

Guidelines

APPENDICES

Appendix 1 – Legal and regulatory framework applicable to ET and CPET in Brazil

Legal aspects	Reference
- The physician shall preserve the confidentiality of any information acquired in the performance of his or her duties, except when legally mandated otherwise - The physician is forbidden from: - Delegating to other providers acts or duties restricted to the medical profession - Shirking responsibility for a medical procedure he or she indicated or in which he or she participated, even when the patient was assisted by several physicians - Aiding and abetting those who practice medicine illegally or with medical professionals or facilities which engage in illicit activities - Failing to obtain consent from the patient or his or her legal representative after explaining the procedure to be performed, except in case of imminent risk of death - Failing to safeguard the patient's right to decide freely about his or her person or well-being, or utilizing his or her authority to violate this right - Failing to keep a legible medical record for each patient	Brazilian Code of Medical Ethics (Código de Ética Médica), FMC Resolution No. 2217/2018 ¹¹²⁹
Sets forth the requirements for Focused Practice Designation in Exercise Test: 1 year of training; having completed Medical Residency in Cardiology before such training; after training, take the Brazilian Medical Association/Brazilian Society of Cardiology board exam to obtain certification; as a prerequisite for sitting the aforementioned exam, in addition to training, holding a current Board Certification in Cardiology from the Brazilian Medical Association	FMC Resolution No. 2221/2018; Ordinance No. 1/2018 ²⁸⁶
- The ET must be individualized and carried out, at all stages, by a qualified physician who has been trained to respond to cardiovascular emergencies and must thus be physically present in the room at all times - As ET is a medical procedure under the sole responsibility of the performing physician, delegating its performance to other providers is considered a violation of medical ethics - The necessary and appropriate conditions for carrying out ET are listed in the FMC Inspection Manual	FMC Resolution No. 2021/13 ²⁸⁷
Guiding criteria for advertising in medicine, conceptualizing advertisements, dissemination of medical matters, sensationalism, self-promotion, and prohibitions related thereto	FMC Resolution No. 2.336/2023 ¹¹³⁰
Ensuring the privacy and confidentiality of patients' data and digitally stored information; organizing secure and reliable databases; ensuring the secure transmission of data and information; maintaining backup copies to the fullest possible extent	FMC Resolution No. 1821/2007 ²⁸²
Art. 186. Anyone who, by willful action or inaction, negligence, or recklessness, violates a right and causes damage to others, even if exclusively moral, commits a wrongful act	Brazilian Civil Code – Law No. 10,406/2002 ¹¹³¹
- Chapter III, Art. 6 – The following are basic consumer rights: - I – the protection of the consumer's life, health, and safety against any risks arising from any practices in the supply of products and services considered harmful or dangerous - II – education and information about the adequate consumption of products and services, ensuring freedom of choice and equality in transactions - III – adequate and clear information about different products and services, with correct specification of quantity, characteristics, composition, quality, price, and taxes, as well as the risks presented	Brazilian Consumer Protection Code. Basic Consumer Rights – Law No. 8,078 of September 11, 1990¹¹³²

FMC: Brazilian Federal Medical Council.

