

THE CHARTERED SOCIETY OF PHYSIOTHERAPY

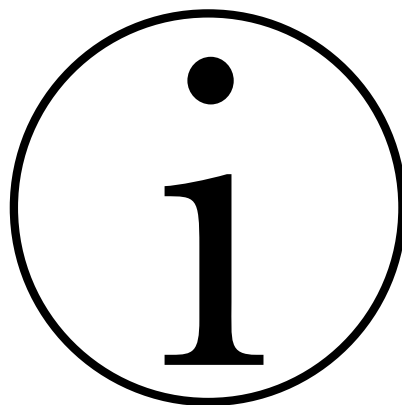
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Employment Relations & Union Services: Health & Safety – Work-related Strain Injuries (Musculoskeletal Disorders)

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1. Introduction

“Is it my imagination or do most physical therapists seem like they consistently have some sort of musculoskeletal disorder?”

Observation posted on ‘Physical Therapy Forum by RehabEdge’ website, under the topic heading “Therapists in Pain!!!!!!!!!!”

Neck and upper limb musculoskeletal disorders are a “significant problem” amongst workers across all EU member states according to the European Agency for Safety and Health at Work. An unacceptable irony given that physiotherapy forms part of the treatment package for musculoskeletal injuries is that CSP members are at particular risk themselves from this type of injury, sustained during the course of their work.

This briefing paper has been produced following a resolution at the CSP’s annual representatives’ conference (ARC) in 1999, which called on the Society to investigate and produce guidance for members on work-related musculoskeletal disorders. It examines, in some detail, available research evidence; discusses the prevalence of such injuries; considers which groups of CSP members and which specialties within the profession may be more at risk; and offers practical recommendations for preventative action, based on risk assessment, where these have been identified. This paper is aimed mainly at CSP safety representatives, but is also targeted at CSP stewards, managers, employers and clinical educators. Members, especially those particularly at risk such as younger relatively inexperienced members, members whose work involves considerable moving and handling and those performing manual therapy techniques may also find it of interest.

2. Definition

The term ‘work-related musculoskeletal disorders’ (WRMSDs) describes “a wide range of inflammatory and degenerative diseases and disorders that result in pain and functional impairment” (Kilbom et al, 1996). They arise when the individual is exposed to work activities and work conditions that significantly contribute to their development or exacerbation but which do not act as the sole determinant of causation (World Health Organisation, 1985).

This briefing paper specifically looks at the broad range of WRMSDs affecting CSP members. It covers work-related upper limb disorders (WRULDs), ie arm and hand/wrist/thumb pain in the context of physiotherapy practice, but also discusses back pain: the focus of most of the published research on musculoskeletal injuries affecting physiotherapists. For a general overview of repetitive strain injury (RSI), please see Health and Safety Briefing Pack No 8 Repetitive Strain Injury, CSP May 1999.

3. Prevalence of strain injuries in physiotherapy and physiotherapists

3.1 Overview of research

International studies suggest that musculoskeletal injuries amongst healthcare workers are common and physiotherapists are no exception, despite the specialist knowledge of body mechanics and injury prevention that they possess.

Concerns amongst CSP members about discomfort and possible musculoskeletal damage resulting from the practice of physiotherapy are not new: a letter appeared in Physiotherapy in 1990 asking for ideas on how to protect thumbs, for example. However, there has been little extensive study into the prevalence of musculoskeletal injuries amongst CSP members.

The latest CSP survey of its members took the form of a general equal opportunities survey of 20% of the CSP’s membership in 1999. Of the 2,283 respondents (a response rate of 46%) 7.2% indicated that they had sustained a disabling back or neck condition: a significant increase on the 4.4% who reported the same during the previous survey in 1994.

The CSP’s perception, based on anecdotal evidence from members, is that musculoskeletal injuries amongst physiotherapists and assistants are widespread but under-reported. Some of the key findings from the available international research are summarised below:

Musculoskeletal injuries in physiotherapists – key findings

- Physiotherapists are susceptible to WRMSDs because of the nature of their work, ie repetitive and labour-intensive;
- Younger physiotherapists, ie below the age of 30, are more at risk, particularly during the first 4-5 years of practice;
- Lifetime prevalence (ie have you ever had a work-related injury?) may be as high as 90%;
- As many as 1-in-6 physiotherapists may move specialty or leave the profession as a result of a musculoskeletal injury;
- The highest prevalence of injury is to the low back, followed by wrists and hands;
- Lifting or transferring patients is the job task most likely to lead to injury;
- Most physiotherapists sustaining WRMSDs self-treat or seek treatment from a colleague rather than from a doctor or from occupational health;
- Physiotherapists who suffer a WRMSD respond to the injury by changing their working habits;
- Failure to take rest breaks, inadequate staffing levels and a heavy caseload (work organisation factors) contribute to the risk of injury

Source: International research studies (discussed further below)

Cromie et al (2000, Australia) reported lifetime prevalence of work-related musculoskeletal disorders amongst physiotherapists to be 91%. One-in-six physical therapists moved within or left the profession as a result of their work-related musculoskeletal injury, with younger therapists reporting a higher prevalence of injury in most body areas: “more than 50% had their first episode as a student or in their first 5 years of practice.”

