



# The Work Colleague of the Future

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**A report on the long-term health of office workers**

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**Published:** June 2019

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# 1. Introduction

People around the world have access to more doctors, medicine and health education than ever. Yet in many developed areas, health is actually declining.

German health is at its lowest ever levels. Sick days in 2016 were up 60% from 2008.<sup>1</sup> Levels of obesity have risen across Europe in recent years.<sup>2</sup> Even the traditionally slender French saw obesity rates rise from 10% to 15% in the 15 years to 2016.<sup>3</sup> The latest *Health Survey for England* says factors like diet and lack of exercise mean that over 80% of adults in England are “so unhealthy they put their lives at risk”.<sup>4</sup> A study by Lloyds Pharmacy suggests Britons today are less healthy than they were in Medieval times! Levels of cholesterol today are higher, exercise levels lower and diets poorer.<sup>5</sup>

What’s causing this? Part of the problem is that, while people are increasingly careful of their health in some parts of their lives, they ignore it in others. To enjoy good health in the future, we will need to broaden our health focus from just gyms and restaurants to our lives as a whole.

One of the key areas is the office. Poor workplace wellbeing is having a major impact on productivity, engagement, attendance and profit levels. Sick staff cost British firms £77 billion annually in lost productivity.<sup>6</sup> The average French worker now takes 17 sick days per year.<sup>7</sup> In Germany, companies logged 560 million sick days in 2016, costing the country an estimated €75 billion.<sup>8</sup> Fabienne Broucuret, wellness expert and founder of workplace health site My Happy Job, believes our work environment “undeniably affects our health”. With workers in many markets spending more time in the office than ever (see below), the problem is increasing.

So, what *specific* impact does the workplace have on health, and what can be done about it?

German occupational and public health expert Dr Frank Emrich, CEO of scalefit and respected member of the Institut für Biomechanik und Orthopädie in Köln, offers a few suggestions:

*“The most common health problems in the office today are physical inactivity and asymmetric physical strain, especially around phone calling or typing. These can all lead to degenerative processes impacting muscles, joints, discs, nerves and tendons, and may cause pain and tissue damage. Lack of motion can lead to muscle degeneration. Overdoing motions, such as mouse-clicking, can cause inflammation and nerve compression.”*

These are just a few of the many dangers facing individuals in today’s workspace. This report was commissioned by Fellowes to study those evolving health trends. It identifies potential problems lurking in four distinct ‘danger zones’: our workstations, offices, jobs and lifestyles.

## 2. Findings

Globally, more people work in offices than any other work environment. And yet, this setting is becoming hazardous to our wellbeing. Unchecked, the office is set to present a significant threat to each nations’ future health, and ultimately, its productivity.

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<sup>1</sup> ‘Rheinische Post’, August 2016

<sup>2</sup> World Health Organization, December 2011

<sup>3</sup> Local.Fr, November 2016

<sup>4</sup> NHS Digital, December 2018

<sup>5</sup> Lloyds Pharmacy, December 2007

<sup>6</sup> Vitality Health, January 2018

<sup>7</sup> Local.Fr, September 2018

<sup>8</sup> Deutsche Welle, September 2018

This report shows how recent workplace trends such as increased time and workload pressures, open-plan layouts and too much screen time, are negatively impacting workers' health.

The most dangerous of these? Our research suggests one overshadows all others—sitting still. We're regularly spending hours at our desks with little movement, and our bodies are starting to atrophy in response. It's accelerating not just musculoskeletal disorders and weaker limbs, but blood clots, heart disease, diabetes and even cancer.

Our workstations and offices create other problems too, from poor posture to strain from repetitive movements. Our screen-filled, strip-lit, air-conditioned environments exacerbated by 'sick building syndrome', are contributing to growing rates of migraines, blurred vision and virus infections.

Broader work and lifestyle issues, like increasing working hours and long commutes, mean more sitting and meals 'on the go', which in turn means higher blood pressure, weight gain, and back and stomach pain.

All the above will impact our mental health too—from anxiety and depression to 'infobesity' (data overload) and memory loss.

Two of the biggest lifestyle issues mix physical and mental issues—a rise in sleep deprivation and the growth of remote working, driving a subsequent rise in non-ergonomic computer use.

Such health issues aren't predetermined. Changing our attitudes, behaviours and workplaces could reduce the problem considerably. Some progressive organisations are already encouraging their workers to stay physically fluid throughout the day.

But the majority of workspaces remain health traps. To fix the problem, employers and employees will need to work together to prioritise physical and mental health. The former will need to address the workstations they provide, their office equipment, environment and terms of employment, if they are to maintain a healthy, engaged and efficient workforce. And the latter? Perhaps office workers can re-assess their attitudes and behaviours; making more positive choices around their work- and lifestyles.

However it happens, radical changes are needed. If not, then what many call the 'Fourth Industrial Revolution' looks set to make us permanently sick.<sup>9</sup> The 'work colleague of the future' will suffer health problems as bad as those we thought we'd left behind in the *first* Industrial Revolution.