Appendix 2 – Formulas for prediction of VO_2peak ^{293,343-348}

Name	Equation for VO_2peak prediction
Classic formulas:	
	Men Males (mL/min): 1) Calculate normal weight (kg) = $0.79 \times \text{height (cm)} - 60.7$ 2) According to weight classification, use one of the following equations: – If actual weight (kg) = normal weight: $\text{VO}_2 = \text{actual weight} \times [50.72 - 0.372 \times \text{age (years)}]$ – If actual weight < normal weight (underweight): $\text{VO}_2 = [(\text{normal weight} + \text{actual weight})/2] \times [50.72 - 0.372 \times \text{age (years)}]$ – If actual weight > normal weight (overweight): $\text{VO}_2 = \text{normal weight} \times [50.72 - 0.372 \times \text{age (years)}] + [6 \times (\text{actual weight} - \text{normal weight})]$
Wasserman algorithm	Women (mL/min): 1) Calculate normal weight = $0.65 \times \text{height (cm)} - 42.8$ 2) According to weight classification, use one of the following equations: – If actual weight (kg) = normal weight $\text{VO}_2 = (\text{actual weight} + 43) \times [22.78 - 0.17 \times \text{age (years)}]$ – If actual weight < normal weight (underweight) $\text{VO}_2 = [(\text{normal weight} + \text{actual weight} + 86)/2] \times [22.78 - 0.17 \times \text{age (years)}]$ – If actual weight > normal weight (overweight) $\text{VO}_2 = (\text{normal weight} + 43) \times [22.78 - 0.17 \times \text{age (years)}] + [6 \times (\text{actual weight} - \text{normal weight})]$ Se esteira (mL/min): multiplicar resultado por 1,11
Jones equation	Cycle ergometer (L/min) Men: $4.2 - [0.032 \times \text{age (years)}]$ Women: $2.6 - [0.014 \times \text{age (years)}]$ Cycle ergometer (L/min) $[0.046 \times \text{height (cm)}] - [0.021 \times \text{age (years)}] - [0.624 \times \text{sex (male = 0; female = 1)}] - 4.31$ Treadmill (mL/kg/min) Men: $[60 - (0.55 \times \text{age})] \times 1.11$ Women: $[48 - (0.37 \times \text{age})] \times 1.11$
Veterans Affairs cohort	Men (MET): $18 - 0.15 \times \text{age}$
St. James Women Take Heart project	Women (MET): $14.7 - 0.13 \times \text{age}$
New formulas:	
FRIEND registry (treadmill)	$79.9 - [0.39 \times \text{age (years)}] - [13.7 \times \text{sex (male = 0; female = 1)}] - [0.127 \times \text{weight (lb)}]$
FRIEND registry (treadmill or cycle ergometer)	$45.2 - [0.35 \times \text{age (years)}] - [10.9 \times \text{sex (male = 1; female = 2)}] - [0.15 \times \text{weight (lb)}] + [0.68 \times \text{height (in)}] - [0.46 \times \text{exercise mode (treadmill = 1; cycle ergometer = 2)}]$
Almeida et al. (treadmill)	$53.478 + [-7.518 \times \text{sex (male = 1; female = 2)}] + [-0.254 \times \text{age (years)}] + [-0.430 \times \text{BMI}] + [6.132 \times \text{level of physical activity (sedentary = 1; active = 2; athlete = 3)}]$
Rossi Neto et al. (treadmill)	$20.89706 + [11.19284 \times \text{sex (male = 1; female = 0)}] - [0.20764 \times \text{age (years)}] - [0.38435 \times \text{weight (kg)}] + [28.14593 \times \text{height (m)}]$
Milani et al. (treadmill)	Men: $37.09 + (0.4129 \times \text{age}) - (0.007798 \times \text{age}^2)$ Women: $33.51 + (0.1242 \times \text{age}) - (0.004551 \times \text{age}^2)$ Age in years

VO_2 : oxygen consumption; BMI: body mass index; conversion formulas: 1 kg = 2.2046 pounds; 1 cm = 0.39370 inches.

Guidelines

Appendix 3 – Key caffeine-containing beverages, foods, and medications

Coffees	Caffeinated snack foods
• Coffee	• Chocolate cookies
• Espresso	• Some potato chips
• Mocha	• Some candies and gums
• Decaffeinated coffee	
Teas, general	Ice creams
• Black tea	• Starbucks Frappuccino
• Iced tea	• Coffee ice cream
• Green tea	• Häagen-Dazs coffee ice cream
• Lemon iced tea (bottled)	
• Lipton Decaffeinated Tea (black or green)	
Soft drinks and juices	Cocoa and other beverages
• Pepsi	• Hot chocolate
• Coca-Cola, Coke Zero, Diet Pepsi	• Candy bars
• Coca-Cola Plus	• Milk chocolate bars
• Diet Coke	
• Fanta, Sprite, 7-Up	
• Guaraná	
• Acerola juice	
Energy drinks	Drugs
• Monster Energy	• Tylenol DC
• Red Bull	• Ormigrein
• Monster Energy	• Metamizole/caffeine
• Fusion	• Neosaldina
• TNT	• Miorrelax
	• Miosan Caf
	• Dorflex
	• Benegrip
	• Caffeinated supplements and caffeine pills

Note: Products and trademarks listed are the most common ones available on the market. The same precautions apply to similar Brazilian's products. Adapted from: Henzlova MJ et al.,¹¹¹ ASNC imaging guidelines for SPECT nuclear cardiology procedures: Stress, protocols, and tracers.