Certain symptoms were found to be associated with certain risk factors. Issues around the organisation of work, such as workload, the frequency or repetitiveness of treatment, rest breaks and scheduling of the workday etc, were found to be more closely associated with neck and upper-limb symptoms. ‘Postural risk factors’, such as the working position adopted by the therapist, “were related to a higher prevalence of spinal symptoms.”

As the table below shows, over 80% of Cromie’s respondents had musculoskeletal symptoms in at least one anatomical area during the 12-month period of the study. Additionally, over 60% had “moderately severe” symptoms that necessitated seeking treatment; 40% had to compromise their leisure activities or other daily living activities and 14% were prevented from working for some period of time.

Table 1: Reported musculoskeletal symptoms by Australian physical therapists

Body Area Affected	12-month prevalence (%)	Symptoms lasting for 3 days or longer (%)	Prevented from working (%)
Low back	62.5	38.4	7.8
Neck	47.6	29.7	3.5
Upper back	41.0	22.9	1.7
Thumbs	33.6	14.9	2.6
Shoulders	22.9	12.5	1.1
Wrists/hands	21.8	13.2	1.7
Elbows	13.2	8.2	0.7
Knees	11.2	4.3	1.1
Hips	7.3	4.7	0.6
Ankles	7.1	2.8	0.7
Total % affected	82.8	63.8	14.0

Source: Cromie J et al (2000) 'Work-Related Musculoskeletal Disorders in Physical Therapists: Prevalence, Severity, Risks and Responses' Physical Therapy Vol 80 No 4 April 2000

Holder et al (1999, USA) found that 32% of physical therapists (PTs) and 35% of physical therapy assistants (PTAs) reported sustaining a musculoskeletal injury. The highest prevalence of injury was to the low back (62% of PTs; 56% of PTAs). Upper back injuries and injuries to the wrist (23%) were the next most commonly sustained injuries. In response to sustaining these injuries the therapists reported that they changed their work habits by improving their body mechanics, increasing the use of other personnel and by frequently changing their work position. Transferring patients was the task being performed most often when an injury was sustained. Lifting, responding to an unanticipated or sudden movement by a patient, and performing manual therapy were also reported as the main activities being carried out when injury occurred.

Bork et al (1996, USA) found the highest prevalence of work-related musculoskeletal disorders amongst physical therapists to be in the low back (45%), followed by wrist/hand (29.6%), upper back (28.7%) and neck (24.7%). "Lifting or transferring dependent patients" was listed as "the job factor most likely to contribute to job-related musculoskeletal disorders." A quarter of the respondents (25%) said that they had had to change their working activities as a result of their work-related musculoskeletal injury. The most common changes made included "altering the frequency or technique of manual therapy, avoiding stressful positions, and improving body mechanics." Forty per cent (40%) indicated that they had sustained an injury outside of their practice setting that was later exacerbated by their work as a physical therapist. The study also noted that "The prevalence of work-related musculoskeletal disorders in physical therapists also was affected by work setting, practice specialty, age of patient, and gender of therapist."

3.2 Risk factors

The physically demanding nature of physiotherapy itself may contribute to the development of musculoskeletal problems. Elements of physiotherapy practice which may be considered risk factors include, for example, the performance of treatments which demand repetitive movements or where continuous bending, twisting and lifting occurs; the tasks, postures and high force levels required in performing certain manipulations and mobilizations; providing manual resistance; the difficulty in performing safe handling techniques due to the patient's condition and size or shape, particularly where there is a restricted workspace, and a work environment made stressful because of an emphasis on high throughput (productivity) and/or understaffing. Age and gender have also been identified as possible risk factors.

Strangely, the vulnerability of the CSP member to musculoskeletal disorders may even be compounded by their specialist knowledge. Members may feel inhibited about reporting accidents and seeking treatment when the specialist knowledge of biomechanics they possess may lead them to believe that they shouldn't be in the position of sustaining an injury of this type in the first place.

"We tend to think that we're not going to get hurt because we have all this knowledge about on-the-job injuries. Our knowledge of ergonomics might help us avoid injury, but we're still forced into bad postures, and we're lifting more than we should."

Teri Jennings, physical therapist, New York, USA (quoted in Fosnaught, 1999)

Cromie et al's (2000) study of Australian therapists suggests that workload is a significant factor in the sustaining of musculoskeletal injury. The study found that of the 403 physical therapists who treated a large number of patients a day, 167 (41.4%) "reported that this was a major factor contributing to their WMSDs. Of the 412 therapists who reported working in the same position for long periods, 171 therapists (41.5%) indicated that this risk factor contributed to their work-related symptoms in a major way."

Holder et al's (1999) study reported that 70% of therapists and 68% of assistants "who sustained a musculoskeletal injury reported that their symptoms were exacerbated by clinical practice." Four work activities were reported to particularly contribute to recurrence of symptoms. These were maintaining a position for a long period of time (36%); lifting (35%); transferring a patient (30%) and performing manual therapy (28%). A fifth of assistants (20%) also reported that working in an awkward or cramped position led to a recurrence of symptoms. Table 2 summarises Holder et al's findings on work activities leading to occupational musculoskeletal injury, whilst Table 3 highlights the work activities reported as exacerbating an injury or causing symptoms to recur.

