
This study examined lip and tongue kinematics in stop and fricative consonants of different durations. Native speakers of Japanese served as subjects. An analysis of the lower lip closing movement indicated that it differed for the long and short labial consonants. In particular, the lower lip reached its highest vertical position later during the closure for the long than for the short consonants, and its deceleration was modified to keep it in contact with the upper lip for a longer time. Thus, both the magnitude and timing of the lower lip movement were changed to control closure duration. For the lingual consonants, the magnitude of the tongue movement during the closure was larger for the long than for the short consonants. However, the speakers reduced the average speed of the tongue during the closure for the long consonant. This allowed the tongue to maintain contact with the palate to produce the vocal tract closure.