Reconfiguring Our Data: A Duoethnography on Chronic Health and Physical Activity through the Lens of Fitness Trackers

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Abstract

Does a run count if it is not logged and datafied? What about intentionally or unintentionally missing a run? Does missing a scheduled run count if it is not logged and datafied? In this paper, we grapple with these and other questions as we reflect on, discuss, and critique our interactions with our physical activity data as individuals with a chronic health condition. We describe the preliminary results of a six-week duoethnography study where we use our Garmin wearable devices – and the data collected and generated by them – as our object of study. We draw from critical and feminist perspectives on data to interrogate what is and is not captured by the data and reflect on the temporality of physical activity, data, and our chronic health conditions. We conclude by discussing three considerations on how data could be reconfigured to meaningfully account for our chronic health conditions.

CCS Concepts

• **Human-centered computing → Interaction design**; **Empirical studies in HCI**.

Keywords

Data; Personal Data; Physical Activity; Chronic Health; Fitness Trackers.

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1 Introduction

Fitness trackers are widespread devices used to monitor overall health and well-being and motivate individuals to engage in physical activity and increase their performance. These devices continuously collect and generate various forms of digital-trace data, often sensitive and intimate. In the context of Garmin wearable devices – targeted explicitly to *"all kinds of athletes"*, these include: (1) digital communications (e.g., messages of encouragement, likes), (2) equipment (e.g., running shoes, bike model), (3) physical activity (e.g., daily steps, frequent running routes), and (4) self-reported physiological signals (e.g., weight, date of menstruation), and (5) sensed physiological signals (e.g., resting heart rate, respiratory rate), among many others [21]. Other systems and data can also be integrated, such as body weight from a digital scale and glucose levels from a continuous glucose monitor sensor).

The field of Human-Computer Interaction (HCI) has explored people's interactions with fitness trackers and wearable devices. With a focus on elite and recreational athletes, Tholander and Nylander [20] discussed the *"measured"* and experiential, felt, or *"lived"* aspects of performance and how these could and could not be supported through technology. Indeed, tensions between what is measured and what is experienced are widely discussed, with people in online communities even debating: *"If you forget your Garmin, do you feel the run doesn't count since it's not logged?"* [15]. On the one hand, there is plenty of critique of datafied bodies underlining how datafication reduces a complex embodied experience into discrete and contextualized data points [13], and how the data collected is often difficult to interpret and must be actively contextualized and interpreted to be meaningful [9, 11, 14]. On the other hand, data have proven helpful and critical in supporting people in managing their health and physical activity. For instance, supporting semi-professional athletes in managing their training load throughout their menstrual cycle [22], and individuals with chronic illness in monitoring their disease [10], for instance, by noticing changes in their data, or presenting their data to health and care professionals [2]. Here, data can serve as validation [10], confirmation of body sensations [11], and an enabler of meaningful discussions [14]. As amateur athletes with chronic health conditions, we grapple with these tensions in our day-to-day lives as we strive to be physically active and partially rely on our Garmin wearable devices and other sources of data to do so. Simultaneously, as HCI researchers, we approach our data with a critical perspective and curiosity; we strive to notice and often challenge it. In what follows, we unpack these tensions, drawing from feminist and critical perspectives on data.

Several scholars in the fields of Science and Technology Studies (STS), HCI, and design have challenged common notions and imaginaries around data, such as that they are *clean* or *objective* (e.g., [1, 7, 9, 18]). For instance, Yanni Loukissas [12] argued that data are *local*, deeply attached to and shaped by the places and contexts where they are created and used. Thus challenging the assumption that data are *smooth* and *singular* and underlying how they (in plural) are plural and heterogeneous. Building upon feminist scholarship D'Ignazio and Klein [8] propose **Data Feminism** as

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Week	Prompt
1	Noticing what is in the data and what is not during and after physical activities.
2	Reflecting on what data could be. How is it in the data, and how would we like to be.
3	Looking at each other activities, what we can see and what we understand from them.
4	Looking at each other activities, what we can see and what we understand from them.
5	Moving away from the exercise itself and instead paying attention to our (de)motivations to exercise or not in a particular moment.
6	Creating and tracking our how metrics, what it is important to capture, and how we feel pre-, during, and post-workout.

