Edition One
2015

Standing at Work

A White Paper covering the health and safety implications of standing in the workplace. Looking at the UK and Europe, it explores the common causes, effects and possible solutions that responsible businesses should be aware of.

COBA europe

Executive Summary

Standing at Work is a White Paper compiled by floor safety experts, **COBA Europe** – an established global manufacturing and distribution business with over 30 years' experience in the manufacture of safety matting for the workplace.

The aim is to provide **health and safety professionals** with the necessary information and resources to properly assess the safety of workers whose occupations require them to stand for most of the day.

Despite an ever-growing focus on safety across all countries within the EU, research indicates that Musculoskeletal Disorders (MSDs) are continuing to rise, affecting millions of workers every year in all types of employment sectors.

MSDs are the most common occupational disease within the EU and very often the cause of long-term sickness absence. According to the 5th European Survey on Working Conditions, **24.7% of workers suffer from backache**, **22.8% have muscular pains**, and **45.5% complain of working in painful or tiring positions**. It is estimated that up to 2% of European GDP is accounted for by the direct costs of MSDs each year.

In a report compiled by the Fit for Work Europe Coalition, so serious are MSDs, it is predicted that EU member states could see **50% of their popular affected by 2030**. That seems credible given that in the UK alone, the number of new cases of MSDs grew substantially from **140,000** in **2011/2012** to **184,000** in **2013/2014** (Source: HSE).

It seems the physical position we work can have real health implications. Interestingly, there are dangers associated with both standing and sitting for long periods. This White Paper takes a closer look at the risks, while giving practical recommendations and solutions to alleviate the problem.

There is also some interesting scientific research, in particular a study carried out at **Loughborough University**. A conclusion of this study emphatically confirmed that anti-fatigue mats can significantly increase comfort to workers who stand for prolonged periods of time.

Lastly, the results of market research carried out in 2015 on the subject of standing in the workplace are examined. The survey explored the experiences of health and safety officers, as well as other professionals employed across a variety of sectors. 34% of respondents had colleagues who had experienced back, leg or foot pain as a result of standing at work, with some 75% citing that anti-fatigue matting had a positive effect on the wellbeing of staff. Supporting this, **23% confirmed that absenteeism had been reduced as a result of anti-fatigue matting.**

Contents

What are MSDs?

The abbreviation **MSD** stands for Musculoskeletal Disorder. **Musculoskeletal Disorders** are injuries or conditions affecting the movement of the human body, or the loco-motor apparatus. They are problems that affect the muscles, tendons, ligaments, vascular system, nerves, soft tissues, bones and joints.

Common Problems Include:

- Pain
- Inflammation
- Tenderness
- Pins and needles /numbness
- Burning
- Muscle spasm and/or weakness
- Lack of movement/flexion in joints
- Crepitus – crackling sound when tendons are pressed
- Reduced or lack of grip
- Ganglion – cyst-like swellings

Body Areas Affected:

- Upper and lower back
- Neck and shoulders
- Hands and wrists
- Hips and Thighs
- Knees
- Calves
- Feet

Symptoms can creep on gradually, and progressively get worse leading to more acute pain. Movement can become increasingly restricted. If an MSD is as a result of an accident or physical exertion, causing a sprain or strain, then acute pain is usually experienced immediately. **They can happen to all genders and age groups**, but the risks increase with age. Many MSDs are, however, preventable. Treatment depends on how advanced MSDs have become and early intervention is essential.

Work Related MSDs

While the original cause may not be due to an event at work, or even the working environment itself, it is acknowledged that MSDs are often aggravated or made worse by a person's work. Of course, tasks carried out at work that involves repeated exposure to bending and lifting, **poor posture** and **prolonged standing** either on a repetitive or prolonged basis, are common causes of MSDs. They are referred to as Work-Related MSDs, widely regarded as the **most common occupational disease in Europe**, affecting millions of workers every year across all types of employment sectors. They are prevalent across both developed and developing countries. They can cause immense suffering, **long-term sickness** absence and even permanent disability.

