



The Association of Chartered Physiotherapists in Occupational Health and Ergonomics

ACPOHE Guidelines for DSE Assessment

Configuration Management

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1 Summary

This ACPOHE guidance document provides an overview of the factors that should be considered when undertaking Display Screen Equipment (DSE) Assessment in the workplace for physiotherapists working in Occupational Health and Ergonomics. Other ACPOHE guidance documents are also available to support this document and to provide additional help and advice in this field.

DSE Assessment is used throughout this document as a term for workstation assessment or office ergonomics.

This guidance is not designed as a training document itself on DSE Assessment but provides guidance on important areas that should be considered when undertaking DSE Assessment.

2 Disclaimer

This document is considered up to date at the time of writing and offers an overview of current legislation, research and practices. The document will be reviewed at regular intervals. However changes in DSE assessment may occur within that time due to changes in office work equipment and work behaviours.

If you wish to suggest resources or content to add to this document please e-mail ACPOHE@buryphysio.co.uk

3 Introduction

The most comprehensive study undertaken in the UK to determine the health problems experienced by computer users is the HSE Research report RR561 undertaken by the Institute of Occupational Medicine (IOM) in 2007.

This survey questioned 1327 DSE users in 130 organisations of different sizes and sectors across the UK and was used to determine the prevalence of DSE work related ill health. This was followed by a statistical analysis of information on work exposure factors collected during the fieldwork. An in-depth literature review was also conducted to determine levels of ill health in other comparable working populations and to establish the evidence-base for potential causal factors for DSE related ill health.

The risks of substantial ill health to any individual user of DSE, is believed to be relatively low, particularly if the user adequately complied with the regulatory provisions. However, the survey found that despite legislative provision to improve computer workstations in the Regulations, the level of musculoskeletal symptoms amongst computer users appeared to be high, with 73 per cent of respondents having reported one or more musculoskeletal symptoms. Additionally, slightly over half of all respondents reported symptoms affecting the head and/or eyes; and anxiety and depression were more common among those who spent more time each week at the computer, than those who spent less time. The recorded prevalence of MSD symptoms in this survey was found to be broadly similar to those reported in the reviewed published scientific literature, and also to an IOM survey of computer users in 2006.

The survey results were based on an estimated response rate of 40-45%. These were drawn from a total of 130 organisations randomly selected from throughout the UK. Small businesses were particularly well represented with 108 of the 130 being drawn from this size group. Key findings were:

- 73% of all respondents to the questionnaire survey reported one or more musculoskeletal symptom.
 - 12 month prevalence of individual musculoskeletal symptoms ranged from 12% for elbow and forearm symptoms to 47% for neck symptoms. Symptoms involving the shoulder, neck and back were most frequently reported together.
 - Slightly over half of all respondents reported symptoms affecting the head and/or eyes.
 - As expected from the literature, symptoms were reported more frequently by women than men.
 - There was little evidence of differences in prevalence between companies of different sizes or different industry sectors.
 - Prevalence of these symptoms was higher among those who spent more time at their computer at work and among those who worked for more than one hour without a break.
 - All symptoms were more common among respondents who also had indications of stress, anxiety and/or depression.
 - 12 month incidence of musculoskeletal symptoms ranged from 2.7% for forearm and leg symptoms to over 6% for hand and neck symptoms.
 - Incidence of eye discomfort was higher than for all the musculoskeletal symptoms at 9.5%.
- Occurrence of anxiety, depression and distress was marginally more common among younger respondents and anxiety occurred more frequently in women than men.

There was little consistent difference in the occurrence of distress, anxiety or depression between companies of different sizes or sectors.

- Occurrence of anxiety, depression and distress was more frequent among those who typically worked more than 5 hours over their contracted hours each week; distress was more common among those who worked more than one hour without a break; and anxiety and depression were more common among those who spent longer per week at the computer.
- The majority of those reporting symptoms (at least 82% depending upon the symptom) took no time off work related to that symptom.
- Expressed as a proportion of those reporting symptoms, the most frequent absences from work were for headaches, back pain and leg pains unrelated to back pain, where more than 10% of those reporting the symptoms had taken some time off work.
- Expressed as the absolute numbers of people reporting absence, the most frequent absences from work were for headaches (105) followed by back pain (65) and neck pain (39).

