

CARDINUS
riskmanagement

CONNECT

The magazine for the risk professional



Issue 12

A call to action

Exciting research for the future of ergonomics

TIME FOR ACTION

Medical wearables can reduce injuries

New tech to manage and reduce injuries

MSDs and mental health in the workplace

Underlying causes, contributory risk factors

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Welcome

As we approach the latter half of 2018 we can look back on the last 6 months with some pride. For Cardinus, we've launched our new range of safety e-learning courses, brought in a whole new security division to complement the work we do in the field of occupational health and safety, and expanded our safety service to deliver a truly global offering.

This edition of Connect features expert contributors we've worked with previously, as well as some new ones, and will explore exciting new fields, new technologies and new guidance to help risk professionals make the right choices for their organisations. As usual, expect to find expert, thought-leading articles that matter to you.

Opening the magazine Anna Clark and Stephen Smith discuss a new project that Cardinus has invested heavily in, and hopes to help define the future of ergonomics in the workplace. The project is a joint-funded research study with the University of Salford, and in the article, lead researcher Anna Clark discusses what the project aims to achieve and why it was set-up in the first place.

We also ask for your help in improving the research with your own evidence from your workplace. You can read more in the article and we hope you can help in whatever way you can.

Andrew Ronchi from dorsaVi takes a look at how medical wearables can help to reduce injuries. With this fantastic new tech enabling managers to evidence and understand their employees' movements throughout the working day, it can really help to make a difference. With 290.8 million working

days lost to MSDs in 2012 in the US, this tech could be the answer to minimizing workplace injuries.

John Davidge focuses his attention on driving and fleet technologies and how they both work for, and against, the driver and the risk manager.

Jon Hayter, a professional security expert, tells us how to make a security strategy that is both operationally agile and fit-for-purpose, through managing your organisational exposure and vulnerability prior to any security threats taking place. This guidance, systematized into a process called the Adversarial Planning Model (APM) has helped transform organisational security.

We've got plenty more too, from tactical solutions that aid with office ergonomics, to the connection between MSDs and mental health disorders in the workplace.

It leaves me only to say thank you for choosing to read Cardinus Connect. It takes a huge amount of effort to get these magazines published, and we'd like to thank all the contributors for expert opinion and evidence. Please send any feedback to info@cardinus.com.

We look forward to hearing from you.



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Increase in Gen Z MSDs will impact your future workplace: A call to action

Anna Clark asks for your help in combating the impact on your future workplace by increases in MSDs in young people.

CARDINUS has embarked on an essential piece of research to understand the association between ergonomics injury caused by technology use and the impact on employers who will be recruiting these young people in the future. As the lead researcher in this project, I am asking for your help.

Cardinus is conducting a research study with the UK's University of Salford into this issue and I believe it's outcomes will show the massive scale of the issue and the need for employers to take note. However, to improve the outcomes your workplace data could be just what we need.

What we're doing

I'll be conducting a longitudinal study looking at technology use and young people. I'm keen to explore how this technology use may be affecting young bodies and the impact this may have on the future workforce when these young people enter it.

We know that technology use has increased, we know the risks of ergonomics injuries associated with technology, but what we don't know is how these elements will link together and affect the workplace of the future.

This is what our research with the will aim to deliver.

We will be heading into schools using a cross-sectional sample of our target population from 5-16-year-olds, with a methodology framework that will work towards building a longitudinal study that will truly uncover the level of risk and help us to understand how to combat it.

Here's what we know so far

Where Cardinus clients allow it, they have been able to utilise aggregated data from Healthy Working (Cardinus' office ergonomics software) to identify those leading indicators that may cause us to change the way we work.

A few years ago, Cardinus started looking at what the next big thing is in terms of office ergonomics. They looked at the ageing workforce, but most of the companies have good policies and practices in place to support this part of the workforce. They also looked at sit-stand desks but found lots of existing research into the area.

However, they noticed something that is pretty much still unnoticed by the ergonomics and occupational health

community. This is young people presenting with ergonomic injuries entering the workforce.

Why is this an issue?

We know poor ergonomics practice is not good for us. Repetitive movement and static and poor posture can lead to many injuries.

“Repetitive movement and static and poor posture can lead to many injuries.”





There is enough research in this area to justify many countries implementing some form of ergonomics regulation. These ergonomics regulations are there because we know that the risks of injury to our adult working population are considerable.

But let's consider our young people. School systems around the world are providing students with laptops and tablets to complete their work. Research shows they drive better academic outcomes as research and reference materials are more readily available. But think about it, children are potentially using these devices for up to 6 hours a day. They are then going home and using them to complete their homework. Inevitably they are gaming for a while and when we think they are tucked up in bed, they are probably organising their social lives through their smartphones.

We think young people are using technology for more hours a day than our workers and, yet we protect our workers, there is no such protection in place for our children.

The research base

The widespread use of MTSDs (mobile touchscreen devices) in children is well-documented, with UK's OfCom (2016) reporting that 79% of 12-15-year-olds own a mobile phone. This finding is supported by the Good-Childhood Report (The Children's Society & Rees, 2017) stating that children aged 12/13 felt that a phone or social media account was integral to social inclusion.

However, there is a lack of research into childhood musculoskeletal conditions, and there are difficulties in identifying

the risk factors for musculoskeletal conditions in children (Kamper et al 2016). We've reasonably assumed that similar risk factors to adults would be appropriate, such as repetitive motion patterns, non-neutral body postures, and forceful manual exertions, among others.

Despite this, it is known that musculoskeletal disorders are multifactorial, with several risk factors (physical, psycho-social and individual) contributing to their development, which can be work, or non-work, related (Ariens et al, 2000).

Considering the rise in the use of MTSDs and the risk factors identified for adults in developing musculoskeletal disorders, the key considerations we're investigating are "repetitive motion patterns and non-neutral body postures (dynamic or static)", as both factors are present when children are using MTSDs (Toh et al., 2017).

Within the age group of interest Fares et al (2017) concluded that the sustained neck flexion that children and adolescents adopt when using mobile phones increases the stresses and strains on the neck which may lead to early wear, tear and degeneration.

Lower back pain has been positively linked to poor sitting postures that adolescents adopt whilst watching TV or playing games (Minghelli et al, 2014). In China, Feng et al (2017), measured 400 children and adolescent's spinal and thoracic postures, as well as collecting data on incidences of lower back pain; concluding that there is a strong correlation between excessive thoracic kyphosis angle and limited total lumbar range of movement and lower back pain in adolescents. Considering the repetitive tasks that may be involved with MTSDs, it can be hypothesised that there may be implications i.e. repetitive thumb movements, wrist



extension, and radial deviation, which have previously been linked to osteoarthritis of the thumb joint (carpo-metacarpal joint) (Fontana et al., 2007).

There are a number of other issues worth examining too, such as the death of evidence in how outcomes are measured and how a lack of adequate breaks and low task variation contribute to the problem. Our research will be looking into these issues and we hope, at the end of the first 3 ½ year period, we will be able to answer some of these questions.

How can you help?

We want your help with gathering data on a variety of factors to enhance our long-term research.

We want to know about the experiences of your workforce. Have you experienced increased absence or presenteeism in your young workforce? Have you incurred any cost increases due to modifications or accommodations to help this demographic? We're keen to know how the changing workplace will have an impact too. As we move to collaborative and agile environments we want to know if you've seen any change in how your young staff have presented with these issues. If we can understand these things we can start to sketch out what the future may look like and how organisations can seek to combat workplace ergonomics issues.

If you would like to get involved, please contact info@cardinus.com for more information.



■ Anna Clark is senior paediatric physiotherapist (MSc) and owner of BodyWorks Injury Clinic, a private physiotherapist clinic treating sporting and non-sporting injuries. She has extensive experience as a physiotherapist, having worked for the NHS and privately for over 10 years. Her interest in childhood musculoskeletal (MSK) conditions has piqued in recent years after seeing a marked rise in the number of children presenting with MSK issues. She has now undertaken a PhD at the University of Salford to study this specific concern as part of a joint-funded research project with Cardinus Risk Management.



A Call to Action

Calling All Ergonomists and Safety Managers

Cardinus has partnered with the University of Salford to understand the physiological impact of tech use during a young person's developmental years and how that will impact the future workforce.

- Have you experienced increased absence and presenteeism in your young workforce?
- Have you had to accommodate their injuries with technology or changing environments?
- Has your office environment changed, and has it made an impact?
- Are you using equipment like sit-stand desks to reduce injuries?

We'd love to hear your stories, or utilise your data, to improve our research for the benefit of all organisations.



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Salford
MANCHESTER

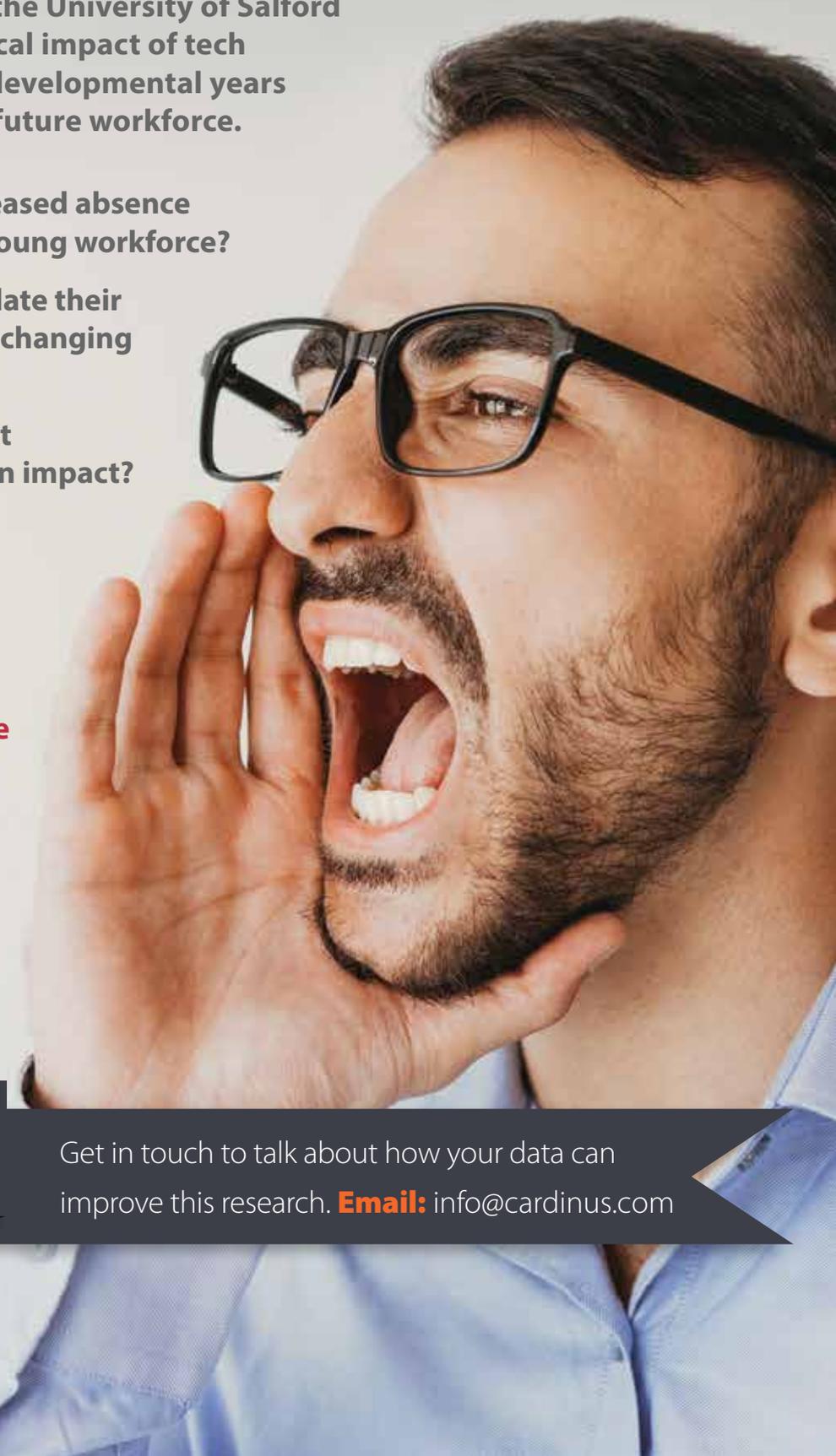
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Medical wearables can reduce workplace Injuries

Andrew Ronchi of dorsaVi brings us the data on medical wearables and why utilising this innovative technology can reduce injuries to the workforce

EMPLOYERS have a legal duty of care to their employees. They should make sure that employees can work in an environment where risks to their health and safety are controlled. This means there are strict procedures in place when it comes to handling machinery, work equipment, chemicals and so on. The procedures are there to prevent what are mostly traumatic workplace accidents.

But however necessary such procedures are, they often do not prevent the most common type of work injury: musculoskeletal disorders (MSDs). These are mostly strains and sprains, shoulder injuries and back injuries, caused by thousands of seemingly innocent, but harmful repetitive movements every day. 126.6 million US adults were diagnosed with an MSD in 2012(1), twice as many as any other condition. Work-related MSDs have a severe impact on the quality of life for a majority of the adult population.

In the US, 290.8 million working days were lost to MSDs in 2012 alone, for an average of 11.4 days per employee. The US economy lost \$213 billion to MSDs in 2011, both in direct and indirect costs. That's 1.4% of its Gross Domestic Product. So not only are MSDs very costly for a national economy

but for an individual company, workers' compensation claims add up to a significant portion of keeping a company's workforce healthy and productive.

Additionally, compensation claims are often only the tip of the iceberg when it comes to costs. MSDs are linked to chronic pain for the employee, more pressure on the remaining team members and overall lower work morale and productivity. Employees who suffer from MSDs are also five times more likely to injure themselves again.

