

Deskercise: The impact of 10 minutes of exercise on mental and physical wellbeing in the construction industry.

Introduction:

Current research provides evidence that just ten minutes of exercise each day can reduce mortality by 6.9% (Saint-Maurice et al, 2022) and 15% (Foster et al, 2018) and this reduction in mortality increases as exercise duration increases. Exercise ‘snacks and other forms of short intermittent exercise demonstrate an exciting and emerging opportunity to benefit physically and mentally from short bouts of exercise. Jones et al (2024) completed a review on the benefits of these short exposures to exercise and conclude that they can have a promising health benefits. Although more research is needed regarding short snack size exposures, regular exercise is known to be the ‘magic pill’ to a healthy, functional, high quality of life, especially through ageing, however, the global cost of inactivity is significant where many either choose not to exercise, have limitations on time due to work, family and personal commitments, or simply do not recognise the benefits that regular exercise may provide.

It is recognised that within the construction industry there are contributing factors to poor mental health. These include highly stressful environments, physical strain, job insecurity, long hours as well as stigma within the industry (HSE Network, 2023). Education and an understanding of the benefits of exercise should be promoted and reinforced by public service, governments and of course within the workplace to encourage positive wellbeing strategies. The workplace therefore provides a unique environment and opportunity to promote activity which will benefit both mental and physical wellbeing. Having an opportunity to exercise at work removes the time limitation often cited as a limiting factor to regular exercise, therefore reducing stress, improving wellbeing and also increasing productivity.

Spitiri et al (2019) reviewed the motivators and barriers to exercise for middle age and older adults. They concluded that environmental factors and resources were the most commonly identified barriers. In both cohorts a mix of social influences, reinforcement, and assistance in managing change, as well as a belief that activity will be beneficial, were all cited as important. One of the key barriers to exercise is noted as time, so if an opportunity to exercise at work with a supportive senior leadership team (SLT) who gives permission to exercise within the working day, then the opportunity to reduce the financial and personal burden of inactivity will improve.

Mohammed et al (2024) conducted a review on three main areas in relation to mental health and the construction industry. Their findings highlight the need for targeted interventions to address specific work-related stressors to alleviate the strains associated with poor mental health. Their findings

underscore the value of focusing on leadership and organisational change efforts to promote worker mental health and well-being in the construction industry. Without a doubt, SLT support and also the introduction of a steering group to add strategic decision making and help promote any intervention within the workplace is an important component to programme success.

It may feel uncomfortable standing up by your desk and completing some mobility and strengthening exercises, sensing that this should be done in the gym, and this lack of self-confidence in the office may lead to a lack of adherence or engagement of the programme, feeling self-aware when office-based exercise is available to do at work. But the physical and mental health and wellbeing benefits should far outweigh the sense of self consciousness and should motivate behaviour change and senior leadership support for change and engagement at work. Finding solutions, like a communal meeting room where participants can all join in together, would encourage attendance and also create a community within the workplace. This leads to accountability, fun and habitual behaviour.

Understanding the benefits and creating a cultural shift will improve the quality of life as individuals age and reduce the financial burden on health services and businesses. The self-fulfilling nature of exercise, where habits and behaviours form from repetition and exposure to a rewarding activity or pastime, can encourage adherence and participation, and benefit health and happiness, yet exercise participation is one of the biggest health challenges. Phillips et al (2016) discuss the key to establishing an exercise habit is by becoming a 'maintainer' which lies in combining a conditioned cue and then an intrinsic reward: you need a cue to trigger attendance and then an intrinsic reward for attending. This intrinsic reward is very individual, the drivers and motivators may be different for all attendees. There may be common threads however, which motivate attendance and lead to adherence and commitment to exercise. A communal space where to join in may solve this challenge, where the intrinsic reward may be group participation, the fun component, and getting to know your work colleagues.

The workplace should be an environment to inspire and influence behaviour in our everyday lives, to encourage activity and create the time and the inclination to participate in exercise.

This research will hypothesise and demonstrate that the inclusion of a workplace exercise programme may be a positive solution to address the challenge of both personal and financial cost that inactivity leads to, and lead to healthier and happier employees, create a positive community and inspire activity away from work.

The World Health Organisation Guidelines on Physical Activity and Sedentary Behaviour (2020) and the UK Chief Medical Officers' Physical Activity Guidelines (2019) recommend 150 minutes of

moderate exercise each week (or 75 minutes of vigorous exercise each week), in addition to 2 x strength sessions each week for the adult population. This is evidence based on disease prevention. Society is busy, with family, friends and work commitments, social engagements. Indeed, time, or lack of it, is anecdotally stated as one of the top reasons that people don't exercise regularly. Living in a hectic, high demand, digital world, and dedicating time to an often perceived 'non-essential' leisure activity may be seen as unachievable and unnecessary. Giving yourself permission to exercise is a challenge when there are so many other demands. Exercise should be promoted as an essential component of our day, especially in the workplace where activity has been shown to increase productivity and happiness.

Sjøgaard et al (2016) completed 15 randomized controlled trials in Denmark, introducing exercise into the workplace enrolling >3500 workers. The duration of intervention ranged between 10-52 weeks of physical exercise. There were many benefits observed, including clinically relevant health improvements. They also found that productivity increased with improved muscle strength and decreased body mass index. The authors alert the readers to their concept that, as suggested by the World Health Organisation, that the workplace should be a specially prioritised arena for health promotion; and this commitment for workplace health promotion has been implied as an almost ethical obligation for our future health. Perhaps regular exercise needs to be rebranded as a non-negotiable, like cleaning our teeth, eating 5-a-day fruit and vegetables, or having 7-8 hours of quality sleep, as a daily requirement for health and wellbeing: should exercise be categorised as one of these non-negotiables and promoted as such.

