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International sporting success factors in GB para-track and field

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ABSTRACT

Research Question: Elite sport structures that support para-athletes are designed on the assumption that the international sporting success factors are concomitant for parasport and non-disabled sport. However, there is a lack of research on elite parasport policy and the nuances which may exist for specific sports. This study investigates the international success factors for GB para-track and field.

Research Methods: A mixed-methods approach was used, including quantitative surveys completed by elite GB para-athletes ($n = 42$) and their coaches ($n = 38$) and qualitative semi-structured interviews with athletes ($n = 7$), coaches ($n = 5$) and UK para-athletics support staff ($n = 3$).

Findings: The study revealed that although factors found in previous non-disabled studies were identified, several para-track and field-specific variables that influence these existing factors were also discovered. These were the nature of impairment (acquired or congenital); level of support and care needs; and level of equipment needs.

Implications: The study presents a framework summarising the variables influencing international para-track and field success. This can be used to inform the development of GB para-track and field policy and the design of parasport support structures to optimise success.

Research contribution: The paper contributes to growing knowledge on achieving sporting success in parasport and the differences with non-disabled sport.

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Introduction

Participation in parasport has grown significantly over the past 50 years, as have the Paralympic Games, in terms of athletes and nations participating, spectator numbers and media profile (Dehghansai et al., 2017; Houlihan & Chapman, 2017). For many nations with ambitions to win more Paralympic medals, the approach to supporting para-athletes has mirrored established Olympic sport structures. In the United Kingdom (UK), together with other countries such as France, The Netherlands, Canada and Australia, the support structures for elite parasport, mirror those of non-disabled sport, indicating an assumption that the factors leading to success in parasport are concomitant with non-disabled sport.

In parallel with the increasing prominence of parasport, there has been a steady growth in the number of research studies focusing on

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parasport and parasport contexts (Dehghansai et al., 2020). Within this body of evidence, there is an emphasis on using non-disabled literature to understand parasport athlete careers (Dehghansai et al., 2020; Patatas et al., 2020, 2020, 2018). However, there has been limited investigation of the factors leading to international success in parasport.

There is significant literature on elite sport policy and models that explore the factors leading to international sporting success, which in recent years has become dominated by the "SPLISS" consortium (Henry et al., 2019). These studies, which have largely been based on non-disabled observations, provide valuable comparative insight regarding success factors in different contexts, the rationale for developing elite sporting structures, investment and the allocation of funding and resources to facilitate success. However, the uniformity and rigidness of existing models overlook the variability that exists across sport, which is particularly "exacerbated by numerous factors in parasport, including disability-related nuances" (Dehghansai, Lemez, Wattie, Pinder, & Baker, 2020, p. 2). Patatas et al., 2018 argue that a parasport system demands different programmes and policies in comparison to an able-bodied sports system. What may work for an able-bodied sports system may not necessarily work for a different system in terms of the operations of elite sport Patatas et al. (2021).

The aim of this study is to identify the international sporting success factors for GB para-track and field, as identified by key stakeholders, including athletes and those responsible for delivering success. Using evidence gathered from athletes, coaches and support staff, it provides original insight into the factors influencing international parasport success in GB. Following this introduction, the article provides a succinct review of relevant literature. It then gives an overview of the case study context, followed by an explanation of our methods and data collection. The article then presents and discusses the findings. Within the discussion section, we summarise our findings in a framework designed to provide guidance for policy makers, coaches and other practitioners, to enable more informed decision-making through a better understanding of the variables that interact to impact para-track and field athlete international sporting success. We conclude with a summary of our research and recommendations for future research.

Literature review

The past half-century has witnessed an increased focus on elite sport policy, in response to nations' desire to win medals in major international sports competitions. This has led to governments and national sports organisations throughout the world spending significant sums of money on funding elite sport in pursuit of success (De Bosscher et al., 2008, 2015). One of the main arguments used to justify funding of elite sport is based on the understanding that sporting success develops national identity, which creates prestige and makes people proud to belong to their country (Grix, 2009, 2012; Shibli et al., 2021). Elite sport success is also seen to increase mass participation, subsequently leading to a healthier population, an argument contested by Weed et al. (2015), who suggest that the demonstration effect of inspiring people to become active is not underpinned by any empirical evidence. Despite the growth of parasport and increased interest from nation-states in elite sport, parasport has received relatively little attention from sport practitioners, policy makers and within elite sport policy literature (Patatas et al., 2018).

