

Factors influencing sports talent development in Senior High Schools in the Upper East Region of Ghana

¹Christopher Akubah, ²Daniel Apaak

¹Ada College of Education, Ghana

²University of Cape Coast, Ghana

Abstract

Despite the increasing interest in examining predictors within sports talent development, there is a dearth of studies in the Ghanaian context. Yet, Senior High Schools (SHSs) in the Upper East Region of Ghana are expected to help talented student-athletes grow their potential. This necessitates empirical research on factors that predict sports talent development within the Ghanaian context. Against this background, this study examines factors influencing sports talent development in SHSs in the Upper East Region of Ghana. Using a questionnaire, data was collected from two hundred and three (203) sports coaches (123 male and 80 female) since the core responsibility of developing sports talents lies with them. Multiple regression analysis was calculated using SPSS version 25 to identify the factors that predict the development of talents in sports. It was found that adequate sports facilities significantly made the largest contribution ($\beta = .300, p < .05$), followed by expert coaching ($\beta = .271, p < .05$), regular training ($\beta = .260, p < .05$), and family support ($\beta = .151, p < .05$). However, genetics made only small and not significant contribution. Therefore, it was recommended that coaches should encourage and guide talented athletes to train regularly to develop their talents. Again, SHSs should provide talented student-athletes with adequate sports facilities and equipment, and qualified coaches to help them develop their sports talent. Also, parents, siblings, and friends should provide support to talented student-athletes in any way possible.

Keywords: coach, family support, sports talent development, training

Introduction

Sports talent development is vital for athletes to succeed in progressing from the first level to elite performance (Collins & MacNamara, 2017). To Bailey and Collins (2013), the foremost important assumption of talent development is that innate skills do not seem to be mechanically remodelled into top performers. In this light, talent development signifies that performers would like a lot of

causative situations to fully realize their potential and maintain productivity (Aalberg & Saether, 2016).

Though there is increasing interest in examining predictors within sports talent development, many of these studies were conducted in Europe (Gagne, 2020). Within the Ghanaian context, a review of the literature did not identify any study. This necessitates empirical research on factors that predict sports talent development within the Ghanaian context and therefore this investigation aims to identify factors that influence sports talent development.

Primarily, the results of this study will assist Physical Educators and coaches in the Upper East Region of Ghana to establish pathways that can be used in developing the sports talents of senior high school students in the region. Furthermore, this research will contribute to enhancing the body of knowledge in the area of sports talent development in senior high schools. Also, this research will be used as reference material in the area of sports management. Amidst the exploration of factors influencing sports talent development, the importance of the family in the process of transforming a child's capability of becoming a global athlete has been continually highlighted in research on sports talent development (Hopwood et al., 2015). Lauer et al., (2010) posits that parents have been recognized as a crucial influence with various responsibilities during their children's performance and growth. Parents provide financial, social, and emotional help (e.g., regulated participation, encouragement, and hardships) to help develop their wards' athletic abilities (Hayman et al., 2011). In addition, parents provide a realistic sports guide (McNamara, Hambrick & Oswald, 2014). There is a positive effect on talent development when parents exhibit desirable attributes (e.g., supplying logistics, economic, and moral backing; offering chances for involvement; and unwavering affection), while there is a detrimental impact on developing talent at instances where guardians and parents exhibit unhealthy sentiments (e.g., exaggerating triumph; possessing unreasonable standards, and condemning their ward) (Gould et al., 2006). Parents play numerous key obligations and offer several forms of support at the various phases of advancement. Mothers and fathers have different obligations in the development of athletes inside a family (Wolfenden & Holt, 2005). Mothers are more engaged in giving sentimental and physical backing to professional tennis performers who were English as against fathers, according to the interview findings (Lauer et al., 2010).

In addition, the structure of one's family can have repercussions on one's willingness to participate in sports. As explained by Schacht and Kiewra (2018), a family with an employed father and mother is more likely to encourage talent development than against household with only one employed parent. Parents, however, are, in certain instances, seen as an antecedent of stress,

impeding athletes' progression, particularly in the final phases of talent development (Lauer et al., 2010). Tennis players generally reported greater adult stress throughout their middle years of development, according to Lauer et al. (2010), who interviewed nine outstanding tennis players, their parents, and trainers.

