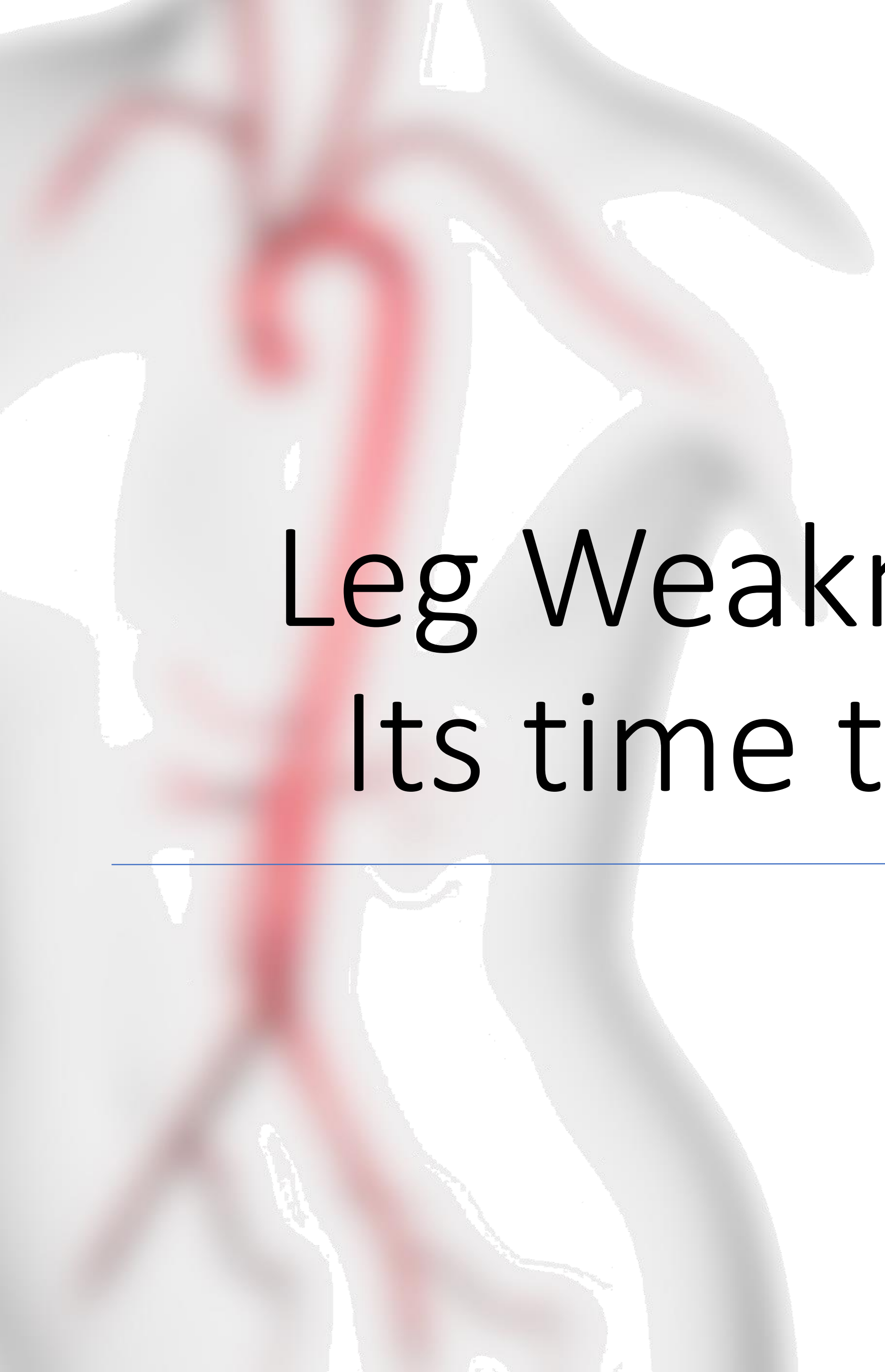


Leg Weakness after TAAA Repair: Its time to start figuring this out

TM Mastracci

London, UK

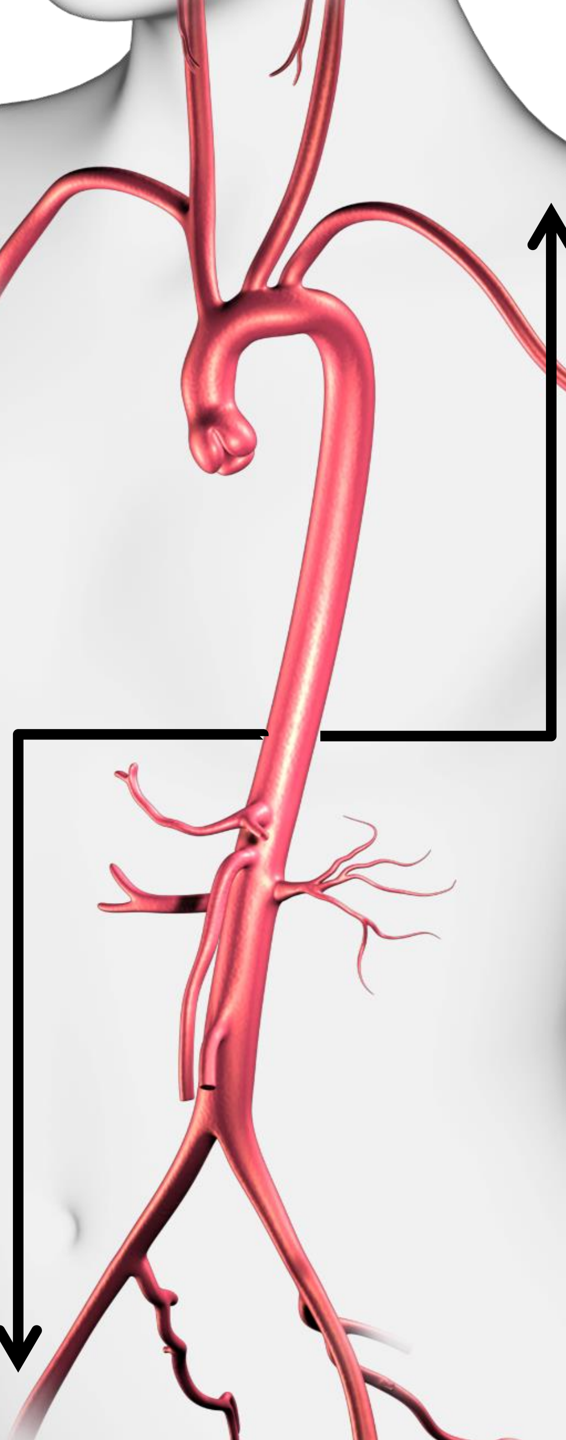
Disclosures

- Cook Medical: Consultation and Speaking
- Philips: Advisory Board
- CYDAR: Speaking and Advisory Board

- I believe very strongly in Prehab before surgery…

There are a few reliable predictors of poor mobility after surgery

Spinal Injury is a Big One



Sealing Zone Below Retrocardiac Aorta

Perioperative Mortality <1%

Risk of SCI <1%

Long term survival good

Sealing Zone Above Retrocardiac Aorta

Perioperative Mortality >5%

Risk of SCI >10%

Long-term survival poor

Bisdas et al, JVS 2015
Lu et al Circulation 2008

Spinal Cord Injury

Trial	Spinal Cord Injury	%
Fehrenbacher 2006	5/110	4.55
Conrad 2006	43/445	9.66
Coselli 2007	87/2286	3.81
Etz 2007	10/858	1.17
Safi 2005	36/1106	3.25
Grabitz 1996	6/260	2.31
Jacobs 2004	4/279	1.43

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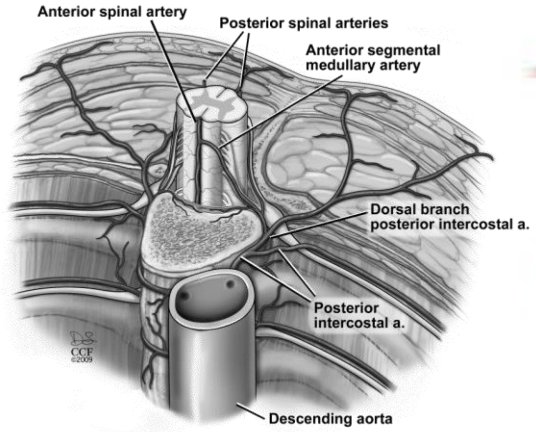
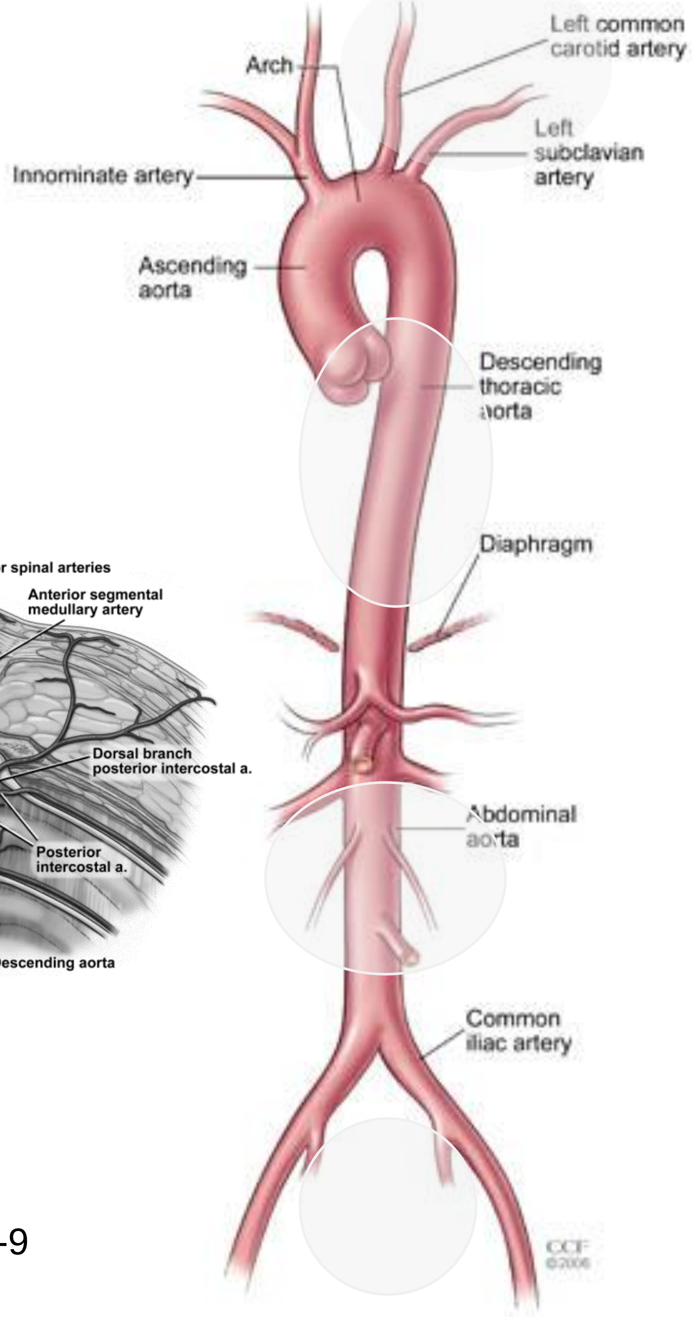
Collateral Network Theory

