Exerwalls – an Exercise Alternative to Paywalls in Mobile Games

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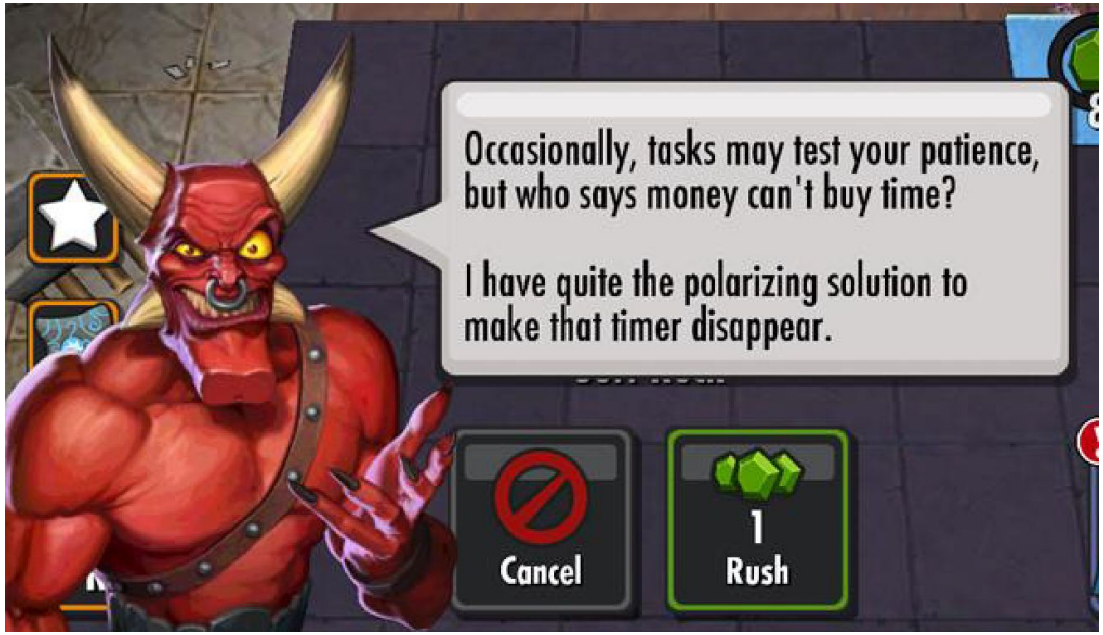
Introduction

- Physical inactivity increases risk of diseases
  - Diabetes, cardiovascular, cancers, obesity [CDC, 2015]
  - Significant cause of death in US [Mokdad, *et al.* 2000]
- Physical guidelines 150 minutes exercise/week
  - But most kids get far less, preferring "online" entertainment [Rideout, Foehr, and Roberts, 2010]
- Approach → integrate exercise into mobile games
  - Inspiration: *Bitwalking* [Imbesi and Bahar, 2016]
  - *Wokamon* [Noodum Co. 2014]

Paywalls (1 of 2)

Paywall – in-game mechanism to restrict content until paid (time, money or effort)



(Dungeon Keeper, Mythic Entertainment, 2013)

Many examples: card games Hearthstone and Heroes of Warcraft (Blizzard, 2014), puzzle games such as Candy Crush (King, 2012), strategy games such as Game of War – Fire Age (Machine Zone, 2013), and classic games Monopoly (Hasbro, 2015).

Paywalls (2 of 2)

- Paywall types [Doe, 2015]
  - *Classic paywall* – purchase game content
  - *Patience-wall* – wait for content
  - *Pressure-wall* – integrate with friends, so social pressure urges payment for content
  - *Ad-wall* – watch advertisement for content
- Our idea: new kind of paywall → *Exerwall*

Exerwalls

- Provide additional choice for player

  exercise to unlock content

- Control for player since exercise rate is their choice
  - Reduce player frustration
  - Promote self-accomplishment, keep players engaged
- Does not replace *paying*, instead replacing *waiting*
- This paper → evaluate exerwall potential

Methodology

- Survey user opinions on exerwalls and patience-walls
- Develop mobile game with exerwalls for user study
- Conduct user study to evaluate efficacy of exerwalls
- Analyze results of user study

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Survey

- Goal: Assess opinions of paywalls and explore exerwall options
- Web survey, email students at WPI
- 18 questions

Respondents

- 56 students
- 31% exercising less than 4 hours per week
- Many only exercise is walking to/from classes
- 25% Actively tracked exercise

