

Preventing incapacity in people with musculoskeletal disorders

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Musculoskeletal disorders are among the most common causes of sickness absence, long-term incapacity for work and ill-health retirement. The number of Incapacity Benefit (IB) recipients in the United Kingdom has trebled since 1979, despite improvement in objective measures of health. Most of the trend is in non-specific conditions (largely subjective complaints, often with little objective pathology or impairment). Understanding incapacity requires a biopsychosocial model that addresses all the physical, psychological and social factors involved in human illness and disability. Rehabilitation should be directed to overcome biopsychosocial obstacles to recovery and return to work. These principles are fundamental to better clinical and occupational management and minimizing incapacity. Sickness absence and incapacity from non-specific musculoskeletal conditions could be reduced by 33–50%, but that depends on getting all stakeholders onside and a fundamental shift in thinking about these conditions—in health care, in the workplace and in society.

Keywords: musculoskeletal conditions; biopsychosocial; sickness; disability; incapacity; primary care; clinical management; occupational health; rehabilitation

Introduction

Musculoskeletal disorders are among the most common causes of sickness absence (23% of sick certification), long-term incapacity for work (21% of Incapacity Benefit (IB) recipients) and ill-health retirement (15–50% in different occupational settings) [1]. This review focuses on incapacity, but that overlaps with these other issues: indeed, the approach advocated is based on preventing incapacity before people ever reach that stage. The number of people on long-term IB in the United Kingdom has more than trebled since 1979, despite gradual improvement in objective measures of health. Contrary to some sensational accounts, the IB caseload has stabilized in the past few years, but it remains persistently high. From the 1960s to the late 1990s, musculoskeletal disorders were the leading reason for IB, but since then, their numbers have fallen

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slightly, whereas mental health conditions have increased and now outnumber them [1].

Common health problems

Social security and compensation systems were originally designed for people with severe medical conditions in which there is objective evidence of disease and permanent physical or mental impairment (e.g. paralysis or amputation). That is still the stereotype of disability used in welfare debates. However, such severe conditions now account for less than one-quarter of IB recipients, and their prevalence has not increased [1]. About two-thirds of IB recipients now have less severe health conditions, the most common of which are mild/moderate mental health and musculoskeletal conditions. These are often largely subjective conditions, which are 'characterized more by symptoms and distress than by consistently demonstrable tissue abnormality' [2]. They have been described as 'common health problems' to emphasize their high prevalence in the adult population [3] or as 'subjective health complaints' to emphasize their symptomatic nature [4]. These health conditions may be 'less severe' in a medical sense, but that is not to suggest they are less important. They are very real, cause considerable suffering, fully justify health care (if desired) and are the major cause of incapacity today. Nevertheless, they are 'common health problems' in that they are similar in nature and sometimes even in degree to the bodily and mental symptoms experienced by most adults of working age [4, 5].

This review focuses on non-specific musculoskeletal conditions that commonly cause pain and may be associated with incapacity, e.g. back pain, neck pain, arm pain, etc. Population surveys show that 34% of men and 49% of women report neck pain, 24 and 42% shoulder pain, 15 and 26% arm pain, 46 and 49% low back pain and 13 and 23% leg pain during exercise [5]. When these conditions present clinically, diagnosis is often based mainly on the patient's self-report of symptoms and limitations. There is often little or no evidence of specific pathology or objective impairment, and any radiological changes may be incidental [6]. Treatment directed purely to the biological condition is often ineffective, particularly for functional and occupational outcomes, as shown by IB trends [1].

Most important, although fully accepting the reality of the symptoms, non-specific musculoskeletal conditions provide an insufficient basis to explain long-term incapacity [3]:

- (i) There is high background prevalence in the general (working) population.
- (ii) Many people with these conditions do not have any absolute physical or mental incapacity for most ordinary activities and most jobs in modern society.

- (iii) Most acute episodes settle quite quickly, with or without health care (at least sufficient to return to most normal activities, even if with some persistent or recurrent symptoms).
- (iv) Most people with these conditions remain at work, and the large majority of those who do take sickness absence return to work quite quickly (even if still with some symptoms).
- (v) There is often little evidence of disease, permanent damage or impairment.
- (vi) Overall, only ~1% of episodes of sickness absence associated with non-specific musculoskeletal conditions go on to long-term incapacity.

