Nurturing and Management of Talent in Motorsport

Syarizal A.R, Mfirdaus M.N, Razli C.R University Malaysia Kelantan, Kota Bharu Malaysia syarizal.ar@umk.edu.my

University Malaysia Kelantan, Kota Bharu Malaysia mfirdaus@umk.edu.my

University Malaysia Kelantan, Kota Bharu Malaysia razlicr@umk.edu.my

ABSTRACT

This paper examined the dualist nature of a student sportsperson while performing in two wheel motorbike racing. The study aimed to identify the sociological implications of the key aspects that affecting the optimal career development in racing. The method used for this study is a qualitative case study on the current race participants in Malaysia Super Series and Cub Prix. Interviews were held as part of a purposive sample. Data was collected over a period of six months with eight riders which consist of four student racer, 3 after school racer and two racing club owners. The study designed for allowing an input, throughput and output analysis. In determining the rationale of the input and throughput phases, qualitative data were integrated for the identification of major themes and trends. All racers which currently still studying at a secondary level, demonstrated a relatively extensive and powerful socialization process. Parents, coach and peers are the main social agents during the primary and secondary school years which were discovered during this study. The attention swift to club owners (including the coach) and fellow racer during the post study at secondary level. There are an increasing need for an academic support at secondary level with critical issues around time, career and management of lifestyle. During the final socialization and specialization, most students recent faced various career challenges without receiving adequate and proper guidance towards breaking the socialization and becoming a professional racer.

Key words: Talent identification, talent management, student sportsperson.

I. INTRODUCTION

Motorsports future particularly in two wheels is developing at a steady rate that provides rooms for improvement especially in new talent development. Formal social institutions such as independent community-based motorsport clubs and tertiary institutions have recently started taking over the professional socialization of students-rider (Burnett 2010). In order to provide an optimal facility to student-rider development, the role of association and clubs has undergone systemic changes. This study is leaning on the understanding of socialization processes of rider from school level to later participation as student-racer and the function of relevant institutions in the various sub-processes. Parents, peers, teachers and coaches are the socialization agent during the process of socialization.

Children are exposed to a variety of motorsporting activity during the primary school and then provided with opportunities to participate in various motorsports which increases in competitive intent and formality. During the early days in school, parents play a very vital role as agents that provide support structure for rider participation. The rider commitment deepens through formal talent identification or when self-selection happen when he or she successfully competing at different levels. This process of talent identification and talent development is a long-term process and is formally known as long term rider development (LTRD) (Balyi & Hamilton, 2004).

This long term process follows an exclusionary trajectory as there is a fall out between primary school and secondary school participation and only a small percentage of secondary school riders enter tertiary eduction (Burnett & Katzenellenbogen, 1993). Most of the riders withdraw from motorsport at secondary school level as factors like de-selection, injury and expiration of eligibility triggers retirement from motorsport (De Rouffignac, 2008). At university level, the rider socialized into the role of student rider, dealing with the management of time and learning to curb on psychological and social demands posed taking part in elite and advanced level competition. The student might experience the increasing role-conflict in balancing the role between being an rider (pressure on performance) and being a student (pressure on academics) (Harris, 1994).

Various talent identification and development of student-racer are currently carried out by organization such as Two Wheel Motormotorsports (2WM), Sepang International Circuit (SIC), Automobile Association Malaysia (AAM) and local bike producer such as Boon Siew Honda,

Hong Leong Yamaha and Motor and Engine National (Modenas). Researchers are challenged to investigate appropriate model and strategy from an applied perspective. It aims to investigate factors that affecting the optimal development of student-racer in Malaysia that may offer a critical similarity of a success of in motorsport industry in Malaysia.

II. LITERATURE REVIEW

This section will be focusing on generating a multi faceted understanding of the dynamics and involvement of stakeholders on student-racer entering into later phase of socialization process in and through motorsport activity.

