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Wearable GPS Devices in a British Elite Soccer Academy Setting: A Foucauldian Disciplinary Analysis Of Player Development And Experience

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Abstract

Conventional wisdom dictates that the use of GPS surveillance technology in sport to assist athletic performance is an overwhelmingly positive phenomenon. Specifically, the health and performance benefits of the application of GPS and surveillance technologies have been well documented across a range of field sports. Previous research into the developmental implications of GPS surveillance in professional rugby league (Jones, Marshall, & Denison, 2016) has identified that there are some significant unintended consequences of their use for elite athletes. We utilised the disciplinary analysis of Foucault to investigate the experiences of academy soccer players in relation to wearable GPS technology. Five academy players took part in semi-structured group interviews as part of a wider study into the effects of surveillance technologies within an academy setting. We suggest that the now normalised and increasingly ubiquitous use of GPS surveillance technology within this particular British soccer academy is seen as relatively insignificant by its players. However, we also report that GPS use does act to impose discipline on academy players and may well have unforeseen and potentially problematic implications for academy players' development experience.

Keywords: Discipline, Foucault, GPS, Soccer, Surveillance, Technology

It is generally understood that contemporary capitalist nation states are 'surveillance societies' (Lyon, 2007), where surveillance is the key mode of organisation (Murakami-Wood & Webster, 2009). It has been argued that in the United Kingdom, the normalisation of surveillance has gone much further than elsewhere, and that therefore it is important to constantly critically examine and re-examine the increasingly coherent and stable surveillance assemblage (Haggerty & Ericson, 2000). In line with this ethos, resistive and critical attitudes to the multiple means of surveillance that employ technological devices have begun to emerge throughout society (Lupton, 2016).

In contrast to these emerging critical attitudes, conventional wisdom dictates that the use of surveillance technologies in sport to assist athletic performance is an overwhelmingly positive phenomenon (Jones & Denison, 2018). Indeed, Collins, Carson, & Cruikshank (2015) have suggested that it is logical for those involved in the production and development of athletes to embrace the benefits that technological advancements can offer. Across sports these developmental benefits broadly include improved performance outcomes and a reduced chance of injury/overtraining (Carling, Wright, Nelson & Reilly, 2008). The developmental and performance benefits of one particular surveillance technology, wearable Global Positioning Satellite

(GPS) technologies, have been well-documented across a range of field sports, including Australian Rules football (Raidis, 2013; Panther & Bradshaw, 2013), Field Hockey (Jennings, Cormack, Coutts & Aughey, 2012), Rugby League (Delaney et al., 2016; Gabbett & Gahan, 2016), Rugby Union (Dubois et al., 2017), and Soccer (Ehrmann et al., 2016; Varley & Aughey, 2013). Since soccer's world governing body FIFA amended their regulations in 2015 to allow for raw GPS data to be collected during competitive FIFA matches, the collection, analysis, and discernment of data from wearable GPS tracking devices has become more of a focal point for those responsible for the conditioning of players (Jones & Denison, 2018). This means that players from a growing number of teams now wear GPS devices during daily training and all competitive matches. As is now common practice across competitive field sports, the data generated is used to develop individual athlete profiles that can be used to design individualised training programmes and to track training load (Aughey, 2011). Data from wearable GPS therefore serves the dual purpose of targeting improved performance outcomes as well as preventing injury. As Radlo (2012, p. 1) identified, it is readily apparent that elite athletic programmes have comprehensively "bought into the idea that dealing with injuries and enhancing athletes to be top physical

specimens is of utmost importance."

It is clear that there has been significant investment into understanding the way that a performing athletic body moves in order to inform its subsequent development, both in terms of performance outcomes and in terms of injury prevention. As a consequence, the idea of leaving athletes unsupervised is no longer considered an option (Denison, Mills, & Jones, 2013). It is important to note that research into the health implications of wearable GPS devices in professional rugby league (Jones, Marshall, & Denison, 2016) has identified that there are some significant difficulties in maintaining the tension associated with trying to achieve performance benefits while protecting the health of athletes. For example, these authors identified that despite the developmental ethos underpinning their evolution, wearable GPS devices have been adopted to prioritise performance outcomes at the expense of normalising unhealthy behaviours and activities. However, beyond this research, an understanding of the personal and social consequences of constant surveillance for the lived experience of working/ elite athletes (including academy soccer players), has yet to be appropriately considered at length (Manley, Palmer, & Roderick, 2012).