These are essentially normal people with what should be manageable health problems. Given proper management and support, recovery is normally to be expected, and long-term incapacity is not inevitable [3].

The dichotomy between ‘severe medical conditions’ and ‘common health problems’ is obviously an over-simplification. More accurately, this is a spectrum, with difficulties drawing any sharp boundary and in defining severity. Nevertheless, there is a qualitative difference as well as a difference in degree between the two ends of the spectrum, e.g. between advanced rheumatoid arthritis and non-specific arm pain.

The biopsychosocial model

Health care for musculoskeletal conditions is traditionally based on a medical model [7]:

- (i) Recognize patterns of symptoms and signs—history and examination
- (ii) Infer underlying pathology—diagnosis
- (iii) Apply therapy to that pathology—treatment (and rehabilitation)
- (iv) Expect the patient to recover—cure (or residual impairment)

The medical model was originally developed and still works well for severe medical conditions where clear-cut pathology permits objective diagnosis and effective treatment, e.g. osteoarthritis of the hip. However, this model is simply inappropriate for many non-specific musculoskeletal conditions, particularly when treatment is largely symptomatic and often ineffective. Yet the medical model still forms an almost inescapable framework of thinking about musculoskeletal conditions for health professionals and patients alike.

The medical model also assumes a linear relationship between disease→symptoms and disability→incapacity for work.

Yet critics argue, rightly, that the medical model is too simplistic, over-emphasizes impairment and incorrectly assumes a direct causal link

between impairment and disability. It fails to take sufficient account of the personal and social dimensions of disability.

In reaction to the limitations of the medical model and as part of the fight for disabled rights, disability groups have proposed an alternative 'social model of disability' [8, 9]. This essentially argues that many of the restrictions suffered by disabled people are not a direct and inevitable consequence of the individual's impairment but are instead imposed by the way society is organized for able-bodied living. Society fails to make due allowance and arrangements that would enable disabled people to fulfil the ability and potential they do retain, e.g. lack of wheelchair access or employment discrimination against people with health problems. The social model is now widely accepted as the basis for social inclusion and anti-discrimination policies (e.g. the Disability Discrimination Act 1995).

Both the medical and social models have some validity, but each describes only one part of the story, and each reflects a particular perspective. Both tend to ignore the other half of the story, and both fail to allow sufficiently for personal/psychological factors. There is extensive clinical evidence that symptoms and illness may originate from a health condition, but the development of chronicity and incapacity often depends on psychosocial factors. Moreover, the more subjective the health condition, the more central the role of psychological factors. There is now broad agreement that human illness and disability associated with non-specific musculoskeletal conditions can only be understood and managed according to a biopsychosocial model (Fig. 1) that includes biological, psychological and social dimensions [7, 10].

'Biopsychosocial' is a clumsy, technical term, but no one has managed to produce a better alternative. Put simply, this is an individual-centred

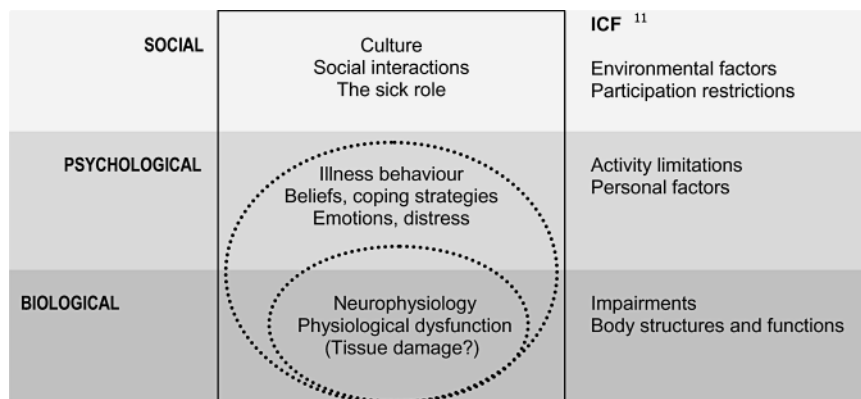


Fig. 1 A biopsychosocial model of disability, with corresponding International Classification of Functioning, Disability and Health (ICF) components [11], is shown (reproduced with permission from Waddell and Burton [3]).

model that considers the person, their health problem and their social context:

- (i) *Biological* refers to the physical or mental health condition.
- (ii) *Psychological* recognizes that personal/psychological factors also influence functioning.
- (iii) *Social* recognizes the importance of the social context, pressures and constraints on functioning.

