The delivery simulator: a new application of medical VR.

Abstract:
This paper presents an elementary overview of the potential of Multimodal Virtual Reality (MVR) techniques in medical education, e.g. obstetrics. The study shows how to transfer the concept of MVR from a time-independent environment, e.g. the Munich Knee Joint Simulator, to a time-critical simulation environment as it can be found in flight simulators. The simulator consists of a haptic, a graphical and an acoustic user interface, which are connected to a biomechanical model for the birth process itself and a physiological model of both mother and child, in order to simulate, e.g. a cardiotocograph (CTG). The user can just watch an uncomplicated birth or is acting as the responsible obstetrician who has a variety of treatment options during the delivery with the most relevant medication or forceps/vacuum-extraction. During this practical training a MVR feedback system assists the trainee and exposes his errors and, thus, allows him to learn faster without endangering a real mother and her child. This concept allows for the first time to transfer stored haptic expert-knowledge to the trainee without a tool-based feedback approach.