sportscotland I

Talent Identification and Development Programme

Academic Review: Summary

Note: The full document can be obtained from our website at:
http://www.sportscotland.org.uk/

Introduction

1   Over the period early 2000 to the end of 2001 **sport**scotland operated a pilot Talent Identification and Development Programme in partnership with three local authorities. The programme used a series of physical tasks and an interactive D-Rom – Sport Interactive – to determine the suitability of sports for young people. In order to investigate the validity and applicability of the programme **sport**scotland commissioned the University of Edinburgh to undertake an academic review.

2   In producing the review all known research into talent identification and development worldwide was considered both in sport and in other domains.

Background Information

3   In introducing the review the following points are made:

    3.1   Researchers in all domains are attempting to find a way of identifying talent.

    3.2   In developed western countries, scientific approaches increasingly are being used.

    3.3   Skills and aptitudes shown at a young age do not automatically translate into talent development and performance.

    3.4   Talent may be lost or never recognised because of lack of opportunities.

    3.5   Lessons, practice and encouragement appear to precede exceptional performance.

3.6	Development patterns vary among individuals and different components develop at different rates.

3.7	The quality, type and intensity of training are important.

3.8	Evidence suggests that it takes ten years of concentrated training to reach the highest levels.

3.9	Training must be directed at improving or developing a skill. It should be purposeful and goal-directed.

3.10	'Deliberate practice' requires time, energy, access to teachers, facilities and training materials and is not inherently enjoyable.

3.11	Children often would not practice if it was not for parental encouragement.

3.12	Children practice more when they are progressing and finding the practice pleasurable. Also, individuals have to enjoy an activity before they can practice deliberately.

3.13	Talent is dependent on genetics, environment, encouragement and the effect of these on physical and psychological traits.

Talent Identification Approaches

4	A number of different approaches and problems in Talent Identification (TI) was identified and the issues surrounding them are noted below.

Physiological/Anthropometric

5	This approach supports the idea that there are distinct profiles for individuals in different sports. This has led to the belief that profiling young people on these measures will enable the identification of individuals with the potential to be successful in specific sports events. As a result, many TI models have been underpinned by analyses of these characteristics. However, these are unstable during adolescence, they vary with age and recent studies have been inconclusive.

6	The assumption that the individual performing best at any one age group is the individual with the most talent is unfounded. Those that excel at strength sports tend to be early maturers. It takes technical superiority for late maturers to develop successfully but they are likely to surpass early maturers' performances over time. (Often these early maturers have not been required to develop technical skills rather relying on their strength.)

7	Models using this approach may eliminate prematurely many people who have potential. For example, late maturers with talent are likely to be excluded before they have the opportunity to surpass early maturers. Also, because of

the emphasis on strength and size early maturers are disadvantaged by not being required to develop technical skills until too late.

Performance Models

8   There is a number of basic movement skills (fundamental motor abilities) required to participate in sport. They are seen as essential precursors to excellence in sport. They need to be developed by age 12 or 13 or success in sport is not possible.

9   These abilities do not develop automatically, they need quality teaching and regular opportunities to practice. Most young people in the world do not receive these opportunities. This approach will lead to individuals with relevant experiences being selected rather than those with potential. Therefore TI needs to be preceded by fundamental motor abilities programmes.

10   In the UK recent schemes encourage the early specialisation in sport with children being exposed to sport specific basic skills rather than generic motor abilities. This results in children dropping out if they do not have, or perceive they do not have, the skills required to participate. Also this early specialisation leads to immature fundamental motor abilities being carried forward. Finally, because successful athletes often excel in a sport other than the one they are involved in initially so individuals need to develop a broad base of motor abilities to transfer successfully from one sport to another.

Psychological

11   Research consistently has identified psychological determinants of sporting performance. Many researchers consider psychological factors to be the main determinants of individuals' potential in sport in terms of the development of skills, a continuing commitment to training and competing and consistent high performance and need to be incorporated into talent detection/identification models. However, the emphasis on psychological development in British sport is minimal.

