

Cycling for Fun, Not Fitness: Sports Tracking Is Not All About Performance

Daniel Harrison
Northumbria University,
Newcastle, UK

daniel.b.p.harrison@northumbria.ac.uk

ABSTRACT

In the summer of 2020, amid the COVID-19 pandemic, a ransomware attack took Garmin's Connect platform offline when athletes relied on it for motivation and social connectivity. Rather than lamenting the loss of support, the downtime prompted some cyclists to re-evaluate and reduce their reliance on tracking, providing a unique opportunity to investigate their motivations for tracking and the implications for design. Our investigation into online discussions during the outage reveals that cyclists stopped, or changed, tracking when the focus on performance undermined their enjoyment or conflicted with their intrinsic motivations, such as fun, adventure, and socialisation. This paper argues for the need to align tracking platforms with the motivations of diverse athletes, advocating for technologies that support, rather than dictate, athletes' goals. We present the overarching lesson that **technology should be inclusively designed with the needs and aspirations of a broader range of athletes**, moving away from a performance-centric focus to embrace broader motivations including enjoyment. This approach can enable platforms to flexibly support a broader range of cyclists' objectives, enriching the CyclingHCI literature and promoting a more inclusive narrative that prioritises "fun over fitness".

CCS CONCEPTS

• Human-centered computing • Human computer interaction (HCI) • Empirical studies in HCI

KEYWORDS

CyclingHCI, SportsHCI, Self-Tracking, Personal Informatics, Sports Technology, Harmful Informatics.

ACM Reference format:

Daniel Harrison. 2024. Cycling for Fun, Not Fitness: Sports Tracking Is Not All About Performance. In *CyclingHCI: Learning from Cycling, Discovering Lessons Learned from CyclingHCI. A CHI 2024 Workshop*, May 11th, 2024. 5 pages.

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

© 2024 Copyright held by the owner/author(s).

CyclingHCI: A CHI 2024 Workshop, Honolulu, HI, USA, May 12th 2024

1 INTRODUCTION

Cycle tracking has a history far predating the digital age, with mechanical odometers or "cyclometers", being used to measure the number of revolutions a bicycle wheel made as long ago as the late 19th century (e.g. [17]). These simple counters developed into models that could display speed and record distance travelled, initially using a mechanical "wheel" or gear, then with digital devices using a hall sensor, or reed switch and magnet attached to a spoke. Further advancements brought additional data such as trip distance and maximum speed, and other metrics such as heart rate. Following these advancements, it was not until much more recently that dedicated GPS bicycle computers were commercially available, with the Garmin Edge 305 introduced in 2005¹. Similar to the more accessible GPS tracking devices available today (including smartphone and smartwatch apps, dedicated GPS sports-watches, and GPS cycle computers from various manufacturers), these models used GPS chipsets to record the position of a cyclist and create a geospatial record of an activity. More recent models and advancements have significantly reduced barriers to entry, while providing increased accuracy and additional data. This broadened accessibility has resulted in a wider range of cyclists and other athletes tracking their activity, beyond more performance-driven athletes, to include more sports, leisure, touring and commuter cyclists. Other research (e.g.[19]) has shown that users are motivated to track different behaviours for a broad variety of reasons, and there is no reason to expect that sports tracking is any different. It is important to note that within this paper we inclusively define an "athlete" as any person who undertakes intentional exercise, without any expectations about their ability, performance, motivations, or the frequency of their exercise.

Companies such as Wahoo, Hammerhead, and Garmin now offer a broad range of devices capable of recording activities using GPS and other sensors. Leveraging this widespread adoption, platforms like Strava provide riders with detailed analysis, social sharing capabilities, and gamification features. These platforms have become ubiquitous among cyclists to track rides and performance metrics, set goals, connect with others, participate in challenges, compete on leader boards,

¹ <https://www8.garmin.com/specs/edge0506.pdf>

and share activities, tracking performance metrics such as speed, distance, elevation gain, power, and heart rate over time to measure progress. In addition to these performance-related functionality, these platforms also offer features aimed towards supporting mapping/ routing, and reflecting on experience, such as heat maps and photo sharing. Although services like Strava provide their own smartphone apps, many users rely on automatic Bluetooth or Wi-Fi synchronisation between their GPS devices and these platforms to seamlessly upload activity data.

