Supervised Exercise Therapy for PAD

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Disclosure

I have no actual or potential conflicts of interest in relation to this presentation

- Hippocrates – 400 BC

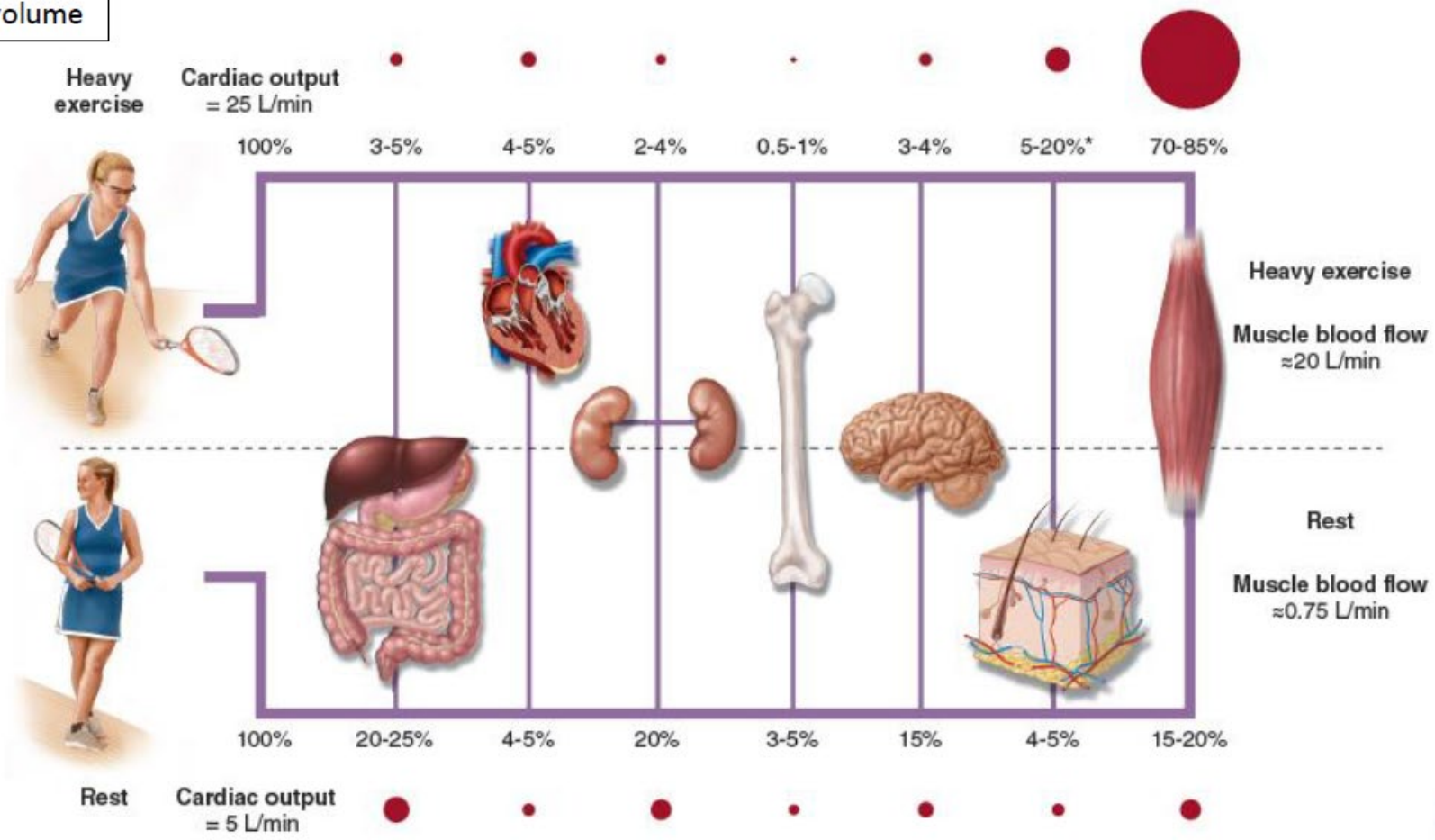
  “Walking is man’s best medicine”

Exercise Training in Patients with PAD

- Efficacy of ***supervised treadmill training*** to improve walking distance in patients with claudication is well established
- Mechanisms by which exercise training improves walking include both local and systemic changes

