

E.TEC YEARBOOK

Artificial Intelligence & Robots



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PREFACE

It is a great satisfaction to present E-Tec's third Yearbook, dedicated to the theme "Artificial Intelligence and Robots".

This publication, based, in part, on the multidisciplinary research developed at E-Tec, aims to promote the debate on this topic of undeniable actuality as well as of economic, social and legal relevance, intensified by the health and socioeconomic crisis caused by COVID-19.

Its approach includes, in addition to ethical aspects, several legal dimensions - including the problems and challenges that the use of artificial intelligence poses in terms of tax, criminal, company, labour, industrial property, copyright and sport law -, besides covering the relationship with another matter of enormous importance: data protection.

Special acknowledgment is due to all the participants in this publication, to Andreia Nogueira, the reviewer who accompanied us in this edition and to the School of Law of the University of Minho for supporting this initiative.

Braga, December 2020.

Maria Miguel Carvalho
Principal researcher of E.Tec

PREFÁCIO

Com enorme satisfação, apresenta-se o terceiro Anuário do E-Tec, desta vez dedicado ao tema “Inteligência Artificial e *Robots*”.

Esta publicação, que assenta em parte da investigação multidisciplinar desenvolvida no E-Tec, visa promover o debate deste tema de inegável atualidade e relevância económica, social e jurídica, acentuadas pela crise sanitária e socio-económica provocada pela COVID-19.

A sua abordagem contempla, como não podia deixar de ser, para além de aspetos éticos, várias dimensões jurídicas – incluindo os problemas e os desafios que a utilização da inteligência artificial coloca em sede de direito fiscal, penal, civil, das sociedades comerciais, do trabalho, da propriedade industrial, dos direitos de autor e do desporto -, abarcando ainda o relacionamento com outra temática de enorme importância: a proteção de dados.

É devido um agradecimento aos investigadores que participaram nesta publicação, à revisora que nos acompanhou nesta edição, Andreia Nogueira, e ainda à Escola de Direito da Universidade do Minho pelo apoio a esta iniciativa.

Braga, dezembro de 2020.

Maria Miguel Carvalho
Investigadora Principal do E-Tec

A NEW AI POWER PLAY FOR WINNERS IN THE EMPLOYMENT RELATIONSHIP OF PROFESSIONAL FOOTBALL

How Lawful is Artificial Intelligence to the Upcoming Portuguese
'Big Data Ball' Championship?

UM NOVO JOGO DO PODER DA IA PARA OS VENCEDORES NA RELAÇÃO LABORAL DO FUTEBOL PROFISSIONAL

*Quão lícita é a Inteligência Artificial para o vindouro Campeonato
Português 'Bola Big Data'?*

Cesar Analide¹

Diogo Morgado Rebelo²

Summary: 1. The Data Ball Championship of a new era in Football: an introduction 2. Footballnomics can give glory to professional footballers and Data Protection Law shall respect the essence of the Moneyball Championships 3. AI-based Football Analytics: a sporting discipline like never before 4. Professional footballers as the foremost protagonists of an increasingly data-driven championship 5. Football Data Protection jigsaw of the new AI game- changing:

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mapping the debate 5.1. AI-based Football Analytics and player metrics under the GDPR 5.2. AI Decision-making not based solely on automated means 6. Is Data Protection regime ready to meet the challenge posed by legal engineering? Does legal dogmatics choke or does it shine AI field-based monitoring? 6.1. The (un)lawfulness of an (un)satisfactory regime 6.2. European Union Law enforces technophobic uniformization, the national legislator obeys through inaction and in the end both the football clubs and professional players are the only ones (un)protected 7. Concluding remarks with the question that no legal scholar endeavour give an appropriate answer: are privacy preserving dictates killing AI field-based Football Analytics?

Keywords: AI-based Football Analytics; Football players employment contract; 'Legitimate Interests' basis.

Abstract: Nowadays, players are no more than numbers or financial assets from the clubs' viewpoint. Decisions in the realm of 'Footballnomics' will no longer *only* be assigned to the anthropopathic willpower of scouts, club owners, general managers, or even to coaches. From theory to practice, in the current state of the *legis artis* applicable to the field *AI-based Football Analytics* and decision-making processes in the employment context, Portuguese lawmaker once again have highlighted their propensity to pursue by inaction the technophobic (lay)gorithmics of normative nature. And despite all the attempts of the European legislator to uniformize theoretical safeguards, professional footballers do not have yet conscientiousness of the risks envisaged and on how to exercise their rights concerning *AI-based* techniques. Consent is not valid. Accordingly, since there is no strict need to use AI for players to maintain their psychophysical conditions or to check their health status, as well the legitimate interest of predictive analysis is not contemporary and real, legal engineers find no basis for lawfulness. Portuguese lawmaker has to introduce particular provisions in Portuguese Data Protection Law or even other legislative act in order to assure the lawful and fair processing as provided for in Chapter IX, specifically whereabouts employment sporting contracts can subsume. Thus, in matters of Football Analytics at the scale of ML modelling, the Data Protection Law is not yet prius, nor posterius, it is not given, nor the solution, it is not in the beginning, nor in the end. It simply does not exist, but it should. Any player, knowing that is supervised by AI tools on the field - whether in training sessions or in-games environment - may tend to change behaviour, improve performances and score more goals, thereby helping out his/her teams achieve victories. In this essay, we will conclude that Data Protection Law is for AI-based Football Analytics a real stone in the shoe, which hurts because of its non-reasonability and intolerable disproportionality from the viewpoint of those who find themselves overly and negatively affected, i.e. the football clubs themselves or even the sports tech companies.

Sumário: 1. O Campeonato *Data Ball* numa nova era do Futebol: um intróito 2. O fenómeno *Footballnomics* pode glorificar os futebolistas profissionais e o Direito à Proteção de Dados devia respeitar mais a essência dos Campeonatos *Moneyball* 3. Análítica Futebolística baseada na Inteligência Artificial: uma disciplina desportiva como nunca dantes perspeticuada 4. Futebolistas profissionais como os principais protagonistas de um campeonato crescentemente *data-driven* 5. O quebra-cabeças da Proteção de Dados nas métricas pessoais de um novo jogo de IA 5.1. Análises futebolísticas através da IA e as métricas dos jogadores segundo o RGPD 5.2. A tomada de decisão na IA Futebolística não se baseia em meios exclusivamente automatizados 6. Está o Direito sobre a Proteção de Dados pronto para corresponder ao desafio colocado pela Engenharia do Direito? Os dogmas legais sufocam ou abrilhantam a monitorização em campo baseada em técnicas de IA? 6.1. A (I)legalidade de um regime (in)satisfatório 6.2. O Direito da União Europeia impõe uma uniformização tecnofóbica, o legislador nacional obedece através da inação e no final tanto os clubes de futebol como os jogadores profissionais são os únicos (des)protegidos 7. Observações finais com a pergunta à qual nenhum dogmático se esforça por dar uma resposta adequada: será que a preservação dos ditames *privacy-friendly* abomina as Análítica Futebolística baseada na IA?

Palavras-chave: Análítica Futebolística baseada na IA; Contrato de trabalho do atleta profissional de futebol.

Resumo: Nos dias de hoje, os jogadores não são mais do que números ou ativos financeiros para os clubes de futebol. As decisões tomadas no domínio *Footballnomics* já não são somente imputadas a vontades antropopáticas de olheiros, proprietários dos clubes, diretores-gerais ou até mesmo aos próprios treinadores. Da teoria à prática, no atual estado da *legis artis* aplicável à Análítica Futebolística baseada em IA e ao contexto laboral aqui conexos, o legislador português sublinhou mais uma vez a sua propensão em prosseguir via inação os enunciados (leigo)rítmicos e tecnofóbicos de natureza normativa europeísta. E apesar de todas os esforços envidados pelo legislador comunitário no sentido de uniformizar salvaguardas teóricas, os futebolistas profissionais ainda não têm consciência “de quais os riscos” e do “como” exercer os seus direitos no que respeita a Análítica Futebolística baseada na IA. Os consentimentos prestados não serão válidos. Por conseguinte, uma vez que também se afigura inexistir a estrita necessidade em empregar estas técnicas na preservação das condições psicofísicas e averiguação do estado de saúde dos jogadores, assim como o facto de o legítimo interesse não ser consentâneo nem real ao momento do tratamento, os engenheiros do direito não encontram qualquer base legal que possa suportar a licitude destas operações de tratamento. O legislador nacional, ou as partes interessadas, devem introduzir disposições particulares na Lei de Proteção de Dados ou em qualquer outro ato legislativo autorizado, entre outros, a fim de asseverar o tratamento lícito e justo

das decisões semiautónomas em matéria laboral. Sem mais, no campo da monitorização IA à escala Analítica Futebolística, o regime da Proteção de Dados não é *prius*, nem *posterius*, não é dado, nem solução, não está no início, nem no fim. Simplesmente, não existe, mas devia. Porque qualquer jogador, sabendo-se vigiado pela IA em campo - seja nos treinos, seja nos jogos -, poderá ter tendência a alterar o seu comportamento, porventura melhorará as suas performances e marcará mais golos, ajudando a sua equipa a alcançar vitórias. Conclui-se então que as regras da Proteção de Dados são para a Analítica Futebolística baseada na IA uma verdadeira pedra no sapato, que magoa, porque irrazoável e intolerável do ponto de vista de quem se vê excessiva e negativamente afetado, i.e., os próprios clubes de futebol ou as empresas de tecnologia desportiva.

1. The Data Ball Championship of a new era in Football: an introduction

The future of *Football Analytics*, it seems, has arrived. Today, Artificial Intelligence [read its abbreviation, 'AI']³ can make all the difference in the business. The most meaningful way to differentiate teams from the opponents, the best way to put distance between a player and their colleagues is to do an outstanding work with information. How clubs gather, manage and use knowledge will determine whether they win or lose, whether clubs make more profits in the transfer season with players' sales or not. Nowadays, footballers are no more than financial assets, and soon, the human-machine interaction in *AI-based Football Analytics* will turn them into real semi-automata⁴.

