

Videotape recording—a complementary aid for the walking training of lower limb amputees

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Abstract

Videotape recording was used as an additional aid in the walking training of lower limb amputees. Fifty patients were interviewed about their reaction to watching themselves on a TV monitor, especially with respect to any negative or depressive feelings resulting from the TV sessions. No such reactions could be elicited among the examined patients.

Introduction

Lower limb amputee training aims at teaching the patient a technique of walking and moving which will minimize abnormalities in the pattern of movement. If the patient is to increase the distance he is able to walk, and thereby improve his ability to cope with the functions of daily life and his chances of returning to paid employment, he will have to be taught a gait pattern that is as little energy consuming as possible and simulates normal walking (Waters et al. 1976).

The physiotherapist training the patient will have to rely largely on verbal and tactile information. As an additional aid a mirror can be used to make it easier for the patient to recognize and correct errors in gait or movement pattern (Fig 1). In many cases, however, these sources of information fail to make the patient understand what errors he is making and, even less, how he is to correct them.

For many years now TV cameras, videotape recorders, and TV monitors have been widely used for educational purposes. The instructive value of this medium has been substantiated for

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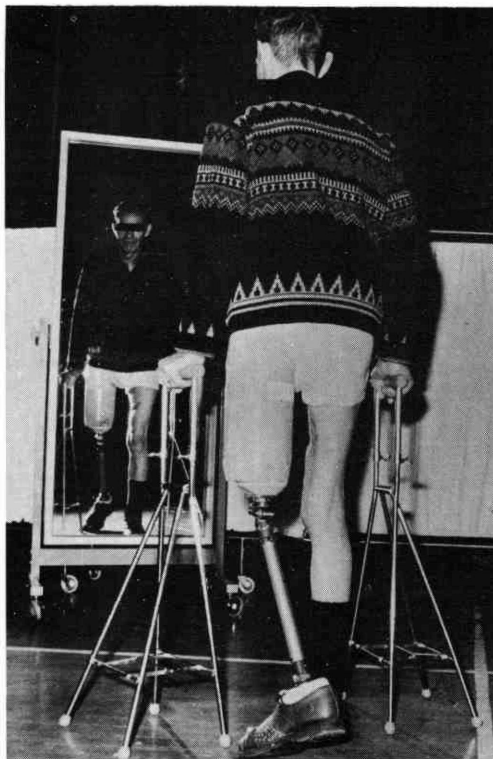


Fig 1. The use of a mirror at the end of the walking area to aid the patient in recognizing errors. The patient had to divide his attention between walking performance and studying his mirror image.

numerous different target groups, among them sportsmen and athletes Hirsch, 1968; De Bacy, 1970; van Gestel, 1971. Learning the technique of walking with an artificial limb must be comparable to learning specific patterns of movement in athletic performance (Alexander and Goodrich, 1978).

The aim of our study was to find out whether

patients who were recorded on videotape during walking training had any negative feelings about the recordings or about viewing themselves and having their gait pattern commented upon.

Material and Method

Fifty patients were recorded during the years 1979–1980. Table 1 shows the levels of amputation.

Table 1. Amputation levels

Below-knee	15
Above-knee	28
Hip disarticulation and hemipelvectomy	7

The Department's profile, with a special interest in oncologic diseases, results in a high incidence of patients amputated for tumours in comparison with the rest of the country (Table 2). This also means that many of the amputees are young people with a mean age of 43 years (Table 3).

Table 2. Causes of amputation

Vascular disease	17
Tumour	19
Trauma	9
Congenital deformities	5

Patients with complicating diseases such as hemiplegia or Parkinsonism were excluded, as it was felt that this might cause negative emotions in them. Some patients objected strongly to being recorded and if attempts at persuading them failed to change their attitude, no recordings were made.

The recording equipment consists of a TV monitor (Salora Boston 24 B, Salora Oy, Finland), a videotape recorder (Sony AV-3670 OE, Sony Corp., Japan) and a TV camera (Nivico, TK 220, Victor Co of Japan Ltd).

The videotape recordings are made in a large hall during the patient's regular walking training

session (Fig 2). The equipment is always kept ready for use and the large room permits the patient to be filmed from the front, rear and side, after which patient and physiotherapist discuss the recorded session in front of the TV monitor. Abnormalities, errors and positive attributes are pointed out and the patient is advised about the best way to correct his errors (Fig 3).

All videotapes are stored and can at any time be shown and discussed again, which permits



Fig 2. The television is kept ready for use in the large training hall.

comparison with earlier training sessions. Videotape recordings were made at varying stages of training, but not during training in parallel bars. Following the discussion in front of the TV monitor, the 50 patients in this series were asked to answer a simple questionnaire.

Results

Forty four out of fifty patients reported that they had noticed details of which they had not been conscious before. All fifty patients felt that the videotape recording and discussion had been useful to them and no patient rated the experience as unsatisfactory or poor.

When asked what they had particularly liked, many patients said that they had experienced a sense of sudden recognition and become aware of defects in their gait pattern which they had

Table 3. Age* and sex distribution

	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Male	0	7	5	1	2	3	6	5	0
Female	1	5	2	2	1	5	1	3	1

* at time of recording



Fig 3. Patients and physiotherapists can at any time discuss progress and performance as shown by the video recording

failed to understand before. Many patients reported that they "walked better than they had thought".

The patients uniformly replied that the videotape recording had helped them to achieve a better gait performance than would have been possible with the aid of a mirror only. They ascribed this to the fact that they had been able to view themselves from different angles and did not have to divide their attention between walking performance and studying their mirror image. No negative reactions emerged with respect to how the patients had experienced their performance on TV. None of them showed any depressive tendencies and those who had been hesitant before the videotape recording, afterwards became positive or even very positive in their attitude.

Discussion

Videotape playback has for many years been used for a variety of therapeutical and educational purposes (Alger 1969; Bishop 1970). Only one report dealing with videotape playback and lower limb amputee training (Alexander and

Goodrich, 1978). This report shows an improved gait pattern in a group of patients who were given an opportunity to view their performance on videotape, in comparison with a group of patients who were recorded but not allowed to view the videotape recordings.

Relatively simple TV equipment was used for lower limb amputee training. Each patient was recorded during walking training on a videotape recorder and immediate playback after each session made it possible for the patient together with the physiotherapist to analyze his own gait and movement pattern. The method allows the patient to view his own movements from all sides and the physiotherapist to give concrete advice about the patient's errors immediately following the training session.

It is quite striking how easy it has been for the patients to understand what errors they make. For weakly motivated patients earlier recordings can act as a spur since they can be used to make the patient aware of his progress or (in some cases) regress. Many of our young amputees are very anxious to leave the hospital and therefore reluctant to see the need of a correct walking pattern. A training session with video-playback has in many cases motivated them for further training. Many patients reported that they "walked better than they had thought", which is entirely in accordance with the experience of Alexander and Goodrich (1978).

The physiotherapists who train the amputees have experienced the videotape recordings as decidedly positive. It has been easier for them to teach the patients correct weight-bearing technique and equal stride length at an early stage.

The fact that the method allows the patient to view himself from all aspects and does not force him to divide his attention between the effort required to walk correctly and studying the effect in the mirror must be regarded as positive. The only thing which could prevent the method from being used would therefore be possible negative reactions of the patient.

The study based on patient interviews did not show any negative or depressive reactions among the fifty patients who were filmed and immediately after their gait performance viewed themselves on a TV monitor. Videotape playback is in our opinion a valuable complement to conventional walking training of lower limb amputees.

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