

## CHAPTER 6: COPING WITH VERTIGO

This purpose of this chapter is to examine how each aversive aspect of the experience of vertigo can be ameliorated, and how the vicious cycle of escalating anxiety and handicap can be reversed. Many people with vertigo either do not seek medical help or, even if they do see a doctor, draw chiefly on their own resources in order to cope with vertigo. The accounts of those with long experience of living with vertigo therefore provide an invaluable source of information about what adjustment to vertigo may involve, ranging from practical tips on how to manage attacks to hard-earned insights into how to overcome or cope with fear and disability. However, most people with significant recurrent vertigo express a desire for professional help; ideally a cure, but at least some form of advice or rehabilitation. Much of this chapter is therefore devoted to a critical evaluation of existing and potential therapies.

The fluctuating, ill-defined, and multifaceted character of the problems experienced by people with vertigo makes treatment evaluation particularly difficult. The measurement of recovery or improvement poses serious problems which have not yet received sufficient attention. Because of the ability of the balance system to rapidly compensate for vestibular dysfunction, a person who is experiencing frequent attacks of acute vertigo may be free from signs of disorder on the actual day of examination. The traditional tests of balance system function are therefore unable to accurately monitor the severity of current symptomatology. Consequently, assessment of improvement has hitherto been based almost entirely on rather crude therapist ratings which do not discriminate between the different elements of the experience of vertigo and may be affected by the expectancies of the therapist. Evaluation of therapy outcome is further complicated by high rates of (apparently) spontaneous remission and strong "placebo" effects. These problems have also been largely ignored, and treated patients have rarely been compared with appropriate control groups. Moreover, in a multi-faceted condition such as vertigo, unaccountable occurrences of "spontaneous remission" and "placebo recovery" deserve closer inspection. Spontaneous remission might actually signify the operation of unspecified processes such as beneficial changes in the attitudes, expectancies, behaviour or circumstances of the people concerned which help them to come to terms with their problems; similarly, placebo effects may result from non-specific features of therapy, such as empathy and reassurance (Stiles et al., 1986).

If such psychosocial factors do, indeed, have a profound impact on the experience of vertigo, then interventions specifically intended to influence these aspects of the experience might result in significant improvements in well-being. However, the range of treatments which have so far received consideration has been constrained by a narrow focus on pathophysiology. Pharmaceutical and surgical remedies have been much more extensively employed, and evaluated, than any other kind of therapy, and the possible benefits of alternative forms of rehabilitation remain largely unknown. The following sections therefore not only examine the evidence for the efficacy of conventional medical treatments, but also explore the way in which some of the difficulties experienced by people with vertigo may be reduced or averted by changes in their activities, environment (physical and social), beliefs and emotions.

### **Medical management**

The principal methods employed by doctors to alter or control the course of vertigo are drugs and surgery. Only a relatively brief description of the possibilities and limitations of pharmacological and surgical treatments is provided below, since a comprehensive review and evaluation of these forms of treatment is beyond the scope, and the concern, of this book.

The most radical form of surgery to eliminate vertigo is "labyrinthectomy", the destruction of the malfunctioning vestibular organ. However, this procedure also destroys hearing in the operated ear, and "best practice" therefore now recommends that this procedure is only employed when the vertigo is disabling and there is no usable hearing in the ear concerned (Paparella et al., 1990; Smith & Pillsbury, 1988). An alternative means of eliminating signals from the disordered vestibular organ consists of cutting the vestibular nerve. This is a relatively new and delicate form of microsurgery which carries a (fairly small) risk of quite serious complications and side-effects, such as cerebro-spinal fluid leakage, facial paralysis which may last many months, permanent total hearing loss in the operated ear, or meningitis (Green et al., 1992; Pohl, 1991; Smith & Pillsbury, 1988). Nevertheless, the reported rates of success in controlling the vertigo for both these procedures are usually around 90% -- better than the highest placebo rates of improvement. Vertigo is occasionally caused by a "fistula", or hole in the vestibular organ (labyrinth) resulting from either trauma or middle ear disease. In these, relatively rare, circumstances surgery is often necessary, and is generally quite effective if the tiny fistula can be identified (see Grimm et al., 1989; Ludman, 1984).

Since labyrinthectomy and neurectomy should completely eliminate the input from the diseased organ, it is pertinent to reflect upon the possible reasons why these treatments do not achieve a one hundred percent success rate (apart from side-effects). Occasionally the surgery may fail to completely destroy the vestibular organ or nerve, necessitating re-operation. A more serious alternative reason for operative failure may be misdiagnosis; if the operated organ is not the sole, or the main, cause of dizziness, the operation is unlikely to succeed. Consequently, if the symptoms actually arise from disordered functioning of some other part of the balance system, such as the other vestibular organ, or even a non-vestibular problem, the operation will not be helpful. Worse still, if the dizziness is caused by a failure of central compensation, or by multisensory deficits, the violent vertigo initially provoked by surgically damaging the vestibular system may actually result in a long-term or permanent exacerbation of the problem. These possible outcomes are particularly important to consider because the published success and complication rates naturally represent the achievements of the most skilled and prestigious surgeons working in the best medical environments, and anecdotal accounts of surgical disasters in less prestigious institutions are not infrequent. One of the more common forms of misdiagnosis arises from a failure to appreciate the extent to which anxiety, beliefs and behaviour may be contributing to the patient's difficulties. When this is the case, the operation will be unable to fulfil the patient's heightened expectations, resulting in bitter disillusionment. One man, whose dizziness and anxiety were eventually alleviated by a programme of combined physiotherapy and psychological therapy, described how the failure of surgery actually intensified his fear and distress:

I had been blaming all of my problems onto the Meniere's.

Every time I didn't feel quite with it I would blame it onto Meniere's, so when I had the Meniere's operation I expected it to be better, and I got worse. The symptoms got worse: pressure in my head, pressure across here, pains in my head. My eyes were funny, I got very anxious, I thought I had real problems -- hence the scan, and all the other things that I had.

Another widely used form of surgery consists of a range of procedures intended to prevent attacks of vertigo in patients with Ménière's disease, essentially by relieving the increased pressure in the fluid (endolymph) in the vestibular organ which characterises this condition. This type of surgery does not entail destruction of hearing and vestibular function -- an important consideration, since about one-third of those with Ménière's disease eventually find both ears are affected. A variety of techniques are employed (most commonly, the "endolymphatic shunt"), all of which have been reported as achieving a roughly similar success rate, averaging about 70%, with fewer and less serious complications than the more destructive procedures (e.g. Paparella, 1991; Raivio et al., 1989; Smith & Pillsbury, 1988). In some cases, repeat operations are needed after a few years, and success rates in halting the deterioration in hearing occurring in Ménière's disease (which can be objectively measured) are significantly lower than those reported for control of vertigo.

