



Hands on

Preventing work-related upper limb disorders in hand-intensive healthcare occupations

Summary report 2014

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In this document, you'll find a summary of the independent research we commissioned from University College Cork entitled 'Musculoskeletal injury as "part of the job": health and safety in hand-intensive healthcare occupations. Preventing work-related upper limb disorders'.



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What's the problem?

Work-related musculoskeletal disorders (WRMSDs) are a widespread priority issue.¹ Although most musculoskeletal injuries can be prevented or reduced by existing law and guidance, they account for a large proportion of work-related injury, sickness absenteeism and long-term illness. The costs to industry are substantial. WRMSDs can have a severe impact on the quality of life because of pain, restricted mobility and sometimes disability. They can be caused by a single event (an accident), a build-up over time or an aggravation by work of a pre-existing condition.

Work-related upper limb disorders (WRULDs) are a type of WRMSD that affect the neck, shoulders, arms, elbows, wrists, fingers and thumbs. Research² has shown that hand-intensive tasks (eg precision hand and wrist movements, repetitive hand motions and sustained awkward postures) increase the risk of WRULDs. Healthcare professionals, such as physiotherapists, physical therapists, sports therapists and manual/manipulative therapists, are exposed to these risk factors daily. Ironically, they treat patients and clients with musculoskeletal disorders, and have specialist knowledge of body mechanics and injury prevention strategies.

While health and safety guidance exists for other hand-intensive occupations, such as manufacturing workers and visual display unit workers, there are no current international guidelines on risk assessment and management in hand-intensive healthcare occupations.

So, we commissioned Dr Birgit Greiner, Sheilah Nolan and Dervla Hogan at University College Cork to look into this issue. We asked them to establish reliable scientific evidence as a basis for strategies on the effective prevention of work-related upper limb disorders in hand-intensive healthcare occupations. The study focused on physiotherapists, physical therapists and sports/athletics therapists, although the results could be relevant to other healthcare professionals whose work involves hand-intensive tasks.

The research had eight key goals:

- to review the existing literature and from this exercise to compile a resource document for health and safety practitioners and policy-makers

¹ European Agency for Safety and Health at Work. Repetitive strain injuries in EU Member States. Belgium 2000. https://osha.europa.eu/sites/default/files/publications/documents/en/publications/factsheets/6/Factsheet_6_-_Repetitive_Strain_Injuries_in_EU_Member_States.pdf.

² See, for example, Passier L and McPhail S. Work related musculoskeletal disorders amongst therapists in physically demanding roles: qualitative analysis of risk factors and strategies for prevention. BMC Musculoskeletal Disorders 2011; 12 (1): 24–29.

- to assess the extent to which therapists in Ireland experience upper limb disorders
- to identify the groups at highest risk
- to identify the first onset of symptoms in the course of therapists' careers
- to identify risk factors and work practices associated with higher and lower levels of WRULDs
- to evaluate early career onset of musculoskeletal symptoms
- to detail which prevention strategies therapists actually practise
- to compile a self-care teaching module for use in professional training programmes.

What did our researchers do?

The project consisted of several phases: a systematic review, a survey and the development of course materials.

Systematic review

The researchers started off by reviewing international models of good practice, codes of practice and industry standards relating to the prevention of upper limb disorders in healthcare workers performing hand-intensive tasks. This involved looking at general scientific databases, national and international health and safety databases, internet sites and the websites of professional organisations.

Survey

After the review, the team conducted two postal questionnaire surveys with questions on musculoskeletal symptoms, clinically diagnosed upper limb disorders, injury prevention practice, and training and work history.

The first survey involved 347 employed and self-employed practising therapists in Ireland. Most were Chartered physiotherapists in private practice (n=135) and hospitals (n=71). The others were mainly self-employed physical therapists and sports/athletic therapists (n=141). The participants ranged from 23 to 72 years in age, and two thirds of them were female. The sample included a mixture of highly experienced therapists with over 15 years' practice (28 per cent) and career starters with under five years' practice (26 per cent).

The second survey involved 74 students from four Irish colleges. They completed the questionnaire during their final month of training and again, one year after entering into professional practice. By that stage, 22 graduates had started employment as therapists.

To calculate the associations between work factors and WRULDs, our researchers adjusted the data so they could exclude non-work-related explanations of upper limb

disorders, such as previous leisure time injuries, age and gender, body mass index, smoking and depression. Some analyses also controlled for employment status and physical workload (such as years in the job and weekly hours of manual work).

Course materials

Based on their findings, the research team also produced a set of training materials that would reflect good practice. These would take the form of presentation slides, with guidance notes for tutors and hand-outs for students. The intention would be to disseminate information and practical tips that would be helpful not only to young professionals at the start of their careers, but also to well-established practising therapists.

What did our researchers find out?

Review of models of good practice

The review confirmed that there is no comprehensive guidance document to prevent WRULDs occurring in physiotherapists, physical therapists, sports/athletic therapists or manual therapists who perform hand-intensive tasks.