It is expected that the availability of real-world data, over long periods of time, regarding football practitioners and teams within the training sessions and competing contexts, can draw a unique live testbed for AI and ML techniques. From great results to profitability in the business, large datasets and ML have already today partial control in constraining real-world decision-making in football, especially to the extent of those choices concerning what elite clubs

³ From a streamlined perspective, AI is the science or engineering that focuses on the development of intelligent agents, configured either as hardware or software. It refers to the systems reacting or operating under the analysis of the surrounding environments through data acquisition, reasoning on the knowledge or autonomously processing information, also executing actions with different levels of autonomy to achieve (pre)-determined tasks. ANALIDE, CESAR/ MORGADO REBELO, DIOGO, «Inteligência Artificial na era data-driven, A lógica fuzzy das aproximações soft computing e a proibição de sujeição a decisões tomadas exclusivamente com base na exploração e prospeção de dados pessoais», *Forum de Proteção de Dados*, No. 6, 2019, pp. 60-91 (pp. 63-66).

⁴ Hereinafter, expressed in its short form, 'AI-based Football Analytics'. The authors coined the expression *AI-based Football Analytics* because of the preponderance that both data and ML models assume in the decision-making process within the scope of this new sci-tech sporting discipline.

should do to become more competitive in the art of winning the ‘Moneyball Championship’. And for those who dare to disassociate the economic benefits of football analytics from the 5 V’s Big Data (i.e., volume, velocity, variety, value and variability)⁵, it must be pointed out that they are completely mistaken. For many SportsTech companies, today, data are one of their biggest assets. In football sporting discipline, too, mega databases are already the new frontier for creating value, increasing efficiency and better allocate human resources. It is probable that the greater volume and variety of the datasets, the more accurate predictions can be achieved⁶. That is, football event and on-field tracking data may come to trigger the upcoming pathway to Football 4.0, the reason to coin the “Big Data Ball Championship” vocabulary.

Specifically, it is within the spectrum of the current state of the art of *AI-based Football Analytics* and decision-making processes in the employment context, that Portuguese lawmakers have highlighted their propensity to pursue the technophobic (lay)algorithmics of normative nature. Legislative bodies did nothing about draconian European policies which unduly hinder technological development. Once again, Portuguese lawmakers and partakers have chosen to adopt policies of idle inertia towards specifying those which are the general and abstract *guidelines* of the Regulation EU 2016/679. This inactivity leaves football players lonely at the mercy of an unworkable protection, namely in line with the digital illiteracy that their *modus operandi* highlights. From the very beginnings, a brief description of the current state of the art of Machine Learning modelling [hereinafter, read as ‘ML’]⁷ will lead us to some flaws concerning the exacerbated unlawfulness and the risks that semi-automated decision-making in *Football Analytics* can entail. By design, those choices exhorted under the scope of on-field based monitoring and in training sessions, when applying AI techniques, can improve the performance of teams and help them in the craft of becoming *Moneyball Champions*. Nonetheless, unlawfulness has to be ascribed according to the multiplicity of semi-autonomous outcomes exhorted in the actual state of the *regulation non-artis*. Both European bodies and national lawmaker have to understand that generic prohibitions are not always the best way forward. On the contrary, as is particularly the case, opening the doors to technological development according to a prudent and privacy-friendly perspective of law engineering

⁵ PENDYALA, VISHNU, *Veracity of Big Data*, Apress, Berkeley, CA, 2018, pp. 1–15.

⁶ ANALIDE, CESAR/ MORGADO REBELO, DIOGO, «Inteligência Artificial na era data-driven, *op. cit.*, pp. 60-91 (p. 63).

⁷ This subfield of AI explores patterns identified from labelled or unlabelled attributes processed by a set of models, likewise, making descriptions, prescriptions or predictions without the need to be explicitly programmed to do so. ANALIDE, CESAR/ MORGADO REBELO, DIOGO, “Inteligência Artificial na era data-driven ... *op. cit.*, pp. 73-74.

can make the suspicious rules on data protection more suitable. Only then law practitioners can get rid of what is purely a loopy imbroglio.

At this stage, the most profitable path to take is drafting step-by-step mind-maps to identify the origin of the mismatch between the *Portuguese data protection scheme*, regarding *AI-based Football Analytics* on the field of play, in what applied to the employment contracts of professional football practitioners. The following framework aims to begin addressing, by law in action, the set of phases that should be taken into consideration in the process of identifying the lack of diligence that underlies (non) complying with the lawfulness of the regime on this scale.

2. Footballnomics give glory to professional footballers and Data Protection Law shall respect the essence of the Moneyball Championships

Nowadays, multiple and various personal features and team metrics are used at the spectrum of advanced sports analytics when applied to the most popular sporting discipline worldwide, namely, the football. In whatever way, conceived in England in the XIX century, football can be described as a team sport in which two groups of practitioners – i.e., the footballers - compete under a set of rules laid down in the *Laws of the Game 2020/2021*⁸. Football in-game dynamics are quite intuitive since the primary purpose of both teams is to kick the ball into the opposite goal line. The playing period has a continuous flow, does not stop at each moment. It exhorts a non-sequential linkage of various moments, an articulation of meaning between the moments of performance considering the respective stages of a game during the different season's stages⁹. Each match has to be headed and supervised by 3 on-field referees, one of which – i.e., the head referee - has the full authority to put into practice both rights to and duties of disciplinary nature (Law no. 05 of the *Laws of the Game*)¹⁰. The 11 players, integrating each team squad, are chosen and instructed by a coach who organizes them in different fickle formations on the pitch, those that previously shall be studded with 1 goalkeeper and 10 outfield players (Law no. 3 of the *Laws of the Game*)¹¹. On the one hand, attackers intend to make the motion to perform successfully short or long passes and further kick in, consequently, scoring goals. From the

⁸ IFAB, *Laws of the Game 20/21*, June 2020, 9-229 (available at <https://www.the-afc.com/documents/ifab-laws-of-the-game-2020-21>, accessed on 20/8/2020).

⁹ CARVALHAL, CARLOS/ LAGE, BRUNO/ OLIVEIRA, JOÃO MÁRIO, *Futebol – Um saber sobre o saber fazer*, 2nd ed., Estoril, Prime Books, 2014, 19.

¹⁰ IFAB, *Laws of the Game 20/21 op. cit.*, pp. 64- 73.

¹¹ IFAB, *Laws of the Game 20/21, op. cit.*, pp. 48-55.

opposite side, defenders seek to intercept the ball, thus, trying to reorganize tactically or perform quick counterattacks. To summarize,

“in (...) football the ball is passed from player to player among the eleven members of a side until a particular player loses possession of the ball either by interception or tackle on the part of a member of the defending team or by an infringement of the rules of the game or by himself shooting at the defending side’s goal”¹².

During matches, coaches adopt different strategies to enhance the performance of teams and, in the end, teams intend achieve victories. Coaches are metaphorical ‘managers of footballers’. They make the most significant and risky decisions since, while having the duty of selecting the ‘main team’, they interfere indirectly on player’s careers at a short or long term. And this is the reason they are often credited or blamed for the successes or failures of their team in championships¹³. Either way, the winner of a match is the team that has scored more goals, hence, obtaining 3 or 0 points, correspondingly, the latter result assigned to the defeated team. However, if both sides have equalled the same number of goals conceded or even none, the result is classified as a tie, a situation in which the teams will take home just 1 point, each (Law no. 10 of the *Laws of the Game*)¹⁴.

In recent years, for instance, football has positioned itself as an impacting pillar of the national society, generating social, cultural and economic aids. In 2017-2018 season, the Portugal League jointly with private sport companies or football clubs, have scored on their own significant goals amongst the national economy. It has contributed to the increase in Gross Domestic Product [GDP] with a total of approximately EUR 456,000,000 and having generated 2,000 jobs only in Portugal¹⁵. Even in our nation, today, footballers are no more than numbers or financial assets from the clubs’ viewpoint, and soon, the human-machine throughput in *AI-based Football Analytics* will turn them into real semi-automata. Decisions in sports will no longer *only* be assigned to the anthropopathic

¹² REEP, CHARLES/ BENJAMIN, BERNARD, «Skill and chance in association football», *Journal of the Royal Statistical Society*, Series A, Vol. 131, No. 4, 1968, pp. 581-585 (p. 581).

¹³ “*My life is a risk. I have done it before and would do it again. I am the manager and I make decisions. I am responsible for the defeats; my team are responsible for the wins*”. HARRIS, HARRY, *Jose – Farewell to the king*, John Blake Publishing Ltd., London, ebooks, epub.

¹⁴ IFAB, *Laws of the Game 20/21*, *op. cit.*, pp. 92-97.

¹⁵ FPF/Ernst & Young, *Anuário do Futebol Profissional Português: Época 2016-2017, 2018*, p. 5 (available at <https://www.ligaportugal.pt/media/14041/anuario-do-futebol-profissional-portugues-liga-portugal.pdf>, accessed on 20/8/20).

willpower of scouts, club owners, general managers, or even coaches. Challenges that sporting professionals (in case, assuming the status of footballers, coaches or managers) have to face every day are being replaced, at least partially, by autonomous models. In reality, semi data-driven coaching and management decisions relate today to game strategies *on the fly*. The most compelling way to predict the future in this sport informatics and analytical discipline is on the basis of past experiences. In the era of AI, ML semi-autonomous decision-making characterizes the way to win championships using models and the big data ball. It can occur, for instance, in predicting the outcome of matches, evaluating players and team's performances, or even in preventing on prospection or better treat players' injuries. Football clubs can now increase even more footballnomics by manage this sporting discipline through personal data in what is the so-called new era of AI-based Football Analytics.

3. AI-based Football Analytics: a sporting discipline like never before

The scrutiny of metrics in football is not a novelty. Managing and processing structured historical data, through the application of predictive models and the usage of information systems to assist teams in gaining a competitive advantage on the field of play, were extremely time-demanding tasks of sports analytics during the pre-computerized era. Back towards the 1950s, they stand today hard to deal with¹⁶. Over the years, the larger audience and the economic growth of this sporting discipline, together with the uncertainties and dynamics that affect both players and team performances, have contributed to dispelling the idea that implementing soft computing programming paradigms in football is a simple straightforward process¹⁷. Indeed, it has turned into the most difficult challenges that cannot yet accurately be dealt with by domain experts through traditional sport-related statistics, albeit fascinating. The key to success will be given to whoever best answers the following question: how to build an AI-based model for Football Analysis? In more complex and unpredictable playing environments, as it occurs in football matches for sure, data scientists have committed themselves to discern better what features entail the success. They did so unsuccessfully until the earlies of this century. However, during the last two dec-

¹⁶ ALAMAR, BENJAMIN, *Introduction to Sports Analytics. A guide for coaches, managers, and other decision makers*, 1st ed., New York, Columbia University Press, 2013, p. 4.