Early research in the field of comparative elite sport policy sought to identify key factors influencing international success. Oakley and Green (2001a) were among the first scholars to identify aspects common to all countries' sports institute networks, drawing on

observations from the former eastern bloc states of the Soviet Union and the German Democratic Republic. An abundance of elite sport policy literature in developed nations has emerged since this early work, including Green & Houlihan, 2005; Digel et al., 2006; Bergsgard et al., 2007; Houlihan & Green, 2008; Andersen & Ronglan, 2012; De Bosscher et al., 2008; and De Bosscher et al., 2015. Patatas et al. (2018) provide an overview of key studies in the field, noting that while each study took a slightly different approach, the common issue addressed was "the extent to which a broad range of countries with different political, socio-economic and cultural profiles adopt similar policy goals and instruments" to achieve sporting success (p. 236).

The widely cited SPLISS framework (Sport Policy Factors Leading to International Sporting Success), developed by De Bosscher et al. (2006) and De Bosscher et al. (2015), brought together a comprehensive body of literature on the factors influencing international sporting success. SPLISS is based on the premise that sporting success can be created. The framework suggests that factors determining international success occur at three levels: macro (e.g, geographic location), meso (e.g. policy) and micro (e.g. talent), although De Bosscher et al. (2015) argue that it is only at the meso-level that success can be influenced and managed. In the context of parasport, macro-level factors may include classification and society relational aspects of disability; at the meso-level, disability specific governance and policy and at the micro-level, the personal care needs.

Historically, within elite sport policy literature, there has been a limited focus on parasport success, although several studies have recently emerged in this area. Patatas et al. (2021) focus on categorising the contextual factors that influence parasport systems and para-athlete development. They acknowledge that para-athlete development opportunities are dictated by national socio-political, economic and cultural environments. Patatas, Bosscher, Derom, & De Rycke, (2020) use the SPLISS pillars along with the social-relational model of disability to provide several policy recommendations for the different phases of athlete development, identifying policy factors and stakeholders that could influence the development of para-athletes' career pathways in Paralympic sport. The authors theorise disability through the lens of the social-relational model and argue that an understanding of the concept of disability is essential when stakeholders develop strategy and management principles from non-disabled sporting contexts. Notably, by the authors' own admission, this study omits the inclusion of para-athletes as key stakeholders, thus presenting an opportunity to explore the important perceptions of athletes and coaches as the key stakeholders responsible for delivering success.

Within the literature on elite sport policy, there is growing recognition of the need for research to consider parasport context. Dowling et al. (2018) suggest that attempts to frame a parasport system and factors determining success must recognise the layers of complexity within parasport. Similarly, Patatas et al. (2018, p. 236) identify the need to "develop parasport-specific research on elite sport policy which can contribute to the development of para-athletes' pathways, in aid of helping policymakers improve support services". To this end, they draw upon a sample of 16 "international Paralympic experts", to compare how parasport policy differs from non-disabled sport policy. The authors found that elite Paralympic athletes receive similar support as their non-disabled peers. However, they note considerable variance between the systems and policies that influence development and that a "one-size fits all" approach does not exist to develop an effective parasport system. The research did not consider the views of athletes, coaches or stakeholders responsible for delivering success. Nevertheless, it reiterated concerns expressed in earlier discussion regarding

the validity of previous research relating to elite sport systems from a non-disabled sport context to parasport.

Another area of the elite sport development literature that has received limited investigation is research with a sport-specific focus (Sotiriadou & Shilbury, 2009). The few studies that examine specific sports, for instance in athletics (Grix, 2009; Truyens et al., 2016), canoeing (Sotiriadou et al., 2014) and tennis (Brouwers et al., 2015), have not focused on or explicitly considered parasport. In the context of track and field athletics, Truyens et al. (2014), consider a resource-based perspective on elite sport development focusing on track and field athletics specifically to identify factors leading to a competitive advantage. Within this study they categorise resources and capabilities into the nine categories of the SPLISS model and an additional 10th category, the elite sport environment was added. Truyens et al.'s inventory provides a first overview of the organisational resources required to develop a competitive advantage in one specific sport. They found that a competitive advantage can be achieved by countries that develop specific resource configurations and dynamic capabilities that take an advantage of the opportunities within its external environment. Nevertheless, they conclude that "the homogeneous approach to elite sport policy development as indicated by De Bosscher et al. (2009) and Green and Houlihan (2005) is not applicable at sport-specific level" (Truyens et al., 2014, p. 484). This suggests a need to also consider the sport-specific context within research on elite sport policy success factors in parasport.

This article intends to address the aforementioned gaps in empirical elite parasport policy research. Specifically, our study aims to identify the international sporting success factors for parasport in a sport-specific context; GB para-track and field. The article aims to identify the factors identified by para-athletes and the key stakeholders responsible for delivering success, which are notably omitted from previous studies.

