



BACKGROUND

- cases).¹
- intervention difficult.
- the disease has sufficiently progressed.
- affected knees.²
- and/or physiologic biomarker of TMJ involvement in JIA.

OBJECTIVE

TMJs.

METHODS

- Subjects: 12 children with JIA, 7 healthy controls
- microphones onto the TMJ



Figure 1. TMJ sound recording headset while performing jaw exercises

Acoustic Emissions Generated by the TMJ of Patients with JIA and their Implication on Assessment and Screening

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- Signals between the healthy controls and patients with JIA are
- Sounds produced by patients with JIA appear more chaotic with
- The b-value metric showed significant differences between the two
- These b-value findings are comparable to early findings we have seen in the case of knee acoustic emissions in children with JIA.³

- Children with JIA show significantly more powerful, more repetitive, and more chaotic sound profiles compared to children with healthy
- Wearable, acoustic sensors can provide a novel method for non-
- . Elvira Cannizzaro, et al. Temporomandibular Joint Involvement in Children with Juvenile Idiopathic Arthritis. The Journal of
- 2. Omer T Inan, et al. Wearable knee health system employing novel physiological biomarkers. Journal of Applied Physiology. 124(3), 537-
- 3. 59. H.-K. Jeong, D. Whittingslow, and O. T. Inan, "b-Value: A Potential Biomarker for Assessing Knee Joint Health using Acoustical Emission

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