KU LEUVEN CAMPUS BRUSSELS
FACULTY OF LAW
The academic year 2022-2023

Safeguarding athletes' data: exploring consent and data protection in AI-Driven Sports

Promoter: J. DE BRUYNE

Master's thesis, submitted by
Saverio CAMPANALE
as part of the final examination for the degree of
MASTER OF INTELLECTUAL PROPERTY
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  https://www.kuleuven.be/english/education/student/educational-tools/generative-artificial-intelligence
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  https://2023.aclweb.org/blog/ACL-2023-policy/

ABSTRACT

Artificial Intelligence (AI) can be considered as an 'umbrella' term which covers several 'smart' technologies, and it is lately contributing to the development of several industries from an economical and technological perspective. AI tools are therefore a considerable aspect of the sports industry which needs to be further analyzed.

The technological developments in sports, which are undoubtedly linked to the enhancement of the latest AI tools available, do not come without risks.
Major risks lie within the data protection aspects involved in the processing of athletes' data. AI tools providers, and sports clubs or third parties, collect, process and store vast amounts of athletes' performance (health) data, which are sensitive according to Article 9(1) GDPR, and thus need an additional layer of protection due to their special nature.

The aim of this research is on the one hand to emphasize one of the core elements that is strictly related to the processing of data, such as the consent of the data subjects (athletes) when their sensitive data is processed. Consent requirements will be analyzed and, in parallel, some recommendations to sports institutions and relevant stakeholders will be provided also considering the (yet to be approved) AI Act proposal and the risk-based approach which might be useful to the enhancement of the sports industry in its entirety.

The creation of a legal framework is also important for one of the main topics currently at stake, namely the prevention of injuries which can be obtained thanks to the deployment of specific AI technologies recently developed. The prevention of injuries represents a major concern as it directly involves athletes' performance and health data which might be processed without a proper consent, as purposes can be multiple while consent has been provided for only one of the multiple purposes.

Nevertheless, there is not a simple answer to all the issues related to the deployment of AI tools in sports. As discussed in the research, sports institutions, together with sports clubs, athletes, and the European institutions, should work together to develop a solid legal framework related to the deployment of AI technologies in sports where all the relevant aspects of the processing of athletes' sensitive data is reflected. This is crucial for all the relevant stakeholders to preserve and improve the social relevance of sport in the European society.

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TABLE OF ABBREVIATIONS

AI	Artificial Intelligence
EC	European Commission
EDPB	European Data Protection Board
EP	European Parliament
EU	European Union
EUCJ	European Union Court of Justice
GDPR	General Data Protection Regulation
TEU	Treaty of the European Union
VAR	Video Assistant Referee
WP Art. 29	Working Party Article 29

I. Introduction

1.1. Context and relevance of the research

Artificial Intelligence (AI) and data analytics are two critical aspects of professional sports and play a significant role in the evolvement of the sports industry[1], i.e., improving athletes' performances, and from an economical perspective, sports clubs can benefit from the deployment of AI in different ways.

Even though AI technologies are already deployed for several purposes, the legal issues behind them have not been fully explored by scholars[2]. Considering that for the purpose of this thesis, only the European Union law framework will be considered, the General Data Protection Regulation is the starting point to discuss the multiple legal issues connected to the use of AI in sports, mainly concerning athletes' fundamental rights in the framework of data protection. In addition, the AI Act proposal[3] regulation will be scrutinized solely where relevant to this work.

AI is used to improve training techniques, as well as to help athletes to enhance their performances. It has changed the way in which elite sport is carried out by sports clubs - from an economic point of view giving the chance to clubs to monetize on athletes' performances, and from a pure performance perspective, offering clubs the possibility to participate to competitions exploiting the data originated by the AI tools deployed during the day-to-day work. AI can process and collect a great amount of data, it can support players in understanding how their body reacts to a certain treatment or measure the intensity of training and the impact that it has on their overall performances[4], as well as understanding and studying their physical limits and abilities.[5]

Furthermore, AI does not solely have an impact on the athletes' performances, but also on the actual sports, assisting or replacing referees in different disciplines, such as tennis (the "hawk") since 2006[6], or in football with the Video Assistant Referee (VAR)[7].

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[1] Artificial Intelligence: Application to the sports industry, PricewaterHouse Coopers, 2019

[2] A. Orlando, "AI for Sport in the EU Legal Framework," *2022 IEEE International Workshop on Sport, Technology and Research (STAR)*, Trento - Cavalese, Italy, 2022, pp. 100-105

[3] The Artificial Intelligence Act is a proposed regulation of the European Union, made by the European Commission in April 2021, with the aim of introducing a regulatory and legal framework for artificial intelligence. It includes all sectors; therefore it will have some relevance also in the context of sport.
https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.html - AI Act - version adopted by European Parliament on 14 June 2023.

[4] A. Jaspers, T. Op De Beeck, M.S. Brink, W.G.P. Frencken, F. Staes, J.J. Davis, W.f. Helsesn, *"Relationships Between the External and Internal Training Load in Professional Soccer: What can we learn from machine learning"*, *International Journal of Sports Physiology and Performance 2018, vol. 13 (5), 625-630.*

[5] M. Fierens, Artificial Intelligence in Sports: some legal and ethical issues, Technology and Society: the evolution of the legal landscape, p. 378, 2022

[6] *M. ANDRADA, "Could Robots Ever Be Referees", Sport.One, 2018*

The rise of AI, though, raises several concerns from a legal point of view, among others the issue of the ownership and exploitation of athletes' data[8], the power shift between sports clubs[9] and athletes, and the commercialization of athletes' data.[10]

In the last decades, indeed, sports clubs have collected and used an enormous quantity of biometric and biomechanical athletes' data, from heart rate to pitch speed[11]. In this regard, one of the tools deployed is the - informally - called 'sport bra' that several elite football players wear under their jerseys during matches and training sessions[12], as mentions Guilherme Passos, a physiologist with the Brazil national team, who emphasizes that the GPS tracking device is a useful addition to the arsenal available to backroom teams. "It gives an opportunity to monitor the team in a live way using the iPad, so it's easier to give the coach live feedback about how their session is going, so it's a very good tool for controlling the [training] load".[13]

Legal and ethical implications are evident, and the General Data Protection Regulation (GDPR)[14] helped to increase the level of attention on people's data and how these are important in modern society.

One of the questions that arises is whether the consent of athletes over the processing of their sensitive data is freely provided based on GDPR requirements.

The interplay between the prevention of injuries and the deployment of AI tools, that involves athletes' consent on the processing of their sensitive data, is crucial as sports clubs and organizations might collect additional, but not necessarily essential, data from athletes' performances.

Furthermore, the AI Act proposal[15] proposed framework could be of great importance in developing a system where a balance between sports clubs and athletes is achievable, leveraging on a risk-

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[7] Video Assistant Referee: https://www.fifa.com/technical/football-technology/football-technologies-and-innovations-at-the-fifa-world-cup-2022/video-assistant-referee-var

[8] N. Fonseca, M. C. Marquez, D. Esteves, Data ownership in individual sports: Narrative review, 2022.

[9] (Orlando, 2022)

[10] Among others, Flanagan (2022)

[11] J-F Grehaigne, P. Godbout, D. Bouthier, Performance assessment in team sports. J Teach Phys Educ 16(4):500–516, 1997.

[12] https://www.goal.com/en-au/news/footballers-dont-wear-bras-sporting-reasons-under-shirt-clothing-/1aakl5v6271f814s624c5ws52t.

[13] Ibid.

[14] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance)

[15] EU AI Regulation, 2021.

based approach that would identify the AI technologies that might potentially affect athletes through the misuse of their sensitive data. The AI Act framework can be relevant, in the context of sport, considering the interplay between the athletes' consent for the collection by sports clubs – the controllers - of their sensitive data and the use of some AI systems by sports clubs, which will constantly increase in the coming years. It would also be interesting to understand whether, considering the risks-based approach of the AI Act proposal[16], different requirements to obtain consent from the data subjects are needed, e.g., stricter requirements for data processed through high-risk AI systems. It is a challenging discussion that will be developed further in Chapter IV.

1.2. Subject matter and research question

Data analytics in sports is revolutionizing the relationship between sports organizations and athletes. The topic raises concerns as athletes' sensitive data are involved and potentially at risk if not processed safely and without necessary consent. GDPR is a great support as it provides rules on consent, which will be outlined in the next chapters. Nevertheless, one of the remaining questions is whether there is an imbalance between sports clubs and athletes concerning the latter's sensitive data and how such a challenge can be overcome.

Even though the so-called AI Act proposal is one step closer to becoming the first formal regulation on AI in the world[17], many questions arise about whether the AI Act proposal is a solid legal framework to be integrated by the sports industry stakeholders, considering that sports clubs must comply with the GDPR principles throughout all the phases of AI technologies which might be implemented by clubs. Issues surrounding the accuracy of data, data minimization vis a vis the purpose of data processing, and consent of athletes, to name a few, must be scrutinized. A major topic of interest for sports clubs and athletes is the prevention of injuries through AI tools, which logically involves the processing of athletes' health data and thus needs to be investigated further. As some authors point out[18], the use of AI in sports can be correctly framed within the proposed AI Act proposal especially regarding the risk classification of AI technologies based on the level of risks.

Considering the above concerns, the research questions I intend to answer are the following:

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[16] See Chapter IV for further insights.

[17] On 14 June 2023 the European Parliament has voted positively on the AI Act proposal, which create the foundation for a productive discussion with the Commission and the Council in the well-known trialogue process. https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.html - AI Act - version adopted by European Parliament on 14 June 2023.

[18] Among others, (Orlando, 2022)

Prevention of athletes' injuries in the context of AI-Driven Sports: how can a balance between performance analysis needs and protection of athletes' sensitive data be achieved?
To what extent the risk-based approach in the latest AI Act proposal can help the sports industry to thrive?

To answer these research questions, the following sub-questions will be addressed:

- *How does the sports industry deploy and use Artificial Intelligence tools?*

- *Why is athletes' consent relevant when AI tools are deployed to monitor their performance?*

- *Considering the potential power imbalance between athletes and sports clubs, how can it be ensured that athletes' consent is provided according to GDPR standards?*

- *Should European sports institutions, e.g., UEFA for football, incorporate issues stemming from AI into their main policy focus to develop a common understanding of the AI impact in sports?*

- *Are sports clubs subjected to the provisions of the AI Act proposal?*

This work aims to help institutions, sports clubs, athletes, and other relevant stakeholders, who are constantly confronted with AI, to understand the advantages that the utilization of AI offers, and more importantly to become aware of the legal risks regarding athletes' consent on the processing of their sensitive data. If this has not been provided lawfully and according to the GDPR standards, as it will be further analyzed in this work. Furthermore, the focus will also shift to the prevention of injuries in the context of AI-driven sports and how a balance between athletes' rights and sport clubs' interests can be achieved.

1.3. Methodology

This work will provide initial insights into how AI is implemented in sports and why it is relevant to pay attention to athletes' health data in the context of the prevention of injuries and whether a balance between sports clubs' needs and the protection of athletes' fundamental rights can be struck. An evaluation of the concept of consent in the GDPR will be conducted, as well as an analysis of the principles according to which personal data can be processed based on the data protection regulation. Further analysis of other legal sources, including legislation proposals, and jurisprudence will also be performed where necessary.

Moreover, I will identify and evaluate the relevant provisions of the AI Act proposal, analyzing how the risk-based approach of the regulation might assist sports institutions in creating a legal framework in the European sports industry on the use of AI technologies in sports. It is also relevant to further analyze whether the concept of consent according to the GDPR relevant provisions acquires even more value in the context of the AI Act proposal, considering the use of AI systems by sports clubs, acting as controllers, and the sensitive data of the athletes as collected.

Further to the evaluation of the case law as applicable, this thesis will also focus on legal doctrinal analysis and will critically analyze scholars' opinions from relevant sources, such as books, academic articles, and other reliable sources wherein the concept of consent is discussed, as well as from technical sources wherein AI tools are described in the context of AI in sports.