The context of para-track and field in the UK

The research presented in this paper is a case study of para-track and field in the UK. UK Sport is the national government agency responsible for investing in Paralympic (and Olympic) success in the UK. UK Sport distributes funding (a combination of National Lottery and UK Government exchequer funding) to UK National Governing Bodies (NGBs) for sport. The funding is used to support the World Class Performance programmes of NGBs, which are dedicated to identifying, developing and supporting the training of athletes in the years leading up to the Paralympic Games (British Paralympic Association, 2020). UK Athletics is the NGB for track and field in the UK. British Athletics is the consumer brand of the governing body UK Athletics.

This study focusses on the United Kingdom of Great Britain and Northern Ireland (UK). The UK is extensively referred to in sport as "Great Britain (GB)". Generally, the UK competes in international para-track and field competitions as GB and Northern Ireland. Throughout this article, GB refers to Great Britain and Northern Ireland. The British Paralympic Association work in partnership with the NGBs, in this instance UK Athletics. GB have competed at every Summer and Winter Paralympic Games (Brittain, 2009). GB currently lies second in the all-time summer Paralympic medal table when ranked by gold medals won and by the total number of medals. Approximately 30% of all GB medals won are from para-track and field.

The complexity of para-track and field makes this an interesting case study. Track and field is a multidisciplinary sport. Moreover, parasport also encompasses multiple classifications of athletes. While the findings of this study are likely to be of most interest to practitioners

within the UK, there are some components from the UK parasport system that may be generalisable and transferable (Smith, 2018). Therefore, the findings may also be of interest to other countries with similar parasport systems.

Methods

A mixed-methods approach was used to identify the success factors perceived by the main stakeholders of GB para-track and field. The use of mixed-methods in this study enabled the collection of more in-depth and diverse data than would have otherwise been possible if just one approach had been employed. The approach enabled a more granular examination of the research aim (Creswell et al., 2003). Triangulation design was used "to obtain different but complementary data on the same topic" (Morse, 1991, p. 122) to best understand the research problem. This design enabled the researchers to directly compare and contrast quantitative statistical results with qualitative findings and to validate and expand quantitative results with qualitative data (Creswell et al., 2003).

A four-phase sequential design was adopted which included both quantitative surveys completed by elite GB para-athletes and their coaches and qualitative semi-structured interviews with athletes, coaches and UK Athletics staff. The research design is summarised in Table 1. Phase 1 was used to explore the individual athletes' and coaches' experiences of the factors leading to international success. Phases 2 and 3 enabled the researchers to compare and contrast quantitative statistical results with qualitative findings. Phase 4 enabled further validation and expansion of the quantitative results with qualitative data. The learnings from Phase 1 informed the design of Phase 2 and 3, and Phase 4 was informed by the findings of Phase 1–3.

Phase 1

Phase 1 consisted of 12 semi-structured interviews with individual athletes ($n = 7$) and coaches ($n = 5$) from a range of event classifications. The UK Athletics Para Head Coach facilitated access to the British Athletics National Squad at a National training camp, where athletes and coaches were recruited. An interview protocol, based on the themes identified in the literature, was used for athletes and coaches. The interviews ranged between 47 and 78 minutes, depending on the depth of responses provided by the participants. The interviews explored experiences and perceptions of the critical success factors for parasport performance. They involved qualitative exploration of the factors leading to international sporting success (in non-disabled sport), identified previously in the literature by De Bosscher et al. (2006), Digel et al. (2006), Green and Oakley (2001) and Oakley and Green (2001b). The nine factors were as follows: Financial Support, Organisation and Management; Foundation and Participation; Talent ID and Development; Athletic and Post-Career Support; Training Facilities; Coaching Provision & Coach Development; (Inter)national Competition Structure; and Scientific Research. These factors formed the a priori codes for the

Table 1. Study design.

Phase	Data collection method	Population and sample
1: Qualitative	Semi-structured interviews	GB international para-athletes ($n = 8$) Coaches of GB international para-athletes ($n = 6$).
2: Quantitative	Survey	GB international para-athletes ($n = 42$)
3: Quantitative	Survey	Coaches of GB international para-athletes ($n = 38$).
4: Qualitative	Semi-structured interviews	UK Athletics Paralympic Head Coach, UK Athletics Parallel Success Coordinators ($n = 2$).

thematic analysis. The interviews also allowed participants to explore other factors and variables not previously identified by the literature. All the interviews were recorded, transcribed and thematically analysed using Quirkos, a qualitative data analysis software tool. Thematic template analysis was selected because it allowed the combination of the a priori codes identified from the literature and existing models of elite sport development, whilst allowing exploration of new factors and variables. Crabtree and Miller (1999) suggest that template analysis offers an intermediate approach, allowing the researcher to combine some initial a priori codes with an immersion/crystallisation style of analysis. This began with familiarising oneself with the data, followed by generation of some initial codes, searching for and reviewing themes, defining and naming the themes, and, finally, conducting the final analysis and producing a report of the findings (Braun & Clarke, 2006).

