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Application of Pre-Participation Screening Guidelines to Novice Masters Endurance Athletes

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Application of Pre-Participation Screening Guidelines to Novice Masters Endurance Athletes

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Introduction:

- The explosive growth in endurance sports has given rise to a parallel increase in the number of older athletes competing in these events 1-2
- Despite this increase in endurance sports there are no uniform guidelines for pre-participation evaluation (PPE) in athletes ≥35 y/o
- Furthermore, little is known regarding the use of existing guidelines in decision making among physicians

Methods:

- The MASTERS Athletic Study is a longitudinal, internetbased survey of training and health aspects of runners ≥ 35
- In the present study, we applied 2 currently available preparticipation screening guidelines to novice runners (<5 years of running experience) to determine who would be "screened in" for further evaluation and testing
- Screening guidelines applied:
 - 1 AHA/ACSM Pre-Participation Questionnaire (AAPQ)3
 - Recommends a pre-participation physician visit for all individuals who have prior cardiovascular conditions, symptoms or 2 or more risk factors
 - 2 AHA Pre-Participation Guidelines for Masters Athletes (AHA Masters)²
 - Recommends pre-participation ECG for all individuals ≥40 y/o who are planning high-level athletic training/competition
 - Recommends pre-participation stress testing for men (≥40 y/o) and women (>50 y/o) who have 1 risk factor,
 - All individuals >65 y/o
- We assessed athlete/physician concordance with these guidelines (ie, were runners that "screen in" appropriately referred for further evaluation and were those that "screen out" appropriately cleared to begin training?)
- We determined the independent factors that were associated with athlete/physician decisions for further PPE and testing

Results:

Of 5850 total survey respondents, 1457 reported <5 years running experience

Table 1. Participant Demographics and Running Habits				
Characteristics (n=1457)	N	%		
Age				
Mean, y (range)	44.5 (35-86)			
Gender				
Male	940	64.5		
Female	517	35.5		
Risk Factors				
Hypertension	167	11.5		
Hypercholesterolemia	333	22.9		
Diabetes meelitus	27	1.9		
History MI	6	0.4		
History of cardio- vascular dis.	34	2.3		
Family history of CVD	577	39.6		
Ever smoked	578	39.7		
Running habits				
Have run marathon/ultramarathon	485	33.3		
Participate in triathlons	230	15.8		

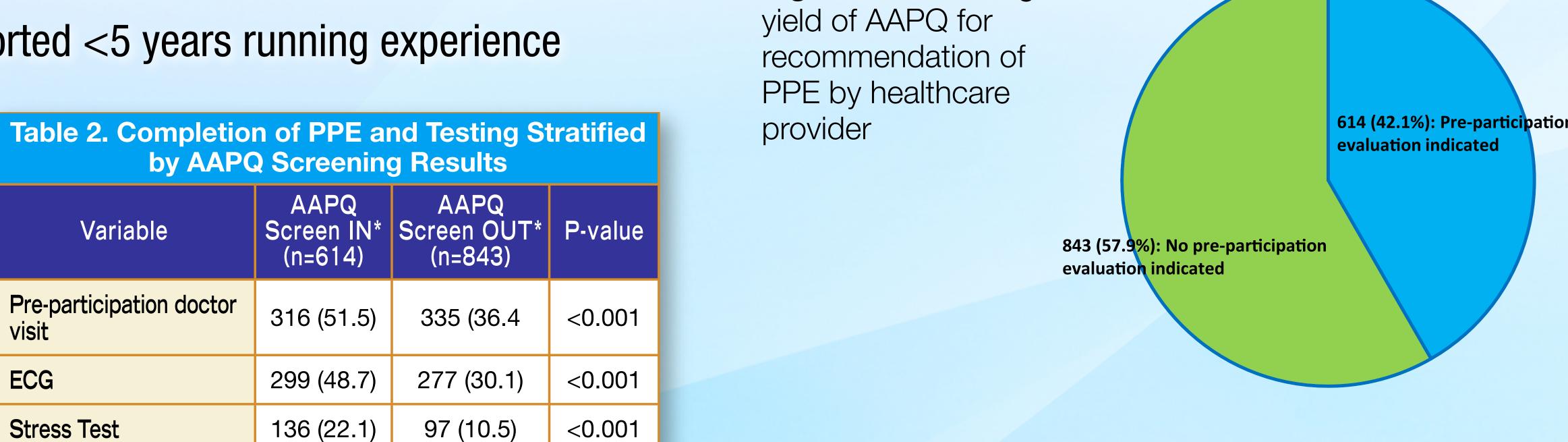
CVD = cardiovascular disease, MI = myocardial infarction