Table 1: Incidence of Symptoms Reported by Computer Users (IOM 2007)

Symptom	Number with symptom	% with symptom	% experiencing symptom for 1 st time	Incidence of symptom (%)
Pain, swelling or tingling in hands	394	30.4	22.7	6.9
Pain or swelling in wrist	291	22.0	19.2	4.2
Pain, swelling or tingling in forearms	169	12.8	21.3	2.7
Aches or pains in either elbow	162	12.9	27.2	3.5
Pain in shoulders	519	39.4	14.1	5.6
Pain in neck	619	47.2	14.5	6.8
Aches or pains in back	482	36.6	10.7	3.9
Aches or pains in legs unrelated to back pain	200	16.2	16.6	2.7
Headaches	659	52.3	8.2	4.3
Eye discomfort	709	64.0	14.8	9.5

4 Legislation

Common Law

Under common law, employers have an obligation to take reasonable care of all their employees and to guard against reasonably foreseeable risks of injury. These duties are judged in the light of the state of the art of knowledge of the employer – what they either knew or ought to have known.

Employers are obliged to inform their workers, including prospective employees, of inherent risks of the job so that they can accept or decline employment having made an informed choice. Employers duties include obligations to:

- Take positive and practical steps to ensure the safety of their employees in the light of the knowledge that they have or ought to have.
- Follow current recognised practice, unless in the light of common sense or new knowledge this is clearly unsound.
- Keep reasonably abreast of developing knowledge and not be too slow in applying it.
- Take greater than average precautions where the employer has greater than average knowledge of the risk.
- Weigh up the risk in terms of the likelihood of injury and the possible consequences against the effectiveness and the cost and inconvenience of the precautions to be taken to meet the risk.
- In deciding what is reasonably practicable to do in terms of eliminating risk and in determining what is reasonably foreseeable in terms of injury the courts have determined a test that balances the quantum of risk against the time, trouble and expense that the employer must go to avert that risk. The greater the risk of H&S the greater the time, trouble and expense the law expects the employer to devote to mitigating that risk.
- Ignorance is no defence in law. Furthermore, if one member of the employer's staff knows about a risk or a health and safety problem then the employer is deemed to know about it. This is called constructive knowledge.

5 Statute Law

Under statute law criminal liability can be placed upon the company as a whole or upon individual managers or employees for breaches of Statutory Duties. Current Health and Safety Legislation comes from the umbrella act: The Health and Safety at Work Act 1974. From this umbrella act are the European '6 Pack' of Health and Safety Legislation which came out in 1992 and is pertinent to all member states. It comprises of:

- The Management of Health and Safety at Work Regulations
- The Workplace (Health, Safety and Welfare) Regulations
- The Provision and Use of Work Equipment Regulations
- The Manual Handling Operations Regulations
- The Personal Protective Equipment Regulations
- The Health and Safety (Display Screen Equipment) Regulations

The most important regulation regarding DSE assessment is:

The Health and Safety (Display Screen Equipment) Regulations 1992 (as amended 2002).

There is also applicable information in the Management of Health and Safety at Work Regulations, The Workplace (Health, Safety and Welfare) Regulations and The Provision and Use of Work Equipment Regulations.

Under the Health and Safety (Display Screen Equipment) Regulations 1992 (as amended 2002) employees maybe defined as a DSE User. The legislation outlines the minimal requirements required for a DSE User's workstation.

6 Equalities Act 2010

Physiotherapists may often make recommendations regarding a DSE User's workstation that are above and beyond the minimal requirements under these regulations due to disability issues. Such disability issues maybe acknowledged under the Equalities Act 2010 for England, Scotland and Wales and under the Disability Discrimination Order 2006 (DDO) for Northern Ireland.