Phase 2 and 3

Phase 2 and 3 provided a quantitative examination of the factors perceived to impact on the success of para-athletes. Both phases used questionnaires to examine the success factors for para-athletes from the perspective of athletes and coaches, respectively. The participant and coach questionnaires included the same themes although specific questions were adapted for the coach or athlete to reflect on their personal experience. Additionally, the athlete survey asked questions for the athlete to report their individual characteristics.

To meet the inclusion criteria, para-athletes must have been selected for British Athletics Paralympic World Class Performance Programme (WCPP). WCPP selection is based upon the potential of athletes to win medals at the Paralympic Games and is split into two levels: Podium (for athletes with the potential to win medals within the next eight years, at the next two Paralympic Games) and Podium Potential (for athletes developing towards the following Paralympic Games, in 12 years). A total of 52 athletes met the eligibility criteria for the athlete survey; the response rate was 81% with 42 athletes responding. For coaches, they must have coached athletes on the British Athletics Paralympic WCPP within four years of data collection. The coach survey received 38 valid responses. The 52 eligible athletes had 34 different coaches. Four coaches also responded who had coached international para-athletes not currently on the British Athletics Performance Pathway. The quantitative survey data was analysed in SPSS. A one-way analysis of variance (ANOVA) was used to determine whether there were any statistically significant differences between the means of three or more independent, unrelated groups. Specifically, ANOVAs were used to investigate international sporting success factors for GB para-track and field and the impact of variables including classification, impairment and event discipline. To enable this, participants were grouped by the event groups of throws, jumps, sprints and distance, by classification group and by nature of the impairment.

Phase 4

Phase 4 of the study focused on data collection with staff from UK Athletics ($n = 3$), to understand the organisations perspective and further explore the findings of Phase 1, 2 and 3. Three semi-structured interviews were carried out with the Head Coach for the British Athletics Paralympic Programme and two Parallel Success Coordinators, representing the key stakeholders responsible for delivering the parallel success programme activity to increase the number of eligible pathways para-athletes retained and competing in the sport. Phase 4 included discussion of charity support, talent development, access to provision, type of schooling equipment and care needs in addition to the themes defined by the literature. Interviews undertaken with UK

Athletics staff were analysed thematically using template analysis, as detailed for Phase 1.

Results

In accordance with the research aim, this section of the paper discusses the factors influencing international para-track and field success, as perceived by para-athletes, coaches and stakeholders responsible for delivering success. The results of the four phases of the study are presented thematically in this section, combining quantitative and qualitative analysis to demonstrate the variables identified.

Overall, the study found some areas of similarity with the success factors identified in previous research conducted in non-disabled sport (Andersen & Ronglan, 2012; Bergsgard et al., 2007; De Bosscher et al., 2008, 2015; Digel et al., 2006; Green & Houlihan, 2005; Houlihan & Green, 2008), comparative parasport research (Patatas et al., 2018, p. 2020) and research that has explored a resource-based perspective on countries' competitive advantage in elite athletics (Truyens et al., 2014, 2016). Interviews with coaches and athletes, together with the survey, identified the following previously identified factors as having relevance to UK para-track and field: Financial Support Organisation and Management; Foundation and Participation; Talent ID and Development; Athletic and Post-Career Support; Training Facilities; Coaching Provision & Coach Development; (Inter)national Competition Structure; and Scientific Research. The study itself did not identify any new factors specific to parasport. However, it did identify three important variables influencing these factors, which were specific to para-track and field. They are the nature of impairment (acquired or congenital); support and care need level and equipment need level. This section, which discusses each of these variables, demonstrates the heterogenous nature of para-track and field and the potential need to provide bespoke support to elite para-athletes.

Nature of impairment – acquired/ congenital

An acquired impairment or disability is a disability that has developed during a person's lifetime, due to an accident or illness rather than a disability the person was born with. Congenital disabilities are those that are present at birth. The study found that the nature of impairment was significant for a number of reasons, in particular, talent identification and opportunities to participate. The research found that for British Athletics to focus on individuals at an early age may be misguided for para-track and field. This is demonstrated by a para-athlete, who acquired their disability in their late thirties and began participating in seated throws, aged 41.