¹⁷ ALAMAR, BENJAMIN, *op. cit.*, p. 1.

ades, the emergence of advanced technologies has eased the shift from outdated statistics to the new frontier of AI predictions using field-based monitoring¹⁸.

At this phase, data and ML self-modeling are expected to lead the operation in *Football AI-based Analytics*. In short or medium-term, it will be no longer the player anymore, nor even the programmers, but the data and the models themselves that forecast what choices should be taken or what sporting events will occur. Informative prospections enable coaches to identify weaker or stronger players, their physical state and predictions support decisions “when it comes to whom to replace during a match or whom to keep on the bench.”¹⁹. Management in football urges now “the ability to take significant amounts of data, analyse it, and then develop approaches to solve numerous problems”²⁰. As the volume and variety of live-updated data sets increase, depicting the “Big Data Ball Championship”, more accurate predictions can possibly be achieved. At the end, the value of ‘*Football Analytics 4.0.*’ will symbolize its predictive capabilities and the competitive benefits it may afford.

For the time being, it can be claimed that ML models portray the forthcoming driving force to predict match results, evaluate athlete’s performance, as well as better manage or predict injuries, and even to estimate the value of players on the transfer market²¹. From great results to profitability in the business, ML techniques have today, or will have in short or medium-term, almost control over constraining real-world decision- making in football. This assertion refers to the extent of those choices concerning what partakers - e. g., club owners, general managers, coaches or associate members -, must take to become more competitive in the art of winning the *Moneyball Championship*. Today, achieving team’s competitiveness in football depicts “what all the formulas, numbers, and analyses are about – i.e., measuring, managing, and making the most of the people who get to play the game”²². The core of football is still anthropomorphic,

¹⁸ FRIED, GIL/ MUMCU, CEYDA, *Sport analytics: a data-driven approach to sport business and management*, New York, Routledge, 2017, p. 50.

¹⁹ NABEEL, LATHEEF, «The Number Games – How Machine Learning is Changing Sports», *Medium*, 21 July 2017, 10th paragraphs (available at https://medium.com/@nabil_lathif/the-number-games-how-machine-learning-is-changing-sports-4f4673792c8e, accessed on 5/9/2020).

²⁰ FRIED, GIL/ MUMCU, CEYDA, *op. cit.*, p. 49.

²¹ BEAL, RYAN/NORMAN, TIMOTHY/ RAMCHURN, SARVAPALI, «Artificial intelligence for team sports: a survey», *The Knowledge Engineering Review*, Cambridge University Press, Vol. 34, No. 28, 2019, pp. 1-37 (2-3); CLAUDINO, JOÃO GUSTAVO *et al.*, «Current Approaches to the Use of Artificial Intelligence for Injury Risk Assessment and Performance Prediction in Team Sports: a Systematic Review», *Sports medicine-open*, Vol. 5, No. 28, 2019, pp. 1-12 (2).

²² DEAN, OLIVER, Foreward, *Introduction to Sports Analytics. A guide for coaches, managers, and other decision makers*, Benjamin C. Alamar, 1st ed., New York, Columbia University Press, 2013, p. ix.

although it certainly no longer requires the little human proficiency that has lied behind the decision-making processes. In fact, Football will always be a sport that practitioners play with their brains. However, footballers “have to be in the right place at the right moment, not too early, not too late”²³. It is one of the most difficult sporting disciplines to evaluate and master. Scientists have developed different ways of understanding the role of predictability and randomness in football. However, the essential issue many of them discuss nowadays remains to be unresolved. Either way, as for the use of AI by football teams in the field of sports analytics, the signs of all the cutting-edge progress still face some struggles, since it is not yet clear how football and AI relate to each other. The main technical hindrance until now has to do with placing the focus on either the sporting category as a whole or in the specific prediction and optimization problems that are but just one part of the field dynamics²⁴. In its functional spectrum, each computational task is arduous because, as aforementioned, team sports like football are well-known by the volatile nature of the in-game events. Everything can change quickly without partakers notice or even predict in advance. And if, on the one hand, this assumption may be the greatest strength that AI can provide to team sport professionals, on the other, it may simultaneously reveal non-satisfactory levels of accuracy, now reported as its biggest weakness. AI in football still has to be more compartmentalised, mechanistic, disjunctive and reductionist. ML tools in a near future may potentially break up the game into disjointed fragments, fracture problems, separate what is united, make what is multidimensional unidimensional. However, it still represents today a ‘myopic intelligence’ which is able to partially solve some misunderstandings in the field of football.

As is to be expected, there are very few studies on the subject in Portugal. However, it must be pointed out that the strategic move of Benfica’s Big Data-driven solution, exploring Big Data and ML with the expectation to build a football powerhouse and acting smart, follows the trend of some of the top European football clubs. Over the last decade, S.L. Benfica has crafted ‘superhuman players’ with ML, raising more than EUR 320.000.000,00 from players’ transfers, approximately²⁵.

As a matter of fact, this field of study reveals a promising future concerning the use of AI in Portugal. The national leagues, the football clubs and the

²³ CRUYFF, JOHAN, «Applying the Principles of Johan Cruyff to Data Science», *Barça Innovation Hub*, 18 June, 2019, 2nd paragraph (available at <https://barcainnovationhub.com/applying-the-principles-of-johan-cruyff-to-data-science/>, accessed on 4/9/ 2020).

²⁴ BEAL, RYAN/ NORMAN, TIMOTHY/ RAMCHURN, SARVAPALI, *op. cit.*, p. 2.

²⁵ ANTHONY, SEBASTIAN, «Football: A deep dive into the tech and data behind the best players in the world», 24 May 2017, *arstechnica* (available at <https://arstechnica.com/science/2017/05/football-data-tech-best-players-in-the-world/>, accessed on 5/9/ 2020).

players will have to adapt to an overcoming *data football league*, the one intended to be more interconnected, more agile, more efficient and, above all, hopefully, more intelligent. For many football clubs, especially to the smaller teams and championships who have to compete with the strongest elite who can afford the payroll to best players, the Big Data may be one of their biggest assets, if not the only one. It is expected that AI can make the difference in reducing disparities between football teams.

4. Professional footballers as the foremost protagonists of an increasingly data- driven championship

The Law No. 54/2017, of July 14 [read as *Sports Employment Law*, ‘SPL’], lays down the legal framework for the employment contract of sports practitioners. In case, they assume the legal status of professional footballers. Its Article 2(a) defines employment contract in sports as the labour agreement by which a practitioner commits, in return for payment, to provide a sporting activity to a natural or legal person who fosters or partakes in sport-related activities, within the organisations and under its authority.

The relationship held between players and clubs, or the so-called Public limited sports companies [hereinafter, read as ‘SADs’] is atypical from a contractual employment standpoint, either because of the reduced workload or due to its common short-term²⁶. Even though the employment regime is founded on the general rule of employment for an indeterminate term, as provided for in Article 129 of the *Portuguese Labour Code* [hereinafter, read as *Labour Code*], recent economic mutations have convoluted the ratio of Article 53 of the *Constitution of the Portuguese Republic* [read as ‘CPR’], headed “*Security in Employment*”²⁷. The Football Players Employment Contract must necessarily include a term, this being a content-related requirement of the Article 6(3)(f) of the SPL. Professional sporting activities like elite football occupies a much shorter work life span, given the accelerated wear and tear to which employees are subject²⁸. Furthermore, as a matter of fact, the concept of professional footballer brings up the question of whether football players can be considered intangible assets. It is quite intuitive to treat a football player as a financial revenue. In fact, player’s passes constitute one of the most important (if not, in some cases, the only

²⁶ LEAL AMADO, JOÃO, *Contrato de Trabalho Desportivo –Lei n.º 54/2017, de 14 de julho, Anotada*, Coimbra, Almedina, 2017, p. 11.

²⁷ LEAL AMADO, JOÃO, *Vinculação Versus Liberdade, O Processo de Constituição e Extinção da Relação Laboral do Praticante Desportivo*, Coimbra, Coimbra Editora, 2002, p. 96.

²⁸ MENEZES LEITÃO, LUÍS, *Direito do Trabalho*, 4th ed., Coimbra, Almedina, 2015, p. 514.

one) resource(s) of a SAD²⁹. Today's professional practitioners in elite football are not ordinary employees. Even though they perform the most relevant role on the pitch, hence, becoming the protagonists when winning matches or, lastly, the championship. They are subject to transactions – i.e., bought, sold, or even temporarily ceded-, and like any financial asset, they undergo valuation or depreciation on the transfer market according to their performances. Therefore, not only does the football industry exteriorize a singular business logic, but also professional footballers are perceived as *sui generis* employees³⁰.

On this topic, even if some rules of the *Labour Code* (read are subsidiarily applied, according to the Article 3(1) of the SPL), the nature of such type of contracts poses some traits which impacts on the (un)necessary and (dis) proportionate protection regarding personal data. Generally, employees in team sports are required to fulfil specific idiosyncrasies, without which clubs or SADs could not accomplish or even close the agreements with athletes, farsighted, in addition to the general duties established in Article 126 and Article 128 of the *Labour Code*. In the same sense, the Article 13(1)(a) of the SPL prescribes that the sports practitioner, in particular, has to provide the sports activity for which he/she was hired, participating in the training, internships and other preparatory sessions of the competitions with the application and diligence corresponding to his psychophysical and technical conditions. The Article 13(a)(b)(c)(e) of the Collective labour agreement signed by the partakers [hereinafter, read, Collective Agreement, 'CA'] provide further deepening regarding specific obligations to which professional footballers are bound³¹.