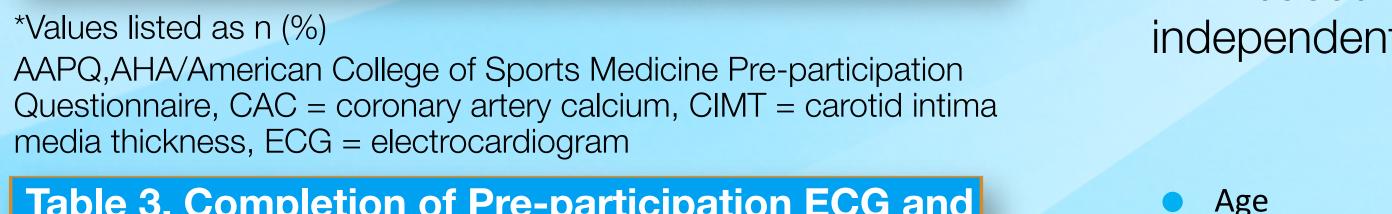
Financial Disclosures:

The authors of this study have no personal financial disclosures.

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- 2. Zingg M, Rust CA, Lepers R, Rosemann T, Knechtle B. Master runners dominate 24-h ultramarathons worldwide-a retrospective data analysis from 1998 to 2011. Extrem Physiol Med. 2013;2:21.
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27 (3.2)

< 0.001

Stress Testing Stratified by AHA Masters 2001 Guidelines Screening Results				
	Screen IN	Screen OUT	P-value	
ECG	458/1048 (43.7)	105/352 (29.8)	<0.001	
Stress Test	122/495 (24.6)	111/962 (11.5)	<0.001	

ECG = electrocardiogram

CAC/CIMT

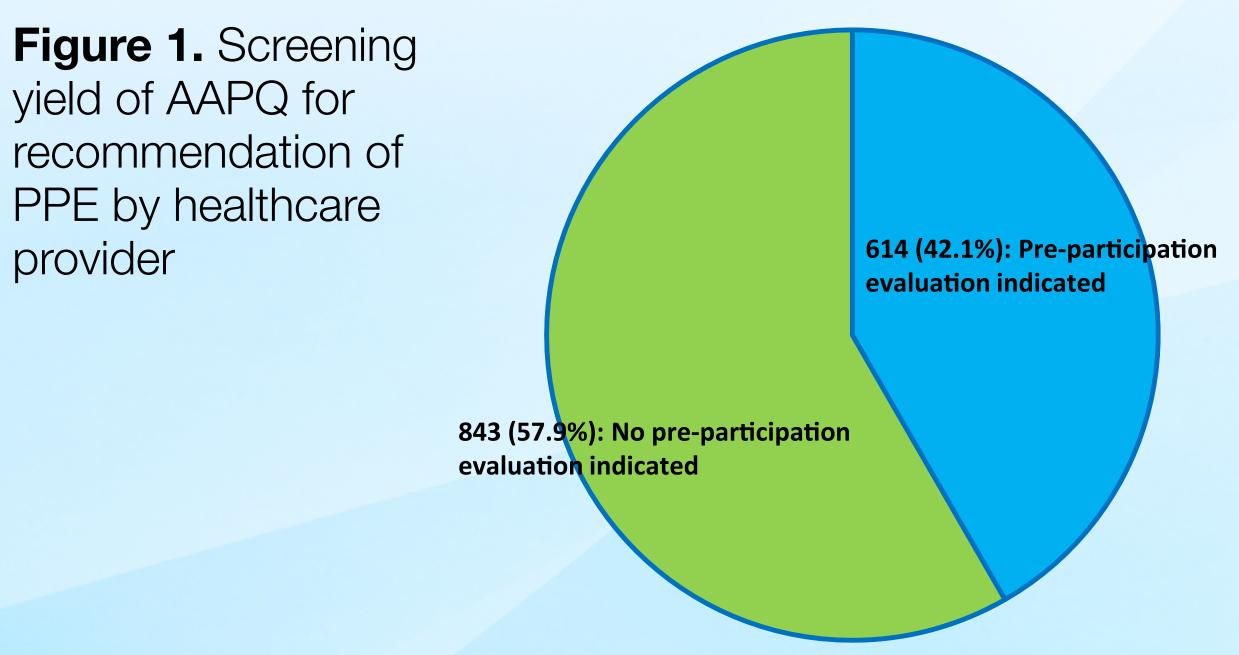
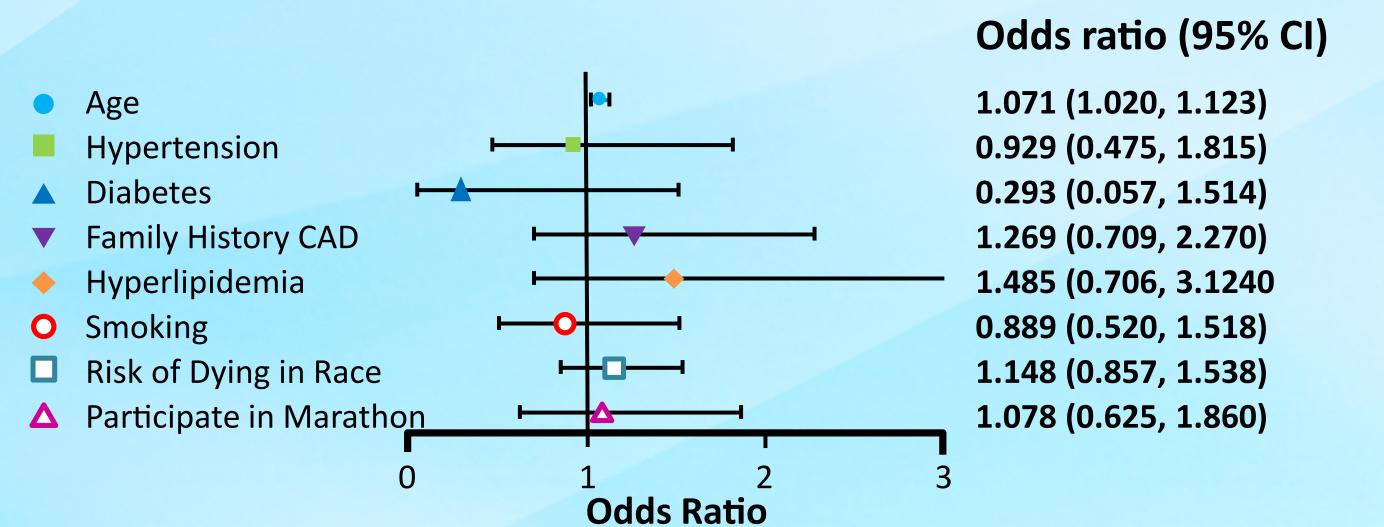


