EVALUATING THE METHODOLOGICAL QUALITY OF POSTEXERCISE HYPOTENSION AEROBIC EXERCISE INTERVENTIONS

[1] Christina A. Day, [1,2] Yin Wu, and [1,2] Linda S. Pescatello, FACSM
[1]University of Connecticut, Storrs, CT, USA.
[2]Institute for Collaboration on Health, Intervention, and Policy, University of Connecticut, Storrs, CT, USA

ABSTRACT

Postexercise hypotension (PEH) is the immediate reduction in blood pressure (BP) of 5-7 mmHg that occurs after a single bout of aerobic exercise among adults with hypertension. Across PEH studies there are variations in the definitions of PEH and the level of rigor of the study designs and methods that limit the conclusions that can be made about PEH.

PURPOSE: To develop and then apply a methodological study quality evaluation checklist (PEH√) to aerobic exercise PEH studies to provide investigators with methodological guidance for undertaking these studies.

METHODS: We developed PEH√ based upon contemporary methodological study quality standards. PEH√ contained 47 items divided into four categories: the PEH definition used (n=2 items), and sample (n=13 items), study (n=17 items), and intervention (n=15 items) characteristics. We then searched six databases to January 2019 to identify and then evaluate studies that: 1) enrolled adults ≥ 18yr with hypertension and without other chronic diseases or conditions; 2) included a bout of aerobic exercise and a non-exercise control session; and 3) were published in English.

RESULTS: Of 17,149 potential studies, 64 qualified. Participants (N=1,489) were middle-aged (38.6±15.6yr), overweight (26.1±2.5kg/m^2) mostly men (64.4%) with elevated BP (systolic BP 129.5±15.2; diastolic BP 81.0±10.1mmHg). Overall, studies disclosed 64.1%±12.2% (35.5% to 88.9%) of the PEH√ items. Only 20.3% disclosed BP was measured following professional guidelines, 18.8% reported BP was taken by the same assessor pre- and post-intervention, and 35.5% stated participants abstained from caffeine, alcohol, and physical activity prior to testing. Half (51.5%) indicated they statistically controlled for pre-exercise/baseline BP. Meanwhile, 100% of the studies reported the setting in which the BP measurements was taken, time from the end of exercise to the start of the BP measurements, and length of the ambulatory BP monitoring period.

CONCLUSION: Overall, PEH√ items that impacted the conclusions that can be made by PEH studies were not well reported, notably the BP methods used and important confounders of pre-exercise baseline BP. The PEH√ provides guidance to investigators on the important methodological study considerations that should be attended to in future PEH studies.