The research presented within this paper was undertaken during the COVID-19 pandemic in 2020 when many athletes relied heavily on tracking platforms as motivation to continue being active under lockdown restrictions [17]. In July 2020, a widespread outage at Garmin, resulting from a ransomware attack disrupted the ability for Garmin devices to automatically synchronise with other platforms for nearly a week [12]. While activities could still manually be transferred and uploaded to sites such as Strava via USB, this additional friction led some athletes to stop recording. This paper examines how this event acted as a catalyst for some athletes to intentionally “abandon”, or significantly change, their tracking behaviours.

2 BACKGROUND

The personal informatics and self-tracking literature has grown immensely in the past 15-years, with research on individuals tracking a broad variety of different behaviours from productivity and finance, to physical activity, diet and health, amongst others. Challenges around short-term use and non-use and “abandonment” (e.g. [7,4,5]), and other critical perspectives on personal informatics have become increasingly prevalent during this time, and alternate models of temporal use have been proposed (e.g.[6,8]). As our understanding of the relationship between tracking and behaviour has grown, academics have begun to “decouple” the importance of longer-term use on positive engagement (e.g. [11,8]), and other work has focused on the impact that tracking has on users feelings towards activities themselves, which is not always positive (e.g. [1,2]) – we characterise these potentially negative relationships and outcomes as “*harmful informatics*”. Other issues such as reliance, dependency and misalignment can have unintended negative consequences on people’s engagement with the activity have also begun to be explored (e.g. [16]), but our understanding of the broader challenges, and potential unintended negative consequences to use of this platforms is still limited.

Cycling provides an interesting context as it includes a diverse range of participants and activities, from competitive athletes, recreational riders, commuters, and tourists. Technologies should support different needs and values, competitive cyclists focus on performance data, leisure cycling platforms must align with other motivations like fun, adventure, exploration, social connection, and reflection [13].

The COVID-19 pandemic encouraged many to cycle for exercise, utility, or wellbeing [10], indicating the activity’s diverse appeal. However, most technology aimed towards cyclists appears to focus on competitive athletes [9,14], despite most cyclists not fitting within this category. This paper examines how a disruption to tracking an activity, specifically cyclists using Garmin Connect during the 2020 outage, acted as a catalyst for users to stop, or change their use of the platform. Although we mostly focus on users of Garmin and Strava, because of the opportunity the Garmin downtime presented, the findings and discussion presented in this paper have implications beyond this, to include users of other devices and platforms. Our work builds upon the existing critical HCI research into relationships between tracking and tracked behaviours, contributes to the “harmful informatics” literature, and provides a critical perspective on the impact that platforms can have on an athlete’s relationship with the physical activity they undertake - highlighting misalignments between pervasive tracking systems and sporting activities meant for fun or enjoyment.

3 METHOD

We produced a list of key phrases and related hashtags (e.g. “Garmin Connect Down”, “Garmin Sync Problems”, #garmindown, #nogarminrules), to help identify and collect secondary online data from a variety of sources including social media posts (Twitter, Reddit, Instagram), blog posts, specialist forums, news articles and comments therein, from those who had in some way been impacted by the Garmin Connect outage. This was not intended to be a comprehensive or systematic review, but was instead driven by our initial online observations of people reporting stopping tracking during the downtime, so we therefore focused our efforts on data that mentioned, or alluded to, this phenomenon. We collected data between 29/06/2020 and 30/09/2020, with an emphasis on information published in a comparable and slightly earlier timeframe. Using publicly available data on blogs and social media is widely accepted, but does pose challenges around consent and re-identifiability, especially if original data is directly quoted. While our data is unlikely to be considered sensitive, to retain anonymity, we paraphrase quotes such that they are not re-identifiable.