Simple, daily exercise routines should be encouraged and supported where obesity, heart disease and Type 2 diabetes are significant killers within our sedentary population. Indeed, the World Health Organisation (WHO) Global Health Estimates (2020) research indicates that the top global causes of death, in order of total number of lives lost, are associated with three broad topics: cardiovascular (ischaemic heart disease, stroke), respiratory (chronic obstructive pulmonary disease, lower respiratory infections) and neonatal conditions. Where cardiovascular health can be affected by lifestyle, then behaviour and choices in our lives may lead to changes in our health and wellbeing.

The cost of obesity alone, both directly, in human terms quantified as good health/quality of life and life expectancy, as well as indirectly, in financial terms, is significant and putting immense pressure on our health services. Frontier Economics (2022) indicates that the prevalence of obesity has increased in the UK, especially over recent years. In early 2022, national statistics suggest there are around 15 million people with obesity (BMI >30) in the UK. Obesity can lead to increased risk of heart disease, stroke, high blood pressure, Type 2 diabetes, certain types of cancer and depression. Interventions to help reduce obesity may include food portion control, healthy eating strategies,

weight management services, as well as regular exercise, and these can all affect body weight, levels of obesity and overall mental and physical health and wellbeing. By reducing obesity in the UK by just 10% could lead to cost savings of up to £6 billion for the United Kingdom (Department of Health & Social Care, 2022).

People in the UK spend around a third of the day at work, based upon an 8 hour/day role sitting for many hours. Sitting for long periods of time is thought to slow down metabolism, which affects the body's ability to regulate blood sugar, blood pressure and break down body fat (NHS.uk, 2022) There is also an increased risk of deep vein thrombosis from prolonged sitting and Thrombosis UK suggest getting up and out of you're a chair every 90 minutes to prevent the risk of DVT and pulmonary embolism. A blood clot is twice as likely if you sit and eat lunch at your desk (thrombosis UK) so good reason to get up and move around during working hours.

Yeung (1996) suggests that both clinical and nonclinical subjects may benefit acutely from even a single bout of exercise in relation to mood. Further, Zhang et al (2019) reported positive associations between physical activity and happiness. Their research suggested that as little as 10-minutes of physical activity per week or 1 day of doing exercise per week might result in increased levels of happiness. Further research is needed, but the knowledge of the flow of endorphins and positive mood after exercise is well documented. Sran et al (2021) highlight the overall benefit that regular exercise provides increased life satisfaction. Dishman et al (2021) explored whether physical activity is inversely associated with the onset of depression and concluded within their review that customary and increasing levels of moderate-to-vigorous physical activity in observational studies are inversely associated with incident depression and the onset of subclinical depressive symptoms among adults regardless of global region, gender, age or follow-up period. This review reinforces how moderate exercise can reduce depressive symptoms and therefore boost wellbeing which when considering the mental health challenges cited within the construction industry, this highlights how valuable an exercise based workplace initiative can be.

The Health & Safety Executive report 17.1 million working days lost due to work-related stress, depression or anxiety in 2022/23 (HSE 2023). There must therefore be a strong moral obligation to provide support within the workplace, and where there is evidence that a regular short exercise exposure can benefit both mental and physical health and create positive habits, that this can be an invaluable investment.

Even a short burst of 10 minutes of brisk walking increases our mental alertness, energy and positive mood (Mental Health Foundation, 2022). With evidence that exercise boosts mood, focus and productivity, then a workplace exercise programme, delivered at your desk is appropriate: more

productivity for your teams, a happier, healthier employee and work force, who feel valued at work, because work has given them permission to exercise and has allowed them to feel good about themselves, boosting self-esteem, boosting team morale, creating a positive culture and everyone reaping the benefits. This concept of wellbeing at work, and a short, 10-minute exercise session, based at your desk forms the basis of deskercise.

Deskercise sessions can deliver the 10 minutes of physical activity and exercise required to reduce mortality and boost positive mood and mental alertness. Further, it acts as a catalyst to encourage activity away from work, encouraging good habits and behaviour change, whether that be starting a couch to 5k running programme, stopping smoking or taking more walks or exercise throughout the day. Moreover, the physical component makes a positive difference to the attendees of deskercise, and offers mental health benefits leading to overall positive wellbeing, a close support network, group exercise and community links within the workplace.

Group exercise programmes have been shown to help people adhere to a programme and keep them motivated. Wing & Jeffery (1999) looked at the benefits of recruiting participants with friends and increasing social support for weight loss and weight maintenance suggesting that participants recruited with friends had greater weight loss at the end of the 4-month treatment and at month 10 follow-up. Therefore, having a support network is a strong indicator for success and adherence with behaviour change and accountability. Being active together boosts team morale, creates the opportunity to meet new friends or colleagues, helps with exercise/programme adherence: people feel more accountable to turn up, and it is also more fun.

The concept of work-based exercise was originally launched in the United States in the 1920's by the US Metropolitan Life Insurance Company. They recognised that exercise was key to a healthy lifestyle and the 15-minute exercise routine was delivered via radio in the United States to its employees. In a quest to improve life expectancy in Japan in the 1920's, where life expectancy was around 42 years, (Park, 2022) two representatives from the Life Insurance Bureau of the Post Office in Japan visited the Metropolitan Life Insurance Company and were impressed with the exercise routines, taking home the idea of daily exercise broadcasts and routines.