MSD tracking is vital for prevention

The reason why companies often do not have proper procedures in place to prevent MSDs is not that they are unaware of the problem or don't consider it a problem. MSDs develop over long periods of time, can be episodic in nature and can vary from mild to severe disorders. They're also rarely life-threatening. This causes three distinct problems for companies.

1. Tracking Cumulative Trauma:

Because of the slow and gradual nature of MSDs, companies have no way to accurately measure which movements are impacting their employees in a way that will cause harm to their bodies years or even decades into the future.

2. Lack of Optimal Movement Patterns or Guidelines:

Even if a company has an understanding of which movements harm their employees, they wouldn't accurately know which movements to replace them with that wouldn't be equally as challenging on the body.

3. Engaging staff in Behaviour Changes

If a company then does try to make changes to how an employee performs





good solutions to these problems. Wearable technology that tracks a heartbeat or number of steps has been around for years and is now well-accepted by consumers, but such technology does not have the accuracy to help prevent MSDs, where even a few angles of difference can have a big effect compounded over years.

How to get the data

Now there are wearable devices available that can provide the data to help prevent MSDs. These are not consumer devices, but devices that are incredibly accurate and approved for medical use. They can start the process to help prevent MSDs and improve the productivity of a workforce. Here's how these devices can solve each problem mentioned above:

1. To understand where MSDs occur, a baseline assessment needs to be done. The devices are applied to several employees with their consent and are used to measure the impact of their movements on their muscles and joints. These devices are unobtrusive and do not inhibit the task at hand in any way.
2. The initial data set provides an idea of the risk level of performed movements and can then be compared to other movements for the same task to determine which movement has less impact on the body. Should the nurse kneel or bend when applying a bandage? Should the cleaner lunge or bend when vacuuming? Comparative assessments will help determine what movements are objectively better for the workforce.
3. Combined with the widespread acceptance of wearable technologies by consumers, employees are much more understanding of why they should change their ways when they're

a job, it's very hard to convince that person to change their ways if they've been doing it one way for years on end. This is particularly the case if the company cannot provide proper evidence of the damaging effect of certain movements and actions.

Senior Construction Manager at VINCI Construction John Baugh says, "the traditional way that bricklayers lay bricks is by stacking the bricks about a foot off the

ground and putting a wooden mortarboard on the top. Can you imagine bending every day getting mortar constantly from that lower board to build your wall? They're going to be bending over every time they need to lay a brick, about 2000-2500 times per day. Introducing the EcoSpot, which is adjustable, was great but we needed the proof that it would reduce bending and strain on the back for us to adopt it."

Even only a few years ago, there were no



presented with objective data on the damaging effect of some of their movements.

The advantages of medical-grade wearable technology have been seen in a project with Bard Pharmaceuticals. MSDs were a key business challenge for Bard, so they teamed up with dorsaVi to help reduce risk. Employing dorsaVi's ViSafe system, warehouse employees were fitted with wireless movement and muscle sensors to measure the impact of their movements throughout the day. This data was simultaneously synced with video footage.

Understanding the data and making the right decisions

The data and the key insights delivered from that data allowed Bard to understand their employees' traditional practices and which movements objectively place severe strain on the body. This led to a re-evaluation of certain movements that were high-risk, manual and often time-consuming. These movements were then compared with alternative movements that put less strain on the body and often took less time too. The result was a 40% reduction of the time spent in high-risk postures and ultimately an 87% reduction in MSDs.

Having access to objective data not only allowed Bard to make changes to their employees' ways of working, but it also helped to get the employees on board with the changes. Understanding why they should change the way they work by presenting them with objective data is vital to motivating them to change. The project was successful, and Bard earned the 2017 EEF Future Manufacturing Health and Safety Award for their efforts to look after the health and safety of their employees.

But MSDs aren't just a risk in manual labour jobs. An assessment conducted by dorsaVi for a client in an office environment found that employees spent 54% of their day sitting, of which 76% was in a slouched sitting posture. Even in an agile work environment, where employees changed their positions on average 16 times a day, most of the sitting was done in poor posture. Through the use of ViSafe technology and by giving feedback on the spot, dorsaVi was able to correct postures so the employees spent 100% of their time in the lowest-risk zone of their respective workstations.

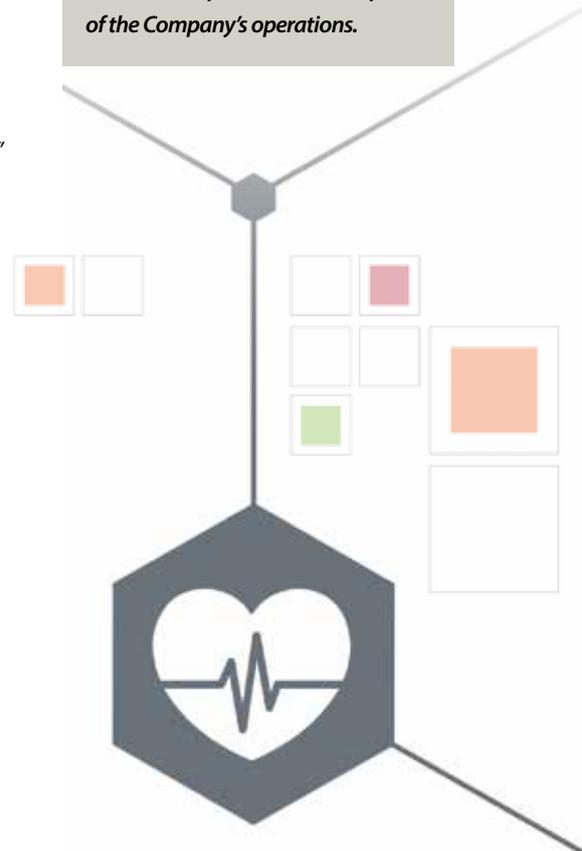
"I'm a big advocate of dorsaVi and truly believe in its capability to make a positive difference in the aviation industry and manual handling industry more broadly. The type of study we undertook was very simple and cost-effective and could be applied to any manual labour activity, reducing risk and increasing productivity in the workforce, and boosting the bottom line for everyone overall."
(Amanda Warner, Project Development Manager at London Heathrow Airport)

With today's modern wearable technology, it is now possible to understand and avoid pernicious risks that cause problems over a long period of time but have a big impact none the less. This technology allows for a real win-win situation, where a company can have a more productive workforce and have less hidden and actual healthcare costs, while employees can avoid injury to their bodies, keeping them happy and improving the quality of their lives.

1. <http://www.boneandjointburden.org/docs/BMUSExecutiveSummary2016.pdf>



Before co-founding dorsaVi, Andrew was a practising physiotherapist both at an Australian Football League (AFL) club and in private practice. He is a founding partner in two physiotherapy centres, the largest of these employing 28 staff (including 13 physiotherapists). Prior to the formation of dorsaVi, Andrew undertook a PhD in Computer and Systems Engineering, investigating the reliability and validity of transducers for measuring lumbar spine movement. As CEO of dorsaVi, Andrew is responsible for all aspects of the Company's operations.



The future of health and safety

Peter Kinselley considers the impact of technology on the future of health and safety and offers guidance on how practitioners can keep abreast of the rapid pace of change

I OFTEN reflect upon one particular TV programme from the 1980s that predicted that the office of the future would be fully automated and have no telephones. It presented a stark but brightly-lit future that felt easy and unsettling at the same time.

Recently, when watching Designated Survivor, a similar moment presented itself. The President is asked by a former factory worker, "Will you get our old jobs back", to which he replied, "they are gone...," and went on to talk about what else could be done to replace the jobs.

Looking to the future of health and safety means we must look at the current economic, technological and social trends, how they are being played out and how they will affect the workplace. Since the programme on the future office, how we work has changed significantly; we rely heavily on technology and 'global' is a term we use routinely. Both have improved the way we work, communicate and can access goods and information. They have also heavily impacted our social lives and how we see our world.

The changing world

Our workplace and social lives are being driven by an increasingly diverse range of products (technology and food) and services that are available to us. While this means increased choice and competitive pricing it also means that we are divorced from our

surroundings as we do not see the impact of the processes used to produce these items.

The same is happening in the world of health and safety. Technology is being developed at pace while in the health and safety world regulation and governance issues are lagging behind. This is the case in even the most advanced countries.

In the UK, Brexit is adding to this concern as the Government is currently focused on its discussions on coming out of the EU and as a result, all UK legislation needs to be reviewed. This is likely to slow UK health and safety legislation development for the next 5 years. As a result, health and safety implications that new technology brings may not be fully considered or understood.

The impact on the organisation

Organisations feel the impacts of new technology and a lack of regulation keenly; on one hand, improved technology and communication increases the marketplace opportunities but on the other, it means increased competition and pricing. It also requires organisations to operate across multiple countries and understand local regulations. And these are affected by local customs and culture, which makes them more difficult to understand.

What does this mean for the future of health and safety?

Organisations will want to be more competitive and therefore health and safety needs to be seen as a business enabler and a key driver for improving the health of workers. With variances in health and safety regulation and culture, health and safety professionals need to ensure that risk management takes a positive, holistic approach to raising health and safety standards and they do not rely only on regulation.

In the future health and safety professionals will need to adapt to new ways of working and keeping their professional practice up-to-date is key.

I would suggest, however, that some key principles will need to be retrained. These include:

- Visible felt leadership
- Risk assessment
- Planning
- The ability to effectively communicate a health and safety programme across a diverse workforce
- And most important of all - show we care about our most important asset - the colleagues we work with and make sure they go home safe and well



■ **Peter Kinselley**

has over 20

years experience

of successfully

implementing health and safety

management systems within

large corporate organisations.

He has worked internationally,

on multi-site operations, within

food manufacturing, professional

services, banking, government and

charity industries and is currently

Cardinus' Associate Director of

Health and Safety.



Rising to the challenge:

A security strategy fit for purpose with operational agility

Jon Hayter describes how organisations can innovate their security strategy to become fit-for-purpose in an interconnected, and more dangerous, global business environment

WE are in a time of unprecedented threat and it is only through an innovative and forward-thinking approach to confronting these threats that we can hope to keep our businesses, buildings and, most importantly, people safe.

The current threat level to Britain is assessed as severe, meaning that an attack is highly likely. The level of threat is complex and ranges from individuals carrying out stand-alone attacks to sophisticated networks executing innovative and audacious plots.

We have all watched in horror at the recent atrocities which have unfolded before our eyes with devastating impact. Each new incident brings with it a unique set of questions, learning points and a familiar sense of fear that we or someone we know will be the next victim.

I feel and understand that fear, and having served in the police force for over 30 years, I realise that the ability to properly understand our challenges is crucial to maximising success.

Beyond the ambit of terrorism, organised criminal gangs are continuing to build robust operations networks and are mobilising their resources with alarming efficiency.

The risk posed by insider threats is stark and wide reaching. Whether it's a disaffected member of staff or an employee associating with known criminals, the danger is real, and the economic implications are grave.

Now, more than ever, it is essential that we do everything we can to help protect the security of our critical national infrastructure, businesses and public places. There is no room for complacency, no second chance to get it right.



Lessons from the Battlefield

The police, security and intelligence services are working tirelessly and at pace to confront terrorism and organised crime, but in the face of searing budget cuts and competing demands, they alone cannot guarantee safety.

It has been said that “Those who fail to learn from history are doomed to repeat it”, and it is that philosophy that underpins our ability to meet new and emerging threats.

A few years ago, while on holiday, I encountered a retired colonel from the US Rangers. The colonel, whom I feel privileged to call a friend, told me about his experience of serving in the Vietnam War.

“Gone are the days when traditional security arrangements such as CCTV and intruder alarms were enough to protect your organisation from emerging threats”

He paid homage to his forefathers and explained how it was the knowledge they passed down to him that helped bring about success on the battlefield. He understood that by adopting the mindset of the enemy and predicting their likely future behaviour, you can put together a much more complete picture of your environment and deploy your resources more effectively.

His approach resonated with my experience of planning and command where ‘getting into the head of a hostile’ is essential to mitigate risk. Malcolm Gladwell describes this concept as “thin slicing” – the utilisation of small slivers of information about a person with the objective of forming a wider opinion about their character and intentions.

A Strategy Equipped to Meet New and Emerging Threats

Earlier this year, former UK Security Minister, Admiral Lord West of Spithead pronounced “Terrorists are good at learning from each other, we should be too.... The tempo and ferocity of recent terrorist attacks are now the new norm and not a blip”.

Further attacks are inevitable and forward-thinking organisations understand the importance of continually reviewing and adapting their strategy to stay ahead of the curve. While there is no magic bullet that can stop crime before it happens, there are many steps you can take to enhance your strengths and significantly improve your capacity.

Gone are the days when traditional security arrangements such as CCTV and intruder alarms were enough to protect your organisation from emerging threats. Lessons learnt from recent incidents point to an increasingly interconnected world – a technologically advanced world where data crunching algorithms, online footprints and deterrence messaging are just as important to security infrastructures as traditional security measures.

At the same time, rapid developments in technology and communications enable hostiles to gather and verify information quickly, easily, and at the touch of a button. Information gathering is a vital component of the attack planning process; it is essential to not only plan an attack with the confidence of success but assess the likelihood of succeeding.

According to academic research, information gathered is used by hostiles in three main ways to:

- Assess the state of security and the likelihood of detection during reconnaissance
- Identify vulnerabilities in security and establish how these could be exploited to achieve the desired outcome
- Inform the modus operandi of criminal activity and assess the likelihood of success

Without obtaining meaningful information during hostile reconnaissance, it is difficult to carry out a successful attack. Whether it’s securing a major stadium event or protecting your assets, a communications strategy that takes account of technological advancements and changing trends is necessary to ensure you meet the challenges of emerging threats.