> I remember seeing something that said "if you're aged between 14 and 25" and I'm 41 … I don't think I would ever have come through the traditional route. (F55 Athlete – acquired impairment)

The sport participation experiences of the athletes interviewed during the study were varied and depended on several variables, notably the nature of the individual's impairment (acquired or congenital). Athletes with congenital impairments and athletes with impairments acquired before school age, reported participation in non-disabled sport, typically through mainstream schooling and sport clubs. Athletes that acquired their impairment later in life reported participating in non-disabled grassroots sport as non-disabled individuals. Dehghansai et al. (2020) found that wheelchair basketball players reached early career milestones at a significantly older age than non-disabled athletes, athletes with congenital impairments reached midcareer milestones at similar ages to non-disabled athletes.

The participants in this study, with acquired impairments, all experienced rapid progression to elite levels, when compared with the development age of able-bodied athletes. The survey data demonstrated that 45% of

respondents in the athlete survey stated that they specialised in their current event over the age of 18. However, there was no correlation between age of first participating in para-track and field and international success as determined by highest International Paralympic Committee (IPC) ranking or age of event specialisation and international success. Para-athletes and coaches interviewed frequently reported rapid progression to international competitive success and participation in major championships, as evidenced by this track athlete:

> I had my first international, in the same year as I won the Paralympics, yeh – was really quick, my life changed completely. It all happened really quickly, I was 18 when it was the Paralympics in London. (T44 Athlete – acquired impairment)

Additionally, the fast progression was reported by a field event athlete, still developing in the event and competing in a major championship:

> I went to the World Championships this year without much of a clue what I'm doing and I'm still in the technique development stage. (F55 Athlete – acquired impairment)

One para-athlete acquired their disability at the age of 37 and achieved elite status in three parasports within six years.

> I competed in London 2012 doing sitting volleyball, so I had an accident in 2008 … and then after London sitting volleyball wasn't really going to progress beyond London … I did the World Championships for shooting, but didn't really enjoy … a friend of mine who is an able-bodied thrower said "why don't you have a go at throwing". (F55 Athlete – acquired impairment)

Dehghansai et al., (2020) found that athletes with acquired impairments were able to reach key late-career performance milestones (i.e. national and international debuts) at a similar age to non-disabled athletes. The data from this study indicate that the nature of an athlete's impairment has a considerable impact on their participation pathway in disability sport, parasport and non-disabled sport and the support system needs to be reviewed to accommodate the varying para-athlete needs.

Equipment needs

It is accepted within the existing literature that elite sport funding is a key determinant of international sporting success (De Bosscher et al., 2008, 2015). Additionally, there is evidence of nations that have almost doubled their elite sport expenditure over the past decade (De Bosscher et al., 2015). It is essential in many events within para-track and field for para-athletes to have costly bespoke equipment, such as prosthetic limbs (blades), throwing frames and racing wheelchairs. For an athlete with specialist para-equipment needs, the impact of not being funded is arguably more significant than for athletes not requiring specialist bespoke equipment. Put simply, the costs to even participate in the sport are higher than non-disabled sport (Falkingham, 2021). This para-specific challenge has not been previously identified in the few studies exploring parasport success. The prospect and reality of being an on/off funded athlete presents considerable individual challenges:

> The equipment needed is really expensive … and erm … well you need it. You can't compete without it, or train, or anything … But it's hard because you need to be so good to get funding, but you need funding to get good. (F32 Athlete – congenital impairment)

In the athlete survey, 68% of respondents stated that the financial support they received was enough to pay for their costs as elite athlete. The financial strain of performing at an elite level is not unique to para-track and field. However, the Head Coach acknowledged the significant specific costs associated with

para-track and field and the high equipment needs:

> The cost, for your amputee … you have to get a running leg which can cost up to four-thousand pounds … a wheelchair costs three to five thousand pounds … So, when we do our talent ID, if an amputee turns up, generally they are running in a day leg. When we see them we have to make some big assumptions. (Head Coach)

While elite para-athletes receive similar public funding as elite non-disabled athletes, the lack of funding support for grassroots para-sport creates a discrepancy. The interview participants cited that involvement in para-track and field often requires expensive equipment, and additional costs are incurred to support athletes in certain classification groups with specific needs. This is particularly pertinent for athletes with high support needs. Charities were cited as a significant factor in determining athlete development and consequent success.

Within the athlete and coach interviews further context was provided:

> There're some charities, if you're young, like 'Get Kids Going'. So, if you're like a teenager or younger you can apply for financial help, but, essentially, it's a case of, erm, fund raising. (Wheelchair Racing coach)

The cost of a bespoke racing wheelchair is about £4,000, and a lightweight manual wheelchair is around £3,000. Sports grants can be anything from £500 to £15,000 per year for each youngster. The participants reflected on the support received in their early careers. Charities were cited as providing essential equipment to enable participation in para-track and field. Sixty-six percent of respondents from the athlete survey cited the support of a charity as being essential to their track and field career. Additionally, 55% of athletes felt that the role of charities in developing athletes is widely acknowledged in the sport.