In practice, reported rates of improvement in symptoms following shunt operations vary quite widely, ranging from 49% to 90%, with the better rates tending to be reported, naturally, by the surgeons who are most enthusiastic about the technique. Unfortunately, almost all of the published clinical trials have suffered from crucial methodological weaknesses, the most serious being the lack of independent, blind assessment of improvement, and/or absence of a suitable control group. The latter failing has resulted partly from an understandable reluctance to withhold treatment, and partly from the assumption on the part of many clinicians that an adequate within-subject control condition is provided by the long base-line period of disabling vertigo, unalleviated by drug therapy, which generally constitutes the criterion for offering surgery. However, the course of Ménière's disease is extremely unpredictable, consisting of fluctuating clusters of attacks, which often become progressively more frequent and severe over a few years, and then tend to become milder and less frequent, eventually ceasing (Haye & Quist-Hanssen, 1976; Stahle et al., 1989). Consequently, a certain rate of improvement may be expected on the basis of statistical probability alone. Moreover, the "placebo" effects associated with surgery are generally ignored, even though they may constitute important aspects of the treatment. Features of undergoing surgery which might affect the experience of illness include: the recognition and sanctioning of the individual's status as truly and seriously disabled, and the consequent removal of the stigma associated with suspected hypochondria; a hitherto unparalleled level of attention, interested sympathy and explanation; communication of the belief that the ultimate form of treatment has been provided; and possibly advice or therapy to assist compensation following the operation (see, for example, the recommendations for pre-surgical counselling of the patient given by Bagger-Sjöbäck, 1988). Indeed, in the only double-blind, placebo-controlled study of endolymphatic shunt surgery, the same success rate -- about 70% -- was observed in both the active and the placebo groups, and no significant between-

group differences in vertigo or hearing levels were present at a three year follow-up (Thomsen et al., 1983). (However, some surgeons have argued post hoc that the placebo operation, which did not involve the vestibular organ itself, might nevertheless somehow have affected the physiology of the surrounding region in a relevant fashion; see Smith & Pillsbury, 1988).

The much larger literature on pharmacological treatment for vertigo cannot reasonably be reviewed here. Nevertheless, the limitations of drug therapy are implicit in the lack of consistent agreement as to which treatment is superior, and for which symptoms, the persisting requirement for surgery in a significant minority of patients, and the admission by most authors that drugs can offer only symptomatic therapy (Dix, 1984a; Hanson, 1989; Paparella 1991; Paparella, et al., 1990; Pykkö et al., 1988). Diuretics and betahistine are both reputed to reduce the severity of attacks of vertigo experienced by some people with Ménière's disease, although they are probably unable to eliminate the vertigo or halt the progression of the disease (Dix, 1984a; Paparella, 1991; Paparella et al., 1990), and restriction of salt, water, alcohol, nicotine and caffeine are also often recommended. However, Brandt (1990) notes that "The existence of a large number of therapies [for Meniere's disease], each supported fiercely by its advocates, usually indicates that there is no demonstrably effective therapy available" (p. 48). Schmidt & Huizing (1992) concluded an exhaustive and well-conducted comparative trial of betahistine with the conclusion that there was no evidence that it was superior to a placebo, and the comment that:

The improvement that is reported in the majority of studies lies within the range of 60-80%, regardless of type of therapy. As long as a more effective treatment has not been found, one should choose the least noxious therapy available. At present, participation in a trial seems to be the best treatment of Meniere's disease (p. 181)

Although there appears to be no effective prophylactic pharmaceutical treatment for vertigo, a variety of drugs may help to alleviate the experience of acute vertigo by partially suppressing the activity within the vestibular system or by inhibiting the autonomic symptoms associated with severe disorientation, although these drugs are not generally considered suitable for long-term usage, particularly as they may retard or prevent central compensation (Pykkö et al., 1988). Those commonly prescribed include antihistamines and phenothiazines (e.g. cinnarizine, prochlorperazine) and tranquillisers (e.g. diazepam); anti-motion sickness drugs may also be tried (e.g. scopolamine), and haloperidol, phenobarbitone and meclizine have also been recommended (Dix, 1984a; Hanson, 1989; Paparella, 1991). The non-specific effects of many of these drugs upon the central nervous system are frequently viewed as a useful means of simultaneously reducing the anxiety which accompanies vertigo. Indeed, the philosophy guiding pharmacological treatment of vertigo is succinctly expressed by Paparella (1991):

Medical therapy treats certain symptoms or [sic] the patient, thereby circumstantially improving conditions for the patient but not treating the disease per se. Since the action of most drugs has an empirical basis, it is our policy not to discourage the use of any of them if the treatment

minimizes the symptoms and improves the quality of life for the patient.  
(p. 117)

In this approach to medical management, the difficult task of attempting to distinguish between "placebo" effects, somatic or psychological effects, or, indeed, the coincidence of spontaneous remission, is largely abandoned, and a wide range of drugs may be tried in a pragmatic effort to find a treatment that appears -- for whatever reason -- to suit an individual patient. Moreover, because of uncertainty as to the physiological mechanisms whereby these drugs may exert beneficial effects, coupled with awareness that their benefit may often be due to central sedative or placebo effects, patients are seldom given the unambiguous information they would need in order to rationally evaluate and regulate their usage of medication.

The aim of the preceding overview of pharmacological and surgical methods of treatment for vertigo is not to deny their usefulness, but to draw attention to the limitations and uncertainties that render these forms of therapy an incomplete solution to the problems that vertigo can pose. The clinicians and authors who prescribe the medical treatments reviewed above are, of course, by no means insensible to these limitations, and themselves emphasise the need for supplementary forms of support for the patient. For example, Paparella (1991) precedes his survey of medical therapies for Ménière's disease with the statement that "Psychological support with patient education may be the most important part of medical management" (p. 117). Similarly, Bagger-Sjöbäck (1988) introduces his paper on the surgical treatment of vertigo with the recommendations that, before even broaching the subject of operations, the patient should be given continuity of care with a doctor who can guarantee support in any emergency, and an opportunity must be provided for in-depth discussion of the nature of the patient's condition and how best to adapt in order to live with it. In the following sections these aspects of therapy, and other means of coping with vertigo, are given the serious, detailed consideration that they merit.

