Abstract:
Clinical use of quantitative sensory testing (QST) requires standardization. The German research network on neuropathic pain (DFNS) solves this problem by defining reference data stratified for test site, gender and age for a standardized QST protocol. In this report we have targeted two further problems: how to adjust for age-related sensory changes, and how to compare groups of patients with the reference database. We applied a moving average across ages to define reference values per decade. This analysis revealed that women were more sensitive to heat pain independent of age. In contrast, functions were converging at older age for blunt pressure pain, but diverging for punctate mechanical pain (pin prick). The probability that an individual patient dataset is within the range of normal variability is calculated by z-transform using site-, gender- and age-specific reference data. To compare groups of patients with reference data, we evaluated two techniques: A: paired t-test versus fixed mean; i.e. the reference mean value is considered as the known population mean, B: non-paired t-test versus the reference dataset and number of cases restrained to the same number of cases as the patient data set. Simulations for various sample sizes and variances showed that method B was more conservative than method A. We present a simple
way of calculating method B for data that have been z-normalized. This technique makes the DFNS reference data bank applicable for researchers beyond the DFNS community without a need for subsampling of subjects from the database.