Understanding the Physiology of Exercise

Cardiac Output =
HR x stroke volume



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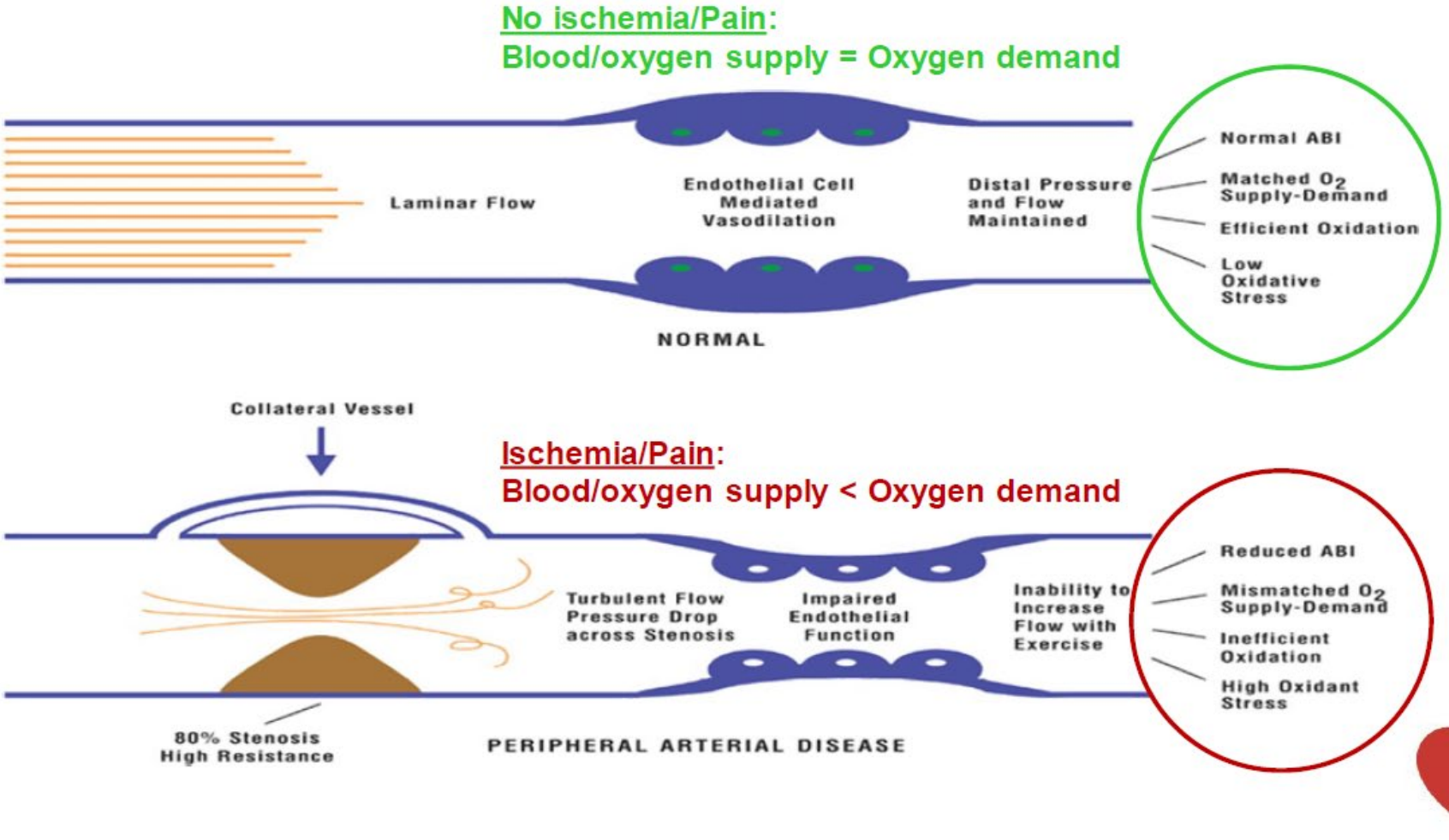
Understanding the Physiology of Exercise



t & Brass, 2006. Pathophysiology of Intermittent Claudication p. 240. In Vascular Medicine Creager, Dzau, Loscalzo, Eds. Slide courtesy of Jon Ehrman, PhD

