

The Effect of Exercise on Internal State Dynamics

Krishna Bathina¹, Onur Varol², and Johan Bollen³

¹Indiana University, bathina@indiana.edu

²Northeastern University, onur@northeastern.edu

³Indiana University, jbollen@indiana.edu

The effects of exercise on physical health are well documented. Exercise can lead to weight loss, muscle development, increased energy, and reduced risk of chronic diseases. Exercise has recently been shown to have advantages in mental health as well, such as reducing anxiety and distress [1] and improving self-esteem. Regular exercise has even been shown to be effective in schizophrenic patients [2]. In spite of these benefits as well as being completely non-invasive, exercise is still not considered a mainstream treatment option for improving mental health.

In the last 10 years, fitness wearables such as Nike+ and Fitbit have become increasingly popular. These tools, typically in the form of a watch, wristband, or smartphone application, can be used to track exercise time, calories, and even heart rate levels. Most of these applications also include social features, such as automatically posting the outcomes of an exercise session to social media after a workout is completed. The Endomondo application, for example, will post "I just finished (exercise) (distance) (unit) in (time) with #Endomondo #endorphins" on Twitter. Most other companies follow this pattern of having a convenient "share" button that posts the exercise information along with the company's hashtags.

We identified large numbers of Twitter users that posted at least one tweet with an automated exercise message and a company hashtag. For each user, we downloaded their entire timelines from the Twitter API providing a longitudinal record of their exercise activities. We then identify changes in internal states of the individual involved by examining the features of tweets posted at different times before and after the exercise session. We further qualify our analysis by differentiating between types of exercise, such as biking, swimming, and running. Finally, we examine the effects of "overtraining syndrome" in runners. While regular exercise has many benefits towards mental health, excessive exercise, contrary to expectations, has been shown to impair mental health [3]. By classifying runners, we show patterns between intensity and mood in order to find the optimum amount of exercise.

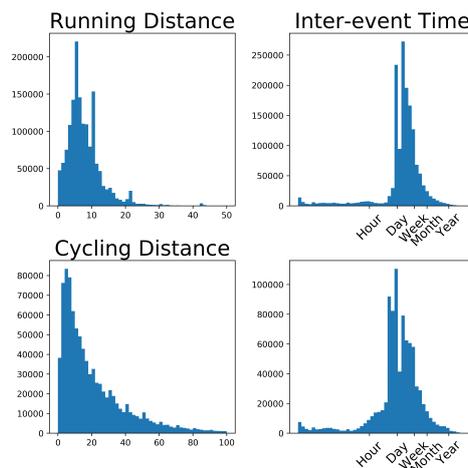


Figure 1: Distance (Km) and Inter-Event Time of runners and cyclists on Twitter.

References

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