A. Development of talent identification and long term racer development

Reilly et al, (2000) referred talent identification as the discovery of potential performers for a motorsports who are currently involved in a specific motorsport. When talent is identified, it is advisable to highlights the abilities of that fundamentally talent which may translate into the best future performance. Identification of talent is the process of recognizing participants with the potential to flourish in a specific motorsport. Parallel with talent identification, talent development is an expected continuance of the process with identifiable relationship interventions.

The focal point of talent development is giving the most suitable learning surroundings to realize the person's potential. In motorsports organization and top-level teams science based support system are increasingly engaged in preparation of elite riders (Vaeyans et al, 2008). Through effective talent identification and the development, it is possible for an institution to minimized dropouts or early retirement of riders (Abbott and Collins, 2004). Both talent identification and the development are included sections that form a long term motorsports person development and aims to favorably nurture racers for the best racing achievement.

Racer development requires intensive training on and outside track, frequent competition and recovery program based on the age of the individuals. In a longer term of the development of a student-racer, its requires administration, coach driven, motorsport science and sponsor supported (Gordon, 2004). Periodic plans are created specifically to the developmental needs of a rider. (Robertson and Way, 2005)

B. Student sportsperson

The difference between student sportsperson and the normal student is that while both attended the education institutions, the one group competes in motorsports while the other does not. The student-racer faces vast challenges that were experienced by non-student racer (social life, intellectual growth and careers). Student-racer also has their race related activities such as daily training, coaching sessions, gym and motivation talks. Student-rider are struggled to lead a balanced life as they are pushed to do well in academic and motorsport while fulfilling obligation to the coach, the team and parents (Watt and Moore, 2001).

Student rider experience the challenge of identity formation especially as many enter the final phase of elite competition before pre-planned retirement and in pursuit of a professional career outside motorsport (Burnett, 2010).

C. Long term rider development

Most first world and successful motorsporting nations offer unique long term rider development models which the Canadian model of Balyi is widely recognised as a leading framework in the field (Robertson & Way, 2005). According to the model, differential stages of development are identified; starting at the initial phases where the child gets introduced by the motorsport to professional elite participation.

One of the initial phases of socialisation encapsulates talent identification, followed by more nuanced phases and interlinked processes as part of rider development over a life span of specialization and elite participation (Burnett, 2005). The process of socialisation into and through motorsport has universal characteristics, but it also takes shape within a given social context.

The current system for Canadian Athlete Development (CAD) focuses on development, following a linear progress from the mastering of motorsport skills to high levels performance. The emphasis on progression towards the achievement of excellence is seen as a shortcoming in Canadian motorsport systems, as well as a shortcoming in motorsport development models across the world. Various countries focus on the development of their riders within a reductionist framework typified by 'winning at all costs'. The results of this approach often

results in one-sided preparation, early burn-out, loss of potential (especially of riders who matured at a slower pace) and overtraining (Coakley, 2007).

It is essential to introduce young riders to the fundamental motor skills at an early stage, often referred to as 'physical literacy' (Higgs et al, 2008). This provides them with the opportunity to achieve a high level of proficiency in physical skills and related competencies before moving onto competition; where motorsporting success becomes the most significant outcome.

Observing the important process of growth and development across different developmental domains such as motor, physical, psychological, social and cognitive development, the mastery of a broad range of skills should come before high performance levels and elite competition within motorsport. Therefore, rider development is a central component in any comprehensive coaching model or motorsport development framework; it focuses on the activities in which the riders participate. It provides a designed trajectory, a pathway the rider is supposed to follow progressively, as well as the obstacles and challenges experienced during the rider's career (Bailey et al, 2010).

Excellence in motorsport requires a chronological, multi-stage developmental trajectory along which the rider progresses to reach his or her full riding potential. Research shows that successful riders share common learning and development stages and has informed the different stakeholders in the development of ridings models (Robertson & Way, 2005) life skills, academic and motorsport skills thus provide an integrated foundation for riders towards career development in and outside of motorsport participation (Magill, 1998).

