



Using the Internet to Improve Physical Activity



**University of Michigan
Health System**

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The Perspective

- Health Systems
- Health Insurance Companies



The Perspective



Department of
Veterans Affairs

- Federal Government



From The Perspective of The Payer Cost Is Driving Increased Interest In



Lifestyle Change

Obesity

\$800 more per member per year (Blue Care Network)

Adult Type II Diabetics

\$1,500 per member per year (VA, private insurance)

Cost of Diet and Exercise Programs



program

Cost per Person - Year

- | | |
|---|----------------------|
| • Residential (biggest loser) | • \$97,200 |
| • Bariatric Surgery | • \$20,000 |
| • Personal Training 50 weeks x 5 sessions / wk x \$50 | • \$12,500. |
| • Weekly sessions – 24 group, 24 individual | • \$2,500. |
| • DPP – telephone, in person | • \$1,500. |
| • Weight Watchers – | |
| ○ in person | • \$576. |
| ○ online | • \$226. |
| • Walking Spree | • \$150. |
| • Sparkpeople, Fitday etc | • \$0. + advertizing |

Self-regulation Theory



If you cannot accurately self-monitor your behavior, you cannot change it.



If you cannot self-monitor, then you cannot



- Plan
- Set goals
- Reward success
- Discuss progress with others
- Learn from failures

Failure of Self-Monitoring



Most People Don't Know How Much They Exercise /
Walk or How Much they Eat

“I am on my feet and active all day and I eat almost
nothing but I still keep gaining weight!”

Self-Monitoring Physical Activity



- Self-monitoring of Physical Activity is difficult for most people who mostly do lifestyle activity. The more sedentary you are the harder it is.
- Marathon Runners track their PA to the minute (usually using some expensive device)
- “I go to curves three times a week and usually go for a 1 hour bike ride on the weekends.”
- People who wear a pedometer or those who walk a pre-specified route as a routine.

Information Technology To the Rescue



- New Physical Activity Self-Monitoring Devices are cheap and accurate
 - Pedometers
 - Activity Monitors
 - Heart Rate Monitors
 - Energy Expenditure Monitors
- Upload data to get automated and individually tailored coaching, goal setting, feedback, peers support, rewards and incentives.
- Objective and Non-judgmental (video game quality)
- Personalized and Gradually Incrementing Goals

Implementation is Moving Rapidly Ahead of Research



**PAYERS ARE BYPASSING THE
MEDICAL ESTABLISHMENT**

Blue Care Network's Healthy Blue Living Lifestyle Change for Obese Insured Adults



- Actual Commercial Insurance Product
- Program Evaluation



Because wellness starts one step at a time

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10,000 Steps a Day™
to Your Optimal Weight

Walk Your Way to Better Health

Walking 10,000 steps a day offers numerous health benefits—from decreasing stress levels to lowering blood pressure.

I love how easy it is to **walk & connect** my pocket pedometer to the computer.

I'm **happier & healthier** than I have been in a long time.



Walk + Connect



Track + Monitor

So cool!!
Uploaded my walking info to the website. Glad I chose this USB Pedometer

My chart shows I'm at 73% of my step target for today. 18 days at 10,000 steps this month!

Healthy Blue Living



- Adult BCN HBL insured patients with BMI > 30 (~ 14,000)
- Significant financial incentive 20% lower cost for copays etc.
- If obese, participate in a lifestyle change program
 - ✦ Weight Watchers (~ 5,000) and
 - ✦ Walking Spree (~ 7,000)
 - ✦ Choose not to join any program, paid more (~ 2,000)
- BCN pays the bill for the program
- Must meet participation criteria to get incentive
- For Walkingspree
 - ✦ Wear pedometer and upload data to walking spree
 - ✦ Average 5000 steps a day over 3 months (assigned generic goals).

Study Design



Implementation Study and Program Evaluation

- Interviews with Staff Implementing the Program
- De-identified uploaded step-count data
- De-identified data from online Forums and Participant Satisfaction Surveys

Goal Setting



- Advised individually tailored, gradually incrementing goals
- Walkingspree programmed the goal setting algorithm
- Customer service rejected it in favor of fixed assigned low goals.

Not Traditional Research



- Not A Clinical Trial
 - No Informed Consent
 - Would not have been approved by an IRB
 - Coercive Incentive is “Just Business”
 - Precise data on the number of people “invited”
 - No medical clearance
 - Generic Assigned Goals
 - Large Scale
 - Rapid implementation
-
- No Control Group
 - Data Filtered through BCN / Walkingspree

Implementation Outcomes



- 6624 individuals uploaded data
- 626,266 / 738,270 (85%) possible program days uploaded
- 4.8 billion steps
- Average daily step count 6,601 steps/day sd 3036
- 78% were adherent uploading 96% of possible program days, with an average daily step count of 7,414 steps per day.



