

The Still Important Role of Physiologic Testing

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- No Disclosures

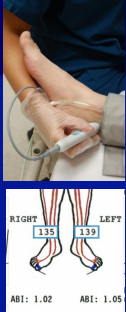
Patient Evaluation

The test you perform depends on the question you wanted answered




Screening Tests


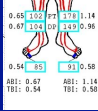
- Performed on asymptomatic patients who may have disease
- Quick & simple to perform
- No risk or discomfort
- Inexpensive, Reproducible
- Efficient
- High Specificity (low false +)



RIGHT: 1.15 LEFT: 1.10
 ABI: 1.02 ABI: 1.05

Symptomatic patients

- Determine presence of disease, severity and level of disease
- Evaluation a specific anatomic segment
- Guide therapeutic options
- Are symptoms the result of disease ?

0.44 0.52 0.48 0.22 1.14
 0.47 1.04 0.9 0.23 0.96
 0.34 0.25 0.21 0.98
 ABI: 0.87 ABI: 0.64
 TBI: 0.54 TBI: 0.50

Ankle Brachial Index

- Fairly stable between visits
- A decrease in the ABI ≥ 0.15 from one exam to the next indicator of increasing severity of disease
- Clinicians will help gauge outcomes of procedures **objectively** based on ABI improvements

ABI and Functional Capacity

- Decreasing ABIs associated with
 - worsening functional scores
 - slower walking velocity
 - poorer leg strength
 - muscle fiber loss

McDermott MM, Fried LS, Simonsick EL, Ling SG,uralnik JM. Asymptomatic peripheral arterial disease is independently associated with impaired lower extremity functioning: the Women's Health and Aging Study. *Circulation*. 2000;101:1007-1012

Physiologic Testing

- Provides info on global perfusion
 - Main vessels
 - Collaterals
 - Total limb blood flow
- Assesses functional status
- Resting & exercise studies



Are the symptoms the result of PAD?

- Treadmill exercise studies
 - Pre and Post ABIs
 - Post exercise drop = vasculogenic claudication
 - No post exercise drop
 - Arthritis
 - Nerve root compression
 - Spinal stenosis
 - Symptomatic popliteal cyst
 - Venous claudication



JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
 VOLUME 83, NUMBER 24, 2024

CLINICAL PRACTICE GUIDELINE

2024 ACC/AHA/AACVPR/APMA/ABC/SCAI/SVM/SVN/SVS/SIR/VESS Guideline for the Management of Lower Extremity Peripheral Artery Disease

A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

Developed in Collaboration With and Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, American Podiatric Medical Association, Association of Black Cardiologists, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine, Society for Vascular Nursing, Society for Vascular Surgery, Society of Interventional Radiology, and Vascular & Endovascular Surgery Society

RESTING ABI		
COR	LOE	RECOMMENDATIONS
1	B-NR	1. In patients with history or physical examination findings suggestive of PAD (Table 6), the resting ABI, with or without ankle pulse volume recordings (PVR) and/or Doppler waveforms, is recommended to establish the diagnosis. ^{5,7}
1	B-NR	2. The resting ABI should be reported as abnormal (ABI ≤ 0.90), borderline (ABI 0.91-0.99), normal (ABI 1.00-1.40), or noncompressible (ABI > 1.40). ⁷
2a	B-NR	3. In patients at increased risk of PAD (Table 5), screening for PAD with the resting ABI, with or without ankle PVR and/or Doppler waveforms, is reasonable. ^{7,9}
3: No Benefit	B-NR	4. In patients not at increased risk of PAD (Table 5) and without history or physical examination findings suggestive of PAD (Table 6), screening for PAD with the ABI is not recommended. ^{10,11}

Exercise ABI and Additional Physiological Testing		
1	B-NR	5. In patients with suspected PAD, toe pressure/toe-brachial index (TBI) with waveforms should be performed when the resting ABI is > 1.40 (noncompressible). ^{12,17}
1	B-NR	6. Patients with suspected chronic symptomatic PAD (ie, exertional nonjoint-related leg symptoms) and normal or borderline resting ABI (> 0.90 and ≤ 1.40 , respectively) should undergo exercise treadmill ABI testing to evaluate for PAD. ^{18,19}
2a	B-NR	7. In patients with PAD and an abnormal resting ABI (≤ 0.90), the exercise treadmill ABI test can be useful to objectively assess the functional status and walking performance. ^{20,21}
2a	C-LD	8. In patients with chronic symptomatic PAD, it is reasonable to perform segmental leg pressures with PVR and/or Doppler waveforms in addition to the resting ABI to help delineate the anatomic level of PAD. ^{22,27}
2a	B-NR	9. In patients with suspected CLTI, it is reasonable to use toe pressure/TBI with waveforms, transcutaneous oxygen pressure (TcPO ₂), and/or skin perfusion pressure (SPP) in addition to ABI for assessment of arterial perfusion and to establish the diagnosis of CLTI. ^{13,28-37}
2a	B-NR	10. In patients with CLTI with nonhealing wounds or gangrene, it can be useful to use toe pressure/TBI with waveforms, TcPO ₂ , SPP, and/or other local perfusion measures to determine the likelihood of wound healing without or after revascularization. ^{13,40,41,46,49}

Physiologic Testing: Early identification of PAD

- 20-50% of patients with PAD are asymptomatic
- Identifying asymptomatic PAD is used to modify CV risks
- Numerous studies assessing CV Risk and ABIs
- Lower ABI associated with lower 5-year survival rate.
- A decrease in ABI ≥ 0.15 was associated with significant CV disease morbidity and mortality

Conclusion

- Physiologic testing is still important
- Provides noninvasive assessment of global perfusion
- Provides objective information on functional status
- ABIs can be used to find patients at risk for CV disease
- Can identify if symptoms are the result of the disease.

