

## Press release

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### Basic information

Name: Olesya Svystun      Email: olesyas@dent.au.dk      Phone: +45 61867700

Department of: Dentistry

Main supervisor: Rubens Spin-Neto

Title of dissertation: Artefacts in sensor-based cephalograms and the effect of head movement

Date for defence: 27-08-2021 at (time of day): 13:00 Place: Zoom  
(<https://aarhusuniversity.zoom.us/j/65678969005>)

Press release (Danish)

Patientbevægelse under røntgenoptagelsen kan påvirke et kraniebilledes kvalitet

Blandt specialtandlæger anvendes ofte et cefalogram (røntgenbillede af kraniet) af patienten i forbindelse med udredning og behandlingsplanlægning inden ortodontisk behandling. Optagelsen af et cefalogram er en proces, der varer mellem 15-20 sekunder i specielle apparater, og det er ikke sjældent, at patienten kommer til at bevæge sig under optagelsen. Dette kan fremprovokere artefakter i det dannede billede. Dette projekt vurderede forekomst, hyppighed og sværhedsgrad af artefakter på cefalogrammer og deres forbindelse med hovedbevægelser. Desuden blev det undersøgt, om bevægelse havde en effekt på visse analysepunkter i billedet. Projektet blev udviklet som tre individuelle studier, offentliggjort i internationale peer-reviewed tidsskrifter. Den generelle konklusion var, at bevægelse under optagelsen, og udformningen af den digitale sensor i røntgenapparatet havde en direkte relation til forekomst og sværhedsgrad af artefakter på cefalogrammer. Et af studierne fandt yderligere, at patientbevægelse fremprovokede forvrængning af billedet. Dette kræver en dybere undersøgelse af effekten på den kliniske behandlingsplan.

Forsvaret er offentligt og finder sted online via Zoom

(<https://aarhusuniversity.zoom.us/j/65678969005>). Projektets titel er "Artefakter i sensor-baserede cefalogrammer og indflydelse af hovedbevægelser". Yderligere oplysninger: Ph.d.-studerende Olesya Svystun, e-mail: olesyas@dent.au.dk, tlf. 61867700.

Bedømmelsesudvalg: Formand: Lektor Michel Dalstra, Sektion for Ortodonti, Institut for Odontologi og Oral Sundhed, Aarhus Universitet; Opponenten: Professor Ingrid Różyło-Kalinowska, Institut for Dentomaxillofacial Radiologi, Medical University of Lublin, Lublin, Polen, og Lektor Reinier C. Hoogeveen, Specialist i Ortodonti, Institut for Maxillofacial Radiologi, Academic Center for Dentistry Amsterdam (ACTA), Amsterdam, Holland.

Press release (English)

Patient movement during acquisition may hamper the quality of skull radiographs

Dentists often request a "cephalogram" (i.e., skull radiograph) from their patients, especially those who demand orthodontic treatment. The acquisition of a cephalogram is a rather long procedure (approximately 15 seconds), making it common that the patient will move during the examination, which may lead to artefacts in the image. This project assessed the prevalence and severity of artefacts in cephalograms and the relationship with head movement. The project generated three studies published in international peer-reviewed journals. The overall conclusion listed in the studies was that the presence of movement and the digital sensor used to acquire the image are directly related to the presence and severity of artefacts in the images. The studies also found that movements caused distortion in the images, an issue that demands further investigation as for its clinical impact.

The defence is public and takes place on the virtual platform Zoom (<https://aarhusuniversity.zoom.us/j/65678969005>). The title of the project is "Artefacts in sensor-based cephalograms and the effect of head movement". For more information, please contact PhD student Olesya Svystun, e-mail: [olesyas@dent.au.dk](mailto:olesyas@dent.au.dk), Phone +45 6186 7700.

Assessment committee: Chairman: Associate Professor Michel Dalstra, Section for Orthodontics, Department of Dentistry and Oral Health, Aarhus University; Opponents: Professor Ingrid Różyło-Kalinowska, Department of Dentomaxillofacial Radiology, Medical University of Lublin, Lublin, Poland, and Associate Professor Reinier C. Hoogeveen, Specialist in Orthodontics, Department of Maxillofacial Radiology, Academic Center for Dentistry Amsterdam (ACTA), Amsterdam, Netherlands.

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