

Determinants and consequences of a pedometer-based physical activity challenge with hospital employees: A quantitative and qualitative longitudinal study.

Geneviève L. Lavigne, Ph.D.
Mélanie Lavoie-Tremblay, Ph.D. **
Charles Sounan, Ph.D, **
Guylaine Cyr, Ph.D.
Kara Martin, B.Sc., M.A., Kinesiology

**** Primary investigators**



CHLR



Why a fitness challenge in the workplace?

- **Physical activity → Health benefits**
- **Why the workplace?**
 - **Setting where a lot of time is spent**
 - **Can reach a large number of individuals**
 - **Better health**
 - higher productivity and efficiency,
 - lower absenteeism,
 - lower accident rates,
 - improved job satisfaction
 - better workplace morale
 - **Modified behaviours not limited to workplace**

The MUHC Wellness Challenge

A fun, motivating and inspirational way to make positive lifestyle changes for better health and well-being

➤ **MUHC Wellness Challenge : What is it?**

A comprehensive workplace health promotion strategy designed to:

- Optimize employees' health and well-being at work by promoting physical activity and nutrition through a pedometer challenge
- Pedometer programs are associated with significant increases in physical activity and significant decreases in BMI and blood pressure (systematic review, Bravata et al. 2007 AMA)



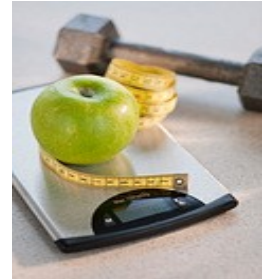
Developed by The McGill Comprehensive Health Improvement Program

MUHC Wellness Challenge

Pre-program evaluation (Baseline)

MUHC Wellness Challenge : Method

□ Pre-intervention Questionnaire □ (september 2011)



- Physical Activity (*International Physical Activity Questionnaire (IPAQ)*)
- Psychosocial work environment (*Accreditation Canada's Worklife Pulse*)
- Stress, Fatigue, Insomnia
- Smoking status
- Presence of cardiovascular disease (CVD) and diabetes
- Family history of CVD and diabetes
- Current medication use
- Demographics

MUHC Wellness Challenge : Method

- **By trained staff**
- (September 2011)



- Weight, waist circumference and height
- Blood Pressure
- Total Cholesterol, HDL, LDL, and fasting glucose



MUHC Wellness Challenge

Intervention

MUHC Wellness Challenge : Method

□ Lecture (September 2011)

- 1 hour lecture (lunch) explaining the benefits of using pedometers to increase physical activity and lose weight:
 - How do I wear my pedometer?
 - How many steps or 'steps equivalents' do I need?
 - How do I get started (wearing a pedometer during 8 weeks)?
 - How can I increase my steps, etc ?

□ 8 weeks Wellness Challenge

- September 19, 2011 to November 13, 2011

MUHC Wellness Challenge

Post-program evaluation

MUHC Wellness Challenge : Method

- Post-program questionnaire
 - Weight, waist circumference and height
 - Blood Pressure
 - Total Cholesterol, HDL, LDL, and fasting glucose
 - Physical Activity
 - Psychosocial work environment
 - Stress, Fatigue, Insomnia

MUHC Wellness Challenge

Maintenance evaluation

- 6-month follow-up

MUHC Wellness Challenge : Method

- Maintenance (6-month follow-up) questionnaire
 - Did you maintain your PA levels? (Y/N)
 - Weight (self-reported)
 - Blood Pressure (self-reported)
 - Physical Activity
 - Stress, Fatigue, Insomnia



SAMPLE

- **Pre-challenge**
 - 310 completed pre-evaluation questionnaire
 - 259 completed blood test
- **Post-challenge**
 - 235 completed post-evaluation questionnaire
 - 178 completed blood test
- **Follow-up**
 - 157 completed follow-up questionnaire
- **Qualitative Follow-up**
 - 32 semi-structured interviews

Results

Pre- to Post-Challenge

Anthropometric

	Pre-challenge Average (SD)	Post-challenge Average (SD)	p-value
Weight	72.40kg (15.30 kg)	72.01kg (15.04 kg)	0.002 
Waist circumference	87.42cm (11.50 cm)	86.72cm (12.33 cm)	0.100
BMI	26.80 (4.92)	26.65 (4.81)	0.002 


Biomedical

	Pre-challenge Average (SD)	Post-challenge Average (SD)	p-value
Total cholesterol	5.21 (0.90)	5.12 (0.89)	0.018 ↓
High-density lipoprotein cholesterol	1.59 (0.43)	1.58 (0.45)	0.558
Low-density lipoprotein cholesterol	3.15 (0.76)	3.08 (0.74)	0.029 ↓
Triglycerides	1.08 (0.78)	1.02 (0.62)	0.207
Fasting glucose	5.12 (0.97)	5.08 (0.78)	0.363
Systolic blood pressure	116.66 (15.46)	114.62 (14.13)	0.001 ↓
Diastolic blood pressure	76.77 (10.43)	75.81 (9.41)	0.063 ↓