This paper has utilised the disciplinary analysis of Foucault (1995) to suggest that wearable GPS harnesses contribute to the production of 'docile footballing bodies' (Jones & Denison, 2016) in the elite football academy context. To achieve this end, the current research investigated the experiences of full-time academy soccer players to consider how they respond to the omnipresence of wearable GPS technology as a normalised component of their practice. Building on previous research (Jones et al., 2016), it was predominantly this paper's intention to continue to distil the dominant 'truth,' or to question one of contemporary soccer's 'myths' (Roderick, 2006) – that surveillance technologies act automatically as 'universally beneficial' for the development of elite players (Jones & Denison, 2018). The analysis was undertaken with two main objectives in mind. Firstly, to present a more balanced interpretation of the effects of surveillance upon the developmental experiences of players in academy soccer settings, and secondly, to caution managers, coaches, and sports practitioners against allowing the performance component of athlete development gained from GPS data to subsume its capacity to protect the physical development of the athlete. In short, this paper encourages those involved in the development of field sports athletes to consider how to avoid the limiting effects synonymous with a working setting typified by heavy surveillance (Sewell, Barker, & Nyberg, 2011). The data collected for this study emerged from two, two-hour long semi-structured group interviews with five players from the academy's Under 18's squad. This data was gathered as part of a larger study into the impact of wearable GPS technologies within a

British soccer academy setting.

Literature Review

The popularity and accessibility of wearable GPS harnesses has developed rapidly over recent years. It is now a well-established method of monitoring external training load in a range of sports (Casamichana et al., 2013; Aughey, 2010; Aughey, 2011; Brewer, Dawson, Heasman, Stewart, & Cormack, 2010; Duffield, Reid, Baker, & Spratford, 2010; Jennings, Cormack, Coutts, Boyd, & Aughey, 2012). The aforementioned recent changes to FIFA regulations have seen a growing number of studies using GPS devices to also track the demands of match play (see for example Suarez Arrones et al., 2015; Torreño et al., 2016). Despite these studies, some concerns exist surrounding the accuracy of wearable GPS technology (Rampinini et al, 2015; Bucheit et al., 2014), although it is now in widespread use in soccer clubs in the UK and around the world. Particularly at the elite level, this wearable technology has become an ever-present aspect of the daily experience for the modern soccer professional or academy player. A significant number of studies have explored how GPS can be used to help develop soccer athletes, both in terms of performance and health. It seems true that there now exists an obsession surrounding the 'how' of producing athletes to be top physical specimens (Radlo, 2012), including via the use of certain surveillance techniques. Directions that inform the practitioner how best to combine surveillance technologies in order to get the most accurate and applicable data also are now available (Weaving et al., 2014). In recent years, a sample of elite British soccer players have even been consulted about their preferences for receiving feedback surrounding how performance analysis devices have captured their outputs (Wright, et al., 2016). However, despite these recent developments, it remains the case that very little is known about the lived experiences of soccer players whose day-to-day movements are the continual focus of these wearable tracking devices.

Surveillance in the elite soccer context

Despite the colossal salaries demanded by Premier League stars, for the most part, British academy players at the lower echelons of the professional game earn a comparatively modest salary as 'highly skilled manual labourers' (Roderick, 2006), and little is understood about their working and personal lives (Jones, 2013; Stamp, 2017). This lack of understanding extends to aspects of players' development, their day-to-day experiences, and their attitudes to the practices that take place within their academy settings. What has been established by existing socio-cultural research into British soccer is that soccer players perform their function within a space that has been well

documented as being traditionally closed (Carter, 2006), one of heavy surveillance (Giulianotti, 1999), that is significantly disciplinary (Jones, 2013), that is coercive and normalising (Jones & Denison, 2016), is symbolically violent (Cushion & Jones, 2006), and includes a space of constant micro-political interplay (Potrac & Jones, 2009).

In the most relevant study with regard to this investigation, Manley, Palmer, and Roderick (2012) identified that the cultural and structural environment that surrounds elite athletes in academy settings has received little critical attention. Specifically, these authors identified that little is known about the modes of surveillance imposed upon academy players to reproduce normalising standards associated with excellence. Since this publication, several cautionary socio-cultural analysis/commentaries also have emerged that examine the increasingly normalised use of wearable GPS harnesses (as a component of performance analysis) in elite sport settings. These articles alert the reader that the physical, mental, and emotional health of athletes can be placed in jeopardy as a result of the misappropriation of surveillance technologies (Jones & Toner, 2016; Taylor, Potrac, Nelson, Jones, & Groom, 2015), including wearable GPS tracking (Jones, et al., 2016). These papers adopt a post-structural position to suggest that within sport, wearable and portable surveillance technologies operate as 'techniques and instruments of discipline.' In addition, that sports settings are often choreographed to render working athletes as 'docile sports-workers' who unquestioningly comply with the norms from within their workplace (Jones & Toner, 2016). This means of inquiry remains in its infancy however, and the implications of the constant monitoring and control of the movements of elite performers in sports settings still require further attention. The clear benefits to athlete health that can be procured through wearable GPS tracking are not dismissed lightly, however a more balanced and comprehensive appreciation of the varied consequences of using surveillance technologies in sport for working athletes/players is required. The following section outlines Foucault's (1995) analysis of discipline and explains how it was adopted for this surveillance study.

