Robust repeated measures discriminant analysis (RMDA) procedures based on parsimonious covariance structures were developed using trimmed estimators. The effects of non-normality, covariance structure, and mean configuration on bias and root mean square error (RMSE) of RMDA coefficients were studied using Monte Carlo techniques. The bias and RMSE values of robust RMDA coefficients were at least 10% and 5% smaller than those of coefficients for DA procedures based on least squares/maximum likelihood estimators when data were non-normal and the covariance structure was correctly specified. The proposed procedures are useful to identify the repeated measurements that describe group separation for non-normal data.