Wearable Fitness Tracking Improves Self-Efficacy for Exercise

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Background

- Self-efficacy is the belief in one’s ability to accomplish a task, such as exercise.
- Physical activity participation is elevated among individuals that have greater intrinsic self-efficacy for exercise.
- Wearable fitness trackers are devices, usually worn around the wrist, that monitor user information related to fitness and health.
- The present study examines the impact of wearable fitness tracker technologies on self-efficacy for exercise and physical activity levels.

Methods

- 198 family medicine patients participated in this cross-sectional study (average age = 47.55, ranging 18-79 years).
- Each participant recorded weekly physical activity habits; survey questions derived from International Global Physical Activity Assessment.
- Participants also completed the 9-question Self-Efficacy for Exercise Scale (0 - 45 total score, 0 = no self-efficacy for exercise, 45 = maximal self-efficacy for exercise).
- Wearable fitness device user total self-efficacy for exercise scores were compared to non-device users (Standard Two Sample T Test).
- The Two Sample Kolmogorov-Smirnov test for relative internal consistency was utilized to assess the reliability of the self-efficacy for exercise survey.

Results

- Wearable fitness tracking device users were found to have higher levels of self-efficacy for exercise than non-users across all participating ages, genders, and ethnicities (p < .05).
- Self-efficacy for exercise scores were distributed normally (Two Sample KS = .092), indicating significant survey validity.
- Participants reported an average increase in physical activity levels with the concomitant use of their devices, reflecting an association between physical activity levels and wearable fitness device use.
- One potential explanation for the associations between wearable fitness device use, self-efficacy, and physical activity involves wearable fitness technology’s use as a tool for generating positive behavioral modification of exercise habits among users.
- Technological devices, for example mobile devices, have been shown to increase physical activity levels, supporting the mechanism described above and illustrated below:

![Frequency Distribution of Self-Efficacy Scores](image)

![Self-Efficacy for Exercise Scores](image)

- Table 1: Group Statistics, Total Self-Efficacy

<table>
<thead>
<tr>
<th>Device User</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>124.00</td>
<td>25.52</td>
<td>8.52</td>
<td>.76</td>
</tr>
<tr>
<td>YES</td>
<td>74.00</td>
<td>28.42</td>
<td>7.94</td>
<td>.93</td>
</tr>
</tbody>
</table>

While using their wearable fitness device, device users participated in an average of 153.38 additional minutes of physical activity per week (self-reported).

![Performance Experience](image)

- Self-efficacy is the belief in one’s ability to accomplish a task, such as exercise.
- Performance Experience
- Social Persuasion
- Vicarious Experience
- Imagination Experience
- Physical and Emotional States

Conclusions

- Future study design should aim to explore the relationships between wearable fitness technology and behavioral modification, and also to understand the role of wearable fitness device use in the clinical setting as a tool for improving health outcomes.

References