Table 2: Work activity causing occupational musculoskeletal injury among American physical therapists and physical therapy assistants

Activity causing injury	PTs (%)	PTAs (%)
Transferring a patient	30	36
Lifting	25	24
Responding to an unanticipated or sudden movement by a patient	24	33
Performing manual therapy	21	11
Maintaining a position for a prolonged period of time	14	16
Working in an awkward or cramped position	13	19
Working when physically fatigued	13	6
Bending or twisting	10	10
Slips, trips and falls	3	6
Instructing a patient	2	2
Applying modalities	1	1

Table 3: Work activity causing recurrence of occupational musculoskeletal injury among American physical therapists and physical therapy assistants

Exacerbating activity	PTs (%)	PTAs (%)
Maintaining a position for a prolonged period of time	36	24
Lifting	35	26
Transferring a patient	30	24
Performing manual therapy	28	15
Performing repetitive tasks	20	14
Working in an awkward or cramped position	18	20
Reaching/working away from the body	18	11
Bending or twisting	16	11
Performing overhead activities	10	9
Squatting	2	6
Walking	2	4
Climbing stairs	0	4

Source for Tables 2 & 3: Holder N et al (1999) 'Cause, Prevalence, and Response to Occupational Musculoskeletal Injuries Reported by Physical Therapists and Physical Therapy Assistants', Physical Therapy Vol 79 No 7 July 1999

Bork et al (1996) asked respondents to indicate job factors that they thought were problematic for the development of work-related musculoskeletal disorders. The results are summarised in Table 4, below:

Table 4: Most important contributing job factors to WRMSDs, by respondents' indications (USA)

Job task leading to injury	%
Lifting or transferring dependent patients	25.7
Treating an excessive number of patients in one day	19.0
Working in awkward and cramped conditions	18.4
Working in the same positions for long periods (eg standing, bent over, sitting, kneeling)	18.4
Performing manual orthopedic techniques (joint mobilizations, soft tissue mob etc)	17.7
Continuing to work while injured or hurt	15.2
Performing the same task over and over	15.2
Bending or twisting your back in an awkward way	14.8
Not enough rest breaks or pauses during the day	14.6

Unanticipated sudden movement or fall by patient	14.6
Working with confused or agitated patients	13.9
Work scheduling (overtime, irregular shifts, length of workday)	13.1
Assisting patients during gait activities	11.9
Working near or at your physical limits	11.6
Reaching or working away from your body	10.4
Carrying, lifting, or moving heavy materials or equipment (eg, continuous passive motion machines)	7.0
Inadequate training on injury prevention	1.2

Source: Bork B et al (1996) 'Work-Related Musculoskeletal Disorders Among Physical Therapists' Physical Therapy Vol 76. No 8. August 1996

Another potential risk factor to which some CSP members may be increasingly exposed and which may lead to repetitive strain injury (RSI) is the use of Display Screen Equipment (DSE). For more information please see the leaflet **"Working with VDUs"**, available from the Health and Safety Executive (HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA, Tel: 01787 881165; Fax: 01787 313995).

4. Research findings by type of injury

4.1 Back strain

According to the Health and Safety Executive (HSE) back strain is one of the most common work-related illnesses in Britain. Annually, it is estimated that more than 250,000 women workers are affected by it, with one in ten sufferers taking sick leave from work because of back pain. The NHS Plan declared that "Backpain accounts for 119 million days of certified incapacity" (para 11.17), whilst workers taking time off work because of back pain account for a quarter of all work-related sick leave according to the Trades Union Congress (TUC). The TUC also estimates that one in six unemployed women are out of work because of their back pain. Back strain also affects women workers more as they get older, although back pain "sets in" earlier in women workers than their male counterparts. Back pain affects 35% of young women and 30% of young men according to the TUC.

Perhaps not surprisingly given the above, back pain is the area where the majority of research into musculoskeletal injuries amongst physiotherapists has been conducted. However, it should be noted that different researchers use different definitions of back pain and different sampling methods, so the results examined below are not directly comparable. An 'at-a-glance' summary of the different research is highlighted in Table 5, with a more detailed look at the individual pieces of research following.

Table 5: Summary of research into back pain in physiotherapists

Research study	Prevalence of back pain	Main cause identified
Cromie et al (Australia, 2000)	62.5% low back 41% upper back	Low back: working in awkward positions; Upper back: working in the same position for long periods
Holder et al (USA, 1999)	Upper back: 23% Low back: 62% (physical therapists), 56% (physical therapy assistants)	Transferring patients
Mierzejewski & Kumar (Canada, 1997)	49% low back pain	Patient handling
Bork et al (USA, 1996)	45% low back 29% upper back	Lifting or transferring dependent patients
Ellis (UK, 1993)	Low back pain reported by 27% of undergraduate physiotherapy students	Handling patients
Scholey & Hair (UK, 1989)	38%	Rehabilitation identified as a particularly stressful working environment
Molumphy et al (USA, 1985)	29% low back pain lasting 3 days or longer	Treating patients, lifting with sudden maximal effort

Cromie (2000, Australia)

Cromie et al found that “working in awkward positions was associated with increased risk of low back symptoms” whilst “working in the same position for long periods was associated with increased risk of upper back symptoms.” Prevalence of back pain among Australian physical therapists in Cromie’s study was 62.5% in the low back and 41% in the upper back (see Table 1).

Holder (USA, 1999)

Holder et al, in a study of 667 physical therapists in the US, found that 62% of physical therapists and 56% of assistants reported injuries to the low back. The type of injury sustained varied by practice setting, with 75% of therapists “practicing in a rehabilitation environment at the time of injury” reporting more low back injuries than “colleagues reporting injuries in outpatient settings (64%), hospitals (63%), or skilled nursing facilities (52%).” Physical therapy assistants injured in hospitals also reported having a higher level of low back injuries (65%) when compared with other practice settings such as rehabilitation (36%).