MSDs are usually categorized as **'Upper Limb MSDs**', **'The Back'** and **'Lower Limb MSDs'.**

Upper Limb MSDs

– also abbreviated as ULD (Upper Limb Disorder)

As the term broadly describes, these are aches, pains, tension and disorders such as inflammation to the upper part of the body including the hands, wrists, elbows, arms, shoulders, neck, and back. Upper limb MSDs are also sometimes described as Repetitive Strain Injuries (RSIs). Examples of ULDs include: **Carpal Tunnel Syndrome, Tennis Elbow, Frozen Shoulder, Cervical Spondylitis, and Ganglion**. These are just a few – there are many more.

The estimated number of working days lost in Great Britain during **2013/2014 due to ULDs was 3.2 million**. On average each person with a ULD took **15.9 days off work**, equating to an average loss of 0.13 days per worker. (Source: HSE/Labour Force Survey, 2013/14)

Work Related MSDs

Lower Limb MSDs

– also abbreviated as LLD (Lower Limb Disorder)

Lower limb disorders describe conditions to the hips, thighs, knees, calves and feet. Causes include squatting, kneeling, pushing on pedals, prolonged standing / walking or can be from any similar tiring position. Conditions include Osteoarthritis, Knee Bursitis, Mensical Lesions/Tear Damage, Stress Fracture or Stress Reaction injuries, and Varicose Veins.

Each step, when walking for example, exerts force through the lower limb – this can be up to two times the body weight.

The estimated number of working days lost in **2013/14 in Great Britain due to LLDs was 2.3 million**. On average, each person with a LLD took **24.3 days off work**, equating to an average loss of 0.095 days per worker. (Source: HSE/Labour Force Survey, 2013/14.)

Back Pain and other Disorders

Key causes of work-related back disorders include lifting, carrying, gripping, pushing, pulling, standing and sitting.

The estimated working days lost in 2013/14 in Great Britain due to MSDs affecting the back was **2.8 million**. On average, each person with a back disorder took **12.3 days off work**. This equates to an average loss of 0.11 days lost per worker which is unchanged from 2011/12. (Source: HSE/Labour Force Survey)

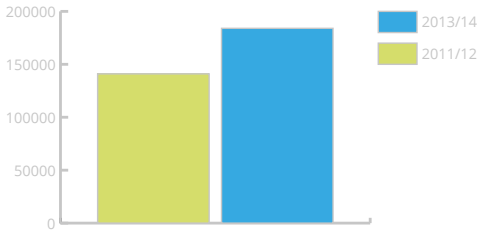
In Europe, 24.7% of workers complained of backache. Within the EU, backache appears to be the most common work-related problem above fatigue and stress.

MSDs in Numbers

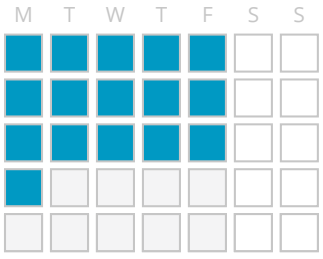
In the UK

- The total number of MSD cases in 2013/14 was 526,000 out of a total 1,241 000 for all work-related illnesses.
- The number of new cases of MSDs in 2013/14 was 184,000, up from 141,000 in 2011/12.
- The total number of working days lost due to MSDs in 2013/14 was 8.3 million, an average of 15.9 days per case of MSDs. (HSE/Labour Force Survey)
- It is thought that MSDs are costing UK businesses £7.4 billion a year through absenteeism. It is also estimated that they are costing UK businesses some £15 billion a year in 'presenteeism' – that is people with an MSD who still come to work but through their condition are not as productive. (Chartered Society of Physiotherapy, Physiotherapy works, 2010)