Conceptual Models of Talent Identification

12   Current models are formulated primarily on presumed determinants of performance as opposed to factors that predispose individuals to learn and consolidate skills. Also, the factors emphasised within these models tend to be innate rather than develop-able performance determinants. While talent is partly innate, an individual's development is largely dependent upon the environment and the ways in which the individual interacts with it. Conceptual models have not recognised the importance of identifying how an individual realises their talent within the competitive environment and maintains success once it has been achieved.

Current Practices in Talent Identification

13   In the UK selection typically occurs from the current participation base. This approach benefits those born in the early months of the selection year. There is a bias towards individuals who are physically mature for some sports (football, rugby, swimming, tennis but the reverse for gymnastics).

14   The distinction between performance and talent has not been grasped by British funding agencies or NGBs - it may be necessary to forego excellence at junior levels.

15   A recent pilot in England emphasising the importance of individuals developing mature levels of fundamental motor abilities appears promising.

16   In the past there has been dominance of the Olympics by communist countries such as Russia and Cuba. In these countries athletes were selected by natural selection using competition results. However, evidence points to an over-emphasis at all ages on winning contributing to high dropout rates. In this approach again there is a tendency to select those born at the beginning of the selection year.

17   In east and central European countries physical and anthropometric characteristics were used and then taken on in countries such as China and Canada. However, in this approach young people who are physically mature are identified for strength sports and others for coordination sports. Also the age of specialisation varies by sport. If it is too early they will not have developed the fundamental movement skills required for transition.

18   The competitive success of the Soviet States seemingly verified the superiority and efficacy of their TI procedures. The lack of empirical evidence suggests that culture is important. In these States:

18.1   Sport was developed under central control.

18.2   Sport was seen as a 'weapon'.

18.3   Winning was expected.

18.4   Athletes trained full-time.

18.5   Minority sports were targeted to ensure Olympic dominance.

18.6   Performance enhancing drugs were used.

19   More recent sporting success in Australia has encouraged other countries to look at their approaches such as Sport Interactive (SI). SI is based on anthropometrical and physical profiles and synonymous determinants of performance and potential in adolescence.

20   This approach is not supported by empirical evidence:

20.1   Determinants of performance and potential at adolescence are likely to differ and mature values are hard to predict.

20.2 Determinants of performance between males and females are different.

20.3 As performance levels improve the importance of anthropometrical factors declines.

20.4 The attributes that determine the extent that an individual is able to progress along the athletic continuum are largely behavioural in nature.

20.5 Once skills are mastered performance is heavily influenced by psychological factors.

21 SI profiles individuals on a limited range of performance tasks. However it does include the need to acquire fundamental motor abilities but this happens after the children are identified as potentially talented.

22 The University of Edinburgh concludes that the three assumptions that appear to underpin SI are empirically unsound. (The assumptions that underpin SI are that there are unique anthropometrical, physical and physiological profiles associated with success in different sports.)

23 Talent Search in Australia has been attributed as being successful in identifying potential elite performers such as in the 1988 Olympic rowing programme. A combination of factors is suggested for this success:

23.1 The sports used - Talent Search concentrated on closed sports (characterised by stable and predictable environment).

23.2 Testing was of 16-18 year olds when anthropometrical and physiological factors have stabilised.

23.3 Sport is very important in the cultural life of Australia (high participation levels).

Talent Identification Methods in Non-Sport Settings

Dance/Music

24 As in sport early schemes identified talent through output (performance).

25 In the search for artistic talent the importance of interest, desire, persistence and self-perception cannot be under-estimated.

26 The use of single auditions is notoriously unreliable. It leads to poor predictive validity as they are testing developed rather than potential talent.

27 Disadvantaged children are unlikely ever to be identified during a single audition as they lack specific training.

28   In the mid 1980s an observational model was used to identify skills, motivation and creativity.

Academic

29   Talent in education currently is still identified mainly through performance although there has been a gradual move towards continuous assessment.