Furthermore, the aim of this work is to provide an overview as to how athletes' data is important for sports organizations and what athletes, and organizations, are doing to protect their interests. Examples of current issues will be highlighted, e.g. "The Project Red Card", which will help to define from a practical perspective how athletes' data are relevant nowadays in the sport context. Other examples will be considered in the context of studying what type of AI tools are deployed by sports clubs to enhance the teams' performances or, more specifically, to prevent injuries.

For the non-legislative sources, I will operate a selection based on the topic discussed in each chapter. In the second chapter, my attention will be focused on selecting sources in the field of AI, where additional technical information on AI tools can be retrieved. In the third chapter, I will focus on academic sources regarding the concept of consent pursuant to the GDPR, as well as articles published in reliable online newspapers concerning 'The Project Red Card' case, choosing accurate non-legal sources for further analysis of this topic.

This work will not perform a legal comparison with other legal systems and will only refer to the European Union's legal framework. However, for the benefit of the thesis, some references or illustrations from other non-EU jurisdictions might be used to provide readers with more insights, as for instance, on how data ownership matter is treated and discussed in the US.

1.4. Chapter overview

This work will be structured as follows:

Chapter II will focus its attention on the different types of AI technologies as implemented in the sports industry: how they are used, and what risks they carry in the context of data ownership and the power imbalance between sports organizations and athletes. As it is impossible to list and describe all the AI technologies in use, specific attention will be given to the systems that mainly impact athletes' careers such as wearable devices, biometric measurements, and the reasons why these tools are crucial in athletes' careers and vital for organizations and their continuous development.

In Chapter III the concept of consent according to the GDPR and the related requirements will be analyzed, specifically regarding sensitive data as per Article 9 of the GDPR.
Furthermore, some practical and ongoing cases will be discussed, for instance, the already mentioned 'Project Red Card', as well as other examples where athletes' data is involved. The analysis of real examples is intended to give this work a solid basis and to prove that the high relevance of this topic in the context of sports industry and protection of athletes' rights in the AI era.

In Chapter IV I will discuss the role that AI plays in preventing injuries, displaying how major sports clubs deploy AI tools to analyze athletes' health data to improve team performances and how this has an impact on the protection of athletes' sensitive rights, to understand whether a balance between clubs' needs and protection of athletes' sensitive data can be achieved. To obtain that, some tools will be described based on real examples that might offer the reader a solid background on the topic at stake. Furthermore, a brief analysis of the recent AI Act proposal will be performed, but only if considered relevant to the aim of this thesis.

Chapter V serves as conclusive chapter of this work, summarizing the key elements discussed in the previous chapters and possible adjustments that can be implemented to improve the sports industry in the context of AI-driven sports.

II. AI deployment in sports and relevance

How does the sports industry deploy and use Artificial Intelligence tools?

2.1. Preamble

In the following chapter, a definition of AI will be provided, and this will act as the main definition for this work. This paper will explain some of the relevant AI technologies which are deployed in the sports industry and that potentially - and factually - affect athletes' rights.

Lastly, the paper will evaluate some AI tools deployed in the sports industry which might help to understand how new technologies can support sports industry in the context of improving teams and athletes' performances, and even more specifically in the framework of prevention of injuries.

2.2. Definition of Artificial Intelligence

It is not easy to define Artificial Intelligence (AI). Some describe it as one of the most exciting developments of our time[19], while other authors think that defining AI is hard since 'intelligence' is difficult to define too[20]. The outcome is that there is not a single definition of AI.

This work will consider the definition of AI embedded into the latest draft of the AI Act proposal, dated 13 June 2023, as the most tailored to the purposes of this thesis:

"Artificial intelligence system' (AI system) means a machine-based system that is designed to operate with varying levels of autonomy and that can, for explicit or implicit objectives, generate outputs such as predictions, recommendations, or decisions, that influence physical or virtual environments"[21]

The present work will consider the above definition as the principal one.

AI is generally used as a wide, general term, which includes several tools which complete certain tasks in an intelligent manner[22]. It is important to note that some technologies fall under the definition of AI, while others are mainly related to, for instance, algorithms. Algorithms are different as an algorithm determines a process which leads to a final decision, while AI uses data to

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[19] A. Panesar, *Machine Learning and AI for Healthcare Big Data for Improved Healthcare (Apress 2021, 2nd edition)*.

[20] (M. Fenech, 2018) 'Ethical, Social, and Political Challenges of Artificial Intelligence in Health' (Future Advocacy April 2018), (021.

[21] Article 3 (1)(1), version 13 June 2023.

[22] (P. Swarup and B Tech, 2021)'Artificial Intelligence [2012] vol. 2 issue 4 International Journal of Computing and Corporate Research < https://www.ijccr.com/july2012/4.pdf> accessed 26 August 2021.

decide[23]. Therefore, some AI technologies will further be discussed as considered necessary for this thesis and for the benefit of the readers.

2.3. AI Tools in the sports industry and their relation to Data

AI has played and will play a significant role in the sports industry. References can be made to the Media and Fan Experience, Management and Operations, and pre-and post-game analysis.[24] Some examples include smart ticketing systems, Automated Video Highlights, and Talent selection tools. In combination with AI tools, data of data subjects represent an important source of innovation[25], and those are usually generated via automated means[26].

Some of the relevant technologies which are relevant to this paper are wearable devices or devices that enable teams to obtain biometrical information from athletes, which is, without any doubt, sensitive data according to Article 9 GDPR. For this data, which is health-related and therefore sensitive according to Article 9 GDPR, consent must be provided by the data subject freely and explicitly. Therefore, the processing of this data demands a higher level of protection as its processing may negatively affect the data subject[27]. Additional details about athletes' consent will be provided in the next chapter.

2.3.1. Wearable devices

Wearable devices deserve a special mention when it comes to discussing the processing of athletes' sensitive data. These AI tools can collect information about athletes' performance during pieces of training or actual competitive matches. Wearable devices incorporate technologies able to collect information about heart rate, distance covered, speed, and level of lactic acid in athletes' blood.

This information is of key relevance when it concerns elite athletes as it is used by their clubs to monitor athletes' performances. The issues here at stake are multiple. For instance, being as sensitive data, simple consent cannot represent the only reliable ground for processing said data - consent must also be freely given, specific, informed, unambiguous, unbundled, and easy to withdraw. This will be further analyzed in the next chapter. Therefore, the question to ask is whether there could be a power imbalance between sports clubs and athletes, as it will also be discussed in the next chapters, and thus it might be hard to prove that consent has been given freely.

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[23] Kaya Ismail interviewing (Dr. Mir Emad Mousavi, 2018) AI vs Algorithms: What´s the difference?", 2018.
[24] Artificial Intelligence - Application to the Sports Industry, PricewaterhouseCoopers, 2018.
[25] F. Boehm, Towards a thriving data-driven economy, COM (2014), p. 4.
[26] R. Fischer, J. Chicot *et al.*, (R. Fischer, 2018)
[27] General Data Protection Regulation, Recital 53.

According to the UK's data protection authority[28], indeed, "*if for any reason you cannot offer people a genuine choice over how you use their data, consent will not be an appropriate basis for processing. This may be the case if, for example, you are in a position of power over the individual*"[29]. The concept of consent, and its requirements, will be further explored in the next chapter.

2.3.2. Biometrical data and deployment in sport

The deployment of athletes' data in sports is not new. Sports clubs and organizations have always considered it crucial to monitor and measure biometric and biomechanical data, from heart rate to pitch speed[30]. Many categories of data can be retrieved from, for instance, wearable devices, which can inform the coaches about sleep data or offer a complete analysis of the athlete's stress level[31]. Heart rate, for instance, can be used to monitor the levels of stress in an athlete[32]. Retrieving athletes' data is not only necessary to measure athletes' performances, but also to provide coaches with information about what aspects of athletes' game can be improved during training, or what methods can be implemented to improve players performances[33].

Retrieving this data raises some concerns about athletes' data, how it can be exploited – specifically performance data - without athletes' proper consent, according to GDPR standards. Therefore, the focus is once again on the possible power imbalance between athletes and sports organizations. As a further confirmation of the relevance of the topic, it is key to mention the guidelines of the EDPB. In its guidelines[34] on systematic automated monitoring, the board points out that "*The use of biometric data and in particular facial recognition entail heightened risks for data subjects' rights. It is crucial that recourse to such technologies takes place with due respect to the principles of lawfulness, necessity, proportionality, and data minimization as set forth in the GDPR*". Even if this thesis does not focus on the facial recognition matter, it is relevant to mention that the biometric data collected from athletes is still sensitive and, if not processed lawfully according to the GDPR, it might affect athletes' rights. Indeed, health data is sensitive data according to Article 9 GDPR, and biometric data must be processed "*for the purpose of uniquely identifying a natural person*", which is the case when sports clubs collect athletes' data, it is crucial to require explicit consent from all the data subjects involved (Article 9(2)(a) GDPR). Should these data not be processed

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[28] Penningtons, GDPR in Sport: trying wearable on for size, 2020.
[29] Ibid.
[30] L. Martin, Sports Performance Measurement, and analytics, 2016
[31] See Shona L. Halson, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4213373/, 2014
[32] B. Osborne, Jennie L. Cunningham, Marquette Sports Law review, 2017
[33] Ibid.
[34] EDPB Guidelines, Guidelines 03/2019 on processing of personal data through video devices.

appropriately and should consent not be requested pursuant to the GDPR requirements, the risk is that sports clubs might exploit those data for additional purposes, such as selling it to third parties (e.g., betting or statistics companies). In addition, it might also be the case that clubs might not want to provide the athletes with their own data upon request, when necessary, e.g., in case of transfer to another club, as shown in section *4.5.1*. Therefore, the power imbalance between athletes and sports clubs is illustrated even more when lawful consent is not given by athletes and, vice versa, when sports clubs do not obtain consent for sensitive data according to the GDPR.

AI is also prevalent in sports regarding coaching[35]. Coaches might create a specific training system, tailored to the characteristics of the players, based on the data gained in a previous training session, e.g., if it is shown that a player experienced a certain weakness before the match it can be resolved before the match with the necessary corrections. AI indeed serves as an additional tool to help teams obtain results due to the additional technological support.

It is extremely interesting to see also how tactics can change due to the implementation of AI tools during training sessions[36]. Football team Liverpool FC uses *"SkillCorner's"* AI systems to analyze players and ball, and to assess the team's weaknesses[37].

These examples show how the implementation of AI in sports can potentially increase the teams' chances to obtain better results and overall performances.

Nevertheless, these technologies represent a challenge to the protection of athletes' data and the role of sports organizations in this context.

In the next chapters, as considered relevant for this work, the so-called 'Project Red Card' will be discussed. Briefly, it is a proposed legal action threatened by hundreds of professional football players against major gaming, betting, and sports data companies over the use of their personal information and performance statistics. Currently, it involves more than 850 players[38].

2.3.3. AI and injury prevention tools

Nowadays, AI technologies are of great support to sports clubs when it comes to detecting injuries earlier or predicting consequences on an athlete's body. In the Australian Football League, many

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[35] X, "Stress monitoring in race driving", *Biorics,, https://www.biorics.com/stress-monitoring-in-race-driving/.*
[36] *See also R. REIN and D. MEMMERT, "Big data and tactical analysis in elite soccer: future challenges and opportunities for sports science", SpringerPlus 2016, vol. 5 (1410); C-J. HOEL, K. DRIGGS-* (R. Rein, 2016), *CAMPBELL,*
[37] *A. COHEN, "Liverpool F.C. Partners with SkillCorner's AI Platform to Extract Data from Matches", Sport Techie 10 October 2019, https://www.sporttechie.com/liverpool-fc-skillcorner-ai-platform-soccer-data-sports-tech#.*
[38] Project Red Card, The Guardian, 2022

hypotheses were advanced on what can lead to muscle strain, for instance, inadequate warm-up, poor lumbar posture, or general fatigue[39]. Detecting patterns that lead to a specific injury is beneficial to both the safety of athletes and the competitiveness of the team.

