Finding Effective Technology-Based Tools for the Promotion of Healthy Lifestyles During COVID-19
Today’s Conversation ...

Consider the landscape of technology-based tools available to support healthy lifestyle behaviors.

Decide what to look for when choosing a program, thereby enabling you to successfully navigate the very large market of remote programs and apps intended to promote healthy lifestyles.

Discuss what makes implementation successful, and how to overcome (inevitable) challenges.
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People with obesity who contracted SARS-CoV-2 were 113% more likely than people of healthy weight to be hospitalized, 74% more likely to be admitted to an ICU, and 48% more likely to die.

A constellation of physiological and social factors drives these grim statistics:

The biology of obesity, including impaired immunity, chronic inflammation, and blood that’s prone to clot, all of which can worsen COVID-19.

And, because obesity is so stigmatized, people with obesity may avoid medical care.

“...morbidity and chronic disability now account for nearly half of the U.S. health burden, and improvements in population health in the United States have not kept pace with advances in population health in other wealthy nations.”


Figure 3. Number of Deaths and Percentage of Disability-Adjusted Life-Years Related to the 17 Leading Risk Factors in the United States in 2010 for Both Sexes Combined

<table>
<thead>
<tr>
<th>Risk factors and related deaths</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietary risks</td>
<td>400,000</td>
</tr>
<tr>
<td>Tobacco smoking</td>
<td>300,000</td>
</tr>
<tr>
<td>High body mass index</td>
<td>200,000</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>150,000</td>
</tr>
<tr>
<td>High fasting plasma glucose</td>
<td>100,000</td>
</tr>
<tr>
<td>Physical inactivity and low physical activity</td>
<td>50,000</td>
</tr>
<tr>
<td>High total cholesterol</td>
<td>40,000</td>
</tr>
<tr>
<td>Ambient particulate matter pollution</td>
<td>30,000</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>20,000</td>
</tr>
<tr>
<td>Drug use</td>
<td>10,000</td>
</tr>
<tr>
<td>Lead exposure</td>
<td>5,000</td>
</tr>
<tr>
<td>Occupational risks</td>
<td>3,000</td>
</tr>
<tr>
<td>Low bone mineral density</td>
<td>2,000</td>
</tr>
<tr>
<td>Residential radon</td>
<td>1,000</td>
</tr>
<tr>
<td>Ambient ozone pollution</td>
<td>500</td>
</tr>
<tr>
<td>Intimate partner violence</td>
<td>500</td>
</tr>
<tr>
<td>Childhood sexual abuse</td>
<td>500</td>
</tr>
</tbody>
</table>

Leading risk factors related to DALYs were **dietary risks**, **tobacco smoking**, **high body mass index**, **high blood pressure**, **high fasting plasma glucose**, **physical inactivity**, and **alcohol use**.
Considerations When Choosing a Program

- Will people use it to improve their health?
  - Acceptability, feasibility, usability

- Will its use result in measureable behavior change?
  - Efficacy

- Will it result in clinically significant improvements in health outcomes?
  - Effectiveness

- Does it work in the “real world”?
  - Adoption, implementation, dissemination
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Will people use it to improve their health?

1. A person must be motivated to want the app/program

2. A person must be able to afford the app/program (and the connected device – a smart phone, a computer, a tablet)

3. Once the app/program is acquired and installed, the person needs to remember to use it/wear it/update it (and recharge it)

4. The app/program must be able to track targeted behavior(s)

5. Assuming information is collected with some accuracy, data must be presented back to the user in a manner that can be understood, motivates action, and sustains that motivation toward improved health
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Will its use result in measurable behavior change?

Behavior change occurs as an interaction between three necessary conditions:

- **Capability**: Psychological or physical ability to enact the behavior
- **Motivation**: Reflective and automatic mechanisms that activate or inhibit behavior
- **Opportunity**: Physical and social environment that enables the behavior

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Systematic review of reviews of intervention components associated with increased effectiveness in dietary and physical activity interventions

Colin J Greaves, Kate E Sheppard, Charles Abraham, Wendy Harden, Peter Schwarz, The IMAGE Study Group

Abstract

Background: To develop more efficient programmes for promoting dietary change (e.g., to prevent type 2 diabetes) it is critical to ensure that the intervention components associated with increased effectiveness are included. The aim of this systematic review of reviews was to identify which intervention components were associated with increased change in diet and/or physical activity in individual participants.