Theoretical Framework

Over the last few decades, a growing group of post-structural sports researchers have demonstrated the utility of applying the 'cache of concepts' (Markula & Pringle, 2006, p. 47) of Michel Foucault to the realm of physical recreation and elite sport (Shogan, 1999). Foucault was a post-structuralist thinker who considered the relationships between power, knowledge, and the human body. In his analysis of social arrangements, he often cautioned against accepting 'dominant discourses' or 'ways of knowing' and the 'truths' that they produce. Like many leading postmodern and post-structural

figures, Foucault was extremely skeptical of dominant meta-narratives. On several occasions he warned of the level of influence that modernist narrative of a trajectory of progress can have upon the production and sustenance of truth and knowledge in society (Foucault, 1995).

For Foucault (1995), during the transition toward modern society the body became both the object and target of power. Central to the functioning of this power was an integrated system of control intended 'to make useful individuals.' Foucault (1995) outlined four specific techniques, or 'disciplines,' and illustrated how when imposed, they controlled the operation of the body. These four techniques were: the art of distributions that involved how bodies were managed and used in spaces; the control of activity that involved how bodies were shaped by time in these spaces; the organization of genesis that involved the way specific bodily practices were categorized and grouped; and the composition of forces that involved the way bodies were brought together to function as a machine. Importantly for Foucault, these techniques did not operate in a disjointed or fragmented manner; rather they worked together to exert their influence over the body through three specific instruments: hierarchical observation, normalizing judgment, and the examination. Underpinning Foucault's (1995) analysis of the making of docile bodies was his understanding of panopticism, a concept he based on Jeremy Bentham's architectural figure of the panopticon. According to Foucault, "the panoptic mechanism arranges spatial unities that make it possible to see constantly and to recognize immediately…assuring the efficient and automatic functioning of power" (p. 201). Thus, Foucault was able to show how in large regimes where discipline occurs, such as factories, the military, schools, and hospitals, people are implicated in a system where the large-scale production of obedient and compliant bodies occurs. These individual bodies are subjects largely uncritical of any relations of power, and thereby although they develop to be productive in certain ways, they do so in what could be considered a limited 'docile' fashion.

The current paper demonstrates how adopting Foucault's (1995) disciplinary analysis can help to evoke an alternative, cautionary re-reading of GPS technology's default function as a universally beneficial tool for the development of athletes (Jones & Denison, 2018). This was achieved by exploring how wearable GPS surveillance in academy soccer may have unintended and heretofore unknown implications for the development of young British working soccer players. Specifically, by rendering them as 'docile footballing bodies' conditioned to comply with their future workplaces' problematic norms (Roderick, 2006).

Many of sport's workplace training practices (including those designed to enhance athletes), have, due to discipline's celebrated status within sport, escaped appropriate levels of scrutiny (Heikkala, 1993). However, the emergence of Foucauldian thinking about elite sport has illuminated many

previously unrecognized effects of discipline for both coaches and athletes (Markula & Pringle, 2006). Specifically, Foucault's (1995) disciplinary analysis has proved fruitful in identifying how the relations of power that characterize sport operate in localized arrangements to produce 'docile bodies' (Shogan, 1999), often with problematic effects (Barker-Ruchti & Tinning, 2010).

Within the realm of soccer, Giulianotti (1999) and Jones and Denison (2016) used Foucault to identify that unnecessarily disciplinary coaching practices that occur during a working soccer career can have significant effects for an individual player's physical, mental, and emotional health. In line with this research, Foucault's (1995) disciplinary analysis also has been utilized to warn that coaching knowledge(s) that remain unquestioned, and any subsequent practices derived from this corpus of knowledge, can have potentially dangerous outcomes for coaches and athletes (Mills & Gearity, 2016). Correspondingly, Foucault also has been used to suggest that coaching practices must reject sport's disciplinary logic (Denison, Mills, & Konoval, 2015) and to demand that coaching practices be re-imagined so as to avoid potentially damaging outcomes to individuals in elite sports settings (Denison & Jones, 2018).