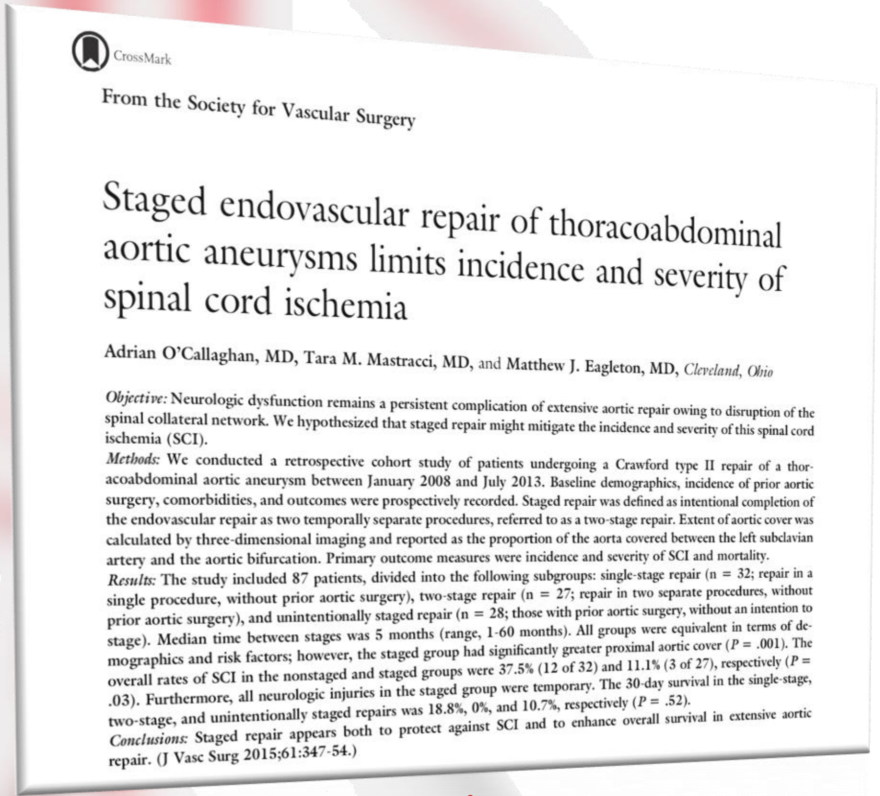
- 4 independent contributors to spinal blood flow
  - L Subclavian Artery
  - Intercostal Artery
  - Lumbar Artery
  - Hypogastric Artery





Griepp RB et al., Ann Thorac Surg 2007; 83: S865-9

Perioperative Complications: Spinal Cord Injury



CrossMark

From the Society for Vascular Surgery

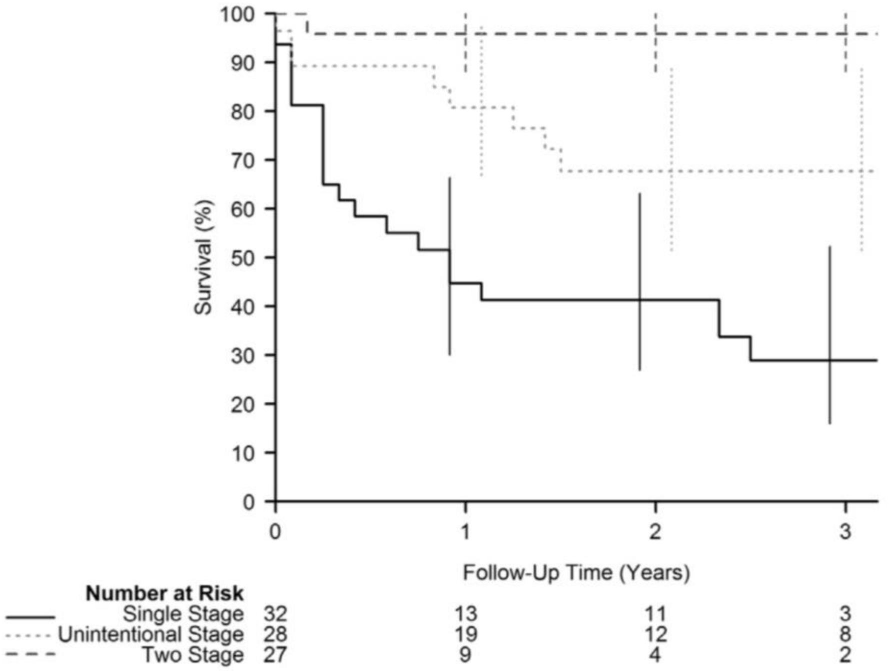
Staged endovascular repair of thoracoabdominal aortic aneurysms limits incidence and severity of spinal cord ischemia

Adrian O'Callaghan, MD, Tara M. Mastracci, MD, and Matthew J. Eagleton, MD, *Cleveland, Ohio*

Objective: Neurologic dysfunction remains a persistent complication of extensive aortic repair owing to disruption of the spinal collateral network. We hypothesized that staged repair might mitigate the incidence and severity of this spinal cord ischemia (SCI).
Methods: We conducted a retrospective cohort study of patients undergoing a Crawford type II repair of a thoracoabdominal aortic aneurysm between January 2008 and July 2013. Baseline demographics, incidence of prior aortic surgery, comorbidities, and outcomes were prospectively recorded. Staged repair was defined as intentional completion of the endovascular repair as two temporally separate procedures, referred to as a two-stage repair. Extent of aortic cover was calculated by three-dimensional imaging and reported as the proportion of the aorta covered between the left subclavian artery and the aortic bifurcation. Primary outcome measures were incidence and severity of SCI and mortality.
Results: The study included 87 patients, divided into the following subgroups: single-stage repair (n = 32; repair in a single procedure, without prior aortic surgery), two-stage repair (n = 27; repair in two separate procedures, without prior aortic surgery), and unintentionally staged repair (n = 28; those with prior aortic surgery, without an intention to stage). Median time between stages was 5 months (range, 1-60 months). All groups were equivalent in terms of demographics and risk factors; however, the staged group had significantly greater proximal aortic cover (P = .001). The overall rates of SCI in the nonstaged and staged groups were 37.5% (12 of 32) and 11.1% (3 of 27), respectively (P = .03). Furthermore, all neurologic injuries in the staged group were temporary. The 30-day survival in the single-stage, two-stage, and unintentionally staged repairs was 18.8%, 0%, and 10.7%, respectively (P = .52).
Conclusions: Staged repair appears both to protect against SCI and to enhance overall survival in extensive aortic repair. (J Vasc Surg 2015;61:347-54.)

- Staging decreases SCI
- Staging may protect against mortality

O'Callaghan et al, JVS 2015



	N	SCI	30 d Mortality
Single Stage	32	12/32 (38%)	19%
Two Stage	27	3/27 (11%)	0%
Unintentional Stage	28	4/28 (14%)	10.7%

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Summary of Staging for Endo TAAA

Citation	Modality	Number of patients	Number completed	Rate of SCI	Definition of SCI
Kasprzac 2014	TASP	40	35 (87%)	2/40 (5%)	Permanent SCI
Ivancev 2015	TASP	25	25	8/25 (32%) 1/23 (4%) Perm	Temporary and Permanent
O'Callaghan 2015	TEVAR-First and Unintentional	55	55	7/55 (13%) 3/55 (5%) Perm	Temporary and Permanent

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Theory: Fewer Major Adverse Events

- Decreasing the magnitude of the repair may decrease the number of hypotensive episodes, degree of blood loss and time in the OR

Theory: May Protect From Potential Embolic Sources

- Covering the proximal aortic thrombus may prevent the wire/delivery systems from causing embolic debris to travel distally

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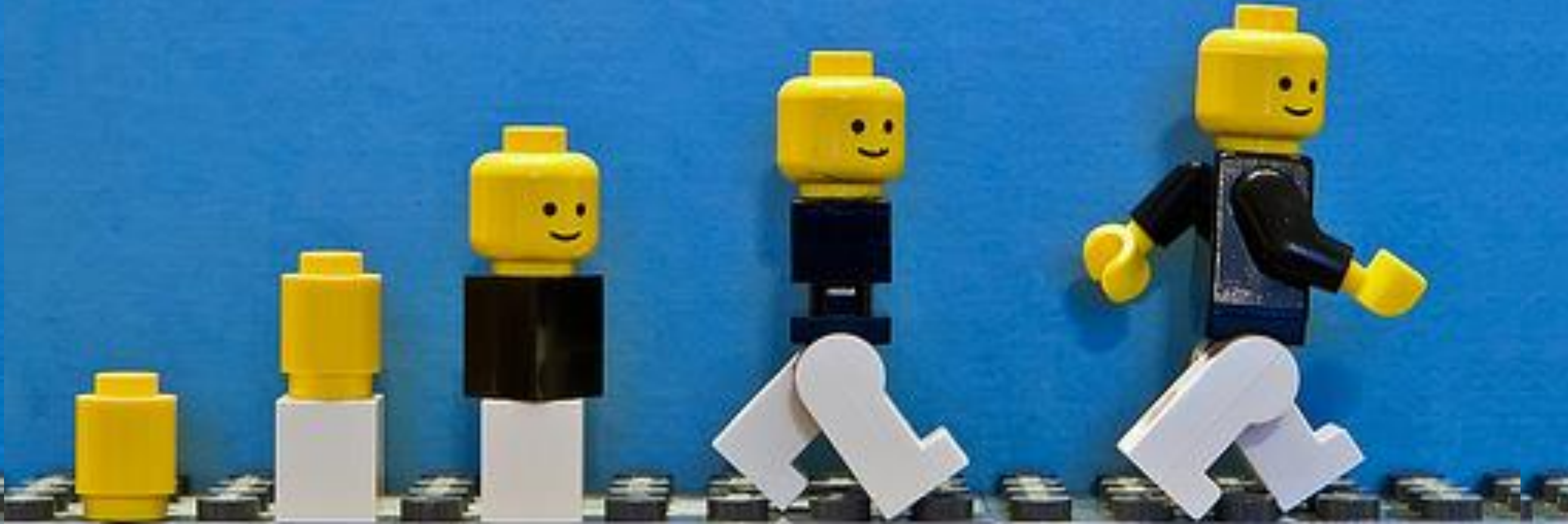
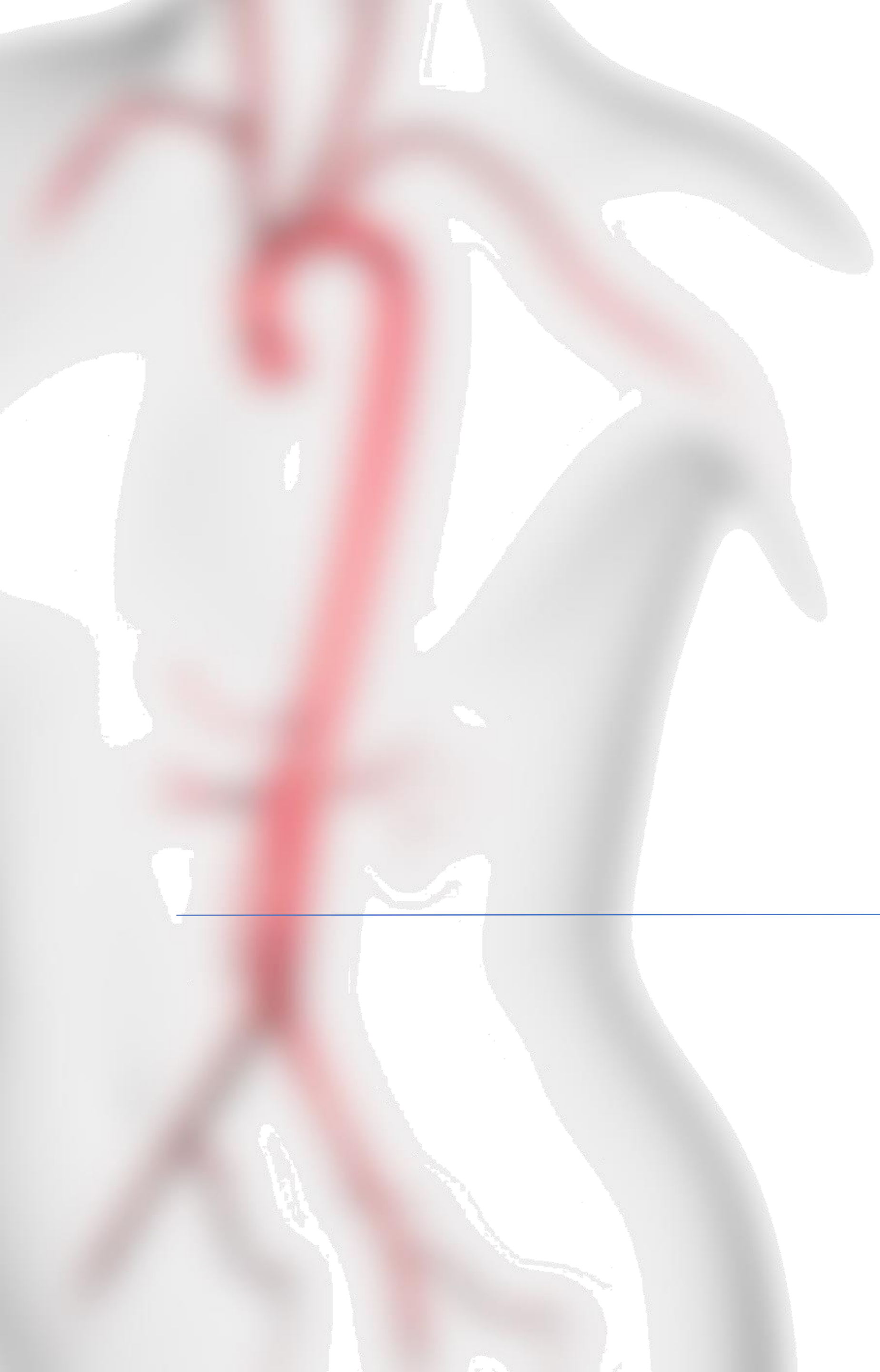
Theory: Gradual Change

