

Linking Promise to the Podium

Talent Identification and Development (TID) in New Zealand

A Report to SPARC's Board from the TID Taskforce



CONTENTS

ACKNOWLEDGEMENTS.....	3
MESSAGE FROM THE CHAIR	4
EXECUTIVE SUMMARY	5
TERMS OF REFERENCE.....	6
REVIEW PROCESS.....	7
Background	7
Methodology	7
FINDINGS	9
Critical success factors	11
Pilot projects.....	11
SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS	12
TACKLING THE MYTHS	17
Myth 1 –One-off screening and testing works	17
Myth 2 – Childhood success or failure is a predictor of adult success or failure.....	17
Myth 3 – Identification is more important than development.....	18
Myth 4 – Earlier is better.....	18
NEW ZEALAND’S TID STRATEGY	19
Mission	19
Principles	19
Business objectives.....	19
Environment	20
Who needs to be influenced?	20
STRATEGIC GOALS AND DELIVERABLES.....	22
GOAL 1 – GROWING THE NUMBERS OF TALENTED ATHLETES.....	23
GOAL 2 – IDENTIFYING POTENTIAL TALENT	26
GOAL 3 – CREATING EFFECTIVE TALENT DEVELOPMENT SYSTEMS	28
GOAL 4 – INCREASED COLLABORATION WITH SECONDARY SCHOOLS.....	32
CODE OF ETHICS.....	34
WHAT WILL SUCCESS LOOK LIKE.....	35
HOW WILL THIS HAPPEN?	36
APPENDIX 1 - KEY DEFINITIONS	37
APPENDIX 2 - PREDICTIVE CRITERIA FOR IDENTIFYING TALENT	38
APPENDIX 3 - COMMON ATTRIBUTES OF ELITE ATHLETES.....	43
Elite athletes	43
Olympic champions	43
Negative factors	43

ACKNOWLEDGEMENTS

The TID Taskforce extends a huge thanks to everyone who participated in the development of this report and accompanying strategy.

The Taskforce was made up of individuals involved in, or with knowledge of, talent identification and development:

- Sir Ronald Scott, Chairman
- Catherine Carter
- Dale Eagar
- Daniel Gerrard
- Leigh Gibbs
- Barbara Hollard
- Dr. Selwyn Maister
- Pr. Mike Marfell Jones
- Doug McClymont
- Susie Simcock
- Simon Wickham
- Tim Mahon, TID Taskforce Project Manager.

Linking Promise to the Podium was prepared by Tim Mahon and authorised by John Limna, Senior Advisor, Athlete and Regional Services, New Zealand Academy of Sport, National Office. *Linking Promise to the Podium* should also be read in conjunction with SPARC's primary strategic documents – *An Introduction to Active Movement* and the *New Zealand Coaching Strategy*.

Important Notice

While Ministry of Education representatives have contributed to this report, it is important to clarify that the collective recommendations are those of an independent Taskforce and not those of Ministry representatives or indeed any individual member. The Taskforce was established to inform SPARC and not the Ministry of Education.

Please contact Tim Mahon directly at SPARC on + 64 4 496 3976 or email tim.mahon@nzas.org.nz if you have any queries about this report.

MESSAGE FROM THE CHAIR

For a nation that prides itself and derives much pleasure from the accomplishments of its international sporting heroes it does not make sense, some say it would be irresponsible, to deny Kiwis with real potential, the help they need to ensure successes.

The reality is that New Zealand sport faces daunting challenges. More nations are investing in success. International standards continue to rise. And because, by comparison, most disciplines lack critical mass, to be off-the-pace in the application of winning knowledge represents a telling, final blow.

In short, to be competitive, New Zealand sport needs to be as smart as anyone, preferably smarter. That has been the bottom-line outcome sought by a very conscientious Working Party that has been driving itself in search of frank, solid, provable answers to two hard-core questions:

- Can talent identification systems work effectively and, if so, do fail-safe models exist around the world? And, incidentally, is there anyone, anywhere whose definition of 'talent' is empirical, reliable and useful?
- Can performance development programmes work effectively and, if so, can they be established and delivered in our country to significantly help raise performance standards?

The report that follows provides the responses based on international research, wide consultation and rigorous inquiry into what is solid and what is not. You will note that answers that indicate mere fiddling will fail; that to be productive, new structuring is essential; and that balance between talent identification and talent development needs to be better understood and applied.