Physiotherapists may often be asked if a DSE intervention is a 'reasonable adaption' to an individual's work environment. In such cases the physiotherapist must provide support and justification into the benefits of their recommendation to the Organization. However no one individual can decide if an adaptation is reasonable and it remains the decision of a judge in an employment tribunal as to whether the adaption was in fact reasonable for the Organization concerned to carry out. Physiotherapists must also consider the context and scope of the work they are undertaking in office environments, as DSE Assessment may be undertaken as part of a bigger occupational health role.

7 Case Law

Fewer claims for personal injury associated with DSE use have been successful in UK courts in recent years. This is likely due to the fact that UK companies are proving compliance with health and safety legislation. Many cases are settled outside of court.

Cases associated with the development of Work-Relevant-Upper-Limb Disorders (WRULD) that has been dealt with in UK courts can be seen on the WRULD database see:

<http://www.humanetechnology.co.uk/wruldii/wruld/index.php>

This site was developed as part of a research project funded by the Health and Safety Executive (HSE), which examined how the Courts are interpreting HSE guidance documents and certain Regulations, e.g. Health and Safety (Display Screen Equipment) Regulations and Manual Handling Operations Regulations, in personal injury claims for WRULD's.

8 International Standards Organization (ISO)

The International Standards Organization (ISO) provides guidelines on issues relating to office furniture (see <http://www.iso.org/iso/home/about.htm>).

The list below is of the pertinent ISO Regulations in relation to DSE Assessment:

ISO 21015:2007

Office furniture - Office work chairs -- Test methods for the determination of stability, strength and durability.

ISO 21016:2007

Office furniture -Tables and desks -- Test methods for the determination of stability, strength and durability.

ISO 22878:2004

Castors and wheels -Test methods and apparatus.

ISO/DIS 24496

Office furniture -Office chairs -- Methods for the determination of dimensions.

ISO/TR 24496:2012

Office furniture - Office work chairs -- Methods for the determination of dimensions.

9 Other Guidance

Information and guidance to help employers and individuals identify and manage the health risks of DSE use is available from the Health and Safety Executive. The links to these are available on their website, see <http://www.hse.gov.uk/> and also listed in the reference section of this guidance document.

10 Intervention Studies

There is a distinct lack of high quality research on preventative strategies for DSE users. This is due to logistical problems undertaking primary intervention studies in the work place. Even with secondary and tertiary prevention studies where individual tools or technology or individual postures in DSE settings have been evaluated, these studies are hampered by small samples and short durations (IWH 2006, IWH 2008).

The most notable systematic reviews that have filtered high quality and scientifically credible studies on DSE users are:

- **Institute for Work & Health – Canada 2006** (Computer work only, 31 studies met selection criteria)
- **Institute for Work & Health – Canada 2008** (Inclusive of computer users, looks at WRULD only, 19 intervention categories defined from 36 studies that met selection criteria)
- **Royal College of Physicians – 2009** (Inclusive of computer users, 15 studies met selection criteria)

The findings of these studies are explored fully in ACPOHE's Advanced Office Ergonomic Course. However it is noted that further studies are required to help support physiotherapists in undertaking DSE assessment and to make research based recommendations. Primary prevention studies that address multiple components and that use clustered randomised trials where the randomisation occurs at the group or cluster level are needed in office environments (Silverstein 2006). Such studies must also be integrated with other knowledge via meta-analysis and systematic review (Burdoch 2007).

11 The Modern Office

The DSE Regulations have not been updated since 2002, yet in that time significant changes have occurred regarding the way we undertake office work. This has been enabled by the dramatic advances in technology over the last 5-10 years with both computer hardware and software.

There is a general trend to more flexible working practices where individuals undertake more work away from their main office environment and spend time working from home and other locations such as cafe's and other office locations. In addition, many people undertake some kind of computer or telephone related work tasks when travelling by train, aeroplane and car. A mobile worker may use their car as an office.