The biopsychosocial model forms the basis of the World Health Organization International Classification of Functioning, Disability and Health (ICF), which is now widely accepted as the framework for disability and rehabilitation. ICF conceives functioning and disability as a dynamic interaction between the individual's health condition and contextual factors that include both personal/psychological and social/occupational factors [11].

Sickness, disability and incapacity for work

Words like 'ill', 'sick' and 'disabled' are often used loosely as if they were interchangeable. A biopsychosocial perspective may help to clarify these fundamental concepts.

Symptoms are subjective bodily or mental sensations that reach awareness and are 'bothersome' or 'of concern' to that person, e.g. aches and pains. Many symptoms are normal, part of life and related to activities of daily living; some represent the clinical presentation of disease; most relevant here are those that fall out with the range of what is usually accepted as 'normal' but which are not associated with any significant, identifiable disease [12].

Illness or ill health is when a health condition impacts on well-being or quality of life or, more simply, 'the subjective feeling of being unwell'. There is considerable philosophical debate about health and ill health and the boundary between them, but they are usually operationalized in terms of (the absence of) symptoms and morbidity [13–15]. Central to all definitions is that illness is an internal, personal experience.

Sickness or, more precisely, the sick role is a social status accorded to the ill person by society, with exemption from (some) normal social roles and carrying specific rights and responsibilities, i.e. sickness is an external, social phenomenon involving interactions between the individual, other people and society [16, 17].

Disability is limitation of activities and restriction of participation in life situations, in people with physical and/or mental condition(s) or impairment(s) [11, 18].

Incapacity for work is reduced capacity, functioning and performance in work because of sickness or disability (and it is difficult to distinguish capacity and performance). In principle, IB is awarded to ‘people whose medical condition is such that it would be unreasonable to expect them to seek or to be available for work’ [1].

These should all be distinguished from the following:

Disease is a disorder of structure or function of the human organism that deviates from the biological norm. The key features are that it is objective, at an organic level, and a matter of medical diagnosis [18, 19]. Note that disease may or may not lead to physical or mental impairment and does not necessarily cause symptoms, illness, disability or incapacity.

Impairment is significant, demonstrable, deviation or loss of body structure or function [11, 19, 20]. The key feature is that impairment is a matter of objective evidence: ‘detectable ... by direct observation or by inference from observation’ [11]. Note that impairment is not the same as the underlying disease but is the manifestation(s) of that disease.

The difficulty, both conceptually and in practice, is the low correlation between pathology and impairment on the one hand and illness, sickness and incapacity on the other hand (Fig. 2). Indeed, the social security dilemma today is the number of people whose incapacity is based on feeling ill (and therefore limited in their activities), claiming the sick role, legitimized by sick certification, often in the absence of proportionate disease or impairment [1].

Contrary to what patients and health professionals often assume, symptoms and disability do not necessarily mean incapacity for work. Population surveys show that about two-thirds of normal, healthy people report one or more bodily or mental symptoms in the past month [5].

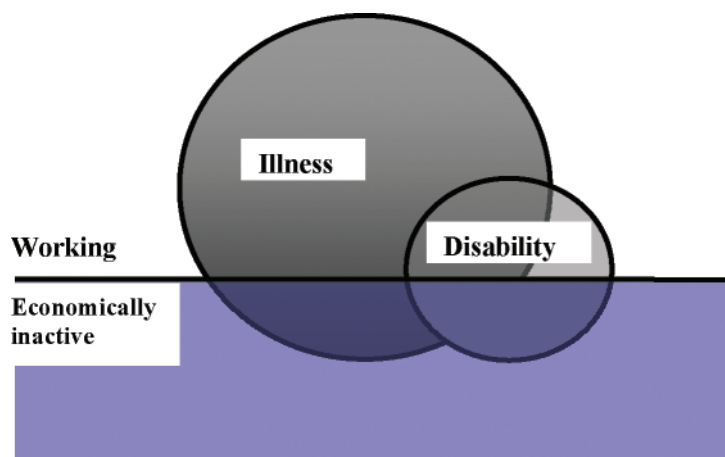


Fig. 2 The limited correlation between illness, disability and (in)capacity for work is shown (reproduced with permission from Waddell and Aylward [1]).

