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Bootstrapping Analogs of the Two Sample Hotelling's T^2 Test.

Suppose there are two independent random samples from two populations or groups. A common multivariate two sample test of hypotheses is $H_0 : \boldsymbol{\mu}_1 = \boldsymbol{\mu}_2$ versus $H_1 : \boldsymbol{\mu}_1 \neq \boldsymbol{\mu}_2$ where $\boldsymbol{\mu}_i$ is a population location measure of the ith population for $i = 1, 2$. The two sample Hotelling's T^2 test is the classical method, and is a special case of the one way MANOVA model if the two populations are assumed to have the same population covariance matrix. This paper suggests using the Olive (2016ab) bootstrap technique to develop analogs of Hotelling's T^2 test. The new tests can have considerable outlier resistance, and the tests do not need the population covariance matrices to be equal. (Received August 06, 2016)