Sitting Less & Moving More
Design to Reduce Sedentary Behavior in the Workplace

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Applied Project

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CONTENTS

INTRODUCTION

What is Sedentary Behavior?

"Any waking behavior characterized by an energy expenditure ≤1.5 metabolic equivalents Units (METs) while in a sitting or reclining posture." (Sedentary Behaviors Research Network, 2012)

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"Sedentary behavior is distinct from lack of physical activity." (Owen et al., 2011)

Background

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Among these different places the sedentary behavior occurs (workplace, leisure, and transport), workplace is a key setting for prolonged sitting time. (Chau et al., 2010)

There is a growing body of emerging evidence to indicate that time spent in sedentary behavior may lead to poor health outcomes in adults.
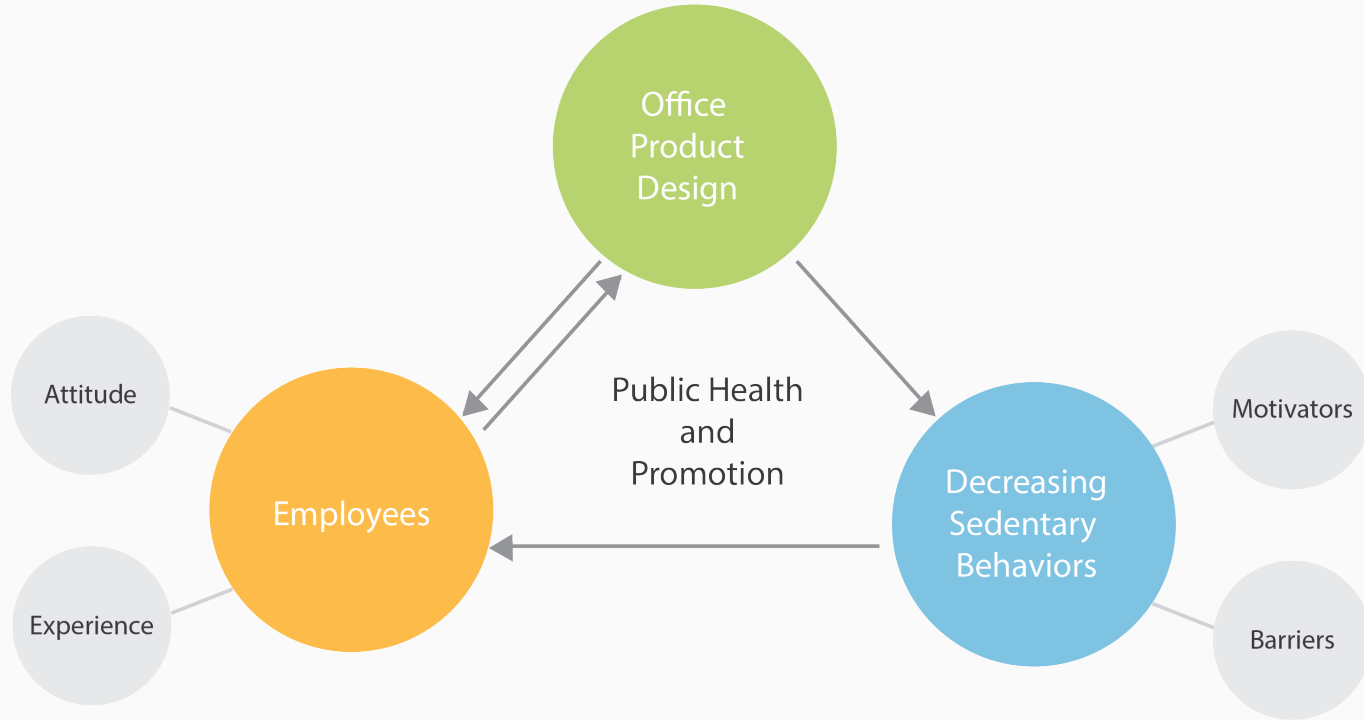
Purpose