In order to accomplish to those duties, practitioners in professional football not only have to undergo medical examinations and clinical treatments, but they shall also preserve the adequate physical condition that allows them to compete in championships. This gives substantive expression to the duty laid down in the Article 13(1)(c)(d) of the SPL and Article 13(d) of the CA. Correspondingly, the employer (or rather, the corporation sports bodies) must also please submit practitioners to the examinations and clinical treatment necessary for the discipline of football, in line with the provision established in Article 11(c) of the

²⁹ MARQUES, ANA SANTOS, «Contrato de trabalho desportivo: roteiro sobre o seu regime», in: *Direito e Finanças do Desporto* (coords. JOÃO MIRANDA/ NUNO CUNHA RODRIGUES), Vol. II, Lisboa, ICJP, CIDP, 2016, pp. 54-109 (p. 82).

³⁰ LEAL AMADO, JOÃO, «Futebol profissional e futebolistas profissionais (a peculiar lógica empresarial daquele e o estatuto jurídico destes)», *Revista Jurídica de Deporte y Entretenimiento*, No. 14, 2005, pp. 189-198, generally.

³¹ Liga Portugal – Futebol com talento, Collective labour agreement signed by the Portuguese Professional Football League and the Union of Professional Football Players, 40 anos de Liga de Portugal, 2018 (available at <https://www.ligaportugal.pt/media/15779/cct-liga-portugal-sjpf.pdf>, accessed on 5/9/2020).

SPL. However, the latter (i.e., the employer or football clubs) does not, cannot and must not shuffle the duties of a professional footballer with the freedom inherent to the private life of those individuals, as enshrined in Article 26 of the CPR³². In any case, not all processing of personal data on *Football AI-based Analytics* level figure as an inadmissible disregard for rights, freedoms and guarantees of football practitioners' private spheres. From another viewpoint, the one who does not only envision the new technologies as a source of risky operations, these responsibilities turn out that performance does not take place individually, but rather in a collective sense of mission. And in the actual state of football-based employability, professional practitioners do not merely work. Instead, they perform and provide spectators with jiffy moments of real madness, making them more enthusiastic, thus, indirectly increasing business revenues³³. The way an athlete behaves in training sessions and on the in-game environments must also be balanced with the group dynamics and each player's role on the pitch. It should also be taken into account the values or interests of football clubs.

Therefore, because the scope of the contract itself is based on distinct premises, and since parties trigger a unique and specific employment relationship, professional football links to some rules that go beyond the Article 17 of the *Portuguese Labour Code*, the one regarding data protection in an employment-based relationship. It is now clear the present-day intersection between labour, sports and data protection law. A joint analysis of the various quadrants, applicable to the use of cutting-edge cyber-physical or software and among the various branches of Law, is urgently needed so that legal policies follow the dictates of the new intelligent-based reality.

After all, submitting athletes to a whole set of duties entails fine-tuning the way to tweak legal tools to the rights and freedoms regarding the processing of personal data in this particular sport-employment relationship. As a consequence, specific rules must establish convenient guidelines to govern professional performances in the spectrum of employment sport-based agreements. Not being the case, football players and clubs, jointly, according to the current state of the art 'legislate without being aware of it', can be subject to unnecessary, inadequate and disproportionate data protection legal constraints, in a relation of vertical hierarchy unduly topped by the latter.

³² COELHO MOREIRA, TERESA, «Da esfera privada do trabalhador e o controlo do empregador», *Studia Iuridica*, No. 78, Coimbra, Coimbra Editora, 2004, p. 436.

³³ LEAL AMADO, JOÃO, *Contrato de Trabalho Desportivo – Lei n.º 54/2017... cit.*, p. 31.

5. Football Data Protection jigsaw of the new game-changing: mapping the debate

5.1. AI-based Football Analytics and player metrics under the GDPR

The Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data [hereinafter, 'GDPR', meaning, *General Data Protection Regulation*] entered into force in the EU on 24 May 2016 and has been applied since 25 May 2018 [Article 99 of the GDPR]. From amongst its material scope, this European legislative act governs the processing of 'personal data' partly triggered off by autonomous tools [Article 4(1) of the GDPR]. It completely befalls within the properties of employee's *AI-based* assessments or evaluations, particularly with regard to the multiple analyses or predictions concerning each footballer's performance at work, health, behaviour or their biomechanics [Article 4(2)(4) of the GDPR].

For some years now, multiple means of remote surveillance have long been collecting and storing information for purposes beyond AI-scale processing. Wearable devices, sensors of smart clothes, Multi-camera recordings, GPS tracking systems and RFID technology constantly monitor football professionals on the pitch³⁴. Sensors include accelerometers (measuring velocity), gyroscopes (measuring orientation and rotation), and body temperature devices. Examples of traditional wearable instruments, gathering professional athlete's data, involve heart rate monitors, face masks with breathing valves to measure oxygen intake and advanced x rays used for measuring bone density. RFID technology also processes data on performances of players such as distance travelled, speed, among other features. Likewise, football teams collect large quantities of personal data from nonwearable devices. For instance, after kicking the sphere, balls with built-in sensors perceive information descriptively and concomitantly on input parameters such as power, spin, strike, and trajectory metrics. Finally, computerized time-motion analyses are also capable of assessing player's evolution of fatigue levels during matches³⁵. It is worth mentioning that the usage of this technological equipment, to control each footballer performance, is lawful on the field of play and does not in any way constitute an intrusive prejudice to their right to privacy. The particular constraints inherent to the nature of this sporting discipline, linked to the player's physical condition, justify their admissibility under the terms foreseen in the last part of article 20(2) of the *Portuguese Labour Code*.

³⁴ Law No. 4 of the *Laws of the Game*, in IFAB, *Laws of the Game 20/21*, *op. cit.*, pp. 56-63, and FRIED, GIL/ MUMCU, CEYDA, *op. cit.*, pp. 52-56.

³⁵ GARLEWICZ, ADAM, «Athlete Biometric Data in Soccer Athlete Protection or Athlete Exploitation», *DePaul Journal of Sports Law*, Vol. 16, Issue 1, No. 2, 2020, pp. 1-34 (pp. 20-21).

Within this new science and art of Data Revolution, each descriptive and/ or predictive task assigned to this sporting discipline starts once the *Electronic Performance and Tracking Systems* [EPTS] collect large amounts of big data indexed to players from training sessions and matches. Even a number of factors can disturb a game of football such as weather, the quality of pitch, and injuries, although such categories must not be deemed as personal data.³⁶ Undergoing the beginnings of processing, in addition to event data and geospatial tracking sets from both teams and players, correspondingly³⁷, the ML model's input layers make use of combinations from biometrics and data concerning health. These categories relate to the physical, physiological or behavioural characteristics, allowing or confirming the unique identification of professional footballers, and data concerning their physical or mental health, respectively [Article 4(1)(14) (15)]³⁸. Thus, self-learning inductions carried out using ML modelling are capable of linking up through fuzzy computation cross-references between football sporting events, spatiotemporal data, biometric sets, data concerning health or even with some environment attributes at the input layers. In the end, these predictors³⁹ are likely to be used to evaluate, treat in a certain way or improve the physical status of football practitioners. To put it in another way, it fulfils the *Three step-model standard* established by Article 29 Working Party, concerning taking into account inferential results themselves as personal data⁴⁰. It exhorts “information relating to an identified or identifiable natural person created

³⁶ BEAL, RYAN/NORMAN, TIMOTHY/ RAMCHURN, SARVAPALI, *op. cit.*, p. 4.

³⁷ RIC, ÁNGEL/ PELÁEZ, RAÚL, *Football Analytics: Now and Beyond, A deep dive into the current state of advanced data analytics*, Barcelona, Barça Innovation Hub, 2019, pp. 148-173.

³⁸ OSBORNE, BARBARA/ CUNNINGHAM, JENNIE, «Legal and Ethical implications of athletes' biometric data collection in professional sport», *Marquette Sports Law Review*, Vol. 28, Issue 1, No. 3, 2018, pp. 37-84 (p. 38); FIFPRO—Football Players Worldwide, Player Data, A Future oriented player data policy for the Digital Football Industry, The collection, protection and use of player data, 2020, p. 5 (available at https://www.fifpro.org/media/31intkan/fifpro-policy-position_player-data_eng.pdf, accessed on 20/9/2020).

³⁹ “To predict a certain outcome in a new case means to jump from certain known features of that case, the so-called predictors (also called independent variables, or features), to an unknown feature of that case, the target to be predicted (also called dependent variable, or label)”, SARTOR, GIOVANNI, The impact of the General Data Protection Regulation (GDPR) in artificial intelligence, EPRS, 2020, p.15 (available at [https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641530/EPRS_STU\(2020\)641530_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641530/EPRS_STU(2020)641530_EN.pdf), accessed on 6/11/2020).

⁴⁰ Article 29 Working Party, *Opinion 4/2007 on the Concept of Personal Data*, 01248/07/EN WP136, adopted on 20th June, p. 10.

through deduction or reasoning rather than mere observation or collection from the data subject⁴¹.

Besides, under the spectrum of *AI-based Football Analytics*, a new category of *Emergent Medical Data* [EMD] has been inferred through ML modelling. Instead of being obtained directly and voluntarily from sporting practitioners, Traditional Medical Data [TMD] – introduced at the model input layer – are gathered and subsequently stored from digital traces that footballers continuously shed through event match or footballer’s interactions with technology. Then, following the previous patterns mined, the model will autonomously reproduce descriptive or predictive analysis to accomplish the (pre)-determined tasks⁴². Regarding the development and implementation of health applications, AI propels “training load”, “training process/knee injury causes”, “heart defect detection”, “ground reaction force pattern”, “psychosocial stress factors”, and “screening”⁴³. And this groundbreaking sports science does so through the usage of data concerning specific individual body parts. It is capable of predicting injuries (output) from certain features. Turning quickly and running impact, e.g., may cause knee injuries, whereas overstretching and kicking may origin hamstrings. Forecasting musculoskeletal injuries is also a key strength regarding this kind of task. Problems like these mentioned can be prevented by autonomous aids which often causes changes in training load and other variables⁴⁴. On health data, the GDPR “distinguishes sensitive personal data as a discrete category”⁴⁵. The specificity of the profiling inferred about football practitioners, including information indirectly indexed to them regarding their physical and mental health, is the reason for the general disallowance established in Article 9(1) of the GDPR.