Don’t Get Left Behind

All good businesses know if you stand still you are in danger of getting left behind. As the nature of the threat has evolved, so too has our methodology and approach. By walking in the shoes of those who threaten our interests and replicating their attack planning process, we are constantly adapting to meet the changing threat picture.

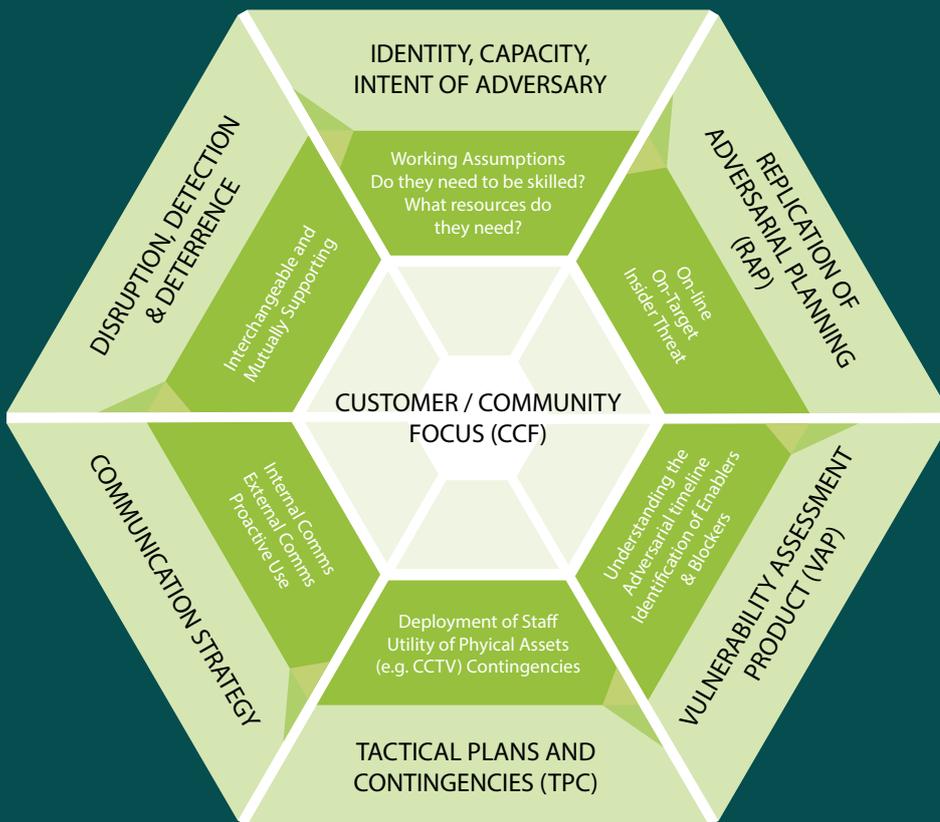
The application of this approach will enable us to determine:

- What information about your company, its staff and its assets are available online and determine how this information will help hostile(s) target you
- The security culture of your staff and organisation in general. This will enable the audit of staff culture and form the start point of any required action for senior management to direct informed changes
- The vulnerability of staff to social engineering by the hostile penetration of social media and other open sources of information



- The vulnerability of staff when travelling to and arriving at a set destination
- How to target-harden your workplace, home address or venues to be visited by you or your staff to prevent acts of hostility

This Process is Known as the Adversarial Planning Model (APM)



■ **Jon has over 30 years of operational police experience, planning for and commanding critical incidents. This has resulted in close working with the military, government and corporate organizations and the wider emergency service family. This planning and management of challenging situations has embedded a clear appreciation of the importance of managing risk through a collaborative approach. In recent years Jon focused on managing the role of Counter Terrorism Security coordination within the eastern region of the UK. Key to his management of this was the shaping of the team's ability to "think outside the box" – developing an ability to look at issues through the eyes of those planning criminal or terrorist acts. The ability to prevent potential and actual threats is the cornerstone of Jon's approach.**

The APM delivers a flexible approach built to prevent the variety of threats we face, from terrorism and criminal action through to corporate-sponsored espionage, delivering a range of solutions focusing on the following key areas.

- Denying others the ability to obtain the information they require for success
- Review and improvement of organisational processes and procedures
- Review and adjustment of communication strategies, both internal and external

In our world of risks and competing demands, don't work harder; work smarter.

The need to have the ability to reinvent ourselves, from individual skills to strategic policies and planning will become essential to success because our adversaries will reinvent themselves and they are not necessarily restricted by laws and morals in the same way that we are.

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 **INDIGO**
the risk management gateway

Tactical solutions for office ergonomics

Ryan Pavey of Office Athletes gives us his favoured tactical solutions in office ergonomics, as well as background on assessing risk in successful ergo programmes

HAVING spent many years working for companies that produced office ergonomics training and risk assessment software, I am well aware of what large office-based organisations need to run a successful programme. It's never just about the software or whatever other process you put in place to assess your desk- and not-so-desk-based, computer-using staff. In a way, the launch of the software is almost the last step of preparation for a successful ergo programme.

There are a few things to consider, including:

- Who's going to follow up on the issues that come out of the assessment?
- Do you know how you're going to roll out the software based on the resources you have?
- Are the questions you're asking relevant, supporting both the individuals and business's needs?
- You're asking the questions, but do you have go-to solutions and have these been communicated to your team for a standardised approach?

Two steps to resolving risk with software

The first two questions can be dealt with as one. If you're using a software solution you need to have these covered off pre-rollout.

Software solutions get the job done, pure and simple. If you have 100 or 100,000 desk-based staff, a software solution will get the training and risk assessment completed for 70-90% of the people you roll out to in a few weeks.

This leads very quickly on to stage two; resolving all the issues that have been uncovered. If this is your first time running a proactive ergonomics programme expect a backlog of issues that have been sitting under the radar. Based on my experience you can roughly expect 2-3 issues per person. Of course, in most cases, these will be lower level risk, like someone not knowing the organisation's eyesight policy or how they adjust their chair, but the issue still needs to be dealt with.

Thankfully with the leading solutions, the software itself can take care of this with built-in, pre-agreed advice that loads after the question, or following the completed risk assessment, allowing the employee to deal with their own minor and mid-level concerns efficiently and without the need for any intervention from your team.

What about the other issues though? The pain related symptoms or the issues that users just cannot fix? For even 1,000 staff there could be 200-500 of these that need working through. This shouldn't stop you from rolling out a proactive programme or using software, it's the most efficient way of carrying out this task, just be aware of what might come and have the resources in place to deal with it.

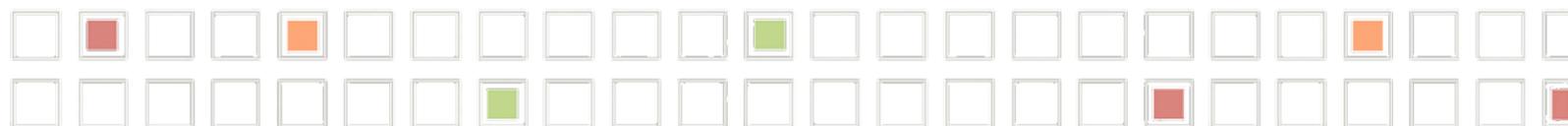
ADMINISTERING A MANUAL PROGRAMME

If you're running a manual programme you'll need a team of assessors in line with the size of your organisation just to manage the training and risk assessment element, let alone resolve the issues generated by the process.

Yes, you will be more in control of the flow of issues but if you have many employees it's unlikely that you'll ever be able to manage a proactive programme.

Despite the challenges, the reasons for ensuring employee comfort are plentiful. Everything from compliance with legislation, in regulated countries, to reduced injury and absenteeism/presenteeism, through to lowering workers' compensation and healthcare insurance costs in countries like the US.

"Taking breaks is proven to increase productivity and creativity over the course of the day"



ENSURING YOUR TEAM ARE ON THE SAME PAGE

Your team can be just you, a team of safety professionals if you're lucky, outsourced consultants if your budget will allow or in-company volunteers that are part of your ergonomics programme within their other work responsibilities. Whatever resources you have access to it's extremely useful if your staff all know the following pre-rollout so that programme runs smoothly:

- How your programme is going to roll out so that they can be in the right place at the right time
- Are there any issues pre-rollout they should be aware that the business expects to come up frequently and what are the fixes? Should that fix take place as a separate project to the ergonomic assessment rollout?
- Is there a standard procedure agreed for addressing all or at least some of the key issues so that everyone knows what to do and your employees get the same level of service throughout the organisation?

- For issues they can't resolve do your assessors know the escalation procedure and is there a next level solution in place for them to escalate to?

Tactical solutions

There are a number of tactical solutions available that will help you answer some of the responses to standard risk assessment questions. The key here is proper diagnosis so that solutions should be fitted to the appropriate circumstances. It may also take some trial and error and a combination of resolutions to fix a problem, but this should give you somewhere to start.

PIT STOP OR REST BREAK SOFTWARE

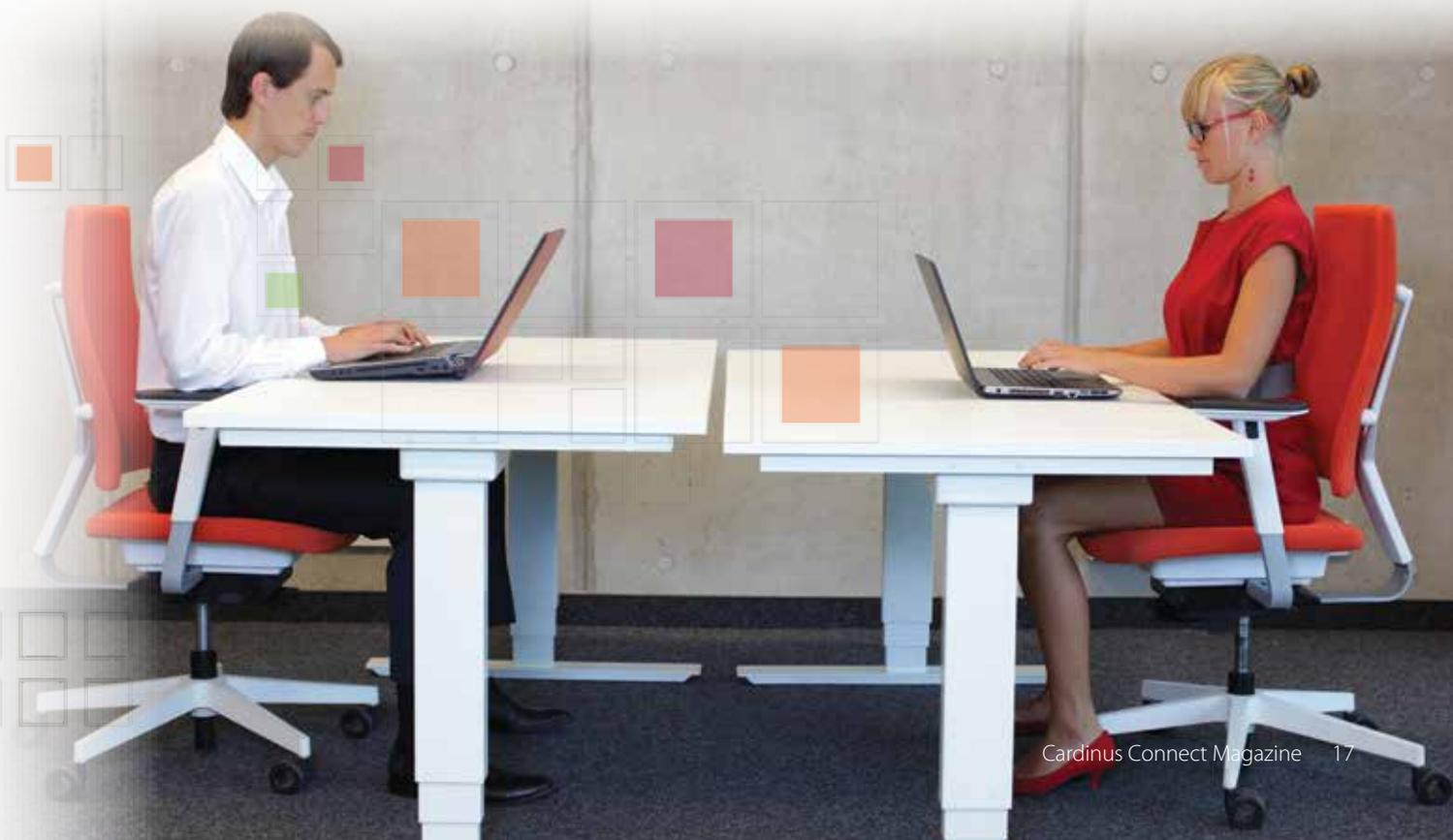
This software solution breaks up sedentary work by telling people who have been working continuously at their computer for a long period to take a break and change their activity. It works with the individual's work behaviour and recognises when it needs to suggest a pit-stop, and when the employee is taking adequate natural breaks from their computer it stays quiet. Regular positive feedback from the software encourages long-term behaviour change.

This more than any other solution can have the greatest effect on employee health and performance. No matter how or where the employee is working and how good or bad their workstation set-up is, taking regular pit-stops allows for recovery from fatigue and discomfort, reducing the risk of injury and serious disease made worse by sedentary behaviour and repetitive movements in a locked posture. Finally, taking breaks is proven to increase productivity and creativity over the course of the day. You genuinely achieve more by taking more pit-stops.

Given these benefits, this kind of software can be the cornerstone of any proactive ergonomics programme. You can even educate employees further with ergonomic and wellness messages during breaks.