Having available training facilities is beneficial to talent development. The ability to get appropriate attire and facilities for certain activities adds to the motivation to succeed (Thomas et al., 2021). Creating the best surroundings where one can cultivate brilliance could also have a larger part in the advancement of technology than genetics does (Baker et al., 2017). Institutions need to assist and grow sporting events by giving funding for sports equipment purchases and assisting student-athletes in participating in nationwide institutional sports competitions (Gagne, 2020). For instance, Tennis Australia believes that having a variety of infrastructure is important for meeting the demands of players' development (Li et al., 2014). The researchers emphasized that elements like amenities and equipment are essential for athletes with the capability of becoming professionals in the sports discipline. These perspectives are reinforced by Gore (2004), who finished an investigation that intended to attain higher know-how of how outdoor obligations, access to precise infrastructure, and the obligations of fellow team members impact the development of athletic capacity. The outcome of the investigation revealed that the availability of standard equipment and facilities was critical to all athletes, no matter their level.

Indeed, some researchers believe that there is a "sports gene" that might assist in forecasting skills at a young age (Kay, 2000). The heritage family study has stressed on genetics inquiry, as several academics have utilized it to derive new findings. An et al.'s (1999) research found in the heritage home survey data that genetic factors no longer directly predict, but constrain resting heart rate. Similarly, Cumming et al. (2018) used the same data and observed the transportation and genetic usage of oxygen. McNarmara et al. (2014) studied cardio ability and located maximal and submaximal cardio potential to be confined genetically. These findings and others made clear responses that training fluctuates based totally on a person's genes (Cumming et al., 2018).

Genetic inheritance has been proven to impact numerous physiological parameters such as cardiac function, respiratory function, damage sensitivity, and training difficulty. These studies discussed earlier show that some characteristics important for sports are inheritable.

For sports talent development of athletes, training has been confirmed to be essential (Bailey & Collins, 2013), but for every stage of the athlete, the correct dose of training should be

provided (Stotlar & Wonders, 2006). Nevertheless, Baker et al. (2017) asserted that, to achieve higher levels of performance, training quality was just as crucial as the number of training hours. According to Johnston et al. (2018) a 10-year promise to significant stages of preparation is the base necessity to arrive at the master stage.

In addition, a typical reason for dropout in competitive games is a lack of time as well as management of training protocols (Enoksen, 2002). Haugaasen et al. (2014) saw practice as the most significant factor for talent development and Morgans et al. (2014) observed no individual accomplished elevated levels without standard and regular practice. Expanding on the past definition, Ericsson et al. (2007) asserted that “just through centering and improving explicit parts of execution, for example, the perspectives where the performer is most fragile, can a hopeful individual improve” (p. 104). McNamara et al. (2014) contended that training is a significant indicator of talent development yet not as solid an indicator as Ericsson et al. (2007) declared. Therefore, the basis of “deliberate practice” warranted a re-look since it proposed the idea of early specialization. Additionally, Gagne (2020) asserted that chances of achieving elite performance got better with early entry into sports participation and the beginning of “deliberate practice”. Thus, the author suggests that for talented athletes to realize their sporting potential they ought to adopt “deliberate practice” early in life.

A coach is anyone who oversees learning activities and regulates social situations while also identifying and correcting performance issues (Booroff et al., 2016). The primary goal of a coach is to help his or her team and individual players grow and improve their performance (Partington & Cushion, 2013). Trninić et al. (2009) discovered that coaches' professional knowledge and experience, as well as scientific accomplishments, allow them to encourage the development of players' athletic potential in a certain sporting discipline. This involves improving skills, increasing the quantity of motor programmes and raising the degree of motor programming, along with supporting the advancement of selected choices and response time. According to Ned (2004), a coach's primary role in supporting incoming student-athletes in their institution's advancement from lower to higher education is crucial. A coach's responsibilities may include giving practical assistance and fostering positive relationships with performers, in addition to delivering advanced instruction (Johnson et al., 2008). Particularly at the latter phases of growth, a strong “coach-athlete” connection should be created. A real coach-athlete connection is built on (a) reciprocal belief and honour; (b) appreciating an athlete's desires; and (c) providing adequate care and warmth for the person as opposed to merely considering or focusing on their performance (Gould et al., 2002).