It was also observed that a high performance level could be achieved by more participants if it is developed on a base of a generic physical literacy. There is abundant evidence that high performance potential has origins in pre-school confidence activity and the early acquisition of elementary motor-skills.

The message of the Working Party is this - if New Zealand has the will to develop a structured and deep-rooted system then more of its sports people will reach their full potential whether for personal satisfaction or for international glory. But the system must involve a substantial mind-shift and not superficial cosmetics.

Ronald Scott
Chairman

EXECUTIVE SUMMARY

Successful talent identification consists of three aspects: extensive knowledge of the performance demands within a particular sport; an accurate assessment of athlete capabilities in relation to these demands; and the ability to predict future performance levels based on current athlete's characteristics¹. The first two points have been well researched with many countries currently basing their identification models on them. Point three, however, is problematic especially considering the long-term nature of athlete development. The multi-dimensional nature of talent, its dependency on genetics, environment, encouragement and its effect on an individual's physical and psychological traits makes it difficult to establish a strategy that is accurate in its predictive ability.

There is no simple solution anywhere to this complex problem of long-term talent identification. To deduce otherwise fails to acknowledge the multi-faceted nature of talent and that its development relies on many influences (e.g. biomechanical, physiological, physical, psychological and environmental factors).

This was the overall conclusion reached by the Taskforce. If a world champion is an aggregate product of genetic endowment, a supportive environment and highly specialised training, it seems naïve to direct our efforts towards just identifying talent; talent development, which commences when a child is born, is the crucial but often misunderstood link.

It is contended that the New Zealand TID strategy prioritise the establishment of a systematic and holistic long-term development process, with an on-going identification strategy embedded in it. Over an extended period of time, *indicators of potential* can be identified, enhanced and monitored so that the more indicators an individual has or gains, the higher the probability of potential sporting success.

And herein lies the challenge - talent development involves more people than the coach, for parents, schools, physical education, sports, providers, education agencies and clubs all need to work cohesively to ensure each athlete, irrespective of their genetics, is given every opportunity to succeed. Such a collaborative approach is the only way forward for our "talented" athletes to fulfil their potential. The opportunity for SPARC to lead this process cannot be overstated.

Success at the elite level will not come overnight but will be as a result of a sustained long-term effort over many years. The Taskforce believes the fruits borne from this strategy will not be seen until 2016 and its ramifications will challenge the way athletes are developed in this country.

¹ Grove 2001

TERMS OF REFERENCE

The accurate identification and development of athletes with the potential to achieve is critical if New Zealand is to ensure sustained future success at an elite level. A TID Taskforce (the Taskforce) comprising of representatives with appropriate stakeholder involvement and knowledge was established to investigate and evaluate existing and proposed talent identification and development systems and make appropriate recommendations for the ongoing development of a national TID strategy and framework for New Zealand.

The Taskforce membership needed to be representative of the organisations that can and do affect talented athletes' development.

The Taskforce's terms of reference were to:

- Report on the status of talent identification in New Zealand by critically reviewing programmes that are in place, both within targeted National Sport Organisations (NSOs), Regional Sport Organisations (RSOs), Regional Sports Trusts (RSTs), secondary schools, and those programmes currently being delivered via independent providers such as the Millennium Institute, the Peter Snell Institute and the New Zealand Academy of Sport Central.
- Review relevant international approaches to talent identification through considering recent literature and gaining an understanding of international best practice, existing or mooted.
- Develop possible models and/or programmes for developing a national approach to talent identification. These models should provide comment on the roles and responsibilities of the various stakeholders involved in the talent development pathway, e.g. within the education system, RSOs, NSOs, the Academy network and independent talent development organisations.
- Provide SPARC with a report addressing the above objectives and providing recommendations for consideration in the ongoing development of a New Zealand talent identification strategy.

The Taskforce was formed in March, 2003 and met seven times prior to the submission of this report. Minutes of all meetings can be viewed via the SPARC internal network *S:\Sports Foundation Data\WZ ACADEMY OF SPORT\Talent ID TaskforceMeetings*.

REVIEW PROCESS

Background

Many papers on TID in New Zealand have been authored over many years. All shared a similar vision, i.e. that Kiwi athletes with potential talent should be identified and placed on appropriate development programmes. Unfortunately, for one reason or another, these papers' recommendations have never been universally implemented. This has resulted in a fragmented approach to TID, inconsistencies in the definitions and prediction of potential talent, misguided emphasis on short-term success versus long-term development, and a singular lack of leadership and structure to oversee the process.