Long term rider development (LTRD) is a motorsports development framework that is based on progressive human growth and development. LTRD is also a system of delivery and understanding on how the rider can achieve optimal training, competition and recovery throughout his or her career, predominantly in relation to the important growth and development years of individuals. In line with this thinking and according to (Robertson and Way, 2005), long term rider development s entails:

"A training, competition and recovery programme based in biological age (the maturation age of an individual), rather than the chronological age. It is rider centred, coach driven and administration, motorsport science and sponsor supported. Riders who progress through the LTRD model experience training and competition in programmes that consider their biological and training ages in creating periodic plans specific to their development needs."

LTRD thus covers every aspect of the holistic development of any human being and is based on the initiative that young riders should be adequately prepared for life in motorsport. The processes of participation and competition are structured with the former process focusing on creation of a culture of lifelong participation for improving health and well-being.

LTRD also helps in creating a supportive and enabling environment for the rider to achieve their optimal performance (Robertson &Way, 2005). Correct and efficient systems offer clear guidelines and foundations for the development of elite rider. A key factor of the system is that the rider's progress through the different stages is monitored and evaluated in order to adapt and deliver effective services efficiently to facilitate optimal motorsport performances.

Scientific research shows that it takes between 8 to 12 years of training for a talented rider to reach elite levels of participation or specialization. This is called the ten-year or 10,000 hour rule and is popularized by Malcolm Gladwell in his book Outliers (Gladwell, 2008). This means that riders need to train for more than 3 to 4 hours per day, for 10 years to reach optimal development in their career (Balyi & Hamilton, 2004; (Bloom, 1985).

The key to success for optimal development of the rider's career lies in well-planned training, competition and recovery management of the rider. The ultimate success of performing comes from training in the long term, rather than focusing on immediate or limited success. Research has shown that there is no shortcut to success in any motorsporting career, as it takes hours of hard work, physical training and tactical and mental development all of which are crucial to comprehensive and integrated human development (Balyi & Hamilton, 2004).

More comprehensive and holistic programmes are promoted by the Confederation of Australian Motor Sports (CAMS) through the National Talent Identification and Development Programme (NTID) to identify Australia's next generation of talented elite riders with potential to win racers at international level and Worlds Championship. The Australian government has committed almost \$20 million (approximately AUD204 million) over four years to fund and support the delivery to national talent identification and development (Kluka, 2003).

A long term rider development pathway is a complex phenomenon as it involves aspects like physical activity, motorsport participation, education, health, facility resources, financial resources, relationships as well as optimum success in performance. According to the Canadian Motorsport Policy of 2002, any LTRD plan should be based on the following four strategic pillars: enhanced participation, excellence, capacity and interaction.

A broad base of participation is advocated from a very young age with the view of offering

opportunities and support structures, as well as programmes to facilitate talent development

towards specialisation and success as the individual moves through an initial phase of

experimentation, discovery, mastery and refinement of a comprehensive and integrated skill set.

The development of systemic capacity, interaction and collaboration between stakeholders are

essential for the system to optimally produce results.

In order for any LTRD model to function optimally, there are seven crucial pillars needed

relating to the human resource components (riders, coaches and officials, and parents), physical

resources (facilities and equipment), leadership and opportunities of competition (Balyi, 2001).

The following discussion provides more details of each pillar.

V. Seven Pillars of LTRD models

Pillar 1: Riders

The first requirement of any LTRD plan or model is the rider or participant. The rider is put into

the LTRD plan to go through the course of all the different stages in the aim to reach the optimal

goal of long term participation.

Pillar 2: Coaches

In order for the rider to perform optimally, the rider needs a coach for preparation and training.

The coach also acts as a mentor in supporting the rider through this process. In turn, coaches

need to integrate various influences for riders. Many competencies are only acquired through

experience, especially against the appropriate level for which rider are developed.

Pillar 3: Officials and service providers

Working together with the coach are the officials, various stakeholders and role players. The

rider needs to follow advanced conditioning programmes under the guidance of professionals

such as a biokoneticist and motorsport scientist. Elite rider need support and guidance from

different professional fields such as a motorsport psychologist, the manager of the ridings club

and team manager, the director of motorsport (at a social institution such as a school or

university), a nutritionist, as well as from a social network in their private lives (Burnett, 2005).