According to Baker et al. (2003), the capacity of a trainer to provide a conducive atmosphere for optimum learning is the utmost important factor in an athlete's sports skill development. Kirk (2005) concurred that the quality of coaching staff and instructors is critical to the success of any program aimed at improving an athlete's athletic skill. Exceptional coaches also promote consistency in acquiring and perfecting technical-tactical information and abilities, as well as the growth of experiences in competitive events and developing the athlete's mental and social attitude (Trninić et al., 2009). Pavlovic (2007) discovered that the capacity to provide high-quality practice is the most significant trait of a good coach. Furthermore, Williams and Reilly (2000), and Morris (2000) stated that providing the greatest coaches and training to outstanding athletes improves their chances of becoming exceptional. Additionally, studies have shown that having a skilled coach who is familiar with the most up-to-date training approaches is beneficial to a gifted athlete's sports talent development (Roetert & Harmon, 2006). According to Baker and Horton (2004), having access to important resources throughout the learning process, such as qualified and experienced instructors, has an impact on the development of athletic potential.

The study posits that a senior trainer ought to be familiar with the elements of the institutions and sports departments' transition models and build his or her personal changeover programme to enhance the likelihood of a well-balanced rookie student athletic performer. When compared to a control group, those who played for trained coaches had significantly higher self-esteem and lower anxiety throughout the season. Coaches are performers, and their work has a direct impact on their players' output (Coutinho et al., 2016). Professional athletes need a trainer who can really execute a clear and measurable plan, create an environment that fosters optimum learning and is dedicated to assisting them in reaching their goals (Baker et al., 2003).

Coaches who over-coach and set unreasonable goals for their athletes might have a detrimental impact on their performance (Gould et al., 2002). Trainers are equally important in the development of athletes (Johnson et al., 2008). The major responsibility of a trainer is to provide advanced training programmes and workouts, as well as educational assistance. A group of support employees helps to ensure that an advanced training regime is delivered (e.g., fitness trainer, sports psychologist, nutritionist, physical therapist, and exercise physiologist). Those five supporting staff members according to Durand-Bush and Salmela (2002) and Morgan and Giacobbi (2006) are quite useful, especially during later phases of talent development, such as during the investment era. Rees et al. (2016) noted that being mentored by loving and competent trainers, particularly during developmental years, may make a significant impact. Exceptional trainers know when to challenge their sportsmen to put in more effort, when to ease up on the intensity and tension, and

how to mold their careers.

Method

A descriptive survey research design was employed for this study. The core assumption of this form of scientific inquiry is that the descriptive study cuts across various fields (Sports, Business, Psychology, Social Science, Education, Governance etc.) and provides more important data that informs all kinds of research (Ogah, 2013).

To ensure that the study, research instrument, and techniques for collecting data did not infringe on participants' rights, ethical approval was needed which was obtained from the Institutional Review Board (IRB) of university of Cape Coast in Ghana (ID: UCCIRB/CES/2021/52). This helped in gaining entry into the schools. Data were collected at the various schools after the necessary permissions were sought and obtained by the investigators and research assistants. The investigators and research assistants complied with all Covid-19 protocol measures such as wearing face masks and using hand sanitizers.

Data collection took place at various schools with help from three trained research assistants (RAs) from 7th to 30th September 2021. Before the data collection, the purpose of the study was explained to the participants. Coaches were assured of confidentiality and anonymity. All coaches were required to sign consent forms. RAs were trained on the purpose of the study, entry protocols into the various schools and how to administer the consent form. The RAs shared the questionnaire instruments with the participants face-to-face at the various facilities. Informed consent forms were made available to the participants. The participants were made aware that participating in the study was optional. Participants who filled out their questionnaire on time were retrieved on the spot, but those who seemed busy were collected after a week. Data were collected by the researchers and the RAs within 23 days.

The data collected were screened for missing values and extreme scores to verify completeness for accurate analysis and to meet the assumptions of linearity, normality and multicollinearity for multiple regression analysis. The choice of multiple regression was made because it is the appropriate statistical tool for modelling and investigating the relationship between a dependent variable (sports talent development) measured on a continuous scale and two or more predictor variables (factors) measured on a continuous scale (Nair, 2010).

Sample

The sample for the study was all 203 coaches in the SHSs in the Upper East Region. The number of coaches was obtained from the Upper East Regional Physical Education Unit. There were 80

female coaches and 123 male coaches at the SHSs in the region. The sample is presented in Table 1.