This study aims to gain better understanding of the barriers that discourage standing while working, identify the future needs of sedentary employees, and propose a product design concept that effectively inspires people to be more active in the office.
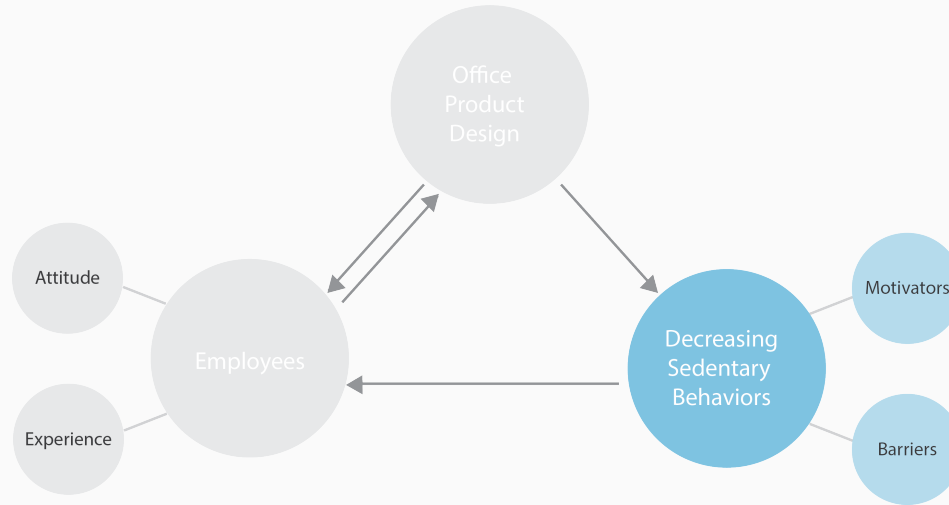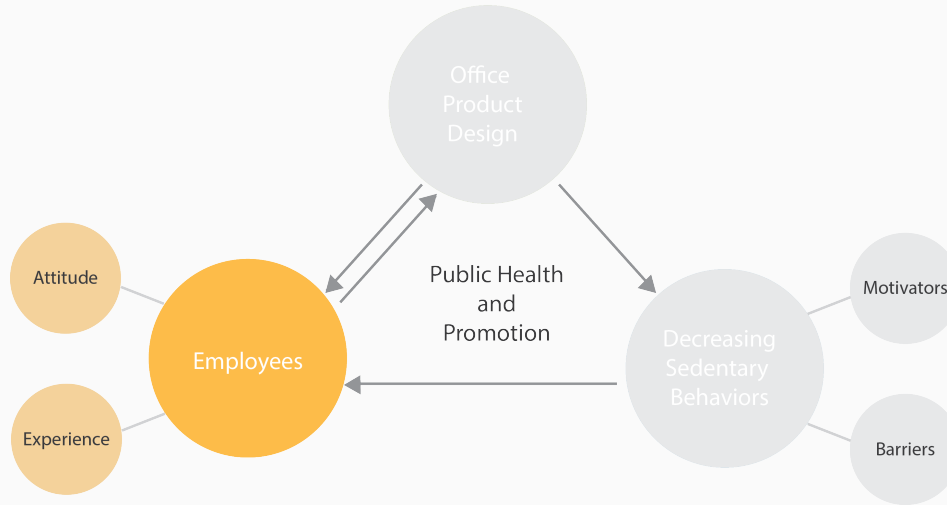
Conceptual Framework

Research Questions

What are the primary barriers that increase people's sitting time in the office?
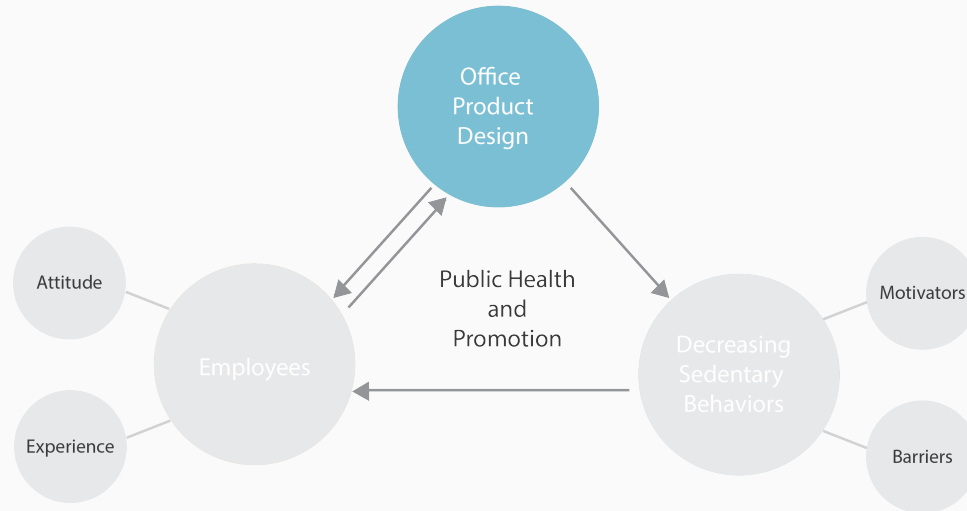
What is the overall user experience of using products that reduce sitting time in the workplace?

