

Title of Study: Personal Informatics for Athletes

Name of Principal Investigator: Carman Neustaedter

Department, School or Faculty: School of Interactive Arts & Technology, SFU

Chair of Department: Marek Hatala

Collaborators: Brett Wakefield

General Description

Recent advancements in technology have led to an increase of its adoption within the endurance athletic community. Swimmers, cyclists, and runners often use devices that couple Global Positioning System (GPS) with other technologies such as heart rate monitors, power meters, accelerometers, and cadence sensors (Malkinson, 2009). Furthermore, advancements in web-based technologies provide these athletes with training resources such as logs and online coaches (Malkinson, 2009). Through this combination of wearable and online technologies, athletes are able to not only receive real-time information, such as speed and distance, but they can also analyze each workout in its entirety after the training is complete. The ability to access such data begins to bridge the gap between sport science and the athlete as this personal informatics data provides individuals or coaches with the opportunity to perform complex analysis on athletic performances, and the ability to tweak or structure future workouts accordingly.

This research project will examine the increasing role that technology and personal informatics have in endurance sport planning, training, and monitoring. Furthermore this project aims to evaluate the current use of technology within this athletic community and develop an understanding of potential areas where these personal informatics and sport specific data can be better integrated with the athletic training process, and coaching communities.

Recruitment

Participants will be recruited via several strategies:

- *Snowball sampling:* Participants will be recruited via family, friends, and colleagues. This will involve people forwarding on our advertisement to others they know who might be interested. Our contact information will be included should interested candidates want to participate.
- *Social media:* Posts to Facebook, Twitter, Google+ and Craigslist.

Please refer to **Appendix A** for sample recruitment content.

We will recruit interested adult participants over the age of 18 years who:

- Do not have any major physical (i.e., immobility) or cognitive disabilities (i.e., diagnosis of a mental disability).

Location of Study

This study will take place in person and can be completed at any location of the participants' choosing. This will likely occur at the SFU Surrey or SFU Burnaby campuses.

Methods

Participants will be asked to complete in a semi-structured interview once they have given their informed consent. The interview will ask them about their practices of logging personal athletic

data (e.g., number of runs, timing of runs), or receipt and viewing of this information from others (e.g., as an athletic coach). See **Appendix B** for sample questions.

Remuneration

Participants will not be paid for participation.

Benefits and Risks

Participants will not benefit directly by participating in the study though they will contribute to broader scientific knowledge and understand. The risks of the study are expected to be none or minimal as all questions are about mundane details about one's personal data recording related to athletics.

Data Collection

Data will be collected in the form of interview responses, which will be audio recorded with the participants' permission. All data will be kept anonymous as participants will not be required to enter any personal identifying information. Data will be stored on a secure SFU server and kept for three years or until the study analysis is completed. At this point, it will be permanently destroyed.

Analysis

We will use standard qualitative analysis techniques such as descriptive statistics, and narratives to analyze participant responses. Common themes and patterns from the study will be extracted based on the observations.

Appendix A: Sample Recruitment Content

Do you record athletic performance data about yourself?

Do you receive athletic data from others?

Researchers from Simon Fraser University are looking for you to participate in an exciting study about personal data collection for athletics.

To be eligible, you must:

- Not have any major physical (i.e., immobility) or cognitive disabilities (i.e., diagnosis of a mental disability).

We want to understand:

- What are your current motivations and practices for recording or viewing personal data about athletic activities?
- What tools would be useful for recording and viewing personal data about athletic activities?

Contact: bww2@sfu.ca

Appendix B: Sample Interview Questions

Background Questions (Part 1)

To begin the interview I would like to ask you a couple of basic questions regarding your previous/current coaching experiences.

1. What sport(s) are you currently coaching / Have you coached in the past?
2. How many years coaching experience do you have?
3. How/why did you get involved with coaching?
4. How many times per week do/did you hold a workout or practice?
5. Are there any other people that you collaborate with for any tasks related to coaching?

Coach-Athlete Interactions (Part 2)

I would now like to ask you a series of questions regarding the coaching process or methods related to any coach-athlete interactions.

1. How many athletes are/were you responsible for?
2. As a coach, are you present at every practice/workout? or are there times when the athletes must complete practice on their own time?
 - a. If so, how are these workouts/practices being communicated to the athlete(s) and visa-versa
3. Do you actively monitor athletes improvements or declines in performance?