Most of these people do not regard themselves as ‘ill’, do not seek health care and do not have any sickness absence. Similarly with disability, about half the adults who meet the Disability Discrimination Act (1995) definition of ‘disabled’ are nevertheless working, including 25% of those who say their limitations are severe. Employment rates vary greatly with the type of disabling condition, and musculoskeletal conditions are about average (48%) [21]. Changing the assumption that symptoms and disability automatically imply incapacity is absolutely fundamental to changing the culture of incapacity [1].

Management of non-specific musculoskeletal conditions

Non-specific low back pain accounts for roughly half of all sickness absence, long-term incapacity and ill-health retirement due to musculoskeletal conditions. It was the leading cause of incapacity for many years, so has been most intensively studied, and there is most evidence available about its effective management. Yet many of the concepts and principles are probably common to other musculoskeletal disorders, bodily pains and psychosomatic complaints. Low back pain may then serve as the best available exemplar for non-specific musculoskeletal conditions.

International guidelines for acute low back pain agree on the basic principles of clinical management [22–24]:

- exclude serious pathology;
- provide reassurance;
- simple symptomatic measures;
- avoid over investigation, labelling and medicalization;
- advise and support continuation of ordinary activities as normally as possible;
- advise and support remaining at work or early return to work; and
- if not returned to ordinary activities and work by 4–6 weeks: arrange intensive reactivation and rehabilitation.

International occupational health guidelines agree that the same principles should be applied to low back pain at work [25, 26].

Assessment:

- diagnostic triage;
- screening for ‘red flags’ (indicators of possible serious pathology) and neurological problems; and
- identification of potential psychosocial and workplace barriers for recovery.

Management:

- advice that low back pain is a self-limiting condition; and
- encourage and support remaining at work or early (graduated) return to work, if necessary with modified duties.

It is important to emphasize that these are biopsychosocial principles of clinical and occupational health ‘management’ rather than biomedical principles of ‘treatment’. The ‘bio’ part involves management of the health condition directed both to control symptoms and to improve function; the ‘psycho’ part involves relieving distress and modifying dysfunctional beliefs and illness behaviour; the ‘social’ part involves minimizing the sick role (Fig. 1).

The European clinical guidelines [24] provide the most comprehensive and up-to-date systematic review of the scientific evidence on the effectiveness of treatment for low back pain. Randomized controlled trials [27, 28] show that such guidelines can be implemented in clinical practice and can improve clinical outcomes. The UK occupational health guidelines [25] provide a review of the evidence to support occupational management, and there is now extensive evidence that a rehabilitation approach can improve occupational outcomes [3, 6]. Most impressive, since 1994–95, there has been a 42% decrease in the annual number of new awards of IB for low back pain in the United Kingdom [1].

Rehabilitation for non-specific musculoskeletal conditions

The definition of vocational rehabilitation is broad: ‘the process whereby those who are ill, injured or have a disability are helped to access, maintain or return to employment or other useful occupation’ [29]. Traditional rehabilitation was designed for severe medical conditions, as a separate, second-stage intervention, after health care had no more to offer. The goal was then to restore patients as far as possible to their previous condition and to develop to the maximum possible their (residual) physical, mental and social functioning [30]. This was essentially a matter of overcoming, adapting or compensating for permanent impairment. It remains an appropriate approach for many severe medical conditions, but it is inappropriate for non-specific musculoskeletal conditions where there is little or no severe and permanent impairment.

Obstacles to recovery

It has already been argued that most non-specific musculoskeletal conditions should be manageable, and recovery is generally to be expected.

This reverses the question: it is not what makes some people develop long-term incapacity, but why do some people with non-specific musculoskeletal conditions not recover as expected? It is now widely accepted that biopsychosocial factors contribute to the development and maintenance of chronic pain and disability. Crucially, they may also act as obstacles to recovery and return to work. The logic of rehabilitation then shifts from dealing with residual impairment to addressing the biopsychosocial obstacles that delay or prevent expected recovery [3, 31].

Biological obstacles

The main biological obstacles to return to work relate to the health condition; yet for most non-specific musculoskeletal conditions, these should not be insurmountable. Symptoms are often felt to be the main obstacle to work, but it has already been emphasized that symptoms *per se* do not necessarily mean incapacity (Fig. 2).