Athletes in the sample were grouped according to classification and event group; throws, jumps, sprints from 100 m to 400 m and distance from 800 m to marathon. The athlete survey investigated the role of charities in the development of athletes included in the sample. The one-way ANOVA revealed that there was a statistically significant difference between how athletes reported their involvement and reliance on charities and the event groups ($F(3, 36)$ 6.656, $p = .001$). A Tukey post hoc test revealed that there was a statistically significant difference in involvement and reliance on charities between the throwing event group ($p = .001$) and the distance event group ($p = .021$). A possible explanation, suggested in the qualitative data, is that different events require varying levels of financial support for essential equipment. A further one-way ANOVA also found there was a statistically significant difference in the level of involvement and dependency on charity across the various impairment classification groups ($F(5, 34)$ 5.073, $p = .02$). The Tukey post hoc Doing qualitative researcht difference between the dependency of athletes with Short Stature ($p = .013$) and athletes with Limb Deficiency ($p = .07$). The analysis of these questions enabled us to identify that para-athletes perceive the impact of charity as a significant success factor.

Care needs

The data generated from the para-athlete interviews indicated an emergent theme from athletes with high care needs. Some para-athletes cited the importance of individuals that were not acknowledged in the existing literature. These individuals were typically a carer or a personal assistant. The data revealed that 95% of athletes identified their personal coach as essential; it is assumed that these findings would be concomitant with non-disabled athletes. An additional 52% of para-athletes in the sample were dependent on their parents to enable the habitus of an elite athlete, with 25% citing medical professionals as essential. The one-way ANOVA identified that there was

significant variation in the individuals identified by the athletes as essential for them to live, train and compete as an elite athlete and impairment type ($F(5, 45)$ 2.775, $p = .03$). The Tukey post hoc test revealed a statistically significance between the identification of "carer" ($p = .042$), "partner" ($p = .021$) and "National Coach" ($p = .033$). No statistically significant differences in the mean gap scores were detected in acknowledgement of "personal coach" as an essential individual.

The variance in classification groups demonstrates that the level of impairment is a significant factor that influences the reliance of para-athletes on carers. Athletes with high care needs can be categorised in two key areas; para-athletes with high care needs consistent with the general disabled population and those with care needs specific to their sport, for example, a visually impaired athlete requiring a guide or a T40 athlete needing equipment assistance in the gym.

When athletes were asked to describe the role of these essential individuals, care and support with disability needs, transport, education, financial support were commonly cited. Both training and personal needs were also identified. A specific example is given by a track athlete:

> My carer takes me to events, they manage my time as I have a brain injury and have a poor memory. (T34 Athlete)

Another athlete stated:

> I use a local public gym, I wanna stay home … I need to stay at home as I need my mum and dad to help with my care. (T34 Athlete)

It is also acknowledged that for some para-athletes, high support and care needs outweigh their specific elite sport needs:

> In terms of lottery funding and the EIS support you get … obviously some athletes in different classifications might say I need a lot of support, physio, full time strength and conditioning coach. We would prefer that more personal assistant level support than perhaps physio every day. (Coach and Carer)

For other participants and coaches, the challenge was the specific nature of athlete impairments and that scientific research is clustered around event classifications with high equipment needs:

> You ask British Athletics about the biomechanics of throwing if you're not able-bodied and there isn't any. So, everyone throws differently, everyone's got a different condition and there isn't enough research and yet they say the bulk of the medals will come from CP athletes, so you go 'where's the research?' … you're designing it as you go, it's a guessing game … There isn't enough research with certainly Amy's level of CP. (Seated Throws Coach)

The Head Coach also acknowledged the impact of care needs on support provide to athletes:

> In one of the classes where you've got limited function, you may need a personal assistant, and so the cost associated by doing your sport … for some of the athletes and some of the classes, it is really expensive. (Head Coach)

Visually Impaired (VI) athletes, in certain classifications, require guides. Guide athletes add an additional resource cost:

> If it's a VI athlete, and they need a guide, we support the guide too … its double really … we need them too, they have to stay fit, injury free and they need to go to the competitions the athletes go to. (Sprints Coach)

Typically, athletes with low care needs and able to emulate the technique of non-disabled elite performers valued coach event knowledge over impairment or classification knowledge. In events that are specific to para-track and field, typically seated events, and where athletes may have high care needs, the research found that understanding of athletes' impairment

and management of this was integral to success:

> I need my coach to know me, to understand me. Sometimes I hurt too much to train … I still want to train … I need my coach to know about throwing but know about me too. (F32 Athlete)

Two para-athletes stated that they see knowledge and experience of para-track and field as a success factor. A point emphasised by a seated throws coach:

> You've got to understand the condition, then how to design a frame and avoid injury, that's the most important.