Furthermore, AI systems are also able to personalize the training of an athlete with a specific schedule allowing them to better understand their physical abilities.

Another relevant development concerns the spotting of concussions in athletes. According to the Washington Post[40], approximately 40% of former NFL players[41] suffer from brain injuries, from dementia to Alzheimer's syndrome. For this reason, there have been several developments and advancements in technologies that can spot concussions in athletes who have been dangerously hit in the head. A concrete example of this is Brightlamp[42]. This app works by flashing a light from a smartphone into a person's eye to measure pupil dilation, determining whether there has been a traumatic brain injury. The system includes the information obtained from the person and puts it through a cloud-based neural network to check if the classical markers of a concussion are visible[43].

To understand more the impact that AI tools have on the sports industry, it is crucial to define machine learning. Machines receive several inputs from data and can predict outcomes based on identified patterns, identify unexpected behaviors, or categorize people or objects[44]. Those machines learn with algorithms that collect vast amounts of data and can make decisions like humans[45]. Currently, there are several types of machine learning techniques, for instance, *Deep Learning*. This is a type of machine learning based on descriptions of variables called neural networks[46] and its algorithms are applicable to many applications that are based on pattern recognition[47].

Another relevant example derives from one of the top football teams in the English Premier League. Liverpool Football Club, from the 2021-2022 season, has been utilizing Zone7, a platform that "*analyzes comprehensive player information, including in-game and training data, as well as*

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[39] Brockett C. L., Morgan D. L., Proske U. W. E., Predicting hamstring strain injury in elite athletes. *Med. Sci. Sports Exerc.* 36, 379–387, 2004.
[40] https://www.washingtonpost.com/news/morning-mix/wp/2016/04/12/40-percent-of-former-nfl-players-suffer-from-brain-damage-new-study-shows/
[41] National Football League, United States of America
[42] https://www.reflexapp.io/.
[43] From Brightlamp website.
[44] H. Surden, 'Artificial Intelligence and Law: An Overview', 2019 vol. 35 issue 4 Georgia State University Law Review 1305; K. Nevala, 'The Machine Learning Primer' (SAS Best Practice e-book 2017)
[45] Y. Bathaee, The Artificial Intelligence Black Box and the Failure of Intent and Causation', 2018 vol. 31 Harvard Journal of Law & Technology 890.
[46] V. Prabhu, K. Taaffe, R. Pirrallo, Multi-Layered LSTM for Predicting Physician Stress During an ED Shift. IIE Annual Conference. Proceedings, 1223, 2020.
[47] E. Horvitz, 'Defining AI' (*One-hundred-year study on Artificial Intelligence), 2016*

biometric strength, sleep, and stress levels to create injury risk signals and practical intervention methods that aim to improve athlete performance while lowering injury incident rates"[48]. Liverpool FC might benefit from Zone7 services as the latter claims to have helped other elite teams - not only football ones - to reduce injury incidence rates by as much as fifty percent[49].

Several questions might arise from this, for example, whether athletes have provided Liverpool with free consent to process their data or whether there have been more health data collected than necessary, according to the data minimization and purpose limitation principles set out in the GDPR[50].

Therefore, is it clear on the one hand how recent developments in machine learning and deep learning fields have contributed to the improvement of organizations (sports, in this context), and the well-being of individuals (considering the prevention of injuries, which might also be potentially applicable to non-athletes). On the other hand, AI has a vast amount of critical legal and ethical issues, and faces certain social challenges, which, if not managed accordingly, might conversely affect the improvement of AI[51].

As for the other AI technologies already mentioned in this chapter, these innovations are not risk-free. The collection of vast amounts of data poses several legal concerns about the risks that AI technologies have[52], such as accountability and protection of privacy.

AI technologies in healthcare have made several steps forward in the past years, therefore it does not come as a surprise that legal concerns have increased due to the processing of sensitive personal data, namely health data, whose processing might cause adverse consequences on data subjects. Therefore, a higher level of protection must be given to data subjects when sensitive data is at stake[53].

Therefore, the integration of these technologies is extremely beneficial from a performance monitoring perspective, nevertheless it must be assessed how such technologies can adversely affect athletes and the protection of their sensitive health data.

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[48] https://zone7.ai/news/client-announcements/zone7-expands-service-to-liverpool-fc/
[49] Ibid.
[50] Also D. Schönberger, 'Artificial intelligence in healthcare: a critical analysis of the legal and ethical implications' 2019, vol 27 issue 2 International Journal of Law and Information Technology 171 (Schonberger, 2019)
[51] L. Floridi, Establishing the rules for building trustworthy AI. Nature Machine Intelligence, 1(6), 261– 262, 2019
[52] D. Schönberger, 'Artificial intelligence in healthcare: a critical analysis of the legal and ethical implications' 2019, vol 27 issue 2 International Journal of Law and Information Technology 171 (Schonberger, 2019)
[53] Recital 53 GDPR

2.3.4. Brief overview of sports marketing and athletes' data exploitations

The development of sports industry and its flourishing coincide also with the steady growth of more personalized digital experiences for fans and various stakeholders. Indeed, stadium owners and sports clubs have found several new revenue opportunities, and this is possible also due to the use of various AI applications[54].

The query is why this is relevant for this work. It is evident that if a club performs well and engages valid players, the value of the team increases. The same is valid for all the 'off-pitch' related activities where supporters and fans, in general, are involved. Sports clubs indeed can exploit players' data to further engage fans, showing athletes' performance data to the wider public and using said data to help teams to generate revenue[55].

Therefore, it is important to establish whether the data minimization principle is well applied in these circumstances, as on the one hand athletes have perhaps conceded their consent for a limited purpose, while teams exploit athletes' data beyond the limit. A balance needs to be found to protect athletes' rights and to prevent clubs using athletes' data discriminatorily to generate additional revenue, specifically athletes' personal and sensitive data.

2.4. Using AI in sports. Are there risks involved?

On the surface, the use of AI in sports might not pose any obvious risks or challenges, just advantages due to its utility in analyzing performances, athletes' health, and other relevant aspects. Nevertheless, several risks and challenges do exist, and such challenges can conversely affect the sports industry, for instance, in addition to the main concerns highlighted in the following chapters, when AI tools are employed to predict the outcome of games, giving several advantages to the gambling industry, especially from an economic point of view. Furthermore, the human element might be lost, as AI can, either way, bring sports to the next level or make it predictable as it's played more efficiently, losing the unpredictability which is the core of sports strategy. These issues will not be further discussed in this work but are only mentioned as examples.

In addition to the above-mentioned challenges, and as relevant to this work, there are also risks surrounding how athletes' data is handled by controllers (i.e., sports clubs), specifically considering

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[54] (PricewaterhouseCoopers, 2018)
[55] (PricewaterhouseCoopers, 2018)

that health data is at stake. A data controller, according to the GDPR, determines the purposes for which and how personal data is processed. It means that a company or organization is a data controller if decides "why" or "how" personal data must be processed. As a considerably high-volume of data is processed, there are also high risks of data breaches and privacy intrusion[56], as by rival sports clubs which might take advantage of opponents' data, including health data[57].

In the sport context, the data controller can be identified in a sport club that collects athletes' data in relation to the execution of their professional contract. Indeed, there is an employment contractual relationship between athletes and sports clubs as explained in the next chapter. Furthermore, athletes' data might also be shared with third parties without the explicit consent of the athletes, and this might not only affect the competition between clubs but also lead to unlawful processing of athletes' data without their consent. A more thorough evaluation of risks will be performed in the next chapters.

2.5. Conclusion

This chapter is meant to provide readers with a brief overview of some AI technologies that are and can be deployed in sports. It has also offered input into the major concerns that stem from the utilization of AI tools, such as the exploitation of the athletes' data performance and the impact on athletes' rights.

Some of the AI technologies have been described to give the reader a concise overview as to how AI tools are used in sports, highlighting the advantages that these can bring, but at the same time some of the concerns that lie within the deployment of AI technologies in sports.

This chapter is also an introduction to the problem to be discussed as follows, which is athletes' consent to processing personal data, and whether the consent is freely provided by athletes. More precisely, do sports organizations comply with the provisions concerning the acquisition of consent and the exploitation of athletes' data?

III. Concept of consent in sports

Why athletes' consent is relevant when AI tools are deployed to monitor their performance?

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[56] P. Esmaeilzadeh, *'Use of AI-based tools for healthcare purposes: a survey study from consumers' perspectives'*, 2020vol. 20 BMC Med inform Decis Mak, (Esmaeilzadeh, 2020) 170.
[57] Ibid.

Considering the potential power imbalance between athletes and sports clubs, how can it be ensured that athletes' consent is provided according to GDPR standards?

3.1. Preamble

This chapter will briefly explain the concept of consent in the processing of (athletes') data. It seems relevant to first examine the concept of consent, its requirements under GDPR, and its relevance in relation to AI. Considering that AI-driven sports involve the processing of important data, such as health and performance data, it will be explained how consent might be obtained for such processing.

In addition, the data minimization principle will be briefly introduced, explaining why there is a crucial interplay between the concept of consent and the data minimization principle itself. In parallel, the informed consent and the granularity of consent principles will also be analyzed. These principles have been selected among others as, for the purpose of this thesis, those seem more relevant to find an answer to the research question, as it will be further evaluated in the next sections.

3.2. Concept of consent in the GDPR

The idea of giving consent in European legislation does not derive from the implementation of the GDPR, but it has always been a general principle in civil law tradition[58], whereby contracts have always been valid upon mutual consent between the parties[59].

The Nuremberg Code[60], the Universal Declaration of Human Rights, and European Law (e.g., Article 9(1) Treaty of the European Union[61] are important examples of how consent has been implemented in several legislations and conventions as a crucial starting point for the European countries.

Recently, since the adoption of the GDPR and its entry into force in 2018, the processing of personal data has acquired an even more relevant position within the EU legal framework (even though a legal framework on Data Protection was already in place with the Data Protection Directive 95/46/EC) and processing must be compliant with the principles set in Article 5 GDPR, such as lawfulness, transparency and fairness, purpose limitation, data minimization, data accuracy, storage limitation, and integrity and confidentiality. Furthermore, Article 6 and Article 9 of the

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[58] K. Haimberger, *Data Protection in medical and pharmaceutical research,* Manz, 67, 2021
[59] Ibid.
[60] The Nuremberg Code (1947)
[61] TEU

GDPR provide legal grounds and exceptions to the processing of sensitive data, for instance, health data[62], unless certain conditions apply.

According to Article 4(2), the processing of data is "*any operation or set of operations which is performed on personal data or sets of personal data, whether or not by automated means*". The regulation applies to the "*processing of personal data wholly or partly by automated means and to the processing of personal data wholly or partly by automated means and to the processing other than by automated means of personal data which form part of a filing system or are intended to form part of a filing system*"[63]

Article 6 of GDPR states that the processing is lawful if based on consent (amongst other criteria).

According to Article 4(11) of the GDPR:
"consent' of the data subject means any freely given, specific, informed, and unambiguous indication of the data subject's wishes by which he or she, by a statement or by clear affirmative action, signifies agreement to the processing of personal data relating to him or her."
Consent is also present in several additional GDPR provisions[64] However for this thesis the focus will be on some specific elements of consent, e.g., it must be freely given, must be informed, specific and unambiguous, and on how this has an impact on the AI tools used in the sports industry and how sensitive athletes' data are used by sports clubs for business purposes.