### **Exercise therapy**

Since the 1940s a series of clinicians and authors have advocated the use of exercises to promote central compensation following a vestibular lesion (Dix, 1984b). The dominant rationale is to provide a structured opportunity for recovery of multisensory and sensorimotor coordination over a wide range of orientations and movements (see Chapter 3). The exercises which the individual is asked to perform are intended to include those eye, head or body positions and movements which provoke vertigo (or, on the principle of limited generalisation of compensation, at least a representative sample of these provocative motions). Adaptation should thus be enhanced or accelerated by repeated experience of the conditions which are found disorienting -- in the same way that, with repeated exposure, one adapts to environments which initially cause motion sickness.

Clinical trials of the efficacy of exercise programmes typically report improvement in symptoms in over 80% of those participating, but with complete elimination of vertigo in less than a third (Hecker et al., 1974; Norré, 1988; Norré & de Weerdt, 1980; Shepard et al., 1990). (Improvement refers to a reduction in movement-provoked vertigo or residual dizziness and unsteadiness,

as exercise therapy is not expected to reduce the number or severity of spontaneous episodes of acute vertigo.) Most of the trials of exercise therapy suffer from methodological shortcomings similar to those criticised in relation to evaluation of surgery. Very few have employed an adequate control condition, and "improvement" has generally been assessed by the clinician responsible for treatment, using rather crude and limited criteria, and ignoring such considerations as therapist effects (Crits-Christoph & Mintz, 1991) and the definition of clinically significant change (Jacobson & Truax, 1991). For example, Norré's measure of improvement simply consists of a reduction in the proportion of 19 test positions which elicit complaints of vertigo (ignoring real-life subjective well-being or handicap), while Shepard et al. (1990) evaluate pre- and post-therapy disability on the basis of the therapists' ratings on a single 5-point scale.

Some of the more recent studies are beginning to remedy these shortcomings. Horak et al. (1992) have undertaken a comparison of vestibular exercises with medication (valium or meclizine) or general conditioning exercises. Preliminary results indicate that both assessments of postural stability and questionnaire measures of disability show more improvement in the vestibular exercise group than in the other two treatment conditions. Shepard et al. (1993) also found a higher rate of improvement among people recovering from vestibular neuritis who were given exercise therapy than among those who had an operation to section the vestibular nerve.

The varying and often incompletely specified patient selection procedures used in many of these trials render it difficult to determine the overall success rate that might be expected in a heterogeneous clinical population. The majority of studies explicitly exclude all but the most clear-cut and uncomplicated cases of position-related vertigo, although Shepard and colleagues report that rehabilitation helped people with a wide range of symptoms and diagnoses. More disconcertingly, none of the studies have seriously addressed the issue of drop-out or non-compliance rates; reported success rates appear to refer to only those individuals accepting and completing the rehabilitation programme. It is possible that the prestigious and highly motivated centres involved in these clinical trials were able to achieve a negligible rate of non-compliance with their recommended therapy. Nevertheless, the issues of acceptance and participation deserve close attention, if only to determine how such high credibility and completion rates are sustained, since many people are disconcerted and disappointed to be offered, instead of a miracle drug or surgical cure, a therapy which requires them to actively induce the very symptoms that they dread:

I was sceptical at the beginning. To begin with, I didn't realise it was so simple to correct, and after having it for years I couldn't see how overnight the thing could change. Because it was so simple in the way of exercises, I couldn't imagine in my brain that that was going to fix it. To be honest, I know this sounds stupid -- I mean people don't like going to hospitals -- but I thought an operation or something would fix it. That was the only way I could imagine it to work ... My husband thought I was crazy, basically, because he thought the exercises were so simple I probably didn't need to do them at all anyway.

I went to a neurologist. He talked to me, threw me around a bit on the couch, asked me how I felt, and said, "Go away. Try some exercises". Which I failed at miserably, I didn't do them very well at all. I hardly did them, because I was frightened, I only did them a couple of times, because I was so frightened of getting dizzy at that time I just couldn't do it. [The doctor] said if it didn't work for me, then he would refer me to [a specialist clinic]. So I did cheat a bit, because I just couldn't face doing them. Because he didn't have time to talk to me, time to explain to me. I was still frightened, I was still worried, I needed someone to have some patience.

As the preceding account suggests, failure to complete a physical therapy programme is often not admitted to the doctor who recommended it. The consequence of such covert non-adherence is that doctors receive a poor impression of the effectiveness of exercise therapy and may refer fewer patients, or even reserve it for intractable cases. They may also unconsciously communicate their low expectations for success to those they do refer, resulting in even lower rates of completion and a reduction in the placebo improvement which most therapies for vertigo achieve.

A comprehensive evaluation of any form of rehabilitation ideally demands an empirical, fine-grained analysis of precisely how therapeutic processes may relate to particular problems and outcomes (c.f. Newman & Howard, 1991). Given the limitations of the empirical evidence from clinical trials, the following discussion of the relative merits of various types of exercise-based therapy for different forms and aspects of vertigo is obliged to draw upon personal clinical experience, theory and deduction. These suggest that the benefits of exercise-based therapy may have many dimensions, ranging from alterations in neuro-physiological function to promotion of confidence and a sense of control.

In certain cases, head and body movements may actually be able to affect the physiological cause of vertigo. "Benign paroxysmal positional vertigo" (see Chapter 1) is triggered by changes in head and body orientation or by linear accelerations such as starting or stopping in a car, and is believed to be due to the accumulation of debris at certain locations within the balance organ (Schuknecht, 1975). Some clinicians claim that by performing particular head movements very briskly, which should dislodge and disperse the debris, this kind of vertigo can be completely eradicated in over 90% of suitable patients (Häusler & Pampurik, 1989; Herdman, 1990). Others have found it difficult to replicate this success rate, and debate continues as to the best technique of this kind. In particular, since the head movements concerned are those that provoke vertigo, some authors have suggested that the mechanism responsible for recovery is actually central compensation, which can be achieved by a longer, more gentle series of movements (Norré & Beckers, 1987) -- although the very rapid recovery rates that often occur (after only a few head movements) provide evidence in support of the hypothesis of peripheral structural changes in at least some cases. In an excellent review of these forms of physiotherapy, Herdman (1990) suggests that the selection of technique should be based on a multifactorial assessment of the individual, rather than on theoretical predilections. The factors she lists as relevant include restrictions on violent

movement imposed by other conditions (e.g. arthritis) or by anxiety, and the ability or willingness of the individual to pursue a protracted programme of exercises.

