

AACVPR

American Association of Cardiovascular
and Pulmonary Rehabilitation

Promoting Health & Preventing Disease

Peripheral Artery Disease and Exercise

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Angioplasty Summit-TCTAP 2010

Seoul, Korea

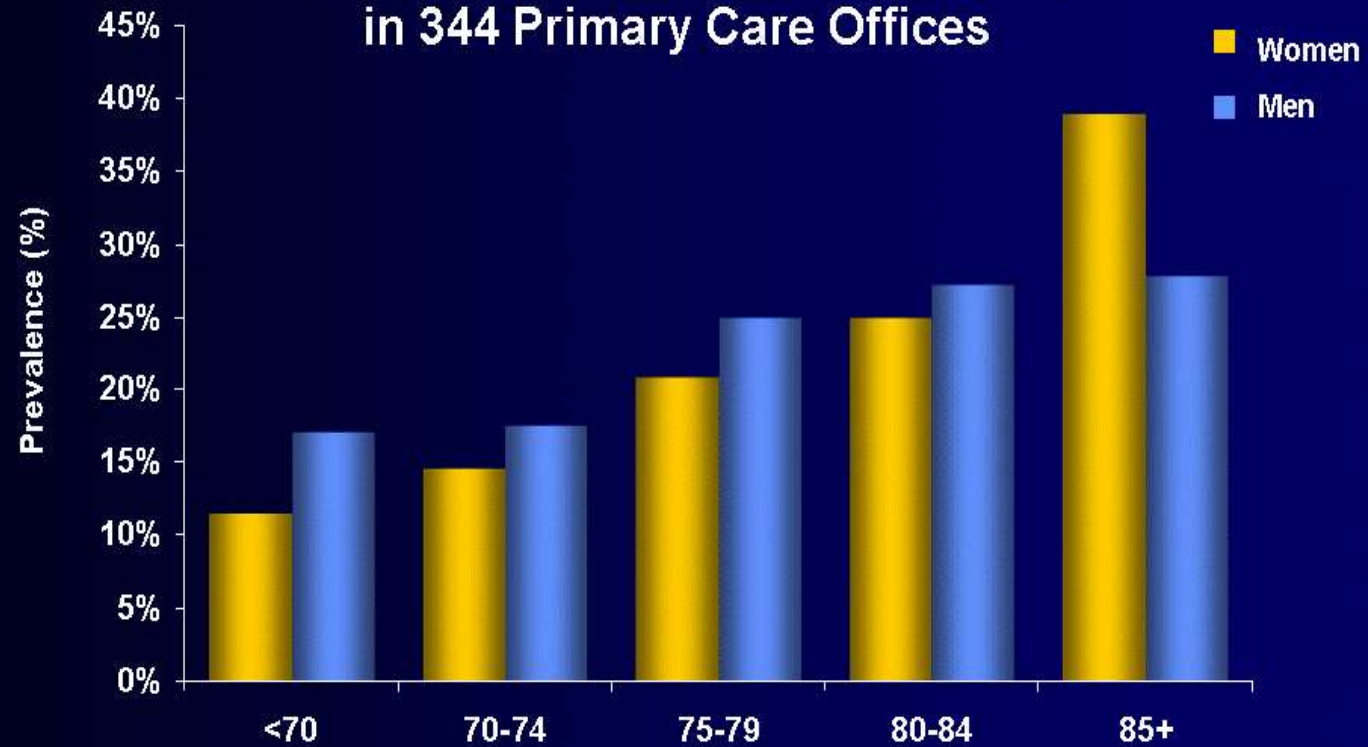
Definition of PAD

- **Peripheral artery disease (PAD)** encompasses a range of non-coronary artery syndromes that are caused by the altered structure and function of the arteries that supply the brain, visceral organs, and the limbs.
- **Lower extremity PAD** is usually caused by atherosclerotic stenoses in the abdominal aorta and/or distal arteries, reducing blood flow to the legs and feet. It is a common syndrome that affects a large proportion of most adult populations worldwide.