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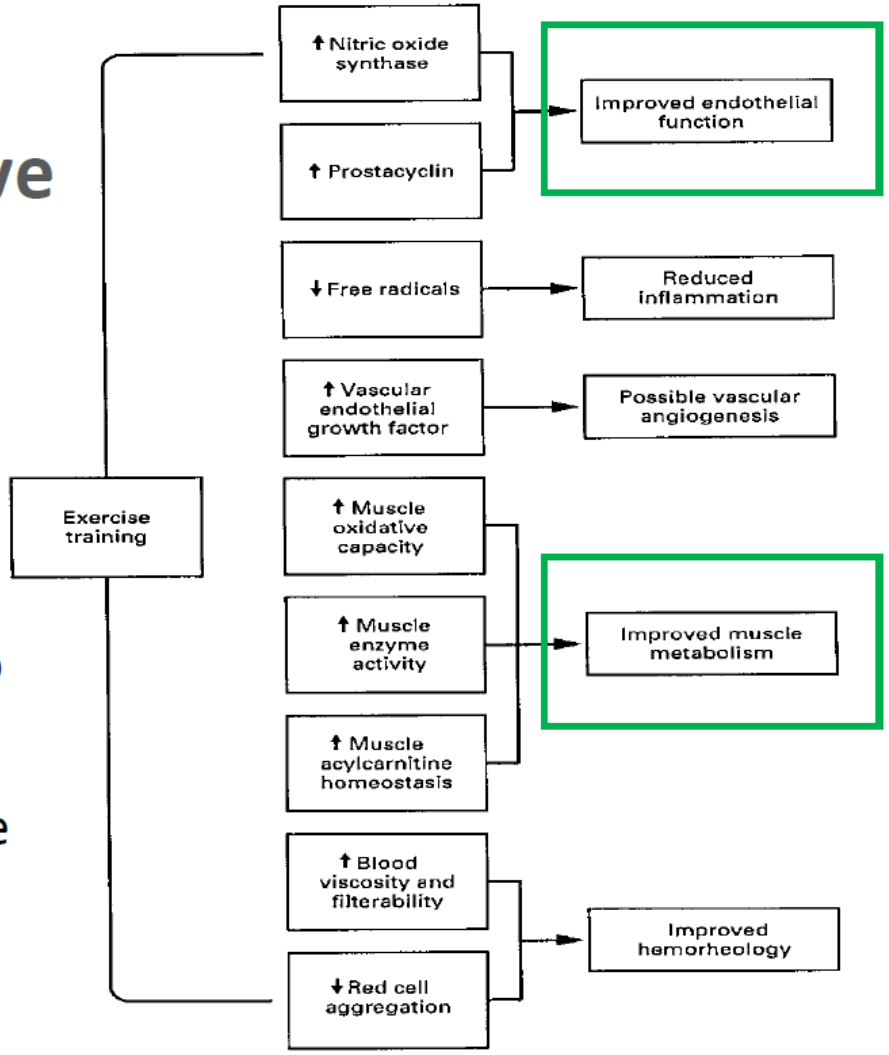
SET

Proposed Mechanisms by Which Exercise May Improve Function and Symptoms

- Enhanced ATP production (mitochondrial function)
- Increased muscle strength
- Improved walking economy due to improved walking biomechanics
- Improved pain threshold/tolerance



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AHA Guidelines 2016

Supervised Exercise Rehabilitation

COR-Class (strength) of recommendation

LOE-Level (quality) of evidence

COR	LOE	Recommendations
I	A	In patients with claudication, a supervised exercise program is recommended to improve functional status and QoL and to reduce leg symptoms.
I	B-R	A supervised exercise program should be discussed as a treatment option for claudication before possible revascularization.
IIa	A	In patients with PAD, a structured community- or home-based exercise program with behavioral change techniques can be beneficial to improve walking ability and functional status.
IIa	A	In patients with claudication, alternative strategies of exercise therapy, including upper-body ergometry, cycling, and pain-free or low-intensity walking that avoids moderate-to-maximum claudication while walking, can be beneficial to improve walking ability and functional status.

American Heart Association.

erhard-Herman M, et al. 2016 AHA/ACC guideline on the management of patients with lower extremity peripheral artery disease. Circulation. 2016;69(11):1465-1508.