Empirical Evidence vs Practice

30 The required and actual resources in TI are:

Actual resources	*c.%*	Required resources	*c.%*
Psychological	3	Psychological	60
Fundamental motor skills	7	Fundamental motor skills	30
Anthropometrical	90	Anthropometrical	10

31 Some of the factors influencing this dichotomy between actual and required resources include:

31.1 Innate characteristics of talent may not be visible in childhood.

31.2 The environment has a big role in the development of the individual.

31.3 There is limited information on the specific components that predispose an individual successfully to acquire skills.

31.4 There is pressure on NGBs to produce results. This leads to pressure on the best players to participate with the less skilled quickly being eliminated. (NGBs are oriented towards talent selection through performance measures.)

31.5 The development of generic skills before the process of identifying potential and the occurrence of early and late maturers both emphasise the importance of combining the process of talent identification and development. In addition the key determinants of potential are largely psychological. These psychological determinants are not innate but can be developed through appropriate experiences. However, the possession of psychological attributes that predispose individuals to acquire skills will not lead automatically to sporting excellence since key environmental factors are also necessary. Consequently talent identification and development procedures must be considered within an holistic developmental framework.

31.6 Talent identification and development must be considered within an holistic developmental framework.

Other Factors that Impact on the Development of Talent

32 In addition to the factors mentioned above other factors impact on the development of talent:

32.1   Parental behaviour may be crucial to talent development through: encouragement; the provision of opportunities; expectations; and financial support.

32.2   The low number of 'master' coaches and the lack of facilities may be constraints.

32.3   The quality of practice is more important than the quantity. Training should be guided by research and developed through the consideration of developmental and sport specific factors.

32.4   Before adolescence sports participation is more important than specialisation.

32.5   The structure of training is of concern in relation to specialisation at a young age.

32.6   Problems of early specialisation include:

   32.6.1 Fundamental motor skills are not developed.

   32.6.2 Individuals may never find the sport for which they have the most potential.

   32.6.3 Restrictions in wider experience.

32.7   Optimal coach behaviours will vary under differing circumstances.

32.8   Different coaching aims and methods are required to progress athletes from one stage of development to the next. In the UK, research is lacking in this area.

32.9   The motivational environment is crucial in allowing athletes to develop their full potential.

32.10   The influence of parents and coaches on the motivational environment is high.

32.11   The little research that does exist suggests that elite performers have both high task and high ego orientation.

32.12   It is important for young athletes to develop in an atmosphere that encourages fun and motivation which will lead to a committed involvement in their chosen domain.

32.13   Research suggests that a moderate level of parental involvement is best to promote the interests of the child but there is little in-depth information on how families create a positive environment to initiate and maintain life long sport participation.

32.14 Transitions from one stage of development to the next are not characterised by chronological age. They are characterised by task completion, relationships/attitudes developed or learning as well as discrete events.

32.15 Athletes need packages of skill development for transitions.

32.16 Currently in TI processes resources are being targeted towards determinants of performance as opposed to determinants of potential.

A Theoretical Model of Talent Development - and Best Fits with Practice

33 There has been little research into the ways in which elite athletes actually attain their status in sport although Bloom's model (1985) of talent development does take an holistic approach. The model incorporates transitions, characterises the stages of development by the completion of certain tasks, relationships or attitudes developed or learning achieved. The model was developed based on swimmers, tennis players, neurosurgeons, concert pianists, sculptors and mathematicians.

34 The model has three stages:

- initiation   an awareness of a child's giftedness, little or no emphasis on competition

- development   transition to this stage is characterised by an athletic identity, development of commitment and competition is the yardstick for measuring progress.

- perfection   transition to this stage is characterised by increasing dominance of sort over the performers' lives. Also there is psychological development (rebellion) and a personal responsibility for their own development. Often a master coach is introduced - often strong love/hate ties are evident.

35 This approach was developed further by Scanlan (1989) who found comparable stages of development in former elite USA figure skates. However, despite the close fit to Bloom's model there were some limitations of both studies:

35.1 The sample populations were North American where many athletes go through the US college system.

35.2 Athletes used in Bloom's model were only involved in individual sports - in the UK there is evidence that there are different pathways for team and individual sports.