In this diapason, the extent to which *AI-based Football Analytics* meets the substantive scope to be qualified as sensitive personal data is too broad. It fulfils the entire material scope of Article 9(1) of the GDPR. Its applicability does not restrict only to those inferences following the prevention, forecasting or management of professional footballer’s injuries. These involves cross-referencing input data concerning health or biometrics integrated at model’s input

⁴¹ WATCHER, SANDRA/ MITTELSTADT, BRENDT, «A right to reasonable inferences: re-thinking Data Protection Law in the Age of Big Data and AI», *Columbia Business Law Review*, Vol. 2019, No 2, 2019, pp. 1-130 (p. 22).

⁴² MARKS, MASON, *Emergent Medical Data: Health information inferred by Artificial Intelligence*, 2020, pp. 7-8 (available at <https://ssrn.com/abstract=3554118>, accessed on 17/9/ 2020).

⁴³ CLAUDINO, JOÃO GUSTAVO, *et al.*, *op. cit.*, p. 6.

⁴⁴ BEAL, RYAN/ NORMAN, TIMOTHY/ RAMCHURN, SARVAPALI, *op. cit.*, p. 31.

⁴⁵ GONÇALVES, ANABELA, «Processing of Personal Data Concerning Health Under the GDPR», *E-Tec Yearbook, Health Law and Technology*, JusGov, School of Law – University of Minho, 2019, pp. 1-24 (p. 8).

layers. After all, the widespread distinction between types of personal data based on identifiability and sensibility does not make any sense when applied to inferences, especially to the field in which data contribute to better perform or better fulfil the employment contractual duties. Legal threats posed by *AI-based techniques* in the field of *Football Analytics* do not depend on any of these categories or means of the processing, but rather on how they are used, wrongly. Any profiling drawn from the various sources can be applied to and harm an individual or group of players. Even if each functional traits do not respect to their sensitive nature, they all will fall once again within the material scope of Article 9(1) of the GDPR. Thus, analysing the set of processing, focusing on the means and the quality of the data collected, will always be the easier legal handling way than carrying out a separate analysis of the sensitive content or purposes that both the inputs and outputs portray, independently. In here too, the potential purposes committed to the former will be more comprehensive and therefore easier to cover in such a broad concept of sensitive data. Consequently, only the analyses involving the preliminary processing of event, geospatial or collective metrics, solely, demanding “detailed data from various sources including technical skill, individual physiological performance, and team formations among others to represent the complex processes underlying team tactical behaviour”⁴⁶, shall be qualified as personal data in itself [Article 4(1), Article 9(1) and Recital 51 of the GDPR].

“The belief that certain categories of data are fundamentally less harmful or risky than others is undermined by Big Data analytics (...) In future European policymaking and jurisprudence, levels of protection should be granted to data based primarily on its usage and impact, and secondarily on its source”⁴⁷.

As should now be clear, the outcomes (not outputs) of profiling football players will necessarily be fictionalized in the quality of sensitive personal data partially processed through automated means⁴⁸. There is only one exception. Only then will small tactical semi-automated coaching adjustments based on data from match events, tracking data and collective metrics not be qualified as sensitive inferences.

⁴⁶ REIN, ROBERT/ MEMMERT, DANIEL, «Big data and tactical analysis in elite soccer: future challenges and opportunities for sports science», *Springer Plus*, Vol. 5, No. 1, 2016, pp. 1-13 (p. 1).

⁴⁷ WATCHER, SANDRA/ MITTELSTADT, BRENDT, *op. cit.*, p. 126.

⁴⁸ KORFF, DOUWE, «New Challenges to Data Protection Study, Data Protection Laws in the EU: The Difficulties in Meeting the Challenges Posed by Global Social and Technical Developments», *European Commission Directorate-General Justice, Freedom & Security*, Working Paper No. 2, 2010, p. 52 (available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1638949, accessed on 12/9/ 2020).

Moreover, concerning the Law of AI & Data Protection, the GDPR intends to become a legal subterfuge to include everything within the prohibition laid down in Article 9(1), regardless of the non-sensitivity traits of the outcomes of inferences. It does not also take into account that input data collected and stored may be used for purposes and by means other than those perpetrated on the AI-scale basis. Hence, in these matters, both the European and national legislative bodies conveniently choose to adopt a greater focus on the input processing stages, especially in comparison with the protection and control instruments that may emerge from outputs to the outcomes. At this phase, legal scholars clearly lack multidisciplinary *know-how*, preferring to ban progressive development, impede privacy-friendly implementations of AI software in order to shrug off learning technicalities. Today, the ‘power’ of the Law of Artificial Intelligence displayed is wrongfully more geared towards monitoring how personal data are collected and processed from the very beginnings of ML modelling. As a consequence, it can be claimed that GDPR is incipient regarding the control of the overall descriptive or predictive-based decisions reached under the spectrum of AI in football. Its weaknesses arise particularly when taking on board they often do not give significance to the non-sensitive nature of the assumptions within analytical correlations not directly provided by the subjects, although which concern them through indirect indexing⁴⁹.

5.2. AI Decision-making not based solely on automated means

Nowadays, decision-making in football Business Intelligence figures under the magnitude of predictions or evaluations not based solely on automated means. That is, becoming a champion in the ‘Big Data Ball Championship’ portrays yet human involvement, much more than just a token gesture⁵⁰. Matches are still won by football practitioners, those who, while headed and supervised by coaches, perform at their best to help out teams achieve victories. AI semi *data-driven* merely assists football practitioners in accomplishing their contractual duties considering the psychophysical conditions that they must safeguard to achieve better performances. On the contrary, as one of its major weaknesses, some are the athletes that may be subject to wage reductions or ultimately be transferred to another club, not being elected in each match’s starting eleven the season, accordingly. Nowadays, despite some reluctance, football managers use

⁴⁹ RESENDE GOMES, FRANCISCA CARDOSO, «O conteúdo do direito fundamental à proteção de dados à luz do novo Regulamento Geral de Proteção de Dados: em especial, a problemática do controlo das decisões automatizadas», *Anuário de Proteção de Dados*, Lisboa, CEDIS, 2020, pp. 105-117 (pp. 116-117).

⁵⁰ BAYAMLIOĞLU, EMRE, «Transparency of Automated Decisions in the GDPR: An Attempt for Systemisation», January 7, 2018, p. 9 (available at <http://dx.doi.org/10.2139/ssrn.3097653>, accessed on 21/9/ 2020).

ML for rewards or to send employees out. In fact, ML can streamline these processes and may cut costs since fewer scouts are needed for the recruitment and assessment of the potential employees. In any case, however, check and balance the strengths and weaknesses of these labour-related contingencies, *inter alia*, will always depend “on the human control loop to become complacent, over-reliant or unduly diffident when faced with the outputs of a reliable semi-autonomous system” (our emphasis, added)⁵¹. Undeniably, this psychological criterion would better achieve GDPR risk approaches than what ensues in the actual state of the entangled *legis artis*. That is, the terminology ‘similarly significantly effects’ set out in Article 22(1) of the GDPR leads to arbitrariness when applying these feeble expressions⁵².

For now, decision-making in *AI-based Football Analytics* still does not fit in with the scope of the ban enshrined in the previously mentioned article. Objectively, there is neither formally nor materially the strict application by the decision-maker of the systems’ assessment or evaluation⁵³. Hence, football clubs will also avoid having to develop and implement the appropriate technical or organisational measures in order to comply with the ‘draconian non-safeguards’ established by the European legislator in Article 22(3) of the GDPR to aprioristically ensure a level of security appropriate to the risks, i.e.: the rights to (i.) obtain human intervention on the part of the controller, (ii.) to express his or her point of view and (iii.) to contest the decision⁵⁴.

6. Is Data Protection regime ready to meet the challenge posed by legal engineering? Does legal dogmatics choke or does it shine AI field-based monitoring?

In fact, inferences portrayed at the scale of ML modelling are often privacy- invasive, non-intuitive, unverifiable and potentially discriminatory (or rather descriptive)⁵⁵. Decisions in workplace are increasingly made based on self-learning models. Today, AI, in general, and ML, in particular, have metaphorically

⁵¹ ZERILLI, JOHN/ KNOTT, ALISTAIR/ MACLAURIN, JAMES/ GAVAGHAN, COLIN, «Algorithmic Decision-Making and the Control Problem», *Minds and Machines*, Vol. 29, 2019, pp. 555-578 (p. 586).

⁵² Article 29 Working Party, *Guidelines on Automated individual decision-making and Profiling for the purpose of Regulation 2016/679* [17/WP251rev.01], adopted on 3 October 2017, last rev. and adopted on 6 February 2018, pp. 21-22.

⁵³ *Ibidem*, pp. 20-21.

⁵⁴ *Ibidem*, pp. 27-28.

⁵⁵ WATCHER, SANDRA/ MITTELSTADT, BRENDT, *op. cit.*, p. 4.

become the new supervisors of employees⁵⁶. Workers are now being selected and discarded, replaced and disposable by reference to a black box referencing system⁵⁷.

In some areas, though, self-learning modelling promises some objectivity and neutrality. For occasion, deploying such systems in football employment-based relationship should not necessarily entail the creation of new opportunities for the unfinished and overstated symphony of privacy-unfriendly or unlawful semi-automated processing. Nowadays, European policies choke totally AI. This science or engineering cannot position itself as the new lawful supervisor of footballers because of the general and abstract Europeanist policies which completely bar technological development. Notably, under the scope of semi-autonomous decision-making, the provisions of the GDPR represent insurmountable obstacles to the development and application of the cutting-edge technologies. From amongst the material scope in which Sports-Tech or clubs carry out *data-driven* assessments through trained self-learning models, both the European legislator and the national lawmakers overlooked safeguard the suitability of some of the lawful basis devoted to these technological realities.