Research Questions

How can new product features and functions be shaped and proposed to effectively reduce sedentary behavior in the office?

Scope

Workplace sedentary behavior
Product design

Adult, 21 and 65 years, greater Phoenix and Tempe area of Arizona
Full-time sedentary, desk-based occupations

LITERATURE REVIEW

Sedentary Behavior

Frequent changes in posture can have a beneficial impact on health (Healy et al., 2012).

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Three different recommendations that specified maximum continuous sitting time: 20min, 30min, 55min, in which 55 min recommendation is more clearly achievable (Ryan et al., 2011).

Sedentary Behavior

Frequent changes in posture can have a beneficial impact on health (Healy et al., 2012).

Three different recommendations that specified maximum continuous sitting time: 20min, 30min, 55min, in which 55 min recommendation is more clearly achievable (Ryan et al., 2011).

There is still limited research focused on reducing sedentary behavior in the workplace from a product design standpoint.
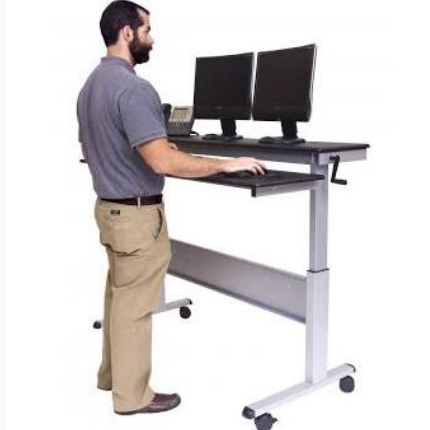
Existing Product

Standing Desk

Jarvis
Electric Standing Desk

Crank Adjustable Stand Up Desk

Varidesks
Desk Converter

Existing Product

Wearable device

Fitbit

0.1 in
thin

0.60 in
square

1.00 in
depth

0.5 in
thin

1.75 in
wide

Lumo Lift

Activity   10:09

iWatch

METHODOLOGY

Research Design

Understand

Literature Review

Research Design

Understand

Data Collection

Literature Review

Survey

Interview

Research Design

Understand	Data Collection	Data Analysis	Application

Literature Review

Survey

Excel

Design concept

Interview

Typology- NVivo

FINDINGS

29 Findings- 8 Topics

Name

- easily controled
- Motivation
- Simplicity
- Triggers
- add-on versality
- environment
- like sitting
- little knowledge
- no too long stan
- not unique
- physical active
- privacy
- save power or ba
- save time
- seperate
- take large space
- what to do during
- easy to be notice
- easy to swich
- effective reminde
- ergonomic and c
- force to stand ca
- knowledge of he
- management sup
- minimum effort-e
- setting
- small scale
- track activities h

negative feature　☐ Edit

14 say a little pop-up on your screen or little vibrate here, that might be OK, I don't know if it i irritation or not.

Internals\4 Julie - § 5 references coded [18.76% Coverage]

Reference 1 - 2.64% Coverage

15 Exercise ball, I don't think I can be able to do that, I never try that

Reference 2 - 3.68% Coverage

16 some of the desk you can buy, you have to pull and raise by yourself, two monitors are too he

Reference 3 - 4.48% Coverage

17 I was looking up a desk with a button, has different settings, it just raises and lower, but that more expensive.

Reference 4 - 1.23% Coverage

18 I won't pay for use my own money.

Reference 5 - 6.74% Coverage

19 two monitor on the desk which is really heavy to raise, and there is a distance (between my b and the desk), not right here, which make sit more difficult to raise the desk,

Internals\5Vanessa - § 1 reference coded [5.29% Coverage]

Reference 1 - 5.29% Coverage

The mobile app It's hard to get my mobile phone, so if there is something coming up on the phone, I not sure I can notice that. I seldom look at my phone during work.

