

Summary of evidence to support Little Nudge

The following is a brief summary which includes results from pilots of Little Nudge and clinical research evidence for use of exercise / break reminders

RESULTS OF LITTLE NUDGE PILOT

DATA FROM 131 LITTLE NUDGE USERS before and after using Little Nudge for 3 months

Physical Activity Increased

- More than doubled the number of people standing up and moving at least hourly
- 43% reduction in people doing less than 50 minutes of exercise per week

Pain reduced

- 27% reduction in people reporting back pain
- 33% reduction in people reporting headaches

Case Study

- Solicitor, Fibromyalgia
Used LN for 1 yr
- Reduced time off work
 - Did not need to see physio
 - Improved productivity

Eye resting improved

- Almost doubled the number of people resting their eyes at least hourly

Mind resting improved

- 32% reduction in never resting the mind

User interviews (x 30)

Themes:

- Reduced pain
- Not distracting
- Felt 'cared for'
- Importance of individualisation and variety of nudges
- Importance of holistic nudges
- Positive impact on other healthy behaviors

IMPACT OF BREAK OR EXERCISE REMINDERS

Musculoskeletal Pain

Good evidence for use of exercise / break reminders for reductions in MSK pain (Barredo and Mahon, 2007 (Lit review), Irmak et al., 2012, del Pozo- Vruz et al., 2013)

Visual Discomfort

Evidence for reductions in visual discomfort (NIOSH, 2000)

Productivity

Evidence for positive impact on productivity – best if breaks are short and frequent (Galinsky et al., 2007; van den Heuvel et al., 2003, Balci & Aghazadeh, 2003)

Risk of Cardiovascular Disease / Diabetes / Obesity

Evidence that frequent breaks from sedentary time impact on plasma glucose/ triglycerides / BMI (Healy et al., 2008)

Exercise Compliance

Evidence for improvements in compliance with exercise programmes (Chen et al. 2017)

Little Nudge

Cost Effectiveness

The following is a brief summary which includes results from pilots of Little Nudge and clinical research evidence for use of exercise / break reminders

COST-EFFECTIVENESS OF LITTLE NUDGE

Presenteeism

Illustrative Cost Benefit Example from Little Nudge Pilot

This calculation demonstrates the cost effectiveness of Little Nudge in one area: the impact of reductions in pain on presenteeism:



Assumptions

*Presenteeism impact on user's productivity assessed through 15 years of experience by ALO clinic's work with corporate clients

**Average salary of desk based employee is £40,000, with fully loaded large corporate daily cost of £400 per day

***Average pain reduced over back (27%) and head (33%) aches is ~30%

****Benefit of pilot over 130 employees is $(£400 * 210 * 0.2 * 0.3 * 130) = \sim £650,000$

Presenteeism causes the overwhelming majority of healthcare costs to employers

(Promoting Employee Wellbeing, SHRM 2011)

Other areas for Return on Investment

Likely impact on reduced sickness absence, healthcare costs, staff turnover, employee satisfaction, productivity, company profile (*Health at Work, Economic Evidence Report, 2016*)

RESEARCH:
COST-
EFFECTIVENESS

Brief interventions to improve physical activity are:

Inexpensive, effective at increasing physical activity, cost-effective
BMJ review of 13 studies (Vijay. et al., 2015)

Job satisfaction and productivity

Strong evidence base for job satisfaction being linked to productivity,
(Bryson et al. 2015)