Table 1: Weekly prompts that guided our diary entries

an approach that foregrounds the power differentials embedded in (extractivist) data practices and interrogate, challenge, and change certain practices in data science that reinforce existing inequalities. They describe seven principles of Data Feminism: (1) **Examine Power,** concerning the scrutiny of power dynamics by asking *who* questions (e.g., Who benefits and is neglected? Whose priorities are prioritized or overlooked?); (2) **Challenge Power,** challenging and changing an unjust status quo by taking action (e.g., collecting counter-data, imagining and proposing an alternative); (3) **Elevate Emotion and Embodiment,** valuing multiple forms of knowledge by challenging the perceived neutrality and objectivity of the data and elevating *"the knowledge that comes from people as living, feeling bodies in the world"* [8]; (4) **Rethink Binaries and Hierarchies,** examining the assumptions behind counting, measuring, and classification in the process of creating knowledge (e.g., What is counted and what is not?); (5) **Embrace Pluralism,** including a broad range of perspectives and participants to contribute their knowledge to a data project at various stages by cultivating solidarity and a shared understanding, (6) **Consider Context:** recognizing the context in which the data is generated; and (7) **Make Labor Visible,** recognizing and valuing the work(-ers) involved in data projects by making them visible.

In this Work in Progress paper, we, Alejandra (A) and Beatrice (B), draw on a six-week duoethnography study where we investigate and critique our interactions with the data collected and generated by our Garmin wearable devices as we manage our physical activity and chronic health. We identify as women living with chronic health conditions – A with endometriosis and B with type 1 diabetes – and we both consider ourselves amateur athletes. We regularly engage in running, cycling, swimming, and strength training, and we routinely use Garmin wearable devices to monitor our activity. We present the initial results from our study, describing how our chronic health are often missing from our data, discussing what is and is not captured by the data, and the temporality of data and chronic health conditions. We conclude by discussing three considerations on how data could be reconfigured to meaningfully account for our chronic health conditions.

2 Method: Duoethnography

We conducted a six-week duoethnography study where we focused on the intersection of sports, chronic health conditions, and self-tracking practices. Duoethnography is a qualitative research methodology that positions researchers as co-participants in an evolving dialogue, using their lived experiences to interrogate social phenomena [19]. Unlike traditional ethnography, which studies the phenomena from an external perspective, duoethnography involves two or more researchers engaging in a reflexive dialogue and meaning-making, critically examining their own experiences in relation to the research focus [6]. This allowed us to uncover how our interactions with our Garmin devices and other self-tracking technologies mediate our engagement with physical activities while living with chronic health conditions. Our process was incremental and cumulative, building on our dialogue and reflections week by week and returning to previous discussions.

Throughout the study, we maintained weekly diaries to document our personal experiences with physical activity and chronic health data. Each week, we individually recorded reflections on our physical activity (e.g., daily steps, strength training sessions, runs), symptoms, and how our Garmin devices captured—or failed to capture—our lived experiences. This was followed by weekly meetings, where we discussed our diary entries, deepening our analysis through dialogue and shared interpretation. The meetings were video-recorded for further analysis. We used the auto-transcription feature on Microsoft Teams to produce transcripts of each session.