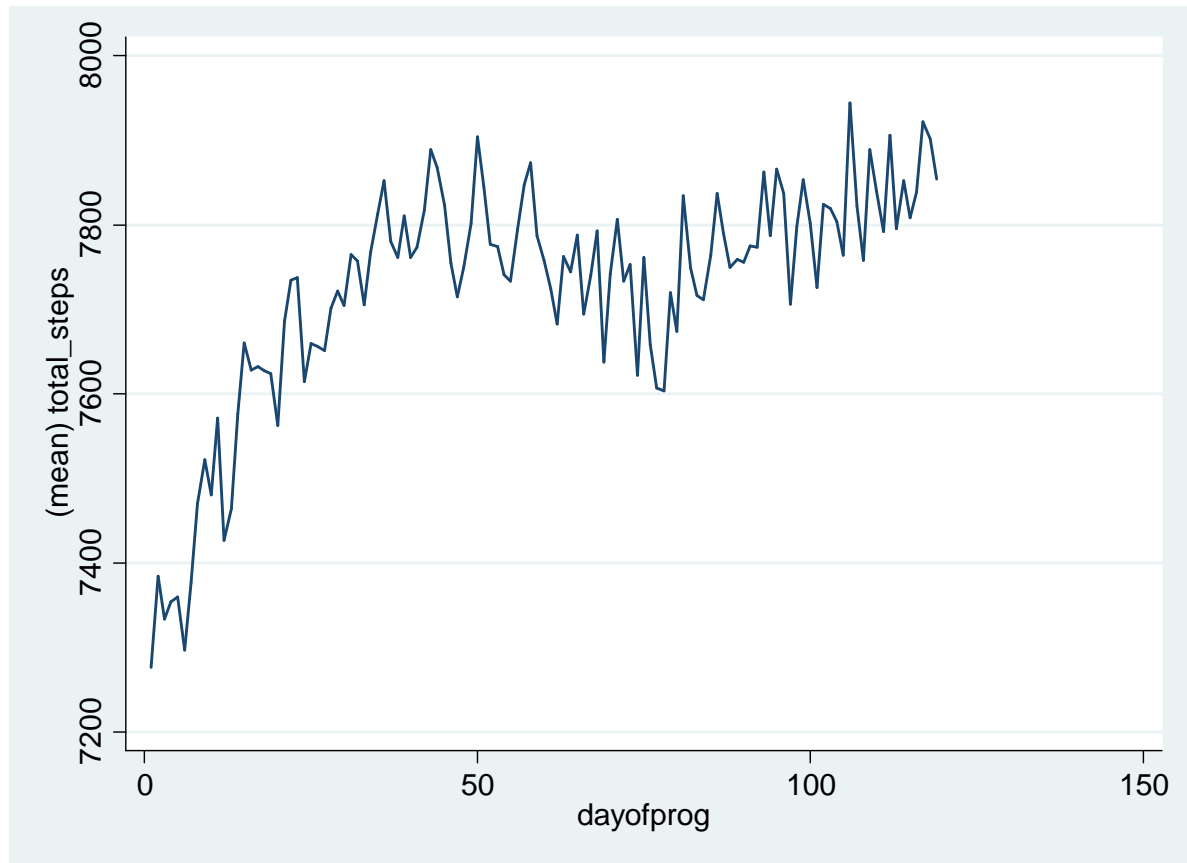
Step Counts Did increase

For those with valid
baseline and 4 months
data:

N = 1818

Change in Step Counts

585 steps per day (sem
53 days, paired t-test
 $t=11.05$, $p < .0001$)



Patient Perspective



- 51% Liked the Program
- 17% Initial Skeptics but Converted to Liking It
- 31% hated it – found it coercive

51% liked it a lot



- “This is really my first month here, and already I have seen some weight loss. This program has inspired me to actually do something about losing weight, instead of just thinking about it. I now look forward to cutting the grass just for the steps.”

17% were initial skeptics but liked it in the end



- “I have to say that at first I wasn't happy about the requirement to walk 5000 steps a day on average. But now that I have done it for about a month, I do feel more energy and actually enjoy the solitude of my morning walks! ... I thought I was compliant also, but turns out I wasn't all that honest with myself...”

31% really hated it



- “Glad to see that I am not the only one ticked off about having to wear this damn device. So much for the land of the free. I feel that this goes against my constitutional rights. I am planning on sending a letter to my senator and the governor. This is just wrong. Give me a discount if I choose to conform to their Nazi requirement!”

Legal? Ethical? Effective?



- Legal ? Yes
- Ethical? Maybe , Not a reseach study, BCN did not ask the IRB. More impact on low income individuals.
- Coercive Incentives, No informed consent.
- Reach – 86% of eligible
- Most participants would not have enrolled in a RCT
- Effective – Increased physical activity
- Cost-Effective – linking data to claims outcomes.

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Activity Today

Amount of steps taken
3,451

Miles travelled
1.4

Calories burned
348

Calories consumed
625



Activity Levels

- Sedentary - 5hrs 40min
- Fairly Active - 40min
- Lightly Active - 3hrs 23min
- Very Active - 30min

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Paul Resnick Steps FB App is inching closer to ^Today payment, thanks to Debra Lauterbach. Stepcount upload, graph display, a... al set today. #3gt

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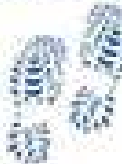


Paul Resnick MSC100 proposal submitted for future fac slots in Schools of I Soc Work, Art&Design on "Design for Social and Civic Participation" #3gt

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Paul Resnick Wish every day was this good...



I walked 10900 steps yesterday!
I'm using Steps to track how far I walk every day with my Otter pedals


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Debra Lauterbach likes this.

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


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Paul Resnick Jojoyee! Pat's talk: ethnography with many non-obvious observations, inspiring social and technical design moves.

Paul had a good thing happen!

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Lessons Learned



- Can increase PA (walking) over the internet using objective monitoring, feedback and goal setting.
- People will do Internet mediated interventions, high rate of adherence with coercive incentives.
- High rate of conversion from skeptic to happy (17%), these people never enroll in intervention RCTs.
- Fixed low goals may be ok

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