Some documents found in the review contained elements that could become part of a comprehensive guidance document. These were:

- guidance on task-specific risk assessment
- support for assessing and managing physical, ergonomic, organisational and psychosocial work risk factors for upper limb disorders
- advice on ergonomic set-up
- guidance on issues such as rest breaks and scheduling
- injury prevention training and exercise programmes for self-care maintenance
- early and continued education.

The extent of the problem

From the survey, the researchers found that upper limb symptoms are very common among practising therapists. A very large proportion (82.5 per cent) of the questionnaire respondents had experienced symptoms (pain, aches, discomfort, numbness) in at least one upper limb site during the last year. The most affected areas were the shoulder (53 per cent), neck (50 per cent) and thumbs (46 per cent) (see Figure 1). For one in four therapists, symptoms were so severe that they could not carry out normal activities at work, home or during their leisure time.

These rates are much higher than for the working population as a whole in Ireland, with 8 per cent of workers reporting muscular pains in the shoulders and neck, and less than 5 per cent reporting muscular pain in the upper limbs.

More than half (55 per cent) of all respondents reported work-related musculoskeletal pain or discomfort lasting for more than three days during the same period. Over a third (37 per cent) of therapists reported at least one clinical diagnosis of the upper limbs, most commonly muscle tension (19 per cent), shoulder tendonitis (13 per cent), overuse syndrome (12 per cent) and tennis elbow (10 per cent).

Who is most affected?

Among therapists, the groups at highest risk of upper limb disorders were:

- hospital-based therapists, who in the past 12 months were more likely to have experienced incapacitating symptoms (38 per cent) than therapists in private practice (23 per cent)
- self-employed therapists – 86 per cent reported at least one upper limb symptom in the past year. This compares to 76 per cent for employed therapists
- female therapists – they reported a significantly higher proportion of neck and shoulder symptoms in the past year than men.

First onset of WRULD symptoms

- A considerable proportion of therapists reported an onset of symptoms within the first five years of practice or even during training, particularly for thumbs and wrists.
- Late onset (more than five years after graduation) was particularly high for elbow symptoms.

The researchers found that 78 per cent of the students in their final month of training had already experienced one or more upper limb symptoms. One year later, the graduates who had started working as therapists reported the onset of 15 'new' symptoms during the year, especially in the thumbs and neck.

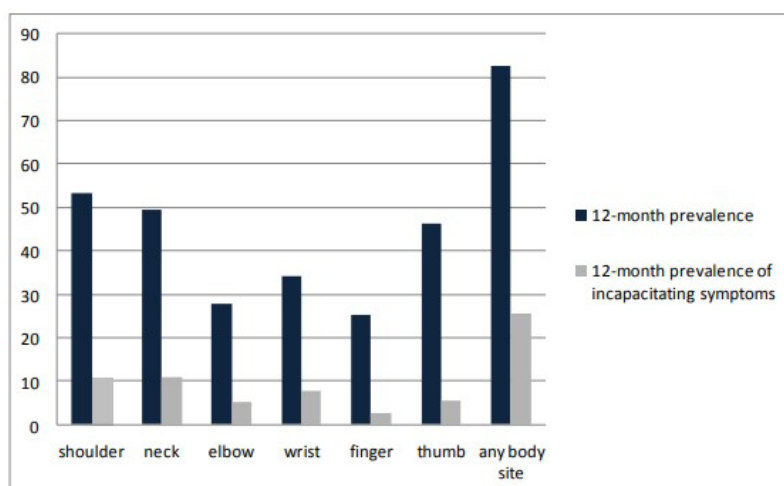


Figure 1
Upper limb symptoms in the past 12 months
reported by therapists (per cent)

Work characteristics associated with WRULDs

Input into scheduling of clients/patients Therapists who use assistants or electronic booking systems to make appointments are twice as likely as those who schedule their own appointments to report an upper limb symptom.

Rest breaks

Therapists who take less than five minutes' rest after each patient or client were 2.3 times more likely to have incapacitating upper limb symptoms in the past year than those taking five or more minutes' break. This was independent of whether they were employed or selfemployed, the number of hours of manual therapy per day, the number of patients treated per day and the duration of individual treatment.

Social support

Self-employed therapists receiving peer support from other professionals, and employed therapists with good supervisory support, reported lower rates of upper limb symptoms.

Influence at work, predictability of work

Therapists reported fewer incapacitating symptoms if they had a high level of influence at work (eg on workload and specific tasks to be completed) or a high level of predictability of work assignments.

Work tempo and work demands

Interestingly, therapists reporting high work tempo and high work demands did not experience higher levels of upper limb disorders.

Physical work factors

The more therapists perceived that they had exerted themselves physically in their work, the higher the likelihood of musculoskeletal symptoms. They felt that the greatest exertion was for repetitive thumb movements. Perceived effort and exertion were significantly associated with upper limb symptoms, but not with incapacitating upper limb symptoms.

How do therapists reduce the strain on their body and prevent upper limb disorders?

Healthcare maintenance behaviour

Therapists were asked to indicate if they actually used any of the following 13 practices known to reduce physical strain during manual therapy.

