

## 論 文 要 旨

### **Differences between the chewing and non-chewing sides of the mandibular first molars and condyles in the closing phase during chewing in normal subjects**

健常者の下顎第一大臼歯と下顎頭における  
作業側と平衡側の咀嚼運動経路の違い

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#### **【Objective】**

This study aimed to assess differences between the closing paths of the chewing and non-chewing sides of mandibular first molars and condyles during natural mastication, using standardized model food in healthy subjects.

#### **【Design】**

Thirty-two healthy young adults (age: 19–25 years; 22 men, 10 women) with normal occlusion and function chewed on standardized gummy jelly. Using an optoelectric jaw-tracking system with six degrees of freedom, we recorded the path of the mandibular first molars and condyles on both sides for 10 strokes during unilateral chewing. Variables were compared between the chewing side and the non-chewing side of first molars and condyles on frontal, sagittal, and horizontal views during the early-, middle- and late-closing phases.

#### **【Results】**

On superior/inferior displacements, the chewing side first molar and condyle were positioned superior to those on the non-chewing side during the early- and middle-closing phases. Conversely, the first molar and condyle on the non-chewing side were positioned significantly superior to those on the chewing side during the late-closing phase. On anterior/posterior displacements, the chewing side mandibular first molar and condyle were positioned significantly posterior to those on the non-chewing side throughout all closing phases.

#### **【Conclusion】**

Our results showed the differences between the mandibular first molars and condyles on both sides with respect to masticatory path during natural chewing of a model food. These differences can be useful for informing initial diagnostic tests for impaired masticatory function in the clinical environment.