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<sup>9</sup> 'Forbes', August 2018

## 3. Danger zones

### 3.1. Our workstations

#### 3.1.1. Trends

The workstation may seem like a safe place to work, but it's fast becoming one of the most dangerous. Sitting for hours, in a bad position, using repetitive movements and staring too long at a screen can have a terrible impact on workers' health.

Increasing computer use is one of the key factors driving a more sedentary workplace. More of us are spending time on computers. A recent survey shows information workers use an average of 2.3 devices at work. Seventy-four percent use two or more, and 52% three or more.<sup>10</sup> Digitisation has also accelerated the decline in physical jobs that began with the greater urbanisation of Europe in the 20<sup>th</sup> Century.

- **Convenient technology.** In the 1990s, office workers might have made dozens of trips a day to filing cabinets or to take documents around the building. But today's computers make this activity a thing of the past. Those jobs can now be done by moving little more than an index finger on a mouse. Tomorrow, even that finger will seem excessive—we're likely to achieve the same with a flicker of the eyes across a screen. Or with our voices, as voice assistants like Amazon's Alexa grow in popularity. As ergonomics expert Stephen Bowden, of the Chartered Institute of Ergonomics and Human Factors, says:

*"Modern technology has robbed us of traditional movements like standing up. We don't even need to get up to answer the phone now. When was the last time you got up to answer the phone?"*

- **Sitting tight.** The average German office worker today spends over 80% of their working day at their desk.<sup>11</sup> 81% of UK office workers spend over 4 hours there, and 45% spend over 6 hours.<sup>12</sup> French workers spend one-third of every day sitting down—over half their waking lives.<sup>13</sup>
- **Stuck in one place.** One-third of UK employees never leave their workplace after they arrive. The percentage of employees working more than 20 hours per week in front of a screen rose from 12% in 1994 to 23% in 2010, with a sharp increase in executives who went from 18% to 46%. An increasingly automated future means these numbers are likely to accelerate.

#### 3.1.2. Sedentary dangers

Just sitting at a desk can have a huge impact on an individual's health. A sedentary lifestyle might seem physically easier for office workers. But when this becomes the default way of being, it can have a devastating long-term effect on employee health. Indeed, long periods of inactivity are one of the biggest causes of poor worker health today. Over three million people a year die due to physical inactivity. Sedentary behaviour is now the fourth highest cause of mortality in the world.<sup>14</sup> Twice as many people die from inactivity as obesity.<sup>15</sup> Ms Broucaret agrees on the importance of this issue:

*"I believe sedentariness will have the greatest negative impact on the body and mind of the worker of the future. The risks of a sedentary lifestyle are now very well known, and include obesity, diabetes, and cardiovascular disease"*

<sup>10</sup> Forrester, February 2102

<sup>11</sup> Baua, Wellbeing in the Office, September 2009

<sup>12</sup> Fellowes, October 2018

<sup>13</sup> Medical Monitoring Survey of Professional Risks (SUMER), 2013

<sup>14</sup> World Health Organization, February 2018

<sup>15</sup> Ekelund et al, 'American Journal of Clinical Nutrition', March 2015

The link between illness and sitting first emerged in the 1950s, when researchers found that London bus drivers were twice as likely to have heart attacks than conductors. Subsequent studies have uncovered a host of other effects, from back pain to cancer.

One clear consequence is weight gain and its associated health issues. Sitting for a long time decreases lipoprotein lipase activity. The less we move, the less time we spend in fat-burning metabolic mode. Weight and cholesterol levels can rise, even with a low-calorie diet.<sup>16</sup>

We can mitigate this, but not through the odd half hour at the gym, no matter how intense. Stephen Bowden points to the findings of Stephen Blair at the Arnold School of Public Health, who recommends becoming 'moderately fit'. This reduces the chance of early death generally by 50% and outweighs the risk of the common risk factors such as obesity, diabetes and high cholesterol.

Stephen Bowden says:

*"The body requires low intensity, high frequency movements throughout the entire day."*

When we sit for long periods, the arteries in our legs constrict. This limits blood flow, raises our blood pressure and becomes a contributing factor for heart disease. A 2015 study on pre-teens found that after sitting for 3 hours, they suffered a "profound" reduction in vascular function. This is particularly troubling, as even a 1% decline in such functions can increase heart disease risk by 13% in adults.<sup>17</sup>

### **3.1.3. Sedentary diseases**

When weight and circulation factors combine, they can create a third, even more dangerous effect. That is an increased possibility of fatty acids blocking the arteries in the heart, leading to high blood pressure and possible cardiovascular disease. One study showed that men spending over 10 hours a week in a car or 23 hours watching television had an 82% and 64% greater risk of developing heart disease, respectively, than those who spent less time doing so.<sup>18</sup>