In recent years there has been an introduction of tablet computers and light weight laptops/tablets into the market place. The use of cloud technology and tele and web conferencing has enhanced an individual's ability to work more fluidly in different environments. Even when working in a specific office many workers now spend less time at their desks and more time collaborating with colleagues in break out areas and informal meeting areas.

All these changes are leading to an increased number of companies adopting 'hot-desking' policies, where individuals do not have their own desk but use whichever desk is available at their time of need. With this comes a greater requirement for each desk set up to be vastly adjustable to suit the requirements of each individual user.

Additionally the replacement of CRT monitors with flat screens has seen the reintroduction of rectangular desks. Due to this and an increasingly paperless workplace, many office workstations are now becoming smaller enabling organizations to fit more DSE workstations into an office.

A physiotherapist undertaking DSE assessment must understand the complexities involved in the modern office and keep up to date with new trends in the way office work is undertaken.

12 Physiotherapists' Skill Set and Knowledge to Undertake DSE Assessment

DSE Assessment is a specialist area and any physiotherapist must ensure they are competent in this area and work within their scope of practice. It is advised that any physiotherapist working in this area becomes a member of ACPOHE and refers to ACPOHE's Competency Framework.

A Physiotherapist's training places him or herself in a great position to perform DSE Assessment competently due to their understanding of pathologies and psychology and their assessment and problem solving skills. They are also often skilled at interacting well at both an individual and organizational level.

A physiotherapist must be able to prove their knowledge and competency in this subject. Physiotherapists are encouraged to undertake formal DSE training through ACPOHE. Training may also be gained from personal study, other DSE training courses, reflective practice and mentoring. In addition to formal training courses and literature review it is important for physiotherapists to learn from their own assessment by reviewing outcomes. The discussion of case studies, equipment issues and successful interventions with other physiotherapists and health professionals can also be very beneficial in the learning process.

At present no formal qualification is available for physiotherapists that provide proof that an individual is competent in DSE assessment.

Physiotherapists are encouraged to gain Registered Membership status of ACPOHE. Membership of the Institute of Ergonomics and Human Factors (IEHF) and other relevant professional bodies is also encouraged.

Physiotherapists must ensure they have suitable Indemnity Insurance to carry out this work. Full Chartered Society of Physiotherapy Members are covered under the CSP indemnity insurance as long as they are working within their scope of practice.

13 Train the Trainer

A physiotherapist who is experienced in DSE assessment may also provide training to individuals who will then become DSE assessors in a workplace (train the trainer). The physiotherapist must decide themselves if they are competent to undertake this work and must understand the

complexities of both undertaking this training and the potential success of this approach to the end user.

14 Different levels of DSE Assessment

A physiotherapist may undertake different levels of DSE assessment such as:

- Simple, short, checklist based (often undertaken in larger groups where a walk-through approach is taken).
- Standard assessment (often the individual has a specific problem or issue related to their workstation).
- Complex assessment (often for individuals with complex issues related to use of their workstation).
- Clinical DSE Assessments (where a neuromusculoskeletal clinical assessment is undertaken alongside a DSE assessment).
- DSE Pregnancy Risk Assessment as part of the overall Pregnancy Risk Assessment.
- Review assessment (essential to ensure that your recommendations and interventions have been successful).

Ideally a physiotherapist will become involved in DSE assessments for the working well, to help prevent issues arising in the future. Frequently, physiotherapists are involved in assessment of individuals with health needs such as musculoskeletal disorders, learning difficulties or mental health conditions.

Physiotherapists may be involved with a company and provide regular assessment services or ad hoc services. Often other occupational health physiotherapy services may accompany this work such as health promotion, education and treatment provision.

15 Recommended Approach to DSE Assessment for Physiotherapists

It is essential that physiotherapists undertaking DSE assessment adopt an ergonomic approach incorporating the biopsychosocial model. The level of DSE assessment undertaken will dictate the level of depth a physiotherapist is able to adopt with his or her assessment. However, a physiotherapist must have a good understanding of Occupational Health Physiotherapy,

Organization culture and the potential barriers to recovery/flag systems in the workplace. ACPOHE offers an Introductory Course to Occupational Health which facilitates learning in these areas.