Internals\6philip - § 2 references coded [8.37% Coverage]

Reference 1 - 5.10% Coverage

I don't think it' really good cause it is not comfortable that only your keyboard up and down The standing desk, is really strong, you can type on like a real desk

Reference 2 - 3.26% Coverage

Findings

Topic 1 Reminder

The reminder should force people to stop sitting and cannot be easily ignored

Reminding people through screen is more effective than mobile phone

The reminder should allow to be turned off under a certain circumstance

Findings

Topic 2 Information

Advertising physical health benefits of sitting less

Providing more options of activities during non-sitting time

Tracking activities and providing data

Findings

Topic 3 Flexibility

Should providing choice and flexibility in selecting whether and when to sit or stand;

Allow to turn off reminders under certain circumstance

Findings

Topic 4 Work Efficiency

Maintain work efficiency

Not to distract employees and workers around;

Findings

Topic 5 Ease of Use

Easy to learn

Minimum effort

Findings

Topic 6 Portability

Easy to carry to the office

Easy to control

Findings

Topic 7 Budget

Low cost that more people can afford

Findings

Topic 8 Supportive Environments

Seeing others standing in the office prompted them to also stand up

Supervisors, who care about health of employees, will create a more flexible working environment and encourage employees to use product to change behaviors.
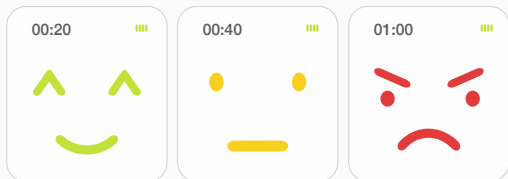
DESIGN CONCEPTS

Motion Sensor

Tracks activity- monitors user's sitting time, standing time and movements during exercise