One 2017 study identified a link between diabetes and sitting time. Prolonged sitting lowers the body's sensitivity to insulin, the hormone that regulates blood sugar levels. If the body's cells respond slower to insulin, this increases the likelihood of the disease.<sup>19</sup>

Even more disturbingly, statistics suggest prolonged sitting can actually increase the risk of several cancers. Some experts believe sedentary behaviour can increase insulin production, encouraging the growth of cancer cells. Regular activity reduces oxidative stress, so the less we do, the fewer antioxidants our bodies produce. Secondary symptoms of sitting, like weight gain, changes in hormone levels or a dysfunctioning metabolism, can add to the risk.<sup>20</sup>

### **3.1.4. Weaker muscles**

Again, doing less is a problem, this time, for our muscles. Not using them enough can loosen and weaken them, especially in the middle and lower body. Without strong legs or core, our lower body is less able to support us.

Much of the problem is actually to do with gravity. The less we stand and walk, the less we interact with gravity, which can have negative effects on our bodies. Sitting still for long periods is not unlike the effects of being in a gravity-free environment; something that can have a negative impact on health. Stephen Bowden points to the findings of Joan Vernikos, former NASA Director of Life Sciences. Research completed on astronauts found life in microgravity accelerates the loss of aerobic capacity, muscle mass and bone density.

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<sup>16</sup> Bey, Hamilton, 'Journal of Physiology', Sept 2003

<sup>17</sup> Metcalf et al, 'Medicine and Science in Sports and Exercise', October 2015

<sup>18</sup> Warren et al, 'Medicine and Science in Sports and Exercise', May 2010

<sup>19</sup> Asvold, Midthjell et al, 'Diabetologia', May 2017

<sup>20</sup> De Sousa et al, 'Sports Medicine' (NZ), February 2017

### 3.1.5. Posture and pain

Maintaining any position for too long can impact health. Maintaining a poor one is worse. Necks and shoulders can curve and stiffen, spines lose their flexibility as they absorb pressure and pelvises rotate incorrectly.

Little wonder then, that back pain has become a global issue. Lower back pain is considered by one leading medical journal to be the leading cause of disability in the world.<sup>21</sup> It's having a strong impact in Europe. Lower back pain affects two-thirds of French employees and costs French business a billion euros per year. It represents almost 10% of all occupational illness, and 30% of work stoppages lasting over 6 months. Forty-three percent of Britons will suffer with lower back pain at some point.<sup>22</sup> In Germany, it's even more acute; 80% of Germans suffer from back pain. It's the most common reason to see a doctor. Thirty percent of all illnesses and 14% of lost workdays there are attributed to back, posture and musculoskeletal complaints (MSC).<sup>23</sup>

We've also seen a shift in industry health trends over the last decade. Traditionally, manufacturing was the most dangerous sector for MSCs, but thanks to regulatory change, it has seen a decrease of thousands of incident cases per year. Now it's the service sector—in the same 10 years, health 'incident cases' have risen by two thousand.<sup>24</sup>

### 3.1.6. Mental health

Sedentary lifestyles don't just impact physical health, they affect mental capacity too. A team of researchers at Liverpool John Moores University in the UK found evidence that sitting for long periods of time can reduce blood flow to the brain. That can slow brain functionality and increase the likelihood of developing neurological disorders like dementia.<sup>25</sup>

Too little movement can also contribute to feelings of depression. Sitting indoors means less exposure to sunshine and vitamin D, and fewer of the mood-boosting benefits that come with exercise. Fabienne Broucuret believes lack of movement affects employees' minds in another way too; it hampers creativity and the emergence of new ideas and innovation.

### 3.1.7. Repetitive movement

Too much movement can be as bad as too little, if it's repetitive. An excessive amount of typing could aggravate carpal tunnel syndrome, which drives permanent nerve damage and muscle-wasting.<sup>26</sup> Keeping a mouse in the same position all day can provoke repetitive strain injury (RSI). Straining tendons for long periods, through repetitive movement, a prolonged awkward position, long periods of standing or sustained pressing against hard surfaces, can lead to upper-limb RSI.<sup>27</sup>

These effects are compounded by our tendency to continue working via smartphones, when we manage to escape our workstations. A 2015 study connected the repetitive movements we make on the phone to carpal tunnel syndrome as well as thumb pain, median nerve pain (palm pain), and a reduced strength and function in the hand.<sup>28</sup>

### 3.1.8. Screen time

Hours spent looking at a computer screen can have a negative impact too. A study of French students revealed increasing levels of screen time exposure are associated with increased risk of self-perceived attention problems and hyperactivity levels.<sup>29</sup> It is the reason behind 30–50% of German computer workers suffering from headaches

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<sup>21</sup> 'The Lancet', March 2018