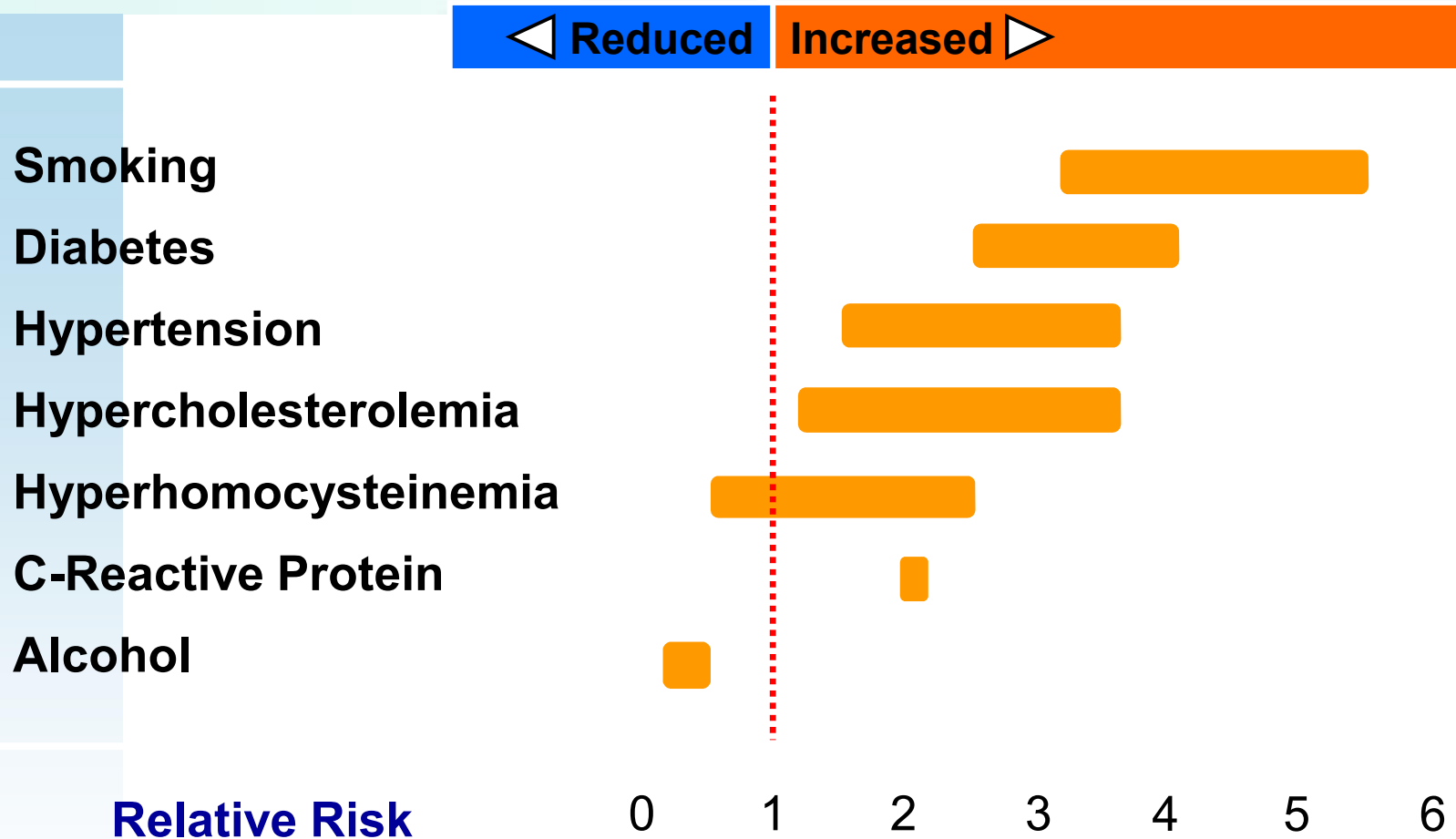


Gender Differences in the Prevalence of PAD

6880 Consecutive Patients (61% F)
in 344 Primary Care Offices



Risk Factors for PAD



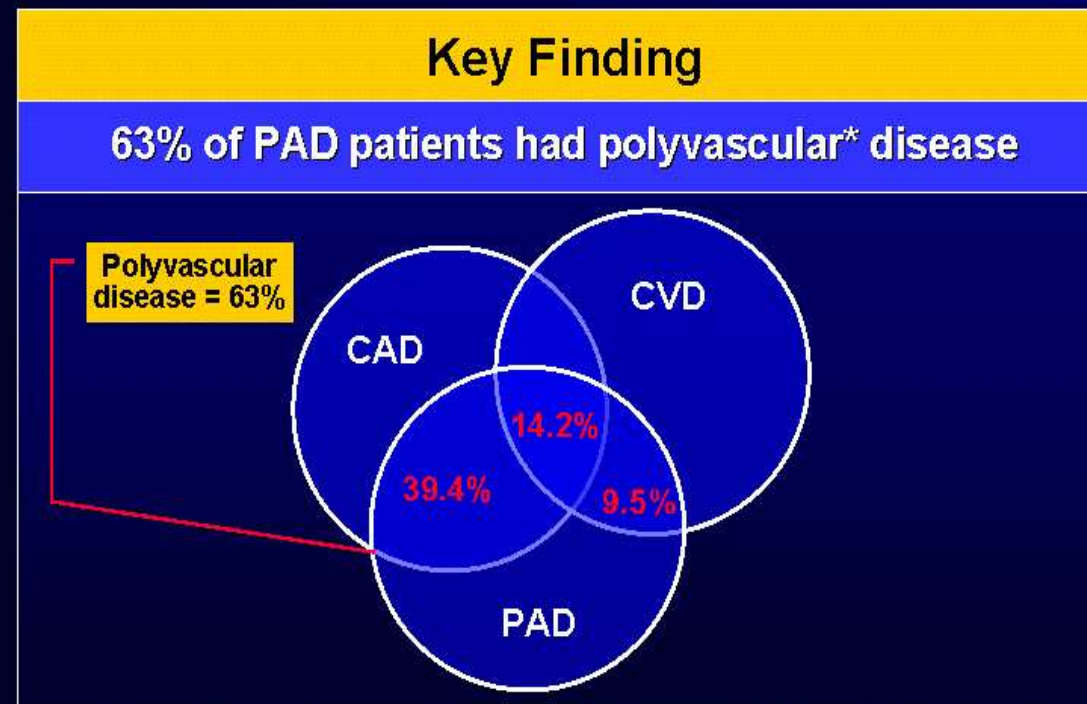
Newman AB, et al. *Circulation*. 1993;88:837-845; Hiatt WR, et al. *Circulation*. 1995;92:614-621; Graham IM, et al. *JAMA*. 1997;277:1775-1781; TASC Working Group. *J Vasc Surg*. 2000;31(1 pt 2):S1-S288; Ridker PM, et al. *Circulation*. 1998;97:425-428.

REACH



Risk Profile of PAD

- The REACH (REduction of Atherothrombosis for Continued Health) Registry studied 7,013 patients with symptomatic PAD



* PAD patients with polyvascular disease had concomitant symptomatic cerebrovascular or cardiovascular disease or both. Bhatt DL, et al. American College of Cardiology Scientific Session, March 8, 2005.

Intermittent Claudication

Classic symptom of PAD characterized by pain, aching, or fatigue in exercising leg muscles. Symptoms result from insufficient blood flow to meet the metabolic demands during exercise (O_2 supply $<$ O_2 demand). It is “*ANGINA* of the legs”. Symptoms resolve with rest.

Results in intermittent pattern of walking and resting over distances

ACC/AHA 2005 Practice Guidelines for the Management of Patients with Peripheral Artery Disease