Jones and Toner (2016) identified that amongst sporting circles, an overwhelmingly positive attitude toward surveillance-based performance analysis technologies presides. In addition, these authors also noted that a one-sided perspective exists that favours the adoption of surveillance technologies as disciplinary tools. This is a perspective that has prevented further exploration into the effects of surveillance upon the developmental experiences of athletes. It also has restricted the development of an unbiased appreciation of the implications for athletes who are the focus of surveillance technologies in professional sport. To address this discrepancy, the present study drew upon Foucault's (1995) disciplinary analysis to provide an alternative reading of the impact of the use of wearable GPS harnesses upon player development experiences.

Method

Markula and Silk (2011) identified that post-structuralist researchers try to create change in the world by rejecting universal 'truths' and by critiquing problematic privileged knowledge. Avner, Markula, and Denison (2017) recently demonstrated how a Foucauldian post-structural approach can be used to identify shortcomings in situated and accepted coaching approaches. Because of these recognised strengths, as with previous research (Jones, et al., 2016), the current study adopted a Foucauldian stance to re-examine the application of wearable GPS harnesses within the working soccer setting. In doing so, this investigation was able to question whether the use

of wearable GPS devices leads to an automatic improvement in a player's performance and health, as is widely advertised (Jones & Toner, 2016). To achieve this aim, the disciplinary analysis of Michel Foucault (1995) was used to investigate how professional players experience having to wear GPS technology during their training and matches. As with previous research (Jones, et al., 2016), a Foucauldian-inspired interview guide was devised and deployed (Avner, Jones, &, Denison, 2014) to encourage the players to discuss how the surveillance of their movements influences their developmental experiences in the football setting. To address the lack of understanding surrounding how wearable GPS devices impact upon the development experience of academy soccer players, this study engaged in semi-structured group interviews with five players from the Under 18 age group section of a fully professional British football club academy.

The soccer academy involved in the current research feeds a fully professional English soccer club that was formerly a member of the Premier League. The academy in question develops talented young footballers from the ages of 8 to 21, separating them into age groups by year (Under 8's to Under 16's) until they reach the age of 16, whereupon they are released or retained for the Under 18's squad. They can then graduate to the development squad (Under 21's) based on their level of progression. In line with the Football Association's (FA) charter of quality, the academy's mission statement is to 'prepare players for the future of their club and to enable them to develop both on and off the field.' The participants for this study were recruited from the academy's Under 18's squad. Of the 22 regular players from the Under 18's squad solicited to participate in the research, five players agreed to take part in two group interviews lasting approximately two hours in length. The group interviews took place on location at the academy and were conducted and thereafter transcribed by the author. The author is a former elite soccer player, whose 'insider' status proved useful in the sustenance of conversation and the management of particular vocabulary common to British football (Roderick, 2006).

When undertaking data analysis, it is important to do so in correlation with the epistemological traditions of the paradigm that governs one's research (Markula & Silk, 2011). It is not considered necessary when adopting a poststructuralist perspective to engage with a lengthy process of verification of the research process to ensure precise objectivity or repeatability. Rather, research from this paradigm concentrates upon clearly understanding the meaning of an individual situated within a specific socio-cultural context in order to shed light upon the workings of power in that specific space. However, this does not mean that poststructuralist researchers are excused from undertaking a comprehensive analysis process. To remain loyal to their research stance, it is essential they clearly stipulate how they analyse their empirical material in relation to their theoretical lens. Therefore, in the current study, the interview data was transcribed and carefully analysed using Foucault's

(1995) disciplinary analysis.

Results and Discussion

A Foucauldian reading of soccer academy players' experiences of wearable GPS

As is typical amongst this population (Jones, 2013), humorous, sarcastic, dismissive and even derisory responses were commonplace during the data collection phase. One could argue that this tone was exaggerated due to the data being collected in a group setting with a population renowned for their ultra-competitive and often symbolically violent interactions (Cushion & Jones, 2006; Jones, 2013; Roderick, 2006; Stamp, 2017). Despite the jovial nature of the group discussions, overall, this study produced some interesting findings with implications for player development and experience in contexts where wearable GPS devices are routinely employed.

Two clear themes emerged from the data. In the first theme, the players' responses indicated that the wearable GPS harnesses were indeed acting as a tool for the imposition of disciplinary power in the football academy setting. In the second theme, it was reported that players saw GPS harnesses and their associated findings as far less important than the 'real work' of demonstrating one's ability to act as a technically capable and productive member of the academy. Players also questioned the worthiness of the data gathered from their GPS harnesses in relation to their development as players. I posit that this second theme can be read as a subtle (if minimally effective) act of resistance in relation to the imposition of disciplinary power imposed by the daily presence of wearable GPS harnesses.

