

USE OF A VIDEO TAPE RECORDER FOR STORING AND RETRIEVING ELECTROPHYSIOLOGICAL DATA

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Electrophysiological recordings are normally displayed on an oscilloscope (CRO) operated in either free-running or stimulus-locked mode, and stored for subsequent analysis on film, F.M. tape, or computer discs. Videotape recording has been used for demonstrations to physiology students (Salmons & Weber, 1981) and for recording rat behaviour in an open field (Livesey & Leppard, 1981) and is routinely used in this laboratory for storage of electrophysiological signals obtained in pharmacological studies. Stimulus-evoked wave-forms are displayed on a CRO with variable persistence, and recorded with a Sony TV camera and recorder. The recorded CRO displays are subsequently analysed for drug-induced changes e.g. in amplitude, and this method has been found to have a number of advantages. Domestic video recorders are suitable for this application, are widely available, and simple to operate. Secondly the equipment is inexpensive, since a camera, recorder and monitor cost around £700: running costs are £10 for 3 hours of continuous recording, irrespective of stimulus frequency. Thirdly the tape is immediately available for analysis or re-use. Lastly details of the experimental conditions can be incorporated in the recording, most simply by holding labels in front of the CRO screen, or by indicator lights mounted on the CRO screen, or by using a microcomputer to generate identifying characters in a video signal which can be included in the recording. Spoken commentary can be included on the audio channel.

Display of the recorded wave forms on a video monitor is simple as domestic video tape recorders have fast-forward, backward and frame-hold facilities. The recorded CRO displays can be photographed with a hand-held oscilloscope camera with Polaroid film, or with a tripod-mounted 35mm camera, with little loss of definition during the recording, since the vertical resolution of a video system is approximately 500 lines, which is similar to that of a 9-bit A/D converter (512 levels). Manipulation of the displayed wave form, e.g. time base expansion, is not possible but circuits for automatic analysis of video records have been published (Livesey & Leppard, 1981) and video signals, including recorded signals, can be processed for computer entry with commercially available equipment.

P.L.H. is an S.E.R.C. scholar.

Livesey, P.J. & Leppard, K. (1981) Behaviour Res. Methods and Instr. 13, 331-333.

Salmons, J.J. & Weber, W.V. (1981) J. Physiol. 318, 6P.