Table 1. Sports coaches who coached various sports in the SHSs in Upper East Region

Sports	N
Badminton	3
Volleyball	31
Handball	13
Basketball	6
Table tennis	4
Football	103
Hockey	6
Athletics	25
Netball	12
Total	203

Questionnaire

The questionnaire instrument was effective in collecting data from a large pool of people within the shortest possible time. Relevant literature was reviewed and ten test items were selected from Talent Development and Environment Questionnaire [TDEQ] (Martindale, Collins, Wang, McNeil, Lee, Sproule & Westbury, 2010) which enabled the researchers to develop the instrument. The questionnaire was in two parts. Section A had five items and solicited information on factors that influence talent development utilizing a four-point Likert scale anchored 1 = “strongly agree” to 4 = “strongly disagree” and item samples included “Expert coaching influences sports talent development of student-athletes”, “Support from family and friends influences sports talent development of student-athletes”, “Regular training influences sports talent development of student-athletes”, “Genes influences sports talent development of student-athletes” and “Adequate sports facilities and equipment influences sports talent development of student-athletes”. Section B had five items which solicited information on talent development utilizing a four-point scale anchored 1 = “strongly agree” to 4 “strongly disagree” and sample item included “My training is specifically designed to help athletes develop effectively in the long term”, “I give my athletes good opportunities even if they dip in performance”, “I involve my athletes in most decisions about

their sports development” “I emphasize that what athletes do in training and competition is far more important than winning” and “I review athletes’ progress and personal performance regularly on an individual basis”.

The instrument was sent to twenty sport management master students to ensure it measured what it intended to measure and that it was easy to understand when read for face validity. A copy was sent to three PhD holders in Sports Management in the Department of Health, Physical Education and Recreation in a public university in Ghana to make sure that it could execute the work for which it was designed. This ensured content validity after which the opinions of postgraduate students and the expert were employed in revising the instrument as needed. The investigators and research assistants administered copies of the instrument to randomly chosen smaller sample of coaches at the tertiary level in the Upper East Region after which the stability of the instrument’s items was ascertained with Cronbach’s coefficient alpha. The instrument’s reliability coefficient stood at .84. The instrument was further revised as needed and finalized.

Table 2. Questionnaire variable and items

Variables	Items
Factors	1-5
Sports talent development	6-10

Analysis

The data were analysed using a quantitative data analysis software package (i.e., SPSS 25.0 for Windows). Multiple regression was the statistical tool used in analyzing data to examine which of the independent variables predicted sports talent development.

Results

Multiple regression analysis helped in determining variables that predict sports talent development. Items 1-5 under section A were computed to form a composite variable “sports talent development” and items 6-10 under section B were used as the predictor variables. Table 1 presents the results from the regression analysis.

Table 3: Predicting sports talent development from genetics, sports equipment, expert coaching, regular training, and family support

<i>VARIABLE</i>	<i>B</i>	<i>BETA</i>	<i>T</i>	<i>Sig</i>	<i>CS</i>
					<i>T</i> <i>VIF</i>
Constant	4.693		6.971	.000	

Expert coaching	.939	.271	4.224	.000	.934	1.070
Genes	-.212	-.085	-1.232	.219	.798	1.253
Sports equipment	.801	.300	4.425	.000	.832	1.202
Regular training	1.050	.260	3.848	.000	.838	1.193
Family	.440	.151	2.318	.021	.909	1.100
R	.494					
R ²	.244					

Source: Field Survey (2021) F= 12.716 df= (5, 197) P< .05

Initial correlation analysis showed low to moderate inter-correlations among variables. Expert coaching correlated positively low with family ($r = .039$), regular training ($r = .132$), genetics ($r = .174$) and sports equipment ($r = .091$). Family support correlated positively low with regular training ($r = .180$), genetics ($r = .197$) and negatively low with sports equipment ($r = .025$). Regular training correlated negatively low with genetics ($r = -.197$), and sports equipment ($r = .281$). Genetics correlated positively moderate with sports equipment ($r = .336$). The regression analysis indicated a variance inflation factor (VIF) of more than one and tolerance of less than one, indicating no collinearity. Data met the assumption of normal distribution and had no outliers. The analysis revealed that the general model was significant, $F(5, 197) = 12.716$, $P < .05$. The sample multiple correlation was .494 with an adjusted R^2 of .225 and R^2 of .244, indicating that approximately 24.4% of the variance of talent development can be accounted for by the linear combination of the independent variables. It was found that adequate sports facilities significantly made the largest contribution ($\beta = .300$, $p < .05$), followed by expert coaching ($\beta = .271$, $p < .05$), next was regular training ($\beta = .260$, $p < .05$), and family support ($\beta = .151$, $p < .05$). However, genetics made only small and not significant contribution as presented in Table 3.