To structure our reflections, we developed weekly prompts that guided our diary entries (see Table 1). These prompts originated from the principles of Data Feminism around what is and is not "counted" or accounted for in the data and the significance of considering the context behind the data. The first two weeks focused on individual engagement with personal data, aiming to notice what was (not) represented in our activity records. In weeks three and four, we shifted our attention to each other's data, exploring what we could infer from shared workout activities on the Garmin mobile application or platform and discussing the insights that emerged. The final two weeks examined our motivation, considering how our chronic conditions, emotions, and contextual factors shaped our willingness to exercise and what aspects of self-tracking felt meaningful to us. We used digital and paper-based media to collect diary entries, allowing for flexibility in how we recorded and reflected on our experiences. This multimodal approach enabled us to capture a rich and nuanced understanding of our interactions with fitness-tracking technologies and their implications for people managing chronic health conditions. It also offers valuable methodological insights for researchers engaging in reflexive or co-experiential inquiry.

This work was approved by the Ethical Review Committee at Birmingham City University. We did not anticipate significant ethical concerns beyond potential discomfort in discussing sensitive health topics. To mitigate these, we had regular discussions and check-ins to foster a supportive environment, allowed breaks, and ensured autonomy over personal disclosures—aligning with feminist principles of care and agency [3, 4]. We pseudonymized the diary entries and transcripts, removing potentially identifiable information, and securely stored all data on Birmingham City University servers. For analysis, we transferred all our diary entries (i.e., digital and paper illustrations, screenshots, and annotations) to a Miro board to get familiar with the data. We inductively coded the entire dataset, i.e., all the diary entries, and identified broader patterns in the codes. Guided by reflexive dialogue and iteratively revisited entries to make shared meaning from our data, we developed initial themes – three of which we report in this Work in Progress paper. We expect to continue iterating on these themes and refining them to produce a robust reflexive thematic analysis [5] in the future.

Positionality Statement

We, **A** and **B**, are HCI researchers from Latin America and Southern Europe, currently based in Northern Europe. We have experience in participatory and qualitative research, and we have worked closely with marginalized and disabled communities. As women living with chronic health conditions—A with endometriosis and B with type 1 diabetes—we reflect on how our own bodies intersect with our research and our data. We are physically active and regularly engage in running, cycling, swimming, and strength training. We also prepare for races, triathlons, and bike-packing adventures. Both of us use Garmin smartwatches (A: Forerunner 265S; B: Venu 2S), which we use to track our activities. Notably, B selected her model for its ability to integrate glucose data from her CGM sensor via an external app, while A chose hers for its advanced performance analytics. Acknowledging the privilege of accessing these technologies, we critically consider how our data is shaped by, and in turn shapes, our experiences and understandings of physical activity.

3 Results

In this section, we describe three preliminary themes from our analysis: (1) missing data, (2) what is and is not captured by the data, and (3) the temporality of data and chronic conditions. We choose to report on these preliminary themes as they exemplify some of the feminist critiques of data and data science. For each preliminary theme, we provide a short description and contextualize it with quotes and diary entries, as well as an illustration (Fig. 1) that highlights how we experience or have experienced what is captured by the theme.

3.1 Missing Data and What is Missing from Data

Early in the process of reflecting on our experience and the extent to which it is captured by the data, we noticed how chronic conditions often impact our ability, motivation, and willingness to perform physical activity. This sometimes evokes emotional reactions, as we are both highly motivated to engage in physical activity and feel frustration, anger, and sadness when we are unable to do so.

> *"In some cases, I plan to go work out, but because of wrong calculations or other factors, my blood sugar level goes very high during the day. In that case, I feel very depressed because I feel the need to work out, by my chronic illness prevents me from doing that. But of course, I don't register any workout, and I can't record this and see some pattern."* (B)

Our data doesn't reflect the impact our chronic conditions have on our performance or our lack of performance. For instance, in A's case, the days of intense endometriosis pain mean missing a scheduled run, captured by Garmin as a rest day or an "empty day", or running slowly, captured by Garmin as a slow pace, or running with a heating pad (Fig. 1a), captured by Garmin as a run. For Garmin, A's missing a scheduled run is often an empty data point, while for A, missing a scheduled run is frequently an indication of intense pain and discomfort. A reflects on Garmin classifying her training load as "recovery" after skipping a few runs due to pain, and how these are partial and decontextualized in the data:

> *"I feel this is insufficient, as it doesn't allow me to contextualize why I'm feeling the need to recover. I'm not in "recovery mode" because I'm tired or because I feel my body needs it, but because I have pain and it prevents me from training as I would."* (A)

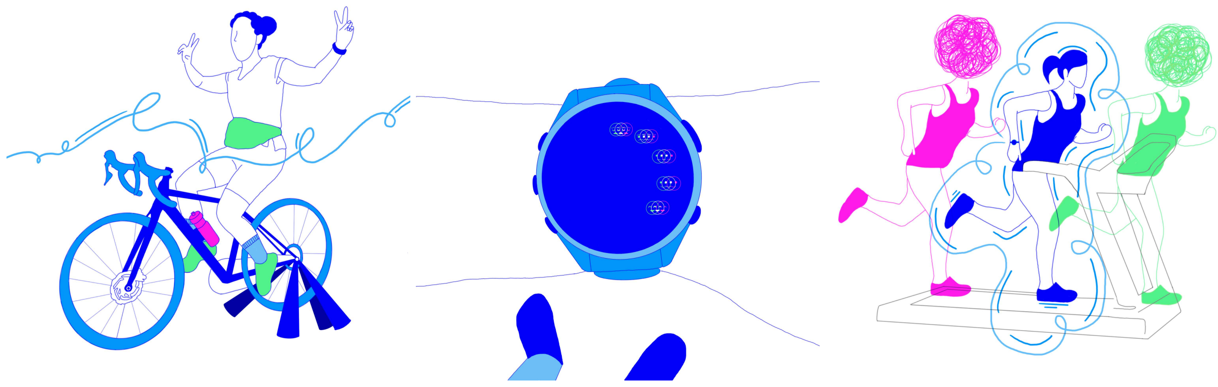
Consideration: Sports technologies should incorporate felt, emotional, and contextual aspects of the sports experience. These could include textual annotations and the possibility of capturing a missing activity or the reason for having missed an activity. This builds on the Data Feminism principle of **Elevating Emotion and Embodiment** by centering lived bodily experiences as valid and necessary data [8]. As in prior work [2, 14], our accounts show how embodied disruptions, like pain or glucose variability, are erased by current logics of what counts are a "valid" data point.

3.2 What Data Are and Are Not

How our Garmin devices configure data shapes how our physical activity and experiences with chronic health are captured and available for us to reflect upon and discuss. For instance, two critical factors for B's physical activity are her food intake and glucose level:

> *"For me, it's not only the physical activity that matters, but a lot of other different things. For instance, the food intake. If I get some kind of food before the workout, or during the workout, because maybe my blood sugar level is going too low... This is something that I need to, in a way, have a sense of. It is important to me to understand better my experience and how to adjust for the following sessions."* (B)

None of these are readily available through Garmin. Nonetheless, B found a way to integrate her continuous glucose monitor (CGM) sensor data with her Garmin device. This involved plenty of labor on B's side. On a similar note, we both critiqued Garmin's self-evaluation (Fig. 1b). Garmin allows its users to reflect "How did you/they feel?" after every activity, with a 5-point scale ranging



a

b

c

Figure 1: llustrations depicting the experiences of A and B. (a) When experiencing endometriosis pain, A sometimes resolves to alternatives such as cycling at home with a heating pad on her abdomen. (b) Garmin self-evaluation is an ambiguous experience for A and B when considering our chronic illnesses. (c) For Garmin, physical activity is quantified from the start to the end of an activity, while for B, what happens a few hours before and after is equally relevant.

from "very weak" to "very strong" and the perceived effort with a similar scale (from "light" to "maximum"). We found these options easy to use and straightforward when our chronic conditions were not impacting our physical activity. Yet, we both found them reductive and difficult to fill in when our chronic conditions impacted our physical activity. B reflected on her choice to stop an activity and record her self-evaluation:

> *"I had to stop during the workout. I could feel strong, but at the same time, I knew that it was better to stop. It is important for me to capture the [intensity] of my low."* (B)