Mierzejewski and Kumar (1997, Canada)

Mierzejewski and Kumar’s study of 311 physical therapists in Edmonton, Canada, found that 49% reported low back pain due to work. According to this study “the initial onset of work-related low back pain frequently occurred within the first five years of practice as a physical therapist and before the age of 30” (60% experienced injury before the age of 30 and 35% sustained an injury between the ages of 20-25 years).

Hospitals and private practice were the work settings where the highest incidence of injury occurred. Some 35% of the therapists surveyed continued to work despite their back pain, whilst 13.7% were required to stop working as a result of the injury. Patient handling was the single greatest factor contributing to work-related low back injury, affecting 31% of respondents. The researchers concluded that

“the physical therapy profession clearly has an abundance of risk factors associated with the development of back pain.”

Bork (1996, USA)

Bork et al undertook a 12-month study of “job factors that may be associated” with work-related musculoskeletal disorders in physical therapists in the United States. Questionnaires were returned from 928 respondents, giving a response rate of 80%. The highest prevalence found was in the low back (45%), with the upper back accounting for the third highest prevalence rate (28.7%). Low back pain accounted for the highest incidence of absenteeism during the 12-month period of the study. Lifting or transferring dependent patients was the job factor identified as being most likely to contribute to injury.

Bork also identified work specialty as an important risk factor. Respondents involved in “neurologic rehabilitation” had a higher prevalence of self-reported musculoskeletal symptoms in the upper and low back (and knees) than those colleagues not involved in this specialty. Physical therapists in paediatrics also had a higher prevalence of self-reported musculoskeletal symptoms in the upper back than colleagues who primarily treated adult patients.

The age of the therapist was also concluded to be a factor in the prevalence of work-related musculoskeletal injury. Prevalence for injury in the low back ranged from 42%-52% from age 25-50 years. After the age of 50 the prevalence of low back musculoskeletal injury declined to 34%. The researchers concluded that this lower prevalence of low back pain in older physiotherapists

“may be related to a survivor bias. As physical therapists become older, the survivors are those who develop strategies for coping with the physical demands of the job and who continue to treat patients. The strategies may include modification of treatment techniques, performing therapies that are less strenuous, and increasing the use of support staff to perform the physically difficult or fatiguing work.”

The study concluded that “specific strategies should be developed to reduce work-related musculoskeletal disorders in the practice of physical therapy.” Therapists who failed to adopt injury-prevention strategies “may retire early, move into a new field such as academia, or continue to work with occasional musculoskeletal pain.”

Scholey and Hair (1989, UK)

Scholey and Hair found an annual prevalence of work-related back pain of 38%. The initial episode of back pain amongst the sample of 243 CSP members occurred most frequently in those aged between 21-30 years old. In this study, significantly more of the physiotherapists than those subjects in the control groups identified the presence of occupational risk factors – ie they attributed their back pain to work and the initial episode of back pain to an incident at work more frequently than the control group did. Younger physiotherapists were seen to be “particularly vulnerable, having a higher than expected annual prevalence of back pain,” although “only 52% reported (receiving) further training in lifting skills after qualification.”

This study also found that 88% of CSP members who reported having experienced 1-5 episodes of back pain had taken steps to avoid a recurrence (compared to 50% of the control group). These steps included back care (43%), exercise (20%) and change of bed or chair (37%). Only 43% of CSP members with back pain had consulted their GP, as opposed to 61% of the control group. The physiotherapists in the study took less time off work than the control group as a result of their injury.

Rehabilitation was identified as a particularly stressful working environment and one which “seemed to figure prominently when physiotherapists were asked in which area they were working when they initially experienced their back pain.” Scholey and Hair question the effectiveness of back care education and considered that

“the working environment (of physiotherapy) was too stressful and predisposed physiotherapists to experience back pain despite their knowledge and skills.”

They also comment on a missed opportunity in terms of education and the promulgation of good practice:

“It appears that the present pre-and post-registration training in lifting skills is not reducing the level of back pain experienced by physiotherapists below that found in the general population. Modifying the training may not necessarily reduce the back pain problem, as there is evidence that lifting is not the only cause of back pain. However, it seems that an opportunity is being overlooked in turning the clinical situation into an environment for acquiring the problem-solving skills associated with safe patient handling.”

Molumphy (1985, USA)

Molumphy et al surveyed 344 physical therapists within a 12-month period. Twenty nine percent (29%) reported having work-related lower back pain lasting three days or longer and 83% were treating patients when the low back pain was first experienced.

Sixty four percent (64%) were age 30 or younger when the first episode of back pain occurred and 58% experienced back pain for the first time within four years of becoming qualified, pointing to a particular vulnerability amongst younger, newly qualified physiotherapists. The prevalence of back pain in younger physiotherapists was thought to be the result of newly qualified therapists tending to work in “physically demanding clinical areas such as rehabilitation and intensive care units”: the two most prevalent work settings within which back pain initially occurred.