Issues resolved or helped:

- All and any kind of discomfort associated with or made worse by long periods of computer work
- Stress and fatigue
- Using a laptop in environments where sitting for a long period has a greater risk of causing issues, such as soft furniture or inadequate laptop and workstation set-ups



COMPACT ERGONOMIC KEYBOARDS

Only 10% of the computer-based working population uses the numeric keypad. Removing this and making the keyboard smaller improves the ergonomic set-up of your workstation. It means you can bring your mouse closer to your body, which reduces reaching and can positively affect discomfort from the hand and wrist up the arm to your shoulders. These keyboards are more portable than their full-size equivalents, so they can be taken anywhere for use in achieving a good ergonomic set-up wherever you find yourself working.



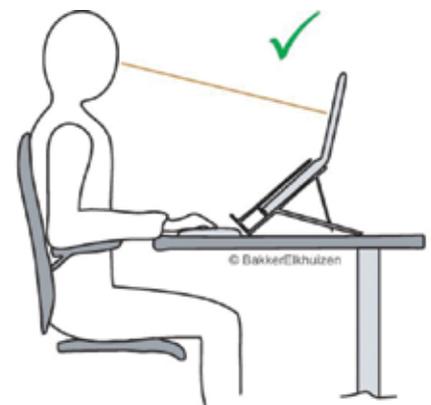
Issues resolved or helped:

- Discomfort in the hands, wrists, arms, shoulders and even neck pain
- Compact, portable solution for remote workers
- Making the mouse easier to reach reducing fatigue caused by over-reaching
- It's smaller size also keeps everything else within easier reach making the desk easier to arrange
- Overreaching often causes flexion in the wrist as they turn inwards to grip the mouse. Bringing the mouse in closer to the keyboard keeps the arm through the wrist to the hand in a more neutral position

LAPTOP STANDS

Many believe the laptop wasn't invented for long periods of use and if it was the effect it has on posture wasn't fully considered.

To begin with, laptops were too expensive to give everyone but as prices came down laptops have overtaken the desktop PC as the most used computer at work. This brings some unique challenges. The screen is too low and too close because the keyboard is integrated and needs to be reachable. The keyboard and mousepad bring your hands and wrists into the body encouraging flexion in the wrist. It also causes us to rest our wrists and hands on the hard laptop service. The mousepad leads to intensive repetitive work being carried out with some of the smallest muscles and tendons in the body, putting fingers under enormous strain over a long period.

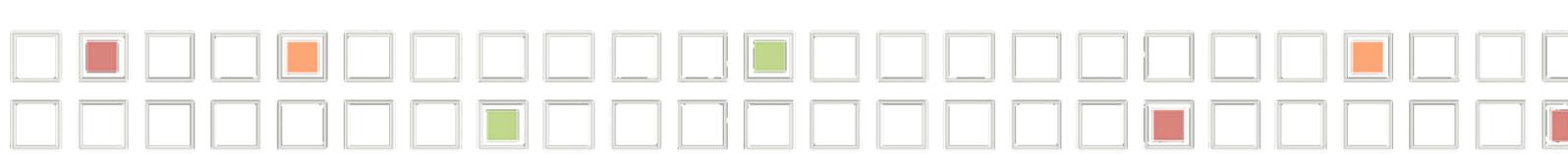


Laptop stands help the user position the screen at the correct height and distance for comfortable working. Ideally, a laptop stand should have a range of height adjustability that covers the 5th through 95th percentile. It should fold flat and be light enough to make it easy to carry around and get a good ergonomic set-up wherever location the employee works.

Issues resolved or helped:

- Discomfort in the neck, shoulders or upper back
- Achieving a good posture with a laptop
- Remote working or in multiple locations
- Raising the laptop screen to the correct height to ensure the user can sit in a better posture

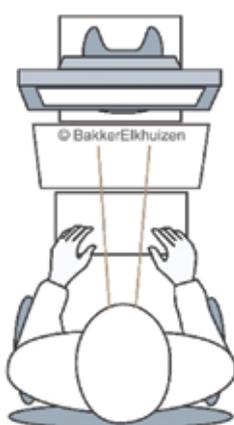
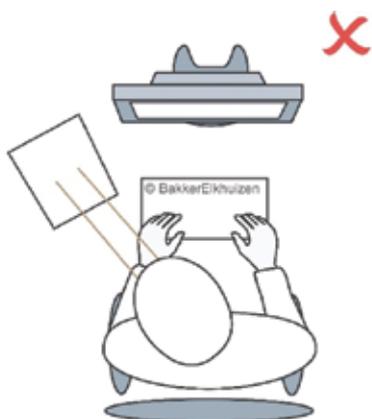
Images provided by BakkerElkhuizen of BakkerElkhuizen brand products



DOCUMENT HOLDERS

If part of your organisation relies heavily on working with documents, a document holder is vital to ensure comfortable, efficient working. With a document off to one side and a screen in front, the employee ends up regularly holding their neck in a twisted position while they read.

This can cause stiffness and pain in the neck, shoulders and upper back when this type of work is sustained over a long period neck movements are also an inefficient way of working, particularly as the user becomes more fatigued as the day goes on.



A good document holder should bring the monitor, document and screen into a straight line making the task more comfortable and efficient. The employee no longer needs to hold their neck in an awkward position for long periods while referencing documentation, so the risk of pain and injury is vastly reduced.

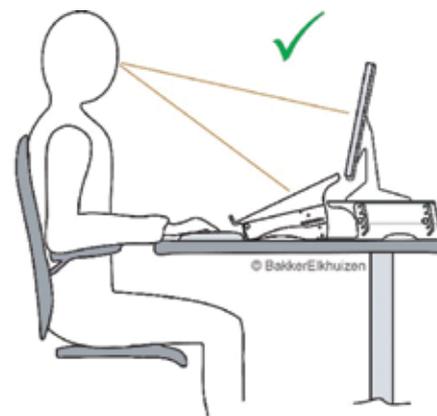
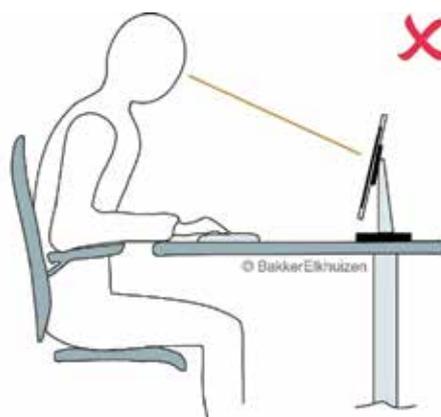
It should also have a range of height and tilt adjustments to achieve the perfect set-up for every individual.

Issues resolved or helped:

- Discomfort in the neck, shoulders or upper back
- Achieving a good posture when working with documents
- Comfortably reaching the equipment and papers used regularly

MONITOR ARMS AND RISERS

The ideal position for a monitor is for the top of the screen to be in-line with the user's eyes. This helps the individual keep their head in a neutral position and prevents the weight of their head being held forward, putting their neck and back under strain.



A monitor arm gives maximum flexibility when it comes to positioning and keeps the screen off the desk surface freeing space for the employee's remaining equipment and papers. Monitor arms can also be brought to hold multiple screens for those that need them.

If a monitor arm isn't available, a riser brings the screen up to the correct height for those that need it to go beyond the normal extent of adjustability.

Issues resolved or helped:

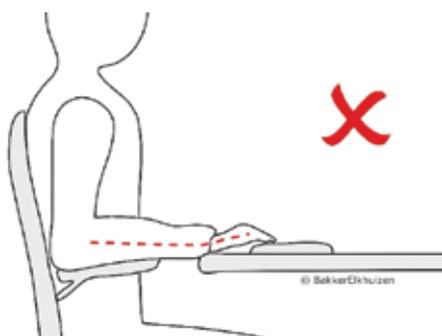
- Discomfort in the neck, shoulders or upper back
- The top of my screen is below my eye level and I look down to it
- Achieving a good posture with a monitor
- Having enough space to comfortably arrange and store the equipment and items used regularly

WRIST RESTS FOR COMPACT KEYBOARDS

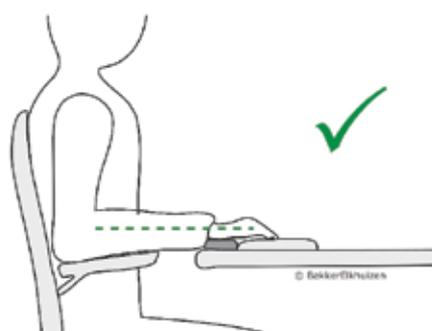
Similar to armrests on a chair, the use of wrist rests with keyboards and mice has been greatly misunderstood over the years. Initially, everyone wanted one but as time went on and cases of pain and injury in the wrists, hands and even fingers remained the same they slowly left the desktop, seemingly to never return. The problem was



understanding. Users were resting their wrists and hands on the wrist rest for long periods while typing. This encouraged an upward bend in the wrist, which is an awkward position and causes stiffness and pain over time. Additionally, because the hands and wrists were in a fix position it encouraged over-reaching and stretching of the fingers and hands to get to the back rows of keys.



When used correctly as a guide to avoid users resting their wrists on the cold, hard desk surface or sharp edge of the desk, they can help keep a straight line through the wrist and hands, which is healthy. They also ensure that a gap between the front of the desk and the keyboard is maintained giving individuals a soft, comfortable space to rest between periods of typing.



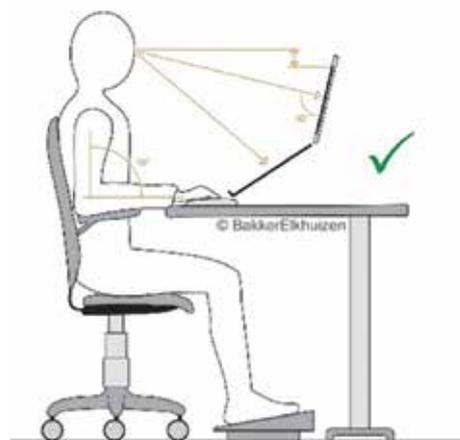
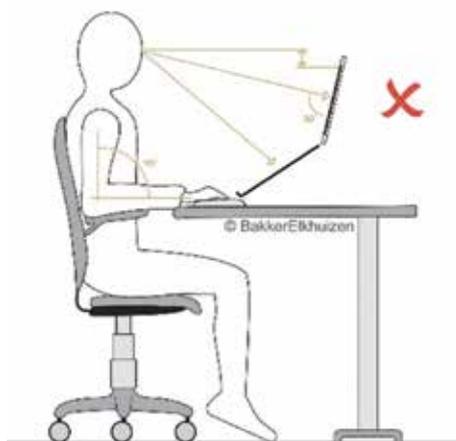
Issues resolved or helped:

- Discomfort in the hands, wrists, forearms or elbows
- Wrists coming into contact with hard or sharp edges while using a computer

FOOTRESTS

Getting the correct desk and chair height for a good ergonomic set-up is tough and it can often feel like these two bits of furniture are working against one another. Thankfully 99% of the time the chair is adjustable so finding an employee's ideal position is possible. If you're not able to offer your employees height adjustable desks, then the adjustment in the chair and a footrest is going to be invaluable.

Whatever happens, your employee needs to be able to sit with their feet flat on the floor or supported. This needs to happen in conjunction with the correct desk height and other seat adjustments. Although the rigid law of getting the major angles in the body in the 90 / 90 / 90 (bend at knees, waist and elbows) position has calmed in recent years, it's still the best starting point for your ergonomic set-up with movement in and around these fundamentals.



My advice with a fixed height desk is to build the ergo set-up around this point so that the forearms are in the right position to use the keyboard and mouse comfortably. Now, where does that leave your seat height? If someone is too short and their feet don't sit flat on the ground at the correct height for the desk this is the time for a footrest. This should fix that problem and enable the user to sit comfortably with their back against the seat backrest. Without the footrest and with the chair high, this encourages the user to sit with their weight forward in the chair putting pressure on their lower back and pressing the back of their legs into the chair.

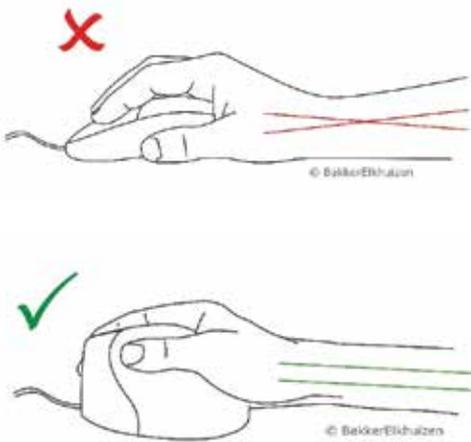
Issues resolved or helped:

- Feet not flat on the floor or supported
- Lower back and leg pain
- Circulatory issues in the leg
- Discomfort in the hands, wrists, forearms or elbows
- Wrists coming into contact with hard or sharp edges whilst using a computer

ERGONOMIC MOUSE AND SHORTCUT SOFTWARE

If someone is using a mouse intensively as part of their job they may find that they start to feel stiffness or pain in the fingers, hands, wrists, arms and even their shoulders. There can be multiple reasons for this, but if their ergonomic set-up is correct and they aren't putting undue pressure on that part of their bodies from another source it might be recommendable to try an ergonomic mouse. These come in many shapes and sizes so it might be that some trial and error is involved in pairing the right mouse with each individual.

I would urge you to consider a vertical mouse that takes hand position to a handshake or pencil holding position for precision work. Either way, the palm position using these types of mouse moves to the side facing in rather than on the bottom facing down towards the desk surface. This small change in position discourages side-to-side flexion in the wrist movement that causes so many problems for mouse users.