As a confirmation of the relevance of the consent for the topic, an example might be helpful, even though it is not related to the consent in sports. The European Court of Justice (EUCJ) delivered a preliminary ruling about valid consent under GDPR and Data Protection Directive in November 2020, where in the case *Orange România SA v Autoritatea Națională de Supraveghere a Prelucrării Datelor cu Caracter Personal (ANSPDCP)* (Case C-61/19), the Court ruled that a printed contract reflecting a clause stating that the consumer has provided his consent to the collection and storage of his ID, is not valid pursuant to the GDPR as it has been pre-ticked by the controller before the conclusion of the contract. This case shows how transparency, for which there is not a widely accepted definition in the EU law[65], is a key principle in the relationship between the

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[62] EDPB Guidelines 03/2020 on processing of data concerning health for the purpose of scientific research in the context of the COVID-19 outbreak (21 April 2020)
[63] Article 2(1) GDPR.
[64] Article 7(f), Article 9(2)(a), Recitals 32, 33, 38, 42, 43, 50, 65, 161, and 171 GDPR.
[65] Even though the transparency requirements have been listed in several EU legislations on consumers' rights, European institutions have not provided an overarching interpretation of transparency. Among others, definition of transparency is also given in M. BM Loos, 'Double Dutch: On the Role of the Transparency Requirement with Regard to the Language in Which Standard Contract Terms for B2C-contracts Must Be Drafted' (2017) 6(2) Journal of European Consumer and Market Law 54, 54−55.

data controller (with more contractual power) and the data subject, as the consent must be given freely and with all the information duly provided prior to the signing of the contract, to avoid any misleading practice against the consumers. Therefore, transparency can be defined as a principle which should help consumers or users to gain, for instance from a provider of a service, all the necessary available information to make an informed and thorough decision[66].

Contextualizing this example in the sport framework, it seems that if such transparency needed to obtain consent from the data subject is required for the processing of non-sensitive data, it comes as no surprise how an even greater level of transparency is needed for sensitive data such as athletes' data[67]. Nevertheless, for the sake of completeness, it is also important to note that there are evident differences between athletes and consumers, considering that athletes can obtain remuneration – even higher if they are elite athletes - by giving consent to the processing of their (sensitive and non-sensitive) data, with all the relevant consequences from a contractual perspective. This makes a considerable difference as consumers, compared to athletes with sports clubs, are a weaker party in their contractual relationship with businesses, which shall result in more protection from a legal perspective[68].

Therefore, athletes can provide sports clubs with their (freely given) consent to collect, analyze and exploit their performance data. To do so, athletes must be duly informed about the consequences of their consent, the fact that they are not obliged to provide it, and that they also have the choice to opt in and opt out of data collection and analysis activities at any time. According to the information I have been able to collect[69], in some circumstances the players do not provide free consent for all the purposes for which their sensitive data are collected, but just for a few selected ones. This is a problem about granularity of consent, as explained in section 3.2.2., as well as it shows a power imbalance between clubs and athletes in their contractual relationship.

As mentioned, consent must be specific, the processing purpose needs to be clear and, in case said purpose changes, consent must be requested once again[70], as the aim is to have the data subject completely aware of their processed data.

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[66] Also in M. BM Loos, 'Double Dutch: On the Role of the Transparency Requirement with Regard to the Language in Which Standard Contract Terms for B2C-contracts Must Be Drafted' (2017) 6(2) Journal of European Consumer and Market Law 54, 54−55.

[67] *Orange România SA v Autoritatea Naţională de Supraveghere a Prelucrării Datelor cu Caracter Personal (ANSPDCP)* (Case C-61/19).

[68] Multiple are, indeed, the consumers Directives in the EU consumer law framework. Among others, Directive 2011/83 ("*Consumer rights*" Directive), or Directive 2005/29 ("*Unfair commercial practices*" Directive).

[69] For more reference, please refer to Chapter IV, section 4.4.1., where some real examples are mentioned following an interview with FIFPRO, the biggest football players union.

[70] FRA (European Union Agency for Fundamental Rights), ECtHR (European Court of Human Rights), CoE (Council of Europe), EDPB (European Data Protection Board) (2018), Handbook on European data protection law, Luxembourg, Publications Office of the European Union.

3.2.1. Informed consent

Consent must also be informed, meaning that the subject matter is sufficiently described and understandable to the data subject[71], i.e., it is described in plain language.

In addition, the European Data Protection Board (EDPB) has provided some guidelines that are required to obtain informed consent[72], including controllers' identity[73], what type of data will be used and collected[74], the right to withdraw consent[75], the purpose of that specific processing[76]. Consent cannot be valid without these requirements. Since there is no specific way to provide consent, even though it is usually in writing, the GDPR has high requirements for informed consent which corresponds to the high accessibility of information by the data subject[77].

Considering the purpose of this thesis, it is important to understand the concept of consent in the sports industry and the different implications. The data type relevant to this discussion is mainly health data, which is sensitive data according to Article 9 of GDPR. Therefore, the question is whether sports clubs seek athletes' consent appropriately and, if so, whether the consent is informed and it is being given by the athletes.

In this regard, once again the guidelines of the EDPB help to better understand what is required in the sports context[78] by providing an example on systematic automated monitoring[79]. The data subject's consent in a monitoring as such can only be considered a legal basis pursuant to Article 7[80] ("*Condition for consent"*) in exceptional cases. The EDPB guidelines provide a tailored example useful to explain this scenario better.

Athletes might want to be monitored during training to analyze their performances at a later stage. This means that athletes choose to be monitored. If, instead, a sport club initiates a monitoring activity for the whole team, consent might not be always valid according to the GDPR[81] and the guidelines on consent[82], as athletes might feel required, under pressure, to provide consent no matter what, in order not to affect the monitoring of the team. If sports clubs (data controllers) want

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[71] Ibid.
[72] EDPB Guidelines, Guidelines 05/2020 on consent under Regulation 2016/679
[73] Recital 42 GDPR
[74] WP29 Opinion 15/2011 on the definition of consent (WP 187)
[75] Article 7(3) GDPR
[76] Recital 42 GDPR
[77] EDPB Guidelines, Guidelines 05/2020 on consent under Regulation 2016/679.
[78] EDPB Guidelines, Guidelines 03/2019 on processing of personal data through video devices.
[79] These guidelines (see note 75) provide additional reference to the circumstances where there is a collection and retention of "*pictorial or audio-visual information on all persons entering the monitored space that are identifiable on basis of their looks or other specific elements*".
[80] See footnote 74.
[81] Article 6 GDPR.
[82] See footnote 74.

to rely on consent of athletes (data subjects), in accordance with Article 7 GDPR, it is their duty to ensure that every data subject who has been recorded in a systematic automated monitoring context has given his or her consent. Considering this undeniable power imbalance between sports clubs and athletes[83], clubs must not simply rely on consent when processing personal data, as it is unlikely to be freely given[84]. In this context, it seems relevant to also mention Article 88 GDPR ("*Processing in the context of employment*") where it is stated that "*Member States may, by law or by collective agreement, provide more specific rules to ensure the protection of the rights and freedoms in respect of the processing of employees' personal data in the employment context, in particular …. for the performance of the contract of employment*".

This provision might be applied in the sports framework, where athletes are employed by the sports clubs and the processing is done for the performance of the athletes' contracts. Therefore, it might be helpful for the European sports institutions, e.g., UEFA for European football, to refer to the example of Article 88 concerning the collective agreements to develop a system where clubs and athletes' representatives (e.g., FIFPRO for football players) can set solid requirements for consent, in particular when sensitive data is collected.

3.2.2. Granularity of consent

The EDPB in the guideline[85] points out that granularity refers to a situation whereby a service might consist of multiple processing operations for more than one purpose. In such cases, the data subject must be free to choose which purpose they accept, instead of "*accepting a bundle of processing purposes*"[86]. According to the GDPR, multiple instances of consent must be given by the data subject. This is also confirmed by Recital 43 of the GDPR, according to which consent is not presumed freely given if the procedure for obtaining consent does not allow the data subject to provide consent for each data processing operation. Conversely, there would be a lack of freedom if the controller does not seek separate consent for each specific purpose.

For example, in the sports context, the football club obtains certain health data from a player to comply with regulations concerning the necessary health conditions before signing the professional contract. The club decides to share said data for additional purposes, for instance, engaging a data analytics company to elaborate a report based on the player's health data shared at the signing

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[83] Same example can be valid in a "employer-employee" circumstance.
[84] EDPB Guidelines, Guidelines 03/2019 on processing of personal data through video devices.
[85] See footnote 77.
[86] Ibid.

stage. In this case, the player should give specific, informed, and free consent to this additional purpose, as a single consent for both purposes would not be valid according to the GDPR.

As a further confirmation of the above, Recital 32 of the GDPR points out that *'Consent should cover all processing activities carried out for the same purpose or purposes. When the processing has multiple purposes, consent should be given for all of them.'*

The concept of granularity, therefore, assumes a key role in the framework of athletes' sensitive data and their protection, offering an additional safeguard to the data subjects who are usually subjected to the greater power of sports clubs.

3.3. Data Minimization definition

Article 5(1)(c) of the GDPR and Article 4(1)(c) define the data minimization principle[87]. According to these provisions, a data controller must limit the collection of personal information of a data subject to what is strictly relevant and necessary to reach a specific purpose[88]. In addition, data must also be retained for the necessary amount of time to fulfill that purpose.

In the context of AI in sports and the health data collected by sports clubs to monitor the athletes' performances, this principle plays a significant role since AI uses algorithms that need great amounts of data to produce results, this principle may therefore serve as a bulwark to protect even more athletes' sensitive data without excessive processing of data that is not necessary for the pre-defined purpose.

The logical, following question is whether the data minimization principle is sufficient to safeguard athletes' rights and their sensitive data, considering that sports clubs cannot, pursuant to this principle, collect more health data than needed to evaluate athletes' performances. Nevertheless, it is challenging but interesting to understand whether the data minimization principle is fully observed by data controllers. Therefore, two aspects might be under investigation, i.e., if the GDPR rules could have been formulated differently and with more clarity, or if, considering the emerging AI technologies, the current GDPR approach to the topic is still applicable or needs a further analysis.

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[87] *'Data shall be adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed',* Article 5(1)(c) GDPR.
[88] Article 5(1) GDPR.

These questions will not be analyzed further as this would exceed the purposes of this work; however it is worth to show how many potential different angles can be touched upon in relation to this topic for further analysis.

3.4. Management of athletes' data

It has already been mentioned that athletes' data constitutes a great asset for sports organizations due to their economic value on the one hand, and as a useful way to enhance the teams' performances in highly competitive leagues and tournaments on the other hand.

It is also a fact that athletes' data might potentially be an important asset not only for the clubs to which they belong but also for other stakeholders, for instance betting companies or data analytics entities.

A vivid example of this involves a world-famous Manchester City FC football player, Kevin De Bruyne who, to achieve better contractual conditions from his club, engaged Analytics FC[89] to assist him in obtaining a pay raise of approximately 30%. The football player requested Analytics FC to elaborate a report including his past, present, and (expected) future performances and his added value to Manchester City FC, as well as comparing his current salary against the top football players playing in his same role[90]. The Founder and CEO of Analytics FC, Mr. Jeremy Steele, stated that "*Kevin De Bruyne asked us to study all aspects of his contribution to the team and even how prepared Manchester City is for success in the years to come, based on the age and quality of the players. However, this is the first time a player has hired us to work directly on their behalf. It is an evolution in football, I believe[91]*".

The above makes it clear that if a top performer like Kevin De Bruyne engaged a data analytics company to enhance his position within his current football club, the impact that players' data collection, analysis and use has on football, and in most sports, represents an historic revolution.

Nevertheless, it is important to remember that Kevin De Bruyne represents a small percentage of football players and athletes in general, due to the contractual power gained during his career as one of the best football players in the world. For many others, instead, there is a clear power imbalance with clubs, acting as data controllers, with which they have an employment relationship. That is

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[89] "Analytics FC - as per the company website - team brings together expertise and experience from a broad range of backgrounds including business, startups, data science, software engineering, mathematics, statistics, and economics. We also understand that context is key. Our team has a wealth of experience in top-level coaching, player development, and scouting". This entity has been engaged by Kevin De Bruyne to

[90] Analytics FC.co.uk.

[91] Analytics FC.co.uk, CEO interview on De Bruyne case.

why this paper strives to study how athletes' consent is a key factor in the modern sports industry and will acquire a greater importance in the future.