Discussion

This study intended to identify international sporting success factors for GB para-track and field, as identified by key stakeholders. In addition to those recognised in previous research, it identified specific variables impacting para-track and field international success factors, that have not been acknowledged in previous elite sport policy research. It ascertains that the difference between parasport and non-disabled sport is not limited to the implementation of a classification system in parasport. The study demonstrates that athlete pathways in para-track and field are not only sport-specific but that consideration of both classification and impairment potentially influence elite para-track and field support structures. Building on the policy dimensions of the SPLISS framework and consideration of SPLISS framework in a parasport context (Patatas et al., 2018, p. 2020), the findings of this research provide policymakers with a better understanding of the different approaches that are required to organsise and structure parasport, potentially leading to the development of bespoke elite parasport structures in the future.

To date, no sport policy model or framework has explicitly been created for parasport. Whilst organisational and sport policy factors, such as personal environment, accessibility in sports facilities, multidisciplinary teams and support, funding and career transitions, have been found to directly influence para-athletes' sport performances (Patatas et al., 2020), the findings of this study urge those designing systems to support para-athletes to consider the specific environment and needs identified by this study. They reaffirm the need for continued and focused attention on the support system in place to facilitate para-track and field success and consideration of factors influencing the development of elite (para)-athlete careers on various levels, including personal, environmental, infrastructural, cultural, political and demographical (Forber-Pratt et al., 2013). The findings identify that there are notable differences from non-disabled track and field and that sport policy should be developed to reflect these differences.

A framework for international success factors in para-track and field

To illustrate the variance in success factors for para-track and field, the research findings were synthesised into a framework, which is presented in Table 2. The framework acknowledges that variation can, to some extent, be grouped by congenital/acquired nature of the impairment, degree of support needs and equipment needs. These variables provide the principal areas of variance in success factors for para-track and field athletes, across the critical factors considered. Rather than identifying omissions from the existing models, the framework identifies the differences between and across the success factors acknowledged in previous studies and the research data collected in this study. Where the findings demonstrate no variance from the existing models or the study found no specific context in para-track and field, the cells of the table are blank.

The proposed framework charts the influence of impairment on the factors identified (i.e.

Table 2. Factors influencing success in international para-track and field.

	Congenital impairment	Acquired impairment	High support needs	High equipment needs
Financial support			Support needs to perform day to day tasks (care needs) and sport-specific care needs (V.I. Guide).	Specialist equipment costs for wheelchair events, seated throw frames and prosthetic limbs. Essential charity support to enable participation.
Governance, Organisation and Structure	The complexity of increased federations and disability sport associations (DSAs).	The complexity of increased federations and disability sport associations (DSAs). Military rehabilitation centres; specific charities (Help for Heroes') and event organisations (Invictus Games).		
Scientific Research	Lack of research understanding training science for specific impairments.		Coach/athlete/ carer relationship and dependency unexplored.	Sport technology and engineering research is needed.
Sport Participation		Pre-impairment acquisition non-disabled participation.	Specialist schooling may introduce para-specific events in a high care need environment.	Bespoke, high-cost equipment needed to participate.
Talent identification and development	School attendance type (special/mainstream). Mainstream schooling ability-based barriers. Individual introduction to parasport.	Participation level in non-disabled sport pre-impairment acquisition.		Specialist schooling may introduce para-specific events in a high care need environment.
Athlete carer pathways	Rapid progression, National level to Major championships within the short time frame (first international frequently major championships).	Entry to sport at a late age. The transition from rehabilitation to elite sport.		Funding requirement to enable participation & progression.
Training facilities	Accessibility of facilities and transport			Availability of facilities for para-throwing
Coaching provision and education	Lack of mentoring, specific education and development opportunities. Appropriate inclusion of para coaching in mainstream coach education. Distinction needed between differentiation and inclusive practice. Progression from participation to performance. An integrated approach (the club set up).			
(inter)national competition	Linked to rapid progression, lack of classification competitive opportunities, variation depending on event group (increased competitive opportunities for wheelchair track and those who can compete against able-bodied athletes).		Care needs support at competition. Classification based competition.	
Athletics and post-career support				

whether it is acquired or congenital). A para-athlete's impairment influences their introduction into parasport participation. For athletes with acquired impairments, there is considerable variation in pre-impairment participation and talent development, with high levels of integration with non-disabled sport for this group

The level of support needed by an athlete also influences talent development. For example, an athlete with high support needs, who has attended specialist schooling, follows an adapted national curriculum for sport and has an introduction of para-specific events. The equipment needs of a para-athlete

influence the support which they require, and these needs are dependent on classification and event. The financial support required by athletes with high equipment needs who require bespoke equipment exceeds the funding required to facilitate success for an athlete in an event with low or no specialist equipment needs. Moreover, the sport-specific care needs of a visually impaired athlete who requires a guide runner, who also receives funding, present an additional variable and resource cost.