Methods: MEDLINE, EMBASE, CINAHL, PsycINFO, and the Cochrane Library were searched for primary research studies published in English from January 2000 to January 2010 that included any dietary or physical activity interventions targeting diet and/or physical activity in adults at risk of developing type 2 diabetes. Two reviewers independently selected reviews and rated methodological quality. The relationship between intervention components and effectiveness was extracted, graded, and synthesised.

Results: Of 3856 identified articles, 30 met the inclusion criteria and 129 analysis could be extracted. These included causal analyses (based on randomisation of participants) and indirect measures (based on comparison of intervention versus control groups). The most effective intervention components were information about risk, social norms, intention formation, goal setting, feedback on progress, self-monitoring, behavioral contracts, practice, social support, role modeling, stress management, and time management.

Evidence-Based Behavior Change Techniques

- Information about risk
- Social norms
- Intention formations
- Goal setting
- Feedback on progress
- Self-monitoring
- Behavioral contracts
- Practice
- Social support
- Role modeling
- Stress management
- Time management

Recommendations for producing measurable (and clinically meaningful) behavior change:

- Use well-defined, established behavior change techniques
- Engage the social support of others
- Target both diet and physical activity

Greaves et al 2011 BMC Public Health; 11:119;
Abraham and Michie, 2008 Health Psychol; 27(3):379-387
What to Look for When Choosing a Program

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• Will it result in measurable behavior change?
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• **Will it result in clinically significant improvements in health outcomes?**
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• Does it work in the “real world”?  
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Will its use result in clinically significant improvements in health outcomes?

Efficacy of weight loss interventions for overweight children: a meta-analyses of 61 RCTs

McGovern 2008 J Clin Endocrin Metab 93:4600-4605
What to Look for When Choosing a Program

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• Will it result in clinically significant improvements in health outcomes?
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• Does it work in the “real world”?
  • Adoption, implementation, dissemination
Also, and critically, basic needs security (food, housing, finances) must be considered.

Adapted from Stokols D. 1996 Am J Health Promot 10(4):282-298 Translating social ecological theory into guidelines for community health promotion
Today’s Conversation ...

Consider **the landscape** of technology-based tools available to support healthy lifestyle behaviors.

Decide **what to look for** when **choosing a program**, thereby enabling you to successfully **navigate** the very large market of **remote programs** and **apps** intended to promote **healthy lifestyles**

**Discuss what makes implementation successful, and how to overcome (inevitable) challenges**
There are (325+) thousands of apps for that ...
Popular New Exercise App Just Tells Users They Ran 5 Miles A Day No Matter What
“A key challenge is to ensure that all people enjoy the benefits of digital technologies. We must make sure that innovation and technology helps to reduce the inequities in our world, instead of becoming another reason people are left behind. Countries must be guided by evidence to establish sustainable harmonized digital systems, not seduced by every new gadget.”

Dr Tedros Adhanom Ghebreyesus
Director-General, World Health Organization

Content analysis of commercial health promotion and weight loss apps: A Cautionary Tale

• "Majority lacked any expert recommendations"¹
• "General lack of theoretical content"¹
• "Insufficient evidence-informed content"²
• "Apps with more evidence-based strategies are least popular amongst consumers"³

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What is the “best” digital app or program to promote health behavior change?