Health care is usually regarded as (part of) the solution, but health care (however well intentioned) can sometimes become an obstacle, e.g. when unhelpful medical advice, inappropriate sick certification or waiting list delays block more appropriate management and early return to work.

Personal/psychological obstacles

Psychological factors, sometimes termed yellow flags [31], are central to (in)capacity associated with non-specific musculoskeletal conditions and may form obstacles to (clinical) recovery [32]:

- (i) personal experience of illness and disability;
- (ii) perceptions and expectations;
- (iii) attitudes and beliefs, emotions and coping strategies;
- (iv) (dis)incentives, motivation and effort; and
- (v) uncertainty.

Perceptions about the relationship between health and work, sometimes termed blue flags [31], may form more specific obstacles for return to work [32]:

- (i) physical and mental demands of work;
- (ii) low job satisfaction;
- (iii) lack of social support at work (co-workers and employer);
- (iv) attribution of health condition to work (whether to an 'accident/injury' or to the physical and mental demands of work);

- (v) beliefs that work is harmful and that return to work will do further damage or be unsafe; and
- (vi) low expectations about return to work.

Social/occupational obstacles

Return to work is a social process that depends on organizational policy, process and practice, which can also become obstacles and are sometimes termed black flags [31, 32]:

- (i) inappropriate medical information and advice about work; sick certification practice;
- (ii) lack of occupational health support;
- (iii) belief by employers that symptoms must be ‘cured’ before they can ‘risk’ permitting return to work, for fear of re-injury and liability;
- (iv) lack of suitable policies/practice for sickness absence, return to work, modified work; and
- (v) loss of contact and lack of communication between worker, employer and health professionals.

Rehabilitation: addressing biopsychosocial obstacles

Recognizing and addressing all the health-related, personal and occupational obstacles to recovery and return to work are fundamental to successful rehabilitation for non-specific musculoskeletal conditions. Biopsychosocial problems need biopsychosocial solutions, and rehabilitation should address all these issues, tailored to meet individual needs (Fig. 3). The same principles underpin job retention, return to work and reintegration.

More generally, this is not just ‘rehabilitation’ but about fundamental principles of effective management. It implies that rehabilitation is no

Dimensions of disability	Obstacles to (return to) work	Corresponding rehabilitation intervention	Interactions Communication
Bio-	Health condition (+ health care) Capacity + activity level -v- job demands	Effective and timely health care Increasing activity levels & restoring function Modified work	
Psycho-	Personal / psychological factors Psychosocial aspects of work	Shift perceptions, attitudes & beliefs Change behaviour	
Social	Organisational + system obstacles Attitudes to health and disability	Involvement of employer critical Social support Organisational policy, process & attitudes.	
			All players onsite

Fig. 3 Biopsychosocial obstacles to return to work are classified, and the corresponding rehabilitation interventions are shown (reproduced with permission from Waddell and Burton [3]).

longer a separate, second stage after medical treatment is complete: rehabilitation principles should be integral to clinical and occupational management from the very beginning.

Clinical management of non-specific musculoskeletal conditions

The primary goal of health care for non-specific musculoskeletal conditions is to relieve symptoms. However, for those patients who do not recover quickly, continued symptomatic treatment alone is not enough. It is then necessary to rethink the goals of clinical management, which should be both to control symptoms and to restore function, and these go hand in hand. The immediate goal is to overcome activity limitations and restore activity levels; the ultimate goal is to improve functioning and social participation: the common element is increasing activity.

All health professionals who care for non-specific musculoskeletal conditions should not only be interested in but must take some responsibility for occupational outcomes. Too often, advice about work is unrealistic or frankly harmful and given without consideration of its implications. It is particularly important not to leave patients with the often-unfounded belief that work has caused symptoms or would be harmful to recovery.

Occupational health has always had a greater focus on the restoration of function and occupational outcomes, but there needs to be a fundamental shift in the culture of all health care. This also requires better communication and cooperation between primary care and occupational health professionals [33, 34].