De Bruyne's case though does not resolve the main issue at stake, i.e., whether athletes have full control over their data as elaborated by their clubs and in general by any third party like a data analytics company and, most importantly, if only the necessary performance and health data is collected.

In this context, it seems clear that De Bruyne's case does not show a power imbalance between athletes' and sports clubs. The reason lies in the fact that De Bruyne is an elite football player, and his contractual power is as strong as Manchester City's one. On the other hand, as previously mentioned, this case might help to realize that this player represents an exception in an industry where most of the players do not have the same contractual powers. Athlete's consent for the processing of their data might be comparable to the typical imbalance of power in the employment context[92]. As the EDPB points out in its guidelines, it would be unlikely that the employee, as data subject, can deny his/her employer consent to data processing *"without experiencing the fear or real risk of detrimental effects because of a refusal. It is unlikely that an employee would be able to respond freely to a request for consent from his/her employer to, for example, activate monitoring systems such as camera observation in a workplace, or to fill out assessment forms, without feeling any pressure to consent"[93] [94]*. It is not easy to process personal data based on consent as it is unlikely to be freely given in the employment context, thus the lawful basis cannot be the consent of the employees (Article 6(1)(a)) GDPR due to the nature of the relationship between employer and employee[95]. Given the above, employees can only give free consent in specific and exceptional situations when it will not have adverse consequences at all whether or not they give consent[96]. These circumstances are comparable with athletes and sports clubs, given the employment nature of their relationship as sports clubs, being data controllers, can process athletes' sensitive data and might exploit this beyond the (perhaps valid) given consent of athletes due to, among others, economic interests.

A question that might follow in this respect is how sports organizations obtain consent for special category of data, such as health data. Considering the relevance of health data and its exceptional

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[92] EDPB Guidelines, Guidelines 05/2020 on consent under Regulation 2016/679.
[93] Ibid.
[94] See Opinion WP 15/2011 on the definition of consent, Opinion 8/2001 on the processing of personal data in the employment context.
[95] Opinion WP 2/2017 on data processing at work.
[96] Ibid.

nature as also provided by Article 9 GDPR, do sports clubs need to make additional efforts to process health data of athletes?

The European Data Protection Board in one of its guidelines[97] outlines different ways to obtain explicit consent. A viable solution might be a two-stage verification[98], whereby the data subject is notified via an e-mail containing the intention of processing health data, and consent is requested offering a complete set of information for which consent is required. The data subject should be able to confirm it with a clear statement, for instance, "I agree". Following this, the second stage of verification takes place when the data subject receives a confirmation code, via e-mail or by other means, needed to confirm the agreement to the processing of the health data[99].

Perhaps this seems a much-articulated way to obtain consent in the sports industry, nevertheless it could be an option for athletes to dispose of this method, which might be discussed and agreed upon at the conclusion of the employment contract.

In parallel, a legitimate comparison can be made with health data of patients. In the European Union, Members States must keep a National electronic health record (NEHR)[100], which includes comprehensive medical records of the past and present physical and mental conditions of an individual. This register has the purpose of keeping the health data of an individual to make it immediately available if needed in specific circumstances. It is important to note that, nevertheless, the register protects vital interest of patients as data subjects, i.e., to keep their records up-to-date and immediately available, while collecting athletes' sensitive data in a similar register has a different rationale, more commercial-oriented, therefore it might be based on different legal grounds. Considering the impact that a register as such might have in the sports sector, where the health data of athletes is constantly processed, it might be relevant for the EU institutions - or perhaps just for the national authorities or sports institutions - to set up a national register whereby sports organizations can safely store the health data of athletes, including a thorough description of how the explicit consent has been obtained by the controller. More specifically, additional information might also be stored about the injury history of a specific player to enhance transparency when it comes to contractual negotiations between clubs and players. Currently, sports clubs are not obliged to keep such register, nevertheless I would recommend to European sports institutions, such as UEFA for football, to implement it gradually (e.g., in a few countries to test it, before expanding it to all the associated federations) to better understand the benefits and the disadvantages that such register can offer to sports clubs and athletes. Despite the objective challenges that sports clubs might encounter while keeping this register in place, it might be

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[97] EDPB Guidelines, Guidelines 05/2020 on consent under Regulation 2016/679.
[98] Ibid.
[99] Ibid.
[100] EC recommendation on cross-border interoperability of electronic health records systems, 2008.

beneficial for clubs of a federation to have a transparent overview of (some) of the relevant athletes' data for their needs, on the other hand athletes could keep their sensitive data in a safer environment to avoid excessive flow of data which could be of advantage for unauthorized third parties.

3.4.1. 'The Project Red Card'. A new era for athletes' data?

As mentioned in the previous chapter, 'The Project Red Card'[101] concerns on the one hand the issue of ownership of athletes' data, which is not relevant for this work, on the other hand the alleged lack of consent from the players to process their performance data[102], as relevant for this work. This case is, due to the interests at stake, a relevant illustration of the power imbalance between athletes and sports clubs. Another demonstration of the latter will be exposed in section *4.5.1.* where some real examples will be mentioned.

This claim brought together more than 850 football players from the English and Scottish Premier Leagues who claim that there has been an unlawful collection and use of their performance data by betting and data processing companies. The claim alleges a violation of the UK Data Protection Law, arguing that players' performance data were processed unlawfully. The players, led by former Cardiff City Manager Mr. Russel Slade, argue that no consent had been given by players prior to processing their performance data[103].

This case helps to further understand the impact of data in sports, especially performance related data, which is clearly a valid resource for the sports clubs who (in practice) hold said data.

It is worth mentioning the European Commission's Report[104] which aims to have a free flow of data within the EU. According to the report, such flow might potentially create goods and services that collect and process data[105]. Nevertheless, this cannot be without any restrictions. A balance between economic and individual interests must be reached, guaranteeing an "adequate free flow of data"[106], whereby adequate refers to simultaneous protection of the interests of European citizens and the economic benefits that can arise from the free flow of data.

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[101] *The Guardian, an* outstanding newspaper from the UK, brought to the attention of the public the "Project Red Card" first in 2022, with more updates in January 2023 whereby also the Professional Cricket Association joined the Premier Leagues players in the case against the misuse of athletes' performance data.
[102] Ibid.
[103] Ibid.
[104] European Commission, A Digital Single Market Strategy for Europe, COM (2015) 192 final, 6 May 2015; cf. also European Commission, A European strategy for data, COM(2020) 66 final, 19 February 2020.
[105] *Ibid.*
[106] *Ibid.*

This argument seems relevant to the sports industry too. The aim of the industry must be, indeed, to reach an adequate level of protection of athletes' sensitive data and the economic benefits that sports clubs might obtain from exploiting their athletes' data.

3.5. Conclusion

This chapter assessed the concept of consent within the GDPR and some of the legal principles according to which personal data can be processed, mainly in the context of athletes' sensitive data at stake, specifically health data. Some guidelines of the EDPB have been analyzed as relevant to this work, when biometric data are processed and when consent is not obtained lawfully by the sports clubs acting as data controllers. Only a few principles have been determined as relevant to this work, namely data minimization, informed consent, and granularity of consent. This chapter prepares the reader for the following section whereby more attention will be given to the prevention of injuries in the context of AI, where the consent of athletes assumes even more importance considering that sensitive health data is processed by the sports clubs. AI technologies related to the prevention of injuries, without the free and informed consent of the data subjects (i.e., athletes), would probably lose most of their potential in terms of enhancement of teams' performances.

Furthermore, to highlight the importance of this matter, a real case has been displayed – 'The Project Red Card'- which helps to explain why the health data of athletes is truly decisive in the sports industry and why sports clubs cannot ignore any longer the athletes' complaints on how their data is handled by the clubs and third parties, e.g., betting companies, that exploit athletes' data to obtain economic benefits that are not shared with the data subjects, i.e. the athletes, but also that they have not provided any form of consent to the sports clubs for the processing of their data.

IV. Prevention of athletes' injuries with AI technologies and processing of health data: Will the AI Act proposal have an impact on the sports industry? Analysis of the current state of the art and recommendations

Should European sports institutions, e.g., UEFA for football, incorporate issues stemming from AI into their main policy focus to develop a common understanding of the AI impact in sports?
Are sports clubs subjected to the provisions of the AI Act proposal?

4.1. Preamble

This chapter will perform a comparison between the public health system and sports will be proposed before an analysis of the AI Act proposal and the impact that it might have on sports organizations. Some recommendations will also be provided to the extent of enhancing the impact that sports institutions can have in the development of AI in sports.

4.2. AI technologies and prevention of injuries. Public health as a guide to improving the sports industry

It is common knowledge that AI technologies are already in use in many sectors, for instance in public health. It can be deployed for emergency prediction, to detect or track infectious disease outbreaks[107] and more. AI uses in public health also have several challenges, risks, and limitations that are by nature incomparable with the deployment of AI in sports. Depending on the circumstances, AI in public health can increase inequality, for instance, comparing rural areas or more urbanized ones, as well as having a non-AI-trained workforce and ethical and privacy concerns. Some authors show that the use of AI in public health indeed can potentially lead to an enhancement of the entire system, nevertheless, it can also highlight more inequalities, especially when compared to any other sector[108]. An example might help. An algorithm used in a North American hospital to offer health care services was found to be biased against black patients, where, despite being as sick as some white patients, they had lower risk scores and thus fewer opportunities to obtain health care services[109]. The issue here arose since the used algorithm had to

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[107] Early detection of COVID-19 in Wuhan, China. For more information, Niiler, E. An AI Epidemiologist Sent the First Warnings of the Wuhan Virus. 2020 September 6, 2020]; Available from: https://www.wired. com/story/ai-epidemiologist-wuhan-public-health-warnings/.
[108] S. Fisher, L.C. Rosella, 'Priorities for successful use of artificial intelligence by public health organizations: a literature review', 2022, BMW Public Health
[109] Ibid.

predict health care costs rather than illness and considering that black patients usually have less access to care, they cost the health care system less[110]. In this specific case, AI amplifies biases present in data[111].

The above example might also help to illustrate that, even in a different sector that has a minor impact on the population, such as sports, there can be a certain number of risks in the prevention of injuries performed through AI technologies.

The first risk that might affect competitiveness between sports clubs is that only a few elite clubs, mainly in the most followed sports such as basketball or football, can afford expensive AI tools or contracts with vendors that provide such services, like Zone7 with Liverpool[112]. This is of course not a legal risk therefore will not be further examined beyond the parameters of this thesis.

A major risk can be represented by the fact that elite sports clubs might rely on their power against athletes to exploit their data without obtaining free consent on their health data, and this can lead to a potential free flow of data (advantaging also third parties who benefit from this free flow, e.g., betting companies) that can only affect athletes considering the existing power imbalance with sports clubs and benefit third parties.

As mentioned in the previous chapters, AI in sports raises data protection concerns. If we consider the use of AI technologies or software by sports clubs for the prevention of injuries, those must consider that the justification for the processing of health-related data must be greater than common personal data processing[113].

Nevertheless, even though AI tools are already in use in sports, the phenomenon is still new, and the ongoing technological developments in the field perhaps show an outdated regulation in the field of protection of personal data, whereby the responsibilities of the relevant stakeholders (controllers, such as sports clubs *et alia*) are not fully clear[114] [115] and the current version of the GDPR seems to rely majorly on the data subject's consent, which is a risk in the context of the sports industry wherein there is a solid imbalance between the athletes and sports clubs[116].

