

A Short Commentary On: “Would John Dewey wear a Fitbit? A pragmatist analysis of self-tracking technologies’ impact on habit formation”

Juraj Sikra¹, Diana Dimitrova², and Lea Sophie Singson²

¹Karlsruhe Institute of Technology, AIFB, Karlsruhe, Germany

²FIZ Karlsruhe – Leibniz Institute for Information Infrastructure, Eggenstein-Leopoldshafen, Germany

*Corresponding author: juraj.sikra@kit.edu

Introduction

Within the Digitalisation and Transformation of Research (DiTraRe) project, Razum et al. [1] postulate that sports science research data fall under numerous legal and ethical precautions. These precautions apply, e.g. to the processing of personal data by wearable devices such as Apple Watches and applications such as MyFitnessPal when processed for research purposes [2]. Whilst wearable devices have their benefits for sports science research, we believe that it is important to approach them from the standpoint of a critical friend. This is because we consider the production of wearables to be mainly commercially, rather than research, motivated, and for this reason many ethical, legal and philosophical concerns have not been addressed.

Objective

Our objective is to connect the commercial production of wearables with the ethical digitalisation of research by analysing the work of Wieczorek [2] based on its merits as well as specifically for the field of data protection in sports science research with wearables. Admittedly, our commentary does not address all the merits of the work. Instead, we supply a preliminary reflective commentary on the work’s relevance for the digitalisation of research and the data protection risks associated with research using sports wearables (i.e., self-tracking devices).

Methods

Our commentary is the result of a series of multi-disciplinary discussions from 18 September 2025 - 24 October 2025 between

ourselves as subject matter experts. We are two legal experts and one psychology expert. Firstly, each of us conducted an individual textual analysis [3] of Wieczorek’s [2] work to extract the key insights. Secondly, we analysed the text in line with the approach of Gillespie and Cornish [4], who describe how to use an inter-subjective reflection by experts. Finally, we accessed the work of Pruski [5], who wrote a short commentary on AI and informed consent.

Results

Wieczorek’s [2] work is intriguing and relevant for self-tracking wearables research because he places the user, rather than the smart watch, in the centre of his theorising. The main idea of his work stresses the importance of users being able to form reflective, flexible and self-developing habits during their self-tracking with wearables [2, p.5]. In doing so, Wieczorek steps away from externally quantifying the user [6] towards an interest in how the user is developed habitually as a human being. The reasoning within his paper can also be interpreted as a reclaiming of the user from the technology which, through its narrowed quantified approaches, has reduced the user’s autonomy. What is critical for our commentary is Wieczorek’s [2, p. 10] identification of the following 5 data management problems in wearables:

1. The users do not have a presentation of all the data collected about them.
2. The users can only access a small amount of data that is collected about them.
3. The users’ insight into their data is su-

perfidial in comparison to those that collect it.

4. The results displayed to the user are based on undisclosed calculations.
5. Wearables usually do not collect enough data to enable meaningful reflection of the results.

These data management problems pose challenges for the digitalisation of research with wearables, whereas the digitalisation of research requires the ethical and legal processing of data.

Discussion

Wieczorek [2] explores two aspects that need to be differentiated: Firstly, whether wearables use technology and data collection methods that are potentially harmful to users. Secondly, whether wearables are efficient in improving users as individuals from the standpoint of reflective habit formation. These distinctions are relevant from the EU law perspective.

European law balances the protection of individual rights vs. the enablement of free data flow and innovation¹. Regulations such as the AI Act [7] and the GDPR [8] adopt a risk-oriented approach for determining the protective measures required during research [9]. This supports Wieczorek's [2, p.18] call to ban dark patterns and manipulative nudging for wearables. However, they may not be considered a "high-risk" AI system under the AI Act [7] *de lege lata*², even though they track and process "health data." To be considered a "high risk" AI system, the trackers would have to be defined as a medical device according to the European Medical Devices Regulation (MDR) [10]. According to Article 2 (1) of the MDR a device is only classified as a medical device, if it is intended by the manufacturer to be used for specific medical purposes of diagnosis, prevention, monitoring, prediction, prognosis, treatment or alleviation of disease. Although digitalised research with wearables may fit this description, the manufacturers promote wearables as lifestyle

choices. Therefore, the process of wearables research digitalisation poses data protection risks for sports science which might not be captured by the MDR, but needs to be considered as it lacks the data protections of medical research.