We both inductively and deductively thematically analysed our corpus of data to better understand people’s motivations for stopping or changing tracking. Because this study aimed to explore *purposeful change related to goals and motivations*, rather than to create a comprehensive taxonomy of motivations for stopping tracking, we focused our analysis on these instances. As a result of the Garmin outage that inspired this work, the majority of our data relate to those using a Garmin device “connected” to an additional platform – in the majority of cases Strava. Because of the complex ways in which athletes and self-trackers utilise multiple technologies

(e.g. [19]), it was common for these platforms to be enmeshed with others.

4 FINDINGS

We identified a broad range of motivations behind people reporting to stop, or significantly change, their cycle-tracking behaviours— many closely align with factors discussed elsewhere in the literature, from ongoing security and privacy concerns, to challenges with hardware and battery life, problems with accuracy, or other technical challenges. Although it is interesting to consider why the outage acted as a catalyst for change following these realisations, especially within the context of the COVID-19 pandemic, in the interests of space and clarity we focus on factors related to incongruities between users behaviours and desires, and their usage of the platforms.

4.1 The impact of the COVID-19 pandemic

Given the timeframe of our research it is not surprising that the pandemic featured predominantly in our data. The pandemic led to a global “boom” in cycling: as a commuting solution, to avoid public transport; as a way to stay socially collected in an outdoors setting; and, simply because many had additional time due to unemployment. However, despite this growth, much of our data referenced rides being disrupted by pandemic restrictions, for example by having more local, and shorter activities, and restrictions preventing events and group cycling.

Posts within our data referred to concerns around recorded data acting as evidence of wrongdoing (related to restrictions), and some even referred to the “*Strava police*” – an account that was being used to comment-on, and report, activities believed to sit outside of the pandemic-related restrictions – adding further concern during that difficult time. Data also mentioned that people considered their sports and leisure rides differently during the pandemic, referring to them as an “*escape*” and an “*opportunity to connect with nature*”. Multiple data points referred to people experiencing a more “*natural*” or “*relaxing*” ride when not tracking, which encouraged them to reconsider their relationship with tracking.

4.2 Focus on performance incongruous with the activity, or personal goals

A dominant theme is the strong, sometimes negative, emphasis on athletic performance and improvement these platforms promote: “*Strava's provision of continuous, instant access to analytics and feedback prompts a relentless pursuit of comparison and affirmation for one's performance. This pursuit overshadows the fundamental pleasures of cycling*”. Athletes indicated this functionality did not match their goals and motivations, but was nonetheless something they engaged with due to the difficulty of avoiding this within the platforms,

which fundamentally changed how they approached cycling: “*Utilising Strava, I inadvertently exert additional pressure on myself to surpass my previous cycling performance*”.

While at first glance this might not appear to be a concern, as many might argue that the focus on self-improvement might result in better health and performance outcomes, this was demotivating for many making them feel “*inadequate with [their] performance compared to others*” – resulting in them deleting the recorded activities, or feeling “*deflated*” after being “*compelled to exert maximum effort to advance within Strava's social hierarchy*”. Furthermore, decreased athletic performance is a natural consequence of aging [3] so given this and the broad range of athletes, from commuters to leisure cyclists, using these platforms, it is not surprising that the strong focus on improved performance resulted in users disengaging or stopping tracking.

4.3 Focus on athletic performance resulted in reduced enjoyment of cycling

Many cyclists reported that the focus on performance metrics and competitiveness resulted in them enjoying their riding less, over time. One athlete mentioned, “*my concentration on increasing speed and bettering segment times stopped me engaging playfully with trail features, significantly diminishing the sheer pleasure of my rides*”. While platforms aim to motivate athletes, the strong focus on leader boards, KOMs/ QOMs, and continual self-improvement caused some participants to “*forget to have fun*” entirely. This reduced satisfaction and intrinsic motivation appeared to ultimately discourage riders, and undermine their original goals for cycling in the first place.