7

Pillar 4: Competition

For the rider to compete, he or she needs competition opportunities. The rider trains to compete in various competitions with varied levels of complexity, difficulty and challenges. In order for riders to reach international performances they need to go through the various phases of competition at different levels – from the local, to the regional, national and international levels.

Pillar 5: leadership

Leadership is of utmost importance as the rider needs to be led and managed during the LTRD plan. According to Watt and Moore (2001) a control system for the rider is essential; the rider needs to be monitored during this process and should be directed during the different stages, through the various challenges and obstacles.

Pillar 6: Parents

During the initial years of socialisation, the rider's parents are central to facilitate and offer material, social and emotional support for motorsport participation. In most families or households primary care givers or parents encourage their children to participate in various motorsporting codes (Bryant & McElroy, 1997). Parents should offer the necessary support to the child by tranmotorsporting him or her to the events by providing encouragement during training times and at events. The young rider might experience different challenges, disappointments, and successes for which adult guidance and support are essential to continue a motorsporting career. In the absence of such guidance and support, many rider might lose interest in the motorsport and this will inevitably result in early dropout (Hedstrom& Gould, 2004).

Social support structures such as receiving emotional support from significant others (parents) is also important, especially during the early phases of socialisation (Burnett, 2005). Friends and peers are equally instrumental as they provide recognition, support and also offer opportunities for socialisation outside of, and within the motorsporting environment. It is for this reason that team members become an important source of support and provide a meaningful frame of reference and collective understanding (Patrick, Ryan, Alfred-Liro, Fredericks, Hruda &Eccles, 1999).

Pillar 7: Facility and equipment

The last pillar of the LTRD plan is the availability of facilities and equipment for the use of the rider. Access to resources, especially physical resources, is crucial for player development. If the rider is a hammer thrower but there is no equipment and facilities available, how will the rider train, or be trained? In her article about the social world of African riders, Burnett (2005) refers to riders from this particular socio-economic status as being disadvantaged compared to their first world counterparts.

These pillars provide valuable insight into the much needed processes that are crucial to the access of resources and to a conclusive development environment for riders.

III. METHODOLOGY

The information gathered through in-depth interviews with four riders which are actively racing in two wheels motorbike racing. This research technique is suitable for relatively unexplored subject (Churchill, 1999). It was decided to use this method as the main method in collecting data for the study since an interpretative approach was adopted for the investigation. The authors required different types of information that qualitative studies possibly provide which is rich in detail.

The profile of the respondents shows that their average duration of being racers is fifteen years since primary school. The purposive sampling as mentioned by (McNutt and Wright, 1995) has two principal aims. The first is to ensure that all the key components that are relevant to the subject matter are covered. While the second is to ensure that within each of the key criteria, some diversity is included so that the impact of the characteristic concerned can be explored. Respondents of this sample are chosen with a purpose to represent racers that started their racing career at a very young age. The interviews lasted for an average of one hour. A recorder was used throughout the interview session to facilitate the interviews as well as comprehensive notes of the answers. The results of each interview were transcribed immediately after each session completed.

The interview sessions were divided into two main sections: first section was on the interviewees' demographic profile since their involvement in races until they graduated from studies. This part asked for background information, which includes type of education, age when they involved in racing, experiences faced during the study while taking part in a race and what drive them to involve in racing while pursuing their study. Later section concerned the generic motorsports related activities. Initially, to crystallize the responses, further analysis using NVivo software mainly involved the data from latter section collected with the aim of identifying and classifying feedbacks regarding talent supply chain in motorsports.

IV. FINDINGS AND DISCUSSION

The results of interviews and its discussion will be elaborated by points taken from the interviewees' statements that are related to their talent in motorsports and their involvement since a very young age. It began with their responses on the understanding the preparation before they started up their racing career. The next points are on their choices in post racer career; the impacts on their racing while pursuing study and involvement in races nowadays.

Future Career

"The racer's direction in Malaysia is still unclear because that of European countries is much more ahead and still evolving. Therefore, those who have the talent will have bright future in the sports. We should do the same thing by focusing on grooming these young talents."

