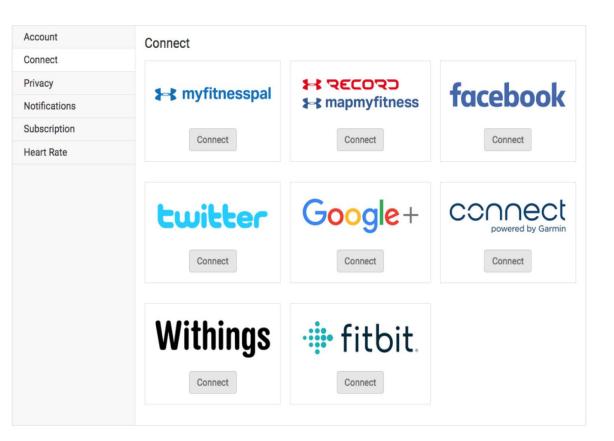# "There is nothing that I need to keep secret": Sharing Practices and Concerns of Wearable Fitness Data

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Wearable services have features that enable users to **share** their information on different platforms

Substantial risks of inferences, repurposing, and data leakage

Fitbit data just undermined a woman's rape claim

Kashmir Hill
6/29/15 2:57pm • Filed to: REAL FUTURE

11.1K   10   Save

Beware a future where health monitoring by wearables is the norm

As wearable devices are equipped with advanced health-tracking technology, how long before third parties use this information to gauge how well we are?

Fitness devices can reveal locations of soldiers, sensitive sites

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Wearable Fitness Data Sharing

Motivations: accountability, social support, and competition (Dong et al., 2018).

Primarily studied on social media (Gui et al., 2017), and within workplaces (Gorm et al., 2016).

Privacy Concerns

Concerns over location information (Motti et al., 2015), unintended use, and lack of control (Lowens et al., 2017).

Some services do not comply with regulations of data practices (Paul et al., 2014). Users have limited knowledge of those practices (Vitak et al., 2018).

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Study Goals

- Privacy is "the selective control of access to the self" (Altman, 1977)

- Our goals:

    - Explore broad sharing practices of long-term users
    - Understand what privacy-related decisions users make when disclosing sensed fitness data

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Interview Study

- ■ Participants
  - ❏ (>= three months of use) + shared some info
  - ❏ 30 participants (15 M, 15 F)
  - ❏ Ages: 20- 51 (avg. 32)
  - ❏ Variety of commercial fitness devices

- ■ Interview questions
  - ❏ General usage and motivations
  - ❏ Sharing practices – who, where, when, why, how
  - ❏ Privacy concerns and behaviors
  - ❏ Duration: avg. 25 minutes

General Usage

- Goals include activity tracking, accountability, and medical tracking.
- Most use their devices at all times, others during workouts.
- Participants review their data regularly in the device or on the app.

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Friends

Accountability, competition, bragging

Family

Mutual & emotional encouragements

Strangers

Feedback from experienced people

Physicians

Tracking vital signs and medical conditions

Incentive Programs

Financial discounts/rewards

Co-workers

Competition in the workplace

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Friends

Goals:
Accountability; competition; bragging

- Common sensed data only

- Primarily on social media channels

- After good physical performance

"I'm only sharing certain things like pictures, my badges, and my daily step counts with my friends"

"... like the weight loss aspect, I don't need them to know how much I weigh"

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Family

Goals:
Mutual and emotional
encouragements

- Disclose more information to family

- Simple ways to communicate data outside of platform

"If I share it with more people, I would have chosen which specific pieces of information, but I will still share everything with my wife"

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Strangers

Goals:
Feedback & advise regarding shared goals

- A variety of non-identifiable information related to fitness goals

- Device social circle, or external online communities

- May use fake identifiers

"They are also on the same journey so I feel like it is for accountability and they are not going to use that information in a way that would negatively affect me"

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Physicians

Goals:
Tracking vital signs & medical conditions

- Share openly and record data precisely

- Compile and report data manually

"I had back surgery in October so I use it as a tool to make sure that I am maintaining my recovery from my surgery."

"With regard to doctors, I share almost everything that I can"

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Incentive Programs

Goals:
Receive financial discounts/rewards

- Mostly step count

- Provide permission to access data directly in the device

- Wear the device continuously to maximize metrics

"It is free money, but I never been giving away something confidential. I was giving away the number of steps or my weight. There is nothing that I need to keep secret."

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Co-workers

Goals:
Increase physical activity;
competition

- Sharing step count only

- On the employer portal

- Set regular step goals and compete with other workmates

"When I originally started wearing it's because of the competition. You don't wanna be at the bottom of the list of your co-workers so you wanna be more active"

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Privacy Concerns

- The overwhelming perception was wearable fitness data is harmless:

    "I wouldn't really care if someone knew how many

    steps I have taken"

- Self-image and social norms were the primary concern:

    "I'm not going to share my blood oxygenation level

    with friends or in public. That would be ridiculous."

- A few participants were concerned about repurposing

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Little effort towards data protection

■ A few participants utilized fake identifiers or providing minimal account information:

> *"I don't know how much of it is personalized because my registration and stuff is under a fake name."*

■ Some were not aware of privacy settings:

> *"I think it came default sharing everything, but I cannot remember because I bought this so long time ago"*

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Summary

Users perceive sensed fitness data as not sensitive

Disclosure decisions impacted by:

- Fitness goals and incentives
- Social norms of the audience and platform

Design Implications:

- Controls and features around common goals and patterns
- Methods for sharing with caregivers
- Privacy Nudges

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Friends

Accountability, competition, bragging

- Sharing mostly done on social media channels
- After good physical performance

Family

Mutual & emotional encouragements

- Disclose more information to family
- Simple ways to communicate data

Strangers

Feedback from experienced people

- On online social and fitness communities
- Sharing a variety of non-identifiable information related to fitness goals

Physicians

Tracking vital signs and medical conditions

- Record everything precisely
- Compile and report data manually

Incentive Programs

To receive discounts/rewards

- Sharing step count only
- Wear the device continuously to maximize the metrics

Co-workers

Competition in the workplace

- Connect data to the employer portal
- Set regular step goals and compete with workmates

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