GPS as a tool for the imposition of disciplinary power in academy soccer

It was clear from the data that the presence of wearable GPS harnesses contributed to the imposition of what Foucault (1995) would call 'disciplinary power' within the soccer academy setting. Findings suggested that academy players exist within a 'machinery of power' that utilizes GPS harness data as one of several normalised means of 'exploring, breaking down, and re-arranging their bodies' to render them 'docile' (Foucault, 1995). Specifically, the players' responses indicated that the imposition of discipline associated with the GPS devices occurred in several ways. Data from GPS harnesses facilitated the imposition of disciplinary power as it functioned to coerce players, to legitimize punishment for the purpose of normalisation (de-selection), and to sustain hierarchies with the academy setting.

The publication and impact of data from GPS harnesses

Interviewer: So they have the GPS data displayed in the changing room for everyone in the academy to see the data?

How you guys feel about that?

Player Three: I wouldn't say that it causes any problems. And, because us lot have different positions it's not really realistic if you compare yourselves, although some do!

Interviewer: So, you do compare yourselves to other players in the academy?

Player Three: Of course we do. It's as you would expect to see in a football environment, there's the banter and a certain level of competition that goes with everything.

In another example, the starting status of a player was jeopardised as a result of a scenario catalysed by coaching staff's discernment of objective data generated by GPS devices.

Player One: There was one of the lads, his (GPS) score was well below and he had an argument with Coach X. Next game he wasn't playing. That was an example of it having an impact on a player.

Players also acknowledged that, much like the rugby league coach in previous research (Jones et al., 2016), it was not unusual for a coach to use wearable GPS data to castigate players or to reiterate his expectations to incite compliance amongst his players.

Player Three: I think one of the coaches brought the data up a few times…

Player Four: Yeah he said xxxx is running this and you ain't doing it – look at his running stats he is running the most…

Interviewer: Was that to…

Player Four: To make him look bad or to buck his ideas up maybe.

Player Three: Yeah I don't think he was looking to learn anything from it – he was just using them because the two players were different and he can use that to make a point.

Player Four: He might use it to say that you aren't performing – that you aren't working hard enough and say, look…here is why.

The above example identifies an instance where the data from the wearable GPS harnesses was used in a problematic, coercive manner by an academy coach. This is an unsurprising finding given what has been reported in recent research into the use of surveillance technologies in elite field sport settings. For example, coaches have been identified as using GPS data as a coercive tool to elicit performance gains, even if this means jeopardising the physical health of players (Jones, et al., 2016).

Responses also indicated that the publication of GPS data led to the arrangement of players into a hierarchy based upon their performance data, enabling the coaching staff to "classify them according to skill and speed" (Foucault, 1995, p. 145). Furthermore, it was evident that this hierarchy was discussed and re-emphasised by the players and became a significant component of their informal daily 'banter.' From a Foucauldian perspective this hierarchical ranking process accentuates the imposition of discipline as placing individuals in rank "circulates

them in a network of relations" (p.146) that "makes possible the supervision of each individual" (p. 147). It also is clear that GPS data was used to re-arrange players within these hierarchies, for example, by excluding players from first-team spaces and opportunities by justifying their de-selection with evidence from GPS harness data.

Responses also pointed to how data from GPS harnesses were used to inform the detailed timetabling of players' daily activities. The accuracy of GPS harness data in particular allows for the regular application of precision, facilitating what Foucault identified as the "fundamental virtues of disciplinary time" (p. 151). Again, drawing upon Foucault's disciplinary technique of 'the control of activity,' it is clear that this timetabling process is a means of imposing disciplinary power, as by ensuring time within the academy is "totally useful," the whole body of the academy player is "constantly applied to its exercise" (p. 151).

Theme one suggests that, through the imposition of disciplinary power, there is a real need to recognise that wearable GPS technology can act to produce compliant 'docile footballing bodies' (Jones & Denison, 2016). For Foucault (1995, p. 136) a 'docile body' was a body that 'may be subjected, used, transformed and improved.' In other words, when 'docile,' a body can be moulded into an efficient piece of machinery that acts as vehicle for what Foucault called 'technologies of domination,' where an individual regulates his mastery over his own body, simultaneously replicating (sometimes limiting) society's status quo. So, docility has potential utility because it enhances function (in this context securing the developmentally appropriate physical health and subsequent performance output of a footballer), but, it also serves to limit and constrain an individual by restricting their alternative potentialities, including their ability to seriously question engrained workplace norms.