Table 4: Prioritizing the factors that influence sports talent development

Factors	BETA	Priorities
Adequate sports facilities	.300	First
Expert coaching	.271	Second
Regular Training	.260	Third
Family support	.151	Fourth
Genetics	-.085	Fifth

Discussion

A linear correlation revealed that adequate sports facilities were a significant predictor of sports talent development and accounted for about 30% (.300) of variance in talent development of

talented student-athletes at SHSs in the Upper East Region. Therefore, as talented student-athletes gain access to adequate sports facilities and equipment, their sports talent development increases. The plausible reason may be that talented student-athletes at the SHSs in Upper East Region using these facilities refine their skills in performance using standard equipment to excel in competitions. For example, a talented player who trains on a grass football field would feel more comfortable playing a match on the said field than a player who has never played on one. This finding is consistent with previous research findings from Thomas et al. (2021) that an extra impetus for attaining achievement is the capacity to acquire suitable clothing and equipment related to a particular sport. Similarly, creating the best surroundings to nurture talent may additionally play a more widespread role in the development of talent than does heredity (Baker et al., 2017). In addition, Li et al. (2014) asserted that elements such as facilities and equipment are essential for athletes with the capacity to become experts in the sport. Hence, the availability of standard equipment and facilities was critical to all the athletes, no matter their level (Gore, 2004). Practically, the findings imply that a great advantage of talent development is having convenient and available facilities in which to train. Therefore, Senior High Schools in Upper East Region need to assist and develop sports activities by providing the finance to buy sports activities equipment and helping student-athletes to take part in national college sports.

The results showed that expert coaching was a significant predictor of sports talent development and that, when expert coaching increases by one standard deviation (all other independent variables held constant), there is a corresponding increase in sports talent development by 27.1% (.271). The probable reason may be that providing high-quality training programme and sessions including informational support at the SHS level in Upper East Region is the main task for a coach. A coach's responsibilities may include giving tangible assistance and developing positive relationships with athletes in addition to delivering effective training (Johnson et al., 2008; Morgan & Giacobbi, 2006). When coaches mentor talented athletes by ensuring that they are taken through high training programs, it makes a significant difference in their talent development. Expert coaches know when to push their athletes to work harder, when to ease up on the intensity and pressure, and how to mold their careers. It is therefore evident that coaches play an important influence in the development of sports potential (Holt & Morley, 2004; Johnson et al., 2008; Morgan & Giacobbi, 2006). Hence, to aid sports talent development, there is the need to employ expert coaches and help other coaches develop professionally in the Upper East Region.

Furthermore, regular training (training regimen set for the athlete by a coach who monitors and ensures that the athlete consistently trains as scheduled) was also found to be a significant predictor of sports talent development and was accountable for about 26% (.260) of the variance

in talent development of talented student-athletes. The plausible reasons may be that as talented student-athletes at the SHS level in Upper East Region train regularly, their skill levels increase and become refined through the exercises they engage in. Regular training helps them develop and control their motor skills and abilities making them more skilled and successful in a particular sports performance. In a sense, the errors in their sports performance become very few and can generally be detected and corrected by them if they occur. Their sports ability therefore becomes automatic and habitual. This finding is in line with past investigations from Bailey and Collins (2013) who proposed that regular training was important for the accomplishment of aptitude. Also, the absence of time and coordination of time for regular training is a common explanation behind dropout in competitive games (Enoksen, 2002). However, Morgans et al. (2014) observed no individual accomplished elevated levels without standard and regular training. The findings of this study, however, contradict Haugaasen et al.'s (2014) assertion that regular training is the most significant factor for talent development but supports McNamara et al. (2014) who concluded that regular training is a significant predictor of talent development.

