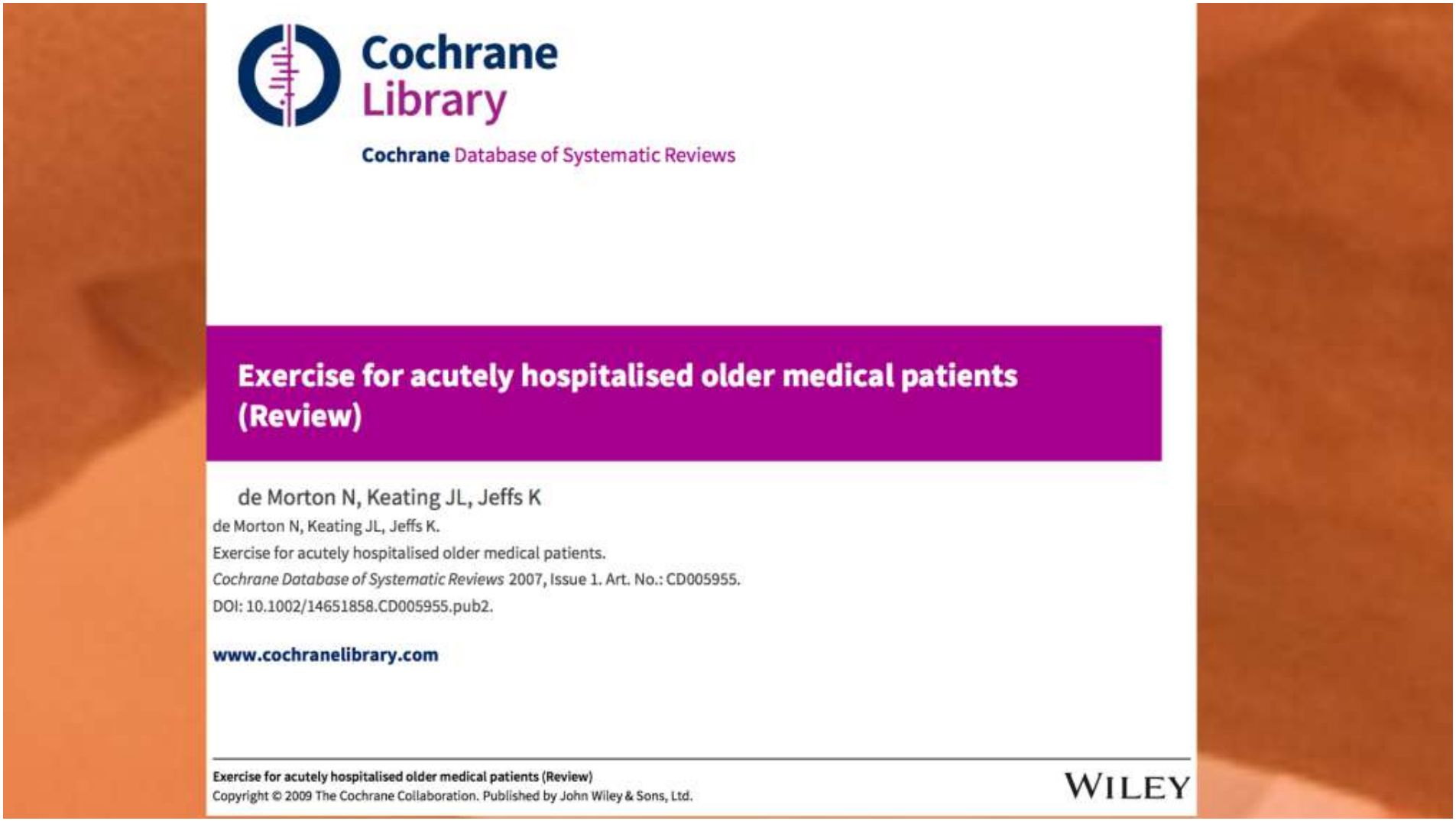


EDAD y VO2 máx utilizado

FIGURE 1. **Depiction of the trajectory of age-related decline in physiological function**
A: depiction of the trajectory of age-related decline in physiological function (such as $\dot{V}O_{2\,max}$ or muscle power) in master athletes, active indivduals, and sedentary people. The graph depicts that the age-function relationship is moved upward and to the right as levels of activity increase. This results in a higher age for the same level of physiological function. The graph also depicts the highest values for any age occuring in the master athletes but also a relatively greater loss in $\dot{V}O_{2\,max}$ in athletes, associated with a decline in training load. Linear declines in function are shown for illutrative purposes but should not be assumed. *B*: $\dot{V}O_{2\,max}$ values taken from Wilson and Tanaka (Ref. 93; men, *bottom*) and Tanaka and Seals (Ref. 86: women, *top*) have been allocated to bandwidths of functional equivalence (5 $ml \cdot kg^{-1} \cdot min^{-1}$). The data for men represent mean values from studies used in the meta-analysis, and for women each data point represents the raw value for a given individual. The graphs separate vigorous exercisers and sedentary people, and show that bandwidths representing different functional equivalence encompass a wide range of ages. Note that the data points plotted are only those that could be discerned from the original publication and that a number of points are overlaid (50).




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Cochrane
Library
Cochrane Database of Systematic Reviews
Exercise for acutely hospitalised older medical patients (Review)
de Morton N, Keating JL, Jeffs K
de Morton N, Keating JL, Jeffs K.
Exercise for acutely hospitalised older medical patients.
Cochrane Database of Systematic Reviews 2007, Issue 1. Art. No.: CD005955.
DOI: 10.1002/14651858.CD005955.pub2.
www.cochranelibrary.com
Exercise for acutely hospitalised older medical patients (Review)
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METODOS DE BÚSQUEDA

- MEDLINE (1966-Feb 2006).
- CINAHL (1982-Feb 2006).
- EMBASE (1988 to Feb 2006).
- Cochrane Database of Sys- tematic Reviews and Cochrane Central Register of Controlled Trials (The Cochrane Library Issue 1, 2006).