35.3 Bloom suggested that the relationship of the athlete with the master coach changes from one of respect to fear and that the athlete becomes more independent. However, research into motivation has not produced a clear indication of the best approach and the role of the coach is unclear.

35.4 There is a low number of master coaches in the UK - a study in England showed that this lack resulted in some athletes retiring early from their sport.

36 Tebbenham's (1998) UK based work showed there to be no one pathway to excellence.

37 In Britain, the World Class model has been questioned as to its accuracy in representing an athletic career. There is concern about using this model as a basis on which to allocate funding and support services to athletes as it may result in distribution of monies in an ineffective and inappropriate way. The UK World Class model of talent development promotes ' the development of basic movement skills and positive attitudes towards physical activity' at the foundation level before any talent identification process begins. Unfortunately there is no incorporation of what, when or how (and no evidence for even if) this is implemented.

38 Other models have been developed, for example McClymont's model to maximise sporting talent in New Zealand with similar approaches used by Canadian sport schools, the FA, Aston Villa FC and British trampolining. McClymont's model includes generic skills development but this follows talent identification based on tests and anthropometric measurement rather than preceding it. The model does allow children to move into other sports.

39 In Germany, TI uses an holistic approach considering performance criteria, anthropometrical data, psychological characteristics of learning, skill development and social background. The German model also incorporates the early development of basic skills and delays specialisation as long as possible. The LTA model of talent development is similar in that it incorporates a variety of activities into the training schedule which would aid the development of a wider range of skills.

40 The limitation of these approaches appears to be not the lack of holistic considerations but the lack of detail of how to implement them successfully. One model of individualistic holistic approach is the British Squash Prospects Management programme. However, the model only comes into play at a late stage - when the athlete decides to make squash their living.

41 A concern of some British models is the introduction of mini games to very young children. Such an approach introduces specialised skill development potentially at the expense of the generic skills that are fundamental to the development of excellence in any sport. Children who have participated in gymnastics or dance prior to other involvement in sport tend to develop skills quickly.

42 Often it is successful transitions that determine future success. Several intervention models have been developed to aid transitions but there has been little research based on the UK situation and no practical models of talent development incorporate transitions into their models.

43 Many models of talent development still incorporate stages of development that are characterised by chronological age. Normally every model of talent development identifies each stage of development with insufficient details regarding the athlete characteristics that need to be developed at each stage, the methods required to develop those characteristics and the support required.

44 Some talent development models include early and continued development of psychological characteristics - this needs to be taken forward in terms of defining skills and characteristics required at each stage as well as the methods and support networks needed. Also the characteristics of performance and psychology of maintaining high performance needs to be identified and methods and support networks developed.

Summary of Conclusions and Implications

45 The review concludes by noting three main areas for attention.

Research

46 Research to date has been orthogonal. Researchers have confined themselves to relatively simplistic uni-dimensional examinations. Multi-factor longitudinal studies must become the norm with an inter-disciplinary approach essential in order to cater for the known interactions that occur in a multiplicative manner. It is arguable that no true TI schemes currently exist in Britain. Ongoing longitudinal research that tracks a number of youngsters to a number of factors appears to be required.

Development and Potential Building

47 The focus on current performance rather than potential is paralleled by the need for successful youth squads that drives the development agenda. Using empirical research, agencies could redirect their performance outcomes towards a more developmental and an agenda for potential building. The review calls for leadership in driving this work forward to influence the development of young people in sport.

Potential Outcomes of Talent Identification and Development Schemes

48 New approaches could be used to equip and empower young people for a lifetime of physical activity. For the health of talent identification and

development and the long-term health of the nation talent development systems should be focused on the early development of motor capacity. It

could help with:

48.1   Potential building for performance sport.

48.2   Raising physical activity levels.

48.3   Identifying and providing initial rehabilitation for those with mild motor improvement.

49   Also needed would be the development of a psychological excellence profile.