Several cyclists had started tracking simply log experiential aspects, like annual miles ridden, to produce heatmaps of their cycling adventures, or to share photos and use the social aspects. However, the platforms' intense emphasis on speed, power, and competitiveness metrics often proved distracting from users' original purpose. As one rider explained, “*my aim in recording my rides was simply to keep track of my annual mileage [...] Strava transformed this into a compulsive pursuit of surpassing segment records and climbing leader boards. I became so engrossed in the metrics that I lost sight of my initial intent to simply relish the joy of cycling*”. By shifting focus to discrete performance indicators over general riding enjoyment, misaligned tracking approaches diminished both the fun and activity levels of these cyclists.

4.4 Continuing to track and the features keeping users engaged

Within the data collected, some athletes claimed to have quit tracking altogether – at least temporarily: “*I've binned Strava, which kinda feels like breaking a big rule for cyclists these days. You know that saying, 'If it's not online, did it even happen?' Whenever someone says that, all I think is, 'So, if no one else*

knows, does it even count?". Another noted after deleting their account, "I ditched Strava and went old school with my bike rides – no tracking, just me and the bike. Now, I just ride based on how I feel". However, the majority did not want to entirely stop tracking, but instead wanted to continue with greater awareness of their motivations and goals. Some indicated the "enforced break" of the platform outage provided an opportunity to reflect and reset behaviours: "I stopped logging every single ride and got back to just having fun on my bike. These days, I might record a ride now and then to see how I'm doing on a fresh route, but I'm not obsessed with setting personal records on segments all the time". Still, without the ability to customise platforms, it is unclear if changed perspectives will persist long-term if the underlying design of the platforms remain consistent.

Many riders reported wanting to continue leveraging helpful features like activity logging, route mapping, heat maps, and social connections, but in a less performance-driven way. Some stopped using the more competitive elements of Strava but still recorded rides on platforms like Garmin Connect, to retain a personal record. Others switched platforms entirely while still tracking, one rider found, "I've stopped sweating over Strava's leader boards and segments. Now I just use Komoot to keep track of my rides and find cool new routes to check out when I feel like it". The outage and pandemic prompted athletes to reassess their tracking. However, some felt tracking was so ingrained that rides seemed invalid or unmotivating without it. As one athlete posted, "even though I rode 15 miles this afternoon, it feels as if it didn't happen because Strava didn't log it". Others particularly missed Strava's social features, particularly during lockdowns to stay connected with friends they could no longer ride with in-person. So, while most riders adjusted their habits in some way, for those deeply bought into particular features – stopping tracking entirely did not feel like a feasible option. This further indicates the importance of technology supporting flexible user needs.

5 Discussion and Lessons Learned

This paper highlights how sports tracking platforms appear to be designed with athletes chasing performance goals in mind, but that this can negatively impact engagement, enjoyment, and ultimately levels of activity, particularly for recreational riders with differing goals and motivations. As such, the overarching lesson we present is that **technology should be inclusively designed with the needs and aspirations of a broader range of athletes**. We argue that this principle applies not just to CyclingHCI but to all of those working in SportsHCI more generally, where designers of technology should be aware of and properly consider the various motivations, needs and requirements of the broad and diverse range of athletes who may be considered users.

The research presented in this paper is a first step towards understanding how technology can better support a diverse

array of athletes, facilitating their engagement with physical activity in a way that aligns with their personal goals, be they competitive or casual, without detracting from their enjoyment or negatively influencing their behaviour. More work needs to be done to better understand how SportsHCI and technology can be utilised to better support these athletes, by designing experiences that are positive, motivating, engaging, and fit within their wants and needs. We advocate for inclusive design that considers the varied needs and motivations of athletes, aiming to support a broad spectrum of individuals in their physical activity. Our future work is directed towards creating frameworks, guidelines, and prototypes for platforms that serve a wider athletic community. By developing tools and features that can be tailored to individual preferences, and by enhancing the social and experiential dimensions of sports engagement, we aim to foster a more personalised approach to sports technology that encourages and supports sustained participation across the cycling community.