(Interviewee 3)

From the above response, the interviewee recommended period for racer's career start up and ending. He stressed that as the start up; a racer should be on board in pocket bike competitions as early as five years old to be on tracks. Early age exposure promised an elongated way for them in creates their success from one level to another swiftly. "We" as in the statement referring to the authorities such as Ministry of Youth and sports as well as the others that have the intentions to manage race events consistently in a calendar year.

They should be able to take actions with the unclear guidelines and unclear path to assist these young talents to step ahead in this motorsports.

Individual vision, passion and qualities

"As for me, it depends on the particular individual. Everyone should be determine and be consistent in work. Never be lazy. If these attitudes are in the mind of a racer, all that the racer needs to have in addition include courage, patience and high motivation. If he continues to have these values in himself, if he's in a business or anything that he plan to do, InsyaAllah (with Allah's willing), he will be able to succeed."

(Interviewee 3)

"Stop racing? We will know when we should stop getting involved in races. We will know how far we can go. Then, we will decide when to stop. Motorsports is a big thing".

(Interviewee 1)

"Thank you to Allah (God)...since 2006 until 2014. In fact, you still can find me on tracks actively. I learned a lot, seen much...saw opportunities in this sport. This industry is expanding. I am still active in races this year".

(Interviewee 3)

To summarize the above responses, there is need to have right attitudes and personal qualities in order to change direction from full time student to student – racer. The interviewees are still involved in races due to passion and to bring out the names in the arena. Although they are active racers, they might consider levels of events and type of bikes used in competitions due to different requirements and different fees they have to pay to the race events' organizers.

Alliance with local universities

"At the moment...there is no potential collaboration because we do not have the right contact. Usually, we depend on ourselves and experiences only."

(Interviewee 3)

There is a need for significant collaboration with local universities to achieve individual and national agenda in sports. But, there are rooms for mismatch of expectations as a result of constraints on talent identification and management of it. They realized that development of talent influence the degree of racing expertise participation locally and internationally. Some issues that came to light are pointed out including the influence of talent development, managing and benchmarking its capabilities at the organizational as well as at the national level.

Therefore, there is need to increase motorsports events with increasing research efforts as the challenges of benchmarking are quite diverse, complex, and unsettling (Hong et. al 2012).

V. Recommendation

Intense research is required within this field to identify our riders, as well as the management of the riders. Early research mainly focuses on a scientific framework with motorsport sciences and bio-kinetics (natural sciences) frameworks, and places limited focus on institutional roles and stakeholder engagement. Some studies in related fields placed emphasis on the role of physical education and Motorsport School.

At the early stages of development it is critical that programmes are designed around the periods of accelerated adaption to training, for example using suitable sizing equipment (e.g. using pocket bike in the stage of teaching children how to ride a bike, then introducing underbone bike at skills development).

It is important to adapt the program according to the needs of the skills at the given period. These periods of development are evident when the children are ready and able to develop their fundamental motorsport skills and abilities such as braking, sliding and bike controlling, in addition to the improvement of speed and agility which are related to motorsport skills. Children, who are not developed in their fundamental motorbike skills by the age of 12 years, may face more challenges in order to reach their potential in a relatively large spectrum of motorsports (Du Randt, 1992).

The scope of opportunities in motorsports is massive. While many businesses start with human resource, customer relationship management, supply chain and finance, the reality is that it is possible for an organization to be embarked from the success in other areas. Thus, the business owners' role will be to act as catalyst to enhance the output from bikes production to creating

more talent in racing. They could also support the research and development activities to produce good bikes with good features in term of performance and durability.

On the basis of the authors' understanding of the progressively multifaceted activities of this industry in conjunction with other potential significant findings from this study, much attention needs to be focused on the opportunities of this sport. More so, some issues demand immediate actions from Malaysia Youth and Sports Ministry, independent organizations such as Motorsports Association of Malaysia (MAM), Automobile Association of Malaysia (AAM) and Sepang International Circuit (SIC); which will influence policy making and practices inside the track. The scope of this research interest might help to set the boundaries for forthcoming studies. The study is based on interviews with a small sample of active riders. In order to develop the research further, a more extensive sample is required.