Occupational management of non-specific musculoskeletal conditions

The management of non-specific musculoskeletal conditions is not just a medical issue but is also an occupational issue that requires proper workplace policies, attitudes and interventions. Workers with musculoskeletal symptoms may find their work difficult, painful or stressful. They may find, or expect, it to be difficult to return to their normal duties. So, work must accommodate non-specific musculoskeletal conditions: 'Work should be comfortable when we are well, and accommodating when we are ill' [35]. Accepting that non-specific musculoskeletal conditions are an inevitable part of (working) life, occupational management may focus more realistically on the secondary prevention of disabling consequences. This includes several overlapping strategies [36, 37]:

- (i) positive health at work strategies;
- (ii) early detection and treatment of mild to moderate symptoms;
- (iii) accommodation of temporary functional limitations from persistent or recurrent symptoms; and
- (iv) interventions to minimize sickness absence and promote (early) return to (sustained) work.

This requires employers, unions and insurers to rethink occupational management for non-specific musculoskeletal conditions. Employers have a general ‘duty of care’ to their employees. Under UK and European legislation, employers have a statutory duty to conduct suitable risk assessments to identify hazards to health and safety and to reduce the risks to employees as far as reasonably practicable. But as well as controlling risks, it is important to make jobs accommodating of non-specific musculoskeletal conditions, sickness and disability. A ‘healthy working life’ goes even further: it is ‘one that continuously provides working-age people with the opportunity, ability, support and encouragement to work in ways and in an environment which allows them to sustain and improve their health and well-being’ [38]. Sickness absence management, assisting return to work and promoting rehabilitation may not be legal obligations, but they are matters of good practice, good occupational management and good business sense (Table 1).

Table 1 The main elements of sickness absence management [39, 40] (reproduced with permission from Waddell and Burton [3])

Development of clear corporate policy, processes and responsibilities, including accurate recording and monitoring of sickness absence
Commitment of senior management
Involvement, training and auditing of supervisors and line managers
Early (and continued) contact with the absent worker
Facilitating contact with health care and access to occupational health services
Availability of temporary modified work (if required)
Involvement of the absent worker in return to work decisions, planning and process

Pathways to work

The *Pathways to work* pilots run by the UK Department for Work and Pensions [1] are based on and provide a test of the biopsychosocial approach described here. *Pathways* is an integrated package of support specifically designed to help IB recipients manage their health problems and get back to work. It is particularly appropriate for non-specific musculoskeletal conditions (and common mental health problems—which often coexist). Over 58,000 people took part in the pilots, and *Pathways* is now being rolled out to one-third of the United Kingdom. Early

outcomes show much higher take-up rates than expected and an 8–10% increase in return to work rates, which is much better than any such social security initiative has ever achieved worldwide [1].

Conclusion

Some people with musculoskeletal pathology will always require specialist treatment and rehabilitation, but most non-specific musculoskeletal conditions are, and should be, managed in primary care and the workplace. The challenge then is to incorporate basic rehabilitation principles into clinical and occupational management. Randomised controlled trials (RCTs) of clinical guidelines [27, 28] and biopsychosocial rehabilitation [3, 6, 24, 41] for low back pain show how management can be improved and how that can lead to better clinical and occupational outcomes. The number of people on IB in the United Kingdom increased 3-fold within a generation [1], for no good biological reason, and there is no biological reason that could not be reversed. The *Pathways* pilots and the 42% reduction in new awards of IB for low back pain show what can be achieved [1]. The UK government's stated target is to reduce the number of people on IB by 1 million. We could reduce sickness absence and the number of people who go on to long-term incapacity by at least one-third to one-half and in principle by much more (fully recognizing the practical problems of delivering that vision). To achieve this, however, depends on getting all stakeholders onside [42] and a fundamental shift in the culture of how we think about and manage non-specific musculoskeletal conditions—in health care, in the workplace and in society [1, 3].

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Declaration of interests

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Biographical details

Professor Gordon Waddell, CBE, DSc, MD, FRCS, was originally an orthopaedic surgeon with a long-standing interest in back pain. His academic work has ranged through clinical assessment, non-organic signs, clinical psychology, the biopsychosocial model, clinical and occupational health guidelines, disability evaluation and medicolegal assessment, and social policy. He has held honorary professorial appointments in Orthopaedic Surgery in Glasgow, Behavioural Medicine in Manchester and currently in the Unumprovident Centre for Psychosocial and Disability Research in the University of Cardiff. Since 1994, he has been a consultant to various government departments and research bodies in the United Kingdom, United States, Canada and Sweden.

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