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INTM 1600 – Introduction to Interactive Media

# The Motivational Impact of Wearable Fitness Trackers

In today's society, everyone knows that exercise is one of the most important factors to a healthy lifestyle. Children are taught from a young age to go outside and play for at least an hour a day. Gyms are more accessible and the popularity of jogging is near an all-time high in recent years, yet the adult obesity rate has only grown from 30.5% in 1999 to 42.4% in 2018 according to the CDC ("Adult Obesity Facts"). Much needs to be done to combat this obesity problem in America, and much has been done including producing many public service announcements about exercise, passing laws to put nutrition facts on food and drink products, and requiring physical education all the way through high school, but technology is a major aspect in the field of health and fitness. Since its creation, the wearable fitness tracker has been able to motivate users to continuously exercise on a regular basis and drive those into a healthy way of living.

The origins of the wearable fitness tracker can be traced all the way back to Abraham-Louis Perrelet in 1780 with the invention of the pedometer, a device that tracks how many steps and sometimes the distance one takes. Not much development happened for many decades until 1965 when Yoshiro Hatano developed the manpo-kei, a pedometer with the set goal of reaching 10,000 steps every day. While this daily step goal was not based on any scientific basis, it was the first wearable fitness tracker that was developed intended to have a fitness goal for the user. As is discussed later, setting personal goals and milestones is one of the key components to fitness motivation. The next largest innovation in technology that would relate to fitness trackers was when Bluetooth was made for the consumer in 1999. This would lead to numerous aspects

of the modern wearable fitness tracker such as Nike+iPod in 2006, which was a device in the user's shoe that would send fitness data to their iPod Nano; the ability to connect and share with a smartphone; and other additional functions such as wireless earbuds to connect with and play music on. On the market today, there are several brands of wearable fitness trackers, but the largest ones are Fitbit, Garmin, Apple, and Samsung, with currently Apple being the top producer of the market with the Apple Watch. However, Fitbit was likely the first company to bring the wearable fitness tracker to the mainstream as it functioned mainly as a fitness tracker but had several other features making the product somewhat like a smart watch. The market for the wearable fitness tracker is only increasing as the technology is quite new and has been incredibly popular in the last decade, with about 21% of Americans using them in 2019 (Vogels).

Wearable fitness trackers have come a long way in the last few decades and learning the functionality and technology behind them is important. Taking the Fitbit wristband for example, due to their simple design and effectiveness, it takes many different points of data to track the fitness rate of the user. It can track steps, altitude or flights of stairs traversed, total distance traveled, current fitness intensity, quality of sleep if worn overnight, heart rate, and location using GPS tracking. A majority of these data points are able to be calculated by a particular sensor within the wristband called the Microelectromechanical System, which is able to detect acceleration in up to three directions, along with some sophisticated software in order to calculate certain data such as steps. Through tracking this data and manually entering food and drink intake of the user, the Fitbit is also able to calculate calories consumed and burned allowing for detailed dieting plans that helps the user make healthy choices when eating. This leads to the key success mark of wearable fitness trackers: their ability to create and set personalized fitness goals for each user. Before the development of wearable fitness trackers,

many people would have to pay for a personal trainer to help set fitness and dietary goals that met each person's way of living which was quite costly, or they would need to have the knowledge to know how to track calorie intake and fitness level throughout the day in order to know what goals are needed to set while also being able to daily calculate if the fitness goals were reached. Both methods were very time consuming and sometimes costly, but now with wearable fitness trackers, setting health goals can be easily created or, even better, automatically calculated and updated in order to help progress the user to reach those goals and even move further past original fitness goals. This is what predominantly led to the popularity in wearable fitness trackers as they are relatively affordable and able to make personalized fitness objectives. Humans are goal-oriented creatures, and by setting goals and encouraging users to reach past them, wearable fitness trackers are able to motivate the user to continually achieve those goals.

The motivational power behind the wearable fitness tracker is not all just supposition, but in fact there have been several research papers and studies indicating this effect. One study found that wearing a FitBit wristband caused the subjects over a 16-week period to increase their moderate-to-vigorous physical activity (MVPA) bout by 38 minutes per week, a change that over doubled the MVPA of the subjects from the start of the study (Cadmus-Bertram et al.). A similar study found similar results in MVPA bout minute per week increase (Finkelstein et al.); however, in this study, another group was incentivized to accumulate a high amount of exercise by cash and another was not, which initially sent the cash group to the highest MPVA bout minute per week rate. However, once the incentives went away after six months, the cash group MPVA bout minute had been cut in half after another 6 months whereas the non-incentive Fitbit wearing group more than doubled their MVPA bout minute per week over that same period, showing the longer lasting effectiveness of motivating the user. Not only do wearable fitness

trackers encourage users on a long-term basis to exercise more, but even on a day-to-day basis too. According to a 2017 study where many wearable fitness tracker users were surveyed, almost every two out of three people stated that they did "something 'extra' during the day in order to reach a certain target reported by [their] fitness tracker" (Chan). Another important factor in which fitness tracking technology can encourage increased physical activity is in social fitness data sharing. This sharing is not exclusive with wearable fitness trackers, but they have made it far easier to do so allowing people to become competitive about their fitness or just overall encouraged to exercise more when seeing others doing the same. The same 2017 study found that over 70% of wearable fitness tracker users noticed significant differences in their activity from their engagement with others.

Wearable fitness trackers are nothing new, in fact, they are hundreds of years old, but with the development of the smartwatch and popularity of products such as the Fitbit wristbands or the Apple Watch, they have become mainstream and a part of an estimated fifth of the U.S. population. Wearable fitness trackers have the ability to greatly motivate the users into increasing their fitness levels and live an overall heathy lifestyle through the processes of easily accessible personal fitness data reading, healthy goals being set for each user personally, and the ease of sharing fitness data socially. The future for wearable fitness trackers seems to be heading into the smaller setting, with many looking into creating a ring-styled tracker, but for now and for a significant amount of time, it appears that the wristband and smartwatches are the top markets for wearable fitness trackers due to their multiuse functionality. Wearable fitness trackers are ingrained in our society and will further grow to impact more of our daily lives.

Works Cited

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