Relaxation techniques are also sometimes taught to people with vertigo, for a variety of reasons (Beyts, 1987; Ödkvist & Ödkvist, 1988). When dizziness is related to neck tension, hyperventilation, or jaw-clenching or grinding, or is provoked by stress, relaxation may directly remove a cause of vertigo. Alternatively, relaxation training (with EMG biofeedback) has been suggested as a means of increasing tolerance of the symptoms provoked by exercise-based therapy (Leduc & Decloedt, 1989), in the same way that autogenic feedback training can reputedly help people to cope with disorienting motions (Cowings & Toscano, 1982). Re-education of postural control, in order to eradicate postural habits which contribute to instability or muscle tension, may also help to reduce imbalance or vertigo at source. Encouragement to participate in sports or other vigorous activities also features towards the end of many therapeutic programmes, in order to reverse the general loss of fitness and mobility that often accompanies chronic vertigo, and to enhance orientation and motor skills.

Debate continues as to whether exercise programmes need to be tailored to the sensorimotor capabilities and specific difficulties of the individual concerned. Although generic exercise programmes, which include the movements that most people with vertigo find problematic, achieve good results with the majority of those who complete them (e.g. Hecker et al., 1974; Shepard et al., 1993), Norré claims that exercises are only effective insofar as they include practice with those positions and motions that the individual finds disorienting. Norré & de Weerd (1980) found that the symptoms of patients who performed exercises which did not provoke vertigo remained unchanged, but after the same patients had practised performing disorienting movements their symptoms improved. This study, albeit somewhat anecdotally reported, is interesting because it included a within-subject control condition. From the start, these patients had (presumably) received the explanation of vertigo and compensation which Norré considers an indispensable precursor to therapy (Norré, 1984). Moreover, performance of even non-provocative exercises should have also provided those participating in the programme with expectations of improvement and control, and a sense that the clinician was taking an active interest in their problems and believed that they could recover. Nevertheless, it was only when the provocative movements were made that improvement in symptoms of vertigo became evident, indicating that this improvement could not be attributed to the effects of reassurance and psychological support, but depended upon recovery of sensorimotor coordination through activity.

Shumway-Cook and Horak (1989) also advocate programmes of physiotherapy tailored to the individual's particular pattern of maladaptive sensorimotor functioning. For example, people who seem to rely excessively on visual information for orientation are asked to practice balancing in environments where the visual cues are absent, unusual or ambiguous, while those who rely mostly upon somatosensory information practise walking on compliant or moving surfaces. Specific training in motor strategies suitable for different balancing tasks may also be useful. For example, a motor strategy commonly adopted following attacks of vertigo is to lean and sway only about

the hips, and not around the axis of the ankle joint (perhaps because it is possible in this way to keep the head upright and hence avoid provoking or using vestibular signals). Since swaying from the hips exerts shear forces between the feet and surface of support that will lead to falls on slippery or narrow surfaces, people who use this strategy exclusively need to learn how to sway from the ankle when necessary. People with complete loss of vestibular function may require special exercises designed to hasten the development of new forms of eye-head coordination. They can also benefit from education in recognising and coping with environments in which they will inevitably find it difficult to balance; i.e. those characterised by an absence or paucity of visual and somatosensory information (Shepard et al., 1990).

In view of the situation-specific nature of the incoordination associated with vertigo (see Chapter 3), specially tailored exercise programmes have high face validity on theoretical grounds. Perhaps equally importantly, individualised programmes may have high face validity for the individual concerned. Tailoring an exercise programme entails working with the individual to discover his or her particular sensorimotor weaknesses, selecting exercises that directly address these, and discussing how the exercises may be expected to affect particular forms or aspects of disorientation and disequilibrium. The process of identifying those movements or perceptual conditions which provoke vertigo provides a concrete demonstration that the programme is relevant to the person's problems, which tends to promote confidence in the therapy. Moreover, this process helps to establish a good relationship with the therapist -- one which encourages active sharing of information and of responsibility for exploring diagnostic and rehabilitative possibilities and progress. As a result, the individual is likely to achieve a more profound, and constantly developing, comprehension of the nature of their problem and the possibilities, difficulties and limitations pertaining to adaptation, and should consequently be better able to monitor, predict and control the course of recovery. This goal is quite explicit in some tailored programmes. For example, Shepard et al. (1990) state that, in addition to promoting compensation and teaching postural control strategies, the "major thrust" of their therapy is:

To educate the patient in techniques for helping to manage their symptoms and functional deficits. They should understand that therapy is not a cure for their balance disorder, but simply a management technique ... if taught a means for dealing effectively with recurrent symptoms, the patient can re-institute the techniques independently. (p. 470)

The comments of one man, made after completing only a few weeks of exercise therapy, suggest that the provision of a means of dealing with vertigo is appreciated, even when a complete cure is not guaranteed:

It has changed my outlook on the way I have been coping in the past. As to whether it has any lasting effect, I don't know at this stage, but obviously we will have to carry on and see. But overall, I think it has probably helped to a certain extent, I mean, already the exercises have been getting easier so obviously I have been compensating better -- so time will tell. I mean,

previously I was just sort of shuffling down and just sort of letting the world go by, until I felt I ought to do things. Obviously now, because of the theory behind it, I am going to push myself to actually try and overcome it with the use of the exercises ... I mean, obviously having a goal is important, so I think it is going to be helpful.

The possible multiple benefits of tailored therapy considered above suggest that it is impossible to equate several aspects of the therapeutic conditions when employing exercises which do not provoke vertigo as a control condition for comparison with exercises which did provoke vertigo. Thus, the demonstrable superiority of the provocative exercise programme may not be entirely attributable to its ability to enhance compensation; expectations, confidence and motivation may have been higher once exercises which could be seen to affect the vertigo were included in the therapy. Indeed, although this section has focused principally on adaptation in terms of recovery of sensorimotor coordination, repeated experience of vertigo in the safety of a therapeutic environment may itself confer additional benefits beyond an actual reduction in disorientation or disability. In particular, it provides an opportunity to explore the nature and boundaries of the experience itself, the provoking factors, and coping mechanisms. This opportunity is likely to result in a reduction in uncertainty and anxiety, and recovery of a sense of self-control. Indeed, many people explicitly mention the motivation and confidence promoted by exercise therapy as a major benefit:

It is nice to have some way forward in all this ... I have come to accept now that there is something that I am going to have to deal with forever, but to my mind [exercise therapy] is giving me something that I can work with, whereas before all I have had is a full-stop there; "You have got that problem -- basically, tough! Go away, there is nothing we can do about it."