Radio Taiso, or radio calisthenics, was created and delivered daily over the national radio in Japan to children in schools, to office workers, factory workers and in parks around the nation. This daily exercise routine has inspired positive behaviour change and improved the quality of life in Japan, with life expectancy now at 84.91 years (United Nations - World Population Prospects, 2022)

Indeed, Osuka et al (2023) looked at how Radio-Taiso, may serve as a coping strategy for older adults with frailty during the COVID-19 pandemic. Inclusion criteria for this study included community-dwelling older adults aged 65–99 years and meeting pre-frailty or frailty criteria according to the revised Japanese Cardiovascular Health Study. The age range in this study was between 72-82 years old and the sessions lasted between 3 minutes and 5 seconds, 3 minutes and 10 seconds and 4 minutes and 30 seconds all at different intensities based upon the capabilities of three different cohorts within the study. The sessions included a standing up and seated version. Adherence to the programme was good (83%) and although the trial did not show a clinically important difference in physical outcomes between the intervention and control groups, the intervention group exhibited a trend toward a clinically important improvement in the mental aspects of health-related quality of life compared with the control group. This positive affect during the covid-19 pandemic was also reinforced by Ejiri et al (2021) who highlighted that regular exercise may help psychological wellbeing and become a coping strategy during the covid-19 pandemic and associated with psychological well-being, with different impacts observed depending on the type of activity.

There appears to be a correlation between obesity, mental health/depression and the use of antidepressants, which has a financial cost implication to the nation as well. Morriss et al (2021) estimates that 66% of people with obesity are given antidepressants. This percentage is applied to 2.96 million people with obesity in England. Depression is increasing in all age groups. People who are inactive have three times the rate of moderate to severe depression than active people (Weyerer S, 1992).

Further, Harvey et al (2010) discuss increased sickness absence in obese workers more than those of a healthy weight, so consideration by SLT in managing sickness absence and productivity may encourage workplace exercise initiatives.

Considering that exercise has been shown to reduce depression and anxiety, and to boost self-esteem, then an exercise prescription, rather than a costly medication prescription, may be the way forward. And with the construction industry experiencing rates of suicide that are 3.7 times higher than the national average (Burki 2018) then a strategy to reduce this number must continually be considered.

Public Health England (Foster et al, 2018) indicate that just 10 minutes of exercise completed daily can reduce mortality by 15%. Consequently 10-minutes of exercise such as brisk walking per day for 7 days can have the following positive impacts:

- increased physical fitness
- greater ease of performance of everyday physical activities
- improved mood
- improved quality of life

- increased body leanness and healthier weight
- 15% reduction in risk of early death

(Foster et al, 2018)

The Office for National Statistics (2022) indicates that there were an estimated 185.6 million working days lost because of sickness or injury in 2022, with the number of days lost per worker being 5.7 with associated business costs alongside absenteeism costs. A desk-based workplace exercise program can encourage increased activity, movement, musculoskeletal health, mental health benefits, creating a community and support network. Moreover, significant benefits will apply to work teams, and more broadly, act as a catalyst to more behaviour change, ultimately creating a healthier and happier workforce.

If deskercise became the norm, culturally acceptable and expected at work, it may help reduce the burden of ill-health. This would create a positive environment, supporting mental and physical wellbeing and encouraging activity in the working day. Everyone then benefits from a healthy, inclusive and fun intervention. Physical activity should be encouraged by the SLT, programmed into the day: there needs to be a positive mindset change in the workplace to create this opportunity to exercise.

Methodology:

Intervention:

In 2020 Perform Fitness S&C Limited launched a deskercise wellbeing initiative with a public limited company within the construction industry. Initially the programme was focused on their site team operatives and the programme was delivered daily on-site to help reduce musculoskeletal injury and improve mental wellbeing and physical preparation. The programme then was introduced to the office-based staff and the specific deskercise programme was developed. The construction business engaged in daily (x5) office-based sessions/week.

A needs analysis was completed and to date, eight different deskercise sessions have been created, focusing on the postural muscles of the back, shoulder health, spinal health, core strength and stability, lower body strength and whole-body mobility. The sessions addressed a combination of some of the most important components of fitness, including balance, coordination, strength, muscular endurance and flexibility. Araujo et al., (2022) indicates that older adults who can't stand on a single leg for greater than 10 seconds are at a higher risk of mortality, so addressing this component of fitness is important. Within the sessions heart rate can also increase steadily to gain a cardiovascular benefit in some of the more dynamic sessions.

Examples of the exercises within the deskercise programme include, but are not limited to:

Lower limb strength: Split squat, isometric squats, Romanian dead lift, arabesque, chair squats, calf raises, single leg squats, goblet squats.

Upper body strength: bent over row, push press, scapulae retractions, biceps curls, shadow boxing, Nordic ski, lateral fly's.

Stretches and mobility: glute stretch, hamstring stretch, hip flexor stretch, shoulder stretches, shoulder mobility, thoracic spine mobility.

Postural/core strengthening: seated crunches, pelvic floor, seated cycling, seated leg lift, sumo leg lift, and stand up core to include crunches, single leg stand and press, lateral bends, single leg crunch.

There is a dedicated stand up core session and all other sessions cover lower limb, upper limb strength as well as balance and proprioception. An example of session 1 is in Appendix A.

The outcome goals of the deskercise sessions include the following:

- Reduce musculoskeletal injury
- Improved spinal strength, activation, balance and mobility
- Improve productivity, focus and readiness for work
- Create a positive culture and a business identity of 'this is what we do'
- Mental and physical health benefits
- Improved team dynamics and team building.
- Getting in 'the zone' for work.

The sessions were delivered Monday-Friday for 15 minutes. The initial 5 minutes provided an opportunity for a mental health check-in, a chat with colleagues and engagement to see how everyone was on the day. The exercise sessions were 10 minutes long and have a hard stop at the end of the 15 minutes, knowing that people have meetings and need to continue with their working day immediately post-session. The sessions become a routine and provide a welcome stretch and exercise break during a busy day.