A. Full Text:

Circulation 2006;113:e463-e465

DOI:10.1161/CIRCULATIONAHA.106.174526

B. Executive Summary:

7

Circulation 2006;113:1474-1547

DOI:10.1161/CIRCULATIONAHA.106.173994

Treatment Option-PTA

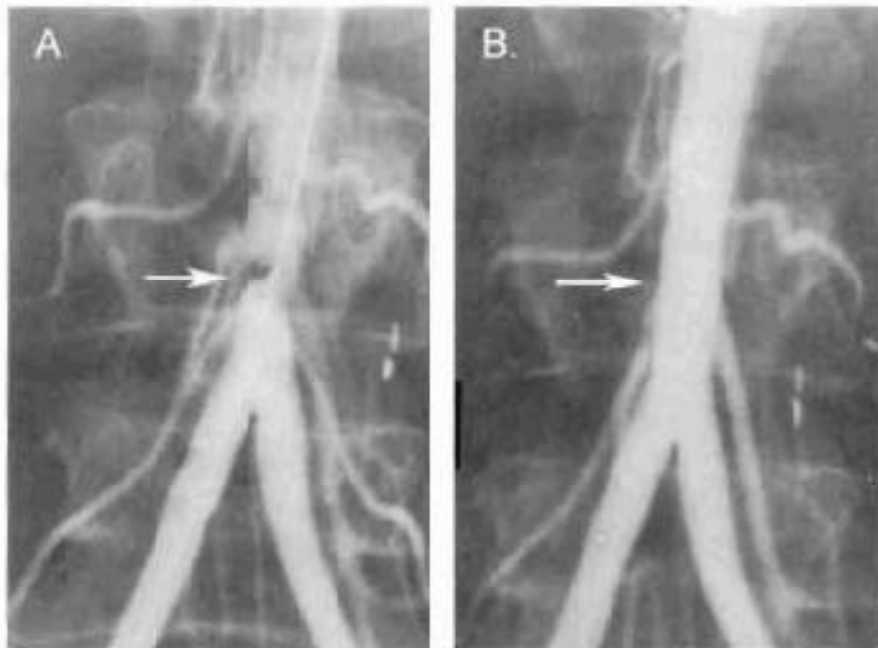


Figure 4. A, Distal aorta severe stenosis (arrow). B, After treatment with balloon-expandable stent (arrow).

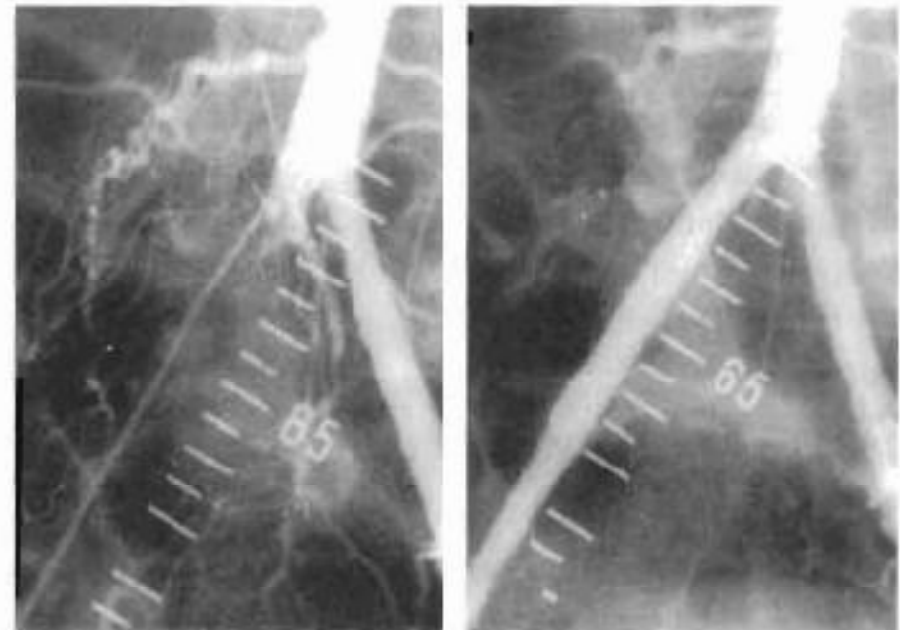
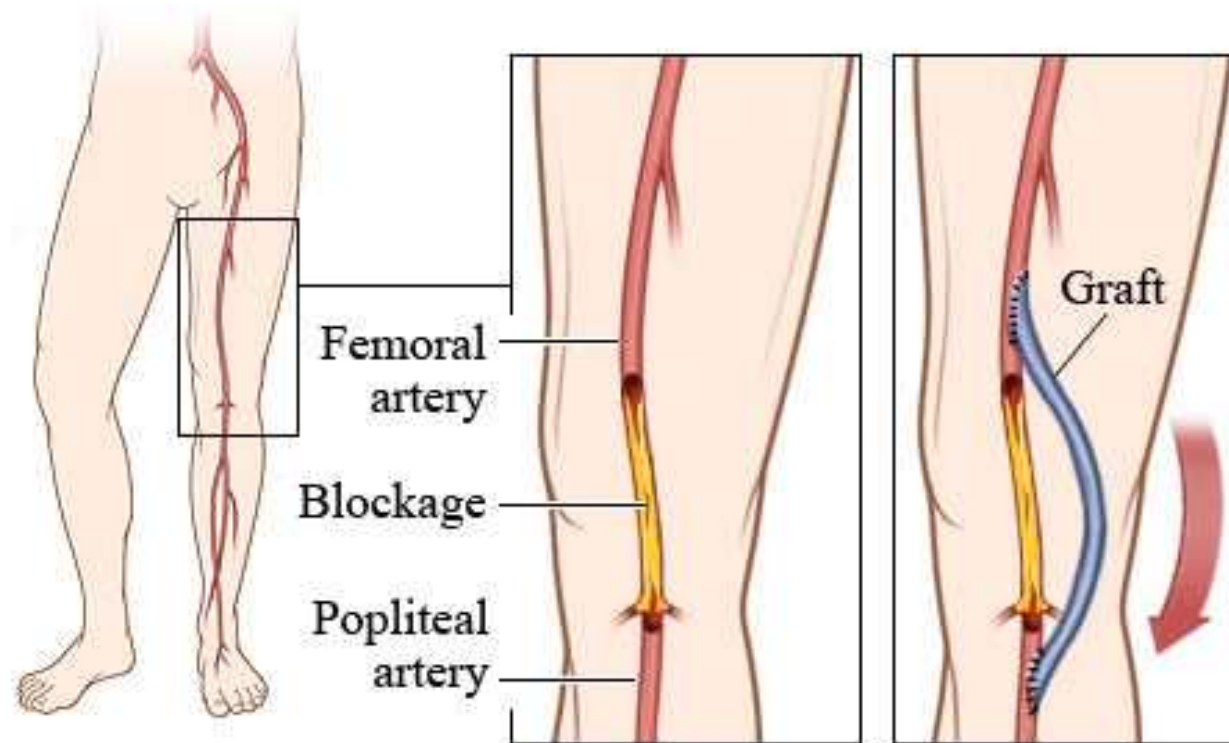