<sup>22</sup> Fayaz et al, 'BMJ', Volume 6 Issue 6

<sup>23</sup> DKV Report, July 2018

<sup>24</sup> French Social Security Department, 2017

<sup>25</sup> Carter et al, 'Journal of Applied Physiology', March 2018

<sup>26</sup> 9 Things You Can Do to Prevent CTS, WebMD 2019

<sup>27</sup> Canadian Centre Occup Health & Safety, June 2017

<sup>28</sup> Inal et al, 'Muscle and Nerve', August 2015

<sup>29</sup> Montagni et al, 'BMJ', Volume 6, Issue 2

and eye strain. It's also why many Britons today are suffering from decelerating working memory, processing speed, attention levels, language skills and executive function.<sup>30</sup>

Too much screen time can cause computer vision syndrome (CVS). The most common symptoms of CVS are eye strain, redness, irritation, dryness, blurred vision, headaches, and neck and shoulder pain. It's exacerbated by poor lighting and posture.<sup>31</sup> CVS affects between 64% and 90% of office workers globally.<sup>32</sup>

Beyond eyes and posture, continued computer use also impacts mental health. One study showed that the longer workers use a computer each day, the greater their levels of depression and anxiety disorder.<sup>33</sup> Ms Broucaret believes employees' mental health will continue to deteriorate if barriers aren't put in place, such as training, rest periods, limits and the 'right to disconnect':

*"Computer work is having a major impact on mental health. Hyper-connectivity, 'infobesity' (data overload), the impression of permanent urgency, having to constantly manage a multitude of things, the merging of work and personal life; these all create negative impacts such as burnout."*

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<sup>30</sup> 'Lancet Child and Adolescent Health', Sept 2018

<sup>31</sup> Rosenfield, 'Journal of the British College of Ophthalmic Opticians', April 2011

<sup>32</sup> 'Time', September 2012

<sup>33</sup> Kim et al, 'Annals of Occupational and Environmental Medicine', October 2016

## 3.2. Our offices

### 3.2.1. Trends

We have established that prolonged sitting is bad for our health. But even those who stretch their legs frequently can suffer other office hazards. Air quality, artificial lighting, germ-laden surfaces and poor-quality building materials can all make us ill.

- **Sick buildings.** Poor office air conditioning and the increasing use of artificial materials and the vapours they produce is driving what experts call Sick Building Syndrome (SBS). Along with a lack of fresh airflow and natural light, it creates a toxic soup of pollutants, dangerous bacteria and a variety of vapours and mould. It is especially common in poorly maintained buildings. French researchers recently found that potentially fatal toxins from mould can “aerosolise” directly into the air.<sup>34</sup> It is thought to cost the UK economy £24.6 million in lost work days.<sup>35</sup> It is unlikely to disappear in the short term. While scientists highlight the dangers, construction laws that might mitigate it have not kept pace. Many new buildings still fail to provide enough ventilation and natural light.
- **Lighting and air.** SBS is one of the factors impacting air and light quality in the workplace. Seventy-nine percent of French workers say they are dissatisfied with the lighting in their workplace.<sup>36</sup> Twenty-five percent of all workers today are unhappy with their office climate, which is exacerbated by inconsistent equipment, ventilation, heat and temperature fluctuations due to workers shifting thermostat dials. Air in a building can also be 100 times dirtier than outside.<sup>37</sup>
- **Close proximity.** Although more employees are working remotely, trends in office space mean those who *do* work from the office are being forced to sit closer to their colleagues. The amount of office space per employee has been steadily declining, and approximately 70% of offices today are open plan.<sup>38</sup>

### 3.2.2. Air quality

Fabienne Broucuret believes air quality is a problem we don't talk about enough. Today it is often corrupted by building materials, poorly-serviced air conditioning, ozone in photocopiers and printers, solvent in felt pens and formaldehyde in furniture. Tiny amounts of ozone or toner particles can cause chest pain, irritation and lung disease.<sup>39</sup>

Meanwhile, failure to maintain recommended office temperatures encourages the spread of viruses. Poor air temperature dries the mucus membrane in the nose. The respiratory system can't filter air as efficiently, enabling viruses and bacteria to penetrate the body more easily. The familiar 'dry air' feeling from a heating system can be unpleasant. It can also tear the film of moisture on the eyes, causing conjunctivitis, headaches and poor concentration.<sup>40</sup>

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<sup>34</sup> Bailly et al, 'Applied & Environmental Microbiology', June 2017

<sup>35</sup> 'The Independent', February 2018

<sup>36</sup> Lutron Electronics and Opinion Matters, 2017

<sup>37</sup> 'Science of Total Environment Journal', April 2016

<sup>38</sup> 'Evening Standard', April 2016

<sup>39</sup> 'Time', August 2007

<sup>40</sup> Baua, 'Wellbeing in the Office', September 2009

### 3.2.3. Poor lighting

Natural light stimulates metabolism, controls hormonal balance and the immune system, and promotes cell replenishment; artificial light removes these benefits. It can also negatively impact workers' internal clocks, making them sleepy in the day and restless at night. One study showed employees in artificially-lit offices sleep 46 minutes less per night than those with windows, and the sleep they do get is less restful.<sup>41</sup>

### 3.2.4. Up close and personal

To stay healthy, employees need plentiful access routes, through routes, ceiling space, leg and swivel room.<sup>42</sup> But as office space shrinks, this is rarely the case. Close proximity to others can create a more bacteria-heavy environment too, from door knobs and taps to lift and printer buttons.