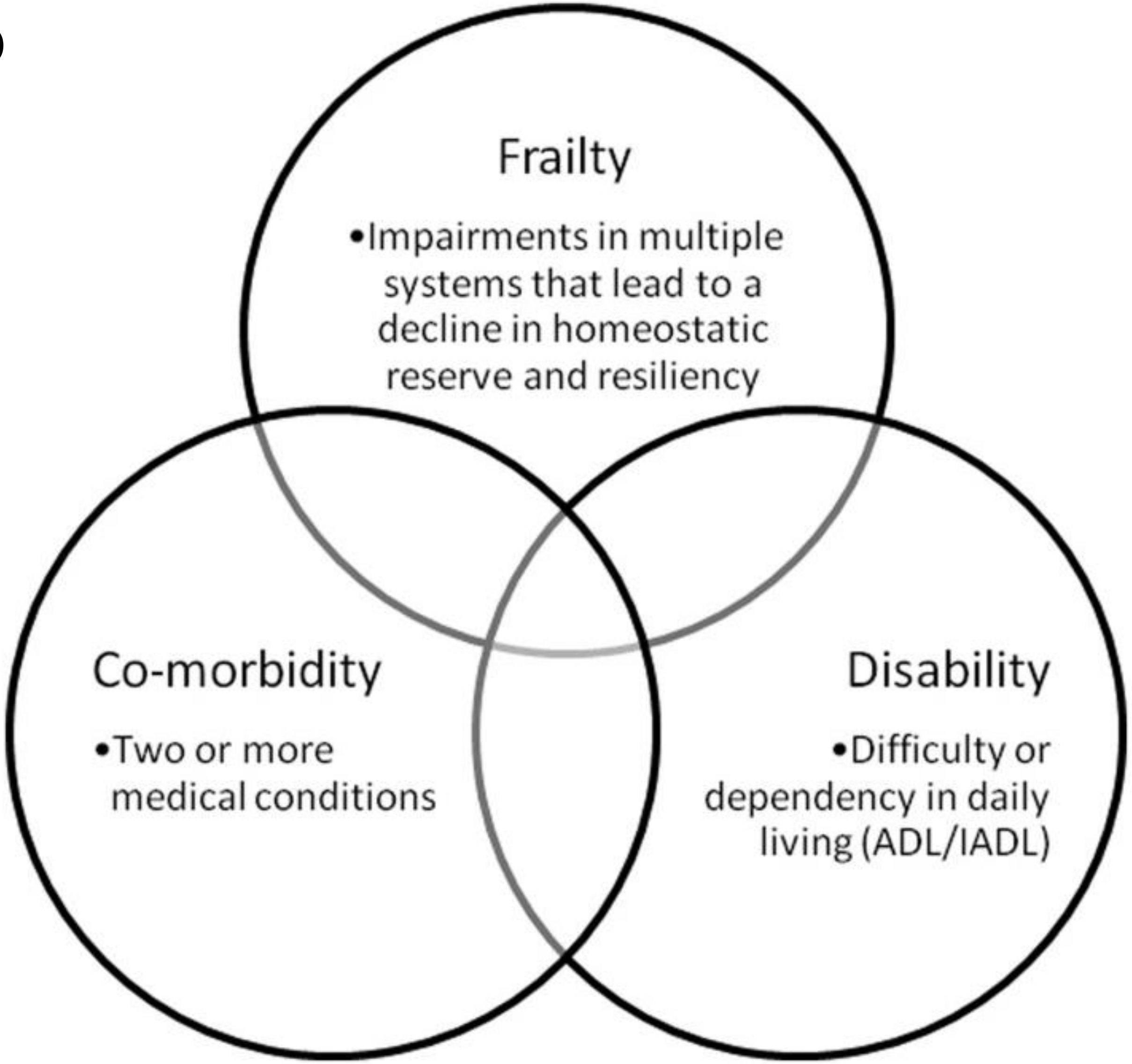
- Putting time between repairs may help develop the collateral network.





What about Frailty?

What about Frailty?



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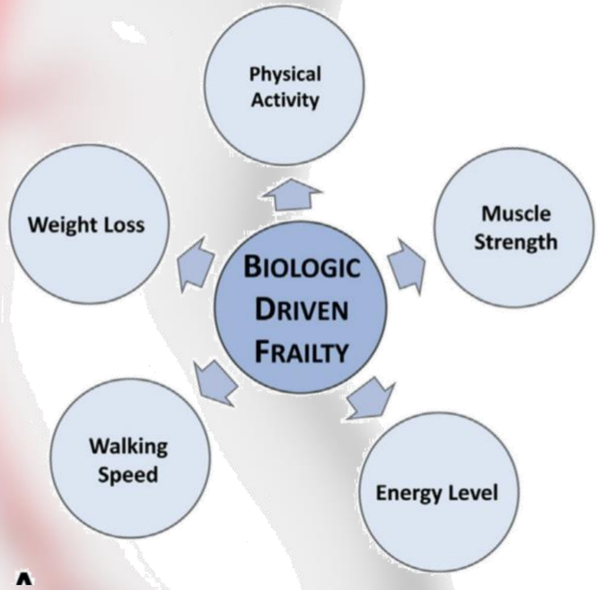
Two Models of Frailty

Phenotype model

- describes a group of patient characteristics (unintentional weight loss, reduced muscle strength, reduced gait speed, self-reported exhaustion and low energy expenditure) which, if present, can predict poorer outcomes.
- generally individuals with three or more of the characteristics are said to have frailty

Cumulative Deficit model

- assumes an accumulation of deficits (ranging from symptoms e.g. loss of hearing or low mood, through signs such as tremor, through to various diseases such as dementia) which can occur with ageing and which combine to increase the 'frailty index' which in turn will increase the risk of an adverse outcome.



We are at risk of frailty when we lose 70% of functional capacity

BGS 2020
JACS "Frailty for Surgeons" 2016

First proposal of frailty as a phenotype

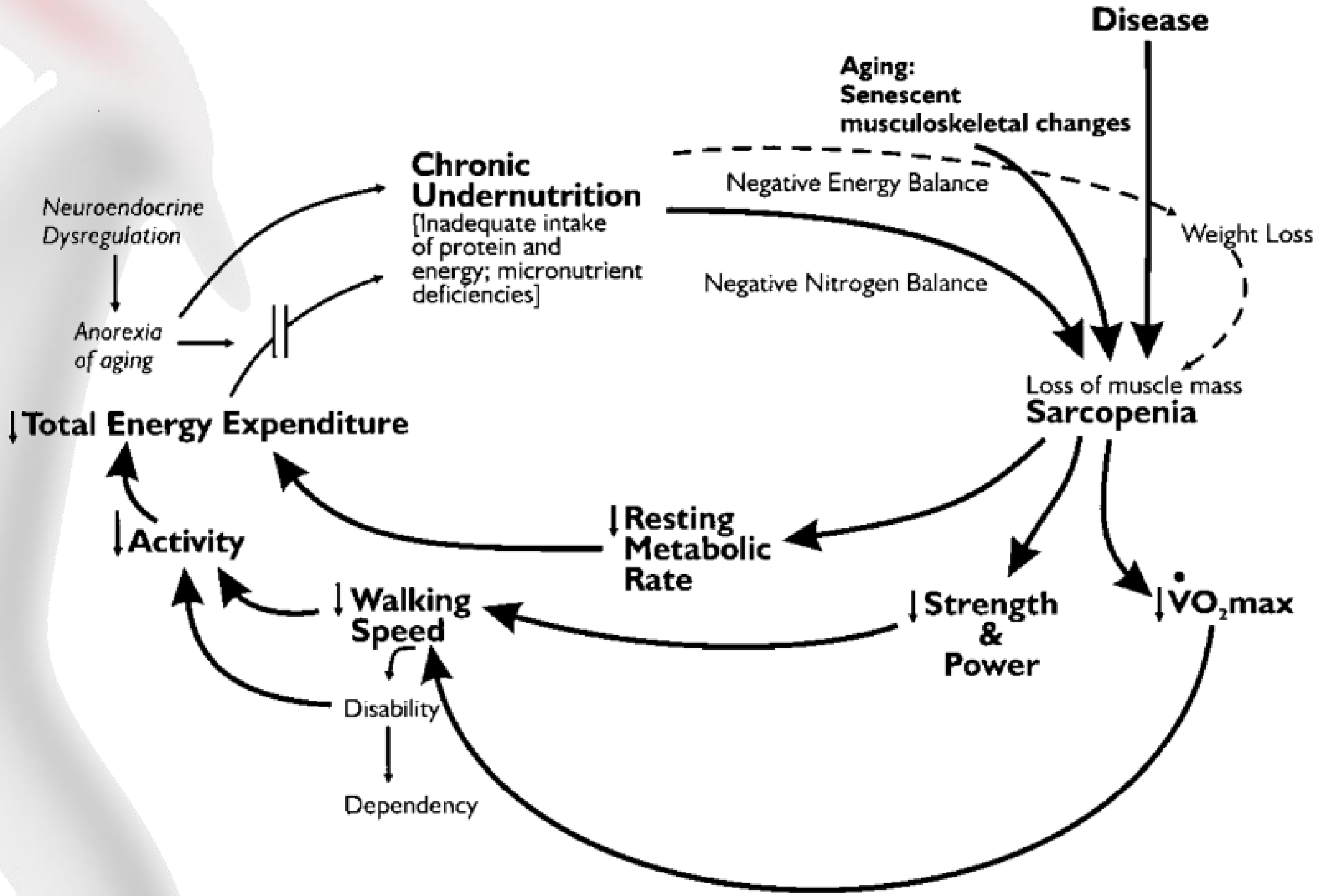


Figure 1. Cycle of frailty hypothesized as consistent with demonstrated pairwise associations and clinical signs and symptoms of frailty. Reproduced with permission from (14).