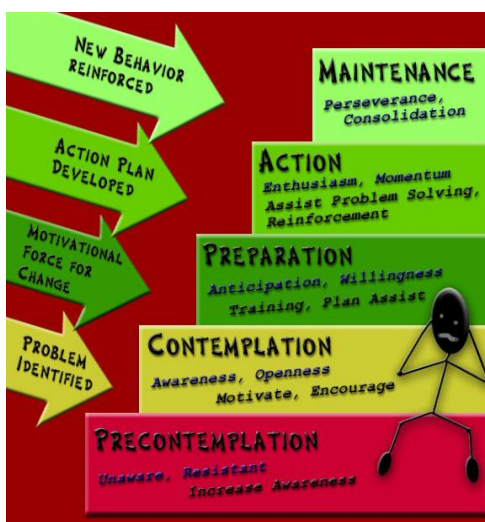
16 Clinical Reasoning and DSE Assessment

Clinical reasoning is defined as the precursor to any clinical decision making or action: a complex reasoning process incorporating cognition, metacognition and specific knowledge that distinguishes healthcare professionals from technicians and ancillary staff (Gilliland 2014, cited by Daya 2015). When undertaken in an office workplace, clinical reasoning helps to differentiate a DSE Assessment undertaken by a Chartered Physiotherapist compared to other less qualified individuals, and acts as the basis and support for any adjustments undertaken during the assessment or for future recommendations made.

Due to the limited research in this field clinical reasoning in this field can be difficult. Physiotherapists are encouraged to read the article “Clinical Reasoning in Office Workplace Assessments” by Sudhir Daya (*Occupational Health Physiotherapy*, Vol 19.1 April 2015) for support and advice on this topic.

17 Behaviour Change

Physiotherapists are also advised to have a good working knowledge of behaviour change. The 5 Stages to Behaviour Change Model below is recommended:



(J.O. Prochaska and C.C DiClemente 1986)

18 Use of DSE Checklists

The use of DSE Checklist forms is recommended to ensure all the essential data is collected and recorded. Physiotherapists often develop their own checklist form. The HSE DSE Checklist is available from the HSE website.

It is recommended that the physiotherapist utilizes his or her assessment and interaction skills during the DSE assessment and does not overuse the checklist form to the deficit of this, i.e. the checklist is a tool to help the assessment only and just asking a monologue of questions from the checklist will not result in a thorough and high-quality assessment.

19 Objective Data/Screening Tools/Outcome Measures

It is recommended that Physiotherapists incorporate objective measures in the form of anthropometric, furniture, space and lighting measurements. In addition, the use of validated screening tools and outcome measures provides additional information to help the assessment process and provide valuable information on the overall success of your intervention.

20 Task Analysis

It is essential that task analysis should be at the heart of any form of DSE assessment to identify work postures and behaviours. The most frequently adopted tasks must be observed and analysed separately during the assessment.

21 Postural Recommendations

Various recommendations can be found in the literature about what is the best posture to adopt when seated at a DSE workstation. A physiotherapist is advised to recommend postural recommendations based on their task analysis evaluation of the particular individual concerned. Postural recommendations are likely to change dependent upon the task undertaken and a flexible approach on this is therefore required. It is common practice to recommend a variety of postures and to educate the individual in the benefits of changing posture. An individual may be advised to incorporate movement when seated by using a 'free floating' chair mechanism (if this facility is possible on their chair). Likewise an individual may be advised to rest their forearms on chair arms or a forearm support board or it may be recommended that they free float their forearms. This

decision will be based on numerous factors associated with the users individual needs and requirements and dependent upon the equipment they are using.

An increasing amount of literature supports the health benefits of standing when at a workstation either through use of a sit to stand desk or a desk riser that sits on top of the normal height seated desk. Postural advice on how to set this up and how best to stand is required. In general it is recommended that most users do not stand all day but vary their work posture from a sitting and standing position throughout the working period.

In all situations a personal 'user based' approach is essential.