REFERENCES

- [1] Christine Attig and Thomas Franke. 2019. I track, therefore I walk—Exploring the motivational costs of wearing activity trackers in actual users. *International Journal of Human-Computer Studies*, 127, 211-224.
- [2] Amid Ayobi, Paul Marshall, Anna L. Cox and Yunan Chen. 2017. Quantifying the body and caring for the mind: self-tracking in multiple sclerosis. In *Proceedings of the 2017 CHI conference on human factors in computing systems* (pp. 6889-6901).
- [3] Barry A. Baker and Yong Q. Tang. 2010. Aging performance for masters records in athletics, swimming, rowing, cycling, triathlon, and weightlifting. *Experimental aging research*, 36(4), 453-477.
- [4] James Clawson, Jessica A. Pater, Andrew D. Miller, Elizabeth D. Mynatt, and Lena Mamykina. 2015. No longer wearing: investigating the abandonment of personal health-tracking technologies on craigslist. In *Proceedings of the 2015 ACM international joint conference on pervasive and ubiquitous computing* (pp. 647-658).
- [5] Daniel A. Epstein, Jennifer H. Kang, Laura R. Pina, James Fogarty, and Sean A. Munson. 2016. Reconsidering the device in the drawer: lapses as a design opportunity in personal informatics. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (pp. 829-840).
- [6] Daniel A. Epstein, An Ping, James Fogarty, and Sean A. Munson. 2015. A lived informatics model of personal informatics. In *Proceedings of the 2015 ACM international joint conference on pervasive and ubiquitous computing* (pp. 731-742).
- [7] Daniel Harrison, Paul Marshall, Nadia Bianchi-Berthouze and Jon Bird. 2015. Activity tracking: barriers, workarounds and customisation. In *Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (pp. 617-621).
- [8] Daniel Harrison. 2020. *The Self-Tracker's Journey: situated engagement and non-engagement with personal informatics systems over time* (Doctoral dissertation, UCL (University College London)).
- [9] Benjamin McIlroy, Louis Passfield, Hans-Christer Holmberg, and Billy Sperlich. 2021. Virtual training of endurance cycling—a summary of strengths, weaknesses, opportunities and threats. *Frontiers in sports and active living*, 3, 631101.
- [10] Alexandros Nikitas, Stefanos Tsigdinos, Christos Karolemeas, Efthymia Kourmpa, and Efthymios Bakogiannis. 2021. Cycling in the era of COVID-19: Lessons learnt and best practice policy recommendations for a more bike-centric future. *Sustainability*, 13(9), 4620.
- [11] Heather L. O'Brien, Ido Roll, Andrea Kampen, and Nilou Davoudi. 2022. Rethinking (Dis) engagement in human-computer interaction. *Computers in human behavior*, 128, 107109.

- [12] Kan Olathe. 2020. Garmin issues statement on recent outage. *Businesswire.com*. Available from: <https://www.businesswire.com/news/home/20200727005634/en/>. Accessed 22/02/24.
- [13] Martin Porcheron, Leigh Clark, Stuart Alan Nicholson, and Matt Jones. 2023. Cyclists' Use of Technology While on Their Bike. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (pp. 1-15).
- [14] Amon Rapp and Lia Tirabeni. 2018. Personal informatics for sport: meaning, body, and social relations in amateur and elite athletes. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 25(3), 1-30.
- [15] Amon Rapp and Federica Cena. 2016. Personal informatics for everyday life: How users without prior self-tracking experience engage with personal data. *International Journal of Human-Computer Studies*, 94, 1-17.
- [16] Ian Renfree, Daniel Harrison, Paul Marshall, Katarzyna Stawarz and Anna Cox. 2016. Don't kick the habit: The role of dependency in habit formation apps. In *Proceedings of the 2016 CHI conference extended abstracts on human factors in computing systems* (pp. 2932-2939).
- [17] Henry Livingston. 1882. U.S. Patent No. 259,562. *Cyloimeter*. Washington, DC: U.S. Patent and Trademark Office.
- [18] Julia Lee Romero and Qin Lv. 2022. Global Impact of COVID-19 Pandemic on Physical Activity Habits of Competitive Runners: An Analysis of Wearable Device Data. *International Journal of Environmental Research and Public Health*, 19(19), 12933.
- [19] John Rooksby, Rost, M., Morrison, A., and Chalmers, M. 2014. Personal tracking as lived informatics. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 1163-1172).