Figure 5. Left, Baseline angiography of TASC D lesion (unilateral occlusion of the common iliac artery and external iliac artery). Right, Endovascular treatment with balloon-expandable stents.

Treatment Option-Surgery



Treatment Option-Medication

- **Cilostazol**
 - Platelet aggregation inhibitor
- **Clopidogrel**
 - Platelet aggregation inhibitor
- **Pentoxifylline**
 - Decreases blood viscosity
- **Aspirin**

Treatment Option-Exercise Training

- Supervised, TM walking programs most effective
- Very effective in increasing*:
 - Maximum walking distance (113 m)
 - Pain-free walking distance (82 m)
 - Maximal walking time (5.1 min)

***Cochrane Review, 2008**

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The NEW ENGLAND
JOURNAL of MEDICINE

Medical Progress

EXERCISE TRAINING
FOR CLAUDICATION

KERRY J. STEWART, ED.D., WILLIAM R. HATT, M.D.,
JUDITH G. REGENSTEINER, PH.D.,
AND ALAN T. HIRSCH, M.D.

2002;347:1941-1951

Possible Improvement Mechanisms with Exercise Training

- Angiogenesis
- Increased nitric oxide activity
- Improved oxidative metabolism & O₂ extraction
- Improved blood viscosity
- Improved walking biomechanics

Exercise Prescription

- Type
 - Treadmill or track walking
 - Resistance training achieves comprehensive fitness but not effective for increasing walking distances
- Intensity
 - Walking speed that elicits moderately severe (3/4) claudication symptoms

Exercise Prescription - 2

- Duration
 - Intermittent format initially totaling 30 minutes of exercise
 - Increase in 5-minute increments up to 45 minutes total exercise time
 - Program duration: minimum 12 weeks
- Frequency
 - 3-5 times per week

Exercise Prescription - 3

- Supervision
 - Necessary to encourage patient to walk as long as possible with moderately severe claudication
 - With improved walking speed and distance, monitor for possible cardiac signs and symptoms
 - Often diagnosed or subclinical CAD

Advantages For Cardiac Rehab Programs

- Involves atherosclerosis
- Similar risk factor, patient education & lifestyle management expertise
- Uses treadmills & supervised exercise training format
- Similar staff competencies

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hamnida**

Thank you