However, there is another way to reduce mouse use. Shortcut software watches for mouse tasks you carry out most frequently and then teaches you the alternative keyboard shortcuts relevant to these tasks. Individualised coaching can help reduce mouse use by 50% within a month, which can have a huge effect on reducing discomfort. Additionally, once learned, keyboard shortcuts are on average 30% faster than using the mouse so there is an efficiency gain too.

Issues resolved or helped:

- Discomfort in hands, wrists, forearms or elbows

While there are many issues and solutions that I haven't covered in this section I hope this gives you some take-home advice for some of the commonly occurring and troublesome risk assessment concerns that come out of an office ergonomics programme.

Additionally, I hope the elements in the first part of this guide serve as pointers to help you plan for and run an effective ergonomic programme within your office environment.



■ **Ryan Pavey is a Director of Office Athletes Group in the US, where he advises those responsible for the health and productivity of computer-based employees on the appropriate WORK & MOVE™ products and software solutions that will improve and develop their office ergonomics programme.**



Technology – Preventing or causing collisions?

John Davidge argues about the benefits and the drawbacks of technology in our vehicles.

THE aim of the European Transport Safety Council has been to focus on halving road deaths by 2020 compared with 2010 levels, and some of that focus has been on using (and even mandating) better in-vehicle technology to aid this objective. On the face of it, that sounds like a great idea, since technology is getting more sophisticated, more reliable and less expensive all the time, and can perform more consistently than humans – for example, I’ve never yet heard of a computer falling asleep or getting distracted - have you?

But is there more to it than that? Consider for a moment the following aspects:

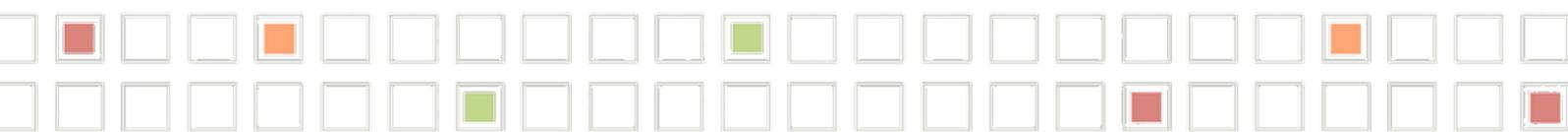
- Our mobile phones and computers have far more technology than we would ever expect to use, and many of us have little idea of some of the built-in capabilities that developers have spent hours creating. What about the technology in our latest vehicles?
- Some of those capabilities are also questionable. For example, ‘Intelligent Speed Adaptation’ is a system that uses GPS location and speed limit databases to identify the speed limits that we are

driving in, and will then take control to prevent us from exceeding those limits. If the system is that ‘Intelligent’, why does it then allow the user to override it, to turn it off? Surely those most likely to override it, are those who most need it and will benefit from it in protecting road users! Bizarre.

- How well do drivers know the functions and features of their vehicles? When my last lease car, a plug-in hybrid, was delivered by a major leasing company that I won’t embarrass, I was promised a full handover by the ‘delivery team.’ The reality was that when it arrived, and I asked the two guys to explain, to give me the promised ‘full handover’ the response was a blank stare, and a casual “S’a pretty colour, innit?!” before they disappeared rapidly. Not helpful to a driver who might not be quite so confident about a new vehicle.

Knowing the technology and features

We can equally imagine the dilemma of a company vehicle driver whose usual vehicle is in for extended repair, being told “Look, just take that red one over there, the previous



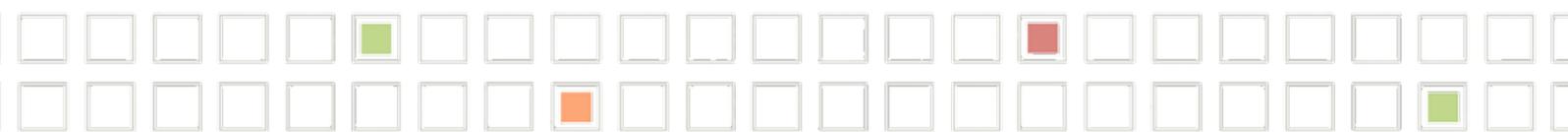


driver has left, and it will save us a fortune in hire vehicle charges until yours is back in action.” Later that day as the novice drives home through town and a cyclist wobbles around a pothole in front of him, when ‘City Safety’ or its equivalent rapidly and firmly applies the brakes in front of him to avoid a possible collision and leaving that driver in a shaken state. For the rest of his/her journey home and for the ensuing weekend it’s not difficult to envisage the driver nervously awaiting the next shock.

As we move towards the arrival of the fully autonomous car that everyone (apart from me) is so sure is just around the corner I’m sure that some drivers will programme it to just ‘get me there’ and promptly get on with other tasks. Whilst we know that drivers typically take much longer than the average Highway Code reaction time of 0.68 second, it’s not difficult to see that the autonomous ‘non- driver’ who is busy updating social media (sorry, working online!) will take a lot more time than that and in a situation where the human needs to take over from the car the true reaction time may well be far more than we think - by which time the impact has probably happened. With more and more ‘connected’ cars, perhaps the next step is for a new driver to sign in to the vehicle with username and password, to take a short online (sorry, on-dashboard!) e-learning with tests that the driver must pass, before being allowed to move to the next module (to start it and drive it!)

Has adequate training been given to use the technology and drive safely?

Back to present day, the Provision and Use of Work Equipment Regulations already expect and require every employer to use only the right equipment, be sure it is in good order, and ensure that it is only used by a person who is adequately trained in its use..



What does 'adequate training' look like? In my example above, would the 'proper vehicle familiarisation and handover' have been adequate in a court of law? I'm not sure it would, are you?

More than thirty years ago, a major UK petroleum company changed from using Scania 3-series tankers to Scania 4-series – the changeover also involved moving from 2-axle tractors to 3-axle, from metal springs to air suspension, and to a more powerful engine and higher weight limits. Every driver went through internal vehicle familiarisation training before being allowed to drive the new vehicles, and once trained was never permitted to drive the 3-series again (with all the older style vehicles being taken away from that depot in each case, once all drivers were trained). Naturally the possible outcomes of a major collision involving a petrol tanker are substantial but when we look at the principles, how many

other companies do you know that have ever undertaken anything like this? Similarly, airline pilots must undertake specific 'aircraft 'type' training before moving to a new aircraft.

Against that background, the general principle of the Health & Safety at Work Act looks for employers to 'ensure, so far as is reasonably practicable, the ...safety and well-being... of employees and others...'. And with subsequent regulations requiring 'suitable risk assessments' and the provision of 'appropriate training.' I can envisage a situation where someone is injured on the road, complaining that 'the company caused it, they gave me this car and didn't show me how to use it properly'. Isn't it a normal typical human response to look to blame someone or something else when things go wrong? Even some seemingly simple aspects could catch out the unwary – on a vehicle with an electric handbrake (sorry, parking brake!) which releases automatically, does it apply

itself automatically too? Or does the driver have to apply it each time manually? One wrong assumption by a driver could see a driverless vehicle rolling down a hill and colliding with vehicles/people – that is food for thought.

Nothing is so important that we cannot take the time to do things safely

The question therefore must be, 'can you be sure that when a driver is given a different and very modern vehicle to drive, that the assessment and training that you give, was enough to satisfy a judge and jury in the Crown Courts that you had done so, so far as is reasonably practicable?'

And more importantly, if so, can you prove it successfully in a court of law? In the absence of any documentary proof, courts tend to assume no such training was provided (possibly on the basis that if it had been provided the collision would not have happened).

Driving is still the most dangerous activity that we undertake – and that is usually because we assume wrongly that it isn't, so we take things for granted.



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John served for 15 years policing the roads as an officer, where he saw the results of driving errors first hand. He holds the National General Certificate from the National Examining Board in Occupational Safety and Health.

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Early intervention:

Strategies for aiding business productivity and the bottom line

ACCORDING to a recent Pew Research Center report, "By 2020, 25 million Baby Boomers who make up more than 40% of the U.S. labour force, will be exiting the workforce in large numbers and leaving many jobs to be filled. With their departure, the work characteristics that define the Baby Boomer generation – results-driven, ambitious, idealistic, competitive, optimistic, and people-oriented – may be lost unless companies creatively develop strategies to simultaneously retain older workers and transition their knowledge to younger workers."

All employees, both older and younger, will benefit when employers implement Early Intervention programmes such as Fit For Work™ to their health and safety programs. The unique challenge of this situation requires flexibility and planning to manage a changing workforce.

Managing a Changing Workforce

A comprehensive early intervention programme involves having a musculoskeletal expert such as an athletic trainer, physical therapist, or occupational therapist interact with employees directly on-site on a regular basis. These on-site providers work with all employees who are subject to musculoskeletal risk.

Proper and sustainable early intervention requires the focus to be 100% on the preventative side, which requires providers to behave differently from how they were trained.

It is intended to be a high-touch model where the provider produces thousands of on-site interactions per year, all without disrupting operations or productivity.

Early Intervention Strategies

Many companies are facing an ageing workforce. If you are one of them, you are definitely not alone. But there is good news! An ageing population provides a tremendous opportunity to make an impact.

Older workers are still around because they have done something right all these years. They often house the highest level of skill and efficiency and, intentional or not, they can serve as mentors or role models to the younger workers. Industrial settings are steeped in respect for tenure. Thus, if well supported by management, an ageing population can definitely set the tone for how things get done in an industrial setting.

From an injury perspective, many people are shocked to hear that older workers are often the most receptive and willing to make the quickest gains from an on-site early intervention program. It is true that an injury to a 60-year-old can be more expensive than the same injury to a 20-year-old. However, what we have found is that the ageing workforce responds extremely favourable to a properly conducted and comprehensive early intervention programme, which again is all about preventing injuries vs worrying about the injuries cost. In this

population, it seems that a little grease goes a long way. In fact, some of our most successful on-site programmes have been with the ageing population.

Using an early intervention program helps with both employee and new hire needs, and aids in achieving a safe, healthy, profitable, and productive workplace. The programme can also help eliminate injuries by having a complete focus that will reduce early symptoms, abate ergonomic challenges, and maximise effective behaviours for all employees.

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Matt Weber is Fit For Work's National Director of Sales.

Over the years, he has successfully worked with many Fortune 2000, 500, and even 100 companies saving each of them at least 50% in injury/cost reductions by placing world-class vetted and then trained Onsite Early Intervention providers at facilities across the U.S. and Canada. For more information contact him at: mattweber@wellworkforce.com

Is it health and safety? Yes!

Dr Ann Hawkins discusses stress, presenteeism and absenteeism and asks, are these health and safety issues?

IN 1964, Bob Dylan recorded – “The Times They Are a Changing” – and changes are on the horizon in workers’ safety. Some elements of the changes involve total employee health - physical and mental - and how health can influence safety and a reduction of on-the-job injuries. Corporate interest in health and safety, like advancing other aspects of employee work environment, almost always translates into a tangible ROI in better company productivity or service. Currently, many companies place health and well being in the Benefits or HR silo and safety in Risk or Work Comp silo - two different silos within the company - and in some instances two silos which don’t converse. Integration of total employee health positively affects the corporate bottom line – the silo doesn’t matter!

Industrial Safety and Hygiene News (May 2017) stated: “An integrated health and safety programme is no longer an operations cost to be controlled but an investment in a company’s overall effort to improved profitability and competitiveness.”

Let’s look at three of the more critical health/ safety issues – stress, presenteeism, and absenteeism - and see how integrated total employee health improves a company’s profitability and competitiveness.

Stress

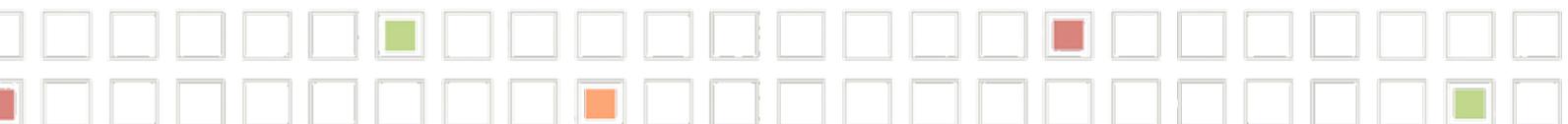
If you had to classify stress, would it be a health or safety issue? Yes, stress is both a health and a safety dilemma. For the most part, no one can see stress, but stress definitely affects employees lack of concentration and efficiency, which many times leads to incidents and accidents in the workplace. Stress affects all levels

of employees - a mistyped word or miscalculated financial analysis due to stress and lack of concentration at the C suite level, an ongoing “pain in the neck,” a musculoskeletal disorder (MSD) aggravated by stress at the workstation, a lifting injury, or slip and fall on the work floor due to lack of focus or training.

The Mayo Clinic, in a published article (April 28, 2016), determined that stress left unchecked can contribute to many health problems, such as high blood pressure, heart disease, obesity, and diabetes.

Stress.org determined that 46% of workers are stressed about workload, 28% because of people issues at work, 20% due to life/ work balance issues and 6% because of lack of job security. The result for the US is over \$300 billion spent annually due to:

- Accidents
- Absenteeism
- Employee turnover
- Diminished productivity
- Direct costs related to medical, legal and insurance



In these incidents, the cause of stress could be viewed as a safety issue and the effect as a health problem. So, once again, is stress a health or a safety issue?

Presenteeism

Presenteeism, not included in the above list, is when employees are at work “in body” but not “in mind.” Causes of presenteeism are typically attributed to, or associated, with illness, injury, pain, anxiety, depression and work/life balance issues related to the employee, the spouse, children or senior parents. Presenteeism is anything that takes the employee’s mind off the “job” at hand. Harvard Business Review reported 80% of workers have experienced presenteeism.