Before [having therapy], I tried to block it out and hope it didn't happen. Now I try to deal with it more, I think. I know it is going to happen, so I am going to do something about it to try and make it go, to improve it.

I feel I am doing something to put this right, and I like to have something to get my teeth into. I don't like sort of thinking "Well, it might be all right and it might not", I have really got to try to do it.

Indeed, for some people the psychological aspects of therapy were the initial motivation for participation, and the reduction in symptoms provided an unexpected bonus:

I didn't think there was a cure much, but I was hoping to perhaps even make me deal with it, the psychological side more than anything else, because I was rather afraid that it would get me down, the fact that I would never know what was going to happen, it would play on my mind ... In point of fact, [exercise therapy] has not only made me cope with it, it has lessened it,

and therefore I am not having to cope with it as much anyway.

### **Emotion and arousal, beliefs and behaviour**

In addition to the disorientation and disequilibrium which are the focus of exercise-based therapy, the experience of vertigo usually includes a constellation of autonomic nervous system (ANS) symptoms, ranging from cold sweating and trembling to nausea and vomiting. These symptoms can be caused or exacerbated by stress and anxiety, particularly if the anxiety results in hyperventilation (which may actually increase the dizziness itself). They may also provoke anxiety, either because they are misinterpreted as a sign of serious or worsening illness, or simply because they add to the unpleasantness of the experience of vertigo (see Chapter 4). Therefore the ANS symptom/anxiety arousal component of the experience of vertigo can have far-reaching effects on beliefs and lifestyle, leading to higher levels of fear and restriction of behaviour than would result from the sensorimotor difficulties alone, and promoting avoidance of the very activities which might facilitate adaptation (including, in some cases, completion of an exercise programme). In order to reverse this vicious cycle, two principal kinds of rehabilitation can be employed. The first consists of techniques designed to lower levels of arousal and promote control of ANS functioning, while the second addresses the misperceptions attached to ANS symptoms. These two therapeutic goals and processes are in fact closely linked, as the following discussion will reveal.

#### Controlling arousal

Therapies which have been used successfully to enable the individual to control arousal, hyperventilation and ANS symptoms include various relaxation techniques, education in respiration control, biofeedback, and autogenic feedback training (AFT), which is a combination of biofeedback and learned control of ANS function by means of cognitive imagery. Some of these have been recommended as part of the rehabilitation of people with vertigo (see previous section), but are rarely used and have never been systematically evaluated. However, several of these therapies have been assessed for their effectiveness in reducing symptoms of motion sickness. Jones et al. (1985) included biofeedback training in control of skin conductance levels, AFT, deep muscle relaxation training, and diaphragmatic breathing in their programme which achieved an 85% success rate in enabling airsick crew to return to flying. Kemmler (1984) also cites progressive relaxation and AFT as essential elements of his programme for prevention of airsickness, while Giles & Lochridge (1985) found that diaphragmatic breathing and cue-controlled relaxation allowed 35 out of 37 student pilots to achieve complete control of their symptoms.

Programmes of this kind tend to take the pragmatic approach of combining as many forms of potentially beneficial treatment as is possible and necessary. Hence, it is not possible to dissociate the effects of graduated exposure to disorienting environments (employed in all these programmes) from the impact of the various techniques for ANS symptom control. The effects of adaptation to disorienting conditions, development of control of ANS functioning, and reduction of anxiety and monitoring or reporting of ANS symptoms are confounded, as many of the authors reporting their success frankly admit. Nevertheless, Jones and Hartman (1984) state that when AFT was added to relaxation and exposure to disorienting motion, the success rate of the

programme increased from 40% to over 75%. These authors themselves stress that AFT may reduce susceptibility partly or entirely by restoring a sense of mastery, fostering the development of coping skills, and establishing a good relationship with the therapist -- rather than by actually altering arousal levels directly. This view is confirmed by the account given by one woman with vertigo of how she was helped by training in relaxation techniques:

You need to have something to work on. You see, you are told there is nothing wrong with you, then you get up the next day and feel exactly the same as you did ... [With therapy] it seems to fall into place, and it does give you something to work on when you start getting yourself into a state. You think, "No, hang on a minute", and think about it, do a bit of breathing, and it brings it all back down again. You have got something that you can actively do about the symptoms then ... [Now] when I sit at my desk, I might have a little attack, and then it will just go out of my mind, and that was the end of it. Whereas before, I think I used to sit there and brace myself for it. When it comes now I just let it go, and try and forget about it, try and breathe a bit, and it tends to be all right.

Cowings and Toscano (1982; Toscano & Cowings, 1982) did attempt to distinguish the processes contributing to reduction in motion sickness susceptibility as a result of autogenic feedback training. They claim that AFT has no effect on the perception of motion and disequilibrium, but does enhance tolerance of the unpleasant effects of making head movements during constant velocity rotation. Tolerance was higher after AFT training than when subjects endured the same motions either with no training, or while performing a cognitive task designed to distract them from their symptoms. However, Cowings presented no evidence showing that control of ANS symptoms themselves actually occurs (see also Cowings, 1990). Tolerance may therefore have been enhanced by indirect mechanisms such as those suggested by Jones and Hartman (1984) -- although in that case it is evident that AFT can promote a greater sense of confidence or mastery than can the cognitive distraction techniques used as a control condition.

Dobie et al. (1987) examined tolerance of a rotating visual surround after training in the control of forehead muscle activity and hand temperature, using biofeedback. This was compared with cognitive-behavioural therapy, which included relaxation and ten sessions of "systematic desensitisation" by exposure to rotation of a visual surround. Subjects in the biofeedback group achieved control of EMG responses, but their tolerance of visual field motion did not improve. The tolerance of subjects given the cognitive-behavioural therapy improved to an equal extent whether or not they additionally received biofeedback training. However, once again the effects of adaptation, relaxation, systematic desensitisation and cognitive therapy were confounded in the cognitive-behavioural therapy condition.