By considering the variables identified in the analysis, the framework identifies the influence of the equipment and support needs of athletes, and the degree of sporting and non-sporting care required. For example, a visually impaired long jump athlete has differing requirements from a support system than an amputee sprinter, specifically in relation to their equipment requirements. Equally, the support needs of these athletes differ from the system required for a seated thrower with high care needs or a wheelchair racer with no care assistance needs. The framework provides a succinct summary of these considerations and adds a valuable contribution to the collection of empirically based elite sport frameworks, on which policy considerations are informed.

Implications

The findings of this study are presented in a way that is accessible for practitioners and academics alike. The framework is intended to summarise existing knowledge; assist decision-makers in para-track and field with the addition of new knowledge and prompt further research. At the outset, the findings were also intended to inform decision-making about the allocation of resources by UK Athletics, to enhance the success of the British Athletics Para Team and ensure the most efficient use of public spending. However, the framework has potential implications for the management and development of para-track and field more widely beyond the UK.

The framework is designed to be used as a general guide to practitioners in para-track and field, to increase competitive success and enhance the elite sport systems that support para-athletes. A practitioner could consult the framework to assist in identifying the support level needs of a specific athlete. For example, the resource infrastructure and development needs of an amputee, who acquired their impairment aged 25, with low care but high bespoke equipment needs differ from an athlete competing in the same event classification born with congenital talipes and no high care or bespoke equipment needs. The framework demonstrates that consideration of their specific needs should be structured around their nature of impairment, support level needs and care level needs, not just classification and event-based, as has traditionally been the case.

The framework can be used within a club and educational institution setting, to inform the allocation of resources and implementation of support services. To assist in designing a bespoke, individualised support programme, the practitioner may simply answer three questions: "What is the nature of the athlete's impairment?"; "what are their individual care needs?"; and "what is their equipment need?". Consultation with the framework prompts consideration of the diverse nature of impairment and encourages the inclusion of separate approaches for individuals with acquired and congenital impairments rather than on a classification or event basis alone.

Limitations

The limitations of this study should be acknowledged when interpreting the findings. First, the study was conducted in one nation and the findings may therefore reflect characteristics of success, unique to the case nation, the UK. The study sampled a population from UK

Athletics National Para Squad; the inclusion criteria required athlete participants to have competed internationally and have had access to support services within the past Paralympic cycle. The population was therefore limited to the number of athletes at that level ($n = 52$), at the time of the study and how the National Squad represents the different event classifications. The National Squad does not include all event classifications. Based on the findings of this study, there maybe be factors influencing success and progression within specific event classifications that are not considered in this study and therefore not captured in the findings.

Conclusion

This study aimed to identify international sporting success factors for GB para-track and field. In addition to confirming the relevance of several factors previously identified in the non-disabled literature, stakeholders including athletes and coaches identified three para-track and field-specific variables that influence international success, namely the nature of impairment (acquired or congenital), equipment needs and care needs. These findings are presented in a framework to generate awareness among sport policy makers, Performance Directors and others in leadership positions within para-track and field. The purpose of this framework is to assist with understanding para-track and field, parasport and its intricacies. Although the existing literature was used to cluster the factors into policy dimensions, this study illustrates that additionally, the contextual variables in para-athletics should be taken into consideration when examining factors that influence parasport policy development, especially in the context of track and field. This study demonstrates that athlete pathways in parasport are not only sport-specific but also potentially impacted upon by the three additional variables identified.

Future research should look to extend the generalisability of the study's findings by exploring the organisational perceptions of a larger sample of stakeholders, in further sport-specific contexts and with para-athletes from different nations. Additionally, in order to further validate the framework, it is recommended that this study is repeated in comparable nations, in terms of para-athletic performance, such as China, the USA, Australia, Germany and South Africa. The nations listed achieve success in both para-track and field and non-disabled track and field. Moreover, comparative research in Tunisia, Brazil, Cuba and Algeria would also be beneficial, as they are nations that achieve greater success in para-track and field than in the non-disabled track and field medal tables.

Finally, this study identified variation in the factors determining success across different athletic event groups, which supports the notion that further investigation into the factors determining success in track and field more generally is needed. Academics have previously acknowledged that further investigation in sport-specific contexts is needed to explore the factors influencing success. Comparative studies of a sport-specific nature, especially in multidisciplinary sports such as track and field, may lead to the development of sport-specific frameworks and more contextualised modelling in the future.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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