Open-plan layouts can exacerbate the problem. One Danish study found sick days increase as the number of people working in a room increases. Those working in fully open offices are sick 62% more than their counterparts.<sup>43</sup> Such layouts can also increase stress and decrease concentration.<sup>44</sup> Employees in cubicles are 29% more likely to be interrupted, and workers who are frequently interrupted have 9% higher levels of exhaustion.<sup>45</sup>

Open-plan offices contribute to a rise in office noise. Fifty-nine percent of French professionals say they are bothered by noise in their workplace, up from just 52% in 2017.<sup>46</sup> According to Ms Broucuret, this can have multiple repercussions, from headaches and poor concentration to anxiety, irritability and even hearing disorders.

Counter-intuitively, such layouts can actually *diminish* human interaction, because dropping physical barriers typically causes people to put up more *virtual* barriers. One major study found that a switch to open plan caused face-to-face interaction to decrease by 70% and email and instant messaging to rise by 50%.<sup>47</sup> As a result, open plan can potentially decrease office movement levels.

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<sup>41</sup> Boubekri et al, 'The Journal of Clinical Sleep Medicine', June 2014

<sup>42</sup> *ibid*

<sup>43</sup> Peterson et al, 'Scandinavian Journal of Work, Environment and Health', September 2011

<sup>44</sup> 'International Review of Industrial and Organizational Psychology', Volume 26, 2011

<sup>45</sup> University of California, Irvine, April 2013

<sup>46</sup> IFOP et association JNA, 'Bruit, Santé Auditive et Qualité de Vie au Travail', 2018

<sup>47</sup> Bernstein et al, 'Philosophical Transactions of the Royal Society', July 2018

### 3.3. Our jobs

#### 3.3.1. Trends

In our volatile economy, many workers suffer from longer hours, more pressure, cutbacks, rising management expectations and later retirement, all of which can have negative effects on wellbeing.

- **Under pressure.** Stress is a real and growing problem for more and more workers. Eighteen percent of European workers say they endure stress at work every day, a 5% rise on 2017. Work-related stress, anxiety and depression now account for over half (57%) of all working days lost due to ill health in the UK.<sup>48</sup> In Germany the number of sick leave cases related to psychological issues rose 125% from 2008–2016.<sup>49</sup> In France, one-quarter (24%) of employees are in a state of ‘hyper stress’, meaning anxiety levels that put their health at risk.<sup>50</sup>
- **Financial volatility.** Experts joke that the only certainty in tomorrow’s economy is uncertainty. Not even countries with traditionally strong economies are immune. Forecasts for the German economy were revised down recently, by sources from the government and the International Monetary Fund to Allianz.<sup>51</sup> Experts from PricewaterhouseCoopers, Bank of France and the European Union have shown concerns about the French and British economy. Whatever happens, this uncertainty is impacting employer and employee alike. For instance, 25% of French workers today are afraid they will lose their job;<sup>52</sup> such uncertainty can increase stress.
- **Round the clock.** Working hours are up in many countries. The average UK working week has seen a steady increase since 2008, with employees working 34 hours a year more.<sup>53</sup> UK workers are also doing more overtime; an average of 5 extra hours per week.<sup>54</sup> Although the French government recently legislated a 35-hour week, it is currently reviewing its decision, meaning long hours may return. Meanwhile many people are taking fewer breaks, concerned that it might increase their chances of redundancy.
- **A long road ahead.** The age of the European workforce is rising. The EU-28 employment rate for people aged 55–64 years rose from 39.9% in 2003 to 50.1% in 2013.<sup>55</sup> This is being exacerbated by a declining birth rate. By 2050, there will be 48 million fewer 15–64 year olds in Europe, and 58 million more over-65s.<sup>56</sup>

#### 3.3.2. Greater stress

Anxiety doesn’t just affect our moods, it can cause fatigue, headaches, intestinal problems and poor sleep.<sup>57</sup> It can also boost rates of cardiovascular disease and musculoskeletal disorders.<sup>58</sup>

The stress of meeting targets or deadlines can affect learning and memory.<sup>59</sup> Work stress can also be linked to an elevated risk of heart disease, sleep loss, weight gain and high blood pressure.<sup>60</sup>

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<sup>48</sup> Health & Safety Executive, October 2018