The results of the study indicated that the family was a significant predictor of sports talent development; and that when family support increases by one standard deviation (all other independent variables held constant) there is a corresponding increase in sports talent development by 15.1% (.151). The reason may be that parents have been mentioned to occupy key positions and played differing roles within the development trajectory of experts (Hayman et al., 2011). Parents of student-athletes at the Senior High School level in Upper East Region furnished tangible (e.g., monetary aid and transportation) and social/emotional help (e.g., disciplined involvement, encouragement, and setbacks) to assist and expand the sports activity talents of their children. In addition, the structure of the family can influence an athlete's willingness to participate in sports. Practically, the findings imply that for coaches to help develop the talents of their student-athletes better, they will have to effectively cooperate with the family of the athlete. They could do this by establishing open and transparent channels of communication, providing the avenue for coaches to regularly share information about the athlete's progress, achievements, and areas for improvement. Also, coaches could provide the family of the athlete with guidance on nutrition, mental resilience, and overall well-being to support the athlete's holistic development.

Genetics was not found to be a significant predictor of sports talent development. Though several physiological factors associated with heart functioning, aerobic functioning, injury susceptibility, and training intensity have shown that some characteristics important for sports are inheritable, coaches at the SHS level in Upper East Region are constrained in terms of equipment and expertise in testing for these qualities. Indeed, some researchers believe that a "sports gene"

exists that can help predict talent from a very early age (Kay, 2000). Similarly, Perusse et al. (2001) asserted that maximal and submaximal cardio potential is confined genetically. These findings and others made clear responses that sports talent is based totally on a person's genes (Rice et al., 2002). This study purports that coaches do not perceive that inherited features significantly contribute to the development of sports talents.

Conclusion

The following conclusions were drawn from the study findings. An increase in adequate sports facilities and equipment, expert coaching, regular training and family support will lead to a corresponding increase in the number of elite athletes in Senior High Schools in the Upper East Region of Ghana. This study's findings provide an understanding of the factors that influence the development of sports talents into elite athletes in SHSs in the Upper East Region of Ghana.

Recommendations deduced from the study include:

1. The management of SHSs in the Upper East Region should provide talented student-athletes with adequate sports facilities and equipment, and qualified coaches to help them develop their sports talent. The school's management is urged to undertake a comprehensive evaluation of extant sports facilities, equipment, and coaching personnel, thereby discerning areas necessitating enhancement per the distinct requirements of talented student-athletes. After this assessment, the school's management is advised to allocate resources for the amelioration of extant sports facilities or the construction of new infrastructures, commensurate with the identified needs. Additionally, the administration should proactively offer avenues for professional development to augment the expertise and knowledge of coaching personnel.
2. Parents, siblings, and friends should provide support to talented student-athletes. Parents, siblings, and friends are strongly encouraged to proffer encouragement and positive reinforcement, particularly in the face of adversity to talented student-athletes. Attendance at sporting events and competitions is advised to manifest steadfast support, as a notable presence in the spectator stands may positively influence the athlete's performance and morale. Additionally, the provision of assistance with transportation to and from training sessions, games, and competitions is recommended to facilitate the athlete's logistical requirements and overall athletic pursuits.

Acknowledgements

The researchers thank all sports coaches at the senior high schools in the Upper East Region who participated in this study.

Ethical approval and Informed consent

Approval was granted by the Institutional Review Board (IRB) of a public university in Ghana for data to be collected. Permission was then obtained from the heads of institutions and departments before the commencement of data collection.

The coaches' consent was sought prior to data collection, and they were assured of confidentiality as well as the freedom to withdraw from the study without any reprisal.

Declaration of conflict of interest

This paper is an extract from one of the researchers' original work presented to the University of Cape Coast for the award of a Master of Philosophy in Physical Education. Therefore, the authors declare no potential conflict of interest. Christopher Akubah wrote the introduction, analysed data and presented results. Daniel Apaak wrote the methods section and discussed the findings. The two authors reviewed the final manuscript.