Similarly, A reflected on the different meanings of feeling "very weak" or "very strong" concerning the presence or absence of intense pain. For instance, feeling "very strong" on a day of running in pain – despite performance – just because running seemed so difficult, and equally feeling "very strong" on a day of no pain and high performance. **Consideration:** Sports technologies should facilitate the integration of other sources and forms of data – for instance, sensor data regarding chronic conditions and qualitative self-reports. Here, we echo Karahanoğlu et al. [11] who advocate for incorporating more qualitative aspects, such as athlete feedback. This builds on the Data Feminism principle of **Rethinking Binaries and Hierarchies** by challenging reductive metrics (e.g., "very strong" or "very weak") and valuing interpretive labor needed to contextualize physiological signals [11]. It echoes findings in HCI research on the limitations of classification and rating systems in chronic illness management [10].

3.3 Chronic Conditions and Data Temporality

When using our Garmin devices to monitor an activity, we start the session a few seconds before the activity begins and stop it immediately after, with all data then being saved to the Garmin ecosystem. During workouts, we monitor certain metrics in real time – for example, keeping our heart rate within a specific range. Although Garmin does not currently support this functionality, B integrated an external application that overlays real-time glucose data onto her activity tracking. This enables B to make real-time decisions during workouts, *"I can have a look at when, for instance, my blood sugar levels start dropping."*

After the activity, we often review data to reflect on how the session went. Yet, as B points out, the captured timeframe is insufficient to fully understand how chronic conditions interact with physical activity (Fig. 1c):

> *"I really like this [overlay graphs] one, but at the same time I see a kind of limitation on this because for me this workout window is too short to have a kind of grasp of what happened on my blood sugar level and how the physical activity influences this [...] my workouts start at least two hour and 30 minutes before the actual workout and finish more or less one or two hours after because I have to understand how my blood sugar level reacted to the workout itself."* (B)

Planning and managing sport activities with chronic conditions involves a complex temporality not captured by conventional activity tracking. As B emphasizes:

> *"For me, physical activity is something that is really planned in advance. This is not something that is captured by any tracking app, you just start the activity as soon as you need to record your heartbeat or your physical activity."* (B)

Moreover, reflecting together on the temporality of our chronic conditions and data, we noticed how different our rhythms are. B's timeframe is highly granular—she receives glucose values every five minutes, prompting a continuous awareness of her condition across the entire day. In contrast, A's condition fluctuates more cyclically, often intensifying at certain points in her menstrual cycle and reducing in others. These differences highlight how expectations about "what counts as physical activity" are shaped by particular bodily experiences.

Consideration: Sports technologies should enable multiple ways of defining what constitutes an "activity" and allow tracking them accordingly —for instance, through pre- and post-activity tracking. This calls for a rethinking of time in line with the notion of *crip time*, where the clock bends to meet disabled bodies rather than disabled bodies being made to fit the clock [17]. Additionally, our exploration reconfigures normative understandings of time and productivity in relation to the body, as in [16]. This builds on the Data Feminism principle of **Consider Context** by foregrounding the non-linear and situated nature of chronic health management [8, 17].

4 Conclusion and Future Work

In this paper, we reflected on, discussed, and critiqued our interactions with our physical activity data as individuals with chronic health conditions, specifically endometriosis in A's case and type 1 diabetes in B's case. We described the preliminary results of a six-week duoethnography study where we used our Garmin wearable devices– and the data collected and generated by them– as our object of study. We described and discussed three preliminary themes: (1) missing data, (2) what is and is not captured by the data, and (3) the temporality of data and chronic conditions. As a Work in Progress, this paper offers a preliminary reflection and open-ended considerations. It offers a useful lens for others—researchers, designers, and individuals with chronic conditions—to critically engage with their own self-tracking data and practice. Our next steps include further development of the themes and designing our own metrics and data representations that account for and underline our chronic health conditions.

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