Screen- sitting time, battery, emotion faces

00:20

00:40
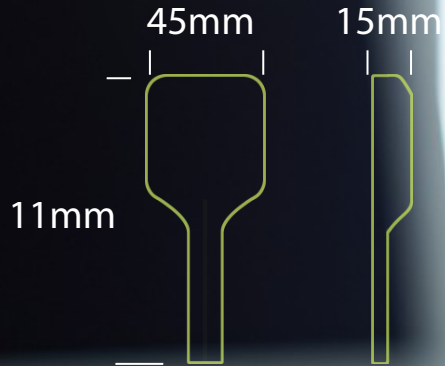
01:00

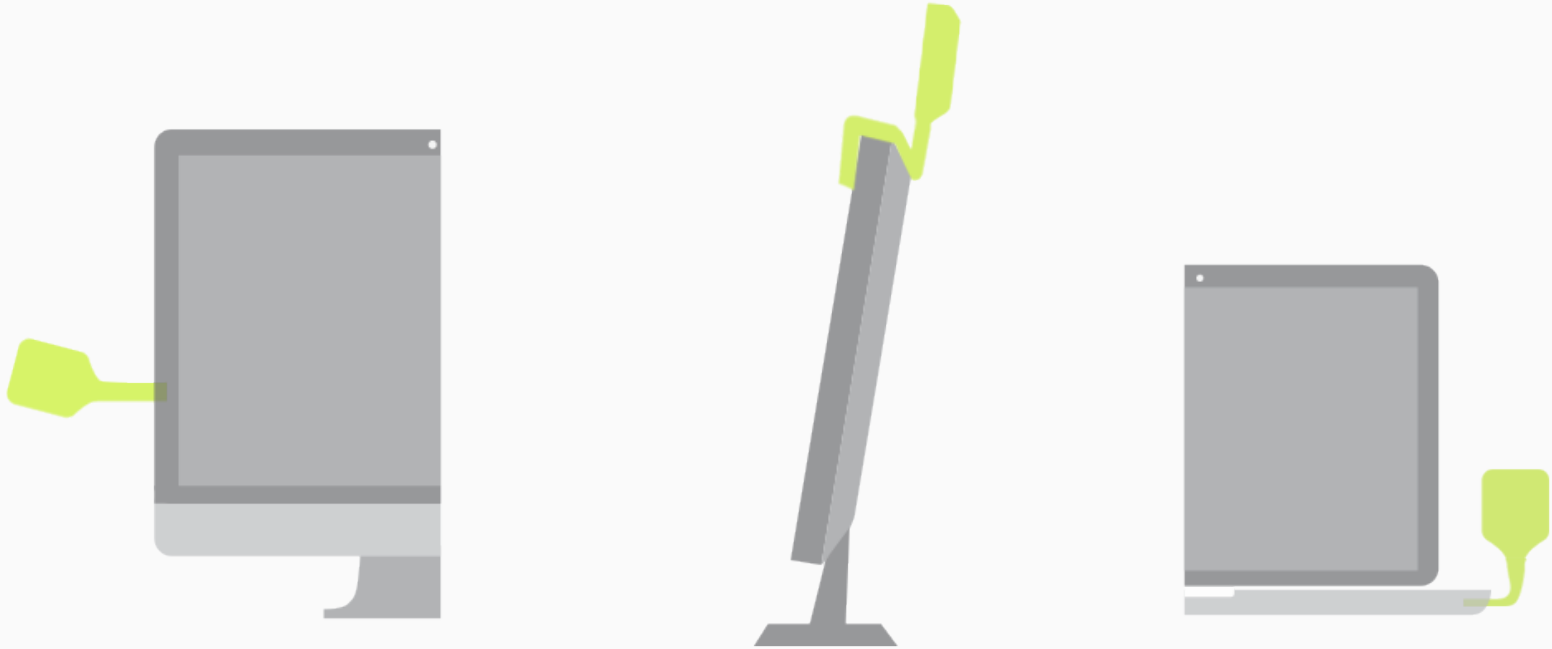USB- charging

Switch- on/off

Flexible band

Button- Hide/show USB

Motion Sensor

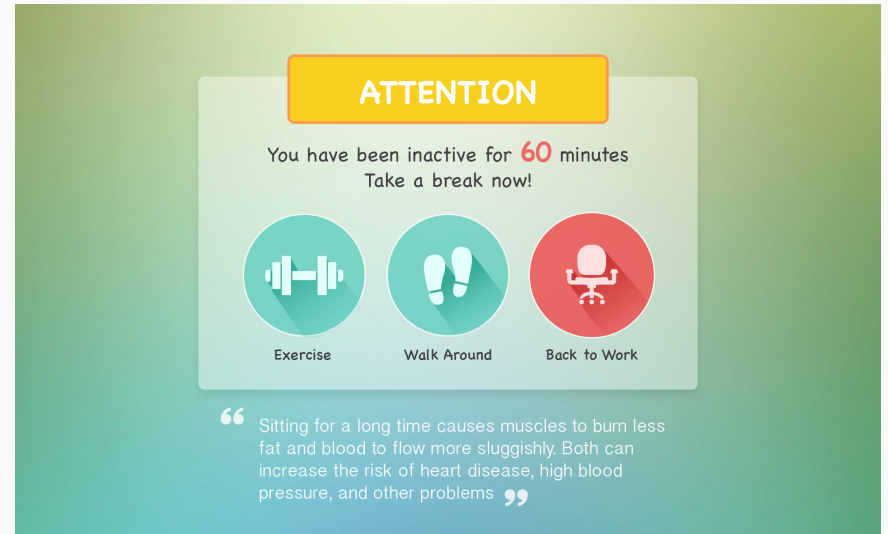Portability- small scale, easy to carry to wherever you want

45mm

15mm

11mm

00:40

Flexibility- multiple ways to mount product

Software

- Freezing screen- forces users to stand up

- On screen reminder- easily seen by users

- Health information- advertises the danger of prolonged sitting

- Exersice guide- more options of activities during standing time

CONCLUSIONS

Q: What are the primary barriers that increase people's sitting time in the office?

Q: What are the primary barriers that increase people's sitting time in the office?

A: Busy working schedule
Current workstation design
Limited options of standing activities
Lacking knowledge of bad outcome of prolonged sitting
Inactive environment.

Research Questions Revisit

Q: What is the overall user experience of using products that reduce sitting time in the workplace?

Q: What is the overall user experience of using products that reduce sitting time in the workplace?

A: Most employees were interested in using products to reduce sitting in the office.

Employees welcomed physical products more often

Current physical products were difficult to control in the office due to the large scale and high cost;

Reminder and monitor activity were two features being mentioned most

Research Questions Revisit

Q: How can new product features and functions be shaped and proposed to effectively reduce sedentary behavior in the office?

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Q: How can new product features and functions be shaped and proposed to effectively reduce sedentary behavior in the office?

A: Reminder, information, flexibility, maintaining work efficiency, ease of use, portability and cost;

Supportive environments also have big impact on sitting behaviors in the office.

Future Research

The target research group could be broadened to the population with larger age range, different occupations and education level

Evaluate the effectiveness of design among potential users in a real working environment

Thank you

Questions & comments?