References

- Aalberg, R. R., & Sæther, S. A. (2016). The talent development environment in a Norwegian top-level football club. *Sport Science Review*, 25(3/4), 159–182. <https://doi.org/10.1515/ssr-2016-0009>.
- An, P., Rice, T., Gagnon, J., Borecki, I. B., Pérusse, L., Leon, A. S., & Rao, D. C. (1999). Familial aggregation of resting blood pressure and heart rate in a sedentary population: The heritage family study. *American Journal of Hypertension*, 12(3), 263-70.
- Bailey, R., & Collins, D. (2013). The standard model of talent development and its discontents. *Kinesiology Review*, 2(4), 248–259.
- Baker, J., & Horton, S. (2004). A review of primary and secondary influences on sport expertise. *High Ability Studies*, 15, 211–228.
- Baker, J., Cobley, S., Schorer, J., & Wattie, N. (2017). *Routledge handbook of talent identification and development in sport*. Routledge.
- Baker, J., Horton, S., Robertson-Wilson, J., & Micheal, M. (2003). Nurturing sport expertise: Factors influencing the development of elite athletes. *Journal of Sports Science and Medicine*, 2(1), 1-9.
- Booroff, M., Nelson, L., & Potrac, P. (2016). A coach's political use of video-based feedback: A case study in elite level academy soccer. *Journal of Sports Sciences*, 34(2), 116–124.
- Collins, D., & MacNamara, Á. (2017). From talent identification to talent development: an

- overview and critique. In M. H. Anshel, T. A. Petrie & J. A. Steinfeldt (Eds.), *Sport psychology*. APA handbook of Sport and exercise psychology, (Vol. 1, pp. 111–128). Washington, DC: American Psychological Association.
- Coutinho, P., Mesquita, I., & Fonseca, A. M. (2016). Talent development in sport: a critical review of pathways to expert performance. *International Journal of Sports Science & Coaching*, *11*(2), 279–293.
- Cumming, S. P., Brown, D. J., Mitchell, S., Bunce, J., Hunt, D., Hedges, C., Crane, G., & Malina, R. M. (2018). Premier League academy soccer players' experiences of competing in a tournament bio-banded for biological maturation. *Journal of Sports Science* *36*(7), 757–765.
- Durand-Bush, N., & Salmela, J. H. (2002). The development and maintenance of expert athletic performance: Perceptions of world and Olympic champions. *Journal of Applied Sport Psychology*, *14*, 154-171.
- Enoksen, E. (2002) drop-out rate and drop-out reasons among promising Norwegian track and field athletes; A 25 year case study. *Scandinavian Sport Studies Forum*, *2*, 19-43.
- Ericsson, K. A., Roring, R. W., & Nandagopal, K. (2007). Misunderstandings, agreements, and disagreements: Toward a cumulative science of reproducibly superior aspects of giftedness. *High Ability Studies*, *18*(1), 97-115.
- Gagné, F. (2020). *Differentiating giftedness from talent: the DMGT perspective on talent development*. Routledge.
- Gore, D.H. (2004). *Factors that contribute to talent development in elite female track and field athletes*. Unpublished Master of Science thesis submitted to the Graduate Faculty of North Carolina State University.
- Gould, D., Greenleaf, C., Chung, Y., & Guinan, D. (2002). A survey of U.S. Atlanta and Nagano Olympians: Variables perceived to influence performance. *Research Quarterly for Exercise and Sport*, *73*(2), 175- 187.
- Gould, D., Lauer, L., Rolo, C., Jannes, C., & Pennisi, N. (2006). Understanding the role parents play in tennis success: A national survey of junior tennis coaches. *British Journal of Sports Medicine*, *40*, 632-636.
- Nair, J. F. (2010). *Multivariate data analysis* (7th edn.). Pearson Prentice Hall.
- Haugaasen, M., Toering, T., & Jordet, G. (2014). From childhood to senior professional football: A multi-level approach to elite youth football players' engagement in football-specific activities. *Psychology of Sport and Exercise*, *15*(4), 336–344.
- Hayman, R., Polman, R., Taylor, J., Hemmings, B., & Borkoles, E. (2011). Development of 4 elite