2013/14 in UK



Increasing MSD cases



Average 15.9 days per MSD case

MSDs in Numbers

Across Europe

- MSDs are the most common occupational disease in the European Union. They are also an increasing problem and one of the most important causes of long-term sickness absence. (Source: European Survey on Working Conditions)
- Over 40 million workers in Europe are affected by MSDs attributable to their work, costing some 240 billion euros per year in lost productivity. (Source: European Agency for Safety and Health at Work)
- EU member states are set to see 50% of their population diagnosed with an MSD by 2030, according to a report from the Fit for Work Europe Coalition produced by the The Work Foundation.
- The same report states that the UK and Germany have some of the worst sickness absence rates in Europe, behind countries such as Poland, France and Romania. It speculates that an extra one million people could be at work each day across the EU if early interventions for MSDs were more widely accessible.
- According to the 5th European Survey on Working Conditions, 35.4% of respondents consider that their work affects their health. 24.7% complain of backache, 22.8% of muscular pains, 45.5% report of working in painful or tiring positions while 35% are required to handle heavy loads.
- Besides the effects on workers themselves, MSDs can lead to high costs to enterprises and to society as a whole.
- It is estimated that up to 2% of European Gross Domestic Product (GDP) is accounted for by the direct costs of MSDs each year.

Pain = Tiredness = Problems

Pain and discomfort is debilitating and inevitably leads to fatigue. When individuals become tired, there is a higher risk of lapses in concentration and reactions to events can become slower.
Many employees have to stand in tiring positions, especially those working in manufacturing, construction, hospitality, retail and other service professions. Over 45% of European workers complain of this.
Tiredness can lead to other types of accidents in the workplace, and in the most serious cases, even fatalities. Fatigue can also lead to stress and affect the immune system, taking its toll on overall health. That is why taking measures to alleviate, even prevent, tiredness and more extreme fatigue is so critical to reducing the risks of accidents in the workplace.

Over 45% of European workers complain of of standing in tiring positions at work.

What are the consequences of Fatigue?

Accidents in the Workplace

With some **22.5% of European workers** complaining of 'fatigue' in broad terms, it is an issue that should not be ignored. From this, it could be presumed that at least **20% of European workers** are at risk of being tired, therefore less alert to hazards in the workplace, endangering themselves and their colleagues. It spans both Mental and Physical Fatigue. Fatigue is known to decrease cognitive performance and has the potential to lead to any type of accident, such as slipping, falling from height, lacerations, and so on.

Loss of Productivity & Cost to Business

Sickness absence due to illness or injury is costly to enterprise and society as a whole. In 2013/2014 the total number of working days lost to MSDs in the UK was 8.3 million, an **average of 15.9 days per case** according to HSE/Labour Force Survey.

An Absence and Workplace Health Survey conducted by the CBI/Pfizer in 2013, found that absenteeism in general is costing the UK economy a staggering £14 billion a year. According to HSE statistics, **£7.4 billion of this is directly attributable to MSDs**. Costs are incurred not just in respect of sick pay, but also in overtime, temporary labour and lost productivity. The problem of 'presenteeism' is also costly to business, with several studies suggesting that it is more costly when employees come to work when they are not feeling 100% compared to them taking the time off sick. **Some cite this cost as being £15 billion, while others even suggest £36 billion**.

Fatigue and its Impact on Wellbeing

Regularly feeling fatigued, if ignored, can have an impact on general health and wellbeing. Fatigue can lead to stress in the workplace; **statistics suggest that stress accounts for 22.3% of workers across Europe.** According to the Workplace Wellbeing Charter, there is strong evidence that 'having a healthy workforce can reduce sickness absence, lower staff turnover and boost productivity for the good of employers, workers and the wider economy.' A happy, healthy workforce benefits society as a whole.

‘To Sit or to Stand?’ That is the question

There has been a lot of national and international press coverage surrounding the question: ‘is it best to sit or to stand?’ While standing for prolonged periods has its share of consequences, it is considered by many health professionals to be better than sitting for long periods of time.

A panel of experts on behalf of Public Health England have issued guidance that workers should get up and stand for at least two hours daily during working hours, eventually building this up to four hours a day. The same experts also say that prolonged static standing may be as harmful and recommend altering posture or walking to alleviate musculoskeletal pain and fatigue. That is why we are seeing more standing desks/ workstations, and we are generally being encouraged to walk about more.

Striking the right balance being sitting and standing, and changing of posture through regular breaks and task rotation are recommended by many. In fact, there are many global campaigns now promoting the benefits of sit/stand desks in the workplace. Across Norway, Sweden, Finland and Denmark over 90% of office workers using computers are working at Sit-Stand desks (www.getbritainstanding.org).