Data Collection:

The authors confirm that the research presented in this article was carried out with due consideration to all relevant ethical issues and in line with Falmouth University's ethical policies. Verbal and written informed consent were obtained from the participants for their anonymised information to be published in this article and all data was stored securely within the University's network. The data collection was over a total of just under 3 years, from September 2020 until May 2023. The initial data capture was completed in a quest to evidence the benefits of the wellbeing initiative and allow

reporting to the Senior Leadership Team (SLT), to support inclusion in the company's wellbeing strategy. The questionnaires and research evolved over this time to then assess other valuable areas of the intervention, to reinforce and discover its effect on the attendees. The rating of perceived exertion (RPE) scale was used as a key insight into session intensity, which can be correlated to research that indicates health related fitness benefits from 10 minutes of exercise (Foster et al, 2018).

Both qualitative and quantitative measures were captured. Google forms questionnaires were developed to establish baseline measures for wellbeing, as well as rating of perceived exertion (RPE) for all the 8 different sessions combined. Testimonials, deskercise engagement in months, as well as weekly average attendance to the daily sessions was also monitored via self-reflection in the surveys, and comments on the deskercise initiative were also requested within the questionnaires.

The research team also completed 1-1 online recorded transcribed interviews with Alex Reid who delivers the live deskercise sessions each day, to gain an insight into how the programme was developed and relay the passion that Alex has for physical and mental wellbeing. In addition, the research team also interviewed 13 regular deskercise attendees to create the opportunity for thematic analysis and to gain a qualitative insight into how the deskercise sessions have influenced and affected the attendees. Informed by Braun & Clarke (2006) established framework in thematic analysis the authors coded the qualitative data to identify themes. This mixed methods approach allows for a more thorough analysis of every individual's perception of the deskercise programme and helps to relay a sense of feeling and emotion that is otherwise hard to measure and may not be captured by the quantitative analysis alone. The researchers felt that qualitative and quantitative research used together would produce a more complete review of our findings, supported within the social and behavioural sciences.

The interviews allowed an intimate insight into how the value of investment may be for each individual and the effect on mental and physical wellbeing, a difficult subjective area to measure. It is easier to quantify the financial cost, as it is tangible, and much harder to quantify the personal effect of any intervention.

As an example of how mental health wellbeing programmes can positively affect a business, research by Deloitte (deloitte-uk-mental-health-report-2022) indicated a ROI was on average £5.30 for every £1 spent on mental wellbeing by those business who invested in mental health programmes. In addition, they found that if an intervention was regular and not reactive, this led to a higher ROI of around £5.60 for every £1 spent. With absenteeism, presenteeism and labour turnover estimated at costing UK businesses between £53-56 billion in 2020-21 (Deloitte 2022), this is an area that all business should be supporting their workforce with. Often because this is so difficult to measure, it

gets lost in the business plan. Therefore, an intervention, like deskercise, can positively influence both physical and mental wellbeing for your teams, in a fun, simple, time-efficient and rewarding way.

Timelines and content of questionnaires:

Date	Number of responders	Questionnaire Content
September 2020	109	PAR-Q (physical activity readiness questionnaire) Initial wellbeing questionnaire
July/August 2022	36	Reflection questionnaires Invitation to interview RPE (rating of perceived exertion)
November/December 2022	42	Wellbeing questionnaire Duration of deskercise engagement Frequency of weekly engagement in sessions
March 2023	88	Rating of Perceived Exertion (RPE) Testimonials
May 2023	38	Duration of deskercise engagement Frequency of weekly engagement in sessions Rating of Perceived Exertion (RPE) More active overall Testimonials

Table 1. Source: author.

Research Findings:

A workplace initiative, like deskercise, where you can have cameras on or cameras off, provides an opportunity to join in and benefit both physically and mentally. This makes the programme very inclusive. In addition, the sessions have been adapted for attendees who are in a wheelchair, recovering from a stroke or injury to empower the individual and encourage participation.

The findings highlight that those organisations that had a higher frequency of sessions had a more positive impact. Consequently, better adherence and a more positive impact occurs when the sessions are more frequent, allowing for habitual engagement and exposure to the different exercises. With increased frequency, comes higher numbers of attendees as well. The time of day that the sessions are delivered also seems to help with adherence, where the attendees can plan their diaries to ensure they can attend by also having the sessions timetabled at the same time for each session: the calendar is blocked out for deskercise so it is part of the daily routine. When the times are different for each session (which is the case for another company) it seems that people forget or get drawn into

meetings. The key point here is that the wellbeing team/senior leadership team have created an opportunity for a physical and mental break in the workplace, this permission slip should be taken and embraced to enhance happiness at work, team morale, but also personal wellbeing and the best way to facilitate this participation should be optimised for each business with careful consideration of timing and session frequency to suit the employees.

One of the most significant measures of the deskercise intervention which affects long-term health and wellness is the evaluation of intensity of the sessions via the Borg CR10 RPE scale (Williams, 2017). RPE was tracked over 5 days (one weeks' worth of sessions with mixed session selection) on three occasions through the research: August 2022, March 2023 and May 2023. Research suggests that an intensity >3 (moderate) on the Borg CR10 scale has been linked with improved health related fitness (Foster et al, 2018) so the researchers were keen to understand how the participants found the intensity of the deskercise sessions to be.

August 2022

Please indicate the rating of perceived exertion (RPE) that you feel a deskercise session provides. This is a feeling of subjective effort over...an average rating of perceived exertion. Thank you.

36 responses

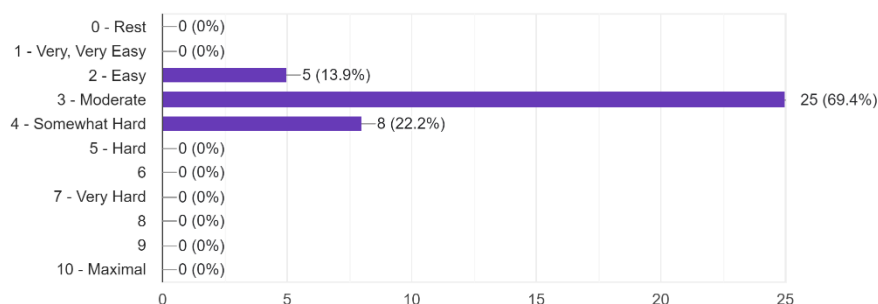


Figure 1.