*Engaging*
*Functional*
*Aesthetically Appealing*
*Credible*
Evaluating the quality of health mobile apps

Mobile App Rating Scale: A New Tool for Assessing the Quality of Health Mobile Apps

Stoyanov R Stoyanov\textsuperscript{1,2*}, MRes(Psych); Leanne Hides\textsuperscript{1,2*}, PhD(Clin); David J Kavanagh\textsuperscript{1,2}, PhD; Oksana Zelenko\textsuperscript{2,3}, PhD; Dian Tjondronegoro\textsuperscript{2,4}, PhD; Madhavan Mani\textsuperscript{1,2}, MSc

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Stoyanov et al JMIR mHealth uHealth 2015;3(1):e27
MARS Checklist Information Criterion: Contains high quality information from a credible source (1 = minimum, 5 = maximum)

- **Accuracy of app description (in app store).** Does the app contain what is described?
- **Does app have specific, measureable, and achievable goals?**
- **Quality of information:** Is app content correct, well written, and relevant to the goal/topic of the app?
- **Quantity of information:** Is info presented within the scope of the app, and comprehensive but concise?
- **Visual information:** Is visual explanation of concepts – charts, graphs, videos – clear, logical and correct?
- **Credibility:** Does the app come from a legitimate source?
- **Evidence base:** Has the app been trialed or tested? (must be verified by published evidence from the scientific literature)
- **Data Safeguarding and Privacy (not one of the criterion but very important)**

Stoyanov et al JMIIR mHealth uHealth 2015;3(1):e27)
Accuracy of app description = Does the app contain what is described?

“Lose weight with MyFitnessPal, the fastest and easiest-to-use calorie counter for iOS. With the largest food database by far (over 5,000,000 foods) and amazingly fast and easy food and exercise entry, we'll help you take those extra pounds off! And it's FREE! There is no better diet app – period.”
Does app have specific, measurable, and achievable goals?
Quality of information: Is app content correct, well written, and relevant to the goal/topic of the app?
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Visual information: Is visual explanation of concepts – charts, graphs, videos – clear, logical and correct?
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Evidence base: Has the app been trialed or tested? (must be verified by published evidence from the scientific literature)

Effectiveness of a smartphone application for weight loss compared with usual care in overweight primary care patients: a randomized, controlled trial.

Laing EY, Mengione CM, Tseng CH, Leng M, Vaisberg E, Mahida M, Bholat M, Glazier R, Morisky DE, Bell DS.

Abstract

BACKGROUND: Many smartphone applications (apps) for weight loss are available, but little is known about their effectiveness.

OBJECTIVE: To evaluate the effect of introducing primary care patients to a free smartphone app for weight loss.

DESIGN: Randomized, controlled trial. (ClinicalTrials.gov: NCT01650337).

SETTING: 2 academic primary care clinics.

PATIENTS: 212 primary care patients with body mass index of 25 kg/m² or greater.

INTERVENTION: 6 months of usual care without (n = 107) or with (n = 105) assistance in downloading the MyFitnessPal app (MyFitnessPal).

MEASUREMENTS: Weight loss at 6 months (primary outcome) and changes in systolic blood pressure and behaviors, frequency of app use, and satisfaction (secondary outcomes).

RESULTS: After 6 months, weight change was minimal, with no difference between groups (mean between-group difference, \(-0.30\) kg [95% CI, \(-1.50\) to \(-0.95\) kg]; \(P = 0.63\)). Change in systolic blood pressure also did not differ between groups (mean between-group difference, \(-1.7\) mm Hg [CI, \(-7.1\) to \(-3.8\) mm Hg]; \(P = 0.56\)). Compared with patients in the control group, those in the intervention group increased use of a personal calorie goal (mean between-group difference, \(2.0\) d/wk [CI, \(1.1\) to \(2.9\) d/wk]; \(P < 0.001\)), although other self-reported behaviors did not differ between groups. Most users reported high satisfaction with MyFitnessPal, but logs decreased sharply after the first month.

LIMITATIONS: Despite being blinded to the name of the app, 14 control group participants (13%) used MyFitnessPal. In addition, 32% of intervention group participants and 19% of control group participants were lost to follow-up at 6 months. The app was given to patients by research assistants, not by physicians.

CONCLUSION: Smartphone apps for weight loss may be useful for persons who are ready to self-monitor calories, but introducing a smartphone app is unlikely to produce substantial weight change for most patients.