Therefore, one of the several questions, which might be more political rather than legal, is: how can sports institutions and clubs embed AI technologies into their structures? This is a relevant question considering the impact that AI is having on sports and athletes' fundamental rights vis a vis health

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[110] Ibid.
[111] IIbid.
[112] https://zone7.ai/news/client-announcements/zone7-expands-service-to-liverpool-fc/
[113] (Orlando, 2022)
[114] C. Casonato, B. Marchetti, Prime osservazioni sulla proposta di Regolamento dell'Unione europea in materia di intelligenza artificiale, BioLaw Journal – Rivista di BioDiritto, 3, 2021, pp. 415- 437. ('*First observation on the proposed AI regulation')*
[115] (Orlando, 2022)
[116] (Orlando, 2022)

data. In my opinion, a similar approach to public health can be adopted in this context. Nevertheless, it is necessary to mention that sports and public health have a natural, different relevance in public society. Sports embed commercial interests that differ from the public health ones. Sport indeed has a social relevance, but the sports clubs and the athletes perform their activities to achieve professional goals and economic gains. Conversely, public health has a significant impact for the whole society thus the implementation of AI systems in the public health frameworks must be carefully carried on safeguarding, above all, the public interest at stake.

Some authors[117] identify some priorities for a successful implementation of AI in public health, which the author considers relevant for the sports industry too, where applicable, as shown below:

1) *Contemporary data governance:*

Sports institutions, considering the social relevance of sports and the impact that it has on athletes' fundamental rights, must have a solid understanding of the legislations in place (e.g., assessment as to how consent is provided by athletes and whether the teams are compliant with the GDPR), involving experts in the field of data protection in high roles making sure that costs, benefits, and risks are assessed and fully understood by the institutions and the relevant stakeholders.

Sports institutions should work to improve efficient data and information technology (IT) systems, compliant with the current legislation, where data, privacy, and other relevant matters can interoperate to improve the whole sports movement.

A recommendation is also given[118] to building partnerships with the private sector and governments to gain expertise and enhance reliability among the relevant stakeholders of the sports industry.

2) *Implementation of AI good practices*

It is known that transparency in AI is one of the core principles[119] that helps prevent misuse of AI, as it offers clarity on the data used, what technology has been deployed, etc.

Sports institutions should therefore work together with local or national institutions to elaborate good practices related to how AI is used in sports and what sports clubs must do to ensure the correct use of AI technologies used to elaborate and process athletes' data. This is therefore relevant in the context of the prevention of injuries where athletes' health data is used to enhance team's performances and athletes' body conditions, without affecting athletes' fundamental rights.

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[117] (Rosella, 2022)
[118] Ibid.
[119] (Rosella, 2022) (Orlando, 2022)

4.3. AI Act proposal and relevance in sports context

The AI Act proposal is a proposed regulation of the European Union, made by the European Commission in April 2021[120], with the aim of introducing a regulatory and legal framework for artificial intelligence. The purpose of the AI Act proposal is to offer European Union citizens a legal framework for trustworthy AI. The proposed regulation embeds a risk-based framework for AI and will act as a 'uniform legal framework for the development, marketing, and use of artificial intelligence in conformity with Union values'[121]. Annex I of the draft regulation displays a broad definition of AI which includes "'machine learning approaches...logic and knowledge-based approaches... [and] statistical approaches'[122]. The relevance with sports is the creation of a 'high-risk' category for specific systems which shall be monitored closely from a regulatory point of view[123].

In addition to the high-risk category for which the proposed regulation sets several obligations for relevant stakeholders, such as a high level of transparency and information for users, specific data governance, and the creation of a risk management system, the draft regulation also provides indications for low and minimal risks[124]. Orlando[125] and Flanagan[126] point out that the relevance of the sports system is grounded in Annex III of the proposed regulation. In this Annex, some high-risk systems are reported, for instance, biometric identification, employment, law enforcement, asylum, migration, education, and administration of justice. AI in sports also finds room in Annex III wherein it is stated that 'AI systems [are] intended to be used to make or materially influence decisions affecting the initiation, promotion, and termination of a work-related contractual relationship, task allocation, based on individual behavior or personal traits or characteristics, or for monitoring and evaluating performance and behavior of persons in such relationships'[127]. Considering that AI in sports is used to monitor athletes' performances, sports might fall within the indication provided by Annex III, including prevention of injuries[128], meaning that sports clubs and institutions might be subject to stricter obligations than those contained in the GDPR.

The proposed AI legal framework is also applicable to sports clubs, even if they act as users. This is because the AI ACT proposal will not only apply to AI systems providers (and, consequently, to

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[120] See footnote 1
[121] Recital 1, Draft EU AI Regulation, 2021.
[122] Annex I, Draft EU AI Regulation, 2021.
[123] C. A. Flanagan, Stats Entertainment: The Legal and Regulatory Issues Arising from the Data Analytics Movement in Association Football. Part Two: Data Privacy, the Broader Legal Context, and Conclusions on the Legal Aspects of Data Analytics in Football, Entertainment and Sports Law Journal, 2022
[124] (Orlando, 2022)
[125] Ibid.
[126] See footnote 82.
[127] Annex III, Draft EU AI Regulation, 2021
[128] (Orlando, 2022)

their authorized representatives), but also to distributors, importers and deployers[129]. Furthermore, Article 5 of the AI Act proposal confirms the application of the proposal to the subjects mentioned above when these place an AI system on the market or put one into service together with their product[130]. The latter means that the AI Act will affect (almost) everyone that places an AI system in the EU market or puts it into service, including sports clubs as users of the AI systems. Thus, even if when not acting as users, for instance when sports clubs engage a third party to develop an AI system to place it on the market at a later stage, the AI Act would also apply. As mentioned in section 4.4. below, the AI act carries a risk-based approach. Therefore, the obligations that the recipients of the AI Act proposal must comply with can vary based on the level of the risks of the AI system. The higher the risk, the stricter the requirements to be observed pursuant to the AI Act proposal.

In light of the above, the AI Act proposal would apply to sports clubs, and considering that the AI systems used or created (through third parties as well) by sports clubs would have focus mainly on the processing of athletes' sensitive data, athletes consent and its requirements as mentioned in Chapter III will become even more decisive to ensure that athletes' sensitive (and normal) data is lawfully processed by sports clubs while deploying AI systems.

At the time of this thesis, the AI Act proposal has been adopted by the European Parliament on 13 June 2023, meaning that the EU institutions will begin the trialogue negotiations to reach a final version of the AI Act approximately by the end of 2023, beginning of 2024.

4.3.1. Trustworthy AI: a prerequisite

In the previous paragraph, it has been mentioned that the AI Act is a proposal to offer European citizens trustworthy AI. But what is the meaning of trustworthy AI? How can AI be trustworthy? Several authors have tried to answer these questions[131], but for the purpose of this work, only the opinions which coincide with the topic of this thesis will be considered and evaluated.

The European Commission High-Level Expert Group on AI (HLEGAI) adopted the Ethics Guidelines for Trustworthy AI in April 2019, underlying that citizens will understand the potentiality of AI technologies if the latter can be trusted. AI that is trustworthy is ethical, legal, and robust[132].

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[129] Article 2 (1) (c) AI Act proposal, 13 June 2023.
[130] Article 5, AI Act Proposal, 13 June 2023.
[131] Tschopp PQ-Rand M, "Relationship between Trust and Law Is Counterintuitive and Paradox" (Can Laws build Trust in AI?), 2021
[132] "AI Hleg Ethics Guidelines for Trustworthy AI"

The word 'trust' is displayed several times (more than 45 times[133]) in the explanatory memorandum to the AI Act proposal. In this introductory document, it is stated that the AI Act proposal clearly aspires to create an ecosystem by offering a legal framework for trustworthy AI[134]. This is a statement that 'trust' plays a significant role in the Act. Trust might have several meanings, nevertheless for the purpose of this work it is important to distinguish it from trustworthy, which assumes a different definition in this context[135]. Trustworthiness can be considered as an attribute, and it is based on goals, beliefs, and competencies and it is difficult to demonstrate to others[136]. Freitas and Iacono believe that trustworthiness is a set of motivations for acting but trust and trustworthiness are often confused. Therefore, the goal of a trustworthy AI regulation, which can also be applied to sports, is based on the idea that AI systems must be considered reliable by citizens and, in this context, by athletes. The latter must be able to rely on the AI technologies deployed by their clubs as their sensitive data is involved.

4.4 AI Classification of risks

The AI Act proposal, as mentioned, carries a risk-based approach and it is divided into three categories, namely unacceptable, high-risk, and low-risk AI. Recital 14[137], in its latest amendment[138], clearly defines unacceptable AI as any AI that hides a demonstrable risk for the EU citizen and therefore must be prohibited. Among other examples, it is worth mentioning social scoring tools[139] created by Governments which are, without any doubt, prohibited[140]. The sports industry seems excluded from this extreme category since AI tools used in sports, among others VAR or tools deployed for training purposes, are less likely to affect EU citizens and athletes with the current state-of-the-art technology. A different and riskier situation would be, for instance, if an AI tool is used to perform social scoring[141], i.e., to rank people's reputations in the society or, in the

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[133] Tschopp PQ-Rand M, "Relationship between Trust and Law Is Counterintuitive and Paradox" (Can Laws build Trust in AI?), 2021
[134] Ibid.
[135] Freitas, R. and Iacono, S., Trust Matters. London: Bloomsbury Publishing Plc., 2021
[136] Ibid.
[137] *"In order to introduce a proportionate and effective set of binding rules for AI systems, a clearly defined risk-based approach should be followed. That approach should tailor the type and content of such rules to the intensity and scope of the risks that AI systems can generate. It is therefore necessary to prohibit certain **unacceptable** artificial intelligence practices, to lay down requirements for high-risk AI systems and obligations for the relevant operators, and to lay down transparency obligations for certain AI systems."*
[138] https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.html
[139] https://www.scmp.com/economy/china-economy/article/3096090/what-chinas-social-credit-system-and-why-it-controversial
[140] Recital 17, AI Act proposal, 13 June 2023.
[141] Ibid.

sports context, to rank players performances and to exclude them whether those are below the average.

High-Risk AI: as mentioned, this is relevant for the purpose of this thesis, mainly concerning the monitoring of performances which are explicitly mentioned in the proposed regulation. These AI systems might be potentially dangerous for people, however, can be considered safe if the necessary safeguards are applied and the necessary precautions are taken by the relevant stakeholders.

Lastly, there is Low Risk AI, such as chatbots. For these technologies, the level of transparency is regular and does not represent major risks for European citizens. Even though some systems are considered low-risk, it is possible to find some examples in sports that fit into the lowest-risk category, for instance, the VAR in football or similar tools in other sports. As some authors explain[142], some transparency issues might still arise in relation to the relevant actors who need to work with the AI (i.e., players, referees, etc.) and need clarity on how the system (and algorithms) works.

An additional concern relates to the division of responsibilities between the AI tool provider, the buyer (e.g., UEFA or sports federations), and the users (e.g., referees or players) when, for instance, the AI tool (the VAR) has a technical issue. Who is accountable for the malfunctioning of the system? There are many unanswered questions that need additional attention.

For the scope of this thesis, the high-risk category is the most relevant in the context of the prevention of injuries, considering that it is included in the macro field of monitoring performance. Therefore, the sports institutions, once the AI Act proposal enters into force, must work proactively with sports clubs to elaborate a system where athletes' rights concerning sensitive data, such as health data, are protected.

Is there a solution to this problem? Previously in this chapter, good practices concerning AI tools' implementation in sports were discussed. A recommendation to the sports institutions is embedded in the AI Act proposal itself, whereby Article 69, paragraph 3[143], states that codes of conduct can be elaborated by individual providers of AI systems or by organizations representing them with the representatives of users (including trade unions, or consumers associations, for instance), to

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[142] (Orlando, 2022)

[143] https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.html
"Codes of conduct may be drawn up by individual providers of AI systems or by organizations representing them or by both, including with the involvement of users and any interested stakeholders, including scientific researchers, and their representative organizations, in particular trade unions, and consumer organizations. Codes of conduct may cover one or more AI systems considering the similarity of the intended purpose of the relevant systems. Providers adopting codes of conduct will designate at least one natural person responsible for internal monitoring".

promote the effective application of the requirements of the high-risk and low-risks systems pursuant to the proposed AI Act.