Acknowledgements

The authors would like to thank Universiti Malaysia Kelantan and Universiti Sains Islam Malaysia for the opportunity to carry out this research as well as the racers who participated in this study.

References

Abbott, A. and Collins, D. (2002). A theoretical and empirical analysis of a 'state of the art' talent identification model. High Ability Studies, 13(2), 157-178.

Abbott, A., Collins, D., Martindale, R. and Sowerby, K. (2002). Talent Identification and Development: An Academic Review. A Report for sportscotland by the University of Edinburgh. Edinburgh: sportscotland.

Anderson, J.L. (1993). Rules of the mind. Hillsdale, NJ: Erlbaum. Baker, J. (2003). Early specialization in youth sport: a requirement for adult expertise? High Ability Studies, 14(1), 85-94. Baker, J., Côté, J. and

Barynina, I.I. and Vaitsekhovskii, S.M. (1992). The aftermath of early sports specialization for highly qualified swimmers. Fitness and Sports Review International, 27(4), 132-133.

Bernstein, N. (1967). The co-ordination and regulation of movements. Pergamon Press: Oxford. Bloom, B.S. (1985). Developing Talent in Young People. New York:

Ballantine. Bunker, D., and Thorpe, R. (1982). A model for the teaching of games in the secondary school. Bulletin of Physical Education, 10, 9-16.

Carroll, B., and Loumidis, J. (2001). Children's perceived competence and enjoyment in physical education and physical activity outside school.

Cote, J. (1999). The influence of the family in the development of talent in sports. The Sport Psychologist, 13, 395-417.

Cziksentmihalyi, M., Rathunde, K., and Whalen, S. (1997). Talented teenagers: the roots of success and failure. New York: Cambridge University Press.

Davids, K., Lees, A. and Burwitz, L. (2000). Understanding and measuring coordination and control in kicking skills in soccer: implications for talent identification and skill acquisition. Journal of Sports Sciences, 18, 703-14.

Durand-Bush, N. (2000). The development and maintenance of expert athletic performance: perceptions of Olympic and World champions, their parents and coaches]. (cited in Durand-Bush, N. and Salmela, J.H., 2001, The development of talent in sport.

International Journal of Sport Psychology, 31, 228-240. Freeman, J. (2000). Teaching for talent: lessons from the research. In Developing Talent Across the Life Span (edited by C.F.M. van Lieshout and P.G. Heymans), pp. 231-248. East Sussex: Psychology Press.

Gallahue, D. L. (1982). Developmental movement experiences for children. New York: Wiley. Gallahue, D. L., and Ozmun, J. C. (2002). Understanding motor development: Infants, children, adolescents, and adults (5th ed.). Dubuque, IA: McGraw-Hill.

Heller, K., Moenks, F., Sternberg, R. and Subotnik, R. (2000). The international handbook of research and development of giftedness and talent (2nd ed.). Amsterdam:

Jess, M., Collins, D. and Burwitz, L. (1999). The role of children's movement competence as an antecedent of lifelong physical activity. Health Education Journal, 1-15. 173

Klint, K.A. and Weiss, M.R. (1987) Perceived competence and motives for participating in youth sports: A test for Harter's competence motivation theory. Journal of Sport Psychology, 9, 55-65.

Kreiner-Phillips, K. and Orlick, T. (1992). Winning after winning: the psychology of ongoing excellence. The Sport Psychologist, 7, 31-48.

Mahoney, M.J., Gabriel, T.J. and Perkins, T.S. (1987). Psychological skills and exceptional athletic performance. The Sport Psychologist, 1, 181-199.

McCall, R.B., Beach, S.R. and Lau, S. (2000). The nature and correlates of underachievement among elementary school children in Hong Kong. Child Development, 71, 785-801.

Meij, J.Th., Riksen-Walraven, J.M.A. and van Lieshout, C.F.M. (1995). Patterns of change and consistency in parental support as related to children's competence motivation.