Psychological

	Pre-challenge Average (SD)	Post-challenge Average (SD)	p-value
Fatigue	11.70 (3.84)	10.39 (3.64)	0.001 ↓
Insomnia	7.70 (5.46)	5.82 (4.48)	0.001 ↓
Stress	20.56 (2.99)	19.84 (3.03)	0.001 ↓
Work environment	3.65 (0.75)	3.61 (0.77)	0.473
General Health	3.46 (0.64)	3.51 (0.67)	0.188
Work adjustment	3.78 (0.61)	3.74 (0.64)	0.162
Absenteeism & Presenteeism (total number of days)	6.59 (22.64)	5.88 (18.00)	0.606

Behavioural

	Pre-challenge Average (SD)	Post-challenge Average (SD)	p-value
Vigorous activity MET	930.72 (1779.08)	923.57 (1855.35)	0.957
Moderate activity MET	628.47 (1716.29)	600.63 (1102.35)	0.817
Walking MET	1407.50 (1938.21)	1567.48 (1928.14)	0.407
Total MET score	2878.07 (3474.30)	3041.86 (2914.56)	0.575
Sitting (min/week day)	417.16 (240.15)	352.82 (189.36)	0.001 

	n	%
Sedentary	6	1.8%
Low active	38	11.5%
Somewhat active	63	19.1%
Active	71	21.5%
Highly active	109	33.0%

Results

Maintenance

Physical activity maintenance

- **75.8% say they maintained their level of PA**

Pre-challenge to Follow-up

	Pre-Challenge Average (SD)	Follow-up Average (SD)	p-value	
Weight	71.35 kg (14.22 kg)	70.25 kg (13.88 kg)	0.001	↓
BMI	26.42 (4.67)	26.17 (4.54)	0.007	↓
Vigorous activity MET	794.21 (1299.97)	1378.95 (2548.23)	0.004	↑
Moderate activity MET	642.42 (1647.68)	1271.17 (4188.11)	0.081	↑
Walking MET	1409.96 (1763.84)	2040.49 (3401.73)	0.038	↑
Total MET score	2699.03 (2606.76)	4946.40 (7171.36)	0.001	↑
Sitting (min/weekday)	427.79 (234.47)	413.89 (369.03)	0.673	

Results

Qualitative interviews

Motivators to participate in the challenge

- Interested in the challenge
 - To be more active
 - To improve global health
 - To reach better physical shape
 - To lose weight

 - *... for health and I find I spend a lot of time at my desk. And I don't move from there. So it's motivating me to like get out at lunch time*
 - *Especially, we work in the health system. We should be paying more attention to what we represent ...*

Factors facilitating participation

- Pedometer
 - Help self-monitor PA levels
- Doing activities in Team
 - *It's always better in a group cause I find we motivate each other*
- Well structured program
- Support team (i.e., the research team) + website
- Study in the workplace
 - *Well first, you guys made it easy. I mean, it was basically handed to us. We didn't have to go elsewhere. And that made it easy not only for me, but for everyone else*
 - *Well I think having it online was very good also... You can look at the progress*

Factors limiting participation

- Bad weather (cold, rainy conditions)
 - *The only day that I'm not walking to the parking lot it's when it's raining*
 - *When it's cold, you don't want to walk.*
- Maintenance itself
 - *But I think maintaining is always the hardest part of everything*
 - *... it was easier to go back to what we were doing before*

Positive impact of participating

- Increase consciousness of the importance of being active and maintaining healthy habits
 - *Just overall it made me more aware of healthier choices*
- Actual improvement of a physiological problem
 - such as lower bad cholesterol levels, lower blood glucose, better blood pressure, higher lung functions
- Improvement in physical health, higher energy levels
- Lost or maintained weight
 - *Well, it kick started me to lose 20 pounds*
- Lower stress
 - *It helped me manage my stress because since I walk more*
- Improved sleep

Discussion / conclusion





- **Short 8-week pedometer-based intervention**
 - **Successful**
 - Led to many improvements
 - **Behavioral** (increase PA levels)
 - **Biomedical** (lower cholesterol and blood pressure)
 - **Anthropometric** (weight loss)
 - **Psychological** (lower fatigue, insomnia, stress)
- **Workplace setting**
 - **Offers many advantages**
 - Large number of people reached
 - Help offer support to participant
 - Offer possibility for team work/objective

Thank you

Souan, C., Lavoie-Tremblay, M., Martin, K., Lavigne, GL., Lowensteyn, I. & Grover, S.A. (2013). Impact of pedometer-based physical activity challenge on behavioral, bio-medical, anthropometric and psychological outcomes in hospital employees: An interventional study. *Clinical Health Promotion*. 3, 5-11.



Post-challenge to Follow-up

	Post-Challenge Average (SD)	Follow-up Average (SD)	p-value
Weight	71.03 kg (14.19 kg)	70.11 kg (13.84 kg)	0.001 
BMI	26.47 (4.73)	26.29 (4.59)	0.041 
Vigorous activity MET	1052.92 (2009.26)	1331.85 (2634.87)	0.279
Moderate activity MET	624.95 (1104.11)	1260.03 (4409.00)	0.060 
Walking MET	1654.92 (1912.37)	1877.46 (3298.64)	0.478
Total MET score	3289.90 (3076.07)	4550.55 (7291.60)	0.049 
Sitting (min/weekday)	355.86 (193.21)	415.04 (383.18)	0.098