Article 88 of the GDPR binds the Member States, by law or collective agreements, provide for more specific rules to ensure the protection of the rights and freedoms about processing footballer's personal data within the employment context. This legal provision binds the national legislator with the duty of adopting internal measures which shall reflect appropriate, necessary and proportional safeguards to the legitimate interests of the data subjects, with particular emphasis on the transparency of processing [Article 88(2) of the GDPR]⁵⁸. In particular for the purposes of the performance of the contract, including the discharge of the obligations laid down in Article 13(1)(c)(d) of the SPL and Article 13(d) of the CA, the principle of lawfulness envisaged in Article 5(1)(a) of the GDPR obliges data controllers to fulfil at least one of the lawful basis enshrined in Article 6 of the same regulatory diploma. As a matter of law in books, the legal framework underpinning lawfulness is at an embryonic stage. Its material scope poses some incompleteness owing to the specific nature of the various law branches in which Privacy and Data Protection may operate, in case, the spectrum of an employment-based agreement involving football practitioners as

⁵⁶ COELHO MOREIRA, TERESA, «Algorithms discrimination and labour law», *Anuário de Direitos Humanos 2019*, Braga, JusGov, School of Law – University of Minho, 2020, pp. 89-103 (p. 94).

⁵⁷ AKHTAR, PAV/ MOORE PHOEBE, «The psychosocial impacts of technological change in contemporary workplaces, and trade union responses», *International Journal of Labour Research*, Psychosocial risks, stress and violence in the world of work, Vol. 8, No. 1-2, 2016, pp. 101-131 (p. 112).

⁵⁸ COIMBRA HENRIQUES, SÉRGIO/ VARES LUÍS, JOÃO, «Consentimento e outros fundamentos de licitude para o tratamento de dados pessoais em contexto laboral», *Anuário de Proteção de Dados*, Lisboa, CEDIS, 2019, pp. 13-36 (pp. 23-24).

workers. Neither its literal wording nor the Recital 40 clarify partakers which are the linkage between each lawful basis. It is not also well-defined whether consent should be given primacy over the other legal grounds. Recital 40 only reproduce what is laid-back to deduce from a verbatim interpretation of the articles enshrined in the provisions of the Regulation. It would be easily understandable that, for processing to be lawful, inferences in the spectrum of *AI-based Football Analytics* should be inducted based on the consent of the footballers concerned or some other legitimate basis. Thus, only a systematic interpretation - perhaps over fictionalized -, can induce legal practitioners to give primacy to consent as a basis for lawfulness over other legal grounds. Moreover, this is the only lawful basis that cuts across Article 6(1)(a) and Article 9(2)(a), supporting the processing operations for sensitive data in this sense. For that reason, in here, the analysis of the lawlessness on remits applicable to the field of football matches will take place firstly through examining as to whether the 'sacralised' consent can be deemed as valid. Then it will be determined if the processing in question can be considered as necessary and proportionate for the performance of the specific employment-based agreement or either if it materializes a legitimate interest for football clubs.

6.1. The (un)lawfulness of an (un)satisfactory regime

The major hindrance to qualify the processing of personal data in *AI-based Football Analytics* as lawful has to do with the fulfilment of the elements to consider valid the consent⁵⁹. Following the definition set out in Article 4(11) of the GDPR, the employment relationship held between football clubs and professional footballers or sporting practitioners is not suitable to ensure that the latter's consent is freely given, specific, informed and unambiguous⁶⁰. Thus, to explain better, sequentially:

- 1 Firstly, it is unlikely that an elite footballer would be able to respond freely to a request for consent from data controllers without feeling any pressure. It is problematic to process players' personal data based on consent. Particularly, in the majority of the situations interrelated with elite employment-based relationship, the lawful basis cannot or should not be the consent due to the asymmetric nature of the labour relationship⁶¹. Besides, one of the specificities provided for in Article 28(3) of Law No. 58/2019 of 8 August [hereinafter, read as Portuguese Data Protection

⁵⁹ Article 4 (11), Article 6 (1) (a) and Article 9(2)(a) of Regulation EU 2016/679, when interpreted in conjunction with the Recitals 32, 43, 51 of the GDPR.

⁶⁰ Article 29 Working Party, *Guidelines on consent under Regulation 2016/679*, adopted on 28 November 2018, last rev. on 10 April 2018, pp. 4-18.

⁶¹ Article 29 Working Party, *Guidelines on consent under Regulation 2016/679, ... cit.*, p. 7.

Law] that must be taken into consideration refers to the validity of the consent. Situations, wherefrom the processing of personal data results in a legal or economic advantage for footballers, do not fulfil the requirement for processing's *lawfulness*⁶². In this respect, the orientation of Opinion No. 20/2018 on Article 28(3) of the Portuguese Data Protection Authority, considering that it excessively constrains the relevance of the employee's consent, is strongly supported by the authors of this paper⁶³. That is, in the case of an employment football-based relationship, there are circumstances in which the provision of consent, or its absence thereof, may have negative consequences on the footballers' legal sphere⁶⁴. It may occur, for instance, in the case of a semi-automated predictive underestimation of player's value on the transfer market. In all other conditions, e.g., in decisions concerning forecasting training strategies in the short or medium term, footballers are strongly granted with the margin of free will necessary to meet the exceptional conditions to consider the consent given as lawful;

- 2 Secondly, with few exceptions, data controllers of Sports-tech enterprises, or else instead, the football clubs' representatives are dealing with individuals who:

⁶² The provision under analyses requires an adjustment of the terminology deployed. In Article 28 (3) of the *Portuguese Data Protection Law*, there is an inconceivable misunderstanding between legitimacy and lawfulness. The latter should replace the former. That is, the concept of legitimation refers to any natural person – i.e. the data controller or the processor, on the active side, or the data subject, on the passive side - in relation with the personal data. Any consent following the guidelines established by the normative prescriptions shall be deemed as lawful. Thus, in the context of an employment relationship, the national lawmakers are sorely mistaken while prescribing that both the data controllers and processors are not entitled (or rather, have no legitimacy) to require employees to give consent, this prevailing as a basis for lawfulness in that sense. None of the legislators has the right to restrict the sphere of free will to be granted to the footballer in giving his consent, even in the context of the football players employment contract. After all, when from the processing results a legal or economic advantage for the player, the validity issue of the consent is only one of lawfulness and not legitimacy, not least because the content of the alleged legitimations refers to the circumstances which the GDPR qualifies as legal grounds for the former, not the later. See MELO FRANCO, JOÃO/ ANTUNES MARTINS, HERLANDER, *Dicionário de Conceitos e Princípios Jurídicos (na Doutrina e na Jurisprudência)*, 2nd ed, Coimbra, Almedina, 1988, p.506, p. 517.

⁶³ Portuguese Data Protection Authority, *Opinion No. 20/2018*, 2018, p.36 (available at <https://app.parlamento.pt/webutils/docs/doc.pdf?path=6148523063446764c324679626d56304c334e706447567a4c31684a53556e4d5a5763765130394e4c7a464451554e45544563765247396a6457316c26e527663306c7561574c7059585270646d46446232317063334e686279396a5a57593359544d794f8330325a44526c4c54526c4c546b74596a41304e4331694e54426d4f5449314d6a64684d7a45756347526d8f8cb=cef7a328-6d4e-4e59-b044-b50f92527a31.pdf&Inline=true>, accessed on 24/9/ 2020).

⁶⁴ Article 29 Working Party, *Guidelines on consent under Regulation 2016/679, ... cit.*, p. 5.

- a often do not understand all the relevant information to make an informed decision;
 - b are represented by football agents in matters of a bureaucratic nature;
 - c intend to practice merely the modality for which they possess the vocation. In most cases, the lack of acquiescence with the “proforma” can constitute a real obstacle to the development of their sporting performance. Hence, football players will accept whatever it takes to compete and only when they face an error of the machine they realize the cost of their naïf enthusiasm⁶⁵;
- 3 Thirdly, in last, but not least, the logic under which ML models semi-autonomously operate does not allow the average sports practitioner (as natural person or employee) to understand the fuzzy inductions established from the inputs to outputs. It is therefore difficult for professional footballers to give an informed consent for considering the lawful use of their data, as it is not even clear to them how and for what purposes its usage will be applied. The above assertions are the premises that justify the following idea: the task of complying with the requirements of transparency laid down in Articles 12, 13 and 14, when interpreted in the light of Recitals 33 and 39, all of whom from or established in the GDPR, is difficult. Furthermore, Article 88(2) appears to be both not practical and useful to provide football players with the information listed in Articles 13 and 14 as well as the communications of Articles 15 to 22 and 34 “in a concise, transparent, intelligible and easily accessible form, using clear and plain language” [Article 12(1) of the GDPR]⁶⁶. Hence, the unintelligibility of predictions results in a myriad of real ‘fuzzy’ decisions. As a consequence, transparency proves to be unenforceable regarding the processing of players personal data. In the field of football analytics, it only exteriorizes a real substantive *Black Hole*. This detrimental effect comes, as it could not be otherwise, from legal thinkers who little-know about the control theory in decision-making and modelling at the ML scale. Along with this reasoning, those data controllers of football clubs will

⁶⁵ QUARENTENA, SORAIA, «Para sua segurança... está a ser filmado, Direito à reserva da vida privada do praticante desportivo versus combate ao doping no desporto», in: *Direito e Finanças do Desporto* (coords. JOÃO MIRANDA / NUNO CUNHA RODRIGUES), Vol. II, Lisboa, ICJP, CIDP, 2016, pp. 210-238 (p. 226).

⁶⁶ Article 29 Working Party, *Guidelines on transparency under Regulation 2016/679*, adopted on 29 November 2017, rev. and adopted on 11 April 2018, pp. 7-9.

ask themselves: how to provide the legally required information in a clear and simple language to an audience with asymmetrical knowledge and manifestly low technological skills? This interregnum seems to remain simultaneously the biggest and the most challenging issue to which the engineers of law who make up this article have serious doubt as to whether both the legislative body of the EU and the national legislator - as well as the hetero- proclaimed data protection experts - can solve, or rather, for convenience, prefer to keep it unanswered.