The prevalence of low back pain amongst younger physiotherapists in these settings was thought to be because, “in general, patients in acute and rehabilitation centres are newly injured and require intensive functional training, which may contribute to the possibility of error in patient and therapist judgement of the patient’s capabilities.” The researchers in this study believed that:

“young physical therapists, new to the field, are not experienced in proper patient handling techniques or in judging patient capabilities. Inexperienced physical therapists may also feel uncomfortable requesting assistance with patient handling from other staff members. This lack of experience may lead to hazardous situations that increase the risk of incurring work-related low back pain.”

“Lifting with sudden maximal effort”, when dealing with an unexpected patient fall, for example, and “bending and twisting” were the most common methods of injury resulting in work-related low back pain. Some 30% of the Californian physiotherapists in the study reported that they had either changed their work setting (18%) or reduced patient contact hours (12%) as a result of the work-related back pain. This changing of work practices was thought to explain why the percentage of individuals experiencing work-related low back pain for the first time decreased as the “age and years of experience of the physical therapist increased.”

4.2 Wrists, hands and thumbs

“A physiotherapist’s hands are a vital tool in the assessment and treatment of patients and it is crucial that they are protected from injury wherever possible.”

Reglar and James (1999)

Several studies have indicated that, after low back pain, wrist and hand injuries are the most prevalent type of musculoskeletal injury affecting physiotherapists. Reglar and James discussed the possibility that the “degree of muscle activation” involved in manual techniques “could predispose” the development of work-related musculoskeletal disorders in physiotherapists. In their study, 43 physiotherapists (57%) working in outpatients “reported having experienced an episode of thumb pain” compared with only 15 (20%) of the control group. Eighty six per cent (86%) attributed their thumb pain to their job, and 67% reported that they had had to change the way they performed a task at work because of their thumb pain. Such change included “using the ulnar border of the hand, using the pain-free thumb and reinforcement with the other hand, splints or tape.” Three respondents reported avoiding mobilizations altogether. The researchers concluded that “The high rates of thumb pain in physiotherapists aged under 40 years could be associated with increased exposure to manual therapy techniques as experience is gained in outpatient physiotherapy.”

Almost a third of the therapists surveyed by Bork et al had experienced symptoms of work-related wrist and hand problems. According to the Bork study: “Physical therapists who routinely performed manual therapy were 3.5 times more likely to have had musculoskeletal symptoms in the wrists and hands than physical therapists who did not routinely perform manual therapy.” Physical therapists in outpatient facilities were found “more likely to have wrist or hand symptoms than were their hospital-based counterparts.”

Over 60 respondents admitted to changing their manual therapy activities due to painful hands or fingers. The changes adopted included “reduced scheduling of patients needing manual therapy, allowing time for

breaks, and modifying techniques to reduce the amount of stress placed on the wrists and hands.” The researchers concluded that:

“This finding suggests that manual therapy techniques are a major source of upper-limb musculoskeletal stress.”

Holder et al found that, along with the upper back, wrist and hand injuries were the second most prevalent anatomical area of injury, affecting 23% of their respondents (physical therapists and assistants in the United States). Holder’s study also reported that the practice setting was an important factor in the development of wrist or hand injury. Therapists in skilled nursing facilities and outpatient settings (38% and 32% respectively) reported sustaining a wrist or hand injury compared with only 13% of therapists injured in hospitals. No wrist or hand injuries (0%) were reported from therapists performing home-based care.

Cromie et al, citing their own research and also two unpublished (theses) studies commented that “Use of mobilization and manipulation techniques was related to increased prevalence of thumb symptoms.” The number of hours worked per week performing mobilization and manipulation techniques were a factor in thumb symptoms, as was treating a large number of patients in one day.

Case study

“In 1992 I joined the Trust as an outpatient physio. I did hands-on work only and developed a problem in the heels of my hands and in my thumbs. It came on gradually and just got worse. It got to the stage where it was painful to hold a knife and fork. It took four years before I noticed something was wrong. I left outpatients and tried non-mobilization/electrotherapy but it didn’t work – I couldn’t escape using hands-on techniques. I left physiotherapy two years ago to do a non-mobilization job because my hands are, effectively, knackered. I’m 32.”

Former CSP member

4.3 Knees and neck

Bork reported that physical therapists treating children (ie below the age of 12) were 3.5 times more likely to have had musculoskeletal symptoms in the knees than were therapists treating adults.

Cromie found that performing manual orthopaedic techniques, performing the same task repeatedly and a failure to take enough rest breaks during the working day were factors which were associated with increased risk of neck symptoms.

5. Gender differences: female physiotherapists more at risk?

Bork’s study “revealed that female physical therapists had a higher prevalence of self-reported symptoms in every anatomical area except the knees than did male physical therapists.” Bork et al suggest that this higher prevalence amongst female therapists may be related to their height and weight: “Female respondents were generally smaller than male respondents and may be at a physical disadvantage when lifting or transferring larger patients.” Female respondents had a higher incidence (73%) of reporting at least one musculoskeletal symptom as compared with 57% of the male physical therapists in the study.

Risk of injury is heightened for female workers during pregnancy. Bork et al revealed that, “Additionally, numerous female respondents commented on the stress that pregnancy superimposed on their work as a physical therapist. According to their responses, the stress of pregnancy often led to an exacerbation of symptoms, particularly sacroiliac problems.” For a fuller discussion of the risks posed to CSP members who are pregnant, please see **Health and Safety Briefing Pack No 6, Reproductive and Post-birth Health Hazards in Physiotherapy**, CSP August 1998.

