

PR0849 HIT

The HIT Simulator - a new device to train the head impulse test A co-operation between Synbone and the University Hospital / ETH Zurich

Background:

The head impulse test (HIT) is a simple and reliable bedside screening test of the vestibulo-ocular reflex (VOR) established by Halmagyi & Curthoys (1988). It allows testing the function of individual semicircular canals. However, physicians require developing the skills to apply head-impulses with adequate angular velocity and to detect subsequent catch-up saccades as clinical signs of VOR deficit. Training in healthy subjects does not allow detecting the pathological saccades and with patients it will not be possible to train a greater number of physicians. Therefore a lifelike simulator was developed to train physicians in the application and interpretation of the HIT.

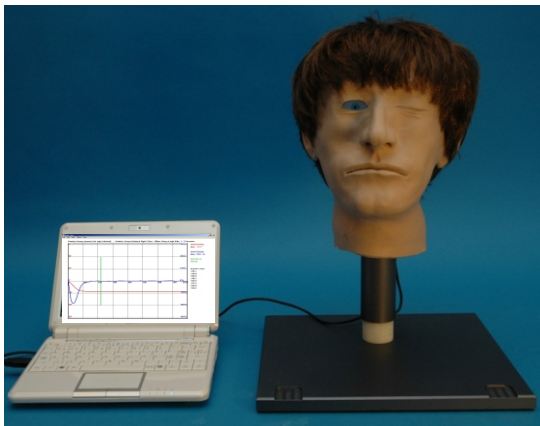
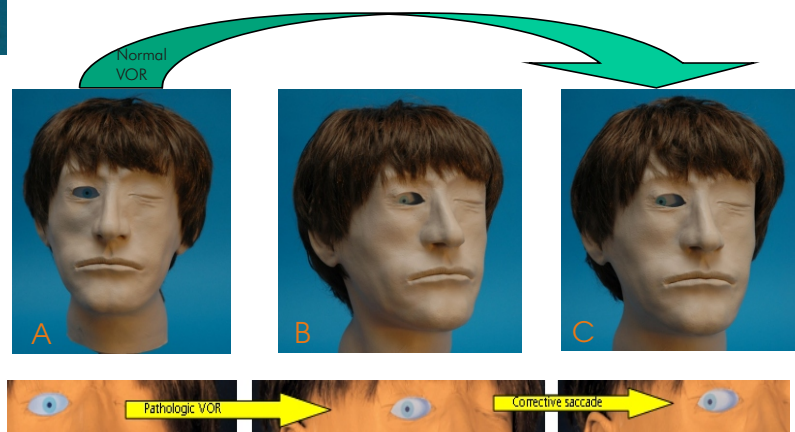


Fig. 1: showing two testing examples. Going directly from A to C would be a normal subject. From A to B would be a pathologic VOR to the left, followed by a corrective saccade.



Clinical and practical relevance:

Using the simulator, a person can train performing adequate head rotations while the program displays the characteristics with which the head was rotated (such as acceleration, velocity). Furthermore a person can train detecting the different pathologies and finally, the system can be used for testing the ability to correctly perform HIT.

The simulator is a stand-alone system consisting of a head model and computer on which the corresponding software is installed. Hence, the system is easily moveable and requires only to be plugged in. The system is capable of simulating the VOR of healthy persons as well as the following pathologies: unilateral vestibular deficit right or left, bilateral vestibular deficit. The latency of a corrective saccade can also be modulated varying between 70 and 300 ms. All symptoms can be selected by the user or generated by the software at random.