22 Breaks and Rest Pauses

Regulation 4 of the DSE Regulations states that there must be provision of suitable systems of work that allows for breaks and changes of activity for DSE Users. Ideally natural breaks should be incorporated in the work routine and the individual user should have control over their work pattern so they can vary screen and non screen based tasks throughout the day.

It is best practice for breaks to be taken before the onset of fatigue. If this is not possible then deliberate breaks must be introduced. A general rule of thumb is that an individual should spend around 5 minutes every hour totally away from their workstation and that they should vary their posture and take a micro break at their desk every 20-30 minutes.

A physiotherapist undertaking a DSE assessment must carefully question break behaviour and make recommendations for change, if required.

23 Product and Equipment

A physiotherapist must have a broad range of DSE product and equipment knowledge. This can be gained from a variety of ways such as visiting conferences, shows and exhibitions, contact with ergonomic supplier representatives, internet and catalogue reviews and from practical interaction with equipment when in an organization.

It is recommended that a Physiotherapist remains impartial regarding the procurement of equipment to show they are independent and unbiased with their recommendations. If

Physiotherapists undertaking DSE assessment do have an affiliation with an equipment supplier this must be made clear at the outset.

24 Recommendations and Report Writing

Guidance on DSE report writing is covered in the ACPOHE course Office Ergonomics (DSE) Level 1. Further guidance can also be found on ACPOHE's website in the Guidance on Report Writing Document.

It is important to remember when writing a DSE report that you make it clear that you have understood the needs of your client and that you answer all questions that have been asked. Any recommendations made must be SMART. If recommendations are clearly impractical and unachievable the credibility of the DSE assessor will be lost.

Who receives a copy of the report from the DSE assessor must be discussed with the person who has requested the work. In most cases it is best practice if an agreement is made that the DSE User receives a copy of the report at the same time as the person requesting the assessment. However, this must be agreed first. Under data protection laws the DSE user will have a right to see their report at a later date, if requested in writing to their employer.

25 Consent/Confidentiality and Data Protection

Consent and Confidentiality issues surrounding DSE assessment are covered in the ACPOHE course Office Ergonomics (DSE) Level 1. Further guidance can also be found on ACPOHE's website in the *Consent and Confidentiality* Document.

Particular issues regarding data protection also occur with undertaking DSE Assessment as a Physiotherapist will be required to transport notes to and from a place of work. Use of photography is often utilized during the assessment, alongside other personal data, so consideration must be given to this under data protection laws.

26 Conclusion

Physiotherapists are well placed to undertake DSE Assessments in the workplace but require additional training and knowledge to undertake this work competently.

This guidance document provides a reference to enable physiotherapists to ensure that they are following approved practices and considering all the necessary factors.

Physiotherapists must also map their own competency against the ACPOHE Competency Framework and are encouraged to learn more about Occupational Health issues relevant to Physiotherapists to help them become more proficient in DSE Assessment.

27 Useful Resources and References

HSE Books and Publications

Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations **1992** (as amended by the Quarries Miscellaneous Health and Safety Provisions Regulations 1995) Approved code of practice and guidance L24 ISBN 0717604136

Safe use of work equipment. Provision and Use of Work Equipment Regulations **1998**. Approved code of practice and guidance L22 ISBN 0 7176 1626 6

Management of health and safety at work. Management of Health and Safety at Work Regulations **1999**. Approved Code of Practice and Guidance. L21 ISBN 0 7176 2488 9

The law on VDUs: An easy guide: Making sure your office complies with the Health and Safety (Display Screen Equipment) Regulations 1992 (as amended in **2002**). HSG90 HSE Books

ISBN 0 7 76 2602 4

Work with Display Screen Equipment. Health and Safety (Display Screen Equipment) Regulations 1992 as amended by the Health and Safety (Miscellaneous Amendments) Regulations **2002**. Guidance on Regulations. L26 (second edition) HSE Books 200 ISBN 0 7 76 2582 6