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CMS Coverage 2017

- **3-1-2017:** "The Centers for Medicare & Medicaid Services (CMS) proposes that the evidence is sufficient to cover supervised exercise therapy (SET) for beneficiaries with intermittent claudication (IC) for the treatment of symptomatic peripheral artery disease (PAD)."
- **A SET program must include:**
  - Sessions lasting 30–60 minutes comprised of a therapeutic exercise-training program for PAD in patients with claudication
  - Three sessions per week
  - Up to 12 weeks of sessions
  - (CPT code: 93668)

CPT code: 93668

Payment: for 2018 for on-campus hospital outpatient setting ~$55 per session; recall patient pays for 20% or approximately $11 per session

ICD10 Codes:

I73.9 Peripheral vascular disease, unspecified

I70.20 Unspecified atherosclerosis of native arteries of extremities

I70.21 Atherosclerosis of native arteries of extremities w/intermittent claudication

I70.22 Atherosclerosis of native arteries of extremities w/rest pain

SVS AUC 2022

SOCIETY FOR VASCULAR SURGERY DOCUMENTS

Society for Vascular Surgery appropriate use criteria for management of intermittent claudication

Karen Woo, MD, PhD,[a] Jeffrey J. Siracuse, MD, MBA,[c] Kyle Klingbeil, MD, MS,[b] Larry W. Kraiss, MD,[d] Nicholas H. Osborne, MD,[e] Niten Singh, MD,[f] Tze-Woei Tan, MD,[g] Shipra Arya, MD, SM,[h] Subhash Banerjee, MD,[i] Marc P. Bonaca, MD, MPH,[j] Thomas Brothers, MD,[k] Michael S. Conte, MD,[l] David L. Dawson, MD,[m] Young Erben, MD,[n] Benjamin M. Lerner, MD,[o] Judith C. Lin, MD, MBA,[p] Joseph L. Mills Sr, MD,[q] Derek Mittleider, MD,[r] Deepak G. Nair, MD, MS, MHA,[s] Leigh Ann O'Banion, MD,[t] Robert B. Patterson, MD,[u] Matthew J. Scheidt, MD,[v] *and* Jessica P. Simons, MD, MPH,[w] for the Society for Vascular Surgery Appropriateness Committee, *Los Angeles, Stanford, San Francisco, and Fresno, CA; Boston and Worcester, MA; Salt Lake City, UT; Ann Arbor and East Lansing, MI; Seattle, WA; Tucson, AZ; Dallas, Temple, and Houston, TX; Aurora, CO; Charleston, SC; Jacksonville, Melbourne, and Sarasota, FL; Louisville, KY; Providence, RI; and Milwaukee, WI*

ABSTRACT

The Society for Vascular Surgery appropriate use criteria (AUC) for the management of intermittent claudication were created using the RAND appropriateness method, a validated and standardized method that combines the best available evidence from medical literature with expert opinion, using a modified Delphi process. These criteria serve as a framework on which individualized patient and clinician shared decision-making can grow. These criteria are not absolute. AUC should not be interpreted as a requirement to administer treatments rated as appropriate (benefit outweighs risk). Nor should AUC be interpreted as a prohibition of treatments rated as inappropriate (risk outweighs benefit). Clinical situations will occur in which moderating factors, not included in these AUC, will shift the appropriateness level of a

AUC Risk-Benefit

- Exercise was deemed B>R as the initial therapy for all patients with IC.
  - Aorto-iliac, common femoral, fem-pop, infrapopliteal disease

- Revascularization was rated as B>R for selected patients with severe lifestyle-limiting IC symptoms despite treatment with OMT and an adequate trial of exercise.

- Revascularization of infrapopliteal disease for IC was rated as R>B for all scenarios.

Elements Needed

Develop Programmatic Infrastructure

- Identify medical director.
- Establish referral process. Make providers aware of availability SET for PAD.
  - May need changes to electronic health record
- Train cardiac rehabilitation staff about how to implement SET for PAD.
- Develop implementation process.

SET PAD - Program Design

- 30-60 minutes of intermittent walking 3 days per week
- Up to 36 sessions over 12 weeks.
- Under the “direct supervision” of a physician, PA, NP or Clinical Nurse Specialist both trained in ACLS

First Session

- Functional Capacity
  - Submaximal treadmill test – onset of claudication and termination of test endpoint of claudication (IC rating, MET level, speed and grade).
- Nursing assessment - particular attention to LE skin integrity and foot ulcers
- Discussion and evaluation of footwear and self-exams.