- Do fewer manual techniques.
- Increase the use of other personnel.
- Modify patient/client position.
- Modify own position.

- Take more rest breaks.
- Do warm up and stretch exercises before performing manual techniques.
- Use acupuncture, dry needling or thermal therapy, instead of manual techniques, to avoid stressing an injury.
- Pause regularly, enabling stretching and change of position.
- Adjust plinth or bed height before treating a patient/client.
- Select techniques that will not aggravate or provoke own discomfort.
- Stop doing a treatment if it aggravates or provokes own discomfort.
- Use improved body mechanics.
- Consider changing job because of fear of suffering from long-term musculoskeletal injury.

Most therapists used strategies to improve body mechanics, such as adjusting the plinth or bed height before treatment (83 per cent), modifying their own position (76 per cent) or that of the client or patient (76 per cent), and selecting a technique that would not aggravate or provoke discomfort (54 per cent).

Therapists who received injury prevention training were more likely to use six out of the 13 listed strategies regularly. However, many reported that they never or rarely warmed up before treatment (80 per cent), sought assistance from other personnel (78 per cent) or took more rest breaks (63 per cent).

Risk assessment

A large proportion of respondents (76 per cent) reported that they did not have a completed health and safety risk assessment for their work. Of these, 86 per cent reported that they had experienced pain or discomfort in the last 12 months. This compares with 74 per cent for those who did have a workplace health and safety risk assessment.

Injury prevention training

Fifty-six per cent of therapists indicated that they had received injury prevention training at some stage in their professional career. They were less likely to have experienced shoulder symptoms in the previous 12 months than those without this type of training.

All recent graduates from the student sample who gave valid answers (n=21) reported having received injury prevention or self-care education as a student. Just over half reported that the training they received was useful in work and that they were able to apply the training in their current workplace (n=12).

The very high incidence of upper limb disorders for therapists working with hand-intensive tasks warrants further attention from the health and safety community, therapists themselves, employers, the relevant professional bodies and policy-

makers. A systematic approach and the introduction of a clear company policy can help to reduce musculoskeletal hazards and so prevent the early onset of upper limb disorders in these occupations.

What does the research mean?

It's recommended that:

- prevention should start early during training, as practised by several training institutions. A good starting point would be to create an awareness of WRULDs (and other WRMSDs) and of potential work risk factors, followed by health maintenance training for students
- continuing professional education and training after graduation should include good health and safety practice as a key element and be made a part of professional development
- self-employed therapists should receive particular attention, as they are a high risk group for upper limb disorders. Support may have to come from professional bodies rather than peers and supervisors
- capacity-building in risk assessment and management of WRULDs is incorporated into the educational process for trainees and into continuing professional development programmes
- risk assessment and management practices must be implemented, focusing on preventing WRULDs. These are crucial in identifying risk factors before symptoms worsen and in making the necessary changes in work organisation, ergonomics or psychosocial environment
- health and safety professionals should be made more aware of WRULDs in hand-intensive healthcare occupations, and may be helpful to therapists in risk assessment and management
- rest breaks of at least five minutes between clients should be built into normal working practice
- transparent work scheduling systems should be introduced to enable therapists to vary the physical work and increase control over the pace, number, type and duration of treatments
- risk assessment of each specific manipulative task should be carried out. A review and modification of the treatment plan, where possible, can help prevent WRULDs and spinal injury in therapists
- self-care maintenance training and exercise programmes should be used, including the use of techniques requiring less strain - social support systems should be provided by supervisors and peers; and for self-employed workers through professional bodies.

Recommended guidance for professionals

Performing hand-intensive work on people rather than machinery or equipment usually has a lower level of standardisation. Guidance is important for patients/clients as well as healthcare practitioners.

A comprehensive guidance document should be drafted for hand-intensive occupations in healthcare. Such a document would include guidance on, for example, task-specific risk assessment, control over the physical and organisational work environment, and self-care maintenance routines.

Research outputs

The full report on this project includes material that can be used as a resource for practitioners. It includes a systematic review and summary of international models of good practice, codes of practice and industry standards in the prevention of upper limb disorders.

The project team has produced a suite of training resources, with one module for trainers and an accompanying one for students. This includes a simple risk assessment checklist to be used by therapists who don't have prior health and safety training.

Don't forget

Like all research, this study has its limitations. For example, it was not able to determine whether certain work factors caused upper limb disorders.

The study assessed upper limb symptoms and clinical diagnoses by self-report and not by clinical health assessment, so there was a chance of over- or underreporting. However, since the study included therapists with a high level of knowledge and awareness of musculoskeletal injury, it is reasonable to assume no substantial bias.

Hospital-based chartered physiotherapists were underrepresented in the study. As this group showed the highest proportion of incapacitating symptoms, it's likely that the study has under-estimated the 'true' rate in the sample.

Our summary gives you all the major findings of the independent project report by University College Cork. If you want to read about the study in more depth, you can download the full report at [iosh.com/research](https://www.iosh.com/research).

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