Working with VDUs. INDG36 (rev3) ISBN 0 7 76 6222 5 - <http://www.hse.gov.uk/pubns/indg36.pdf>
Health and Safety of Portable Display Screen Equipment

Aching arms (or RSI) in small businesses - <http://www.hse.gov.uk/pubns/indg171.pdf>

Upper limb disorders in the workplace - <http://www.hse.gov.uk/pubns/books/hsg60.htm>

HSE Research Reports

Health & Safety of Portable Display Screen Equipment. Contract Research Report 304 **2000** - http://www.hse.gov.uk/research/crr_pdf/2000/crr00304.pdf

Better Display Screen Equipment (DSE) work – related ill health data. Research Report 561 **2007** - <http://www.hse.gov.uk/research/rrpdf/rr561.pdf> (Institute of Occupational Medicine)

Evaluation of the success in Great Britain of the Directive on Minimum Safety and Health Requirements to work with display screen equipment. Research Report 628 **2008** - <http://www.hse.gov.uk/research/rrpdf/rr628.pdf>

Management of Upper Limb Disorders and the Biopsychosocial Model. Research Report 596 **2008** - <http://www.hse.gov.uk/research/rrpdf/rr596.pdf>

Executive Summary of Cross National Report of Evaluation of VDU Directive (90/270 EEC)- <http://www.hse.gov.uk/Msd/pdfs/reportevaluation90270.pdf>

Evaluation of the success in Great Britain on minimum safety and health requirements for work with DSE -<http://www.hse.gov.uk/research/rrpdf/rr628.pdf>

Pilot study on basis of the VDU Directive - <http://www.hse.gov.uk/Msd/pdfs/directivevdu.pdf>

RR10 - How the Courts are interpreting HSE guidance and health and safety regulation-<http://www.hse.gov.uk/research/rrpdf/rr010.pdf>

The Challenge of Managing Upper Limb Disorders – how can health professionals become more effective. Research Report 215 - <http://www.hse.gov.uk/research/rrpdf/rr215.pdf>

WRULD Database

WRULD database <http://www.humanetechnology.co.uk/wruldii/wruld/index.php>

Institute of Work and Health Canada

Workplace interventions to prevent musculoskeletal and visual symptoms and disorders among computer users: A systematic review Van Eerd D, Brewer S, Amick BC, Irvin E, Daum K, Gerr F, Moore S, Cullen K, Rempel D, **2006** - <http://www.iwh.on.ca/sys-reviews/workplace-interventions-to-prevent-musculoskeletal-and-visual-symptoms-and-disorders-am>

Systematic review of the role of occupational health and safety interventions in the prevention of upper extremity musculoskeletal symptoms, signs, disorders, injuries, claims and lost time Amick BC, Kennedy CA, Dennerlein JT, Brewer S, Catli S, Williams R, Serra C, Gerr F, Irvin E, Mahood Q, Franzblau A, Van Eerd D, Evanoff B, Rempel D, **2008** - http://www.iwh.on.ca/system/files/documents/sys_review%20_upper_extremity_2008.pdf

Royal College of Physicians

Upper limb Disorders, Occupational Aspects of Management: A National Guideline, Royal College of Physicians, **2009**- https://www.rcplondon.ac.uk/sites/default/files/upper-limb-disorders-national-guideline-full-text_0.pdf

Other

Burdorf, A, **(2007)** Invited points of view: The art of conducting workplace intervention studies. *International Journal of Industrial Ergonomics*, 37, (2), 175-176

Daya, S, **(2015)** Clinical reasoning in office workplace assessments. *Occupational Health Physiotherapy*, Vol. 19.1

Gilliland, S **(2014)** Clinical reasoning and first and third year physical therapist students. *Journal of Physical Therapy Education*, (28): 64-80, cited by: Daya, S, **(2015)** Clinical reasoning in office workplace assessments. *Occupational Health Physiotherapy*, Vol. 19.1

Silverstein, B. **(2006)** Preventing the burden of workplace musculoskeletal disorders, what do we know about what works? IWH Alf Nachemson Lecture, (From <http://www.iwh.on.ca/research>)