



Application of using standard equipment for dental scaler tip testing according to ISO 18397

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Abstract. A dental scaler is one of the major tools used in dentistry. It is necessary to assure its quality by testing it with method that comply with international standards. The international standard ISO 18397 requires a test of vibration amplitude of the scaler tip with and without load condition and a test of oscillation frequency with cooling liquid. The objective of this work was to study the use of standard equipment in amplitude and frequency tests of dental scaler tip according to ISO 18397. Four types of standard equipment, a standard laser displacement sensor, a standard microscope, a standard tachometer, and a standard ultrasonic frequency meter, were experimentally investigated to test a dental scaler tip. The standard laser displacement sensor and the standard microscope were used to test the unloaded amplitude of the scaler tip. It was found that two types of standard equipment were able to measure the unloaded amplitude of the tip. The measured amplitude at the unconstrained end of the tip obtained from the standard laser displacement sensor was slightly lower than the measurement from the standard microscope. The standard microscope was also employed for the loaded amplitude test. This test was performed by pressing the scaler tip with a load of 1 N, which was measured by a load cell set. The peak-to-peak amplitude found from the test was 116.7 μm . The frequency test of the scaler tip was conducted using the standard laser displacement sensor, the tachometer and the ultrasonic frequency meter. All three types of standard equipment were found to be able to test the frequency of the tip without cooling liquid. Nevertheless, only the standard tachometer was capable of measuring the frequency of the tip with cooling liquid applied.