<sup>49</sup> ‘Rheinische Post’, August 2016

<sup>50</sup> Stimulus, ‘Observatoire du Stress au Travail’, 2018

<sup>51</sup> Allianz SE, ‘Germany Economic Outlook 2019’, Dec 2018

<sup>52</sup> DARES, ‘Working Conditions-Psychosocial Risks’, 2016

<sup>53</sup> ONS, 2017

<sup>54</sup> Right Management, January 2017

<sup>55</sup> European Agency for Safety & Health at Work, 2014

<sup>56</sup> Grage, December 2018

<sup>57</sup> Premier Health, ‘Women Wisdom Wellness’ Jan 2018

<sup>58</sup> French National Research & Safety Institute for Prevention of Occupational Accidents & Diseases (INRS), 2019

<sup>59</sup> University of California, ‘Short-term Stress’, Mar 2008

<sup>60</sup> Robbins et al, ‘Journal of Applied Psychology’, September 2011

Stress also increases the risk of eczema. In one study, 81% of sufferers say stress aggravates their symptoms.<sup>61</sup> There is certainly a higher incidence of stress among those with the condition; 30% of those suffering from eczema also suffer from depression or anxiety. It's also a key cause of muscle twitching.<sup>62</sup> Ms Broucuret says:

*“The impacts of stress can be psychological; anxiety, loss of self-esteem, isolation and so on. But they can also be physical; back or cervical pain, migraine, lack of appetite, digestive disorders and skin problems like eczema.”*

According to Dr Emrich, stress can also be a source of muscular problems:

*“Stress hormones entering the blood stream can affect muscular function, pain and behaviour.”*

### 3.3.3. Longer hours

There's one clear consequence of longer hours—more time spent sedentary. This only exacerbates the problems for workers outlined above. Meanwhile, the longer and harder employees work, the less time they take for exercise. Employees in high-strain jobs do significantly less exercise than those in low-strain jobs—because work gets in the way.<sup>63</sup> Meanwhile, one study showed that people who work 10 hours or more per day have a 60% greater risk of a multitude of cardiovascular problems, from heart attacks to angina.<sup>64</sup>

### 3.3.4. Routine jobs

Studies suggest monotonous, badly-planned work that lacks individual freedom can actually increase musculoskeletal disorders, gastrointestinal infections, disturbances to the circulatory system and even depression and 'burnout syndrome'. Dr Emrich agrees:

*“Doing the same thing for a long time always leads to negative health effects. The less routine work, the more often you change tasks the better.”*

One study from University College London even suggested that workers who complain of boredom are more likely to die from heart disease or stroke.<sup>65</sup>

### 3.3.5. Older workers

With the retirement age increasing across markets, tomorrow's office will include more older workers. As we age, our ability to fend off, and recover from, illness typically decreases. So, these older workers will be more acutely impacted by many of the health dangers listed in this report.

## 3.4. Our lifestyles

### 3.4.1. Trends

New work pressures and methods are affecting worker lifestyles, and their work–life balance. The more tasks each employee is given, the greater the pressure to prove themselves in a redundancy-heavy environment. The more their work spills into 'leisure' hours, the less break time they'll have for exercise, healthy meals or just some mindful 'me time'. This will drive stress, obesity and heart disease. Two key areas here are sleep and remote work. Rising home computer use, commuting and stress are decreasing the amount and quality of office workers' sleep. Meanwhile, more workers are working in non-office environments, from cafes to home offices, which are frequently not ergonomic.

<sup>61</sup> Suarez et al, 'Acta Dermato-Venereologica', January 2012

<sup>62</sup> 'Medical News Today', March 2019

<sup>63</sup> Payne et al, 'The impact of working life on health behavior', 2002

<sup>64</sup> 'European Heart Journal', May 2010

<sup>65</sup> 'International Journal of Epidemiology', Feb 2010

- **Hounded by technology.** Forty percent of Britons check work emails at least five times a day outside of working hours. One-third say remote access to work means they can never fully switch off, and 17% say it makes them anxious or impacts their quality of sleep.<sup>66</sup>
- **On the phone.** Mobile use continues to grow. The number of smartphone users in Europe in 2017 hit 450 million—up 10% on the previous year. European users are set to pass 522 million by 2021.<sup>67</sup>
- **Rush hours.** Commuting is up in many markets. It is at record levels in Germany in both numbers and distance. Sixty percent of German workers now commute on average 17 km each way—up from 15 km in 1999.<sup>68</sup> In Britain, annual commuting time has risen by 18 hours since 1999.<sup>69</sup>
- **Remote working.** Seventy percent of global professionals work remotely at least 1 day a week; 53% at least half the week.<sup>70</sup> 2.6 million Britons work from a range of different places, using home as a base.<sup>71</sup> A study by Bitkom, Germany's digital association, found that 39% of businesses in Germany enable their employees to work remotely, and 11% of all German employees now work partially from home.<sup>72</sup> Most senior executives believe over half of global employees will work remotely by 2020—25% think over three-quarters will.<sup>73</sup>
- **Eating against the clock.** Workers are eating less wholesome food, in shorter spaces of time. French workers now take just 22 minutes for lunch, compared with an 1.5 hours 20 years ago. Fast food consumption rose 9% in France last year.<sup>74</sup> More French workers are skipping breakfast.<sup>75</sup> One in five German employees now works through their break, 10% rarely take a break and 20% are taking fewer breaks than before.<sup>76</sup> Half of Britons regularly miss breakfast versus 20% in 2012.<sup>77</sup> Most British workers take just 30 minutes for lunch—70% take less than an hour. Those that do take a break typically spend it browsing online or doing personal admin.
- **Sleepless nights.** Factors such as late-night computer use, rising commuting times and rising stress levels mean workers across Europe are sleeping less and less. The French have lost an average of 90 minutes of sleep per night in the last 50 years. According to one study, 16% of adults in the UK sleep for less than 6 hours per night. A German Sleep Society survey revealed that six percent of Germans suffer from chronic sleep disorders.