Survey Summary Results

OVERALL	
Use phones for gaming	70%
Unlikely to spend money on mobile games	68%
GAMERS	
Play once or more per day	68%
Have experienced paywalls	82%
Felt paywalls negatively impacted game	84%
Would exercise instead of waiting	75%
Exercise time as percentage of waiting time	33%

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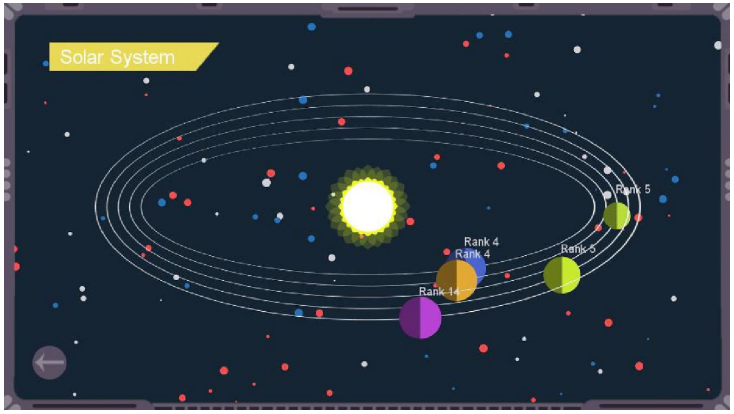
Game for Study

- Need game with exerwalls – control duration, compare to waiting
- Develop in Android, using Libgdx
- Use procedural content generation for art
- Conduct focus group for development focus
  - (Details in paper)

→ Concentrate on making game fun given developer resources (2 students, 6 months)