Presenteeism costs employers 10 times more than absenteeism! EHSToday (March 2016), found that employees take 4 days off per year for sick time, but admit being unproductive 57.5 days a year, almost 3 months of being at work but not being at work. Imagine if your workforce, across the board, was not completely focused at work 60 days a year but was still making decisions, manufacturing product and dealing with customers. It is next to impossible to determine the number or percent of accidents and injuries which happen during those “semi-conscious” 3 months spent at work and not mentally being there!

In the UK, almost nine in ten (86%) of the over 1,000 respondents to the Chartered Institute of Personnel and Development survey, compiled May 2018, observed presenteeism in their organisation over the last 12 months. In 2010, the figure was just 26%, rising to 72% in 2016. The British work fewer hours than the US, 1,676 hours per year and Americans 1,783 hours. Presenteeism is prevalent around the world.



A 2008 academic study,¹ completed in the UK determined that stress, depression or anxiety accounted for 13.8 million days lost or 46% of all reported illnesses making this the single largest cause of all absences attributable to work-related illness. From 2003-2008, work-related stress, depression or anxiety remained for each year the single most reported complaint.

Psychosocial issues, a state of mental, emotional, social, and spiritual well-being, are reflected in presenteeism. Hartford Insurance analysed claims from 2002 to 2015 and found that 10% of claims had at least one psychosocial issue which accounted for 60% of claims costs – presenteeism is a costly issue for any company.²

Like stress, presenteeism is real and has a negative productivity and financial effect on your company. Again, the question is – is this cost related to employee health or safety - again the answer is yes.

Absenteeism

Absenteeism due to stress, presenteeism, illness or pain hinders productivity and consistency of work. The workplace would be safer if those who are ill would stay home. When a sick worker comes to work over half the workplace surfaces are contaminated by lunchtime. Productivity drops by only 28% when employees stay home sick compared to a 72% drop when they try to gut it out and keep working.³

As an example, worker A comes to work sick and workers B, C, and D get sick. Is that a workplace illness? Employees B, C, and D come to work sick – and productivity drops by 72% times 3. Then, worker A's child goes to school sick and contaminates the entire 1st grade – now workers B, C, and D stay home to take care of their sick child. Plus, the average wait time of 29.3 days to see a doctor only adds to the depression, anxiety, and aggravation of the worker⁴ (March 2017).

According to "Absenteeism: The Bottom-Line Killer," unscheduled absenteeism costs roughly \$3,600 per year for each hourly worker and \$2,650 each year for salaried employees. These costs can be directly attributed to wages paid to absent employees, high-cost replacement workers (overtime pay for other employees and/or temporary workers), using absenteeism as a form of "disengagement" from work and a rise in administrative costs of managing absenteeism. Indirect costs include: lower quality of goods/services resulting from overtime fatigue or understaffing, reduced productivity, excess manager safety issues (inadequately trained employees filling in for others, rushing to catch up after arriving as a replacement, etc.), and low morale among employees who have to "fill in" or do extra work to cover absent coworkers.⁵

Yet again, is absenteeism a result of safety in the workplace because of conditions such as contaminated work surfaces, and the negative impact on the worker staying home and not gutting it out?

The times are changing

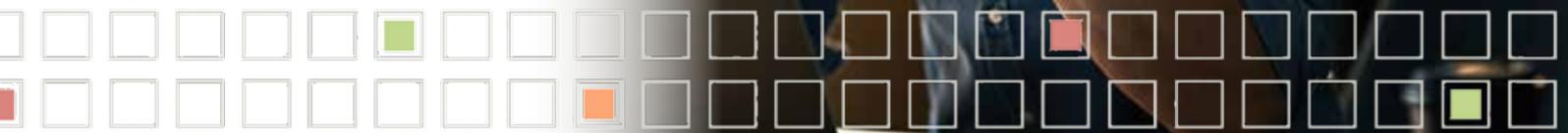
"These Times They Are a Changing" invites new opportunities and solutions which are good for employers, employees and their families. The opportunity is for the C suite,

Health, Safety and Human Resources to work together, move out of their silo's into an open floor plan. The solution is total employee health empowering all employees with simple to use and accessible tools which allow them to be as productive as they want to be and understand that - yes - health affects safety and safety affects health. The result of this well-facilitated programme is decreased stress, presenteeism and absenteeism and an employer group who works to the best of their ability thus increasing productivity, commitment to the job and most importantly the bottom line.

1. https://www.researchgate.net/publication/23569693_Well-being_-_Absenteeism_presenteeism_costs_and_challenges
2. <http://www.businessinsurance.com/article/20170306/NEWS08/912312232/Detecting-mental-health-issues-can-cut-workers-comp-claims-costs>
3. www.nolo.com/legal.../could-poor-employee-health-be-29914.htm
4. <https://www.beckershospitalreview.com>
5. <https://www.investopedia.com/articles/personal-finance/070513/causes-and-costs-absenteeism.asp>



Dr. Ann
founded WellCare Dimensions Inc. in 1996. The mission of the company was to provide a new dimension to the delivery of healthcare products and services through the 24hr Virtual Clinic™. The 24hr Virtual Clinic™ grew from a family telehealth benefit into a disruptive cost mitigation risk management programme. Virtually, the clinic addresses occupational health, ergonomic health, behavioural health, non-critical healthcare and early symptom intervention. Dr. Ann received her Doctorate in Sports Management from the University of Northern Colorado, Greeley, CO; Masters in Sport Administration from Idaho State University, Pocatello, ID and Bachelors of Science in Health and Physical Education from Colorado State University, Ft. Collins, CO.



Global health and safety regulations and ergonomics

General safety (legislation) clauses across the globe encompass the requirement for an organisation-wide ergonomics programme, says Jon Abbott.

ACROSS the European Union musculoskeletal disorders (MSDs) are the biggest cause of absence from work, accounting for 40% of workers' compensation costs and a reduction of around 1.6% of gross domestic product¹ In the US, similar statistics show MSDs account for 33% of all workers' compensation costs, with a direct cost of approximately \$20 billion to the US economy.²

MSDs provide a chunk of the estimated \$3 trillion cost to the global economy from injury and illness.³

When working across multiple regions in a global environment, safety managers will want to understand the key regulations related to MSDs so as not to fall foul of the compliance bodies and to reduce employee injury and workers' compensation costs. It's not always clear what regulations national, or international, bodies put in place specifically for ergonomics for organisations can reduce the risk of MSDs.

European Ergonomics Regulations

There is no specific ergonomic regulation

that covers workplace ergonomics across the EU. Instead, EU Directive 89/391, the

OSH 'Framework Directive' sets out the requirements for member states to put in place a structure for assessing and monitoring workplace health and safety with the ultimate aim to reduce injuries and illnesses at work for the benefit of employees.

The framework directive does many things, such as:

- Sets out the definition of the working environment
- Aims to establish equality in health and safety for the benefit of all workers
- Obliges employers to take appropriate preventive measures to reduce injuries
- Introduces risk assessment as a key element of the directive and defines the elements of a risk assessment
- Puts emphasis on health and safety management



The directive is a fundamental step in putting the onus on the employer to take responsibility for the health and safety of their employees by providing a safe workplace that does not detrimentally affect their health.

Under the employer's obligation to adopt appropriate preventatives to reduce injury, in the introduction of risk assessments and in management level controls, it can be read to include ergonomics.

However, the directive is primarily for EU member states to act upon. It has been transposed variously into laws such as the Law of August 4, 1996, on the well-being of workers in the performance of their work (Belgium), Labour Code, Legislative Part 4: Occupational Health and Safety: Article L4131 (France) or Arbeitsschutzgesetz (Germany). In some cases, ergonomics is only briefly mentioned as part of broader health and safety obligations such as guidance on workplaces (VDUs and workstations) or work equipment. However, the need for risk management remains and organisations can be fined for not putting in the appropriate preventative measures.

In 2013 the EU dropped a proposed directive specifically on the issue of ergonomics as part of a scheme to reduce unnecessary regulations and bureaucracy. This would have marked a big change in the way the EU acts towards the curbing of MSDs. However, the EU continues to work on the reduction of MSDs through educational initiatives.

US Ergonomics Regulations

OSHA, like EU-OSHA, has no specific regulation that applies directly to ergonomics. However, under the OSH Act

1970 General Duty Clause, employers have an obligation to keep the workplace free from hazards, which include ergonomic hazards.

OSHA will, and have, cited and fined organisations under the General Duty Clause for ergonomics issues as part of its enforcement programme. Employers are encouraged to reduce ergonomic risks and to put in place a programme to effectively deal with issues.

OSHA's enforcement is site-specific and uses the following four criteria to assess ergonomic hazards:

- whether an ergonomic hazard exists
- whether that hazard is recognised
- whether the hazard is causing or is likely to cause, serious physical harm to employees
- whether a feasible means exists to reduce the hazard

OSHA will not enforce against employers who are making good-faith efforts to reduce risk but will target those employers whose corporate commitment to positive safety reduction does not manifest itself in its actual activities.

Australia Ergonomics Regulations

The Work Health and Safety Act 2011 and WHS Regulations provide the basic underpinning in Australian law and states that there is an obligation upon employers to provide a health and safety system of work – where that work may be, and that training should be fit for purpose.

This translates as workstation assessments for ergonomics, with guidance issued by the government on how these should be undertaken. However, as with the EU and the US, there are no specific regulations governing ergonomics.

Global Regulations

In the absence of ergonomics regulations, employers are encouraged to take the ILO's guidance and assess and remove workplace risks to health. Additional guidance on ergonomics can often be found from the regional or national enforcement agency, as well as international bodies such as the International Labor Organisation.

1. <https://ergoweb.com/new-european-initiative-highlights-work-related-musculoskeletal-disorders/>
2. <http://ergo-plus.com/cost-of-musculoskeletal-disorders-infographic/>
3. <http://www.safetyandhealthmagazine.com/articles/16112-ilo-global-cost-of-work-related-injuries-and-deaths-totals-almost-3-trillion>



■ **Jon Abbott is a director at Cardinus Risk Management Limited, with more than 15 years' experience of ergonomics, safety and occupational health. Over that period he has worked with a wide variety of organizations in the private and public sector providing a full range of risk management solutions including software, e-learning and consultancy. Jon was instrumental in setting up Cardinus operations in America and Holland. Jon feels passionately about the health and well-being of young people and he believes more must be done to protect the workforce of the future. This drove him to set up Healthy Working MOVE in 2013.**



Positive persuasion: A wellness story

Jennifer Law and Sarah Lytton tell us about Lockton's employee wellness programme and how the organisation attempted to encourage and persuade its staff to take part and become ambassadors of the programme.

The goal of this wellness programme was to use a proven science-based strategy to improve Associates' health and decrease the company's rapidly increasing medical risk. In addition, this was an opportunity to set a good example for our clients and the industry overall by practising what we preached in terms of managing risk.

One of the foundational elements of wellness programmes is to focus on all facets of well-being. Following our own consulting advice, our company began to think holistically about employee health from all facets of well-being. Aside from just physical health, additional components including meaning and purpose, financial and social health were integrated into the programme – recognising the significant relationship between each of these dimensions.

A Social Network

"My idea of good company... is the company of clever, well-informed people, who have a great deal of conversation." – Jane Austen, Persuasion

Multiple studies have shown that people are more likely to engage in physical activity when they are influenced by active peers and even their spouses. From the moment a new hire candidate finishes up their first interview at Lockton they have already been informed by their future manager about the wellness programme. Then upon hire and orientation, they are bestowed with pamphlets, emails, and links about the programme. During the first few weeks on the job, other Associates typically start sharing progress, step counts and personal success stories. This is a typical topic of conversation that comes up at least once a week.

The core of Lockton's wellness strategy involved tapping into the science of digital social network platforms and their influence on people's health. The wellness programme was integrated into Associates' work and personal

THE continuous pursuit of work-life balance has resulted in an overlap between our professional and personal health. Studies continue to reveal that healthy employees make happier, more productive employees and therefore corporate wellness programmes are rapidly becoming the norm in most proactive companies. However, when it comes to the overall benefits of wellness programme engagement, it still requires a change in one's lifestyle plus a little extra effort to reach viable outcomes. Whatever their reasons, some employees still need a little encouragement... or persuasion to participate.

This year happens to mark the 200th Anniversary of Persuasion, the last of Jane Austen's completed novels which were published in 1818, several months after her death. The novel was so named by her family due to the various characters who attempt to influence, encourage and persuade others, including themselves

This classic story of complex characters and personal opinions immersed within a range of social situations reminds us that sometimes we find ourselves the beneficiary of a compelling

incentive to move in a certain direction – ideally a positive one.

Every company has a different culture and various approaches to promote corporate initiatives. They must find a process that appeals to the needs and values of their people, then continue to share the inspirational message to make it last, like a classic novel - or a sustainable story. This is ours.

Walking the Talk

"...pleasure in the walk must arise from the exercise and the day, from the view of the last smiles of the year upon the tawny leaves and withered hedges..." – Jane Austen, Persuasion

Lockton is the world's largest privately held insurance broker and the world leader in our industry with 4,000 U.S. employees and 41 locations across the country. We are passionate about serving our clients, developing our Associates, and giving back to our communities. However, in 2011, Lockton U.S. leadership realised that their own Associates were not heading in a healthy direction, so they decided to implement Lockton Health Risk Solutions(R) in partnership with an industry leading wellness provider, the Vitality Group.



lives - which included the establishment of local office peer programme ambassadors, authentic leadership involvement, wearables, virtual team challenges, team outings, financial/money management tips, and the inclusion of spouses into the programme. Daily mobile app feeds also provide helpful info, tips and customised goals as constant motivators to stay on track. Whether it is peer pressure, inspiration, or persuasion, 98% of Associates reported feeling encouraged by Lockton participants to engage in the wellness programme.