Leading Foucauldian scholars have identified that the collection of 'personal knowledge' (such as that allowed by GPS devices) is an important disciplinary technology (Markula & Pringle, 2006) that contributes toward the production of docility. Theme one's findings point to fresh evidence from the population under GPS surveillance (academy soccer players) that lends further weight to the notion established in previous research (Jones et al., 2016). Namely that, despite its considerable reported developmental benefits, wearable GPS monitoring also needs to be recognised as a disciplinary technique complicit in the production of developing sportspeople as docile bodies. This is an arrangement that repeatedly has been identified as problematic for this population (Jones & Denison, 2016), as well as for elite athletes from other sports (Johns & Johns, 2000; Barker-Ruchti & Tinning, 2010). It also is important to acknowledge that this imposition occurs alongside and in combination with other previously identified traditional 'disciplinary' practices and attitudes exposed in academy soccer (Giulianotti, 1999; Jones, 2013). It is suggested here that when

considered from a Foucauldian lens, wearable GPS tracking should be considered as implicated in sustaining both the techniques and instruments of discipline that operate within the working soccer setting.

GPS data as subservient to the 'real work' of being a productive player

The second theme indicates that while most of the participants involved in the study quickly accepted the presence of the wearable GPS harnesses as a normal component of their physical working environment, there also were several reservations about the utility of the technology.

Player Three: Every session they are set out ready in the changing room for us to use (GPS harnesses). It's very straightforward and is just a normal part of getting ready now. Find your one, turn it on, put it in, put it on. Then you are in charge of it until you hand it back in.

It is clear that the interviewed players quickly accepted the wearable GPS devices as a normal part of their routines. Despite this acceptance, when asked what they thought happened as a result of GPS surveillance, each athlete seemed to attribute very little significance to the data or how it might be used in their academy setting. Results revealed that the players were rather dismissive of the relevance of data gathered from the GPS harnesses. Instead of consistently providing supportive responses, players were much more likely to instead suggest that the wearable GPS harnesses were unnecessary and constituted a minor annoyance. Despite the reports of annoyance and frustration at the imposition of another thankless task to complete and remember, as soon as the more important rigours of training or match-play commenced, devices were quickly forgotten. Academy players considered the GPS data collection as unnecessary and as 'make-work' and 'only really for the conditioning staff's benefit,' however, it also is possible that the players were ignorant in relation to how the data generated by the devices is used. At numerous times the players reported that the presence of GPS technology had little to no influence upon their daily routine or indeed upon their fortunes within the club. Instead, players were keen to emphasise that the role of data generated by GPS was peripheral to the 'real business of the academy.' Interestingly, this supports the notion that while players may voice criticality of certain intrusive (or in their parlance, 'busy') seemingly peripheral disciplinary apparatus (such as GPS devices or heart rate monitors), their docility (Jones & Denison, 2016) and desire to display a 'good attitude' allows that they are more than willing to be normalised by other common place values, norms, and power relations that typify the elite soccer space (Roderick, 2006). These include the acceptance of symbolic violence (Cushion & Jones, 2006), the manipulation of their physical bodies in relation to space

(what Foucault would call the arts of distributions), time and exercise (what Foucault would call the control of activity), and progressive technical development (what Foucault would call the organisation of genesis).

The dismissal of data generated by GPS devices also supports existing findings from earlier research (Jones, et al., 2016), and lends weight to the supposition that across elite field sport settings, sceptical attitudes to surveillance technologies exist amongst the athlete population, as well as amongst coaching staff (Williams & Manley, 2014). This finding also was verified by one of the player's tangible resentment toward the imposition of wearable GPS technology that he repeatedly described as 'a waste of everyone's time.' During the group discussions one player in particular was very dismissive of the role and purpose of the GPS devices. Below is a collection of his misgivings surrounding the wearable GPS devices.

> **Player One:** I don't see the point because I am not going to run around more with a thing on my back than without it. Is it there to try and catch you out to see if you are lazy or what? I don't get it. I just don't think it's necessary.
> I don't think the Head Coach would ever come in and really pay much attention to that stuff. He's got bigger things to worry about like thinking about football and the next game.