#### Changing perceptions and expectancies

In addition to directly reducing tension and the physiological arousal component of anxiety, training in relaxation teaches the individual an active coping

technique and demonstrates that they have some control over unpleasant situations or states. Encouragement to explore the nature, cause and control of symptoms in a safe, therapeutic setting may lead to significant modification of beliefs which previously caused anxiety. The exploratory aspect of forms of rehabilitation intended primarily to bring about changes in sensorimotor coordination and skill or control of physiological functioning may thus provide the individual with an opportunity to discover vitally important information. For example, exercise therapy may reveal that the disorientation provoked by movement is self-limiting and controllable, and does not herald the onset of a full-blown attack of vertigo, and that movement-provoked symptoms are a part of the process of compensation rather than a sign of recurring illness. Similarly, while learning to recognise and control autonomic symptoms, the individual also learns that these can simply be indicators of arousal or anxiety levels, rather than signs of serious disease. In this respect, the basis for employing AFT for vertigo resembles the rationale for "interoceptive exposure therapy" for people subject to panic attacks. It is interesting to note that the vestibular sensations induced by rotation have been used as the stimulus for therapy of this type.

The impact of these informational aspects of programmes of exercise therapy and training in relaxation and respiratory control is by no means undermined by the apparently "incidental" nature of the learning process. Indeed, actively discovering the nature and limits of the experience of vertigo by means of practical exploration may be the most powerful way that an individual can acquire the information, beliefs and confidence which are needed to encourage and support the resumption of an adaptive and fulfilling lifestyle (Bandura, 1982). Nevertheless, rehabilitation can also directly address the evaluative and intentional components of the experience of vertigo by means of cognitive and behavioural therapy. It was noted in Chapter 2 that the "reassurance" routinely offered by health professionals is frequently insufficient to allay fears about the significance and likely consequences of symptoms. Bandura suggests that verbal information is the least effective and behavioural demonstrations the most effective form of reassurance. Positive evaluations of one's own potential or actual competence, arising from personal or vicarious experiences of successful goal-directed activity, provide the motivation and confidence to continue to pursue desired goals and overcome obstacles to success (Bandura, 1977, 1978, 1982). Beneficial changes in perceptions of symptoms and the ability to cope with them may therefore be achieved by deliberately exploring the parameters of these symptoms during programmes of exercise therapy. Performing movements which may induce dizziness can be thought of as a "behavioural experiment" which demonstrates to the individual the true extent of his or her actual and potential capabilities, and thus results in revised evaluations of self-competence. My own experience has provided some (admittedly anecdotal) evidence for this. In a study of ANS symptoms associated with vertigo, I was obliged to ask people with vertigo to perform multiple head movements which would provoke vertigo. Before doing so they were naturally apprehensive, as most had studiously avoided these movements for months or even years. However, after making the head movements many people commented, with delighted relief, that the consequences had been much less severe than they had expected.

The informational aspect of programmes of therapy can be made more explicit by focussing on the goals, difficulties and environments that are most

salient to the individual concerned. For example, after competence in a range of movements and perceptual conditions has been achieved in the clinic, it may be helpful to set explicit goals and practice targets for demonstrating competence in real-life situations, such as relaxing in a busy shopping mall, or walking down an escalator (Beys, 1987). This ensures that the skills, knowledge and confidence acquired in the safe therapeutic setting are perceived as applicable to the environments encountered in daily life. Jeans and Orrell (1991) report that the near-total disability of a woman with symptoms of "space phobia" (dizziness and fear of falling or going out) was greatly reduced by encouragement from family and therapists to gradually but systematically attempt activities which she had abandoned. The accounts of two people with vertigo whose exercise therapy was complemented by graded goal setting also indicate that this can be a useful way of pacing exposure to disorienting situations and building confidence:

I couldn't stand any sort of movement at all when this first happened. I could only sort of stand five minutes in the car, and I just had to get out because I felt so ill ... I could just walk to the bottom of the road, and I gradually went a bit further and further, and then I got on the bus, and I went a couple of stops, and the next week I would go a bit further, and I gradually built it up from there.

You have to set targets, well, the first thing I had to do was write down the things that I wanted to do. Well, there's me putting "Walking down to the Post Office", which is only down to the end of the road and to the right, but by the time I'd left [therapy] I'd done every one of my targets, which I never, ever thought I'd be able to do ... Just walking down to [town], you know, I'm sort of wobbling as I'm going down, but by the time I've been and I'm coming back I'm feeling good because I've done it.

Certain facets of cognitive-behavioural therapy focus explicitly on exposing and exploring unrealistic fears and misperceptions, and should therefore be relevant to achieving genuine reassurance with respect to the anxieties which accompany vertigo. Some therapists start by providing the individual with general information about their condition and theories relating to aetiology and recovery (Klosko et al., 1990; Nicholas et al., 1991; Pearce & Erskine, 1989). This stage is similar to the education about the cause, course and treatment of vertigo currently provided by health professionals, but with sufficient time provided for wide-ranging and detailed discussion. However, in cognitive therapy the individual is then encouraged to examine his or her own particular experience in order to detect specific, idiosyncratic symptoms and processes, and relevant beliefs, behaviour, and environmental factors (Barlow et al., 1989). Exploration can take the form of a debate with the therapist. Interestingly, Salkovskis and Clark (1991) illustrate the use of this form of therapy for people who have panic attacks by describing the case of a woman anxious about sensations of dizziness, who was successfully reassured by a rational comparison of her sensations when excited with those which preceded fainting.

### Changing attitudes

In a longitudinal study, people whose questionnaire responses had indicated that they were partially handicapped by vertigo (Yardley & Putman, 1992) were sent a second questionnaire six months later, and were asked to state whether they thought that either their vertigo or their ability to cope with vertigo had improved or deteriorated, and why. Most people reported being better able to cope and less handicapped. Some attributed their recovery to spontaneous remission or control of symptoms by drugs. However, the most common reason given for the improvement in well-being was a change in attitude. Respondents were less anxious about the causes of vertigo, and had come to terms with its effects: "I know what to expect and not to get afraid like I used to"; "I take every day as it comes and live life to the full"; "I have learned to live with it, and try to ignore it".

To a certain extent, habituation to vertigo seems to result simply from the familiarity of prolonged experience:

After a while, when you've had it so long, you sort of get used to it.

It's something I've learned to live with, it doesn't bother me as such now -- I've got used to it really.