Fruits of Labor

"...when pain is over, the remembrance of it often becomes a pleasure." – Jane Austen, Persuasion

Lockton's commitment to integrating its wellness programme into its culture has led to positive results and national recognition. From healthcare premium discounts to accumulating points towards rewards for exercise and nutrition, overall incentives are proving to be meaningful and achievable as demonstrated by the resulting data.

To date, employee engagement levels, work satisfaction, job performance and turnover rates have all improved since the programme's launch. We have found that higher engaged individuals generally have higher corporate performance attributes and a 6.7% net improvement in risk. In addition, we are seeing reductions in claims costs as over 85% of our Associates consistently participate in the wellness programme core components year after year.

Lockton has been recognised by Business Insurance as the Best Place to Work for 9 years running and received honourable mention for the C. Everett Koop National Health Award in 2014. Numerous offices, including Charlotte and Chicago, have been named Best Places to Work in their respective states.

Sustaining Success

"Their time and strength, and spirits, were ... exactly ready for this walk, and they entered it with pleasure." – Jane Austen, Persuasion

With the programme in its 7th year, Lockton regularly evaluates the progress of its Associates. We will continue to evolve and determine the need for new features or improvements. "The company has created an environment where taking personal responsibility for health and engaging in healthy behaviours has become the norm", says Theresa Schnelle, Senior Vice President of Human Resources Operations and Total Rewards Manager at Lockton.

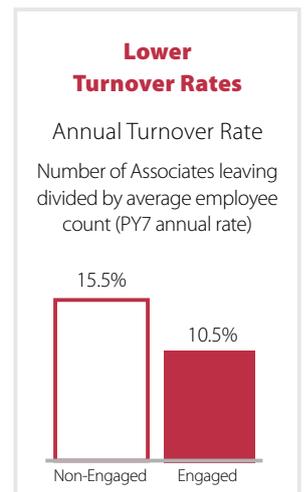
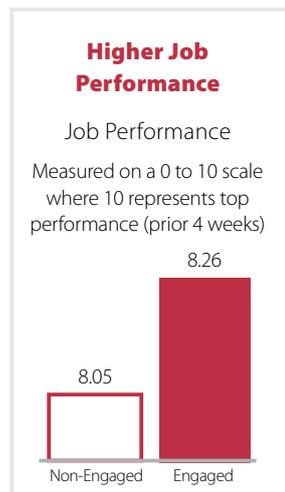
Going forward, success will continue to benefit from Associates (and their spouses) spreading contagious enthusiasm while sharing success stories to persuade others to engage. If healthy employees = happy employees, and happy employees = productive employees = happy customers/clients, then we hope to see returns on the business side in the near future. But that is another story.



Jennifer Law is a Certified Professional Ergonomist and Senior Consultant at Lockton. She has 14 years of consulting experience within various industry sectors developing strategic corporate safety and ergonomics programmes.



Since 2014, Sarah Lytton has worked with the Health Risk Solutions and Employee Benefit teams to assist in planning, implementation, and evaluation of client health management programmes. She strategises with organisations to build comprehensive wellness plans.



*Data above is self-reported data by Lockton Associates.

*Turnover rates may also include those opting out of the health plan, rather than the turnover.





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Musculoskeletal and mental health disorders in the workplace:

The underlying causes and contributory risk factors

Pamela Gellatly of Healthcare RM looks at the link between musculoskeletal and mental health disorders in the workplace and how organisations need to join to dots to reduce their risk and benefit their employees



MUSCULOSKELETAL disorders (MSDs), and, in particular, the experience of musculoskeletal-related pain has been one of the many unanswered questions relating to a person's perception of ill health, that may or may not have an underlying organic cause. The paradox of a person's belief that there is something physically wrong with them when clinicians cannot find a tangible reason has not only been of interest to the clinical profession but has fascinated philosophers for many years. The development of the biopsychosocial model broadened the concept of a psychological and social contribution in relation to musculoskeletal disorders but, arguably has not been extended to mental health (MH).

However, what is evident is that a person's belief that they are stressed, anxious or depressed and is an illness that requires treating, is equally important in mental health as it is in musculoskeletal health. Over the last twenty years, there has been a clear focus on work-related mental health

with work often cited as the main causative factor. This focus is now starting to change as we accept that work-related stressors, inherent in most jobs, cannot be isolated from personal stressors and that mental ill health in the workplace rarely has a single causation but is often multifactorial in nature, and therefore requires a multidimensional solution.

Musculoskeletal and mental health disorders are intertwined, as are other conditions and continuing to assess symptoms as a single condition, with a single causation, requiring a single intervention pathway, will result in a continuing failure to prevent, assess and manage these (and other) conditions appropriately.

The purpose of this article is to introduce some of the issues that exist at a physical, psychological and social level and the interrelationships with an organisation's health, safety and wellbeing policies and benefits, which can adversely affect the onset, maintenance and severity of both conditions.

General prevalence

MSDs remain the most common single condition, by incidence, affecting the working population. This remains true, even though the apparent historic causation of manual handling, has reduced significantly. Sickness and invalidity benefit rose exponentially during the period from 1953 to 1995 suggesting that possible causation was somewhat more complex. During this period, the link with psychological and social phenomena emerged and became accepted, but evidence to suggest that this approach has made a difference is not yet apparent.

Back pain alone has been termed a 20th-century medical disaster, which has continued into the 21st century. While 85% of low back pain has no clear clinical diagnosis, individuals continue to seek a clinical solution and employers to provide one. Possible causation of low back pain has been deliberated on for many years but understanding pain remains as complex as ever with very little evidence to suggest that progress has been made, but normalisation of the problem is said to play a key part. Within the "market" of workplace stress, anxiety and depression – normalisation is rarely mentioned yet evidence-based best practice of post-traumatic stress does exactly that.

Sickness absence incidence

MSDs are the major reason for days lost due to illness and injury in the workplace after short-term ailments. In 2016, sickness absence in the UK labour market accounted for 137.3 million days lost, of which 30.8 million days were due to MSDs and 15 million days were lost due to stress, anxiety and depression, representing a 6% and 12% respectively reduction from 2015.

The media often juxtaposes these two conditions suggesting that mental ill health is increasing and that it is hidden due to the stigma associated with mental ill health. While it is important to identify, understand and support those that need help, it is equally important that we do not "catastrophise" the problem, as in doing so we can cause harm. Understanding the implication of "damage beliefs" and perceived injustice can be gained from forty years of the biopsychosocial model.

Work-related prevalence

In 2016/17 the suggested prevalence of work-related MSDs (WRMSD) reported was 1,550 cases, while mental health was 1610 cases in 100,000 people, but the length of absence reported for both conditions, appeared more aligned to a normal MSD or MH length of absence.

Workplace psychosocial factors (e.g. organisational culture) and the interaction between health and safety climate and human factors are more likely to cause an MSD than any single other causation.

Understanding (the association with personal risks (and it is assumed MH could be said to be similar) should be relatively easy to comprehend, yet guidance on how to assess and address these factors is somewhat lacking from public bodies.

Reliance on subjective reporting

The data reported in many different publications are collated from a relatively small number of national surveys that rely on subjective reporting of both sickness absence and work-related ill health or injury. Such reliance is unlikely to represent an accurate reflection of prevalence and incidence, especially in relation to apparent work-related associations and lead to the implementation of ineffective control strategies.

Self-reports reflect an individual's perception and *belief* of causation and if measured objectively would suggest a circa 28% (MSD) and circa 20% (MH) actual work-relatedness. Therefore, it is difficult to quantify either the scale of the problem or the actual causation from traditional data collection methods.



Study of occupational health data

Data identified across four participating organisations (n = 56,000) conducted by the author suggests that although MSDs are still prevalent in workers involved in active and strenuous roles, sedentary workers also experience a high prevalence, but can remain in, or return to, work easier. This would indicate that MSDs are potentially being caused or contributed to by other constructs (e.g. sitting and inactivity) as identified in research associated with sitting and body composition. Mental health, while circa 30% lower in incidence (based on the number of episodes) attracts a higher length of absence and hence in some organisations, the number of working days lost may be associated with psychological ill health.

However, when analysing the data based on the number of people affected by each condition across various benefits, then it is evident that MSDs are considerably higher than MH in certain job roles (e.g. field-based staff) while mental ill health is more prevalent in office-based roles.

Interestingly data from circa 8,000 musculoskeletal cases and 6,000 mental health cases identified the incidence variation by age and job type (Table 1).

Age	MSD Field based		MSD Office based		MH Field based		MH Office based	
	Male	Female	Male	Female	Male	Female	Male	Female
20-29	0.11	0.05	0.04	0.03	0.09	0.19	0.23	0.31
30-39	0.14	0.09	0.06	0.04	0.09	0.13	0.19	0.25
40-49	0.14	0.13	0.07	0.08	0.09	0.11	0.17	0.19
50-59	0.17	0.05	0.07	0.09	0.09	0.11	0.17	0.19
60-69	0.18	0.03	0.07	0.11	0.10	0.24	0.19	0.21

Objective assessments suggest a higher proportion of individuals require an intervention with a clinical diagnosis of an MSD compared to a clinical diagnosis of mental health. This is also evident in healthcare plans where 45% of the claims are for MSDs compared to less than 5% MH.

However, it is also apparent that access to private interventions (from studying private healthcare claims and direct physiotherapy provision) results in over 80% of assessments being referred for treatment, which when audited was found should have been recommended in less than 40% of the cases.

Musculoskeletal and mental health risk "gaps"

While the components of organisational health, safety and wellbeing operate in "silos" in most organisations, the evidence now strongly suggests that the presence of individual risks (e.g. inactivity, excess weight, poor nutrition and negative attitudes and beliefs) should no longer be ignored. Understanding the interaction or implication of the presence of such risks should change the way in which safety is assessed and controlled, health is managed (including the content of the benefits provided) and the focus of wellbeing programmes.

Personal lifestyle risks

The link between MSDs and MH with excess weight, inactivity and poor nutrition has been evident for twenty years but rarely features in the diagnostic or intervention MSD or MH pathway.

Table 2 identifies the risk of an increase in incidence for MSDs and MH based on levels of inactivity and has weight increases. From the analysis of circa 8,000 MSD and 6,000 MH cases, only 11% and 8% respectively were normal weight and active, strongly suggesting the association with the incidence of these two risk factors.

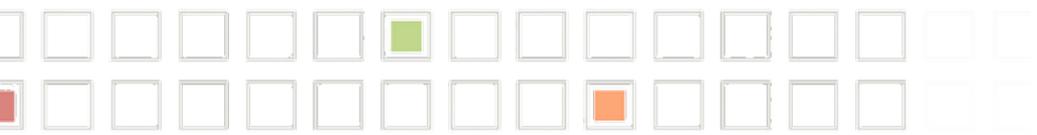


Table 2: Percentage of cases by condition and risk factors and increased likelihood

Risk factor	Musculoskeletal	Mental Health
% of individuals who are inactive	66% of episodes and 69% of days lost	72% of episodes and 73% of days lost
Obese/Overweight and inactive	47%	48%
Obese + inactive	19%	21%
Overweight + inactive	28%	27%
Normal + inactive	18%	22%
Obese/Overweight and active	21%	17%
Obese + active	7%	7%
Overweight + active	16%	10%
Normal weight and active	11%	8%

% increase in risk

Obese and inactive	137%	182%
Overweight and inactive	76%	148%
Normal weight and inactive	57%	68%

Age

Ageing is inevitable yet physical activity, good nutrition and weight management may be used to counteract the ageing process. The effect of negative lifestyle behaviours become more apparent in later years and are likely to affect levels of disability and mobility, which if understood are factors that most people would wish to avoid. However, for MH younger people appear more susceptible (Table 2) and the reasons for this more complex.

Work

The impact of an occupation on the individual or the individual on their occupation (due to personal risks) and the application of traditional controls and interventions may lead to measures

that are inappropriate and/or unlikely to deliver a long-term outcome for the employee or the business. The “silo” nature of safety, health and wellbeing often leads employers to unsatisfactory outcomes.

“If you always do what you have always done you will always get what you always got”

Tony Robbins

A focus on work-related factors will mean that circa 80% of the risk will be ignored while providing only clinical interventions will equally ignore the main risks, namely those that can be eliminated or reduced by the individual if they are helped to understand the real risks and what they need to do to resolve them.

Psychosocial

The link between MSDs and psychological issues (e.g. negative attitudes, beliefs and social factors) work satisfaction or financial compensation, has been well documented in research. Such maintenance factors or obstacles to recovery can, if not identified and treated, affect the likelihood of an individual returning to normal function (for them), and health and work.

The link between psychosocial factors, comorbidities (e.g. depression) are less understood and further work required, possibly as part of the risk assessment process to better understand not only how work-related problems can be prevented but also how individuals can learn to cope better with life in general.

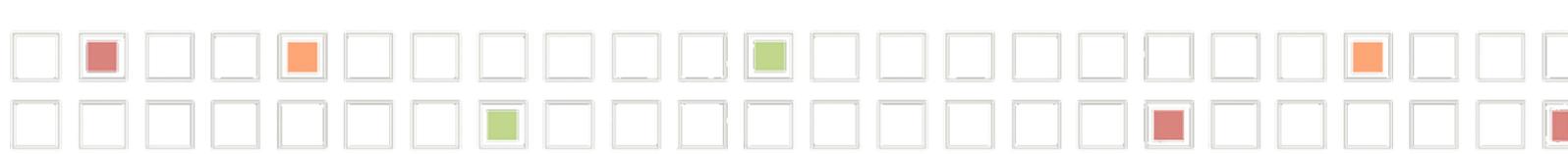
Wellbeing provision

A review of literature provided by three major wellbeing organisations omitted any reference to musculoskeletal health other than where the organisation provided a limited assessment. An effective psychological assessment was also somewhat lacking, suggesting that the wellbeing industry is failing to address the two most common workplace health risk factors.