4.4.1. Focus: FIFPRO and AI in sports. Evaluating the future of sports and defending athletes' fundamental rights

As mentioned in the first chapter, this work is intended to offer recommendations to sports institutions and relevant stakeholders about the use of AI technologies in sports, promoting a safe and risk-based approach to enhance the whole sports system.

In this regard, the FIFPRO[144] perspective on this topic is relevant for the purpose of this thesis. I had the opportunity to interview Dr. Michael Leahy, Policy Advisor & Strategic Project Coordinator at FIFPRO, who shared some relevant insights on how relevant AI in sports from the protection of athletes' rights perspective is. As a preliminary disclaimer, neither athletes' personal data nor football clubs' names will be made explicit in this work.

Dr. Leahy mentions that a few years ago, a survey was conducted with FIFPRO affiliates concerning their opinion on the use of their data. Ultimately the three main issues at stake were access to data, control over data and data portability.

Regarding access to data, many players stated that they have no certainty as to where or to whom their data is shared and thus, we can assume that athletes are not fully aware about the purpose for which their data is processed.

Mr. Leahy provided a real example on a situation which occurred in approximately 2013, although still relevant nowadays. A football player was about to be transferred to another football club; however, the new club was not convinced of his fitness due to some previous injuries which he had sustained. For this reason, the player officially asked his club to obtain his performance data and health data collected in the previous months, and the club refused to provide him with his own data claiming that he could not receive them without a specific reason. The player eventually received a report with his own data, but this example helps to illustrate the lack of progress in the last decade regarding the transparency and difficult access to health data between sports clubs and athletes especially when it comes to their own (health) data. This real example confirms how the power imbalance between athletes and sports clubs is a proper concern that, since long time, poses the athletes' rights (as weaker contractual party) at risk.

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[144] FIFPRO - https://fifpro.org/en - is the world's largest trade union for football players who oversees defending professional football players active in more than 65 countries.

Concerning the control issue, athletes are convinced that their data is used for monitoring performance purposes, however they believe that their performance data is used for other purposes where proper consent has not been provided by them. This is relevant as the granularity of consent[145] principle might be affected.

Lastly, data portability is a problem as well. Athletes are generally aware about their data being shared with third parties; however, they are concerned about the lack of control in this respect. A good example reported by Mr. Leahy involves the collaboration between the national teams and the football clubs to which players belong to. Some national teams share with football clubs athletes' performance/health data to provide clubs with an overview of the fitness status of their athletes. One of the major national teams in the Asia and Oceania division (as per FIFPRO denomination) is currently advanced in sharing with local football clubs athletes' data in a safe manner, however most of the national teams look unprepared to the AI technologies challenges facing the sport.

The issue here at stake, which is also one of the main topics under FIFPRO evaluation, is that teams can go beyond the mere tracking of match data and biometric parameters, for example, which might consistently affect athletes' rights. For more insights on the legal grounds for processing biometric data refer to section *2.3.2.*

Moving towards the prevention of injuries topic, Dr. Leahy confirms that it is a key topic in FIFPRO as currently the framework within which sports clubs and institutions operate does not provide an adequate level of protection of athletes' rights.
A very recent example of a vast amount of athletes' data collected is the latest football World Cup 2022 in Qatar. FIFA installed, with national teams' consent, cameras in the stadiums able to monitor 29 body points of each player on the pitch. This results in a collection of thousands of athletes' performance data which might potentially go beyond the mere performance analysis but, also according to FIFPRO, could represent a risk in the context of contractual negotiations between athletes' and sports clubs. Indeed, it is still not clear where the collected data will be stored and whether it will be shared with third parties. In addition, there is no transparency in the algorithms used by the AI tools created by third parties specifically engaged by FIFA for this purpose. As such, this increase the risks of athletes' not being in control of their data, which could affect their own privacy rights, but also contract negotiations with football clubs, for example, where performance data might push football clubs negotiate worse contractual conditions as influenced by such data.

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[145] Chapter 3, para 3.2.2.

For all these reasons, FIFPRO is constantly working with the sports institutions but also with the European ones to develop a solid legal framework where there is clarity and transparency as to how athletes' sensitive data is collected, processed, and shared among the relevant stakeholders.

4.5. Role of the European Sports Institutions, e.g., UEFA for football, in the context of AI tools in sports and AI act proposal

Governance of sports in the European landscape has several challenges to face, not only concerning the use of AI in sports but also in relation to how clubs can develop youth leagues or how sports bodies can keep the competitions interesting for the new generations[146], for example.

The sports institutions' role and contribution to AI in sports represents, indeed, a *conditio sine qua non* for developing an efficient and effective system, since the clubs, athletes, and all the relevant stakeholders in the world of sports (European, but worldwide as well) are organized in a structured governance system[147] whereby those institutions, even though being of a private nature, have a prominent "public" role[148] and act as the main actors whether new regulations in sports have to be adopted[149].

An older but leading example of the interconnection between sport and policy is the *Bosman* case in 1995[150], where there was an evident rise of sport in the EU institutional agenda where sport was recognized not only as an economic activity but also as a socio-cultural one, beneficial for the whole European Union society[151].

An example of the sports institutions' attempts to create their own internal regulations involves the *Federation International de football association[152]*, the most prominent football institution in the world, which approved on 24 October 2019 the FIFA Data Protection Regulation[153]. This regulation borrowed most of the provisions from the GDPR, although contains minor important differences.

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[146] Together for the future of football, UEFA report. Available at https://editorial.uefa.com/resources/0269-1267e6a556ce-3b9dd3e7e6ec-1000/together_for_the_future_of_football.pdf
[147] (Orlando, 2022)
[148] A. Duval, What *lex sportive* tells you about transnational law, in P. Zumbansen (ed.)., The Many Li ves of Transnational Law: Critical Engagements with Jessup's Bold Proposal, Cambridge, 2020, pp. 269- 293;
[149] F. Latty, *La Lex sportiva*: Recherche sur le droit transnational, Paris, 2007
[150] Case C-415/93, Bosman
[151] García, B., (2016) "From regulation to governance and representation: agenda-setting and the EU's involvement in sport", *Entertainment and Sports Law Journal* 5(1), 2. doi:
[152] Known as FIFA.
[153] FIFA Data Protection Regulation, available at https://digitalhub.fifa.com/m/787f00d0380f4120/original/dr9labmtd63ctx6o3erk-pdf.pdf

The purpose of this regulation is to establish a standard to be applied when a FIFA entity processes personal data and to provide safeguards against the infringement of data privacy rights[154].

It introduced the "need to know principle", which has no equivalent in the GDPR (even though it seems an addition to the integrity and confidentiality principle in the GDPR) according to which personal data might be accessible by people who need it for their activity, however, it does not go further in explaining how appropriate security should be implemented[155].

Furthermore, "*each FIFA entity shall ensure that all infrastructure used for processing personal data is adequately protected with "state-of-the-art technical and organizational measures, taking into consideration the risks to data subjects" ("the protection principle")*"[156][157].

This regulation, even though too weak[158] as it is mainly a reproduction of the GDPR provision but addressed to FIFA entities (especially not within the EEA), shows that sports institutions, at least the ones with decision-making powers, have the intention to study issues related to topics that affect their members, such as data protection.

As also mentioned in the AI Act proposal[159], the possibility to create codes of conduct by organizations that deploy or have the intention to develop AI systems within their organizations paves the way for a possible revolution in the sports industry.

Even though the AI Act is currently under discussion, it would be recommended for sports institutions to brainstorm, in conjunction with their affiliates, public institutions, and relevant stakeholders, and work on a regulatory framework based on the challenges brought by AI and how to combine these with the protection of athletes' sensitive data.

The interaction between (elite) sports clubs and sports institutions that can support the awareness about the potentiality of AI (see Zone7 partnership with Liverpool FC in the field of prevention of injuries), can help to correct some problems which may represent a major risk for athletes' and the protection of their health data exploited by third parties and not only by the clubs which they belong to.

In this framework, is it necessary to mention the Data Protection Impact Assessment (DPIA)[160] . According to Article 35 of the GDPR, the controller of a data processing has a legal obligation to

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[154] Article 1 FIFA Data Protection Regulation.
[155] J. Bellamy, An overview of FIFA's new data protection regulations, LawInSport, 2020
[156] Ibid.
[157] Bellamy, An overview of FIFA's new data protection regulations, LawInSport, 2020
[158] (Orlando, 2022)
[159] See note 96.

assess the impact that the processing would have on the data subject involved, more specifically to assess, prior to the processing, whether said processing represents a high risk to the rights and freedoms of the data subject.

Considering that in the context of deployment of AI technologies in sports, personal data is processed, it may become necessary to assess the impact of those technologies on the sensitive data of the athletes. The European Data Protection Board has provided guidance concerning the different types of processing that might require a DPIA. The same guidance might be adopted and implemented by the sports institutions to elaborate a more tailored DPIA when AI tools are used in sports.

This analysis must therefore not only cover the high-risk-based approach applicable to the evaluation of the performances but also to low-risk situations which are still applicable in sports as mentioned in the previous section. The services falling in the low-risk systems category, however, do not provide specific obligations to the providers[161]. Nevertheless, it is logical to understand that the sports institutions might even act *in melius* to improve their internal rules on transparency and liability which might be linked to low-risk systems too[162].

On the one hand, the implementation of a legal framework in the context of the AI deployment in sports within the sports institutions, for instance UEFA for football, can bring benefits to sports clubs from an economic and organizational point of view, considering that they would engage solely highly reliable vendors which would operate within the boundaries posed by sports institutions' policies on AI. On the other hand, it would offer athletes' more certainty on how their performance and health data are processed by the processors, considering more effective rules on how consent is given by the athletes for such processing.

4.6. Conclusion

This chapter has first analyzed the data minimization principle, pursuant to the GDPR. This principle is relevant since not all the athletes' data have to be processed but only the ones that are needed for a specific purpose.

Furthermore, some insights are given about FIFPRO's role in the ongoing development of the sports industry and the key role that athletes play in this context.

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[160] Article 35 GDPR
[161] https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.html - AI Act - version adopted by European Parliament on 13 June 2023.
[162] (Orlando, 2022)

The analysis shifted to considerations on the AI Act proposal, which is currently following the usual legislative trialogue among the relevant European Institutions, showing how the key is to establish a process between the sports institutions and the sports clubs to improve and have a safer use of the AI technologies in sports, especially concerning sensitive topics such as prevention of injuries, which by nature involves the processing of athletes' health data. Therefore, the question remains whether the AI Act proposal and its possible implementations in the world of sports can support the development of the sports communities but at the same time guarantee a high level of protection for athletes' sensitive data exploited by the sports clubs for their benefit.

V. Conclusion

5.1. Connecting the dots

The deployment of AI tools in sports is not a new concept. This phenomenon does not solely have an impact on teams' performances and the enhancement of the competition among sports clubs, but also on athletes and their sensitive data and how it is processed by the sports clubs or other third parties.

The research will serve on the one hand to increase the awareness of relevant stakeholders in the world of European sport, namely institutions, clubs, and athletes. On the other hand, this work aims to highlight the importance of athletes' sensitive data in the context of sports, having at the core athletes' consent, which must be informed and freely given, before processing vast amounts of athletes' data which might affect their fundamental rights. More specifically, the core of this thesis is the prevention of injuries in the context of AI tools deployed in sports. Athletes' data needed for such a purpose is undeniably sensitive data, i.e., health data, because in order to prevent injuries, sports clubs must have access to a vast amount of data referring to the health status of athletes. This data is not only recent data, but also includes historical data spanning athletes' career.

The processing of these types of data has some benefits for both sports clubs and athletes. For sports clubs, exploiting such data can result in huge economic gain, while athletes might benefit from knowing their body, how vulnerable it is to injuries and allows them to explore new ways to train their own body based on such data.

At the same time, the use of AI in sports raises several concerns as mentioned in the previous chapters. The main risks involve the consent of athletes, which might not be provided freely or after a thorough consideration of the possible consequences of a certain processing, but also the uncontrolled flow of athletes' data which might end up in the hands of exploitative third parties. This can also lead to an increased revenue for such third parties which would not benefit the athletes at all. This is the reason why 'The Project Red Card' assumes nowadays even more relevance as it is evident how players (for the moment, mainly elite athletes with consistent interests) strongly want to be involved in the processing of their performance data as never before.