Fried et al, Journal of Gerontology 2001

Frailty Score

CLINICAL FRAILTY SCALE

1	VERY FIT	People who are robust, active, energetic and motivated. They tend to exercise regularly and are among the fittest for their age.
2	FIT	People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g., seasonally.
3	MANAGING WELL	People whose **medical problems are well controlled**, even if occasionally symptomatic, but often are **not regularly active** beyond routine walking.
4	LIVING WITH VERY MILD FRAILTY	Previously "vulnerable," this category marks early transition from complete independence. While **not dependent** on others for daily help, often **symptoms limit activities.** A common complaint is being "slowed up" and/or being tired during the day.
5	LIVING WITH MILD FRAILTY	People who often have **more evident slowing**, and need help with **high order instrumental activities of daily living** (finances, transportation, heavy housework). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, medications and begins to restrict light housework.
6	LIVING WITH MODERATE FRAILTY	People who need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.
7	LIVING WITH SEVERE FRAILTY	**Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months).
8	LIVING WITH VERY SEVERE FRAILTY	Completely dependent for personal care and approaching end of life. Typically, they could not recover even from a minor illness.
9	TERMINALLY ILL	Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise living with severe frailty.** (Many terminally ill people can still exercise until very close to death.)

SCORING FRAILTY IN PEOPLE WITH DEMENTIA

The degree of frailty generally corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

In **very severe dementia** they are often bedfast. Many are virtually mute.

DALHOUSIE UNIVERSITY

Rockwood K et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489–495.

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KATZ score

Patient Name:______________________ **Date:**_____________
Patient ID #________________________

Katz Index of Independence in Activities of Daily Living

Activities Points (1 or 0)	**Independence** (1 Point) **NO** supervision, direction or personal assistance.	**Dependence** (0 Points) **WITH** supervision, direction, personal assistance or total care.
BATHING Points: __________	**(1 POINT)** Bathes self completely or needs help in bathing only a single part of the body such as the back, genital area or disabled extremity.	**(0 POINTS)** Need help with bathing more than one part of the body, getting in or out of the tub or shower. Requires total bathing
DRESSING Points: __________	**(1 POINT)** Get clothes from closets and drawers and puts on clothes and outer garments complete with fasteners. May have help tying shoes.	**(0 POINTS)** Needs help with dressing self or needs to be completely dressed.
TOILETING Points: __________	**(1 POINT)** Goes to toilet, gets on and off, arranges clothes, cleans genital area without help.	**(0 POINTS)** Needs help transferring to the toilet, cleaning self or uses bedpan or commode.
TRANSFERRING Points: __________	**(1 POINT)** Moves in and out of bed or chair unassisted. Mechanical transfer aids are acceptable	**(0 POINTS)** Needs help in moving from bed to chair or requires a complete transfer.
CONTINENCE Points: __________	**(1 POINT)** Exercises complete self control over urination and defecation.	**(0 POINTS)** Is partially or totally incontinent of bowel or bladder
FEEDING Points: __________	**(1 POINT)** Gets food from plate into mouth without help. Preparation of food may be done by another person.	**(0 POINTS)** Needs partial or total help with feeding or requires parenteral feeding.

TOTAL POINTS: ________ **SCORING:** 6 = High (*patient independent*) 0 = Low (*patient very dependent*

Source:
try this: Best Practices in Nursing Care to Older Adults, The Hartford Institute for Geriatric Nursing, New York University, College of Nursing, www.hartfordign.org.

DASI (Duke Index)

Is the patient able to:

Take care of self e.g. eating, dressing, bathing, using the toilet	No 0	Yes +2.75
Walk indoors	No 0	Yes +1.75
Walk 1–2 blocks on level ground	No 0	Yes +2.75
Climb a flight of stairs or walk up a hill	No 0	Yes +5.5
Run a short distance	No 0	Yes +8
Do light work around the house e.g. dusting, washing dishes	No 0	Yes +2.7
Do moderate work around the house e.g. vacuuming, sweeping floors, carrying in groceries	No 0	Yes +3.5
Do heavy work around the house e.g. scrubbing floors, lifting or moving heavy furniture	No 0	Yes +8
Do yardwork e.g. raking leaves, weeding, pushing a power mower	No 0	Yes +4.5
Have sexual relations	No 0	Yes +5.25
Participate in moderate recreational activities e.g. golf, bowling, dancing, doubles tennis, throwing a baseball or football	No 0	Yes +6
Participate in strenuous sports e.g. swimming, singles tennis, football, basketball, skiing	No 0	Yes +7.5

58.2 points

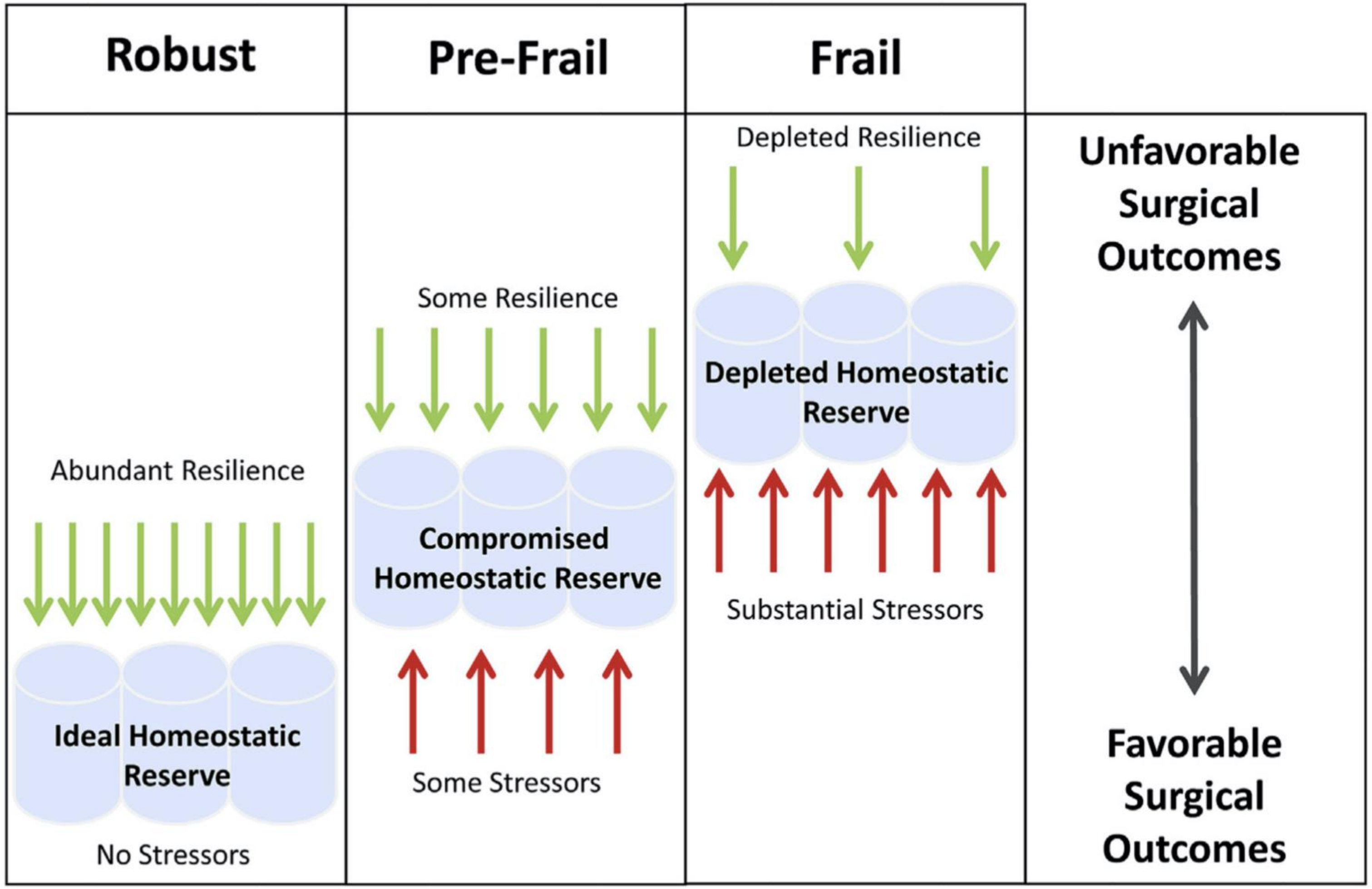
The higher the score (maximum 58.2), the higher the functional status.

9.89 METs

Copy Results

Next Steps

Resilience: A health based model



JACS 2016

Psoas Muscle Area and Sarcopenia

Psoas muscle area and attenuation are highly predictive of complications and mortality after complex endovascular aortic repair

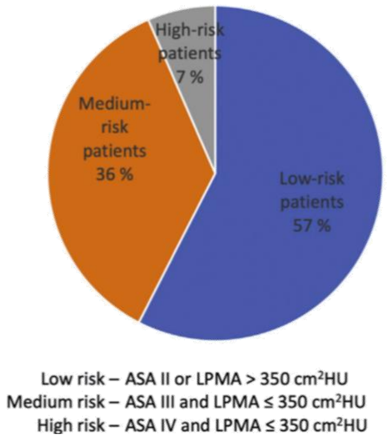
Jussi M. Kärkkäinen, MD, PhD,[a,b] Gustavo S. Oderich, MD,[c] Emanuel R. Tenorio, MD, PhD,[c] Keouna Pather, MD,[a] Niku Oksala, MD, PhD, DSc(med),[d,e] Thanila A. Macedo, MD,[a] Terri Vrtiska, MD,[a] Barend Mees, MD, PhD,[f,g] and Michael J. Jacobs, MD, PhD,[f,g,h] Rochester, Minn; Kuopio and Tampere, Finla Houston, Tex; Maastricht, The Netherlands; and Aachen, Germany