Summary

It is hoped that the data discussion points highlighted in this article will help drive understanding of why integration of safety, health and wellbeing at an organisational level is so important.

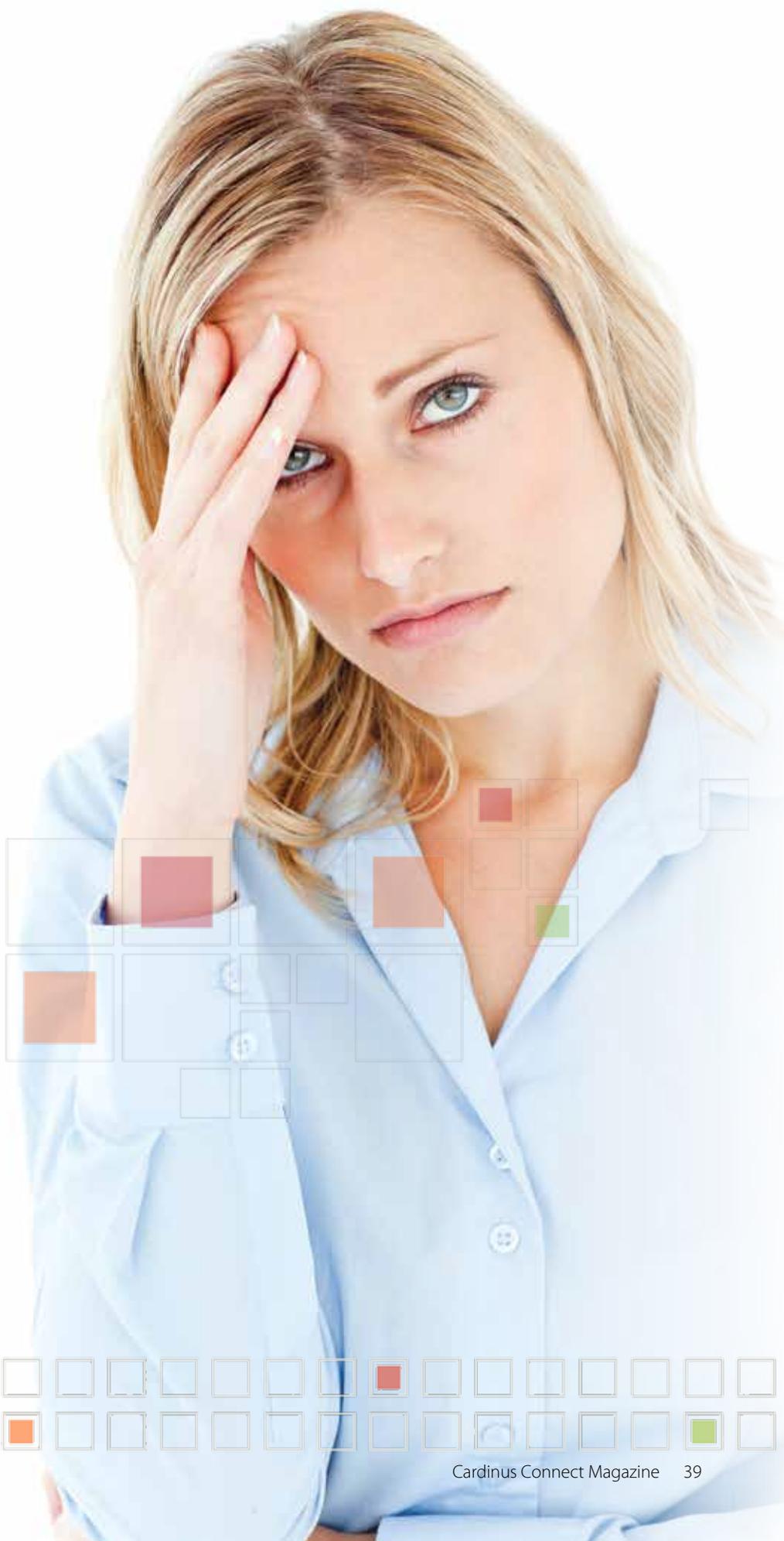
Furthermore, it is intended that the introduction of some basic reasons why we need to change the manner in which MSDs and MH are assessed and managed



across the physical, psychological and social level will allow employers to think the unthinkable. Organisations need to: focus on the whole person and broaden their risk management strategy to encompass personal risks; develop a range of benefits that consider the clinical and non-clinical pathways, and ensure that wellbeing also encompasses these risk factors if costs are to be reduced and lives improved.



Pamela founded healthcare rm 17 years ago to provide an integrated approach to Employee Health Risk Management. This approach considers the occupational and personal risk factors across all aspects of safety, health and wellbeing in the workplace. This approach is different in that it looks at the prevention and management of all conditions, in particular, what healthcare rm has identified as the two main risk factors, musculoskeletal & mental health. Significant research allows us to challenge the status quo of more traditional models. Our outcomes have been shown to deliver both financial and non-financial benefits to organisations.



BAX-U Case Study at Seattle City Light

Recently Seattle City Light decide to augment their employee wellness programme by trailing BAX-U posture devices. Keith Osborne and Dr Romina Ghassemi share the results of their trial with us

WORKPLACE injuries impact businesses on multiple levels and in multiple ways. Worker comp claims, days away, presenteeism, drops in productivity are all issues impacted by workplace injuries. Here at Seattle City Light, our 6-year Strategic Initiative has directly targeted workplace injuries to not only lower injury rates, comp claims, and other negative metrics, but to also significantly improve our worker's wellbeing, so they can enjoy the Other 16. The Other 16 is an initiative born out of our grassroots efforts and focuses all on how to create a safer workplace, so employees can go out and enjoy time away from work- the Other 16.

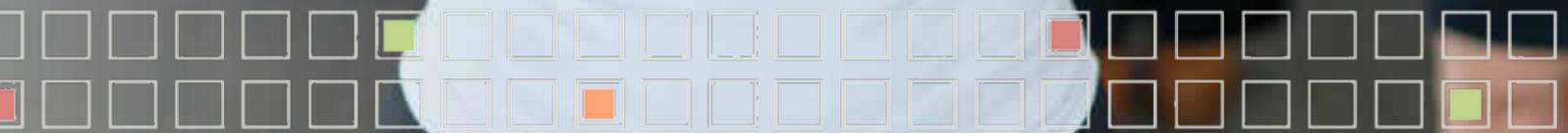
Part of the focus on safety was also to build a multi-faceted ergonomics programme that integrated wellbeing initiatives together to enhance worker productivity, comfort, and satisfaction. Over the last four years, in support of the Strategic Initiative, the combined office and industrial/field ergonomic process has proactively saved City Light over \$23M in potential costs. Even with that success, I felt there were other things we could do. Enter the BAX-U Case Study. With the help

of Dr Romina Ghassemi, founder of Think Healthy and developer of the BAX-U posture device, we ran a 12-week case study using the device in an office setting with 53 participants. The goal of the case study was to explore ways to incorporate wellness into an already successful ergonomics process. Additionally, we wanted to be able to provide employees proven avenues (based on case study data) to explore to improve their wellbeing both at work and at home.

Participants had to meet certain criteria to be involved. They had to be users of our online risk tool, be willing to give the full 12 weeks needed to complete the study and have areas of discomfort that would benefit from the device's use. Requirements for participation were that the participants complete an initial assessment, answer a mid-study questionnaire, and then complete an exit assessment at the end.

From the beginning of the study, we had positive metrics to report. 92.4% felt an immediate difference when they first wore the device. 56.6% felt immediate pain relief after the device was fitted, with many showing visual improvement in their postures in our fitting room.





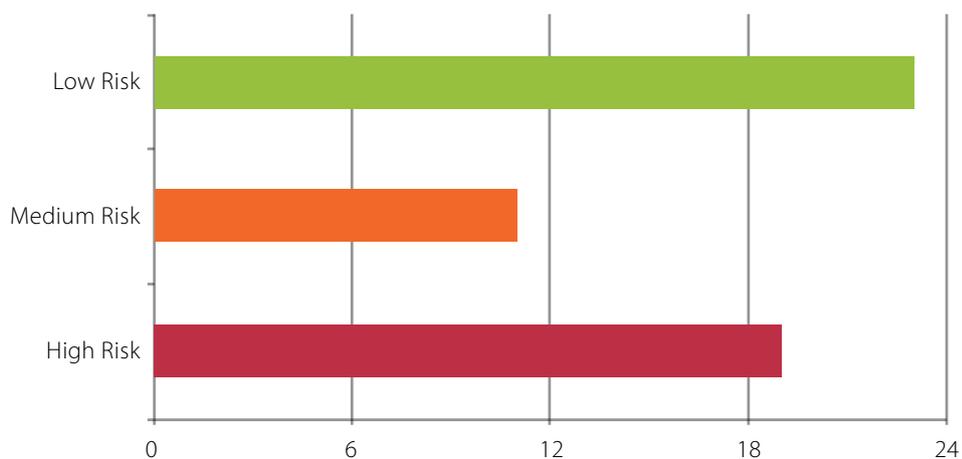


Analysis of the initial assessment found the following:

Initial Risk categories for the participants

- High Risk - 20 (38%)
- Medium Risk - 13 (24%)
- Low Risk - 20 (38%)

INITIAL: Risk categories for the participants



The overall risk score for the group was 853 compared to a utility-wide risk score of 300. Lost productivity was measured at 41 minutes per day within the group compared to 30 minutes for the utility. This translated, based on our GAP assessment, to \$14,717 in annual lost productivity for the group compared to \$10,955 for the utility.

Our mid-study questionnaire focused on the immediate impact of the device, how often they were wearing it, and if the device made employees more aware of their work and how ergonomics impacted it. Other questions focused on what was most affected by wearing the device and if they wore it while exercising.

Out of the respondents, 88% felt an immediate difference when wearing the device while 56% wore the device between 3-7 days a week. Over 80% felt that proper chair use was noticed the most, while 30% stated they forgot they had it on. Over 90% felt that posture awareness was affected the most with BAX-U, followed by discomfort/pain mitigation. Only 26% tried wearing it while exercising, but that was not really the focus of the study. Almost 70% said they would buy one for a family member or loved one.

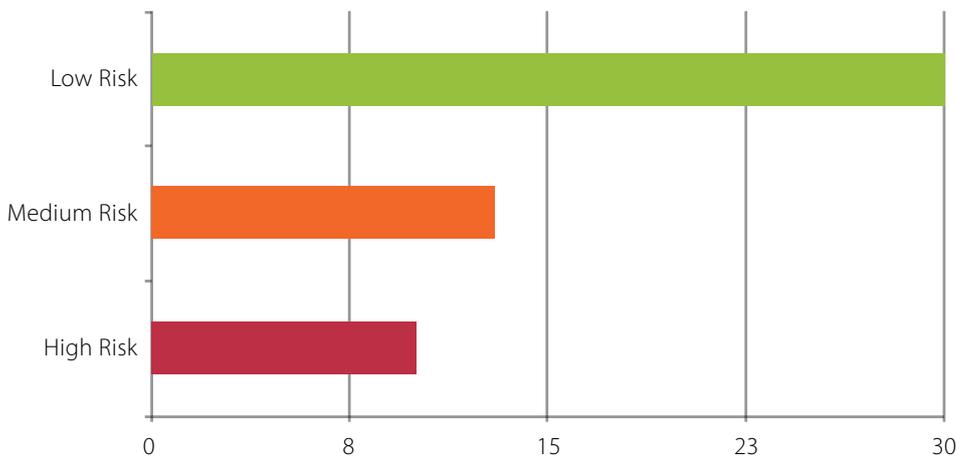


Exit result for the risk categories showed the following shifts:

Exit Risk categories for the participants

- High Risk - 10 (18.8%)
- Medium Risk - 13 (24.4%)
- Low Risk - 30 (56.8%)

EXIT: Risk categories for the participants



The takeaway here is that we were able to reduce the number of high and medium risk employee but also, those who were still high risk saw their overall risk score drop significantly. Additionally, there were other very positive metrics from the study.

A 63% improvement in overall group discomfort levels in the targeted areas (head, neck, shoulders, back) with a 75% improvement in neck and back discomfort specifically. The risk score for the group dropped by 45%. It is still 23% higher than the utility overall but a huge improvement was shown in only 12 weeks. There were also large improvements in productivity gained back both in minutes and money.

Although limited in scope and size, this was a very successful case study showing how using the BAX-U device in conjunction with a sound ergonomic process can enhance the wellbeing of an employee base. This case study should go a long way in being able to introduce BAX-U to more of the employees here at Seattle City Light as an additional wellness tool to be used to improve their comfort.

All of which positively impacts productivity, morale, and employee satisfaction. We are also looking at a potential study using the new BAX-U posture shirt in a test with our field workers. That decision is pending the publication of the results of this case study.



■ **Keith Osborne** is currently the Ergonomist for Seattle City Light. Keith holds degrees in Applied Management and Business Administration, is a Certified Ergonomic Assessment Specialist, Certified Wellness Specialist, Master Fitness Trainer, Six Sigma Greenbelt, and author. He the recipient of the HTSI HSE President's Award, the 2014 Honeywell Aerospace Outstanding Engineer and Innovator Award, 2017 Seattle City Light Safety Director's Safety Excellence Award, and 2017 Safety Champion MVP Award. He has written several articles on ergonomics and wellness programme integration, ROI development, program building, and the aging workforce. His programs have saved companies over \$65M in potential lost costs.



■ **Dr Romina Ghassemi DC** is a local practitioner and her baX-u posture support won an innovative product of the year award in 2014. For more information about Dr Ghassemi and her work on community posture evaluation visit SanPedroChiropracticAndPosture.com



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