

# Using transmedia games and wearables to encourage fitness in children

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## ABSTRACT

Studies show that the degree to which children move around is a good predictor of overall fitness. In addition to being fitness trackers, wearables also have the potential of being fitness encouragers. We have built a wearable device that encourages its players to actively move in order around to participate in an engaging transmedia collection-type game. We propose that transmedia gaming done on a wearable device on which movement is encouraged is a promising way of engaging young players intellectually and physically in game narratives as well as encouraging them to be active.

## Author Keywords

Transmedia, wearable technology, fitness tracking, biometrics

## ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous

## INTRODUCTION

This work concerns the intersection of transmedia game design and wearables that encourage activity in children. Most games oriented towards children, even those played on wearables, encourage sedentary playing positions. This is a major problem with many games for children: they tend to encourage a sedentary lifestyle. This clearly is a threat to the overall fitness of children. Games and game-oriented wearables cannot be seen to decrease the health or fitness to those they are marketed towards. Gaming for children should at least reach the threshold of 'do no harm'.

Wearables, with their many sensors and games that run on them can also be designed in to encourage movement. If children are less sedentary their overall fitness is expected to improve. Since, in many obesity in children is

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a major concern, this approach could be helpful towards health and fitness in children. The goal of this research is to produce intellectually and physically engaging wearable devices and games involving narratives for children designed to encourage activity and fitness.

## THE PROMISE OF 'EXERGAMES'

Exergames are ones that encourage or require movement in their players. In order to work they both have to be shown to actually require physical activity, and they also have to be adequately engaging and interesting to provide incentive for people to play them [2]. Activity that is expected to have a significant fitness effect tends to be rather strenuous. The results of a new regime of exercise may take months to appear. An effective exergame must encourage people to start moving more and it must be sufficiently interesting for people to continue working at it. Like gym memberships, the novelty of exercising often wears off quickly. This is a rather difficult standard for a game or device to achieve. The most prominent examples of exergames are those played on the Nintendo Wii.

Whitehall, et al. surveyed the number of calories expended while playing exergames and found that there is a wide range of values. Typically, these games are marketed towards children, who find them fun to play. There is also a large market for exergames – if they actually do encourage fitness over the long term – for the elderly, where the negative effects of sedentary lifestyles are even more problematic than with children [1].

## BIOMETRICS

There is a strong correlation between heart rate and energy expenditure [2]. Activities that engage the whole body tend to be more effective for fitness than ones that engage individual limbs. One way of encouraging whole body movement is to attach several sensors to player's limbs. Some exergames (e.g. Wii) allow pseudo-movement: minor movement read incorrectly by device sensors as major body movement. Exergames should be designed to prevent 'cheating.' Measuring more aspects of activity, such as body and limb movement, and heart rate more accurately measures real activity that will likely have a real effect on fitness.

## WEARABLES THAT ENCOURAGE MOVEMENT

### TRANSMEDIA NARRATIVES

Basic idea of this combination: - If children play the - It integrates an existing transmedia property called 'Time Tremors' - Goal: engage children with a transmedia, encourage them to engage in movement

Wearable devices are useful for recording biometric data. The ebbs, flows, mental and physical capacities of people's bodies inform their lives. When viewed over time, and organized into a useful format, this data can be seen as a type of personal narrative. It is not just a stream of unrelated data; it can be structured to have a 'narrative' arc.

If bodies are capable of becoming sources of important narratives then to measure aspects of people's bodies, their mobility, their actions, their positioning in space and time, in a structured way, such narratives could possibly be useful for explaining people's lives to themselves.

The concept of transmedia provides a helpful structure for structuring biometric data. Transmedia enables narratives to span multiple devices and media channels. These narratives are authored by writers intentionally, with explicit and carefully engineered connection points between media platforms. Despite these transition points, the integrity of the narrative must remain intact.

This research examines the connection between biometric data and how it might be structured into narratives similar to interactive transmedia narratives. Both narrative and transmedia are important, though sometimes quite hidden, aspects of modern lives. Narratives, stories that people construct to explain their actions, inform all aspects of interior and social life. Internal narratives seem important for our psychological makeup.

Certain points in any narrative that are more important than others. For instance, in a media property called Time Tremors (a series involving pre-teen children and their cosmically evil teacher) it is when ominous, supernatural things start happening to the protagonists, such as when toy bears start talking, bugs invade a classroom or when a so-called time tremor is triggered. These are special inflection points within the narrative that demand special attention.

In a similar fashion there are also inflection points in internal narratives; these are points in people's lives when life takes a different direction. Wearable device are useful by their ability to measure and identify these important 'inflection points.'

In transmedia the viewer has some ability to exercise choice and to customize their narrative experience. Transmedia narratives must be designed to allow for this kind of non-prescribed navigation. This gives an inherent modularity to its content.

Narratives generated by bodies as they navigate the world is similar to narratives written to span multiple media venues: both are modular, customizable, and depend on the personal experiences of the viewers.

### CONCLUSION

Children spend an inordinately large number of hours playing games. One approach to increasing the value of this time spent is to convert some of them into so-called 'exergames.' This type of game has the promise of increasing activity and fitness in the children who play them. It is not difficult to engage children in a game for short period of time. However, healthy habits with respect to activity requires a long-term commitment and high levels of physically and intellectual engagement. Our approach is to integrate and to increase the engagement of players using the device of transmedia gaming. The narrative appeal of transmedia should increase the incentive of physical activity, not by the appeal of heightened fitness, but by the desire of players to explore narratives.

### ACKNOWLEDGMENTS

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### REFERENCES FORMAT

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