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First Session (cont.)

- Risk factor discussion and teaching
- Smoking status (30 days prior to start of the program). Must be willing to try to quit smoking to qualify for the program.
- Vitals
- Question patient about signs and symptoms of angina.

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The Claudication Pain Scale

NO PAIN	1
ONSET OF PAIN	2
MILD PAIN	3
MODERATE PAIN	4
SEVERE PAIN	5

PAIN IS TEMPORARY IF I QUIT
HOWEVER IT WILL LAST FOREVER.

Submax Assessment to Determine Training Intensity

Stage	Speed	Grade	Minutes	METS	HR	Rating of Claudication	Comments
Pre-Stage							for very low functioning patients
1	2 mph	0	2	2.5			
2	2 mph	2%	4	3.1			
3	2 mph	4%	6	3.6			
4	2 mph	6%	8	4.2			
5	2 mph	8%	10	4.7			
6	2 mph	10%	12	5.2			
7	2.2 mph	10%	14	5.7			

Exercise Prescription

- Claudication must be the most limiting factor on the treadmill.
- Day 1 – speed and grade set at onset of pain
- Days 2 through 36 – if they went more than 8 minutes continuously last session increase grade by 1%; go until rating 3-4 out of 5. For a total walk time of 30-60 minutes.
- Continue this pattern
- End at 3.0 mph 15% grade

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SET for PAD in the Real World

- Try treadmill or other walking exercise first.
- If unable to perform treadmill exercise or if walking duration is so short that benefit is unlikely, consider alternative mode:
  - Seated aerobic arm exercise
  - Recumbent total body stepping (NuStep)
  - Lower extremity cycling
- Encourage the exercise therapists to apply their art and science as they do with cardiac rehabilitation.

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SET Evaluation

Client Name:_____ **MR#:**_____ **CSN#:**_____

Date:_____ **DOB/Age:**_____ **Diagnosis:**_____

Medical History (check all that apply and explain)	
☐ Heart	☐ Other
☐ Lung	
☐ Stroke	
☐ Depression	
☐ Orthopedic	

Risk Factors for CAD (check all that apply)	
☐ Weight	☐ Exercise
☐ Stress	☐ HTN
☐ Cholesterol	☐ DM
☐ Family Hx	☐ Depression

Pain Screen:
Intensity Rating:_____
Location:_____ Onset:_____
Duration of ea. Episode:_____
Precipitating Factors:_____
Alleviating Factors:_____

Stress test results (if available):
Max HR:_____
85% of max HR:_____
Onset of Claudication:_____minutes
Peak MET Level:_____

Wounds Present:
Do you have any wounds on your feet? Yes No
Location of wounds:_____
Do you know how to do a foot inspection? Yes No
Handout provided? Yes No

ABIs:
Right Pre Ex:_____ **Post Ex:**_____
Left Pre Ex:__ **Post Ex:**_____
Symptoms of Claudication:_____
Location of Claudication:_____

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SET Evaluation

6-Minute Walk Test:	Initial Date:	Discharge Date:
Total Time Walked		
Resting Heart Rate (bpm)		
Exercise Heart Rate		
Recovery Heart Rate		
Resting Blood Pressure (mm Hg)		
Exercise Blood Pressure		
Recovery Blood Pressure		
Claudication Onset Time (COT)		
Claudication Onset Distance (COD)		
Total Distance Walked (PWD)		
Effort Rating (OMNI Scale)		
O_2 Saturation		