Methodology

The task of answering the Terms of Reference was segmented into five distinct phases:

- Phase 1 – Taskforce planning.
- Phase 2 – Evaluation of current NZ TID strategies including consultation meetings.
- Phase 3 – Determination of TID best-practice principles through a review of literature, direct communication with international competitors and evaluation of non-sporting talent environments.
- Phase 4 – Test possible TID theories through pilot programmes.
- Phase 5 – Establish TID recommendations and strategy.

Before drawing conclusions or making subsequent recommendations, the Taskforce needed a better understanding of current domestic and international TID theory and practices. The Taskforce subsequently consulted with key stakeholders with a view to better understanding the strengths and weaknesses of TID theory and practice. This consultation phase included:

- Surveying all performance and participation NSOs, RSOs, New Zealand secondary schools, RSTs and independent organisations involved in TID programmes.
- Follow-up meetings with 11 NSOs, one RSO, four tertiary institutions, five independent organisations, two RSTs, six schools, and one individual.
- Inviting written submissions (one received).
- Receiving oral presentations from: Angela Abbott (Senior Research Assistant, University of Edinburgh); Mike McHugh (Advisor Coaching, SPARC); Cath Clark (Senior Policy Adviser Education, SPARC); Nicky Sheriff (Senior Strategic Advisor, SPARC); Peter Smith (Managing Director, SportMinz); Phil Connelly (Business Development Manager, Real Sports); and Graeme Perigo (Sales Director, Real Sports).
- Reviewing existing and proposed international best practice methodologies and literature on TID theory.

The aim of the surveys and consultations was to determine:

- The perceptions of talent, its identification and development; and
- The status of New Zealand programmes currently delivered through key stakeholders: National Sporting Associations; Regional Sports Trusts; secondary schools; or independent providers.

FINDINGS

The results of the surveys and consultations can be found in the document *“Interim Report to the NZAS Advisory Committee, July 2003”* and can be found on the SPARC internal network at *S:\NZ ACADEMY OF SPORT\Sports Foundation Data\NZ ACADEMY OF SPORT\Talent ID Taskforce\TID Interim Report.doc*

From this research and follow-up interviews, it appears that in New Zealand:

- There is no national approach to TID. It is more left to chance;
- We have a strong belief that NZ has the ‘raw’ talent to produce world champions;
- Talented individuals possess an ‘x’ factor;
- The provision and mastering of basic motor skills/spatial awareness/foundation skills development in primary school children is questionable;
- There is a lack of capable/competent coaches (expertise) at the developmental level;
- Little communication exists between schools and NSOs/RSOs with regard to talented athletes;
- Some schools have flexible curriculum delivery to cater for talented athletes;
- Generic screening/testing cannot predict potential but rather measures current performance;
- Overall sport performance is determined by physiological, biological, psychological and environmental factors;
- The use of chronological age differentiation can prejudice early or late maturers;
- Some NSOs admit to having little influence on the development of their athletes at the regional level;
- Talented students are perceived as falling through the gaps;
- Early specialisation can increase the chances of medical injuries;
- Talent detection is spasmodically utilised by NSOs;
- There is no formal system for schools to nominate the names of talented school athletes;
- There is a lack of resources (financial, human, knowledge) in talent development;
- There is a sport talent ‘loss’ from secondary to tertiary education;
- Individual motivation, commitment and family support are critical factors for talent development; and
- Variable and few pathways exist for athletes to transfer to other sports/activities.

It can be concluded that NZ TID is ad hoc, under-resourced and based on a belief of “hope”. Historical practices play a major influence on how athletes progress through the athlete development pathway. It is debatable whether all athletes are given every opportunity to reach their potential.

A review of overseas TID models and research provided an insight into whether current international practices were theoretically valid. Tim Mahon visited Europe to speak to representatives of Government agencies, universities, Institutes of Sport and some TID proactive sports about current practices. Mahon also attended a sport science conference

in Austria, specifically to hear results of current TID research and to network with TID representatives from other countries.