March 2023

Please indicate the rating of perceived exertion (RPE) that you feel a deskercise session provides. This is a feeling of subjective effort over...an average rating of perceived exertion. Thank you.

88 responses

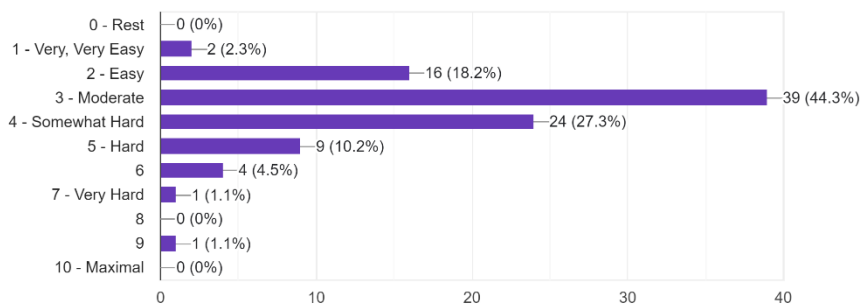


Figure 2.

May 2023

Please indicate the rating of perceived exertion (RPE) that you feel a deskercise session provides. This is a feeling of subjective effort over...an average rating of perceived exertion. Thank you.

38 responses

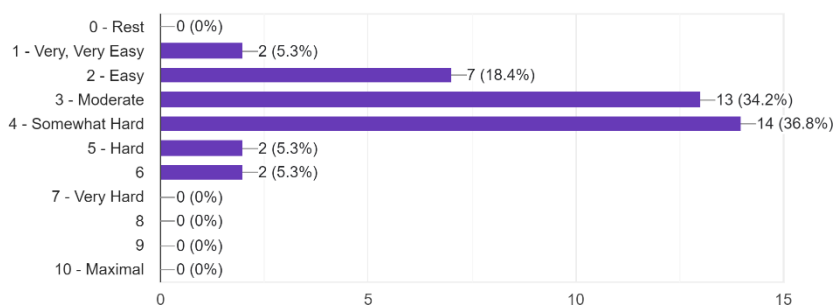


Figure 3.

This is an exciting outcome and reflection of the physical demands of the 10-minute sessions. The intensity recorded by the responders indicates that there is a progression of intensity over time. This may indicate a confidence in loading, learning and choosing to push a little harder physically in the sessions. Regular attendees have dumbbells at their desks to use during the sessions, at home and in the workplace, which will add to the RPE, intensity and overall benefit.

One hypothesis is that the attendees are feeling more able to push themselves and challenge their bodies over time, hence recording a higher RPE for the sessions in March and May 2023 (figure 2 and figure 3.). With frequency of sessions, and familiarity of the exercises comes a confidence to perhaps push harder, load more and reap the benefits. In August 2022 (figure 1) 91.6% of attendees noted that the sessions were moderate or more (RPE 3). In March 2023 (figure 2) this was subjectively noted for 88.5% of attendees, but with a higher spread of intensity, reaching up to a RPE of 9 (very, very hard)

for one attendee, and 81.6% in May 2023 (figure 3), again with a higher spread of RPE. This is a great reflection of the intensity of the sessions and one attendee noted: *‘It can be as hard as you make it, if you want to take it easy don't give it 100% if you want to make it hard give 110% But either way it's an excellent way to have a stretch and a 10 min break’*

Public Health England (Foster et al, 2018) have evidenced that an RPE of 3 (moderate) is beneficial for health-related fitness: lowering blood pressure, improving cardiovascular health, weight management, improving mood and mental health, strengthening bones and muscles, so this is a great outcome for the programme.

One of the key areas in workplace wellbeing programme is whether an intervention can inspire behaviour away from the workplace. The researchers posed the question whether deskercise had inspired behaviour and inspired more activity for the attendees with an overwhelming 84.2% of responders claiming that it has inspired more exercise (figure 4.).

Has your involvement in the deskercise programme inspired you to become more active overall, recognising the benefits of exercise?
38 responses

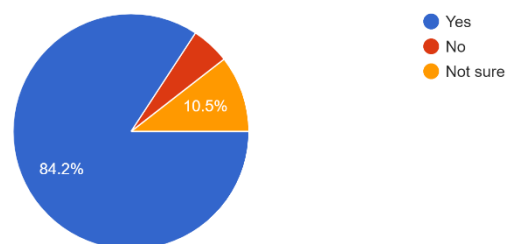


Figure 4.

This is a great indicator and a powerful example of how a workplace intervention can positively affect behaviour and choices away from work. This will of course lead to a happier and healthier team of employees, where the company will benefit in many ways.

The mental health benefit of the deskercise sessions has been more significant than expected. This was a surprise to the researchers and the significance of this is reflected in the qualitative results and testimonials from the research. The influence on people's lives has been beyond expectation and the regular attendees have created a valuable social network. What has happened over time is the development of relationships and an opportunity to care, empathise and genuinely support each other. It is very powerful and as the journey has evolved over the 3 years that deskercise has been delivered to the business, the fondness of the sessions, and what it provides, has been significant. The group

have experienced loss, pregnancy and newborn babies, illness, retirement within the business, as well as birthdays and celebrations with each other. A strong workplace community has been established.

The qualitative value of deskercise can not only be reflected in the testimonials gathered and feedback from the attendees, but also by the determination of this cohort to save the initiative when the SLT expressed that they would stop the sessions due to budget constraints towards the end of the second year of engagement. This rallied the regular attendees to voice their values and express why the sessions mean so much to them. This will be discussed further in the discussion and is certainly a challenge with any wellbeing intervention when budgets and ROI need to be considered. However, any CEO or director in any business who reads the upcoming testimonials can't help to be influenced by the positive impact of deskercise.

