Using Facebook to Influence Adolescent Physical Activity: A Pilot Randomized Controlled Trial

Thomas R. Wójcicki, Diana Grigsby-Toussaint, Charles H. Hillman, Marian Huhman, & Edward McAuley
Physical Activity in Youth

• < 1/5 adolescents report being regularly physically active (CDC, 2011)
  – Active Transport
  – Physical Education
  – Sedentary Behaviors
  – Obesity Epidemic
  – Function of Age

• Many health-related consequences

• Identify effective strategies to promote physical activity
**Internet-Based Interventions**

- Can lead to improvements in behavior change outcomes (Lau et al., 2011)

- Web 2.0
  - Socially interactive, virtual environment that fosters the creation and exchange of user-generated content
  - Has gained universal acceptance among Internet users
  - Evaluation of social media as a means to influence health behaviors is warranted (AHA, 2013; CDC, 2013; SBM, 2013)
  - Social Networking Sites are the most popular Web category
    - 57% look to their SNS for advice (e.g., health, diet, fitness) (Nielsen, 2009)
The SMART Trial

- 8-week, randomized design PA program
  - Delivered entirely over social media
  - Goal to influence PA behaviors in sedentary and low-active adolescents

- Objectives
  1. Test the feasibility of a social media-delivered PA intervention for increasing lifestyle PA
  2. Compare the effects of a progressive behavioral training condition to a simple information-based condition
1. Trial would provide initial support for the feasibility of using social media to deliver a PA intervention

2. Behavioral training condition (i.e., intervention group) would experience greater improvements in PA
Recruitment & Eligibility

FREE Physical Activity Program for TEENS on facebook

Does your teenage son or daughter need help becoming more physically active? If so, they may be eligible to participate in a FREE, 8-week physical activity research program delivered via Facebook!

13-15 Years Old
Resident of Champaign County
< 60 Minutes of PA per Day
Internet Access, Facebook Account

N = 21 Parent-Child Dyads
Behavioral Assessments

• Conducted at baseline and program end (i.e., Week 8)

  – **Accelerometry**
    (Health One Technology, Fort Walton Beach, FL)

  – **Godin Leisure-Time Exercise Questionnaire**
    (Godin & Shephard, 1985)
Treatment Conditions

• **Behavioral** \((n=10)\)
  
  – 8 unique PA-related modules (via YouTube)

  – Privately delivered on a weekly basis via FB Messages

• **Informational** \((n=11)\)

  – 8 generic messages sent

  Mod1 - Getting Started with the SMART Program
  Mod2 - Physical Activity Definitions and Benefits
  Mod3 - Physical Activity Guidelines
  Mod4 - Goal-Setting for Physical Activity
  Mod5 - Individual Expectations and Physical Activity
  Mod6 - Social Support for Physical Activity
  Mod7 - Overcoming Barriers to Physical Activity
  Mod8 - Maintaining a Physically Active Lifestyle
The SMART Facebook Group

- **SMART FB Group**
  - Study-specific, restricted access
  - Interactive community that revolved around the topic of physical activity for adolescents

- **Two Group Posts/Day**
  1. PA-Related Websites
  2. Infographics
  3. Video PSAs
  4. Tech & Mobile Apps
  5. Local Parks & Facilities
  6. Motivational Quotes
  7. Miscellaneous
SMART Facebook Group Post

Tom Wojcicki

PSA | Stay fit and healthy by accumulating at least 60 minutes of physical activity each day!

Physical activity - It All Adds Up
www.youtube.com

'It all adds up!' campaign aims to encourage children to become more active. Physical activity is especially important for children if they are to grow

Like · Comment · Unfollow Post · Share · February 13 at 3:08pm near Champaign

and 2 others like this.

This is true we should get 60 minutes of physical activity a day.
February 13 at 5:51pm · Unlike · 1

Tom Wojcicki indeed, ...and the best part is that it doesn't all have to all be done at once! 😊
February 14 at 8:29am · Like

i think this could help a lot of kids
February 15 at 5:45pm · Unlike · 1
Data Analyses

• 2 (treatment condition) by 2 (time) repeated measures design

• Effect sizes (Cohen’s $d$) calculated within groups to determine differential treatment effects outcomes
Sample Demographics

- 13.48 Years Old
- 42.90% 8th Grade
- 57.20% OW/Obese
- 61.90% White
- 52.40% Female
- 71.40% > $100K AHI
Intervention Effects

• 2x2 repeated measures design revealed improvements over time on subjectively reported:

  – Weekly leisure-time PA ($F = 8.426$, $p = .009$, $\eta^2 = .319$)

  – MVPA approached significance ($F = 4.186$, $p = .056$, $\eta^2 = .189$)

  – Significant time and/or interaction effects not present in remaining behavioral outcomes

• Effect sizes calculated to identify patterns of change within each treatment condition
Effects on Objective PA

Effect Sizes
Small = .20
Medium = .50
Large = .80
Effects on Subjective PA

Effect Sizes
Small = .20    Medium = .50    Large = .80
Participation in FB Group

**PERCENTAGE OF POSTS VIEWED**
- Behavioral: 86.25%
- Informational: 73.86%

**ENGAGEMENT RATE**
- Behavioral: 27.33%
- Informational: 25.45%
Preferred Wall Post Categories

1) Technology/Apps
2) Websites
3) Miscellaneous/Topical
4) Quotations
5) Local Resources & Facilities
6) Public Service Announcements
7) Infographics
Discussion

• Changes in the behavioral outcomes were not statistically significant between groups

• Behavioral group effect sizes: moderate – large

• Informational group effect sizes: small – moderate

• Intervention effects were larger than those typically found in traditionally-delivered PA programs and web-based interventions

• Difference in behavioral effects may be specific to program delivery
  – Inherently social and interactive in nature
  – Readily available, instant access to content
Discussion

• Delivering a behavioral intervention via social media is both feasible and well-accepted

• Advances in Web 2.0 design may:
  – Influence health education and behaviors
  – Overcome many research-related barriers
  – Implications for public health
Strengths & Limitations

• Strengths
  – Among the first to examine the feasibility of delivering a PA RCT over social media
  – Subjective and objective assessment of behavioral outcomes
  – Fairly even split between males and females
  – ~ 40% minority participants

• Limitations
  – Small study sample, lack of statistically significant findings
  – Predominantly higher SES households
  – Inability to track the viewership of the weekly behavioral modules
Future Directions

• Larger trials to establish efficacy

• Evaluate in other populations

• Examine behavioral maintenance

• Identify strategies to increase rate of engagement with shared content

• Examine of the utility of various interactive features

• Explore the potential of other social media services
Thank You!

PHYSICAL ACTIVITY