People are generally being encouraged to move around more, both during the working day, and out of working hours, as sedentary lifestyles are linked to the growing problem of obesity, type 2 diabetes and other health conditions.

Global studies show, on average, people are seated 7.7 hours a day, and some results estimate people sit up to 15 hours a day. In Great Britain, the average figure for people sitting is 8.9 hours per day according to the campaign website www.getbritainstanding.org. It claims that sitting for more than 4 hours a day could be harmful. It also has a handy calculator for users to estimate the time they spend sitting during the course of an average day. Other global statistics concerning the dangers of prolonged sitting, can be found at www.juststand.org

Many ergonomists believe that workers need to be ‘taught’ how to sit properly and how to stand correctly. Of course, some occupations require standing, while others require long hours of sitting.

The Problem of **Standing**

While it is widely recommended that we should stand more, there are risks associated with regular prolonged standing.

Common ailments:

- Varicose Veins
- General pain and swelling of the legs, feet and ankles
- Low back pain
- Joint damage
- Bunions and corns
- Achilles Tendonitis
- Plantar fasciitis
- Circulatory problems
- Hypertension

Prolonged standing can also be dangerous to those who have an existing health problem such as cardiovascular disease, as it makes the heart work harder. Hard concrete floors are considered the worst type of floor surface to stand on.

The Science of standing

Let us take a look at what happens to the human body when we stand.

Standing affects our circulatory system, and in particular the Venous System, which is responsible for moving blood throughout the body via our veins. When we stand, we subject increased pressure on the walls of our veins, and if standing in a static position, that intensity increases.

Think of the heart as the central pump in the circulatory system. With each beat, the heart pumps blood through the vessels, which transport oxygen and nutrients to all tissues and arteries of the body. Oxygenated blood leaves the left side of the heart. The arteries carry the blood away from the heart and the veins return the blood back up the heart. The main venous return pump is in the calf muscle. The foot has many tiny complex veins. Veins in the legs have one-way valves to help blood flow back to the heart against for the force of gravity. The blood pushes through the valves toward the heart and the valves close to prevent backward flow. With each step that we take when we walk, the foot and calf muscles contract with forces the blood up through the venous system against gravity back up to the right hand side of the heart.

That is why when we stand we subject the walls of our veins to increased pressure which can cause long-term

damage. When standing still, gravity makes fluid settle in the feet and legs, which in turn can create pooling and swelling.

As tiredness creeps in, joints such as the ankles and knees can tense up and become locked. There is a tendency to shift weight from one side to the other, which increases the release of muscular energy, and in turn can lead to fatigue. Regular standing in static positions can slowly diminish elasticity in the soft tissues. This degenerative damage can lead to rheumatic diseases.

Research into venous pressure on a group of workers found the pressure was 56mm when seated and 87mm when standing. The pressure dropped to 21mm after taking 10 steps concluding that walking for two to four minutes a day after every 15 minute period of standing was more comfortable than standing without walking (Konz S, Johnson S, Work Design 1-629,2000)

The Problem of **Sitting**

Recent research suggests that prolonged sitting is now linked to serious health risks, such as Type 2 diabetes, heart disease, cancer and even premature death. This even applies to people who are fit and exercise regularly. Following extensive research, it is now believed that prolonged sitting may slow the metabolism, affecting the body's ability to regulate blood sugar, blood pressure as well as its efficiency in breaking down body fat.

It appears that inactivity is a silent killer and that is why able-bodied people are being urged to stand more both at home and in the workplace. In the UK, the NHS has issued official guidelines and recommendations about why sitting for too long is bad for your health in the form of the 'Start Active, Stay Active' report. Ernest Hemmingway famously wrote his novels standing up, and Sir Winston Churchill was another who stood at his desk.

For those with jobs that involve prolonged sitting, it is recommended that an individual gets up and moves around every 30 minutes, possibly standing while on the telephone or in meetings. Standing boosts metabolism which helps to burn calories. It also tones and improves muscles, helps posture and circulation.