Data controllers cannot either rely on Article 6(1)(b)(f) to use inferences as mere support in *AI-based decision-making*, since processing is envisioned not to be strictly necessary concerning the particular employment-based relationship. Professional footballers do not have to be subject to ML descriptions or prescriptions in order to fulfil the duty regarding preserving their health status and the adequate physical condition. Each player's predictive evaluation or assessment does not necessarily pursue the duty to maintain the physical conditions to which footballers must preserve. There are less intrusive methods, although less efficient, for sure. So, this kind of semi-automated processing is intended not to be strictly necessary concerning the particular employment- based relationship and the duties a football practitioner is obliged to accomplish⁶⁷. Also, the lawfulness of *AI-based* processing in the field of Football Analytics will not meet the scope of an alleged legitimate interest, as set out in Article 6(1)(d) of the GDPR. Even though the rule in question refers "to (any kind of) legitimate interest pursued by the controller (in any context)"⁶⁸, the predictive purposes at stake, are not real and present, do not stand for the inductive timeline of any inferential analytics. From footballers' viewpoint, tracking players on the pitch and manage their data to predict both individual performances and of their teams do not make the overall expected benefits more foreseeable. Instead, by nature, football dynamics are hard to measure, and hence, predictions are stamped by their high levels of uncertainty. In addition, an interpretation of this rule in conjunction with the Recital 47 makes it possible to conclude that the risks AI pose

⁶⁷ "As regards the condition relating to the necessity of processing personal data, it should be borne in mind that derogations and limitations concerning the protection of personal data must apply only in so far as is strictly necessary", cite. Judgment of the ECJ of 4 May 2017, *Valsts policijas Rīgas reģiona pārvaldes Kārtības policijas pārvalde v. Rīgas pašvaldības SIA 'Rīgas satiksme'*, Case C-13/16 (ECLI:EU:C:2017: 336), paragraph 30; EPDS, Assessing the necessity of measures that limit the fundamental right to the protection of personal data: a Toolkit, 11 April 2017, p. 5 (available at https://edps.europa.eu/sites/edp/files/publication/17-04-11_necessity_toolkit_en_0.pdf, accessed on 15/9/ 2020).

⁶⁸ Article 29 Working Party, *Opinion 6/2014 on the notion of legitimate interests of the data controller under Article 7 of Directive 95/46*, adopted on 9 April 2014, p. 13.

override data subject's privacy rights and interests. Namely, those privacy-risky threats, exteriorized in the necessity to comply with mandates of a transparent decision-making processing laid down in Articles 12, 13 and 14 of the GDPR, *inter alia*, would be neglected in this newest sector of information management.

Moreover, as mentioned above, some outcomes are qualified as special categories of data concerning health in the field of *AI-based Football Analytics*. These inductions pertain patterns to EMD [Article 4(15), Recitals 35 and 53 of Regulation EU 2016/679]. Hence, beyond the Article 9(2)(a), each processing must also fulfil the unsurpassable dictates established in Article 17(1)(b) *Portuguese Labour Code* and in Article 29(1) of the *Portuguese Data Protection Law*, mainly because they are inadequate when facing technological realities such as AI. In the national legal order, EMD inferences are governed by the principle of the necessity to know infer knowledge, as required by Article 29(1) of the *Portuguese Data Protection Law*. If, on the one hand, practising football can bring numerous benefits, whether physical, psychological or even social, on the other, since it is a sport in which contact or collision happen recurrently, the risks of a player being injured are high-pitched. Furthermore, currently, the prevalence of the various sporting health-related issues among adults and adolescents is significantly increasing. Injuries have huge impacts on player's careers. The performance of a team declines when athletes get hurt, not to mention the expenses clubs will have to bear in paying wages for those employees who cannot even play. For instance, in the 2018-2019 season, an annual report carried out by Jardine Lloyd Thompson Group [JLT] assessed to English Premier League health-related injuries of players. It revealed that the cost and number of injuries continues to increase and that clubs had spent approximately EUR 2.459.68580,00 to pay injured players their wages during that period⁶⁹. Portugal is no exception in these health-related sporting concerns. Injuries increase every day long in the world of national competitions⁷⁰. At this point, AI could help both players and their teams. It would very likely become a vital tool due to its economic and performance-based benefits since its functioning may be crucial to evaluate the player's health status and predict injuries. Even though these sensitive inductions can reveal its utility for footballers' interests, the invalidity of consent assumes to positioned itself as an unavoidable barrier to the application of these breakthrough technologies. It, therefore, seems senseless to apply the provisions of Article 17(1)(b) of the *Labour Code* to the cases of inferences concerning the health

⁶⁹ See Marsh JLT Speciality, Football Injury Index, English Premier League 2018-2019 Review, 2019, pp.1-2 (available at <https://www.kinesport.info/attachment/1665451/>, accessed on 22/8/2020).

⁷⁰ RUIVO, RODRIGO/ PINHEIRO, VALTER/ RUIVO, JORGE, «Prevenção de Lesões no Futebol: Bases Científicas e Aplicabilidade», *Revista de Medicina Desportiva*, Vol. 9, No. 2, 2018, pp.16-19 (p. 16).

status of players. In fact, football clubs may require professional practitioners of this sporting discipline to provide data concerning health since the particular requirements inherent to the nature of this physical and economic activity are deemed as casuistically justifiable. However, from a self-defence perspective, it is still difficult for athletes to discern the consequences AI may pose to their privacy rights. Consequently, consent can never be used to support lawfulness in *AI-based Football Analytics*.

Furthermore, Article 28(5) of the *Labour Code* prescribes that the processing of employees' biometric data - assuming the status of professional footballers - is only lawful regarding recording the attendance of workers. Thus, any processing of biometric data will be forbidden in the context of labour relations, as is the case in particular for employment agreements in the football world.

Once again, the super protectionist guarding (nowadays, certainly unreachable) from Data Protection Law proves to be non-logical in the face of the reasonable analyses that should take precedence over each processing's operations. That is, undeniably, not all input data collected and stored can be used for other purposes and by different technological means other than those perpetrated on the AI-scale basis. The approach to the symphonized risks AI poses to data subjects' rights and freedoms, underlined in the GDPR, is irrefutably incomplete, inadequate and technophobic. Specifically, it leaves football clubs with no more than just legal gaps (or unfruitful looping's), especially when they intend to know if and how they can apply AI technologies in such kind of sporting activity. On the other side, football practitioners may also become more aware of the benefits these technologies can bring to them. Only in a second plan they will be interested on understanding the "logic involved" in the whole predictive process [Articles 13(2)(f), 14(2)(g), 15 (1)(h)]. And even if the data controllers or the processors explain footballers the general logic involved, not only would they do not understand anything from a technological viewpoint, as probably they would also give priority to the economic benefits at stake.

The time to approve efficient and enforceable remits concerning Data Protection regime has now arrived. Perhaps each processing, including multiple operations of erratic nature, should not be understood like a whole unified, rather split into different stages, contrary to the provision established in Article 4(2) of the GDPR. That is the same of saying: not all the sensitive data collected leads to inferences with the same protectionist background; not all predictions portrayed at the scale of *AI-based Analytics* shall be deemed as sensitive. If lawfulness is deduced primarily based on purpose(s), data should be characterized as to their sensitive nature according to the same criterion. In this respect, the means for collecting the set of data inserted at the input layers may serve other purposes than those interrelated with ML modelling. Hence, if data are not lawful when used from the outset collection processing, it will not be introduced

at initial layers of an ML model. However, the sensitive nature of the collection operation does not, cannot and should not be ascertained to the outputs of an ML model.

6.2. European Union Law enforce technophobic uniformization, the national legislator obeys through inaction and in the end both the football clubs and professional players are the only ones (un)protected

Article 8 of the *Charter of Fundamental rights of the European Union* [the 'Chapter'] enshrines the essential right to the protection of personal data. Its extent is not absolute and may be restricted, provided that limitations comply with the requirements laid down in Article 52(1) of the Charter, followed by the GDPR in what it is substantively pertinent. These principles are applicable in the Portuguese Legal order under the Article 8(3) of the CPR, whose protection of fundamental rights is a criterion laid down in or under Article 18(2) thereof. Mainly, first and foremost, any constraint on the exercise of the fundamental rights regarding the use of *AI-based* techniques in *Football Analytics* must be provided for by law, as established in Article 52(1) of the Charter. In this domain, the European legislative bodies seem to allow the national lawmaker to introduce novel legal basis on the lawfulness of this sort of processing in Article 6(2), at final. As a consequence, Portuguese legislative entities might have introduced particular provisions to adapt the rules of GDPR efficiently and, in the meantime, to ensure the lawful and fair processing as provided for in Chapter IX, specifically whereabouts employment contracts can subsume. In particular, as envisaged in Article 88(2) of the GDPR, those rules shall include suitable and specific measures to determine what are the legitimate interests that must be taken into account regarding (semi) autonomous decision-making in football employment-based relationships, among many other issues. Now, this is the missing point, what still lacks internally to guarantee greater effectiveness in *Portuguese Data Protection Law*, or even in other law or decree-law enacted to fulfil similar aims. National lawmakers fail to prescribe specific reasonable measures. Internal legislative bodies did not give effect to the self-defence approach of the GDPR. Instead, they enshrine by doing nothing the risky bases from a draconian European perspective, especially when deep diving into the tech or data processing on the scale of the football players employment contracts.

At a later stage, academic scholars of or in law must not dare or even claim to be disproportionate the application of AI-based techniques in on-field football environment, as its socio-economic benefits has proven to become incommensurable⁷¹. Like the above-mentioned assertions, processing in-game data through self-learning models, regarding athlete's tracking metadata and

⁷¹ EPDS, *op. cit.*, p. 4.

team metrics, should at least observe the legitimate interest as a requirement enshrined in relation to the protection of personal data. Firstly, the socio-economic nature of football requires a more thoughtful trade-off between the economic benefits and the protection of personal data, in some situations, assuming that the latter can be more stringent than the former. Secondly, practitioners can also be able to predict or prevent (serious) injuries, whilst coaches can adjust training sessions and change game tactics with higher levels of accuracy. Finally, enhancing players' performances on the pitch allows teams to achieve better results and count with more support from fans. Anyone who summons arguments to the contrary will only be making use of the principle of proportionality whereas disregarding its material significance.

