BIOENGINEERING AND MEDICAL-SURGICAL SCIENCES

UNITO - Development and implementation of virtual scenarios in oral evaluation for simulated teaching

Funded By	UNIVERSITA' DEGLI STUDI DI TORINO [P.iva/CF:02099550010]

Supervisor	ARDUINO PAOLO GIACOMO - paolo.arduino@polito.it

Contact	

Context of the research activity	The virtual simulation of medical procedures has seen an exponential spread in recent years, demonstrating its enormous potential in the development and learning of new techniques for preclinical activities. The visual simulation in a virtual environment, combined with haptic and hand tracking devices for the realistic reproduction of the movement of the limbs in space, represent the most innovative pre-clinical teaching method currently available. In addition, the ability to view and use unlimited 3D educational content, compared to traditional consumable solid simulators, facilitates the storage of information received through an additional spatial perspective, better cognitive consolidation; the virtual simulation therefore offers an innovative approach, which is well integrated with the progress derived from the subsequent clinical experience. It also allows the student to save their progress, to self-assessment and review the teacher's assessment at any time. This is possible the future of the high level preclinical educational setting. However, the implementation of preclinical dental education through technologies in the virtual environment is still poorly developed and, where used, characterized by a relative poverty of virtual scenarios available.
Objectives	To the best of our knowledge, to date the possibility to make a full evaluation of the oral cavity (also known as "conventional oral examination") with a virtual simulator has not been yet developed. The Virtual Training Dental Centre (VTDC) of the Dental School of the University of Turin has been active for some years and it has now 4 operative units. Thus, the aims of the research activity within the Doctoral program are manifold and interlaced, and the 2 principals supposed to be the following: AIM 1: to create a virtual program of diagnostic visualization of the mucous membranes of the oral cavity, for the objective examination of language, palate, buccal mucosae, gums and oral floor. This will be possible using the VR simulation units of latest generation (Virteasy V2, HRV France) that combine the innovative haptic technology with high-definition virtual scenarios and immersive reality devices (Oculus Quest 2, hand tracking module).

	AIM 2: to create a library of possible oral diseases, with the virtual creation of diagnostic paths starting from a source of real images. It is expected that, at the end of the PhD activity, the candidate will be able to propose different virtual scenarios for the oral examinations of the normal and pathological tissues.
Skills and competencies for the development of the activity	We are looking for skilled and motivated candidates, preferably with a master's degree in Oral Medicine (or equivalent, or similar) and a previous clinical experience in an Oral Medicine Unit. The candidate must have proven familiarity in oral medicine disorders and must demonstrate to having diagnostic and therapeutic skills for the correct evaluation of patients with oral cavity disorders. The candidate should possess a good knowledge of English, a proven experiences of writing scientific papers and be available to work in our network of biomedical laboratories and clinical units. A previous experience of teaching in university setting.