

Publication**Coronary Artery Motion and Cardiac Phases : Dependency on Heart Rate
Implications for CT Image Reconstruction****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 69720**Author(s)** Husmann, Lars; Leschka, Sebastian; Desbiolles, Lotus; Schepis, Tiziano; Gaemperli, Oliver; Seifert, Burkhardt; Cattin, Philippe; Frauenfelder, Thomas; Flohr, Thomas G; Marincek, Borut; Kaufmann, Philipp A; Alkadhi, Hatem**Author(s) at UniBasel** [Cattin, Philippe Claude](#) ;**Year** 2007**Title** Coronary Artery Motion and Cardiac Phases : Dependency on Heart Rate Implications for CT Image Reconstruction**Journal** Radiology**Volume** 245**Number** 2**Pages / Article-Number** 567-76**Keywords** Medical -> Heart

This study had institutional review board approval; written informed consent was obtained. The purpose was to prospectively determine the heart rate (HR) dependency of three-dimensional (3D) coronary artery motion by incorporating into analysis the durations of systole and diastole. Thirty patients (seven women, 23 men; mean age, 56.6 years \pm 12.7 [standard deviation]; HR: 45-100 beats per minute) underwent electrocardiographically gated 64-section computed tomographic (CT) coronary angiography to determine coronary motion velocities at bifurcation points. Significance of velocity differences ($P < .05$) was determined by using analysis of variance for repeated measures and Bonferroni post hoc tests. HR dependency was determined by using linear regression analysis. HR significantly affected 3D coronary motion ($r = 0.47$, $P < .009$) through nonproportional shortening of systole and diastole ($r = -0.82$, $P < .001$), leading to percentage reconstruction interval shifts of coronary velocity troughs and peaks ($P < .01$). Results suggest that image reconstruction algorithms at CT coronary angiography be adapted to the individual patient's HR.

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