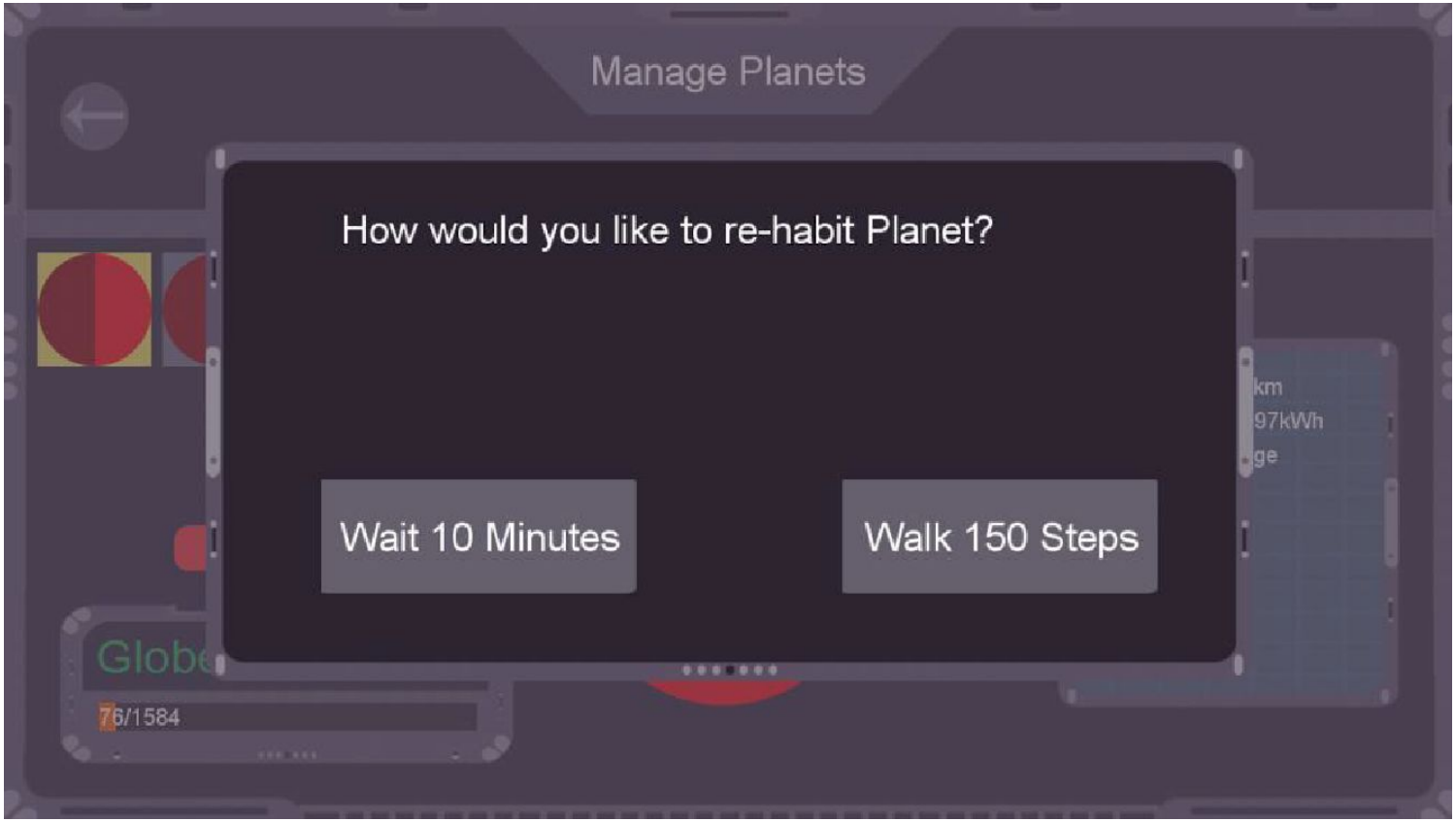
Laser Planets

Player builds team of planets – shoot laser beams to battle other planets – win battles for galactic domination!



Leader Board

Exerwalls in Laser Planets



(Also in “Explore” screen for fuel)

Random paywall options: Force Walk, Force Wait or Choice

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User Study Procedure

- Solicit users via WPI email
  - Incentives: gift card raffle
- Users download game via APK
- Users play brief tutorial
- Asked to play at least once per day

Details in report
[Baumann and Gallo, 2016]

Results

- 8 days (April 2016)
- 21 users
- 16 male, 5 female
- Ages 18 to 31, median 21
- All in CS and Engineering
- Players averaged 13 sessions/day for an average of 3 mins/session

