

Investigating the impact of physical, psychosocial, and behavioural changes related to modern, flexible office settings.

BY: RANNY (RONNY) MICHAEL, MHK, AE

About Me

 Bachelor of Science in Kinesiology - McMaster University (Hamilton, ON) – 2017



 Assessed physical and psychosocial risk factors associated with changes to modern offices, in partnership with MyAbilities Technologies & a hospital network (Hamilton Health Sciences)



MCMASTER MARAUDERS



Key Physical Factors



My Research

Split into two studies:

 1. "Investigating the impact of changes to modern offices using the Rapid Office Strain Assessment (ROSA) – 10 years later" – R. Michael, M. Sonne, D.M. Andrews

 2. "Exploring the psychosocial effects of wellness benefits on burnout and physical discomfort in modern office settings" – R. Michael, M. Sonne, D.M. Andrews

First Study: "Investigating the impact of changes to modern offices using the Rapid Office Strain Assessment (ROSA) – 10 years later"

R. MICHAEL, M. SONNE, D.M. ANDREWS

Introduction



Musculoskeletal disorders are a significant issue plaguing both employees and employers.



MSDs have been deemed to be "the most costly medical condition in Canada", with estimates of direct and indirect costs being around \$22 billion annually.



Changing Environment

>50% of jobs required some degree of computer proficiency in 2012, was projected to rise to 77% by 2020 (U.S. Bureau of Statistics, 2012).

By 2022, projected shift of 42% in core workforce skills due to increased usage of technology and automation (WEF, 2018).

Background of ROSA







- Office ergonomics picture-based screening tool.

- First published in 2010 and based on Canadian Standards Association (CSA) guidelines published in 2000. - Developed to establish relationships between bodily discomfort scores and office work set-ups.

Rapid Office Strain Assessment (ROSA)

Example: Scoring chart for assessors to score office components



Rapid Office Strain Assessment (ROSA)

Final scoring matrices where component scores are input to calculate injury risk score.



Cornell University Discomfort Questionnaire

Yields musculoskeletal discomfort scores based on the frequency, intensity, and impact of pain in a bodily region during work.

Neck / Head Shoulder (Right) (Left) Upper Back Upper Arm (Right) (Left) Lower Back (Right) Forearm (Left) Wrist /Hand (Right) /Fingers (Laft) Hip/Buttocks Thigh (Right) (Left) Knee (Right) (Left) (Right) (Left) Lower Leg /Foot Never 1-2 times last week 3-4 times last week Once every day Several times every day

During the last work week, how often did you experience ache, pain, discomfort in your neck/head? *

Assessed By Original ROSA

Workstations containing:

- Office chair
- Computer monitor
- Keyboard
- Computer mouse
- Desk Phone



Changes since 2008-2010

• New technologies

- Smart Phones
- Tablets
- Laptops, Dual Monitors, and Sit-Stand desks more commonly used

• Increase in remote work and flexibility

- Work accessible away from the office
 - Laptops
 - Cell Phones
 - Paperless work

• More methods of communication

- Video-conferencing
- Instant messaging clients



Not Directly Assessed By ROSA

Workstations containing:

- Dual monitors
- Laptops
 - Monitor
 - Keyboard
 - Trackpad
- Cell Phones
- Sit-Stand Desks



The research for this project had 3 primary goals:



E	Exploration	Better understand current trends in offices and worker behaviors.
С	omparison	Investigate trends & changes to office environments and worker behaviors since the time of the original studies over 10 years ago.
O	ptimization	Based on the comparison between the original studies and the present study, see if alterations to the assessment tool were needed.

Methods

Similar methods to the original ROSA studies were chosen (sample size, partner organization, & questionnaires) to more accurate compare the studies.



Key Insights

- 1. Less overall phone use and better postures adopted, while dual monitor use negatively impacted monitor scores.
- 2. Spreading out work across multiple work set-ups reduced ROSA final scores.
- 3. Very consistent laptop scores across participants. Still not ideal postures, but less extremes.
- 4. Sit-stand desk users had significantly reduced sitting durations across a typical workday compared to those who did not have one.
- **5.** Proposed changes to ROSA were easily implementable.

Applicable Considerations

- 1. Shifting away from using standard desk phones is a great trend to avoid harmful postures.
- 2. The risks/benefits should be weighed when a dual monitor is implemented.
- 3. Varying a person's work set-ups can be an effective way to promote circulation and not remain in non-neutral postures for a prolonged duration.
- 4. Laptops can be effective in reducing the variability across people compared to employees using a standard desktop set-up, however, the use of peripheral equipment is still recommended.
- 5. Sit-stand workstations can be one effective method of reducing sitting durations across a typical workday, however, other methods can also be effective.



Second Study: "Exploring the psychosocial effects of wellness benefits on burnout and physical discomfort in modern office settings – a pilot study"

R. MICHAEL, M. SONNE, D.M. ANDREWS

Wellness Benefits

Many employers rely on health benefits as a recruitment and retention tool, and HR professionals use a variety of wellness programs to impact health care expenses at their organizations.



*The difference between 2011 and 2015 is statistically significant (p < .05). Source: 2015 Employee Benefits (SHRM, 2015)

Wellness Benefits

While they have been growing in popularity, their effectiveness isn't always substantial.



Source: Strategic Benefits: Wellness Initiatives (SHRM, 2015)

Sit-Stand Desks as Wellness Benefits

The Society for Human Resource Management (2019) classifies sitstand desks as a "wellness benefit", or a perk, to promote worker health and validate an employee's position or job security.

What is Burnour?

Burnout is "an erosion in values, dignity, spirit, and will; [eroding] the human soul", which occurs when job demands exceed the support and resources available to employees (Maslach and Leiter, 1998).

Project Overview

The research for this project had 2 primary goals:

See if the use of certain modern technologies might have an impact on worker burnout and Exploration musculoskeletal discomfort. See if certain work factors or groups of Comparison employees had significant differences in their levels of burnout.

Methods



Copenhagen Burnout Inventory

Example: Question from Copenhagen Burnout Inventory, used to quantify personal, work-related, and clientrelated burnout.

How often are you emotionally exhausted? *

Always or to a very high degree

Often or to a high degree

Sometimes

) Seldom or to a low degree

Never, almost never, or to a very low degree

Key Insights

- 1. In this organization, sit-stand desks were beneficial in reducing burnout, while laptops were detrimental in increasing burnout.
- 2. The differences in burnout did not have to do with physical factors, suggesting that cognitive and psychosocial factors.
- 3. The relationship between demands and provided support, which leads to burnout, is the most helpful lens to approach this problem.
- 4. Theory proposed based on the results of this study and a review of the literature. (*next slide*)



Proposed Theory

Applicable Considerations

- When any wellness benefit or perk is given, considerations should be made to see if benefits or perks actually increase the demands of their jobs more than they provide support.
- 2. When these benefits/perks are effective, they can improve employees feelings of job satisfaction and security, which is believed to potentially have an effect on reducing MSD/RSI risk.

Thank You!

QUESTIONS?

ROSA:

- <u>https://www.ohcow.on.ca/ergotools/rosa/index.php</u>
 - <u>https://myabilities.com/rosa/</u>

Contact Information:

Email: <u>rannymichael@gmail.com</u>

LinkedIn: linkedin.com/in/rannymichael/