- a. If so, how are these improvements or declines monitored? (what type of measures are being monitored to assess the athlete's performance)
 - b. Does this have an affect on future workouts or practices for the athletes? Please explain.
4. Do you keep records of athlete performance from practices or events?
- a. If so, how are these documented or collected?
 - b. What type of information is documented?
 - c. What are your main reasons for documenting these performances?
 - d. How are you currently storing these records?
 - e. Do you ever look at previously recorded records at a later day? If so, often?
 - f. Are these records ever used to make comparisons with newer or more recent performance records? If so, over what timeline are the records compared. (year to year, month to month, etc).
 - g. Is additional data ever recorded along with these records (such as weather, mood, any illnesses or injuries etc).

Coaching Methodology and Planning. (Part 3)

I would now like to ask you a couple of questions to understand a bit about the process involved when creating a training program or workout schedule for your athletes.

1. Can you explain a little bit about the planning process involved with your competitive season? (Anything from writing individual workouts to choosing which races/events to focus on)

Additional - if not answered in explanation:

- i. Do you follow any type of periodization while planning workouts or practices? (adequate rest weeks, peaking for specific games, events or races)
 - ii. Do you use any athlete data to structure training programs and schedules. (for example workouts can be structured so that an athlete performs in a certain heart rate zone, or at a specific wattage output)
 - iii. What types of tools or software do you use to do this type of work (calendars, paper and pen, excel, TrainingPeaks, etc)
 - iv. Are the planned workouts the same for all of your athletes, or are there different plans for different athletes or types of athletes? If so, how does this affect the scheduling/planning work.
2. Do you ever use data or performance records from previous seasons to construct future programs or workouts? If so, what type of things are important to analyze?

Additional - if not answered in explanation:

- i. Do you ever look at trends in athlete performances to determine how future programs/workouts should be structured. (For example if athletes peaked too early in the previous season, would this affect how you structured the practices for the next season?)
- ii. Do you ever analyze contextual factors, such as weather, mood, exam periods or stressful times of the year, in order to change or adapt the training accordingly. (For example have more indoor practices if weather had a negative affect on training in the previous year)

Technology and Personal Informatics Systems. (Part 4a)

This last part of interview is split into two parts. First, I would like to get your thoughts on some of the current technologies available to the endurance athletic community. In the second part, I will show you a series of screen shots from existing athletic recording systems and will ask a series of questions in that relate specifically to the data within the examples.

1. Do any of your athletes currently use any type of smart technology to record, analyze or, check that the status of their fitness levels. (Heart Rate monitors, power meters, GPS, pedometers, cadence, or any others)

- a. If so, do you as a coach have access to this data?
 - b. Would any of this data help you with your coaching process in regards to that particular athlete?
2. Do you know if any of your athletes are using any of the online systems to record his/her workouts and performances? (Garmin, Strava, nike+, Runkeeper, MapMyRun/Ride etc)
 - a. If so, do you as a coach have access to this data?
 - b. Would any of this data help you with your coaching process in regards to that particular athlete?

Technology and Personal Informatics Systems Exercise (Part 4b)

I would like you to take a look at this screenshot from Garmin Connect (appendix a), an athletic tracking and personal informatics website.

Imagine you are this athlete's coach, and this page displays the results from a recent workout you had the athlete complete.

1. Look through the sections of the page, can you describe what each of these sections are and how they might be beneficial, or not useful to you as the coach of this athlete.
2. From a coach's perspective, is there anything on this page that is missing that would be beneficial to see in order to monitor this athlete's progress or further discover trends in this athlete's workout behaviors? If so, please explain.

a.

Now I would like you to take a the same workout this time from Strava (appendix b), an athletic tracking and personal informatics website that allows athletes to compare themselves against other athletes.

Imagine you are this athlete's coach, as well as the other athletes shown on that page. This page displays the results from a recent workout you had your athletes complete.

1. Look through the sections of the page, can you describe what each of these sections are and how they might be beneficial, or not useful to you as the coach of these athletes.
2. From a coach's perspective, Is there anything on this page that is missing that would be beneficial to see in order to monitor this athlete's progress or further discover trends in this athlete's workout behaviors? If so, please explain.

Lastly, I would like you to look at this example from Nike+ (appendix c). Another system that allows users to track and monitor his/her performances.

In comparison to the other two examples, how does this example provide data that is more useful or not as useful to you as a coach?

Conciliation & Wrap-Up Questions (Part 5)

I would now like to conclude the interview by asking you a couple of short wrap up questions.

1. Have you previously seen or had experience using systems similar to the ones shown in the previous part of the interview?
 - a. If so, are you using these systems to monitor any of your athletes performances?
 - b. If not, now that you have had a brief overview of parts of the application, would you consider using some type of technology similar to these if it were integrated within your training program/work out schedule? Do you think these systems could bring surface valuable information about your athletes?
 - a.