6. Reducing the risks

6.1 Risk assessment

Risk assessment is a legal obligation - forming part of the Management of Health and Safety at Work Regulations 1999 (MHSW) - placed on employers to eliminate or minimise hazards at work. Its operation is a management function. Approaches to risk assessment vary, but the common theme is the employer's responsibility to assess hazards at a generic and individual-specific level. The changed circumstances of female employees who become pregnant also need to be taken into account. A written record of the assessment needs to be kept and the results of the assessment need to be communicated to staff. Safety representatives should be fully consulted on all aspects of risk assessment.

It is essential that employers have a clearly thought-out strategy based on risk assessment and that all work activities and all elements of work organisation are covered in the risk assessment. CSP members' vulnerability to work-related musculoskeletal injuries, and particularly work-related upper limb disorders (WRULDs), should be taken into account when undertaking risk assessments. This may require a broader rethinking around the subject of potential risks and hazards to ensure that wrists, hands, fingers and thumbs and the potential for neck and knee injuries are not ignored and are properly and systematically evaluated. It is particularly important that once risks have been identified and assessed, effective measures are put in place to eliminate or reduce them to the lowest level possible.

With regard to musculoskeletal injuries, risk assessments should also include, for example:

- Patient information: information on the patient's weight, disability, distress, unpredictability, fears of treatment or being handled or other relevant factors. This information should be readily available and clearly communicated;
- Adoption of a minimal lifting approach as a core principle. Where patients are lifted or handled the risk should be decreased by other means, such as use of mechanical hoists, use of better and more appropriate rehabilitation equipment and increased staffing levels, for example. Knowledge of and training in the proper use of equipment needs to be regularly reviewed and updated;
- Use of other technical aids wherever possible, eg strapping for thumbs (in conversation with CSP members when producing this paper, splints were not thought to be effective);
- Staffing issues, ie are staffing levels sufficient/adequate for the task(s) being performed;
- Re-evaluation of content and frequency of training courses;
- Working time and rest breaks;
- Caseload, patient throughput and job or task rotation, to protect against cumulative injury from repetitive activity. Rotating the job tasks throughout the shift or workday ensures that more time is allocated for the muscles to recover. Ensuring that the workday is varied, by spreading the workload and having a mixed caseload, such as half a shift doing hands-on work and half in the gym, for example, is recommended. When booking patients in for treatment that require mobilization or manipulation, appointments should be spread evenly throughout the day/shift, again to prevent against repetitive injury and to allow enough muscle recovery time;
- Encouragement and monitoring of reporting procedures to promote early detection of injury and monitor effectiveness of preventative action;
- Staff involvement (using a partnership approach to problem solve);
- Job redesign, ie adapting the job to the individual (fitting work to the worker) by consulting staff, utilising ergonomic principles and increasing the amount of control an individual has over their work: build good design into the workplace;
- Consider providing, at the workplace, access to a physiotherapist specially employed to deal with injuries to staff.

6.2 Reporting injuries

Research suggests that physiotherapists are not good at reporting injuries. Bork et al, for example, found that “The percentage of physical therapists who saw a physician for work-related musculoskeletal symptoms was very low.” One reason for this was that a high proportion (61%) treated themselves or sought treatment from a colleague. Bork’s study also found that 15.2% worked whilst injured or hurt and rated this as a “moderate to major job problem.”

In Holder’s study, a quarter of physical therapists and just under a quarter of assistants (23%) reported taking half a day or more off work as a result of their injury. The Holder study confirmed, however, Bork’s findings that therapists “tend to self-diagnose more or seek help from a colleague who specialized in musculoskeletal injuries rather than take time to visit a physician.”

The cumulative effect of hands-on work with patients may be a factor in sustaining musculoskeletal injury, therefore the importance of reporting injuries can not be over-emphasised. CSP members faced with one extremely heavy patient, for example, may automatically seek help, but not for those patients deemed ‘manageable’. However, a constant stream of ‘manageable’ patients may ultimately lead to damage. Commenting on patient transfers Jones, a physical therapist quoted in Fosnaught (1999), illustrates the point:

“Most of the time you can do it by yourself, and because PTs are safety conscious, we do make sure our patient is safe. But if you do that for 6 to 8 hours a day, day in, day out, you’re going to get hurt.... So many PTs who are injured don’t go to employee health, they don’t go to a doctor – they treat themselves, or a colleague treats them, and they keep right on working. The injury’s not reported, and there’s no cost to management. This means that, for administration, on-the-job injuries in physical therapy can be an invisible problem.”

A problem that is invisible is impossible to help solve. Reporting musculoskeletal injuries and ensuring that they are discussed at safety committees and an action plan is adopted and executed is, therefore, recommended action.

6.3 Training programmes

The extent of musculoskeletal injuries amongst physiotherapists suggests that their specialist skills and knowledge are not being used to prevent such injuries occurring. Consequently, it may be necessary to consider the frequency and content of training courses, particularly for younger members, to reinforce good practice in providing treatment which also protects the practitioner from injury.

Scholey and Hair (1989), for example, questioned the effectiveness of back care education. They commented that “Where one’s occupation is physically demanding, back care education is advocated in the belief that with increased anatomical knowledge and heightened awareness of biomechanical and ergonomic principles, the back pain sufferer will be able to avoid recurrent symptoms.” Citing a study on backpain in nurses (Stubbs, 1986) they concluded, “without a rigorous ergonomics analysis of the working environment, training programmes per se have little effect on the occurrence of back pain in nurses.”