### 3.4.2. Faster food

Skipping meals can have a huge impact on employee health and efficiency. People who don't eat breakfast have a greater risk of high blood pressure, obesity and poor cardiovascular health compared with those who regularly eat within 2 hours of waking up. So rather than helping lose weight, consistently denying ourselves meals can place the body in a stressful state and disrupt the metabolism.<sup>78</sup> One recent study showed that those who missed breakfast were also more likely to show early stages of atherosclerosis—a build-up of fatty material in the arteries.<sup>79</sup>

Meanwhile, skipping meals might seem productive, but shorter meals actually *reduce* concentration levels. According to one expert, if one eats within a working environment—in one's office for example—concentration declines.<sup>80</sup>

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<sup>66</sup> Chartered Institute of Personnel Development, 2017

<sup>67</sup> eMarketer, Internet and Mobile Users in Europe, November 2017

<sup>68</sup> Federal Institute for Research on Building, Urban Affairs and Spatial Development, 2018

<sup>69</sup> TUC, November 2018

<sup>70</sup> IWG, May 2018

<sup>71</sup> 'Raconteur', December 2018

<sup>72</sup> Deutschland.de, July 2018

<sup>73</sup> London Business School, Global Leadership Summit, July 2014

<sup>74</sup> Malakoff Médéric, 2018

<sup>75</sup> 'Le Parisien', June 2013

<sup>76</sup> TNS Infratest, June 2014

<sup>77</sup> Flahavan's Oats, 2017

<sup>78</sup> 'Business Insider', July 2013

<sup>79</sup> 'Journal of American College of Cardiology', Oct 2017

<sup>80</sup> Dr Patrick Serog, September 2011

Food on the go often means more fast food too. Such food can have double the calories of other similar foods, and more oxidised fat—increasing the risk of heart disease and obesity. We are also seeing greater demand for stimulants to combat workload pressure, from coffee to energy drinks. Studies show over-consumption of such drinks can lead to increased blood pressure, insomnia, anxiety, obesity and kidney damage.<sup>81</sup>

### 3.4.3. More commuting

Longer, more frequent commutes have several health drawbacks—they can drive stress and decrease sleep. They also have a role in those missed breakfasts mentioned previously.

UK commuters have, on average, lower life satisfaction and levels of happiness. They have less of a sense that their daily activities are worthwhile, and higher anxiety than non-commuters.<sup>82</sup> Commuting over 10 miles a day by car can increase blood sugar, cholesterol and depression.<sup>83</sup> Road traffic is one of the main stressors of German workers—equivalent to that caused by data overload.<sup>84</sup> One official German study showed the longer a German worker's commute, the more sick days they took due to poor mental wellbeing.<sup>85</sup>

### 3.4.4. Remote working

Working remotely enables workers to avoid some of the health hazards of an office. For instance, remote workers are more likely to take breaks. It can lead to other problems, however, especially when they make their office in cafes or transport hubs.

In public spaces, germs are likely to be more plentiful. Such spaces are typically not built for computer use either. Today just 10% of Europeans work ergonomically in locations other than their permanent place of work. This can lead to the development of skeletal and muscular issues, like back tension, wrist pressure and neck strain.<sup>86</sup>

Most people who work remotely use a laptop or tablet, which can exacerbate the problem. As Dr Emrich says:

*“Having the screen and keyboard fixed together while working can have a negative impact on posture.”*

Laptop users can also experience skin problems from the heat, which can lead to long-term effects like toasted skin syndrome.<sup>87</sup>

### 3.4.5. Sleep deprivation

More out-of-hours work, such as responding to late-night emails, is having a negative impact on sleep. Seventeen percent of Britons say it makes them anxious and/or impacts their quality of sleep.<sup>88</sup> Having phones and computers switched on and by the bed certainly doesn't help. As Stephen Bowden points out, the blue light emitted from computers and mobile phones can affect the circadian rhythm, which helps regulate the sleep-wake cycle.