- PEDro (1929- Feb 2006).
- Current Contents (1993- Feb 2006).
- Sports Discus (1830-Feb 2006).
- The Journal of the American Geriatrics Society.

Criterios de selección

- **Ensayos controlados aleatorizados prospectivos (ECA).**
- **Ensayos clínicos controlados prostectivos (ECC).**

De los 3138 documentos examinados, se conservaron 143 artículos, se incluyeron 7 ECA y 2 ECC, que comparan el ejercicio para pacientes hospitalizados vrs controles sin intervención, > 65 años ingresados con una exacerbación aguda de una afección médica (registrados primeros 3 días al ingreso).

Se excluyeron estudios en animales, ECV y condición médica no general (ej. afección ortopédica).

Recolección de datos y análisis

- **Metanálisis, utilizando RR, RRA, DME, DMP**

Resultados principales

- 4223 participantes.
-Aumento significativo en la proporción de pacientes dados de alta al hogar (RR 1.08, IC 95%, 1.03 a 1.14).
- Reducción en la duración de la hospitalización aguda (DMP -1.08 días, IC 95%, -1.93 a -0.22).
- Reducción en el total de costos hospitalarios en comparación con la atención habitual.

Analysis 1.3. Comparison 1 Function - multidisciplinary intervention versus usual care, Outcome 3 Maintained or improved ADL scores between 2 weeks prior to hospital admission and discharge- MDI v usual care.

Review: Exercise for acutely hospitalised older medical patients

Comparison: 1 Function - multidisciplinary intervention versus usual care

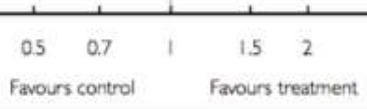
Outcome: 3 Maintained or improved ADL scores between 2 weeks prior to hospital admission and discharge- MDI v usual care

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Counsell 2000	498/714	464/705		71.3 %	1.06 [0.99, 1.14]
Landefeld 1995	207/297	184/285		28.7 %	1.08 [0.96, 1.21]
Total (95% CI)	**1011**	**990**		**100.0 %**	**1.07 [1.00, 1.13]**

Total events: 705 (Treatment), 648 (Control)

Heterogeneity: $Chi^2 = 0.07$, df = 1 (P = 0.79); $I^2 = 0.0\%$

Test for overall effect: Z = 2.04 (P = 0.041)



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Analysis 5.3. Comparison 5 Hospital outcomes - multidisciplinary intervention versus usual care, Outcome 3 Cost of acute hospital stay - MDI versus usual care.