In Cromie’s study (2000) in Australia, only 15 therapists (3%) who had experienced work-related musculoskeletal disorders responded that inadequate training in injury prevention was a major contributing factor in the development of their work-related symptoms.

Both content of, and access to, training course are issues for consideration. The majority of training programmes are based around lifting and handling, for example, not the use of hands as a tool of physiotherapy practice.

Trusts’ educational courses on manual handling and lifting are currently carried out, on the whole, on an annual basis, and are general awareness courses aimed at all staff. This means that physiotherapists will receive, in many instances, the same training as secretaries and surgeons, irrespective of the fact that these different staff groups do not have the same musculoskeletal stresses. Targeted training programmes, which are specifically tailored to the needs of physiotherapists and physiotherapy assistants, are preferable, although the resource implications of providing specialised training are currently a barrier to making this happen. Tailored training courses might include a more in-depth consideration of anatomy, biomechanics and ergonomics, lifting and manual handling, the safe use of equipment, the effects of sustained postures,

caseload variation, rest breaks and other work organisation issues, working with other professionals who may have different approaches and reflection on alternative (ie safer) ways of working that do not compromise treatment outcome.

6.4 Preventative strategies

Holder's study of American physical therapists (PTs) and physical therapy assistants (PTAs) looked into strategies employed by the respondents to minimise further injury or recurrence. Eighty per cent (80%) of respondents reported adopting different approaches to work as a result of sustaining their injury. These are summarised in Table 6.

Table 6: Altered work habits following an experience of an occupational musculo-skeletal injury by physical therapists (PTs) and assistants (PTAs) in the USA

Altered work habit	Adopted by (%)	
	PTs	PTAs
Use improved body mechanics	50	50
Increase use of other personnel	43	33
Change working position frequently	24	36
Avoid lifting	16	13
Increase use of mechanical aids	14	10
Take more rest breaks or pauses	13	11
Decrease manual therapy	13	10
Stop working when hurt or when symptoms occur	11	13
Encourage patient responsibility for carrying out treatment	10	19
Change work schedule (overtime, irregular shifts, length of workday)	4	3
Increase administrative time, decrease patient care time	4	2

Source: Holder N et al (1999) 'Cause, Prevalence, and Response to Occupational Musculoskeletal Injuries Reported by Physical Therapists and Physical Therapy Assistants' Physical Therapy Vol 79 No 7 July 1999.

Cromie et al's study also investigated the strategies used by physical therapists to avoid the development of work-related musculoskeletal injuries and found that 369 therapists (73.4%) changed or modified their treatment at some stage as a result of their injuries. The use of aids and equipment (such as height-adjustable beds, lifting belts, slide boards, splints and stools on casters) were reported, as were so-called "self-protective behaviours" which Cromie further divided into 'outsourcing', 'preventive' and 'reactive' strategies:

- Outsourcing strategies involve obtaining help from an assistant or other colleague when lifting or transferring patients;
- Preventive strategies involve altering the working environment or the practice technique and include adjusting bed height, changing posture or introducing regular pauses and performing warm up exercises before treatment;
- Reactive strategies are strategies developed in response to a real, or perceived risk of, injury and include, for example, using a different body part to administer a manual technique and "substituting electrotherapy for some manual techniques". Care, however, must be taken to consider the appropriateness, both in terms of patient and practitioner safety and clinical effectiveness/governance, of substituting particular therapy techniques.

Adopting a minimal lifting approach and minimising manual handling wherever possible is one obvious preventative strategy. This can be done by either enlisting other staff to help or by utilising appropriate equipment.

CSP members working in multi-disciplinary teams may, however, come across problems where different professionals have different approaches to moving and handling because of different training. Adequate supervision and a clear understanding of colleagues' roles and competence will be needed in this type of situation. The option of enlisting other staff to help, whether this is a fellow CSP member (physiotherapist or assistant) or a colleague from another discipline should not be overlooked. The use of portering staff, for

instance, to bring rehabilitation patients to a gym rather than trying to administer rehabilitative treatment to a patient in an unsuitable bed space is one useful approach that has been reported.

The provision and proper use of equipment is an important issue and supervision and training should be regularly provided in the use of new equipment (new mobilization equipment, for example, may be different to the equipment it has replaced). This is particularly important for assistants and new staff who may shun the use of appropriate equipment because of a lack of training or supervision, thus increasing their risk of injury. CSP members working in GP practice settings should also consider their use of the available equipment. GP practices often have limited space within which to provide treatment, and have fixed-height plinths rather than adjustable-height alternatives. Consideration should be given to what acceptable minimum standards of equipment should be, with non-adjustable equipment being replaced wherever possible.

Regular rest breaks; task rotation to avoid doing the same repetitive job all day; seeking support from colleagues and rethinking the approach to work to fit the work to the individual, as well as addressing staffing issues, should all be considered and acted upon where practicable. Whilst staffing levels and resources may be limited, it nevertheless remains important for the CSP member to be aware of the dangers of attempting to struggle with unacceptable workloads: saying 'no' to a heavy workload or repetitive caseload may actually be saying a 'yes' to health and safety considerations of both patient and practitioner. Good communication with the patient is also important, and the patient should be clear about what the physiotherapist is trying to achieve and how this is to be undertaken.