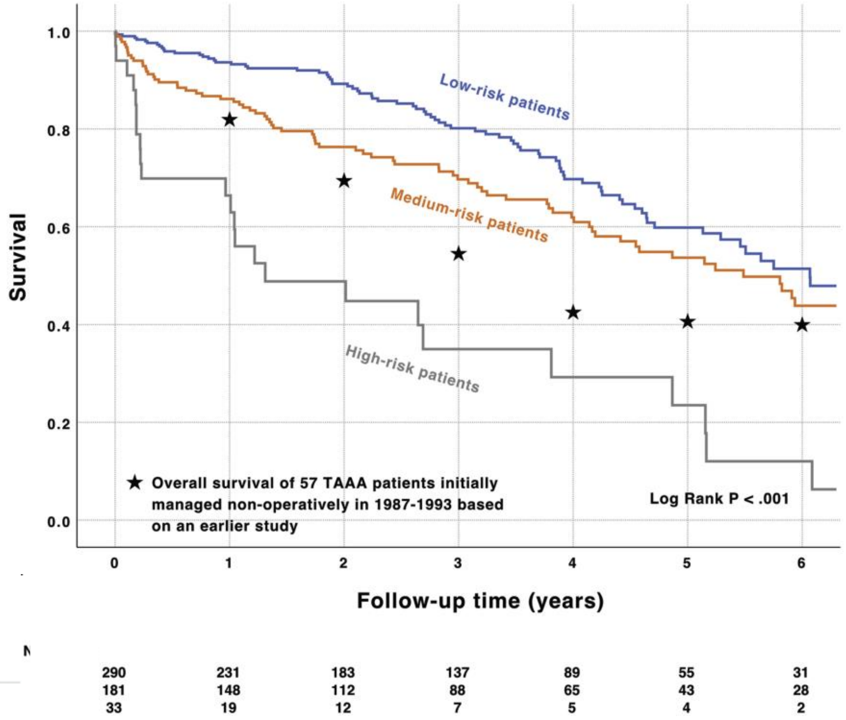
ABSTRACT

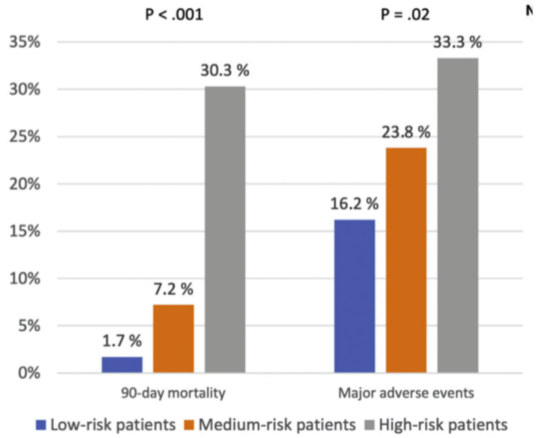
Objective: The present study evaluated the psoas muscle area and attenuation (radiodensity), quantified by com tomography, together with clinical risk assessment, as predictors of outcomes after fenestrated and branched vascular aortic repair (FBEVAR).

Methods: The present single-center study included 504 patients who had undergone elective FBEVAR for pararenal or thoracoabdominal aortic aneurysms. The clinical risk assessment included age, sex, comorbidities, body mass index, glomerular filtration rate, aneurysm size and extent, cardiac stress test results, ejection fraction, and American Society of Anesthesiologists (ASA) score. Preoperative computed tomography was used to measure the psoas muscle area and attenuation at the L3 level. The lean psoas muscle area (LPMA; area in cm^2 multiplied by attenuation in Hounsfield units [HU]) was calculated by multiplying the area by the attenuation. The risk factors for 90-day mortality, major adverse events (MAEs), and long-term mortality were determined using multivariable analysis. MAEs included 30-day or in-hospital death, acute kidney injury, myocardial infarction, respiratory failure, paraplegia, stroke, and bowel ischemia. A novel risk stratification method was proposed according to the strongest predictors of mortality and MAEs on multivariable analysis.

Results: The 30-day mortality, 90-day mortality, and MAE rates were 2.0%, 5.6%, and 20%, respectively. The independent predictors of 90-day mortality were chronic obstructive pulmonary disease, chronic kidney disease, ASA score, and LPMA. The independent predictors of MAEs were aneurysm diameter, glomerular filtration rate, and LPMA. For long-term mortality, the independent predictors were chronic kidney disease, congestive heart failure, extent I-III thoracoabdominal aortic aneurysms, ASA score, and LPMA. The patients were stratified into three groups according to the ASA score and LPMA: low risk, ASA score II or LPMA >350 cm^2HU (n = 290); medium risk, ASA score III and LPMA ≤350 cm^2HU (n = 181); and high risk, ASA score IV and LPMA ≤350 cm^2HU (n = 33). The 90-day mortality and MAE rates were 1.7% and 16% in the low-, 7.2% and 24% in the medium-, and 30% and 33% in the high-risk patients, respectively (P < .001







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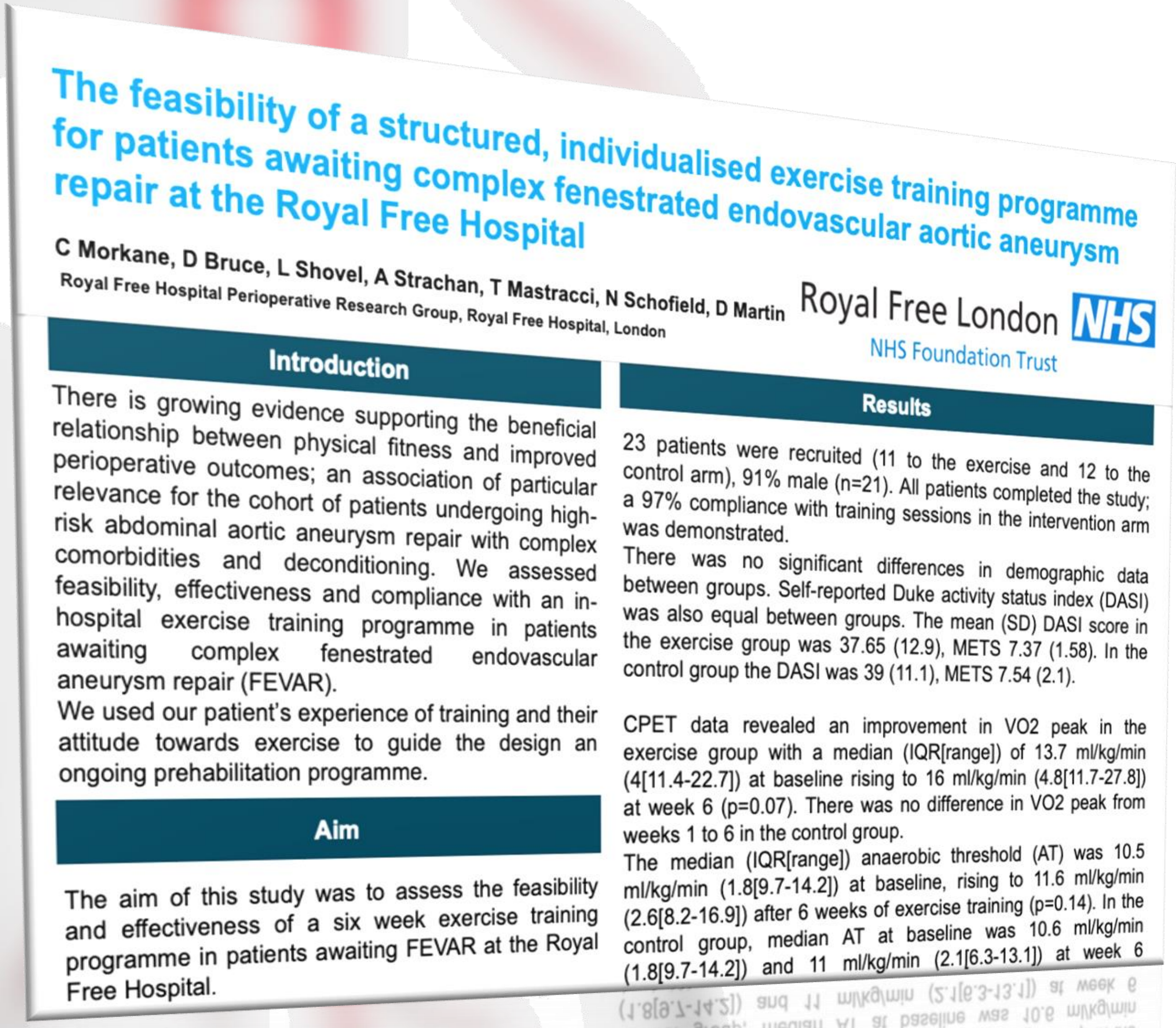
Karkkainen et al, JVS 2020


PRehabilitation

Prehab in FEVAR/BEVAR: Our Experience



The feasibility of a structured, individualised exercise training programme for patients awaiting complex fenestrated endovascular aortic aneurysm repair at the Royal Free Hospital

C Morkane, D Bruce, L Shovel, A Strachan, T Mastracci, N Schofield, D Martin
Royal Free Hospital Perioperative Research Group, Royal Free Hospital, London

Royal Free London NHS
NHS Foundation Trust

Introduction

There is growing evidence supporting the beneficial relationship between physical fitness and improved perioperative outcomes; an association of particular relevance for the cohort of patients undergoing high-risk abdominal aortic aneurysm repair with complex comorbidities and deconditioning. We assessed feasibility, effectiveness and compliance with an in-hospital exercise training programme in patients awaiting complex fenestrated endovascular aneurysm repair (FEVAR).
We used our patient's experience of training and their attitude towards exercise to guide the design an ongoing prehabilitation programme.

Aim

The aim of this study was to assess the feasibility and effectiveness of a six week exercise training programme in patients awaiting FEVAR at the Royal Free Hospital.

Results

23 patients were recruited (11 to the exercise and 12 to the control arm), 91% male (n=21). All patients completed the study; a 97% compliance with training sessions in the intervention arm was demonstrated.
There was no significant differences in demographic data between groups. Self-reported Duke activity status index (DASI) was also equal between groups. The mean (SD) DASI score in the exercise group was 37.65 (12.9), METS 7.37 (1.58). In the control group the DASI was 39 (11.1), METS 7.54 (2.1).

CPET data revealed an improvement in VO2 peak in the exercise group with a median (IQR[range]) of 13.7 ml/kg/min (4[11.4-22.7]) at baseline rising to 16 ml/kg/min (4.8[11.7-27.8]) at week 6 (p=0.07). There was no difference in VO2 peak from weeks 1 to 6 in the control group.
The median (IQR[range]) anaerobic threshold (AT) was 10.5 ml/kg/min (1.8[9.7-14.2]) at baseline, rising to 11.6 ml/kg/min (2.6[8.2-16.9]) after 6 weeks of exercise training (p=0.14). In the control group, median AT at baseline was 10.6 ml/kg/min (1.8[9.7-14.2]) and 11 ml/kg/min (2.1[6.3-13.1]) at week 6

Group	Week 1 (steps/day)	Week 6 (steps/day)	Change, (% change)	P value
Exercise (n=11) Median (IQR)	6016 (3762)	6556 (4515)	+ 540 (9)	0.03
Usual care (n=12) Median (IQR)	4779 (2899)	4347 (4430)	- 432 (-10)	1.0

The median (IQR[range]) anaerobic threshold (AT) was 10.5 ml/kg/min (1.8[9.7-14.2]) at baseline, rising to 11.6 ml/kg/min (2.6[8.2-16.9]) after 6 weeks of exercise training (p=0.14).

Morkane C et al, VASBI 2018

Prehab: The jury is still out

For EXERCISE Based interventions:
No difference in mortality
Adherence to interventions: 50 – 76%
Trend (not significant) towards decreased LOS

SYSTEMATIC REVIEW

The Content of Pre-habilitative Interventions for Patients Undergoing Repair of Abdominal Aortic Aneurysms and Their Effect on Post-Operative Outcomes: A Systematic Review

Rory J. Bonner [a,*], Tom Wallace [b], Alexander D. Jones [b], D. Julian Scott [b], Suzanne H. Richards [a]
[a] Leeds Institute of Health Sciences, University of Leeds, Leeds, UK
[b] Leeds Vascular Institute, Leeds General Infirmary, Leeds Teaching Hospitals NHS Trust, Leeds, UK

WHAT THIS PAPER ADDS
This study provides a review of current evidence investigating pre-habilitation in patients undergoing abdominal aorta aneurysm (AAA) repair and its effects on post-operative outcomes. Although pre-habilitation has potential to improve clinical and health related quality of life outcomes, the limited and heterogenous state of current literature precludes conclusive recommendations for future practice. The contents of included interventions were analysed and found to be generally inadequately described according to existing reporting standards. More high quality trials, conforming to an urgently needed set of core outcomes and reporting standards, are required to best inform the clinical and cost effectiveness of pre-habilitation for AAA repair.