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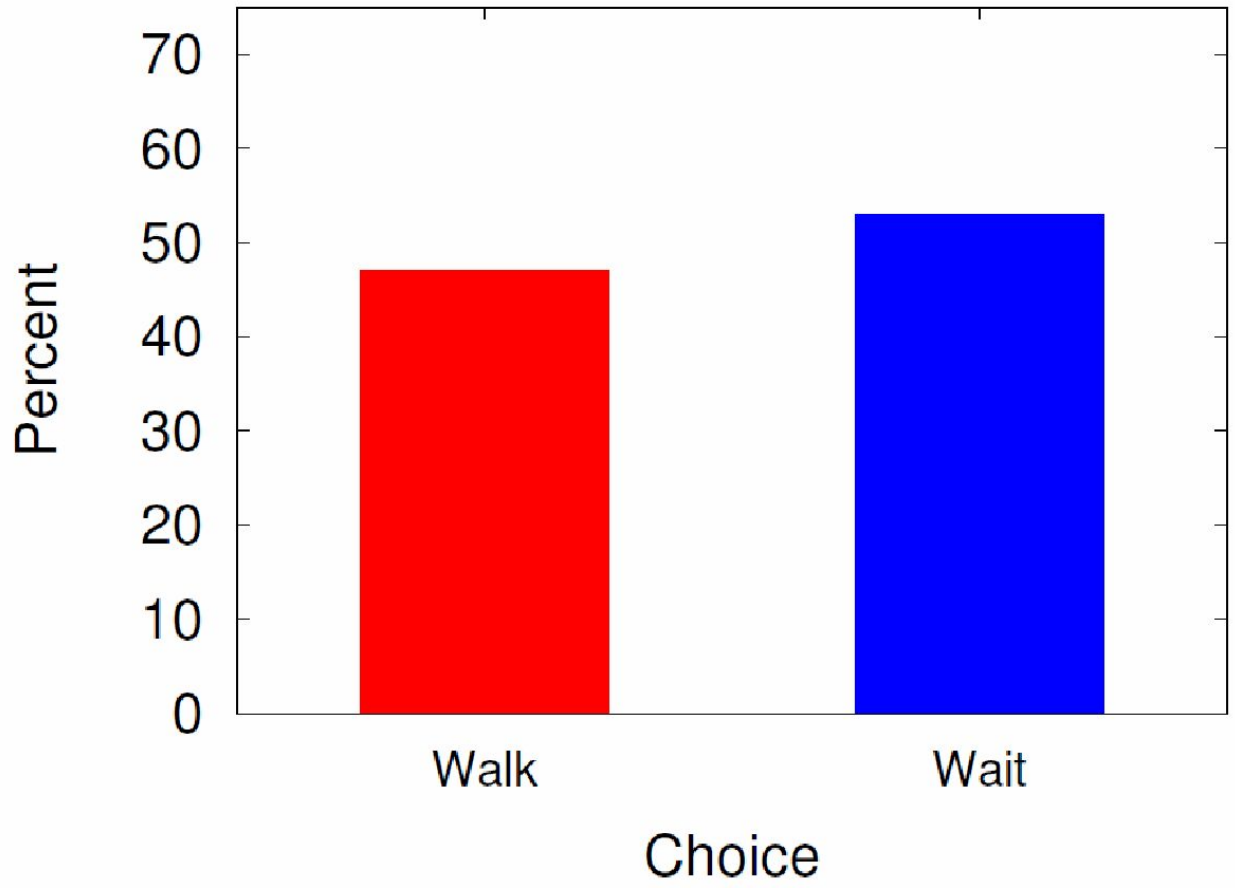
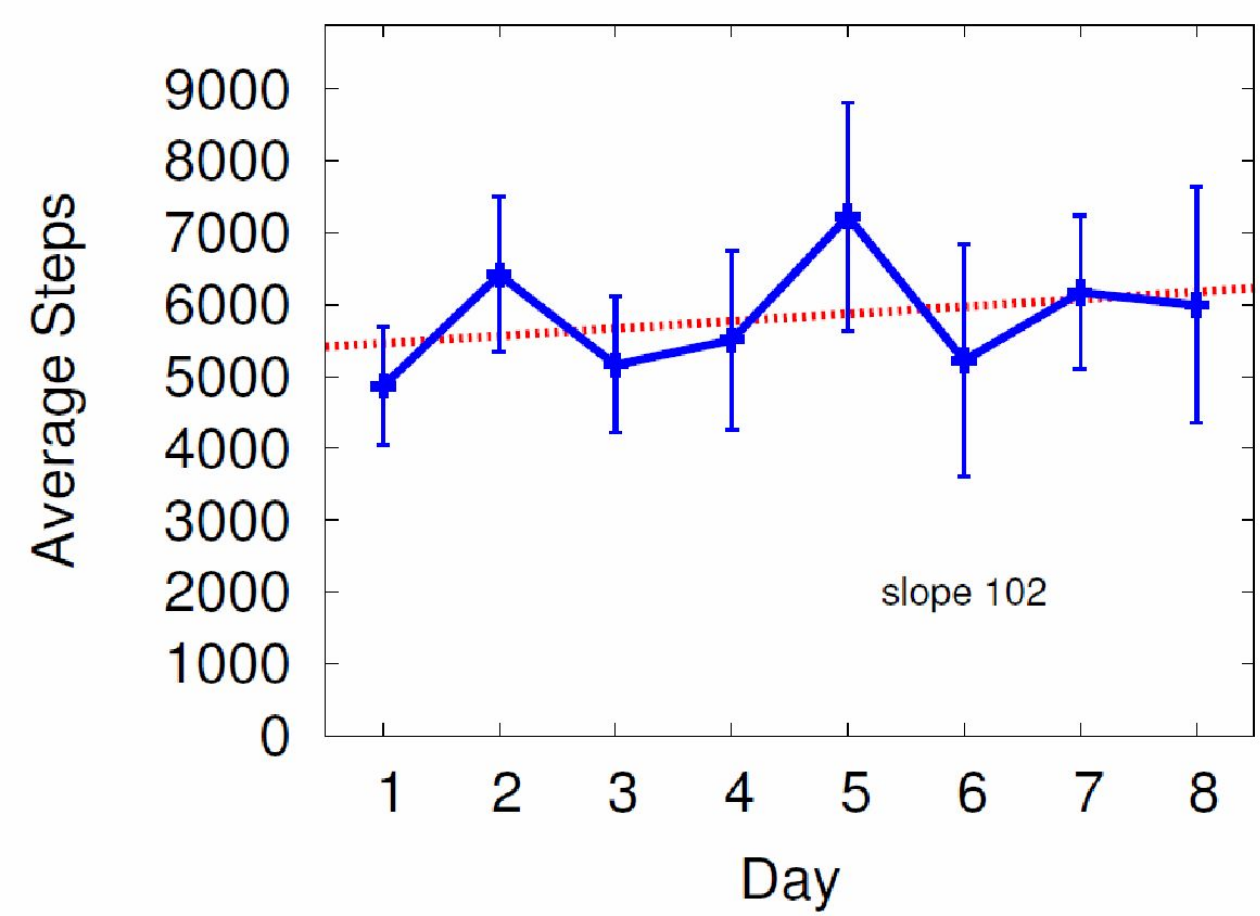
When Choice, Walk or Wait? (1 of 2)