However, the aforementioned restrictions do not address Wieczorek's [2, p.8] critique of the ineffective and counterproductive tracking method that uses a data-driven approach. Legal regulations cannot solve this problem completely either. This would lead to over-regulation and obstruct research digitalisation that should be enabled by the regulations.

Wieczorek [2, p. 9–10] acknowledges that collecting more data from people is impractical. Furthermore, it raises the question of whether extensive data collection beyond the health data already collected is justified for the purposes of digitalisation of research, and whether such extensive data collection would infringe the transparency and data minimisation principles prescribed by the GDPR [8].

According to Wieczorek [2] new technological design has to account for the quality of the model as measured in relation to the underlying problem. Additionally, changes in the problem and behaviours may also occur with time. Zliobaite calls this the "*concept drift* [11]." Applying the concept drift to the design of data-driven models, scientists and developers should construct self-tracking wearables that respect the written data protection principles³. Moreover, the development of self-tracking wearables must remain flexible to changes in measured behaviours to avoid the creation of an alternative digitalised research reality that no longer reflects the user's actual habits. For the above reasons we insist that the insights from the collected data should be cautiously interpreted by the sport scientists.

In conclusion, this commentary reflects our shared passion for Wieczorek's [2] user-centred technology and its role in the digitalisation of sports research that engages wearables to collect users' data.

¹See: Ruschmeier in Martini/Wendehorst KI-VO Art. 6 Rn. 104 of the AI Act [7] and Recital 7 of the GDPR [8].

²The law as it exists.

³For example, data accuracy, data minimisation and good scientific quality of the models as per Recital 71 GDPR [8] and AI Act [7].

References

- [1] M. Razum, F. Bach, S. Brünger-Weilandt, C. Scherz, F. Böhm, H. Sack, and M. Volkamer, “Digital transformation of research (DiTraRe),” 2024. doi: 10.5281/zenodo.11109405. [Online]. Available: <https://zenodo.org/records/11109406>
- [2] M. Wiecezorek, “Would John Dewey wear a Fitbit? A pragmatist analysis of self-tracking technologies’ impact on habit formation,” vol. 37, no. 1, p. 5, 2024. doi: 10.1007/s13347-024-00695-2.
- [3] G. Sorina, “Informal text analytics at the interface of theoretical research and education,” vol. 7, pp. 314–320, 2018. doi: Not available.
- [4] A. Gillespie and F. Cornish, “Intersubjectivity: Towards a dialogical analysis,” vol. 40, pp. 19–46, 2010. doi: 10.1111/j.1468-5914.2009.00419.x.
- [5] M. Pruski, “A short commentary on: Does black box AI in medicine compromise informed consent?” vol. 38, no. 44, pp. 43–44, 2025. doi: 10.1007/s13347-025-00870-z.
- [6] K. Ng and T. Ryba, “The quantified athlete: Associations of wearables for high school athletes,” vol. 7, p. 6317524, 2018. doi: 10.1155/2018/6317524.
- [7] M. Martini and C. Wanderhorst, *Artificial Intelligence Act: AI Act*. Brussels Commentary, 2026.
- [8] The European Parliament and The Council of the European Union, “REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL,” p. 88, 2016. [Online]. Available: <https://gdpr-info.eu/>
- [9] H. Rothstein, O. Borraz, and M. Huber, “Risk and the limits of governance: Exploring varied patterns of risk-based governance across Europe,” vol. 7, pp. 215–235, 2018. doi: 10.1111/j.1748-5991.2012.01153.x.
- [10] The European Parliament and The Council of the European Union, “Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 april 2017 on medical devices, amending Directive 2001/83/ec, Regulation (EC) no 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC,” 2017. [Online]. Available: <https://eur-lex.europa.eu/eli/reg/2017/745/oj/eng>
- [11] I. Zliobaite, “Learning under concept drift: an overview,” 2009. [Online]. Available: <https://arxiv.org/abs/1010.4784>