PRIMARY FUNDING SOURCE: Robert Wood Johnson Foundation Clinical Scholars Program, National Institutes of Health/National Center for Advancing Translational Sciences for the UCLA Clinical and Translational Science Institute, and the Resource Centers for Minority Aging Research Center for Health Improvement of Minority Elderly under the National Institutes of Health/National Institute on Aging.
Data safeguarding and privacy

MyFitnessPal Terms of Use

We may provide a translated version of this Agreement, the Privacy Policy or any other operating rules, policies and procedures regarding the Services, in other languages for your convenience. Please note that the English language version of these documents is the version that governs your use of the Services and in the event of any conflict between the English language version and a translated version, the English language version will control.

1. AGREEMENT

These Terms of Use (the "Agreement") constitute a legally binding agreement by and between MyFitnessPal, Inc. (hereinafter, "MyFitnessPal") and you ("You" or "Your") concerning Your use of MyFitnessPal's website located at http://www.myfitnesspal.com/ (the "Website") and MyFitnessPal mobile phone applications (the "Applications") and the services available through the Website and Applications (the "Services"). By using the Services, You represent and warrant that You have read

MyFitnessPal Privacy Policy

MyFitnessPal, Inc. (hereinafter, "MyFitnessPal") is committed to respecting the privacy rights of users of the Website and MyFitnessPal mobile phone applications (the "Applications"). MyFitnessPal created this Privacy Policy to explain its information collection and use practices and the protection of Your information when You visit and use the Website and Applications. Any terms capitalized but not otherwise defined herein shall have the respective meanings set forth in the MyFitnessPal Terms of Use.

This Privacy Policy is only applicable to the Website and Applications and does not apply to any websites or applications that are owned or operated by third parties ("Third-Party Websites/Applications"), which may have data collection, storage and use practices and policies that differ materially from this Privacy Policy. For additional information, see the section concerning Third-Party Websites/Applications, below.

BY USING THE WEBSITE AND/OR APPLICATIONS, YOU REPRESENT AND WARRANT THAT YOU HAVE READ AND UNDERSTOOD, AND AGREE TO THE TERMS OF, THIS PRIVACY POLICY. IF YOU DO NOT UNDERSTAND OR DO NOT AGREE TO BE BOUND BY THIS PRIVACY POLICY, YOU MAY NOT USE THE WEBSITE AND/OR APPLICATION.
MARS checklist **Subjective Quality** criterion

- Would you recommend this app to people who might benefit from it?
- How many times do you think you would use this app in the next 12 months if it was relevant to you?
- Would you pay for this app?
- What is your overall star rating of this app?
  - One of the worst ⭐
  - One of the best ⭐⭐⭐⭐⭐⭐

Stoyanov et al JMIR mHealth uHealth 2015;3(1):e27)
In summary ...

- There are HUNDREDS OF THOUSANDS of apps for that
- Some are great, many are not
- The same ‘rules of engagement’ apply to mobile apps and digital & remote programs as face-to-face approaches
- There is no ‘best’ app - but you can serve as ‘guide on the side’ and help provide additional scrutiny of existing tools
Melanie Hingle, PhD, MPH, RDN
Associate Professor of Nutritional Sciences, Public Health, and the Bio5 Institute
Finding Effective Technology-Based Tools for the Promotion of Healthy Lifestyles

Mike Lopez
Extension Program Specialist II
Family and Community Health
MLLopez@cg.tamu.edu
Our Goal Today

1. Explore Howdy Health website and program offerings
2. Discuss recruitment to online programs
3. Highlight practice-based program activities offered
4. Share opportunities and lessons learned
Thank you to our local County Extension Agents, program partners and participants across Texas for their continued support!

“I benefitted physically by developing endurance. My canine family benefitted because they got to go walking/exploring most days! Best of all, though, was walking with my college-age son, home due to COVID-19. He joined me most days. We talked about things we’d rarely talked about before — things really going on in his life, things he values and believes in, all sorts of things. I think we both treasured our evening walks, enjoying beautiful sunsets and experiences together. I feel closer to him now than I have since he was a child.”

— WAT! Adult Program Participant
Thank You!