In the light of the above considerations, what would be a sufficient solution to this problem? There are many enquiries that might need solid answers. For instance, it shall be further discussed whether the consent provisions of the GDPR are able to protect athletes' rights (and more generally, data

subjects), considering how AI is shaping, and will continue to shape, the world of sports. It is not easy to answer this question, since it partly concerns the willingness of the actors involved to fully comply with the GDPR provisions, but at the same time it might potentially involve an interpretation issue of the consent articles under the GDPR.

It looks that the GDPR might already be outdated if we analyze it in the context of AI, as AI is a developing phenomenon which needs to be addressed by the Institutions as comprehensively as possible.

A first attempt to do so is, as explained, the AI Act proposal. It aims to achieve different objectives, such as regulating the AI phenomenon in the European Union, nevertheless the interplay between the GDPR and AI is more powerful and alive than ever.

The processing of data is perhaps the main challenge that comes with the deployment of AI technologies, as it impacts fundamental rights of people and thus needs to be cautiously taken into consideration.

In the world of sports, though, some corrections must be made before it is too late. AI impact in sports is real, and it is vital for the Institutions to open discussions with the relevant stakeholders to try, at least, to "own" the AI subject, aiming at elaborating a solid legal framework ready to face the unlimited challenges that AI in sports poses.

In my opinion, which is based on the current available version of the AI Act proposal[163], the risk-based approach of the envisaged regulation must be applied to the sports industry. The AI tools used by sports clubs should not be used without a clear legal framework defining the responsibilities of the actors involved, the consequences following the unlawful use of athletes' data and a solid set of rules concerning the requirements needed to obtain consent from athletes, considering the risks involved.

It might take a few years to see consistent developments in this topic, perhaps integrated by EUCJ rulings in the sports context. Academia, in the meantime, should continue studying how, from a theoretical and practical perspective, sports institutions and clubs can implement best practices related to the use of AI in sports and make it compatible with the AI Act proposal that will be implemented.

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[163] https://www.europarl.europa.eu/doceo/document/TA-9-2023-0236_EN.html - AI Act - version adopted by European Parliament on 13 June 2023.

As evident from the conversation with Mr. Leahy at FIFPRO, the relationship between athletes (and their unions) and institutions plays a crucial role for the development of the AI in the sports industry, towards a greater protection of athletes' fundamental rights.

It is thus far evident that the GDPR constitutes the bulwark from which most of the provisions could be borrowed to build a tailored framework within the sports landscape.
Nevertheless, at the same time there are no evident impediments, for sports institutions, which need to preserve and enhance the social relevance of sports in the modern societies, to pursue and obtain better conditions for who represents the heart of all sports, athletes.

BIBLIOGRAPHY

Legislation

European Parliament and Council Regulation (EU) 2016/679 of 27 April 2016 on the protection of natural persons about the processing of personal data and on the free movement of such data [2016] OJ L 119/1 (GDPR)

Directive 95/46/EC (Data protection directive)

Consolidated Version of the Treaty on the Functioning of the European Union [2012] OJ C326/47 (TFEU)

European Convention on Human Rights

Charter of Fundamental Rights of the European Union

Universal Declaration of Human Rights (Adopted on 10 December 1948 (Resolution 217 A(III)) during the 183rd plenary meeting of the General Assembly)

Legislative Proposals

European Commission Regulation proposal, Artificial Intelligence Act, 2021, https://eur-lex.europa.eu/resource.html?uri=cellar:e0649735-a372-11eb-9585-01aa75ed71a1.0001.02/DOC_1&format=PDF

Documents relating to legislative sources.

Communication from the European Commission (EC) to the Parliament, High-Level Expert Group, 2021

European Data Protection Board Guideline 03/20 on the processing of health data for scientific research in the context of the COVID-19 outbreak, 2020.

Doctrine

Books, chapters of books and journals

Bathaee Y., The Artificial Intelligence Black Box and the Failure of Intent and Causation'. vol. 31 Harvard Journal of Law & Technology, 2018.

Board E. D., (sd). EDPB Guidelines 03/2020 on the processing of health data for scientific research in the context of the COVID-19 outbreak (21 April 2020).

Cath C., Governing artificial intelligence: ethical, legal and technical opportunities and challenges, 2018.

Casonato C., Marchetti B, Prime osservazioni sulla proposta di Regolamento dell'Unione europea in materia di intelligenza artificiale, BioLaw Journal – Rivista di BioDiritto, 3, pp. 415- 437, 2021.

Dove E.s. and Chen J., International Data Privacy Law, Vol. 11, No. 2, What does it mean for a data subject to make their personal data manifestly public? An Analysis of GDPR Article 9 (2) (e), 2021.

Dimitrova D., the right to explanation under the right of access to personal Data: legal foundations in and beyond GDPR, 2020.

Ding P., Analysis of Artificial Intelligence (AI) Application in sports, 2019

Duval A., What *lex sportive* tells you about transnational law, in P. Zumbansen (ed.)., The Many Esmaeilzadeh, P., Use of AI-based tools for healthcare purposes: a survey study from consumers' perspectives'. BMW Med Inform, 170, 2020.

Fierens M, De Bruyne J., Artificial Intelligence in sports - the legal and ethical issues at play, 2020.

Fierens M., Artificial Intelligence in sports: Some legal and ethical issues, in Technology and Society: The evolution of the legal landscape, 2021.

Fischer, R., Study in support of the evaluation of Directive 96/9/EC on the legal protection of databases. Final report (2018, report for the EC), 2018.

Floridi, L., Establishing the rules for building trustworthy AI. Nature Machine Intelligence, 261- 262, 2019.

Freitas R., Iacono S., Trust Matters. London: Bloomsbury Publishing Plc., 2021.

García, B., From regulation to governance and representation: agenda-setting and the EU's involvement in sport, *Entertainment and Sports Law Journal* 5(1), 2. Doi, 2016.

Geiregat S., The Data Act: Start of a New Era for Data Ownership?, 2022.

Georgeva L. and Kuner C., Art.9, Processing of special categories of personal data, in C. Kuner, Lee Bygrave and Christopher Docksey (eds), The EU GDPR: A commentary, p. 375, 2020.

Haimberger, K., Datenschutz in der medizinischen und pharmazeutischen Forschung (Data protection in medical and pharmaceutical research). Manz, 2021.

Halson, S. L. (2014). Monitoring Training Load to Understand Fatigue in Athletes, 44 SPORTS MED. 139, 140–41 (2014).

Horvitz, E. (2016). Defining AI (One hundred year study on Artificial Intelligence), 2016. Stanford University.Lives of Transnational Law: Critical Engagements with Jessup's Bold Proposal, Cambridge, 2020.

Humerick M., Taking AI Personally: how the EU must learn to balance the interests of personal data privacy & Artificial Intelligence - vol. 34 Santa Calara High Technology Journal, 2018.

Ioannidou I. and Sklavos N., SCYTALE Group, Computer Engineering and Informatics Department, University of Patras, Greece, On General Data Protection Regulation Vulnerabilities and Privacy Issues, for wearable devices and Fitness Tracking Applications, 2021.

Jarvis D., Jones D., Westcoot K., The Hyperquantified athlete: technology, measurement, and the business of sports. Deloitte insights, 2020.

Latty F., *La Lex sportiva*: Recherche sur le droit transnational, 2007

M. Fenech, N. S. Ethical, Social, and Political Challenges of Artificial Intelligence in Health', 2018.
Martin, L., Sports Performance Measurement and Analytics, 2016.

Mousavi, Dr. M. E., AI vs Algorithms: What's the difference?, 2017

Orlando A., "AI for Sport in the EU Legal Framework, IEEE International Workshop on Sport, Technology and Research (STAR), 100-105, 2022.

Osborne B., J. C., Legal and Ethical Implications of Athletes' biometric data collection in professional sport. Marquette Sports Law Review, 2017

Panesar, A., Machine Learning and AI for Healthcare Big Data for Improved Healthcare, 2020.

Prabhu, V., Multi-Layered LSTM for Predicting Physician Stress During an ED Shift. IIE Annual Conference. Proceedings, 1223, 2020.

Rein, R "Big data and tactical analysis in elite soccer: future challenges and opportunities for sports science". SpringerPlus, 2016.

Rosella, S. F., 'Priorities for successful use of artificial intelligence by public health organizations: a literature review'. BMW Public Health, 2022.

Russell K., Why Sports Teams Should Avoid Relying on Consent To Comply With GDPR, 2018.

Schonberger, D., Artificial intelligence in healthcare: a critical analysis of the legal and ethical implications, vol 27 issue 2 International Journal of Law and Information Technology 17, 2019.

Surden, H., Artificial Intelligence and Law: An Overview. vol. 35 issue 4 Georgia State University Law Review 1305; K. Nevala, 'The Machine Learning Primer' (SAS Best Practice e-book 2017), 2019.

Swarup P. and Tech B,. 'Artificial Intelligence [2012] vol. 2 issue 4 International Journal of Computing and Corporate Research, 2021.

Tschopp PQ-Rand M, Relationship between Trust and Law Is Counterintuitive and Paradox (Can Laws build Trust in AI?), 2020.

Warrant S., Brandeis L, The Right to Privacy, Harvard Law Review Vol. IV., 1890.

Watson B., Data Ownership in Sports technology, 2020.

Case Law

Case C-415/93, *Union Royale Belge des Sociétés de Football Association ASBL v Jean-Marc Bosman*.

C-61/19, Orange Romania S v Autoritatea Națională de Supraveghere a Prelucrării Datelor cu Caracter Personal (ANSPDCP).

Website and Newspaper (online)

FIFPRO, Football players Worldwide, https://fifpro.org/en/player-iq/player-iq-tech/why-players-should-be-cautious-about-the-collection-and-use-of-their-performance-data-and-machine-learning

KU Leuven (CiTiP), https://www.law.kuleuven.be/citip/blog/towards-a-new-research-line-on-artificial-intelligence-and-sports-at-citip-some-preliminary-legal-and-ethical-issues/

LawInSport, https://www.lawinsport.com/topics/item/an-overview-of-fifa-s-new-data-protection-regulations

Lexology, https://www.lexology.com/library/detail.aspx?g=38355c57-547b-4e76-b575-e600d9519d2a

Mayer Brown Law Firm, https://www.mayerbrown.com/en/perspectives-events/publications/2023/06/european-parliament-reaches-agreement-on-its-version-of-the-proposed--eu-artificial-intelligence-act

Northon Rose Fulbright Law Firm, https://www.nortonrosefulbright.com/es-es/inside-sports-law/blog/2020/09/project-red-card-uk-soccer-players-call-foul-on-the-use-of-their-personal-data

Penningtons Law firm, https://www.penningtonslaw.com/news-publications/latest-news/2020/gdpr-in-sport-trying-wearables-on-for-size

PWC - Pricewaterhouse and Coopers, https://www.pwc.com.au/industry/sports/artificial-intelligence-application-to-the-sports-industry.pdf

The Guardian, https://www.theguardian.com/football/2021/oct/12/hundreds-of-professional-footballers-threaten-action-against-betting-companies

The Sports Pro Media, https://www.sportspromedia.com/news/project-red-card-soccer-data-gdpr-lawsuit-ea-sports-sla/?zephr_sso_ott=VG55k1 and https://www.sportspromedia.com/news/project-red-card-soccer-data-gdpr-lawsuit-ea-sports-sla/?zephr_sso_ott=VG55k1

The Washington Post, https://www.washingtonpost.com/news/morning-mix/wp/2016/04/12/40-percent-of-former-nfl-players-suffer-from-brain-damage-new-study-shows/

UEFA, https://editorial.uefa.com/resources/0269-1267e6a556ce-3b9dd3e7e6ec-1000/together_for_the_future_of_football.pdf