Moore, P., Collins, D.J., Burwitz, L. and Jess, M. (1998). The Development of Talent Study (DOTS). London: English Sports Council. 174

Moran, A.P. (1996). The Psychology of Concentration in Sport Performers: A Cognitive Analysis. Hove: Psychology Press.

Morris, T. (2000). Psychological characteristics and talent identification in soccer. Journal of Sports Sciences, 18, 715-726.

Morrone, A.S. and Pintrich, P.R. (1997). Achievement motivation. In Children's Needs II: Psychological Perspectives (edited by G. Bear, K. Minke and A. Thomas), pp. 387-395.

Washington, DC: National Association of School Psychologists. Newell, K.M. (1985). Coordination, control and skill.

Okley, A.D., Booth, M.L. and Patterson, J.W. (2001). Relationship of physical activity to fundamental movement skills among adolescents. Medicine and science in sports and exercise, 33 (11), 1899-1904.

Orlick, T.D., Hansen, H., Reed, A. and O'Hara, T. (1979). Psychological attributes and on-ice indicators of high calibre hockey players.

Van Lieshout and P.G. Heymans (Eds.), Developing talent across the lifespan (pp. 203-229). East Sussex: Psychology Press. Rose, J. and Jevne, R.F.J. (1993).

Psychosocial Processes Associated with Athletic Injuries. The Sport Psychologist, 7, 309-328.

Rowley, S. (1992). Training of young athletes study (TOYA): TOYA and lifestyle. London: The Sports Council. 175 Sallis, J.F. (1993) Epidemiology of physical activity and fitness in children and adolescents. Critical Reviews in Food science and Nutrition, 33, 403-408.

Schmidt, R.A. and Wrisberg, C.A. (2000). Motor Learning and Performance: A Problem Based Learning Approach. Champaign, IL: Human Kinetics.

Schunk, D.H. (1990). Self concept and school achievement. In The Social Psychology of the Primary School (edited by C. Rogers and P. Kutnick), pp.70-91.

Simonton, D.K. (1999). Talent and Its Development: An Emergenic and Epigenetic Model. Psychological Review, 106, 435-457. Smith, A. (1997, September 19th). Athlete talent search programs.

Sosniak, L.A. (1985). Learning to be a concert pianist. In Developing Talent in Young People (edited by B.S. Bloom), pp. 19-67.

Starkes, J.L. and Allard, F. (Eds.) (1993). Cognitive Issues in Motor Expertise. Amsterdam: Elsevier.

Starkes, J.L., Weir, P.L., Singh, P., Hodges, N.J. and Kerr, T. (1999). Aging and the retention of sport expertise. International Journal of Sport Psychology, 30, 283-301. Stevenson, C.L. (1990).

The athletic career: some contingencies of sport specialization. Journal of Sport Behavior, 13, 103-113.

Talbot-Honeck, C. and Orlick, T. (1998). The essence of excellence: mental skills of top classical musicians. The Journal of Excellence, 1(1), 66-81.

Tebbenham, D. (1998). The nature of talent development and importance of athletic transition in UK sport.

Thelen, E. (1995). Motor development: A new synthesis. American Psychologist, 50, 79-95. 176

Thorburn, M. and Collins, D. (2003). Integrated curriculum models and their effects on teachers' pedagogy practices. [Article] European physical education review 9(2), 185-209.

Vealey, R.S. (1992). Personality and Sport: a comprehensive view. In Advances in Sport Psychology (edited by T.S. Horn), pp.25-59. Champaign, IL: Human Kinetics.

Whitehead, J.R. and Corbin, C.B. (1997). Self-esteem in children and youth: The role of sport and physical education. In K.R.Fox (Ed.), The physical self (pp. 175-203). Champaign, IL: Human Kinetics.

Williams, A.M. and Reilly, T. (2000). Talent identification and development in soccer. Journal of Sports Sciences, 18, 657-667.

Zha, Z. (1993). Programs and practices for identifying and nurturing giftedness and talent in People's Republic of China.