As Player One's quotes reveal, for at least one of the participants, wearable GPS devices were a troublesome and unnecessary addition to his day. For him they served no real purpose beyond acting as (in his mind) an unnecessary and futile tool for his observation. For Player One, the wearable GPS device was a 'fancy' hindrance to the 'real business' of the academy. According to Player One, the priority for him was to pay due diligence to the well-established 'football norms' and expectations of the academy. His quotes suggest that maintaining these norms were the head coach's duty and correspondingly, that it is an academy players' duty to conform in order that the ambitions of the academy team could be reached. Player One's belief in this norm was evident throughout the conversations and heavily influenced his attitudes toward the surveillance devices. It also is important to note that when asked whether they were worried about how their data profiles might be used to influence management's decision process with regard to their contract renewals or status within the academy, the players wholeheartedly rejected the idea that their data profiles would have significance upon any playing decision.

> **Player Four:** I might use it to say to the coaches, 'Look you can see what I do in a game,' but I think we all know that it's performances that counts when it comes to retain or release conversations. Unless you are not pulling your weight in training and the data shows that. But let's be honest, the head coach should see that from his own experience – that's his job.
> **Interviewer:** So would you say knowledge of football is the most important thing?

> **Player Two:** Totally. I honestly don't think he cares about the [GPS] stats that much.

Not only did players suspect that the coaching staff mainly disregarded the statistics that GPS surveillance gathered about them, players were keen to point out that they also have their own reservations about how the statistics generated by wearable GPS devices could produce what they considered to be unhelpful findings about players' outputs during games.

Results from theme two suggest that while the academy players interviewed are aware of the potential developmental benefits of regulated training volume, players are rather dismissive of GPS harnesses and the data they produce. Foucault's analysis allows that the responses from theme two can be read as an example of the players attempting to resist the power relations that govern their sporting space – and in doing so highlight the operations of power in this dynamic. Foucault observed that the relational nature of power allows the 'possibility of resistance' and for 'strategies that reverse the situation' (1987, p. 12). For example, because of power's relational rather than possessed nature, Player One's objections to the GPS devices demonstrate his freedom to exercise his struggle at a 'point of resistance' within the capillary-like network (Markula & Pringle, 2006) of his academy setting. Foucault mentioned that after power is invested upon a body it "finds itself exposed to counter-attack in that same body" (1980, p. 56). Player One's remarks could therefore be read as what Foucault might term a cleavage capable of potentially breaking the dominance of bodily discipline at this location. However, because of the scenario where Player One resists too much and would experience an expulsion from the academy (and a loss of his socially desirable status), this cleavage is unlikely to happen. As Jones and Toner (2016, p. 17) identified,

> Resistive actions can and do influence how coaches perceive the value of surveillance technologies and therefore should not be ignored in any critical discussion surrounding the politics and application of these devices in the sports coaching setting. However, despite this recognition that athletes can and do engage in resistive actions with regard to the imposition of surveillance, in many instances, if athletes are to maintain their elite status, they are often required to comply unquestioningly to the demands of their coach or manager.

Theme two identifies how academy players have attempted to adopt resistive practices and attitudes to cope with the imposition of discipline. Importantly, this resistance renders the relations of power operating in this coaching context visible. However, as yet, academy players' "knots of resistance have not been able to organise into a force with enough leverage to compel a change in the disciplinary logic" (Markula & Pringle, 2006, p. 91) that has come to define their typical soccer space (Giulianotti, 1999). This mirrors the findings of Williams and Manley (2014) who noted that the use of surveillance technologies in elite

sport settings leads to a 'regime of control.' Within this regime, players may privately disagree with the arrangement, and in doing so they exhibit seeds of resistance. However, for the most part, given their reluctance to jeopardize their positions they "remain largely passive in order to secure a favourable position within the institution" (p. 840).

The above analysis suggests that despite elements of apathy and resistance from the players explored in theme two, there remain several unrecognised limiting and 'docile making' effects of the routine application of GPS surveillance within this academy. In addition, given the dog-eat-dog (Magee, 1998), cutthroat nature of elite soccer in the UK (Cushion & Jones, 2006) it is likely that this soccer club will continue to pursue the existing 'productive' performance and coercive potentialities of distributing wearable GPS technology to their young charges. As a result, it is important for those responsible for the enhancement of young soccer athletes to be aware that a lot more than an automatic transaction of 'observation - informed planning - improvement' occurs wherever GPS surveillance is deployed as a developmental tool (Jones & Denison, 2018). In this specific instance, it is important to recognise that routine surveillance using GPS devices influences the social dynamics of the soccer academy setting in ways that have, thus far, been largely ignored. Specifically, that GPS devices create docile players who, despite displaying elements of resistance, for the most part, comply with coercive practices that may be limiting their developmental experiences.