I did worry about the future in the beginning, but now it doesn't bother me in the least. I have had [vertigo] an awful long time now, and you do get used to anything, I suppose.

Some people find that the eventual provision of a diagnosis enables them to cease worrying about their condition, and to come to terms with it:

When, gradually, you know what it was, you accept the fact that you've got that particular thing wrong with you, and it don't seem quite as bad then.

You feel if there's a handle to it [i.e. diagnosis], in many ways you can deal with it better.

I think that the only way to deal with it is to put it behind me and forget about it as much as possible, or be realistic about it. I'm very determined, I mean, I try not to let it stop me doing anything if I can, I've tried not to let it worry me. I thought "Well, at least I haven't got two horrible things [he had suspected multiple sclerosis or a brain tumour], I'm not going to die of it, so be positive.

Others simply resolve that the best solution is to try not to anticipate the worst and to make the most of the periods which are free from illness and incapacity, as recommended in the following accounts. (Since many of the excerpts in this book were taken from interviews with people from a maritime town, examples of successful coping often seemed to revolve around the very active, disorienting and somewhat hazardous pastime of sailing!)

Get on with life, see what happens today. It may not happen tomorrow, it may not happen for another six weeks -- you've got to use the time when it's not happening to do the things you normally do, do those things you like doing. If you like sailing, to go, but to go with someone who can handle the boat, so that if anything happens there's someone there who can take over, look after the situation.

I've started sailing again this summer, and it's the first time I've done that for years. I've taken the attitude that [the vertigo] has stopped me doing so many things that I've decided that I want to go sailing, and if I do feel bad after it, then I'll put up with it and enjoy myself while I'm sailing.

This latter statement illustrates how the paralysing dilemmas (see Chapters 4 and 5) posed by inconsistency between long-term goals, such as maintaining a normal life-style, and behaviour directed towards achieving sub-goals, such as avoiding activities that might provoke vertigo, can be resolved by consciously establishing priorities and devising acceptable compromises (Powers, 1973; Scheier & Carver, 1988).

Although many of the preceding accounts seem to describe a fairly easy and practical adjustment to vertigo, expressions of resolve to cope with vertigo often have a more determined, even desperate, quality:

I sat one morning on the bed, and I thought "Well, if it's going to stay, you've got to make the best of it, not let it dominate you that it's there all the time". You can't sit and think about it, you've got to get on, and I think that's what I've done.

You've got to get used to it, otherwise ... It ends up, you either cope with it, or else you end up staying home. So I made my mind up that it wasn't going to affect me, so it was all right after that.

In a study of people with multiple sclerosis, Pollock (1993) has observed that the theme of achieving control over illness by an effort of will dominates the discourse of people with chronic physical illness. She notes that this somewhat moralistic rhetoric, which is strongly reinforced by the family, fellow sufferers, healthy people, and health professionals alike, represents a means of exerting pressure on the sick or disabled to minimise their deviation from normal behaviour. The danger of such a rhetoric is that failure to "fight" the illness may then be attributed to a deficiency of motivation or weakness of character. Although this book can itself be construed as implicitly supporting the normative notion that anxious and passive reactions to vertigo are undesirable, the potentially condemnatory aspect of this discourse has been avoided by repeatedly emphasising the understandable and justifiable nature of such reactions. Moreover, as Pollock herself observes, the idea of fighting their illness is undeniably popular with sufferers, and is associated with high self-esteem. This is partly because the ideal of "successful coping" provides sick people with a positive goal, and the opportunity to demonstrate their competence

and recover a respected social identity. Indeed, it is interesting that many people linked the idea that they were able to overcome their problems with "downward comparisons" (see Chapter 5) with other people supposedly unable to achieve such control over their more severe illness:

You can't let it rule your life, that's what I always say, it's got to be pushed away as much as possible, you can't feel sorry for yourself really -- I think I'm lucky that I'm not any worse, I mean I could be arthritic or something and then not able to do anything.

There are times, like when I'm going out and I wonder "Is it going to get bad?", you know, and I think "Oh, I mustn't think that way, I've made it so far", so I think positive, rather than negative ... I mean, there are times when you feel very low, and you think -- well, I think -- "There's a lot of people worse off".

### **Active coping and the environment**

I actually got to the stage when I thought "Will I have to give up my job, will I have to move house?", and think those things through. We're lucky that we live in a bungalow, so I don't have stairs to contend with, and therefore I felt I couldn't damage myself. If anything happened that I couldn't drive, we would almost certainly have to move house to somewhere within easy reach of the station, or a better bus. That's one of the things I thought about when I was going back into a job, and I thought "Well, at least I could probably do [computer programming] sitting down, if the worst comes to the worst". It wasn't the sole reason why I chose the job, but it's something I thought about -- that if I was stuck, and sort of couldn't get around, then it was something I could do.

As the preceding section indicates, although medical diagnosis and treatment are commonly regarded as the primary method of mastering vertigo, sufferers are not passively and uncritically dependent upon the resources and guidance offered to them by health professionals. In their attempts to understand and cope with the vertigo, many individuals informally experiment with various types and dosages of drugs, as well as with acupuncture, homeopathic remedies, diets and faith healing. Moreover, many sources of information about vertigo other than that provided by medical professionals are utilised. Some people use medical textbooks to arrive at personal decisions concerning diagnosis and treatment. Others find that fellow sufferers can provide the most pertinent advice, as well as independent, compelling confirmation of tentative insights that they had arrived at as a result of their own experiences. Indeed, in a questionnaire study involving one hundred and twenty-seven people with vertigo (Yardley, 1993b), 77% of the sample reported that they had looked out for books, newspaper or magazine articles, or television programmes about vertigo, and 40% had consulted medical textbooks on the subject. In addition, 42% of the respondents

reported asking friends and relatives for practical advice, while 73% had tried to talk to other people with similar problems.

A range of strategies are employed by people with vertigo in order to control their condition and maintain an active, albeit slightly adapted, lifestyle. Some of these involve altering the way in which routine activities are performed, so as to avoid over-taxing limited perceptual-motor capabilities and exposing the individual to danger:

[on the bike] I was all right so long as I go in a straight line and no hand signals, so I didn't do any hand signals. I used to get off, and walk my bike round corners, of course not go along any main roads.

You shouldn't walk near the edge of the pavement, or a railway station, because it could happen, you know. I mean, you've got to be aware, not think of it all the time, but be aware that it may happen, and so you've got to try and keep yourself in a reasonably safe situation.