Figure 3. Forest plot illustrating independent predictors for PPE based on AAPQ simulation: Only athlete age was an independent predictor of PPE



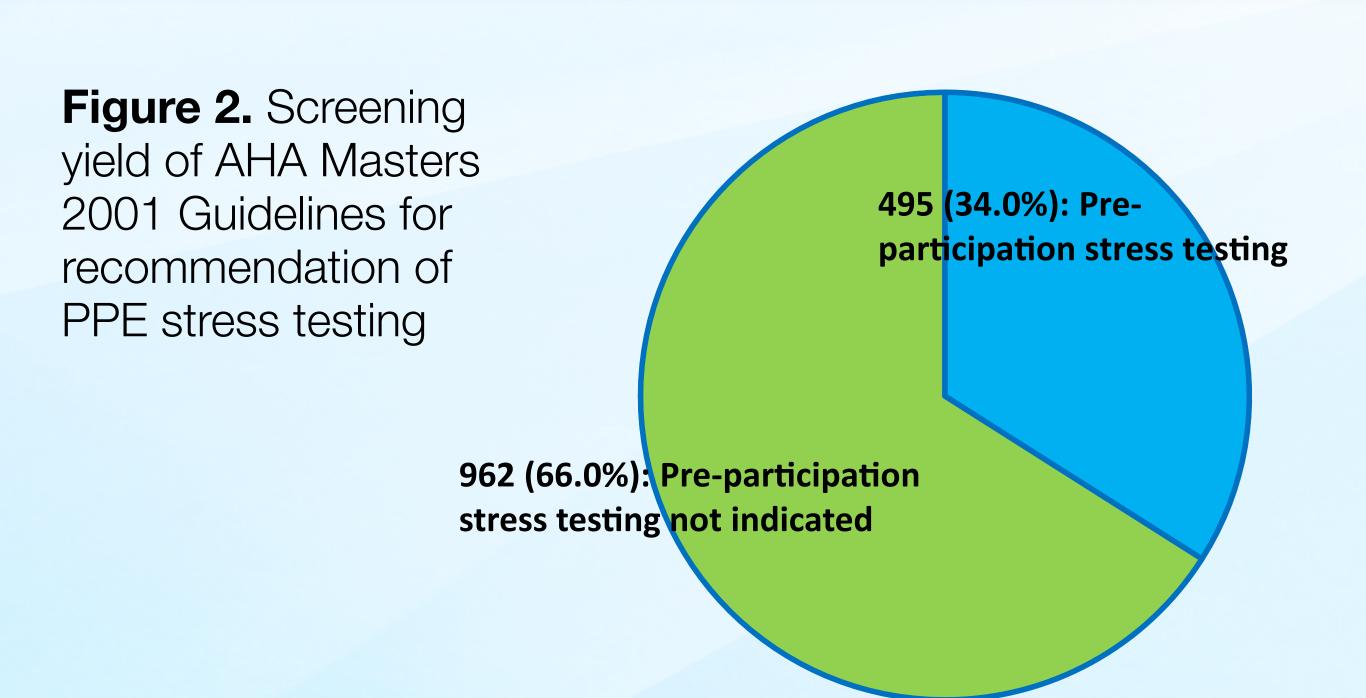
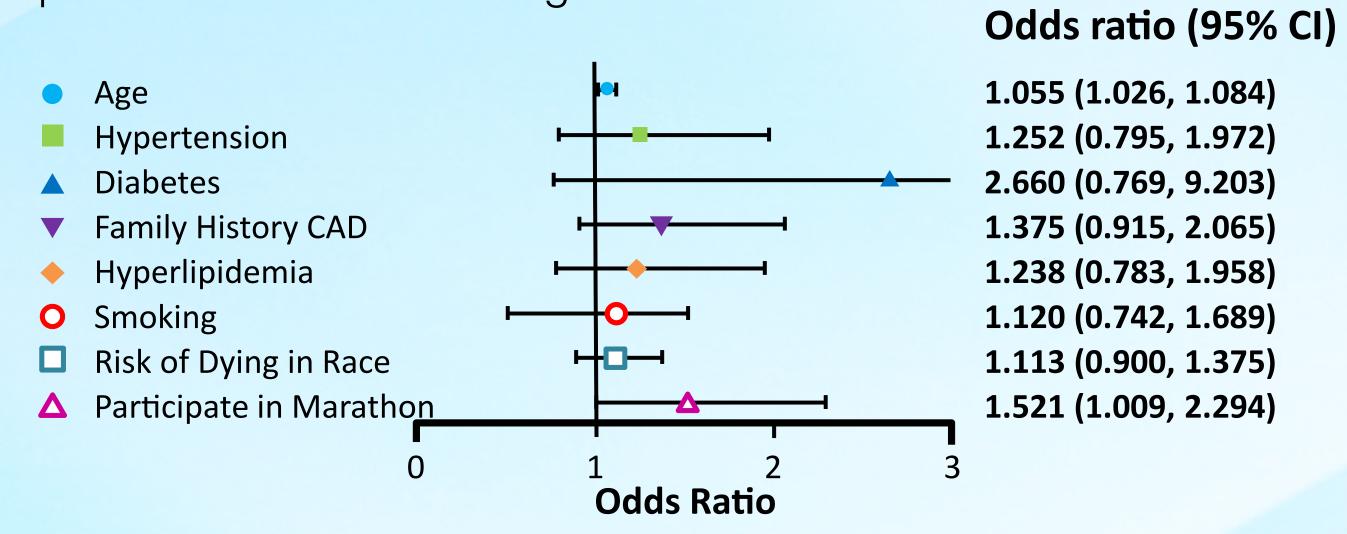


Figure 4. Forest plot illustrating independent predictors of stress testing based on AHA Masters 2001 Guidelines: Only athlete age and plan to complete a marathon/ distance event were independent predictors of stress testing



Conclusion:

- Application of AAPQ and AHA Masters Screening Guidelines yielded a substantial percentage of novice runners who "screened in" for further cardiovascular evaluation and testing (more than 1/3 for each screening guideline)
 - Given the low risk of running-associated cardiovascular events, it seems unlikely that application of these guidelines are a cost-effective method to screen novice runners for further PPE and testing
 - Further study is required to confirm this concept
- Overall, there was low healthcare provider concordance with these guidelines
 - PPE was not performed in a substantial percentage of athletes who were "screened in" for further testing
 - Conversely, a substantial percentage of athletes who were "screened out" received further evaluation that may have been unnecessary according to the guidelines
- Athlete age was a strong independent factor associated with PPE and testing,
 - Planning to complete a marathon or endurance event was also a strong predictor of pre-participation stress testing
- This study does not address the effectiveness of AAPQ and AHA Masters 2001 Guidelines to identify older runners who warrant further evaluation and testing in an accurate and cost-effective manner and further longitudinal follow-up will be required to address this question

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