Review: Exercise for acutely hospitalised older medical patients

Comparison: 5 Hospital outcomes - multidisciplinary intervention versus usual care

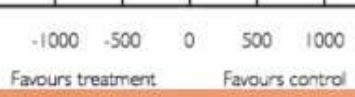
Outcome: 3 Cost of acute hospital stay - MDI versus usual care

Study or subgroup	Treatment N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
Asplund 2000	190	1367 (1329.1)	223	1620.3 (1253.2)		72.4 %	-253.30 [-503.84, -2.76]
Collard (C) 1985	95	4015.17 (4015.17)	176	4545.13 (4545.13)		4.1 %	-529.96 [-1580.10, 520.18]
Collard (S) 1985	123	3591.42 (3591.42)	301	4155.54 (4155.54)		7.3 %	-564.12 [-1353.56, 225.32]
Counsell 2000	746	5640 (5640)	736	5754 (5754)		13.5 %	-114.00 [-694.18, 466.18]
Landefeld 1995	327	6608 (8504)	324	7240 (8504)		2.7 %	-632.00 [-1938.52, 674.52]
Total (95% CI)	**1481**		**1760**			**100.0 %**	**-278.65 [-491.85, -65.44]**

Heterogeneity: $Chi^2 = 1.35$, $df = 4$ ($P = 0.85$); $I^2 = 0.0\%$

Test for overall effect: $Z = 2.56$ ($P = 0.010$)

Test for subgroup differences: Not applicable



Analysis 6.2. Comparison 6 Hospital outcomes - additional exercise versus usual care, Outcome 2 Acute hospital length of stay - additional exercise versus usual care.

Review: Exercise for acutely hospitalised older medical patients

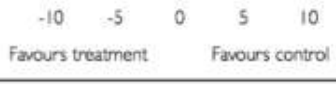
Comparison: 6 Hospital outcomes - additional exercise versus usual care

Outcome: 2 Acute hospital length of stay - additional exercise versus usual care

Study or subgroup	Treatment N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
de Morton 2006	108	5 (3.4)	124	6 (3.3)		37.8 %	-1.00 [-1.87, -0.13]
Jones 2006	71	8 (3)	77	8 (3)		36.1 %	0.0 [-0.97, 0.97]
Siebens 2000	149	12 (7.1)	151	10.5 (7.1)		26.1 %	1.50 [-0.11, 3.11]
Total (95% CI)	**328**		**352**			**100.0 %**	**0.01 [-1.23, 1.26]**

Heterogeneity: $Tau^2 = 0.88$; $Chi^2 = 7.69$, df = 2 (P = 0.02); $I^2 = 74\%$

Test for overall effect: Z = 0.02 (P = 0.98)



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Original Article

Impact of prehabilitation on morbidity and mortality after pulmonary lobectomy by minimally invasive surgery: a cohort study

Fairuz Boujibar[1], Tristan Bonnevie[2,3], David Debeaumont[4], Michael Bubenheim[5], Antoine Cuvellier[2,6], Christophe Peillon[7], Francis-Edouard Gravier[3], Jean-Marc Baste[1,8]

[1]Normandie Univ, UNIROUEN, INSERM U1096, Rouen University Hospital, Rouen, France; [2]Research Group on Ventilatory Handicap (GRHV) , Rouen University, Rouen, France; [3]ADIR Association, Rouen Cedex, [4]Department of Respiratory and Sports Physiology, [5]Department of Biostatistics, [6]Department of Respiratory Intensive Care, [7]Department of Thoracic Surgery, [8]Department of Thoracic Surgery, Rouen University Hospital, Rouen, France

Contributions: (I) Conception and design: All authors; (II) Administrative support: F Boujibar, JM Baste, FE Gravier, T Bonnevie; (III) Provision of study materials or patients: C Peillon, JM Baste, D Debeaumont, FE Gravier, T Bonnevie; (IV) Collection and assembly of data: F Boujibar; (V) Data analysis and interpretation: F Boujibar, M Bubenheim; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Fairuz Boujibar, PT, MSc. Normandie Univ, UNIROUEN, INSERM U1096. Pôle 3R, Rouen University Hospital, Rouen, France. Email: Fairuz.boujibar@chu-rouen.fr.