Experts in guidance on AI and Data Protection by 'Law in Books' use the "proportionality formula" – supported under mere axiological-normative standards - so that a right to informational self-determination takes precedence over all the specific economic interests at stake⁷². That being the case, specialists of or in Data Protection Law try (but they cannot) justify their technophobic and over-protectionist governance with a fictional fulfilment of the constitutional steps enshrined in Article 18(2) of the CPR and Article 52(1) of the *Charter*, i.e., adequacy, necessity and proportionality *stricto sensu*⁷³. Hence, in the particular field of football, while managing with numbers and self-learning software, the normative or axiological sense linked with proportionality, assumed as a preeminent constitutional principle, must always be preserved. It can in no way serve as a pretext for arbitrariness. But this same criterion cannot be taken as an excuse to abhor any financial interests of partakers in the world footballnomics. Here, too, proportionality can charge its material significance indirectly through the privileged relationship between procedure and validity, form and content. In the field of *AI-based Football Analytics*, all check & balance must be deemed as a procedure of validity, without, however, having to abdicate its higher dimension of the personal rights concerned⁷⁴. Nevertheless, the latter, the abstract perspective, cannot, does not and must not always outweigh the casuistic mandate of reasonability⁷⁵. When applicable to football, AI tools make up the technological framework in which the protection of market's interests and efficiency justify

⁷² CALVÃO, FILIPA, «O direito fundamental à proteção dos dados pessoais e a privacidade 40 anos depois», *Jornadas nos quarenta anos da Constituição da República Portuguesa*, Almedina, 2017, pp. 87-101 (p.96).

⁷³ MIRANDA, JORGE, *Direitos Fundamentais*, 3rd ed., Coimbra, Almedina Editora, p. 342.

⁷⁴ VICENTE, LAURA NUNES, «O princípio da Proporcionalidade: Uma Nova Abordagem em Tempos de Pluralismo», *Prémio Doutor Marnoco e Sousa, Instituto Iuridico*, Faculdade de Direito da Universidade de Coimbra, 2014, pp. 7-83 (p. 79).

⁷⁵ REIS NOVAIS, JORGE, *Os Princípios Constitucionais Estruturantes da República Portuguesa*, Coimbra, Coimbra Editora, 2004, pp. 187-190.

with reasonability the annihilation of privacy, without, however, breaching the democratic values. Perhaps the new social and technological landscape of football may, or rather should, in some cases, justify a re-weighting of constitutional rights. Because, under Constitutional Law, the conflicts of fundamental rights are not always settled in a black or white logic. Personal rights do not always prevail over others of an economic nature. And do not forget that data protection is not absolute, as Recital 4 of GDPR clarify

At this point, rules on automated processing of personal data in the context of employment enshrined in Article 88 of GDPR, among many others from the same regulatory act – all of which directly applicable in the Portuguese legal order under the Article 8(3) of the CPR -, insufficiently governs the field of AI concerning *Football Analytics*. Moreover, in the Portuguese legal framework, neither the *Labour Code* nor the Law No. 58/2019, of August 8 (*Portuguese Data Protection Law*), provide IT departments of football clubs suitable normative prescriptions for today's ML reality in the football world. Likewise, even the collective agreement signed by the Portuguese Professional Football League and the Union of Professional Football Players in 2018 has no clause on the processing of player's data, much less on the AI analytics scale within the scope of semi or solely automated decision-making.

The interests or the fundamental rights and freedoms of the professional footballers are not overriding by these constraints, taking into consideration the reasonable economical or contractual expectations of based on their relationship with the SADs' [Recital 47 of the GDPR]. To better explain, elite footballers shall have to make some sacrifices to offset their enormous economic benefits. Football players are not ordinary employees. They earn astronomical amounts of money every month. Elite football practitioners are also a source of great expense to clubs when they get injured. They are truthfully assets who have both the power and the duty to stabilize the financial balance of clubs. The financial steadiness of a SAD depends on them.

In this follow-up, some questions may be asked:

- 1 Why cannot football clubs use some personal and/or sensitive metrics to assess the viability of players permanence on the pitch?
- 2 Since elite footballers may carry large expenses for clubs, why should constitutional reasons concerning the protection of personal data always prevail?
- 3 Is the protection of personal data an overestimated constitutional value in today's society of information, at least, regarding the use of individual and/sensitive player metrics in the field of Sport Analytics?

These and other issues will be addressed in further studies. For now, the authors of this paper acknowledge the potential further suitability of AI-purposes for the specific employment relationship. Depending on each context, inferences can be deemed as the forthcoming legitimate interest basis for football clubs. However, the personal data involved at the input layers (i.e. health and biometric data) and the potential restrictions of fundamental rights per se entailed in the collection, independently, oblige the national legislator to urgently draw up a universal and novel plan providing appropriate safeguards to data subjects. This will only become achievable through the adoption of an authorised law or decree, which duly defines the criteria and minimum requirements applicable in any monitoring and forecasting system for *AI-based Football Analytics*.

Let us, therefore, refute the position we have taken in previous papers⁷⁶. Perhaps here, the social, economic and cultural context provided by both the international and national world of football justifies a rethinking of the values in such a way that it does not make players maintain as fundamental to human dignity principle the proper dimension of privacy and protection of personal data. Another question is left for further reflection:

Do the provisions enshrined in Article 35 of the CPR, as well as Article 8(1) of the Charter and Article 16(1) of the Treaty on the Functioning of the European Union (TFEU), need to be revised in face of all these legal imbroglios?

7. Concluding remarks with the question that no legal scholar endeavour gives an appropriate answer: are privacy preserving dictates killing AI field-based Football Analytics?

From theory to practice, in the actual state of the *legis artis*, the analysis of processing's should be fragmented. Within the spectrum of inferential analytics, it should not be allowed to assume the sensitive nature of the inductions solely rendering to the characteristics of the collecting source. Nor will any decision of Football Analytics, involving the use of ML techniques, meet the requirements of Article 22 of the GDPR. It is a good move for football clubs to be exempt from draconian European policies. Most important, professional footballers do not have conscientiousness of the risks envisaged in AI operations and on how to ex-

⁷⁶ ANALIDE, CESAR/ MORGADO REBELO, DIOGO, *op. cit.*, pp. 85-86.

ercise their rights concerning *AI-based* techniques in the field of *Football Analytics*. As a consequence, first of all, consent cannot be deemed in any way as valid⁷⁷.

Moreover, since there is no strict need to use AI for players to maintain their psychophysical conditions or even to check their health status, as well as the interest of predictive analysis is not present or real, legal practitioners find no basis for lawfulness. And despite all the attempts of the European legislator to uniformize safeguards concerning automated decision-making, both data controllers and subjects (here assumed as data controllers or processor, or on the contrary, the professional footballers) are still granted unsatisfactory safeguards over what types of data and how different sets are processed from the inputs to the outputs of inductions.

To face this ineffective and detrimental effect, EU and national policy-makers must embrace the role other than that of mere stubbornness, constantly prompting barriers to technological breakthroughs. As a consequence, the *Portuguese Data Protection Law*, the SPL, or even the CA shall prescribe reasonable measures specifically applied to this sporting discipline [Article 88(1)(2), when interpreted in conjunction, Recital 155 of the GDPR].

To answer the question on whether or if Data Protection regime ‘kills’ AI-field based Football Analytics, rational and informed legal engineers are obliged to respond affirmatively. The GDPR only abolishes data processing in practice. It destroys the Small and Medium-sized enterprises with the scope of football clubs, it does not effectively guarantee any safeguard on data subject’s privacy rights and interests. Because any player, while being supervised by AI tools on the field - whether in training sessions or in-games environment - may have the tendency to change behaviour, perhaps improve the quality of performances, hence, helping his or her team squad achieve victories and possibly become champions.

In any case, we assume AI must include also several techniques whose outcomes should be as accurate, transparent and robust as conceivable, both from a technical, legal and social perspective, in order to fulfil the adequate levels of trustworthiness and lawfulness for end-users⁷⁸. Even so, all the AI tools or unavoidable forces in sports analytics must fulfil the low lightness of the Por-

⁷⁷ In this respect, it should be pointed out the sentence uttered by Professor Alexandre Sousa Pinheiro, albeit along with a thematic adjustment: “the idolization of consent is one of the most common illusions in the history of data protection, acquiring characteristics of pure deception when applied to the field of AI-based Football Analytics” (our emphasis, in fine-tuning, added). SOUSA PINHEIRO, ALEXANDRE, *Privacidade e proteção de dados: a construção dogmática do direito à identidade informacional*, AAFDL Editora, 2015, p. 812.

⁷⁸ See AI HLEG, Ethics Guidelines for trustworthy AI, European Commission (EC), 8 April 2019, 5 (available at <https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai>, accessed on 26/8/ 2020).

tuguese Data Protection Law dictates, among others, especially concerning the area of Football Analytics in the *Moneyball Championship*. That is what we are going to purpose in further researches on this matter. Unlike the lines of thought that have been followed by academic scholars, also the technological misunderstandings highlighted in and by Data Protection mandates can turn themselves into Law Engineering.

Specifically, in the spectrum of *AI-based Football Analytics*, this new branch of the law will not only trigger embarrassments, but also support in the heuristics that aim to execute actions whose solution is as optimally combined as possible, realistic, and feasible. Because of the GDPR's focus on individual rights, legal protections of specific matters (i.e., footballnomics issues on the dynamics of management) appear to be – at best – of secondary importance. In the end, none of the general and abstract prescriptions provided by the GDPR will be effective in the various sectors of activity, with their own regulations to which they apply, but for which data protection is relentless in reaffirming its superiority.

Until now, it can be claimed that the required “levels of leadership and understandings of the changes (...) are low when juxtaposed with the need to rethink our economic, social and political systems to respond to the fourth industrial revolution”⁷⁹. As a result, in the national football landscape, the mandatory “institutional framework to govern the diffusion of innovation and mitigate the disruption in sports analytics is still inadequate at best and, at worst, absent together” (our emphasis, in adjustment, added)⁸⁰. In matters of Data Protection regarding *AI-based Football Analytics*, the law is not yet *prius*, nor *posterius*, it is not given, nor the solution, it is not in the beginning, nor in the end. It simply does not exist, but it should. Once again, unfortunately, law is for AI-based Football Analytics a real stone in the shoe, which hurts because of its non-reasonability and intolerable disproportionality from the viewpoint of those who find themselves overly and negatively affected, i.e. the football clubs themselves or the Sports tech companies.

⁷⁹ See KLAUS SCHWAB, *The Fourth Industrial Revolution*, Cologne/Geneva, World Economic Forum, 2016, p. 13.

⁸⁰ *Ibidem*.

TITLE

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