The three areas of significant benefits identified are:

1. Physical wellbeing
2. Mental health
3. Community/social benefits

These three threads all combine within each 15-minute session: the initial conversation and check in, the physical work of the exercise session, and the community that it creates. Below are some examples from the transcripts. Although split into the three separate threads, there is no doubt that each component overlaps the other and links together: it is not just physical, mental or social, the sessions combine all three threads.

Physical Wellbeing:

I think it's helped to improve my balance. It's helped to improve my strength. You lose the ability to get in and out of chairs quite as easily, so we do quite a lot of focus on squatting and things like that, which has helped a lot, and I think it's helped a little bit with my post-menopausal belly as well.

Since I started, I bought more exercise equipment if you like, which I use regularly. I don't think I would have done it otherwise. What else is there? But it's something to look forward to in a way. Well, I probably wouldn't have bought an exercise bike and a series of weights, which I've got, you know, I've got lots got three or four sets of weights on the desk, which I used during the day, you know, actually, you know, sometimes in meetings I put the camera off and do some weights. I don't know, it helps something. I think it helps; you know.

It's easy to do, easy not to do. I would recommend you do it because very quickly you will build strength, both physical strength and mental strength if you do it consistently. I believe it really will make a difference to your life.

Mental Health:

I think it helps you mentally, just to focus gives you like a routine and it's also helping me move in those 10 minutes because I wouldn't have done that. You would always find an excuse. Doing it in a group is easier than doing it on my own. It's hard work. People can do it, but it's hard work and it's your mindset.

I say you know you've got to treat health like safety. Everybody understands about looking after each other. You treat health like safety and you treat mental health like physical health. This is something that gives you that little bit more core stability. So actually this could be a benefit for slips, trips and falls and sort of general awareness et cetera. It's good to be with friends, be able to have a laugh for the couple of minutes before hand or whatever, laugh when you're doing it. If you can't do it or whatever. So that's good for your mental health. And then there is the benefit of your actual fitness.

Of course, because there's a group of people that are like minded. There's never a sour face on there. They're always smiling. The little bit of banter we have just because it's a 15-minute session, the first 5 minutes is just everybody catching up on different things. So yes, mentally, it's really, really positive.

But I do find that doing my 10 minutes of deskercise a day clears that and you're a little bit lighter in your mood and lighter in your head and you can sort of clear and see the woods for the trees, I suppose.

Community/Social Benefits:

I've formed a connection with those people now, so that well like a little support network and we're all involved in each other's lives to a very small amount to a very small degree. But you know, we're there

They're interesting sessions, but as well as that, we have a 5-minute logon session before we start, and we have formed a lovely little community amongst ourselves, and we all know a little bit about each other. And it's just a really good thing to do. So, you know, that's just the session itself, but as

well as that, I found that it energizes me. I look forward to it. It's something to look forward to in the day, you know, to getting in touch with people, having a little chat and a bit of a jump about. I've formed a connection with those people now, so that well like a little support network and we're all involved in each other's lives to a very small amount to a very small degree. But you know, we're there

But I what I tell you what I do I see in the people that come to that. I see the benefit that it does because particularly during COVID, when people were working at home, there's some people, this was that one of their only outlets about meeting a group of people who don't judge. You have a laugh. They do a bit of exercise or whatever and it really, you can really see it in peoples sort of faces and demeanours that this is really important to them. And it was something different as well. So, for me, mental health wise, has it made the difference? No. But I see it making a difference in others. And I recognize the value of having a little family of people that come to the 9:50 session, the value of doing the exercise of value, of raising your heart rate a bit of getting a bit more sort of air going through your body a bit more oxygen. It's got to be good for you. So yes, I do see benefits and if your body is fit your health, your mental health is too.

I just thoroughly enjoy it. For more than just the exercise, of course, it's just a nice little feeling. You just feel like you have a little, you know, group hug with a with a group of people, basically.

The interviews not only touch on the three main threads that have been identified above but the participants talk about culture, how they feel, the routine and benefits for them, which are very personal, but have a common tone within the transcripts. This aligns with the research by Phillips et al (2016) regarding cues and intrinsic rewards mentioned in the introduction. The openness of these interviews provides a touching insight into the benefits of deskercise which can be difficult to measure and evidence.

In addition to the three main threads identified and discussed here, time, and the convenience of the duration and frequency of the sessions was mentioned by all interviewees. 15 minutes, of which 10 minutes is the actual exercise session, is a sustainable duration to have a break from work and also has been demonstrated to be a long enough exposure for all attendees to benefit physically and mentally.

Although more research is needed, evidence exists for the benefit of short bouts of exercise in the workplace. Metcalfe et al (2020) demonstrated how time efficient exercise in the workplace can create a positive physiological change with high-intensity interval training (HIT) on a stationary bike. With an average weekly commitment of <20 minutes/week, the HIT sessions were feasible, effective and an acceptable exercise intervention in a workplace setting. In addition, Gilson et al (2023) reinforce

the cognitive benefits of HIIT and SIT (Sprint Interval Training) where significant improvements in aspects of cognitive function related to work performance were demonstrated, however, to better understand the potential benefits to employee performance and safety, HIIT/SIT and cognitive function research needs to transition from laboratory to “in-situ” occupational settings (Gilson et al, 2023).

Below are four examples from the testimonials expressing the benefit they feel in relation to time and session duration:

They are paying you for 15 minutes for jumping around in your office. But they're gonna get so much more out of you as a result of that because it really does. It breaks your day up when it really energizes you. And I think you just work much more effectively after it.

But no, it's good. You know, if it was longer, fine. But 10 minutes. I think everyone can afford that.