The results of this work can be found in a literature review titled *“Talent has to be developed; Can it be reliably identified? – A Review into Talent Identification and Development Strategies – February, 2004* located on the SPARC internal network *S:\Sports Foundation Data\NZ ACADEMY OF SPORT\Talent ID Taskforce\TID Review of Literature.doc* and a summary of findings from the visit to overseas agencies can be found in the document titled *TID Study Tour, Incorporating 2003 ECSS Conference, Europe – July 7-18, 2003* located on the SPARC internal network *S:\Sports Foundation Data\NZ ACADEMY OF SPORT\Talent ID Taskforce\study tour\TID STUDY TOUR.doc*

From this research, it can be concluded that the following assumptions should form the basis of New Zealand’s TID strategy:

- The aim of an “identification” strategy is to predict an individual’s success in a chosen sport;
- Talent can emerge at any time depending on the sport and the individual;
- Identification is a continuous rather than a one-off process and spans the entire developmental process;
- It is difficult to predict the talent “potential” of an individual;
- Identification of talent can use a variety of methods;
- The genetic makeup of an individual has a significant effect on performance;
- Talent displayed at one age level does not ensure that it will be present at subsequent ages;
- While talent is a dynamic, multi-dimensional aptitude, an athlete’s development is largely dependent on the environment and the way an athlete interacts with it;
- The substantial role of practice and the environment in achieving excellence is crucial;
- Most “champion” athletes participate in more than one sport during their formative years;
- Most successful TID systems are linked to an education system;
- School-based physical education programmes are an integral part of athlete development;
- Chronological age differentiation is a poor means of talent identification;
- An athlete’s development spans over a number of distinct stages; and
- A consistent approach is required by all key stakeholders who work with children – parents, pre-school/primary teachers, high school teachers, sport development officers, and coaches.

Research suggests there is no simple solution to the identification of talent. The multi-dimensional nature of talent, its dependency on genetics, environment, encouragement and its effect on an individual’s physical and psychological traits makes it difficult to establish a strategy that is accurate in its predictive ability. Some even argue that it is the deliberate practice evident in talent development rather than innate ability that accounts for far more variance in performance.

Critical success factors

The information sourced during phases one to three helped the Taskforce to identify issues, analyse concepts and ultimately influenced the recommendations included in this report. The Taskforce identified a number of critical success factors that must be evident in a world-class TID strategy. These include:

- A reciprocal relationship between talent identification and talent development;
- The crucial importance needed of early development (0-5 years);
- A recognition of the multiple pathways evident in talent development;
- TID being seen as a process rather than an outcome, i.e. long-term rather than short-term;
- The acknowledgement of the factors that can affect talent – psycho-behavioural, psych-motor, anthropometry, physiology, environment;
- Athlete development systems to ensure the longevity of athletes to remain in the system;
- A strong communication network and collaboration between all stakeholders;
- The need for sequential development of skill; and
- The driver behind the TID process being the NSO.

Pilot projects

The Taskforce sought applications from priority and revitalisation NSOs for TID pilot projects that could identify and nurture athletes that display potential world-class physiological and psychological characteristics.

The Taskforce was looking for projects to test the following key themes:

- Motivation of an individual to succeed.
- Decision-making skills in open-sport environments.
- Physical/physiological requirements.
- Transference of skills between sports.
- New opportunities for athletes not involved (detection).
- Cross-sport issues.

Six pilots were originally selected. One sport was unable to conduct their pilot and subsequently withdrew. Coming towards the end of their pilot phase, indicative findings reinforced the importance of deliberate practice and athlete self motivation.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The Taskforce, in the course of its review of current best practice and theory, believes the current approach to talent identification and development in New Zealand is neither working nor keeping up with international best practice. As such, talent isn't being given every opportunity to be realised.

Key points from our review of domestic and international TID practice for **talent identification** are:

- There is no simple way to predict performance based on talent or identify at an early age all the attributes required to succeed.
- The key challenge is defining those attributes that indicate an individual has the potential for success.
- Identification is a continual rather than one-off process; it can span the entire career of an athlete's development.
- Talent with all its complex elements can emerge or be developed at any time, depending on the sport and the individual.
- Talent displayed at one age doesn't *automatically* equate to the realisation of that talent in later life. Conversely, the absence of specific talent indicators at a particular point in time doesn't *necessarily* equate to an athlete's lack of potential in that area later in life.²
- The role of junior competition results as a predictor of success has been over-estimated. Success at this level may be more a reflection of early natural talent, which becomes less advantageous over time.
- Over time, indicators of potential can be identified and monitored. The more indicators of potential the individual has, or gains, the higher the probability of success.

In light of the above, the Taskforce believes the following recommendations should be adopted:

1. A broad approach to the identification of talent be taken to develop future champions, rather than focusing exclusively on anthropometrical, physiological or psychological indicators.
2. A variety of methods be used in the identification of potential talent.