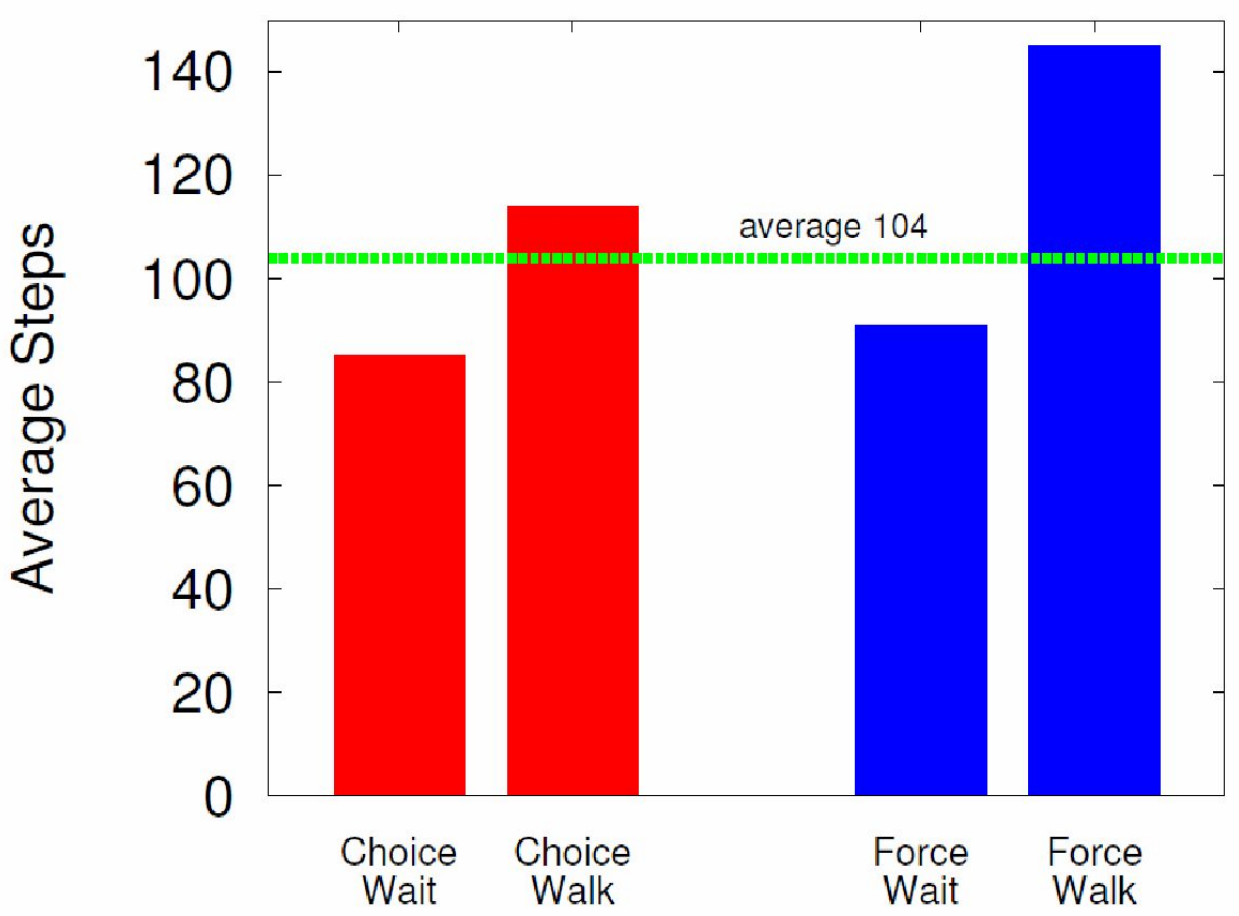
Walking viable choice for users versus waiting

Average Steps per Day



Slight increase in steps per day over week

When Walk, More Steps?



Increase in number of steps when given exerwall

Conclusion

- Current paywalls limited (pay or wait) and frustrating (decreasing user base)
- Exerwalls provide player-controlled option – exercise to unlock content
  - Potential to increase exercise
  - Potential to increase user base and revenue
- Survey (54 people) shows ¾ gamers would walk instead of wait
- User study (21 people) suggests exerwalls in Laser Planets encourage walking

Future Work

- Exerwall impact
  - Additional studies with more users, broader demographics, longer period of time (years – behavior change)
- Exerwall placement
  - Frequency and duration
- Exerwall revenue
  - Impact on in-app purchases

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