I can't always join cause work schedules are very busy, but you know, I think to myself that just to do, you know, 10 minutes in a day, if I can't find 10 minutes then that's a sad reflection of the day. And also I find it invigorating just to take that time out.

I like the fact it is at 9:50. I like the fact that it starts at 9:45 because it gives you that five-minute wiggle room because you've all probably have forgotten or something's happened or whatever. And so it's on regularly. Every day. I have it scheduled in my calendar so that it always pops up every day. Doesn't mean I can make it or not. The fact that you can go when you want and not go if you're busy. You're still all part of the family. When you join, if people say hello and if they're not there, you know that they're out on site or this that and the other. And I really like the fact that in the 10 minutes that Alex has with us. First of all, she's got a number of different programs, so there's variety. But I also think incredibly, in 10 minutes you manage to sort of pack it in so you feel like, you know, you've raised your heart a little bit, you've done some stretching. You know, your backs, you know, a little bit better, whatever. And if you don't do it, I actually notice, you know, that I missed it. So I think it's the flexibility. It's the regularity, it's the ability to pick it up, put it down, that fits in with the with the lifestyle.

Discussion:

Initially the deskercise programme was borne out of the covid-19 pandemic in 2020, where teams and employees were asked to work from home, and thus the programme provided an opportunity to keep in touch remotely with colleagues and provided a physical stimulus which led to workplace connections and consequential physical and mental health benefits.

The 'new normal' of hybrid working means that still some colleagues are based at home and don't benefit from the connections as they would do by being in the office. The continuation of the deskercise initiative through this transition has helped people adapt and maintain connections and wellbeing at work. However, as with any intervention, it doesn't come without its challenges. Just past the 2-year anniversary of the programme with this company, a change in the leadership team meant that the programme was under threat of being stopped. The day-to-day value and impact of the programme needed to be justified so that budgets could be allocated to this wellbeing initiative. What followed was a journey of personal investment in the programme, engagement and trust: people fought for the daily sessions to continue. They posted on their intranet, told their colleagues, they were emotionally, personally and socially engaged in the programme and didn't want to lose it. The value of investment (VOI) was high, and the financial cost to the business from the SLT was outweighed by the passion and drive to save deskercise by the attendees.

After evidencing the impact of deskercise to the SLT, approval for another 3 months was given. Naturally there is a financial cost to wellbeing initiatives, and measuring the impact and value of any programme can be problematic. The 'power of the people' and support of the programme helped the SLT find the budget to fund deskercise until December 2023.

There is evidence that the intensity of the sessions is high enough to illicit a positive physiological reaction to benefit health related fitness, which can reduce mortality by 15% with as little as 10 minutes of exercise at a RPE of 3 (moderate) and the sessions have inspired 84.2% of attendees to be more active away from work. The testimonials have reflected the mental health benefits gained by group exercise and feeling part of a community.

A desire to shape culture within the workplace, raising awareness of a simple 15-minute daily session and what an impact that can have on a workforce is a step forward in wellbeing at work. Small changes can make a big difference, and if the SLT are on board, the marketing team make everyone aware of the programme, and with the introduction of a steering group, for perhaps the initiative to become part of the induction process for new starters, then the permission to exercise at times within the day will be highly valued by workers.

Interestingly, when people are unable to attend a session because of a meeting, illness or annual leave, they are messaging in the group chat to advise the team before the session. This is a great indicator of accountability and a positive habit. Replies are given with a thumbs up or a comment, which empowers the person and creates the community feeling. It's a great sign that there is buy in and accountability. Exercise adherence is a challenge, group exercise makes things a little easier, so a message in the chat box is a great example of engagement and commitment.

Another area for discussion is frequency of sessions. As mentioned at the beginning of this paper, a number of other companies engage with deskercise but 3 x each week or 1 x each week bi-weekly. There is no doubt that the benefits of a daily session are diluted by less frequent sessions. An area for further research may be to review behaviours and empirical evidence with these companies. From experience, having worked with these companies for a number of years, the daily sessions and the value that brings with accountability, community as well as the physical loading and mental health benefits, is not as high with the less frequent engagement. Of course, something is better than nothing in wellbeing, and budgets may be a limiting factor, but the ROI from such a short yet impactful programme like deskercise should encourage more frequent exposure and opportunity to join in at work.

Conclusion:

This research project demonstrates that deskercise is a very simple, time efficient, inclusive and effective wellbeing intervention. Physical health, mental health and social benefits are all part of the wellbeing package. A social contract has developed with the employees within this research, who are accountable and care dearly for the programme and their peers. The value of all of the components of the programme have been documented via the 1-1 interviews, from the 5-minute chat at the start of each session, to the challenging exercises and the fact that most attendees now have dumbbells by their desks at home or at work to use during the sessions.

The sessions have inspired more exercise and activity out of work, and although it is impossible to measure, the evidence suggests that the quality of life and risk of mortality has been reduced significantly with this cohort of regular deskercise attendees. They have developed their spinal and core strength, their lower limb strength, shoulder mobility and postural muscle strength, and essentially, they have improved their single leg balance and single leg control, one of the highest risk factors of mortality in older adults (Araujo et al 2022).

There is evidence that workplace physical activity intervention can have a big impact in health and wellbeing (Pedersen et al, 2009) and with the financial burden and people cost of injury and illness to all stakeholders, healthcare providers and companies, it's an intervention that is relatively simple to deliver yet has significant benefits to those involved.

Research shows that being more active and by reaching our weekly activity targets set by the World Health Organisation and Public Health England will have an impact on an individual's working life and also into retirement and later life. Given that the World Health Organisation emphasise that promoting physical activity within the workplace is a key intervention to reach the health and well-

being of the working population (Abdin et al, 2018), then an intervention like deskercise offers a wellbeing solution with a range of benefits as highlighted in this research.

