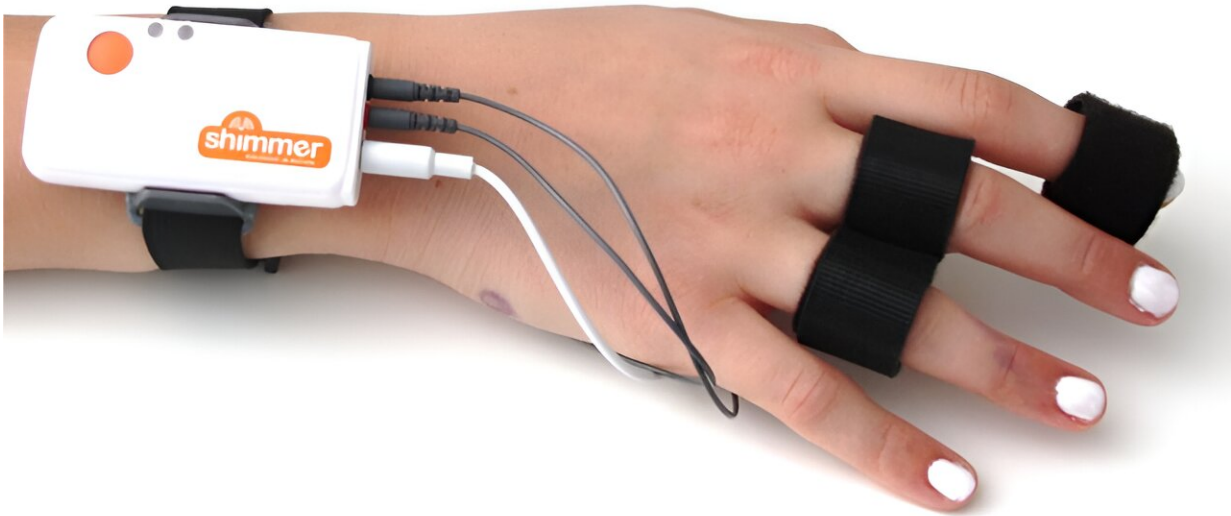


# Silent stress among children at the dentist

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Credit: Christian Jonasson/RISE

Children are very stressed by anesthetics injected into the mouth before tooth extraction, in connection with orthodontic treatment. In a study by the University of Gothenburg, a technique was tested to monitor stress levels in 14–16-year-olds during dental treatment.

The results of the [pilot study](#) are presented during the ongoing [congress of the European Academy of Pediatric Dentistry \(EAPD\)](#) in Gothenburg. The purpose of the study is well aligned with the focus of the gathered expertise in the field: treating children with sensitivity.

The study was led by Larisa Krekmanova, a researcher in pediatric dentistry, pedodontics, at Sahlgrenska Academy at the University of Gothenburg and a pedodontist within Region Västra Götaland's public dental service.

"Child and [adolescent patients](#) aren't always able or confident enough to convey negative experiences during [dental treatment](#). Parallel to this, we know that a significant number of them find dental exams and invasive treatment stressful, whether this is due to fear or pain," she notes.

"We want to uncover this silent stress, a type of stress that's difficult to detect and can remain hidden. This research aims to increase practitioners' sensitivity and raise patient voices," says Krekmanova.

## **Movements and sweating monitored**

The study included 34 patients, aged 14–16 years, who were to undergo either a regular dental exam (20 patients) or invasive treatment (14 patients) involving anesthetic injections and the extraction of healthy molars, often over several appointments, in conjunction with [orthodontic treatment](#).

During treatment, the participants were fitted with a device on one of their hands to collect data on hand movements and hand sweating, measured via the electrical properties of the skin, known as electrodermal activity or galvanic skin response.

The results show that the participants who underwent regular dental exams exhibited scattered stress spikes while those who underwent [invasive treatment](#) were significantly more stressed for longer periods, all following a clear pattern.

## Anesthetic injection most stressful

Some stress was already recorded when the patient had the dentist's fingers in their mouth and was examined with a mirror. However, these stress levels skyrocketed when anesthesia was administered. To some extent when anesthetic gel was applied, but especially when [local anesthetic](#) was injected. This is when hand movements and sweating peaked. During the actual tooth extraction, the hand movements lessened somewhat while the heavy sweating continued.

The technical devices used for this pilot study are from the world of sports. Responsible for the technical application in the study is Christian Jonasson, a researcher specialized in sensor systems at Research Institutes of Sweden, RISE. Another key member of the research group is Claudia Jaldin, a dentist at the public dental service clinic in Kvillebäcken, Gothenburg, who carried out the treatment.

"Children and adolescents are most afraid of invasive interventions, and we now have a picture of the stress caused by these various interventions. Moving forward, the ability to use the device in real time would help practitioners to monitor [stress levels](#), and to perhaps pause for remedial measures before continuing treatment. Within dental care, when it comes to fear and pain, it's important to work preventively with children and adolescents," Jaldin says.

Provided by University of Gothenburg

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