References

- Balci, R. & Aghazadeh, F. 2003. The effect of work-rest schedules and type of task on the discomfort and performance of VDT users. *Ergonomics*, 43, 622-638.
- Barredo, R and Mahon, K, 2007. The effect of exercise and rest breaks on musculoskeletal discomfort during computer tasks: an evidence based perspective. *J. Phy. Ther. Sci*, 19: 151-163
- Bevan S (2010). "The business case for employees health and wellbeing". The Work Foundation. London.
- Bryson A, Forth J and Stokes L (2014). "Does worker wellbeing affect workplace performance?". Department for Business Innovation and Skills. London.
- Cagnie, B., Danneels, L., Van Tiggelen, D., De Loose, V. and Cambier, D. (2006) 'Individual and work related risk factors for neck pain among office workers: a cross sectional study', *European Spine Journal*, 16, 5, 679-86.
- Chen, H.-C., Chuang, T.-Y., Lin, P.-C., Lin, Y.-K. and Chuang, Y.-H. (2017), Effects of Messages Delivered by Mobile Phone on Increasing Compliance With Shoulder Exercises Among Patients With a Frozen Shoulder. *Journal of Nursing Scholarship*. doi:10.1111/jnu.12308
- Del Pozo-Criz B et al. A web-based intervention to improve and prevent low back pain among office workers: a randomised controlled trial. *J Orthop Sports Phys Ther*; 42 (10) 831-41.
- Dunstan DW et al (2012) Breaking up prolonged sitting reduces postprandial glucose and insulin responses. *Diabetes Care* 2012, 35(5):976-983.
- Fjorback, L et al. 2011. Mindfulness- based stress reduction and mindfulness- based cognitive therapy: a systematic review of randomised controlled trials, *Acta Psychiatrica Scandinavica*, 124 (2) 102-119.
- Hush, J., Michaleff , Z., Maher, C. and Refshauge, K. (2009) 'Individual, physical and psychological risk factors for neck pain in Australian office workers: a 1-year longitudinal study', *European Spine Journal*, 18, 10, 1532-40.
- Galinsky, T. et al. 2007. Supplementary Breaks and stretching exercises for data entry operators. A follow-up Field Study, *American Journal of Industrial Medicine*, 50, 519-527.
- Gierach GL, Chang SC, Brinton LA, Lacey JV Jr, Hollenbeck AR, Schatzkin A, Leitzmann MF. 2009. Physical activity, sedentary behavior, and endometrial cancer risk in the NIH-AARP Diet and Health Study. *Int. J. Cancer* **124**(9): 2139-2147
- Hamburg NM, McMackin CJ, Huang AL, Shenouda SM, Widlansky ME, Schulz E, et al.. 2007. Physical inactivity rapidly induces insulin resistance and microvascular dysfunction in healthy volunteers. *Arterioscler. Thromb. Vasc. Biol.* **27**(12): 2650-2656
- Health at Work, Economic Evidence Report, 2016
- Hill J, Whitehurst, LM, et al. 2011. A randomised controlled trial and economic evaluation of stratified primary care management for low back pain compared with current best practice: The STarT Back trial [ISRCTN37113406]. *Lancet*
- Howard RA, Freedman DM, Park Y, Hollenbeck A, Schatzkin A, Leitzmann MF. 2008. Physical activity, sedentary behavior, and the risk of colon and rectal cancer in the NIH-AARP Diet and Health Study. *Cancer Causes Control* **19**(9): 939-953
- Healy et al., 2008. Breaks in Sedentary Time. Beneficial associations with metabolic risk
- Hush, J., Michaleff , Z., Maher, C. and Refshauge, K. (2009) 'Individual, physical and psychological risk factors for neck pain in Australian office workers: a 1-year longitudinal study', *European Spine Journal*, 18, 10, 1532-40.
- Healy, G., Wijndaele, K., Dunstan, D., Shaw, J., Salmon, J., Zimmet, P., and Owen, N. (2008) 'Objectively measured sedentary time, physical activity, and metabolic risk: the Australian Diabetes, Obesity and Lifestyle Study (AusDiab)', *Diabetes Care*, 31, 369-371.
- Howard RA, Freedman DM, Park Y, Hollenbeck A, Schatzkin A, Leitzmann MF. 2008. Physical activity, sedentary behavior, and the risk of colon and rectal cancer in the NIH-AARP Diet and Health Study. *Cancer Causes Control* **19**(9): 939-953
- Hush, J., Michaleff , Z., Maher, C. and Refshauge, K. (2009) 'Individual, physical and psychological risk factors for neck pain in Australian office workers: a 1-year longitudinal study', *European Spine Journal*, 18, 10, 1532-40.
- Irmak, A., Bumin, G. and Irmak, R. 2012. The effects of exercise reminder software program on office workers' perceived pain level, work performance and quality of life. *Work*, 41: 5692-5695.
- Katzmarzyk, P., Church, T., Craig, C. and Bouchard, C. (2009) 'Sitting time and mortality from all causes, cardiovascular disease, and cancer', *Medical Science and Sports Exercise*, 41, 998-1005.
- Paton, N. (2007) 'DVT scare story for office staff'. *Occupational Health*, 59, 44 1-3.
- STarTBack <http://www.keele.ac.uk/sbst/> last accessed 180214
- Thaler, R and Sunstein, C, 2008. *Nudge*. Penguin Books
- Tremblay et al., 2010. Physiological and health implications of a sedentary lifestyle. *Applied Physiology and Nutrition Metabolism*, 35(6) 725-740.
- Van den Heuvel, S et al. 2003. Effects of software programs stimulating regular breaks and exercises on work-related neck and upper-limb disorders. *Scandinavian Journal of Work Environment and Health*. 29 (2) 106-116.
- Van der Ploeg et al., 2012. Sitting time and all-cause mortality risk in 222497 Australian Adults. *Archives of Internal Medicine*, 172 (6).
- GC Vijay, Wilson EC, Suhrcke M, et al. Are brief interventions to increase physical activity cost-effective? A systematic review *Br J Sports Med* Published Online First: 05 October 2015. doi: 10.1136/bjsports-2015-094655
- Wellnomics <http://www.wellnomics.com/support/research/white-papers/> last accessed 190214.