[When I have an attack] I just have to go into an office and lie down for 10 minutes, and then gradually sort of get up on my elbows, and then I sort of sit against the wall, and then sort of gently sort of rise holding on to the wall all the time.

New and ingenious ways in which common artifacts can be unobtrusively utilised for support when necessary have been identified by some individuals:

I bought the camper van so that if we went off anywhere at least there was somewhere to sleep, and I could throw up without all and sundry looking at me.

You just feel as though you can't keep your balance when there's nothing around you, but I've got a trolley, which is a four-wheeled sort of trolley, but its a very, very strong one, and I take that with me when I go out. I must have something, hold something in my right hand; that's my trolley (I can't hold my trolley with my left hand because I tip over to the right).

Another tactic described by people with vertigo is to wear flat shoes with thin, non-slip soles, thereby increasing the availability of useful somatosensory information and reducing the risk of a fall. Often sufferers find that the handicap resulting from vertigo can be reduced by altering characteristics of their physical and social environment. One person replaced boldly patterned wallpaper in the bedroom with neutral colour, so that the visual environment was less disorienting when lying in bed during an acute attack. A woman who was no longer able to drive started a local bus-users' group, and found that this brought appreciable social benefits.

In a rare published personal account of adapting to the experience of vertigo, Shereen Farber (1989) describes how she was able to find numerous constructive ways of altering her behaviour and environment in order to cope

with Ménière's disease. In the days immediately following her first acute attack of vertigo she learned to dress without having to bend over or balance on one leg, and immediately consulted the medical literature to find out more about her condition while waiting to see the doctor. During the next few weeks she trained her dog to walk more slowly, developed a new technique for bowling which did not involve adopting a disorienting position, and re-arranged the positioning of her surgical instruments at work to reduce the amount of head movement required -- even building a special stand for her surgical microscope. Subsequently, she deliberately adapted her behaviour again in order to assist the process of compensation and resumption of normal patterns of activity. However, Shereen Farber was aided by an occupational grounding in rehabilitative techniques, and she herself writes that:

Perhaps other people also would have been able to make the necessary adaptations to their occupational activities; it is certainly true, however, that the problem-solving skills and the creativity I developed during my years as an occupational therapist enabled me to rapidly adjust to the condition. Still, even with all my skills and resources, I experienced considerable emotional strain. (p. 342)

Just as social factors play an important role in the handicap associated with vertigo (see Chapter 5), adaptation can be aided by the understanding, support and example that can best be provided by either people who are close to the individual concerned, or those who have shared similar experiences (Bandura, 1982; Beyts, 1987; Pearce & Erskine, 1989). The influence of the social environment can be harnessed to enhance the benefits of therapy by encouraging the participation of the family in the rehabilitation programme, or by organising group therapy, which allows group members to benefit from the support, experience and example of each other. The latter type of support can also, of course, be found outside official programmes of therapy, in the form of self-help groups. In the United Kingdom the "Ménière's Society" is the only group of this kind for people with vertigo, while in the United States the best known group is VEDA. Interestingly, while members of the Meniere's Society interviewed in the studies reported in this book said they found the information and support it provided very helpful, they had all learned of the society through friends and the media, rather from health professionals. The existence of the society is not widely advertised in medical environments, and some doctors express a concern that patients' fears might be exacerbated by meeting with other people who may have worse forms or experiences of the same disorder. There have been no specific investigations to determine whether this is a serious risk, or whether such potential costs are outweighed by the benefits of a self-help group. However, there is evidence to suggest that patients generally welcome additional information about their illness, even when this includes potentially distressing knowledge (Ley, 1988), and that awareness of people who are worse affected by illness actually tends to boost confidence (Taylor, 1983).

## **Conclusions**

In this chapter, a wide variety of kinds of information, exploration, support and therapy have been described which each have potential or (partially) proven

utility for ameliorating different features of the experience of vertigo. Drugs, surgery, and many forms of exercise or physiotherapy can help to limit disability (disorientation and disequilibrium) and to restore and enhance sensorimotor functioning. A range of relaxation techniques, coupled with deliberate, controlled exploration of feared sensations, situations, and activities, can be used to reduce anxiety and over-arousal and exercise the exaggerated or unrealistic fears which fuel the cycle of distress and behavioural restriction. In addition, the physical and social environment can be selected or modified so as to minimise risks (ranging from instability to embarrassment) and provide information, opportunities and support, whether in the form of settings in which the demands for sensorimotor coordination are minimal and the individual can safely rest or recuperate, or in the shape of people who may be able to help with empathy, tips, encouragement, or supportive actions.

The preceding analysis of the processes involved in adjusting to vertigo suggests that, just as the negative elements of the experience of vertigo have multi-faceted and interactive characteristics, the benefits of therapy and active coping measures may well also be multidimensional. Hence, part of the therapeutic effect of exercise programmes may emanate from the concrete demonstration that movement will not provoke unbearable and unmanageable dizziness. Similarly, the value of education in relaxation techniques may actually be that confidence is enhanced by the acquisition of an active coping skill. Conversely, encouragement to experience feared sensations or resume feared activities (using methods of "graded exposure" or "systematic desensitisation") may have physical benefits, by providing the learning opportunities needed for central compensation and the development of sensorimotor coordination and skill.

Although this chapter provides an analysis of the potential usefulness of various forms of information, therapy and support, further research is needed in order to systematically evaluate the actual relative value of each therapy. For example, to date there have been no properly conducted, randomised comparisons of the various drug therapies with different exercise programmes, nor of physiotherapy with cognitive-behavioural therapy and autogenic feedback training. Moreover, quite apart from the methodological failings of the clinical trials detailed in the preceding sections of this chapter, important questions concerning how the mutual effects of various combinations of therapies might enhance (or hinder) rehabilitative processes have scarcely been investigated in the context of vertigo. Hence, it is unknown whether relaxation training or cognitive therapy might increase compliance with exercise programmes by providing the individual with a method of coping with the frightening sensations provoked by exercises, or whether behavioural therapy might be usefully combined with exercises in order to ensure that improvement in physical capabilities and confidence generalises to behaviour outside the therapeutic environment. It is to be hoped that future developments in rehabilitation will seek to understand, address and exploit the complex reciprocal processes which contribute both to the maintenance and escalation of handicap, and to adjustment and habituation to vertigo.