
Sports as an Example Domain for Collection of Personal Information

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Abstract

Sports is a good example domain for understanding how to deal with collection, understanding, and analyzing personal data, since special purpose tools for this has been available in sports for a long time. Our previous work in sports indicate that new measures might help athletes to make use of their collected data. We believe that the thinking around new measures also is relevant for personal information in general.

Author Keywords

Sports, bio-data, sensors, sense-making.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; See <http://acm.org/about/class/1998> for the full list of ACM classifiers. This section is required.

Introduction

Sports and physical exercise is one of the first domains where it became possible for the general public to log data about themselves, first through commercial biosensors such as heart rate monitors and more recently through a variety of apps and activity trackers. Many athletes, recreational as well as elite, also kept paper diary over their exercise long before digital tools were available to support them in data collection.

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Since the sport domain has long standing practices on data collection, we believe that sports and exercise can provide a useful example domain when it comes to understanding how people collect data, interact with it, or make the data meaningful.

Research has shown that it is often difficult for sports technology users to understand and analyze their data, and many athletes rarely return to it [2-4, 6], even though they enjoy the fact of gathering, keeping, and thinking about it [7]. Our prior work has lead us to believe that new measures could help athletes connect to, understand, and interact with their data to make it more meaningful in both long term and short term perspectives.

A specific measure that has proven highly versatile and powerful is heart rate. Runners have for a long time organized their practice around various exertion levels. The availability of cheap and reliable heart rate monitors has fundamentally restructured how many people conduct their training, letting heart rate levels guide their workouts rather than speed or perceived effort. This has even created new forms of interactive technologies e.g. within gaming [5] and broadcasting where heart rate levels are presented to TV-audiences as a measure of effort level.

Here, we will briefly describe some of our prior work and then discuss how new measures could benefit sports activities, as well as how our experience with data collection from the sports domain is relevant in the broader perspective of personal information.

How Endurance Athletes Use Technology

We conducted a study of how endurance athletes use technology in their exercise, primarily heart-rate monitoring sports watches [6]. They all used the sports watch for all exercise sessions, and most of them saved all the data the watch logged. Some of them also used additional apps for data logging. However, they looked very little at their data and hardly did any analysis at all. They knew their “normal” heart rate level in certain places of their sessions so they could assess themselves live, but did not do much other analysis. Three elite athletes participated in the study, national level orienteers, which had coaches and support from the Swedish Federation of Orienteering. Not even those athletes really analyzed their data in relation to their experience and their result. They reported looking at more high level data such as the composition of the overall exercise plan, mix of session types, and the personal comments.

These findings led us to believe that perhaps new measures would help athletes understand their data.

Experimenting with a new measure

To explore how a new measure could work in sports settings we designed Drift, an application for orienteering - an outdoor navigation sport that combines fast running with cognitively demanding navigation in the terrain [1]. One key skill in orienteering is the ability hold a particular path of running, simply put - to “run straight”. This is an important part of orienteering practice and Drift measures and provides feedback on how far from the ideal path an orienteer has deviated.

A study of Drift show that the measure of deviation was highly versatile. Participants saw a number of novel opportunities for using it and found it relevant to many practice activities and situations. It seemed to promote qualities in the activity such as playfulness and new forms of competition, which in the long run also can support motivation.

New measures

We argue that there is a need for novel kinds of representations and “measuring sticks” of sports performances. This is especially relevant for data such as heart-rate data which is highly individual. The fact that two individuals with equal physical capacity in most cases has different maximum heart-rate and different heart-rate thresholds means that there is a *lack of common reference points* for straightforward understanding, interpretation, and comparison between individuals. This requires a partially different set of aggregations than the current ones, in order to bridge individual variations. By developing a richer set of measures that connects to heart-rate rather than to speed and distance, it could be easier for athletes to perform workouts the way they had intended.

Moreover, the fact that people are not only driven by ‘hard’ goals in their training, but largely emphasized the “soft” elements, often without connecting them to the measurable goals, has consequences for what we put in focus in the design of technologies for these users. Given that it was primarily the bodily experiences and the joy they got from a really good workout or race that motivated several of our participants, we should explore ways of designing sports technologies that better match those drivers. This leads to the question of what kinds of measures

and perspectives current systems provide. Should data by necessity be considered as true or should it rather be one of many elements the build user experience. What new measures can we design that suites the variety of goals athletes have for their practice, such as getting to the perfect feeling in training and following their workout regimen. Current systems gather data that are seen as objective, such as distance, speed, time and heart-rate, and are consequently presented as such to the user. However, as our study shows, athletes have a variety of subjective ways of valuing their performance, which cannot straightforwardly be connected to the data in its current form. Thus, we need representations that relate to users’ individual and subjective measures for their performances.

The above argument for new measures are based uniquely at experiences from the sports domain. However, we believe that it holds quite true for personal information and life logging in general. In those domains, individuals logging data about themselves will also need help with interpreting the data, and the meaning will be dependent on context, personal experience and many other individual and contextual factors. Personal information in everyday life is no more objective truth than in sports, and we live our lives in a highly subjective and experiential way.

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