Objective: Patients requiring abdominal aortic aneurysm (AAA) repair are at risk of post-operative complications due to poor pre-operative state. Pre-habilitation describes the enhancement of functional capacity and tolerance to an upcoming physiological stressor, intended to reduce those complications. The ability to provide such an intervention (physical, pharmacological, nutritional, or psychosocial) between diagnosis and surgery is a growing interest, but its role in AAA repair is unclear. This paper aimed to systematically review existing literature to better describe the effect of pre-habilitative interventions on post-operative outcomes of patients undergoing AAA repair.
Data sources: EMBASE and Medline were searched from inception to October 2020. Retrieved papers, systematic reviews, and trial registries were citation tracked.
Review methods: Randomised controlled trials (RCTs) comparing post-operative outcomes for adult patients undergoing a period of pre-habilitation prior to AAA repair (open or endovascular) were eligible for inclusion. Two authors screened titles for inclusion, assessed risk of bias, and extracted data. Primary outcomes were post-operative 30 day mortality, composite endpoint of 30 day post-operative complications, hospital length of stay (LOS), and health related quality of life (HRQL) outcomes. The content of interventions was extracted and a narrative analysis of results undertaken.
Results: Seven RCTs with 901 patients were included (three exercise based, two pharmacological based, and two nutritional based). Risk of bias was mostly unclear or high and the clinical heterogeneity between the trials precluded data pooling for meta-analyses. The quality of intervention descriptions was highly variable. One exercise based RCT reported significantly reduced hospital LOS and another improved HRQL outcomes. Neither pharmacological nor nutritional based RCTs reported significant differences in primary outcomes.
Conclusion: There is limited evidence to draw clinically robust conclusions about the effect of pre-habilitation on ... AAA repair. Well designed RCTs, adhering to reporting standards for

Table 2. Intervention characteristics of included randomised controlled trials comparing post-operative outcomes for patients undergoing a period of pre-habilitation prior to abdominal aortic aneurysm repair

Trial	Type*	Intervention (I) and control (C)*,†	Duration*	Mode and setting*	Staff level of training*	Pilot study/ Piloted‡
Dronkers et al. 2008[20]	Exercise (unimodal)	I: "Inspiratory muscle training" C: Usual care	At least two weeks pre-operative	Single centre 1 session per week was supervised, five sessions were unsupervised Location of intervention provision/ administration NR	Experienced physical therapist	Pilot
Barakat et al. 2016[21]	Exercise (unimodal)	I: "Hospital based exercise class" C: Usual care	6 weeks pre-operative	Single centre Supervised Hospital based, physiotherapy gym	NR	Piloted
Tew et al. 2017[22]	Exercise (unimodal)	I: "HIT programme" C: Usual care	At least four weeks pre-operative	Multi-centre (3) Each session supervised Hospital based (no further information)	Research nurse and physio-therapist, trained in ILS	Pilot
Barry and Mealy et al. 1998[16,17]	Pharmacological (unimodal)	I: HrGH C: Placebo	6 days pre-operative until six days post-operative	Single centre Location of intervention provision/ administration NR	NR	-
Decker et al. 2005[19]	Pharmacological (unimodal)	I: HrGH C: Placebo	2 days pre-operative until 7 days post-operative	Single centre Location of intervention provision/ administration NR	NR	-
Watters et al. 2002[18]	Nutrition (unimodal)	I: Micronutrient supplement C: Placebo	2–3 weeks pre-operative until 7 days post-operative	Single centre Location of intervention provision/ administration NR	NR	-
Garg et al. 2018[23]	Nutrition (unimodal)	I: Curcumin supplement C: Placebo	Two days pre-operative until one day post-operative	Multicentre (10) Location of intervention provision/administration NR	NR	-

HIT = high intensity interval training; HrGH = human recombinant growth hormone; ILS = immediate life support; NR = not reported.
* Criteria definition from TIDieR guidelines.[14]
† See Supplementary Table 1 for full details of procedures and doses reported.
‡ Additional criteria definition from Goodwin et al. guidelines[9] – only applicable to exercise based interventions.

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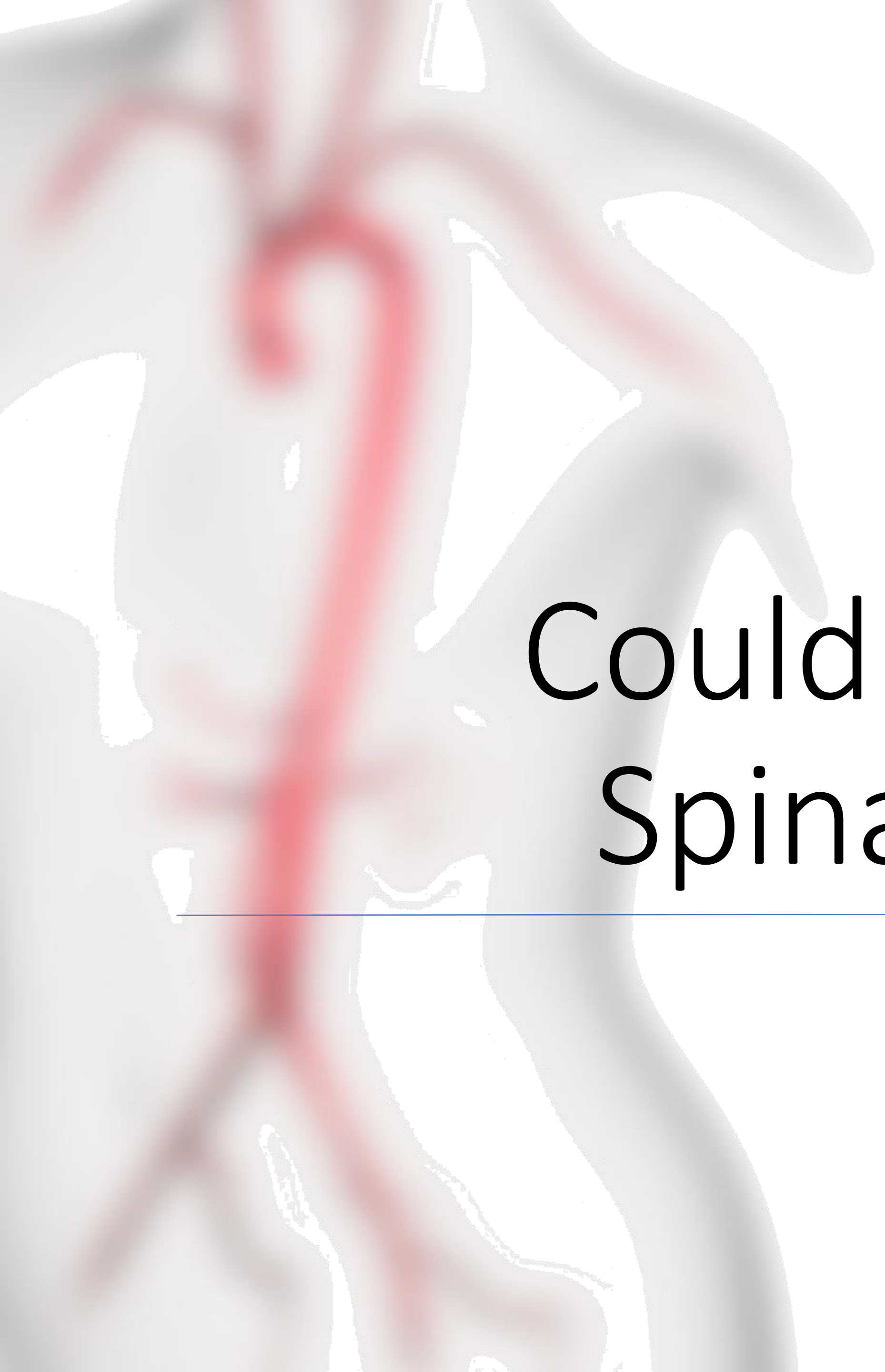
Bonner et al, EVJES 2021



Could Frailty and Underlying Spinal Damage be Related?

Sit to Stand Testing: Power loss in older years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Contents lists available at ScienceDirect
Experimental Gerontology
journal homepage: www.elsevier.com/locate/expgero
ELSEVIER

Assessment of functional sit-to-stand muscle power: Cross-sectional trajectories across the lifespan

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Functional capacity

ABSTRACT

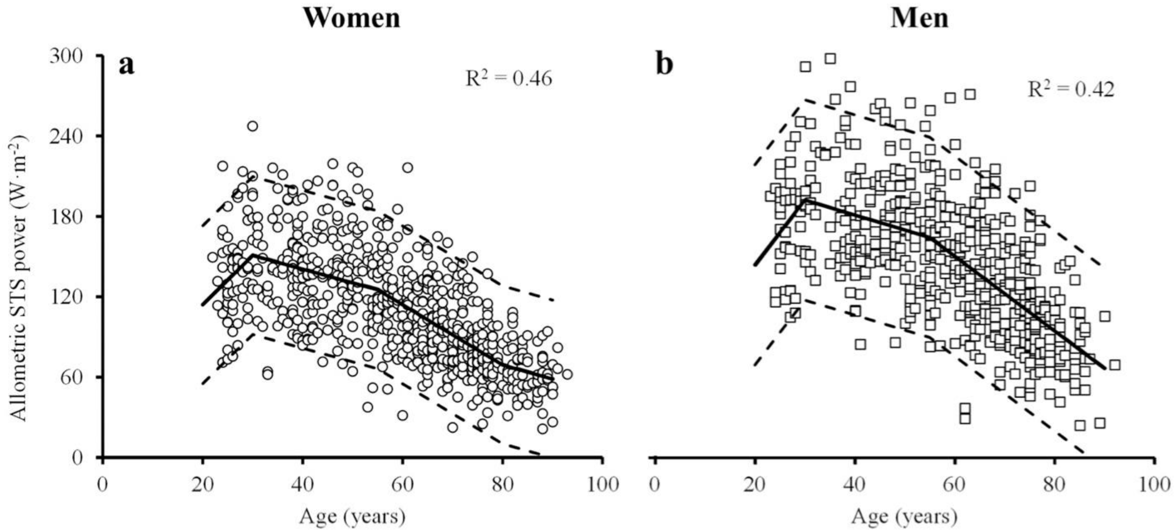
Background: The 30-s sit-to-stand (STS) muscle power test is a valid test to assess muscle power in older people; however, whether it may be used to assess trajectories of lower-limb muscle power through the adult lifespan is not known. This study evaluated the pattern and time course of variations in relative, allometric and specific STS muscle power throughout the lifespan.

Methods: Subjects participating in the Copenhagen Sarcopenia Study (729 women and 576 men; aged 20 to 93 years) were included. Lower-limb muscle power was assessed with the 30-s version of the STS muscle power test. Allometric, relative and specific STS power were calculated as absolute STS power normalized to height squared, body mass and leg lean mass as assessed by DXA, respectively.