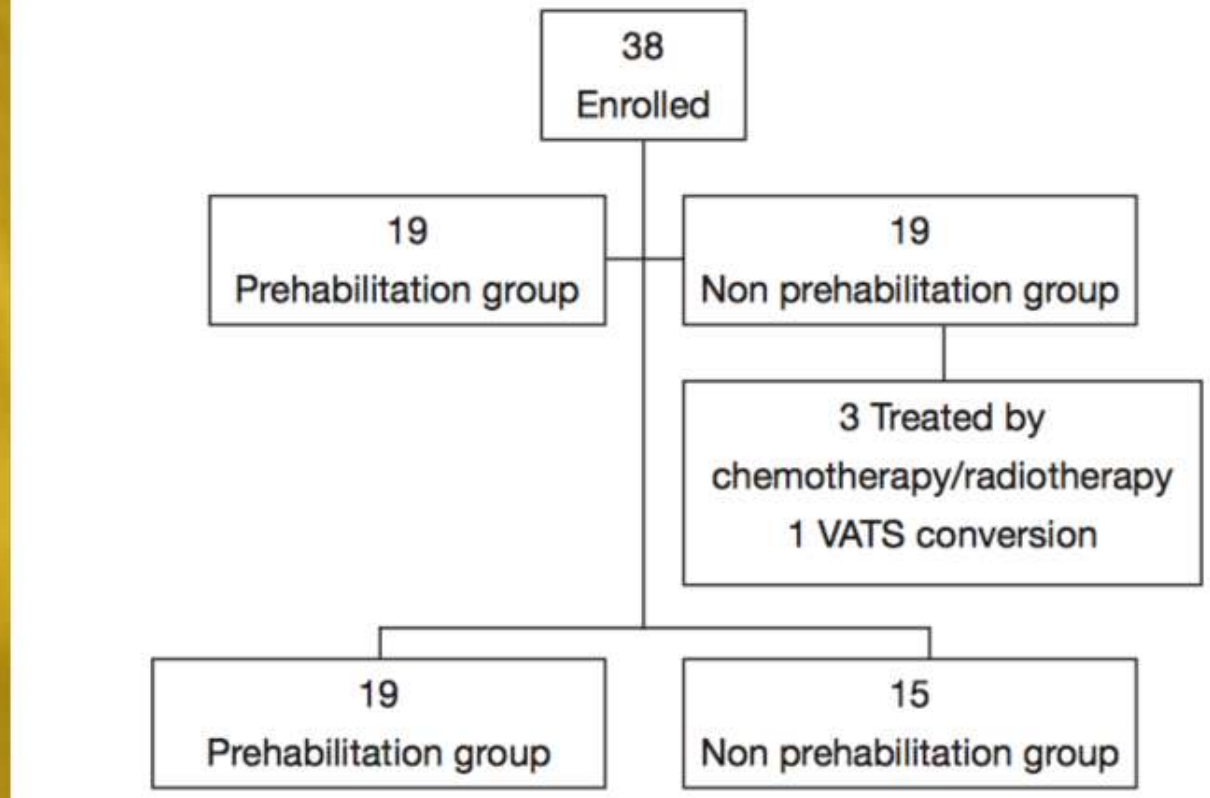


Figure 1 Flow chart. VATS, video assisted thoracic surgery.

Table 3 Hospital stay and post-operative complications according to prehabilitation group

Variable	All	No	Yes	P value
Patients	34	15	19	
Length of stay (days)[a]	6 [5–8]	7 [5–8]	5 [4–8]	0.0838
Occurrence of complications				0.0382
No	14	3	11	
Yes	20	12	8	
Among complications				
Atelectasis	6	3	3	
Empyema	5	5	–	
Pneumonia	5	5	–	
Acute respiratory disease	4	2	2	
Number of complications				0.0030
0	14	3	11	
1	13	5	8	
2	6	6	–	
3	1	1	–	
Clavien-Dindo classification				0.0291
0	14	3	11	
I	7	3	4	
II	4	2	2	
IIIa	5	5	–	
IIIb	1	–	1	
IV	3	2	1	
Clavien-Dindo classification ≤2				0.0252
Yes	25	8	17	
No	9	7	2	

Data expressed as n; a data expressed as median (Q1–Q3).


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¿ SE PUEDE?
... SE DEBE PRESCRIBIR
CONCLUSIONES

CONCLUSIONES

- **Se debe prescribir un programa de ejercicio a todo paciente que se encuentre hospitalizado en agudos, excepto por su contraindicaciones.**
- **La intervención multidisciplinaria que incluye ejercicio tiene efectos positivos en la estancia hospitalaria y el alta.**
- **La prehabilitación tiene efectos positivos en resultados post-quirúrgicos.**


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