

Masticatory Loading and Oral Environment Simulation in Testing Lithium Disilicate Restorations: A Structured Review

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Abstract: Abstract Objectives: To provide evidence for the need to standardize fatigue testing of restorative materials by reviewing all laboratory studies that tested fatigue resistance of Lithium Disilicate (LD) crowns and Fixed Dental Prostheses (FDPs) to elucidate study designs and testing parameters. Data: A database search on PubMed, Scopus, and Ovid for in vitro (lab-based) studies investigated fatigue resistance of LD crowns and FDPs retrieved 1191 eligible studies. After deduplication, 1054 records were examined by titles and then abstracts; 1016 were excluded and thirty-eight were assessed by full-text reading. In total, nineteen articles met inclusion criteria and were included in this study. Study selection: Studies were selected if they investigated fatigue resistance of LD crowns and/or FDPs in vitro. Mechanical and thermal loading parameters, including magnitude of load and number of cycles, and oral environment simulation, must be clearly identified. Only articles published in peer-reviewed, English-language journals were considered. Conclusion: It is noticeable that simulation of the fatigue phenomenon has become valued, and thus applied more extensively in the last year. However, studies included in this review show level of heterogeneity as testing parameters were considered in different ways through different set-ups. Therefore, standardization of test procedures is required to enable the delivery of consistent, meaningful, and comparable data.