It is believed that the average adult may spend 50-60% in a sedentary state (either sitting or lying down). A study carried out by researchers from Loughborough University and the University of Leicester in 2011 compared the shortest time spent sedentary with the longest time spent sedentary. For the longest time there was as association with:

- 112% increase in risk of diabetes
- 147% increase in cardiovascular events
- 90% increase in death due to cardiovascular events
- 49% increase in death due to any cause

It is believed that the average adult may spend 50-60% in a sedentary state

Striking the balance between Sitting and Standing in the Workplace

Current recommendations:

If your job involves prolonged sitting, then stand up for at least every 20-30 minutes. Find ways of introducing standing to your daily routine, such as standing while on the telephone and during meetings, walk to a different part of the office or building.

If your job involves prolonged standing, change position as often as possible and take regular sitting breaks to rest the legs. The maximum recommended time for standing before taking a break in many working environments is normally 4 hours.

Recommendations for Standing in the Workplace

Wellbeing in the Workplace

While organisations have a legal duty to comply with the Health & Safety at Work Act, this traditionally addresses measure to prevent accidents for physical safety. There is today a growing recognition about the importance of not just 'health and safety' but 'health and wellbeing'; this being the impact of the working environment on physical and mental health and wellbeing. Organisations have been urged to take measures to enhance positive wellbeing, which not only include the workspace but also take into account work culture, such as people management, leadership etc. It is often described as the psychosocial environment. This helps to address the problem of stress, anxiety and depression, which is often made worse, or even caused, by work.

The impact of poor-employee mental health is significant (and prevalent) to many organisations. Creating and investing in a comfortable working environment is a positive step in supporting wellbeing in the workplace, and in doing so, helps to create greater employee engagement and motivation. It can therefore be presumed that a healthier and happier workforce (with less absenteeism) is going to be a more productive workforce. For many companies, increased productivity also leads to increased profitability.

> The Workplace Wellbeing Charter claims 'there is strong evidence to show how having a healthy workforce can reduce sickness absence, lower staff turnover and boost productivity - this is good for employers, workers and the wider economy.'

Scientific Evidence:
A comparison between standing on concrete and anti-fatigue mats

A scientific study commissioned by COBA Europe Ltd and conducted by Loughborough University in 2007 emphatically confirmed that anti-fatigue mats can significantly increase comfort to workers who stand for prolonged periods of time and also help to reduce fatigue.

Loughborough University

The study carried out by Professor George Havenith and Lucy Dorman from the Department of Human Sciences used 14 independent participants. Using objective and subjective measures, the study compared thermal comfort and fatigue when standing on floor matting samples to that experienced when standing directly on concrete.

Test methods included infrared thermal imaging, body temperature sensors, calf circumference measurements and cognitive testing. Participants were provided with the same test clothing and conditions, standing on eight different anti-fatigue mats supplied by COBA Europe.

The subjective results showed statistically significant benefits to users of anti-fatigue mats when compared to standing on a concrete floor. After just 90 minutes, both thermal and postural comfort benefits (in particular to the legs and lower back areas) were experienced and levels of fatigue were reduced.

Scientific Evidence: A Study of Anti-Fatigue Mats at Land Rover

A separate study commissioned by COBA Europe and conducted by Professor Mark Porter and Dr Samantha Porter from the Design Ergonomics Group at Loughborough University compared standing on concrete with standing on floor matting with the help of employees at Land Rover. 26 employees working on the Range Rover Carousel took part in study over a seven week period, using four different types of anti-fatigue mats supplied by COBA, and standing on concrete, described as the 'No Mat' condition.

Discomfort data was collected from 30 body areas using a body discomfort diagram. Discomfort was assessed as either 'slight', 'moderate' or 'considerable', and this information was taken at the start of the day, just before the lunch break and at the end of the day. It also compared the type of mat preference.

Significant statistical differences between the conditions were only identified in the feet, calves and lower back. The provision of matting was found to reduce either the number of reports or the severity of discomfort in the feet and calves during the day. Reports of discomfort of the feet and calves were appreciably higher in the weeks when the matting was not fitted (no mat conditions). Reports of 'considerable discomfort' were 5.2 times greater when matting was not used.