- adolescent golfers. *Talent Development & Excellence*, 3, 249-261.
- Hopwood, M. J., Farrow, D., MacMahon, C., & Baker, J. (2015). Sibling dynamics and sport expertise. *Scandinavian Journal of Medicine & Science in Sports*, 25(5), 724–733. <https://doi.org/10.1111/sms.12387>.
- Johnson, M. B., Castillo, Y., Sacks, D. N., Cavazos Jr, J., Edmonds, W. A., & Tenenbaum, G. (2008). "Hard work beats talent until talent decides to work hard": Coaches' perspectives regarding differentiating elite and non elite swimmers. *International Journal of Sports Science & Coaching*, 3, 417-430.
- Johnston, K., Wattie, N., Schorer, J., & Baker, J. (2018). Talent identification in sport: A systematic review. *Sports Medicine*, 48(1), 97–109.
- Kay, T. (2000). Sporting excellence: A family affair? *European Physical Education Review*, 18, 151-169.
- Kirk, D. (2005). Physical education, youth sport and lifelong participation: The importance of early learning experiences. *European Physical Education Review*, 11(3), 239-255.
- Lauer, L., Gould, D., Roman, N., & Pierce, M. (2010). How parents influence junior tennis players' development: Qualitative narratives. *Journal of Clinical Sport Psychology*, 4, 69-92.
- Li, C., Wang, C. K. J., & Pyun, D. Y. (2014). Talent development environmental factors in sport: a review and taxonomic classification. *Quest*, 66(4), 433–447.
- Martindale, R. J. J., Collins, D., Wang, C. K. J., McNeill, M., Lee, K. S., Sproule, J., & Westbury, T. (2010). Development of the talent development environment questionnaire for sport. *Journal of Sports Sciences*, 28, 1209-1221.
- McNamara, B. N., Hambrick, D. Z., & Oswald, F. L. (2014). Deliberate practice and performance in music, games, sports, education, and professions: A meta-analysis. *Psychological Science*, 25(8), 1608-18.
- Morgan, T. K., & Giacobbi, J. P. R. (2006). Toward two grounded theories of the talent development and social support process of highly successful collegiate athletes. *The Sport Psychologist*, 20, 295-313.
- Morgans, R., Orme, P., Anderson, L., & Drust, B. (2014). Principles and practices of training for soccer. *Journal of Sport and Health Science*, 3 (4), 251–257.
- Morris, T. (2000). Psychological characteristics and talent identification in soccer. *Journal of Sport Sciences*, 18, 715-726.
- Ned, T. S. (2004). *A Case Study of Freshmen Swimmers College Transition Experiences*. Dissertation. Virginia Polytechnic Institute and State University.
- Ogah, J. K. (2013). *Decision making in the research process*. Accra: Adwinsa Publications.

- Partington, M., & Cushion, C. (2013). An investigation of the practice activities and coaching behaviors of professional top-level youth soccer coaches. *Scandinavian Journal of Medicine & Science in Sports*, 23(3).
- Pavlovic, S. (2007). Ten qualities of a successful coach. *Coach and Athletic Director*, 76(9), 58–59. Retrieved from the Gale General One File database.
- Rees, T., Hardy, L., Güllich, A., Abernethy, B., Côté, J., Woodman, T., Warr, C. (2016). The Great British Medalists Project: A review of current knowledge on the development of the world's best sporting talent. *Sports Medicine*, 46 (8), 1041–1058.
- Roetert E. P., & Harmon, R. (2006). Coaching talented player. Issue 39 of the ITF *Coaching and Sport Science Review*.
- Schacht, C. L. O., & Kiewra, K. A. (2018). The fastest humans on earth: environmental surroundings and family influences that spark talent development in olympic speed skaters. *Roeper Review*, 40, 21–35.
- Stotlar, D. K., & Wonders A. (2006). Developing elite athletes: A content Analysis of US National Governing Body Systems University of Northern Colorado, US, *international Journal of Applied Sports Sciences*, 18(2), 121-144.
- Thomas, C. E., Gastin, P. B., Abbott, G., & Main, L. C. (2021). Impact of the talent development environment on the wellbeing and burnout of Caribbean youth track and field athletes. *European Journal of Sport Science*, 21(4), 590–603.
- Trninić, V., Papić, V., & Marko, T. (2009): Role of expert coaches in development of top-level athletes' careers in individual and team sports, *Acta Kinesiologica*, 3(1), 99-106.
- Williams, A. M., & Reilly, T. (2000). Talent identification and development in soccer. *Journal of Sports Sciences*, 18, 657-667.
- Wolfenden, L. E., & Holt, N. L. (2005). Talent development in elite junior tennis: Perceptions of players, parents, and coaches. *Journal of Applied Sport Psychology*, 17, 108-126.