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Appendix A.

PERFORM FITNESS DESKERCISE PROGRAMME: SESSION 1

Perform Fitness are delighted to be providing desk based exercises for your teams and colleagues to join every week. The programme will be delivered live for 15 minutes within the allocated time through the business. In addition, these posters can be used to refer to and complete the exercises in your own time.

The Plan: Perform Fitness Deskercises

The Perform Fitness Deskercise programme will deliver the following programme to help improve conditioning, mobility and range of movement as well as develop posture and spinal control for everyone who is desk based, working at the office or working from home.

The programme will be completed for 15 minutes each week and can be used additionally as desired through the week to help with mobility posture and strengthening.

Outcome goals:

- Reduced musculoskeletal risk, improved spinal strength, endurance and mobility
- Improved productivity, focus and readiness for work
- Mental and physical health benefits
- Creating a break for exercise/breaktime within your working day
- Improved team dynamics and team building
- Create a culture for exercise at work, improved health and wellbeing

The exercise selection for the Perform Fitness Deskercise programme is as follows:

Mobility/Strength
Core Activation

Seated overhead and lateral stretch

- Can be completed seated or standing
- Reach one arm and then reach to the other
- Hold the position for 2-3 seconds and then switch sides
- Breathe and relax as you stretch and then repeat
- Complete 1 set of 5 each side

Seated thoracic spine rotations

- Sit in a tall posture, sit in line with your chest
- Place one arm over your head and the other over your head
- Rotate your torso through the barrel of the chest (up/down)
- Rotate spine keeping your chest up
- Breathe and relax as you rotate around
- Complete 1 set of 5 each side

Overhead squat to chair

- From seated, stand up and push both arms above your head
- Keeping your arms above your head, sit down
- Feet a stretch through the thoracic spine as you sit down
- Repeat the work to the starting position, then repeat push up and stand up and sit down
- Complete 2 sets of 5

Seated Chest Stretch

- Sit forward on your chair and place arms at 90 degrees angles in the elbows
- Rotate the chest forwards and the arms backwards to feel a stretch across the chest
- Hold for 5 seconds and then return to the starting (90 degrees) position
- Complete 8 x 5 second holds
- Breathe and stretch as you hold the stretch

Seated hamstring stretch

- Position towards the end of your chair
- Place one leg out in front of the other and place your foot in the ceiling
- Gently lean forward and keep your back flat (arching and spine square)
- Hold a light stretch at the back of your leg
- Hold for 5 seconds and then switch legs
- Complete 2 x 5 second holds left and right side

Seated glute/low back stretch

- Position towards the end of your chair
- Cross one leg over the other and place your foot on the floor
- Gently lean forward and keep your back flat (arching and spine square)
- Hold a light stretch at the back of your leg
- Hold for 5 seconds and then switch legs
- Complete 2 x 5 second holds left and right side

Seated hip flexion - extension

- In a seated position, sit upright, grab your knee and lift it towards your chest
- Repeat back to the floor and switch legs
- Alternate legs and remain seated in a tall position
- Repeat 2 x 5 knee hugs left & right side

Calf stretch

- Stand by your desk or behind your chair
- Place your heel in a split/stance position and gently lean forward
- Keep the back knee straight and as you lean forward you should feel a stretch in the calf muscles on the leg
- Hold for 5 seconds and then switch legs
- Complete 2 x 5 seconds left and right side

Seated scapular retraction

- Sit tall on your chair and place your arms out straight in front of you
- Draw back your shoulder blades (scapulae) in your back
- Maintain a neutral spine/neck position
- Hold the retraction position for 5 seconds
- Relax and repeat: 4 x 5 second holds

Chair Squats

- From a seated position, feet shoulder width apart, push up and sit down
- Sit on the edge of the chair and repeat your glutes
- Sit on a seated position with your feet apart
- Repeat up and down, maintaining a tall posture and keeping the hips at all times
- Spread of movement: 2-3-2
- Complete 1 x 10 squats

Seated Dead bugs

- Sit in a tall position and place your arms out in front of you
- Draw in your belly button and brace through your diaphragm
- Raise one arm above your head, keep your abdominals braced
- Hold for 5 seconds and then switch arm and leg, then repeat on the other side
- Brace and breathe as you slowly move. Spacing: 3-2-2
- Progression: lift the opposite leg off the ground as you alternate arms and legs
- Complete 1 x 5 reps left and right side

Seated alternate knee lift

- Sit tall on your chair with your hands on your thighs
- Draw your belly button towards your spine and hold this position
- Lift a leg, slowly keeping your knee bent and hold the position for 5 seconds
- Keep your pelvis/hips level and complete a big belly breath outwards as you hold by not to sway side to side
- Return the working leg to the floor and repeat on the opposite side
- Complete 2 x 5 second holds left and right side

Bent over reverse fly

- Sit on the edge of the chair, feet shoulder width apart, take a big belly breath in and draw your belly button in towards your spine
- Flexing the posture in your core, lean forward slightly, keeping your back flat and chest out
- Draw your arms in front of your body, palms facing each other
- Draw your arms out straight to the side to your back
- Draw a "T"
- Hold this position for three seconds
- Return to the starting position slowly, bringing your arms together again
- Repeat 1 x 5 reps with 2 second holds

Seated Russian Twists

- Sit up tall with your bottom towards the front of the chair
- Bend your knees to 90 degrees, lean on the floor
- Make a fist with your hands and hold them next to each other in front of you
- Draw in your belly button and rotate your hands from one side of your legs to the other
- Keep your chin and chest in-line with your hands as you move side to side
- Brace and breathe as you rotate and make sure you sit up tall throughout
- Progression: lift feet off the floor
- Complete 1 set of 8 repetitions left and right side, Repeat 1 x 5-8

Don't leave your performance to chance...

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