

AAO Foundation Award Final Report

Principal Investigator	Peter H. Buschang and Gaylord S. Throckmorton
Co-Investigator	
Secondary Investigators	
Award Type	Biomedical Research
Project Title	Masticatory Performance and Jaw Movement as Functional Outcomes of Orthodontic Treatment
Project Year	2002
Institution	Baylor College of Dentistry The Texas A&M University System
Summary/Abstract	<p>This project improved methods for analyzing chewing cycle kinematics as food breaks down and showed that cycles are affected by resulting changes in bolus properties.</p> <p>Abstract: This project focused on improving methods for relating chewing cycle kinematics to masticatory performance (the ability to break down food). As part of this project we: 1) Modified previous computer programs designed to analyze gum chewing cycles (which does not break down) for analyzing chewing cycles when food was breaking down; 2) Used kinematic data on 29 normal subjects while chewing Cuttersil® (which does break down) to test the accuracy and reliability of the modified programs. 3) Completed a study of 28 normal subjects showing that the initial 3-4 cycles in a chewing sequence are significantly longer and have larger excursions than later cycles as food is broken down; 4) Collected kinematic data on 21 normal subjects chewing on Cuttersil with four different initial particle sizes to determine how particle size affects chewing cycle shape; 5) Collected both kinematic data and masticatory performance data on 25 subjects to look for correlations between performance and timing and shape of the chewing cycle; 6) Completed a study of how bolus size affects chewing cycle kinematics; 7) Completed a study of how deep bite malocclusion affects timing and shape of the chewing cycle; 8) Completed a series of 5 studies evaluating sources of variation in chewing cycle kinematics. Results from these studies are being used to enhance the precision and reliability of future kinematic studies, and relate their results to masticatory performance.</p>