Results: Relative STS muscle power tended to increase in women (0.08 ± 0.05 W·kg^{-1}·yr^{-1}; $p = 0.082$) and increased in men (0.14 ± 0.07 W·kg^{-1}·yr^{-1}; $p = 0.046$) between 20 and 30 years, followed by a slow decline (-0.05 ± 0.05 W·kg^{-1}·yr^{-1} and -0.06 ± 0.08 W·kg^{-1}·yr^{-1}, respectively; both $p > 0.05$) between 30 and 50 years. Then, relative STS power declined at an accelerated rate up to oldest age in men (-0.09 ± 0.02 W·kg^{-1}·yr^{-1}) and in women until the age of 75 (-0.09 ± 0.01 W·kg^{-1}·yr^{-1}) (both $p < 0.001$). A lower rate of decline was observed in women aged 75 and older (-0.04 ± 0.02 W·kg^{-1}·yr^{-1}; $p = 0.039$). Similar age-related patterns were noted for allometric and specific STS power.

Conclusions: The STS muscle power test appears to provide a feasible and inexpensive tool to monitor cross-sectional trajectories of muscle power throughout the lifespan.

A decrease of one standard deviation in maximal muscle power has been associated to a 27–42% increased likelihood of disability among older people



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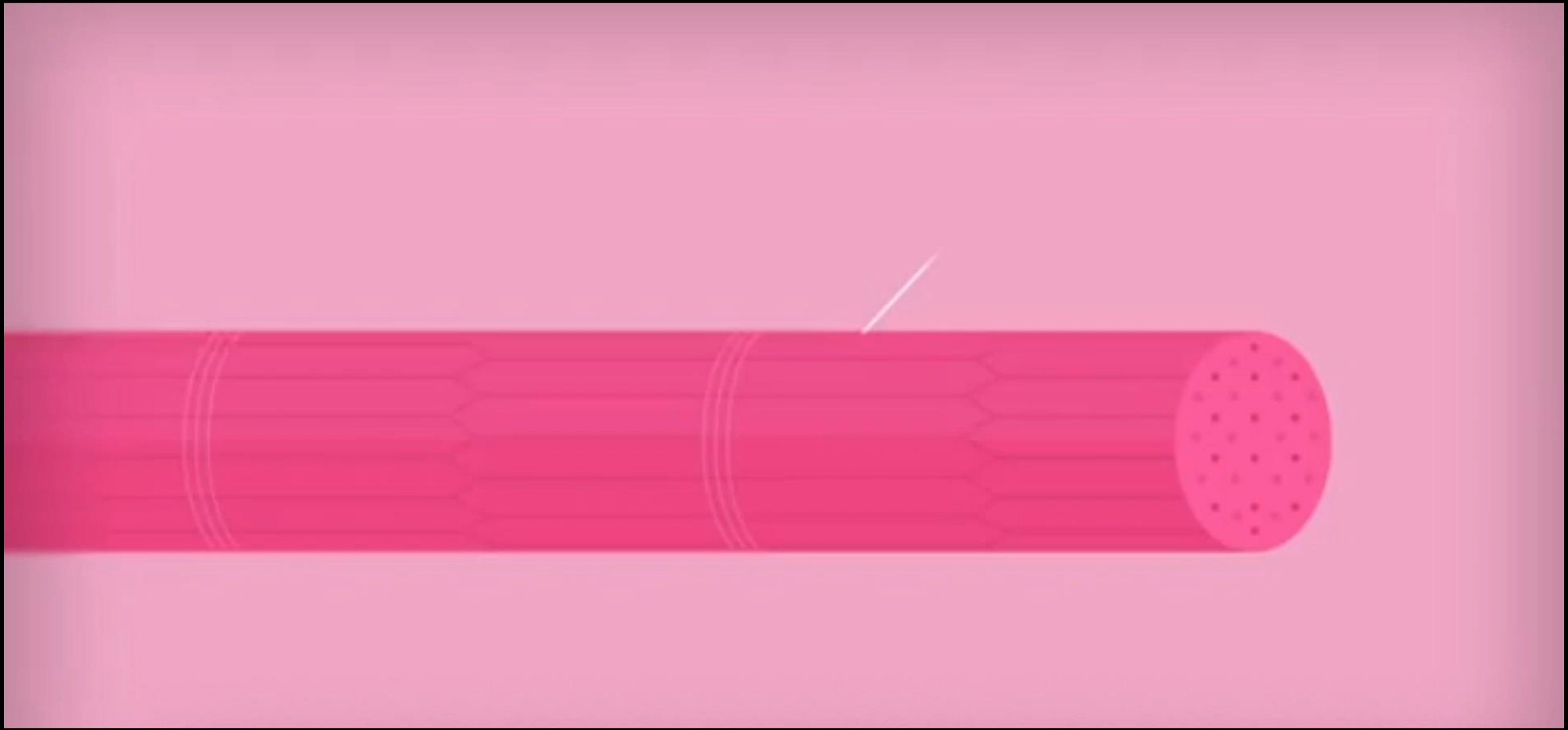
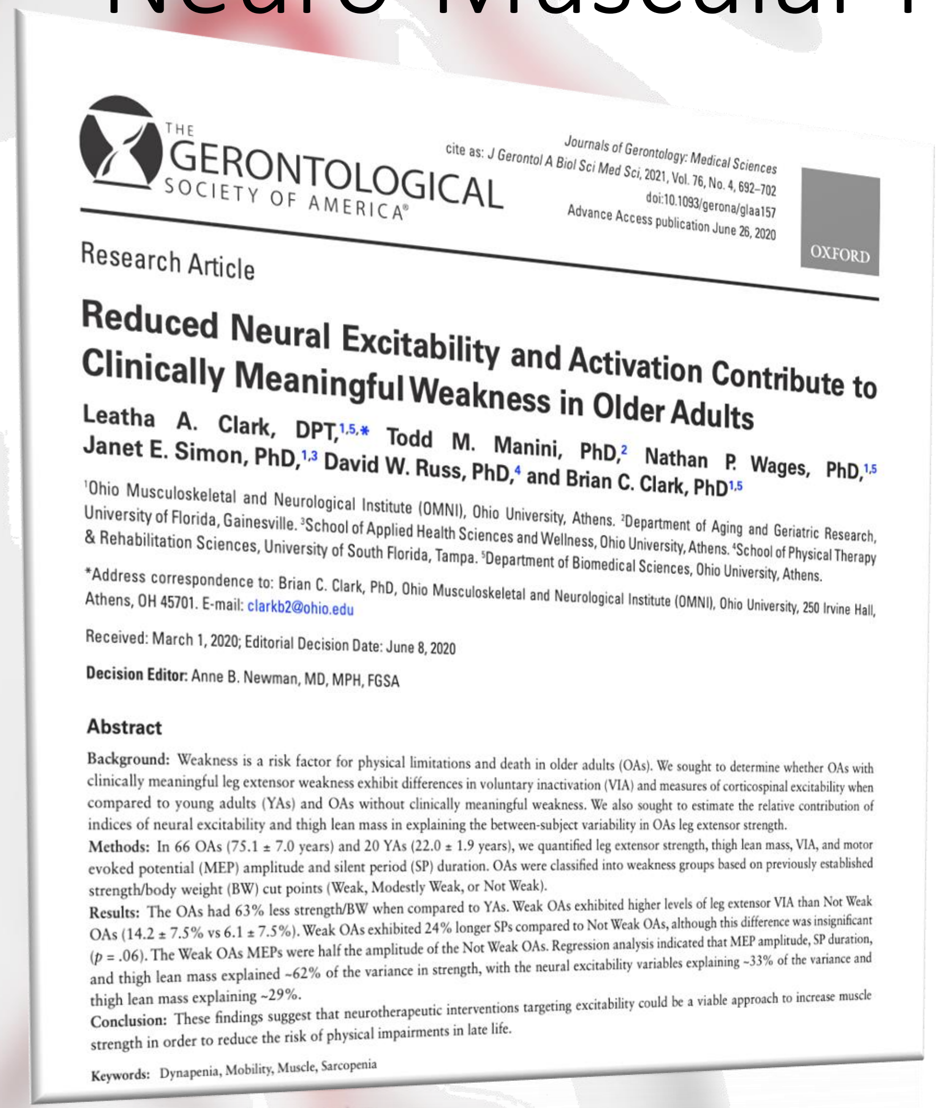
The link between muscle weakness and central nervous decline is being better understood



A failure to reinnervate denervated fibers has recently been suggested to trigger the accelerated decrease in muscle mass among sarcopenic older men

Piasecki et al., 2018

Neuro-Muscular Relationship



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OXFORD

Research Article

Reduced Neural Excitability and Activation Contribute to Clinically Meaningful Weakness in Older Adults

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Abstract

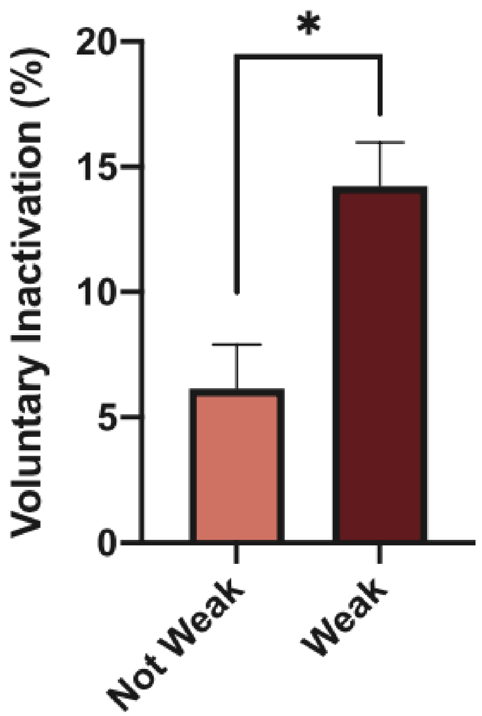
Background: Weakness is a risk factor for physical limitations and death in older adults (OAs). We sought to determine whether OAs with clinically meaningful leg extensor weakness exhibit differences in voluntary inactivation (VIA) and measures of corticospinal excitability when compared to young adults (YAs) and OAs without clinically meaningful weakness. We also sought to estimate the relative contribution of indices of neural excitability and thigh lean mass in explaining the between-subject variability in OAs leg extensor strength.

Methods: In 66 OAs (75.1 ± 7.0 years) and 20 YAs (22.0 ± 1.9 years), we quantified leg extensor strength, thigh lean mass, VIA, and motor evoked potential (MEP) amplitude and silent period (SP) duration. OAs were classified into weakness groups based on previously established strength/body weight (BW) cut points (Weak, Modestly Weak, or Not Weak).

Results: The OAs had 63% less strength/BW when compared to YAs. Weak OAs exhibited higher levels of leg extensor VIA than Not Weak OAs (14.2 ± 7.5% vs 6.1 ± 7.5%). Weak OAs exhibited 24% longer SPs compared to Not Weak OAs, although this difference was insignificant (p = .06). The Weak OAs MEPs were half the amplitude of the Not Weak OAs. Regression analysis indicated that MEP amplitude, SP duration, and thigh lean mass explained ~62% of the variance in strength, with the neural excitability variables explaining ~33% of the variance and thigh lean mass explaining ~29%.

Conclusion: These findings suggest that neurotherapeutic interventions targeting excitability could be a viable approach to increase muscle strength in order to reduce the risk of physical impairments in late life.