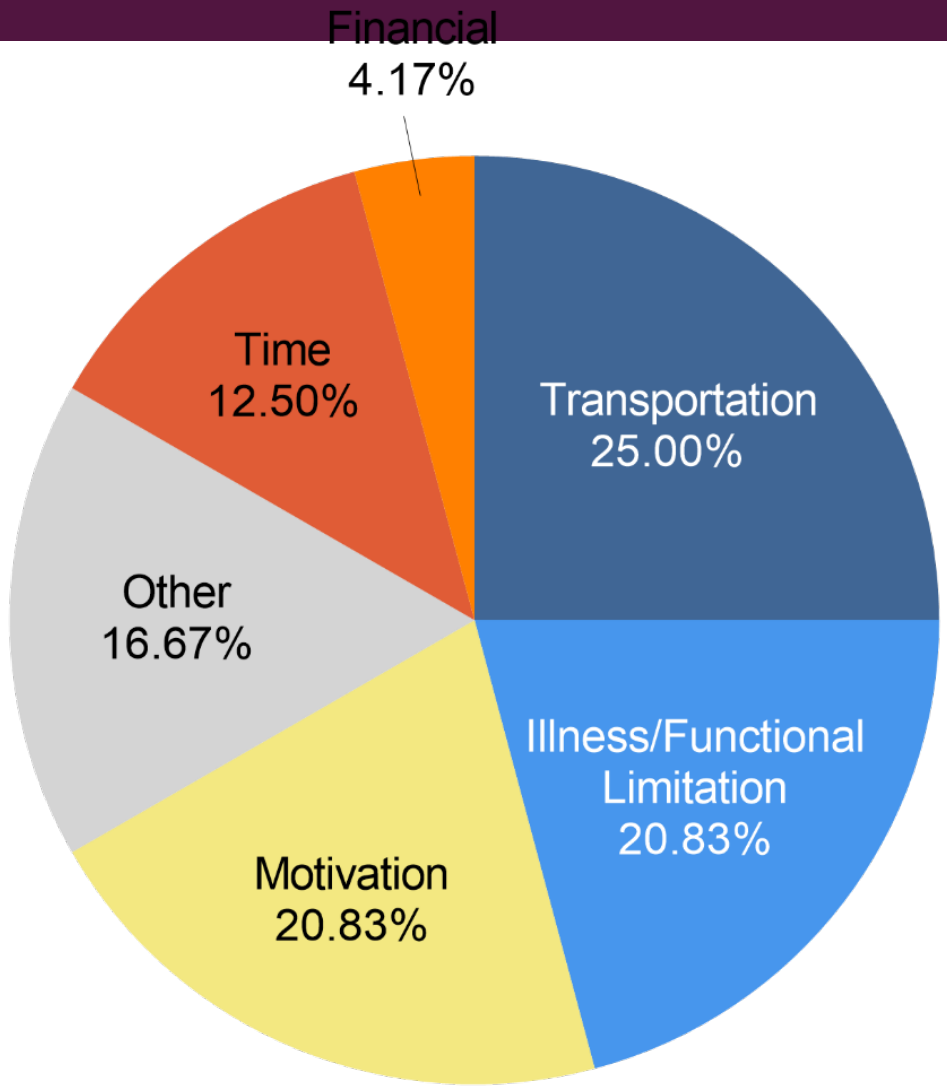
Barriers to SET

University of Pittsburgh

Socioeconomic Factors Predict Successful Supervised Exercise Therapy Completion

Eastern Vascular Society Annual Meeting 2023
Washington, DC

Reasons for Incompletion



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Barriers to SET completion

- Copay may be a barrier to SET Initiation
  - Literature shows cost cited as a reason for declining SET participation
- Hidden costs of SET program
  - Household income was still a significant predictor of SET completion
  - Ex: Transportation, time away from work

CASE STUDIES

ANNE

- 82 yrs old
- HL, HTN, DM, never smoked
- Extensive atherosclerosis. Hx of CAD: PCI, post CABGS/AVR, subclavian artery stenosis - angioplasty and stenting; enrolled in cardiac rehab
- Pain in calves walking less than 100 feet
- 1.9mph/0 with 3 out of 5 claudication in less than 8 minutes
- after 21 sessions 2 mph/ 7% grade for 20 minutes
- Now walking during ADLs with no pain

JIM

- 56 yrs old
- HL, DM and active smoker
- Pain in less than 100 feet on slight grades
- 2.0mph/2% grade 3-4 out of 5 claudication in less than 8 minutes
- After 24 sessions – 3.4mph/10% grade for 30 minutes
- No pain ever (even walking to Peterson Event Center)
- HbA1c 8.4 to 6.4
- Lost 10 lbs, Quit smoking

Conclusions

- SET works and should be first line in all patients with claudication
  - Supported by guidelines
  - Reimbursed
  - Systemic benefits
- Barriers to SET are real but are not insurmountable
  - Socioeconomic
  - Physiologic
  - Role for APP based home SET

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SAVE THE DATE

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THANK YOU

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