COBA Europe Standing at Work Survey 2015

COBA Europe recently commissioned market research into the effects of standing in the workplace for the specific purpose of this White Paper. The study involving Health and Safety Managers, Warehouse Managers, Production and Operations Managers was carried out in June/July 2015, to provide evidence and findings from real work conditions about the issue of 'standing at work' in the UK. It was compiled to gain a greater understanding of related health problems from prolonged standing in a variety of working environments, and respondents represented both large multi-national organisations and smaller privately owned companies. Those participating in the survey were also asked to indicate what measures had been taken/or are being taken to address the problem of prolonged standing, should it be applicable to their workplace.

Key points:

34% of respondents had colleagues who had experienced back, leg or foot pain as a result of standing at work, of which 8% also confirmed they knew of staff with other health problems, and a further 5% had received complaints about serious health issues that had resulted from their staff standing at work.

When asked to rate the seriousness of the problem of standing within their own company, one respondent considered the issue to be 'highly serious' while a further 26% cited it as being 'serious'. Some 12% identified people taking sick leave as a direct result from standing at work. 86% considered sick leave to have an impact on the productivity within their organisation.

Nearly two thirds of respondents said they had a policy on standing at work. Actions taken to overcome discomfort from standing commonly included the provision of anti-fatigue matting, regular breaks and the rotation of activities. 69% of respondents who had invested in measures to alleviate the problem of standing at work, considered they had obtained a good return on their investment. 84% considered they had an effective solution in place.

Of those who had invested in anti-fatigue matting as a solution, 75% found anti-fatigue matting to have had a positive effect on the well-being of staff; 54% found anti-fatigue matting had helped to reduce pain or serious health complaints of staff; and 44% considered anti-fatigue matting to have a positive effect on increasing productivity in their company. Some 23% confirmed that absenteeism had been reduced as a result of anti-fatigue floor matting.

75% found anti-fatigue matting to have had a positive effect on the well-being of staff.

Conclusion

From this, it can be concluded that both sitting and standing for prolonged periods of time can have an impact on health and wellbeing. However, walking and standing (in the correct posture and on a comfortable floor surface) is considered by many to have more health benefits over sitting. Health experts warn that prolonged sitting can be harmful, even to those who regularly exercise. Recommendations are to get up and move around at least every 30 minutes as standing boosts metabolism, improves muscles, helps posture and circulation.

So, in short, able-bodied people are being urged to stand more; to be more active in general and take measures to avoid sedentary lifestyles. Finding a compromise between sitting and standing is deemed important. Regular prolonged standing can lead to MSDs and other health conditions. That is why many recommend taking measures to make standing as safe and as comfortable as possible, not least in the workplace.

Scientific studies repeatedly confirm that standing on anti-fatigue mats is more comfortable than standing on hard floors. From this, it can be assumed that improved comfort reduces the speed/onset of fatigue from standing, and generally supports healthier standing.

This leads to the presumption that a healthier workplace will in turn generate higher levels of productivity. 75% of respondents participating in the survey by COBA Europe found anti-fatigue matting to have a positive effect on the wellbeing of staff of which some 54% said it had helped to reduce pain and serious health complaints.

Some 26% of those respondents surveyed by COBA Europe considered the problem of standing to be 'serious' within their workplace, with one describing it as 'highly serious'. While two thirds of those surveyed had a policy on standing at work, it can be presumed that one third did not consider the issue to be important in their environment.

So, advice could include conducting a risk assessment and creating a policy on sitting and standing at work; addressing the design of workstations; investing in solutions to make standing at work safer and more comfortable.

Credits & Sources

HSE 'Musculoskeletal Disorders in Great Britain 2014'/ Labour Force Survey 2013/2014 (Self-Reported Work-Related Ill Health & Workplace Injuries) - The Office for National Statistics

Chartered Society of Physiotherapy, Physiotherapy Works, 2010

5th European Survey on Working Conditions, 2010

European Agency for Safety & Health at Work, 2010

Image Credits

p1 - 'Man standing at desk' - Ramsey Beyer / Flickr

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+44 (0)1788 228 555
sales@cobaeurope.com
www.cobaeurope.com