



*Figure e-1: Setup for simultaneous video and search coil head impulse recording. A high-speed (250 Hz) video camera (1) is mounted on a lightweight spectacle frame (2) to prevent slippage of the camera relative to the head (total weight of the system ~60g). The image of the eye is reflected from a hot mirror (3) on the frame to the camera. The eye is illuminated by infrared light emitting diodes (4). Video eye-position measures are calibrated with targets projected from a head-mounted laser (5). Position of the same eye is measured simultaneously with a scleral search coil (6). Head velocity is measured simultaneously by a miniature inertial measurement unit (7) for the video system and a search coil mounted on a dental impression tray (8).*