In summary, a thorough evaluation of risk, particularly for upper limb disorders, is needed along with more research into the efficacy or effectiveness of preventative strategies before a clear recommendation on which strategies are best can be made. There is an important role to be undertaken in monitoring the effectiveness of local preventative strategies, and results of any monitoring exercise should be acted upon.

7. Conclusion

The practice of physiotherapy and its increasingly fragmented and specialized nature creates musculoskeletal problems for CSP members. Cromie et al concluded that "the issue of musculoskeletal injury within the physical therapy profession is widespread and not without cost", and that "it seems that the way physical therapists work is related to their musculoskeletal health."

There are many factors that contribute to musculoskeletal injury but the susceptibility of (particularly younger) physiotherapists to musculoskeletal injury argues for more investment in training programmes and the investigation into effective preventative strategies which are supported by employers.

Whilst it may be an often heard joke that a physiotherapist with a musculoskeletal injury is rather like a dentist with a cavity, the jest disguises a worrying and serious problem for CSP members, employers and the profession itself. For the profession, its very practice contains inherent risks to the practitioner whilst for employers there are the direct and indirect costs of managing a problem that not only affects the practitioner (the CSP member), but which also has consequences for patient care and implications for retention and recruitment. For a discipline that already has the status of a shortage profession, this is a worry. Consequently, it is hoped that the guidance in this paper is appropriately considered and acted upon.

7.1 Action points for safety representatives

- Ensure risk assessments take account of the multiplicity of factors that may lead to the development of musculoskeletal injury, including job location and specialty;
- Adopt a minimal lifting approach;
- Revisit training programmes and communicate the issue to members;
- Encourage reporting of injuries;
- Ensure musculoskeletal injury is a topic on the agenda at safety committee and agree an action plan that incorporates regular monitoring;

- Re-evaluate staffing levels and encourage staff involvement to address any musculoskeletal problems that arise, including issues of work organisation such as working time, breaks etc;
- Press for the provision of an occupational health physiotherapist to deal specifically with staff injuries as soon as they occur.

References

- Bammer G and Blignault I (1988) **More than a pain in the arms: a review of the consequences of developing occupational overuse syndromes (OOSs)** J Occupational Health & Safety – Aust NZ 1988, 4(5): 389-397
- Blizzard P (1991) **Save Our Thumbs** Physiotherapy, August 1991, vol 77, no 8
- Bork B et al (1996) **Work-Related Musculoskeletal Disorders Among Physical Therapists** Physical Therapy, Vol 76, No 8, August 1996
- Buckle P and Devereux J (1999) **Work-related neck and upper limb musculoskeletal disorders** European Agency for Safety and Health at Work, Bilbao 31st August 1999
- Cromie J et al (2000) **Work-Related Musculoskeletal Disorders in Physical Therapists: Prevalence, Severity, Risks, and Responses** Physical Therapy, Vol 80, No 4, April 2000
- Fosnaught M (1999) **Injuries on the job: PTs at Risk** PT Magazine April 1999
- Hignett S (1995) **Fitting the Work to the Physiotherapist** Physiotherapy, September 1995, vol 81, no 9
- Holder N et al (1999) **Cause, Prevalence, and Response to Occupational Musculoskeletal Injuries Reported by Physical Therapists and Physical Therapy Assistants** Physical Therapy, Vol 79, No 7, July 1999
- Kenny D et al (1995) **Trends in industrial rehabilitation: ergonomics and cumulative trauma disorders** Work: A Journal of Prevention, Assessment & Rehabilitation Work 5 (1995) 133-142
- Kilbom A (1988) **Intervention Programmes for Work Related Neck and Upper Limb Disorders – Strategies and Evaluation**, keynote address Ergonomics International 88
- LRD (2000) Painless Partnership Labour Research October 2000. Labour Research Department. London
- Mierzejewski M and Kumar S (1997) **Prevalence of low back pain among physical therapists in Edmonton, Canada** Disability and Rehabilitation, 1997; Vol 19, No 8, 309-317
- Molumphy M et al (1985) **Incidence of Work-Related Low Back Pain in Physical Therapists** Physical Therapy, Vol 65, No 4, April 1985
- NIOSH (1997) **Elements of Ergonomics Programmes: A Primer Based on Workplace Evaluations of Musculoskeletal Disorders** National Institute for Occupational Safety and Health, US Department of Health and Human Services, March 1997
- Reglar P and James G (1999) **Thumb pain in physiotherapists: a preliminary study** British Journal of Therapy and Rehabilitation, October 1999, Vol 6, No 10
- Scholey M and Hair M (1989) **Back pain in physiotherapists involved in back care education** Ergonomics, 1989, Vol 32, No 2, 179-190
- Scholey M and Hair M (1989) **The problem of back pain in physiotherapists** Physiotherapy Practice (1989), 5, 183-192
- TUC (1999) **Your back: where does it hurt?** TUC/BackCare leaflet October 1999

Further reading

- CSP (1997) **Health and Safety Briefing Pack No 3 Risk Assessment Policy Statement and Guidance**. August 1997. CSP. London
- CSP (1998) **Health and Safety Briefing Pack No 6 Reproductive and Post-birth Health Hazards in Physiotherapy**. August 1998. CSP. London
- CSP (1999) **Health and Safety Briefing Pack No 8 Repetitive Strain Injury**. May 1999. CSP. London