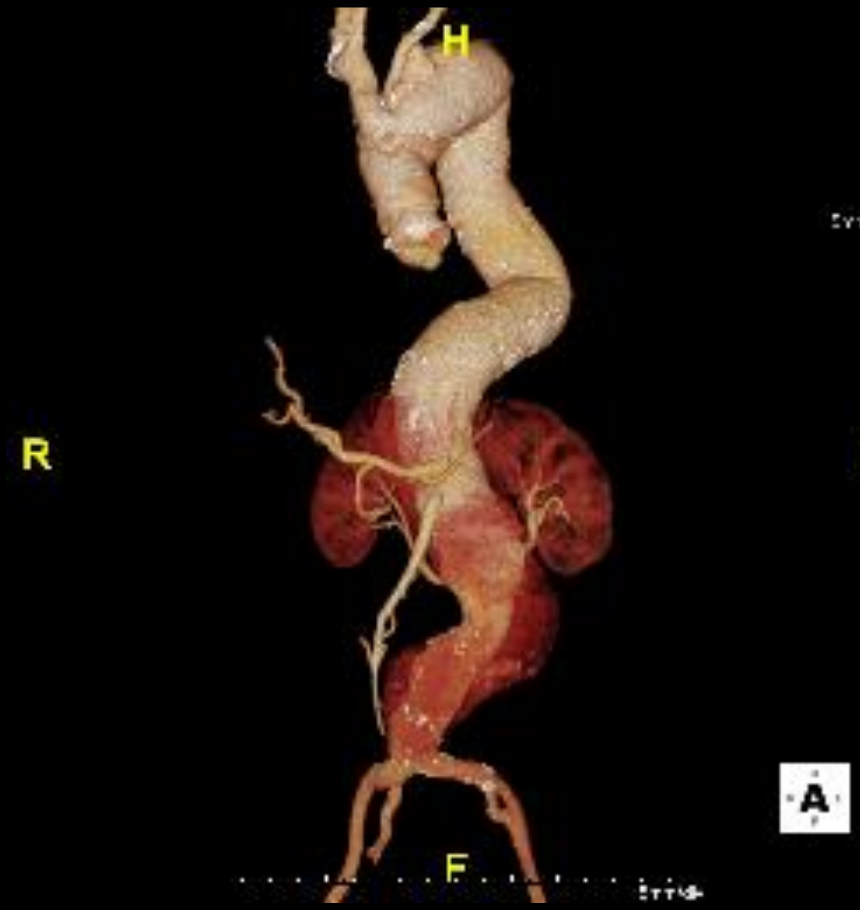
Keywords: Dynapenia, Mobility, Muscle, Sarcopenia



- Impairment in *activation* of the muscle may contribute to muscle weakness as much, or more, than muscle mass

Clark et al, 2021

We intentionally narrow the distal aorta…



Does lumbar artery coverage matter?

Safety and durability of infrarenal aorta as distal landing zone in fenestrated or branched endograft repair for thoracoabdominal aneurysm

Check for updates

Yuk Law, FRCS,[a,b] Tilo Kölbel, PhD,[a] Fiona Rohlffs, MD,[a] Christian Behrendt, MD,[a] Franziska Heidemann, MD,[a] Eike Sebastian Debus, PhD,[a] and Nikolaos Tsilimparis, MD,[a] *Hamburg, Germany; and Hong Kong*

ABSTRACT

Objective: Manufacturers often recommend the iliac arteries as the distal landing zo endovascular aortic repair (FB-EVAR) for thoracoabdominal aneurysm. It is not uncomn the infrarenal aorta for preservation of lumbar arteries or the inferior mesenteric artery durability of this procedure have not been verified in the literature.

Methods: Consecutive patients who underwent FB-EVAR with distal landing at the i retrospectively. The primary outcome measured any type IB endoleak over time. Secon operative complications of paraplegia and bowel ischemia, preservation of lumbar artery infrarenal aorta (diameter of infrarenal aorta at landing zone) and common iliac arteries (r

Results: Between August 2011 and August 2017, 40 patients (40% male with a mean age o I (37.5%), II (25.0%), III (20.0%), and V (17.5%) thoracoabdominal aneurysms were included was 6.4 ± 1.5 cm. There was no immediate or delayed type IB endoleak with mean follo (range, 0-72 months). Postoperative complications included six (15%) spinal cord isch permanent) and no mesenteric ischemia. There were three deaths (7.5%) within 30 d tomography arteriography showed that 37 patients (92.5%) had at least one lumbar a preoperatively patent IMA, 23 (74.2%) were preserved. There was one incidental finding c the stent graft end. Mean infrarenal aorta diameters were 24.8, 27.7, 27.7, and 29.4 mm imr 1 and 2 years postoperatively, respectively. The mean maximal right common iliac diame 15.8, 15.9, and 14.8 mm preoperatively, immediately postoperatively, and 1 year post maximal left common iliac diameters were also stable and measured 15.7, 15.9, and 14.7 m postoperatively, and at 1 year postoperatively, respectively.

Conclusions: Our early experience showed that distal landing at the infrarenal aorta was s IB endoleak, although the observation of gradual infrarenal aortic degeneration mandates regular surveillance. (J Vasc Surg 2019;69:334-40.)

Keywords: Thoracoabdominal aortic aneurysm; Endovascular aortic repair; Distal landing zone; Endoleak; Aortic degeneration

Table IV. Incidence of spinal cord ischemia and mesenteric ischemia in the literature

	Incidence of type IB endoleak	Overall incidence of spinal cord ischemia, No. (%)	Incidence of permanent paraplegia, No. (%)	Incidence of mesenteric ischemia, No. (%)
Present study (n = 40)	0 (0%) 15 months of follow-up	6 (15.0)	1 (2.5)	0 (0)
Chuter et al[7] (n = 22)	0 (0%) Majority <1 year of follow-up	3 (13.6)	0 (0)	0 (0)
Guillou et al[9] (n = 89)	0 (0%) 17 months of follow-up	7 (7.8)	3 (3.4)	0 (0)
Verhoeven et al[10] (n = 166)	4 (2.4%) iliac endoleak 29 months of follow-up	15 (9.0)	2 (1.2)	2 (1.2)
Eagleton et al[8] (n = 354)	5 (1.4%) iliac endoleak 22 months of follow-up	31 (8.8)	14 (4.0)	2 (0.6)

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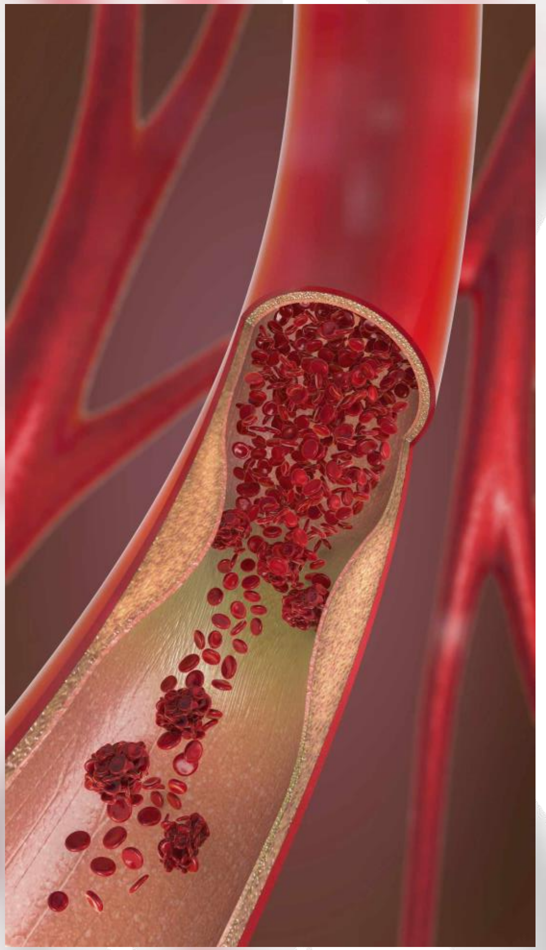
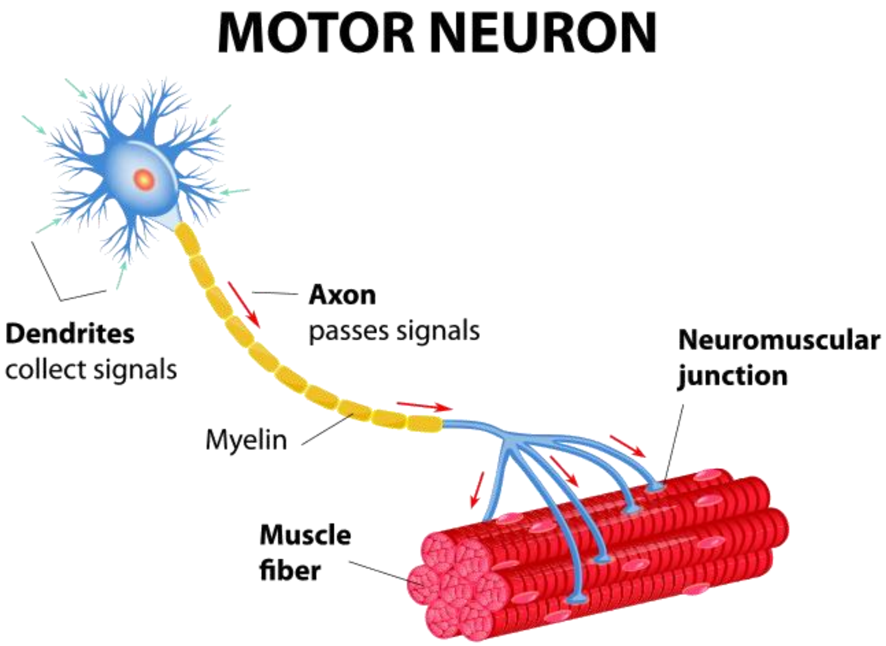
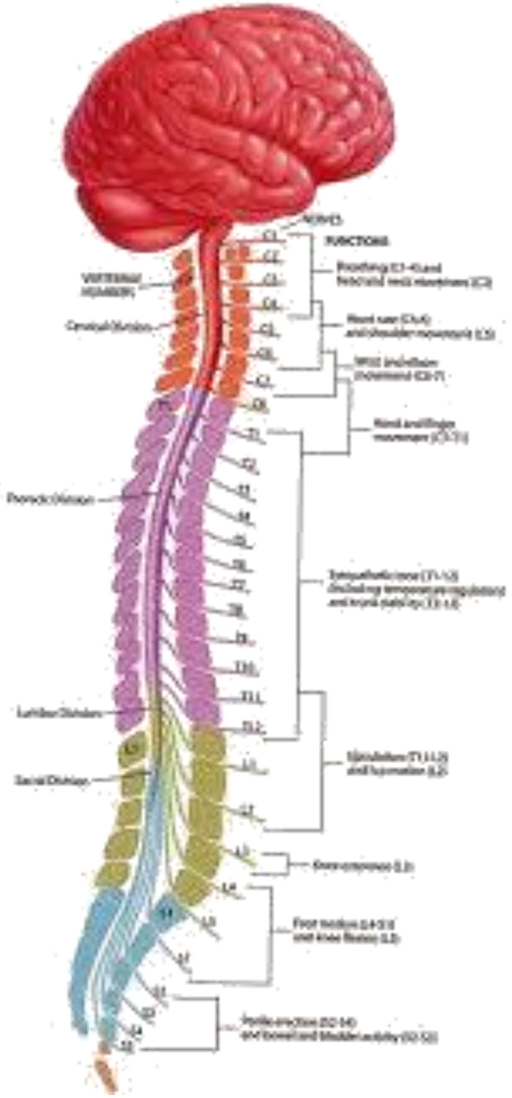
Could there be 3 factors impacting mobility?







Leg Weakness and TAAA Repair

- SCI is easy to measure, but subtle changes over time may be due to a combination of neurovascular effects of coverage.
- More work needs to be done to elucidate this relationship

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