Lack of sleep impacts stress and concentration levels. According to the NHS, it also increases the risk of obesity, heart disease and diabetes.

Ms Broucuret believes the combination of all these lifestyle trends—sleep deprivation, long commutes and skipping meals—can lead to a dangerous cocktail of *“irritability, weight gain, lack of concentration, exhaustion and low morale”*.

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<sup>81</sup> Mattei et al, 'Frontiers in Public Health', Nov 2017

<sup>82</sup> ONS, 2014

<sup>83</sup> 'American Journal of Preventive Medicine', June 2012

<sup>84</sup> Techniker Krankenkasse, 2016.

<sup>85</sup> Techniker Krankenkasse, Annual Health Report, November 2018

<sup>86</sup> Fellowes 2018

<sup>87</sup> WebMD, October 2010

<sup>88</sup> *ibid*

## 4. Physical impact

### 4.1. Long-term impact

So, what long-term impact will sedentary office work have on our bodies? What will the work colleague of the future actually look like?

From reviewing the data it's clear that, unless workplace behaviours change, office employees will suffer a huge range of long-term health problems. These will be particularly focused around the torso and legs, but will impact across eyes, noses, hands, wrists and internal organs too.

If the behaviours and problems described in this report continue, by 2040, the majority of office workers could have permanently bent backs. According to Dr Emrich, regular negative behaviour can “permanently alter” the body's shape:

*“It can shorten the muscles in the thigh. The body can contract in many areas creating a more compact shape and a rounded back. Repetitive movements can create long-term inflammation of hands, fingers and wrists. Individuals might have permanent mobility deficits in their hips or shoulders and could find it harder to stand upright.”*

In Germany and the UK, almost two-thirds of the population are already overweight.<sup>89</sup> Sedentary lifestyles over the next 20 years look set to increase this exponentially, especially around the torso. But such lifestyles will have the opposite effect on our legs. They'll shrink and weaken from lack of use, with swelling and varicose veins from poor blood flow. The swollen wrists and ankles caused by RSI will also become more common, as the number who suffer from it rise from the 1 in 5 as is currently estimated to do so.<sup>90</sup>

With up to 90% of office workers already suffering from CVS,<sup>91</sup> and a trend for the affliction to increase, a *huge* number of workers will suffer from drier, redder eyes and even a squint. As a result of poor air quality, we could see more workers suffering from swollen sinuses and their noses and ears might become hairier. Their noses may be swollen too, to help breathe in necessary levels of oxygen. Some might even exhibit sallow skin from over-exposure to artificial light.

The huge rise we expect to see in workplace anxiety, noise distractions and sleep deprivation, will increase levels of stress-related eczema and muscle twitching. Also, digital nomads who frequently use laptops, may have permanently irritated upper legs and arms from regular laptop heat.

### 4.2. The generational impact?

If this isn't bad enough, some people believe these negative behaviours might actually have an impact even *further* into the future, with individuals' sedentary lifestyles impacting, not just themselves but, their children too.

This is still a little speculative; we've yet to see evidence of sedentary behaviours impacting our genes. It is certainly worth thinking about as a growing number of scientific studies suggest humans are still evolving.<sup>92</sup>

Evolution rates may even be speeding up. Human-induced rapid evolutionary change is taking place in urban animals over decades, or even just years. Bird beaks, for instance, have already adapted to human-designed bird feeders.<sup>93</sup>

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<sup>89</sup> World Health Organization, February 2016

<sup>90</sup> Mentholatum, January 2016

<sup>91</sup> 'Time', September 2012

<sup>92</sup> 'New Scientist', July 2016

<sup>93</sup> 'Interesting Engineering', October 2018

### 4.3. The future

Whether the health effects of today's workstyles are generational, or just impact individuals, they are clearly long term and chronic.

Employees and employers alike will need to address the problem. If not, the former will suffer long-term chronic conditions and the latter a weaker, less efficient and less engaged workforce.

Reassessing working practices and redesigning workstations should be a priority. Dr Emrich believes new technology will help:

*"Let's see more augmented reality work! 3D hologram data structures using hands-free input devices and voice control. Maybe even get rid of the computer. Certainly, remove the idea that info must be input by typing. Why not find ways to 'grab' data in virtual space? The less we use a keyboard, the less the problem."*

Companies will also need to explore ways to integrate more motion into office work via steppers or spinners, treadmills or ambulant meetings. They should encourage regular breaks and stretch sessions. More radically, they could look at ways to combine office work and physical work.

Some progressive organisations are already encouraging their workers to stay physically fluid throughout the day. A few are discouraging sedentariness by offering myriad working locations and sit-stand spaces to use throughout the office. Others are designing spaces to maximise natural light and are promoting the 'walking meeting' made famous in Silicon Valley.

However they do it, employers and employees alike need to make some radical changes, otherwise our offices are going to make us very sick. The 'work colleague of the future' will suffer health problems as bad as those we thought we'd left behind after The Industrial Revolution.