Practical considerations

Marks (2012) suggested that rather than enhancing and developing young athletes to meet 'normalised expectations,' it is necessary to ask new questions and provide practical suggestions to the end users. With this in mind, in this section I present some strategies to allow end users of GPS devices (for example team coaches and strength and conditioning practitioners) to become better at their jobs by exerting less control and less unnecessary discipline in their athletes' development (Jones et al., 2016).

Practice

It has been acknowledged that de-coding and enacting Foucauldian ideas in the applied coaching context can be challenging for sports practitioners (Denison, Pringle, Cassidy, & Hessian, 2015). However, several authors have recently highlighted how working coaches have drawn from Foucauldian concepts to change how they coach (Gerdin, Pringle, & Crocket, 2018). With this in mind, Foucault's disciplinary analysis was consulted to devise several strategies that a soccer academy coach might chose to employ when attempting to use GPS devices in a more

developmentally appropriate manner. Building upon Jones and Denison (2018), it is suggested that the following strategies might help to lessen the imposition of unnecessary disciplinary power by softening the impact of GPS devices as instruments of discipline:

- Avoid using GPS data to explicitly compare players to each other or against normative data.
- Remove unnecessary monitoring/data collection – for example, during warm-ups or technical sessions.
- Carefully consider how, where, and when the data from GPS devices are distributed and discussed with players.
- Engage in regular dialogue with the players about how they feel about the presence and utilization of GPS during training and matches.
- Increase the level of transparency regarding the ways and means GPS data is used in the academy setting.
- It is hoped that encouraging coaches to adopt these more sensitive strategies may allow them to produce less docile academy players with different behaviours, characteristics, and skill-sets. Moreover, these players will perhaps be less likely to sacrifice their physical, mental, or emotional wellbeing in the pursuit of performance excellence.

Education

Another practical suggestion presented here is that instruction surrounding the developmentally appropriate use of surveillance technologies such as GPS harnesses should become embedded within formal coach education platforms. As well as undertaking training designed to master the deployment of these technologies with maximum efficiency, it is essential for coaches to also explore the powerful implications of these instruments of surveillance. In line with this suggestion, contemporary Foucauldian coach education scholars also have suggested that working alongside coach educators versed in Foucauldian concepts may allow coaches to develop a more advanced understanding of the potentially dangerous effects of certain unquestioned coaching practices (Denison, Mills, & Jones, 2013). Indeed, Konoval, Denison, and Mills (2018) noted how working alongside a Foucauldian coach developer can help an open-minded coach facilitate new and less limiting ways of coaching that may well be more appropriate for the ethical and sustainable development of athletes across sports. This study has identified one limiting and currently unquestioned coaching practice that needs to be destabilised is the reliance upon routine surveillance in the elite field sports setting.

Conclusion

Some authors have suggested that too much has been made of the dangers of surveillance technologies in sport. These

scholars have argued that, when looked at from a positive angle, these technologies can lead to developmentally appropriate training progressions, better-informed coaching decisions, and a rise in levels of athlete empowerment and autonomy (Collins et al., 2015). Like Manley et al (2012), the current study does not deny that GPS harnesses can aid the internalisation of norms that can lead to enhanced performance outcomes. However, in the current paper it is suggested that the now normalised and increasingly ubiquitous wearable GPS devices amongst British academy soccer players may well have potentially problematic developmental implications for this group of young athletes. This study has shown that soccer academy coaches need to regulate or re-think their day-to-day practices and tools to reduce unnecessary surveillance. Foucault (1995) himself warned that the spread of disciplinary technologies and instruments did not necessarily result in the creation of a well-disciplined or orderly society. Likewise, to assume that the deployment of wearable GPS devices will lead to exclusively productive developmental outcomes may be a dangerous mistake to make.

This study not only has several implications for attitudes toward the use of wearable GPS devices in the development of elite athletes, but also for the use of these devices throughout the social body. It is clear that if employed in a thoughtful and sensitive manner wearable GPS devices can promote personal empowerment in human/technology relations (Mann, 1997), and if used in a mutual fashion, afford the observed a "new voice in the usually one-sided dialogue of surveillance" (Mann, Nolan, & Wellman, 2003, p. 348). However, the above findings clearly have demonstrated that due to workplace pressures, the potential for surveillance technologies to be misappropriated cannot be discounted. These technologies' capability to expose potentially vulnerable groups to arrangements typified by unnecessary disciplinary power should always be kept in mind. Therefore, it is suggested here that those wanting to monitor others by deploying wearable GPS devices should always proceed with caution and an open mind to the potential array of unintended consequences that may occur (Jones & Toner, 2016).

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