ABSTRACT: The present work proposes a multivariate multiple comparison procedure for multidimensional vectors using bootstrap and permutation. The procedure employs computationally intensive methods and is evaluated by Monte Carlo simulation. The idea consists of obtaining the distance $T^2$ of Hotelling for all pairs of means and comparing it to distributions of bootstrap or permutation distances obtained by re-sampling. The experimentwise type I error rates and the power of the proposed tests were computed in order to evaluate their performance in $N$ Monte Carlo simulations. The results of the simulations of proposed tests demonstrated good test size and power properties. The tests also showed robust power performance when the homoscedastic supposition was violated. The R code are available in the appendix.

KEYWORDS: Experimentwise type I error rates; multiple comparisons; Bootstrap; permutation.