² Simonton 1999

3. Identification span the entire career of an athlete's development. Identification of potential is an ongoing rather than one-off process tailored for each sport. As such, the long-term prediction of an individual's performance must cater for each sport's specific demands and the changing interests of today's athletes.
4. Since sport performance is multi-faceted, talent identification take a multi-disciplinary approach, assigning a significant role to the acquisition of performance determinants. This includes taking the dynamic aspects of sport performance into account, i.e. recognising that the relative contributions of performance determinants change with age, and that some determinants can improve through training and development. Performance attributes should indicate whether an individual has the potential for success and should be monitored over an extended period of time.
5. Support and promotion of SPARC's work in early childhood physical activity development must continue unabated as it is the precursor to the acquisition of basic motor skills.

Key points from our review of domestic and international TID practice for **talent development** are:

- While talent is a dynamic, multi-dimensional aptitude, an athlete's development is largely dependent on the environment and their interaction with it.
- Deliberate practice (typically 10,000 hours) plays a crucial role in achieving excellence.
- An average of 12-13 years of deliberate training and development is needed in order to develop talent in most athletes. This is a long-term strategy.
- Talent development systems are more focused on the short-term success of teams and squads than the long-term development of individual athletes.
- A quality physical education programme in schools is the best foundation for the initial stages of a young athlete's talent development.
- Talent development that occurs at a community and club level ultimately impacts on talent development at senior, sub-elite and elite levels.
- Placing quality coaches at all development phases will yield a better overall development programme.

In light of the above, the Taskforce believes the following recommendations should be adopted:

6. The TID strategy reflect that chronological age is a poor means of talent identification given an athlete's development spans several distinct stages.

7. The mastery of motor skills at an early age is critical. One of the cornerstones underpinning the successful development of talent is that every child should possess fundamental motor skills.
8. In the early stages of athletic development, emphasis is placed on building confidence, skills and enjoyment. Primary emphasis is placed on the capacity of an individual to develop as opposed to testing performance levels.
9. Physical literacy in primary schools is a priority and a child's right to gain a fundamental mastery of skills should be acknowledged. Increased resources and funding for the provision of physical education is therefore needed.
10. Positively influencing parents and caregivers ensures children master basic motor-skills. Parents and caregivers must be given credible information, increased opportunities to play with their children (time), and the opportunity to explore and experiment with movement skills in 0-5 year olds.

Specific conclusions from our review of domestic and international TID practice for **talent identification and development** are:

- Identification and development are *complementary* rather than mutually exclusive. Defining a strategy for one without the other is unsustainable.
- One-off testing regimes are limited in their predictive ability. Such an approach risks eliminating many athletes prematurely; athletes that may in fact have potential. This is talent discrimination versus identification.³
- The identification and development of talented sports people in schools relies upon the provision of a high quality physical education programme for all. Research shows that this is probably the most crucial stage in the development of any future elite-level athlete.⁴
- Many successful talent development programmes include school-based talent development initiatives that contribute significantly to the development of the athletes.
- An athlete's development spans over several distinct stages. Using chronological age to define competitive categories doesn't cater for maturational age differences. While it is legitimate to place particular emphasis on development at different stages of an athlete's career, talent identification must span the individual's entire career.

³ Reilly 2003

⁴ AAH Perd

- Talented young athletes are most able to maximise their sporting and academic potential when supported by the collaborative efforts of schools, parents and coaches.
- A consistent approach is required from all key stakeholders working with children (i.e. parents, pre-school and primary teachers, high school teachers, sport development officers, and coaches) if sustainable long-term sporting success is to be achieved.

In light of the above, the Taskforce believes the following recommendations should be adopted:

11. The New Zealand TID strategy prioritise the establishment of a systematic and holistic long-term development process, with an on-going identification strategy enmeshed within it.

12. Further investigation into the appropriateness of age-based selection criteria is warranted. Age-based criteria means people born in the first half of the year (who are likely to be more advanced developmentally than their peers born in the latter half of the year) usually have a physical advantage over the latter group.⁵

13. SPARC take a pan-Agency view of TID and work closely with key agencies including Education Agencies, National Sports Organisations, the New Zealand Olympic Committee and coaches.

14. New Zealand's TID programme is linked to New Zealand's education system, given the integral role schools-based physical education programmes play in athletes' development.

15. New Zealand's TID programme acknowledges and caters for individual differences in pace and degree of development. Children are not miniature adults.

16. An athlete's inability to balance sport commitment levels with schoolwork can be highly disruptive to both their academic work and social lives; it requires planning and coordination. The national curriculum needs to be flexible to permit potentially talented athletes to fulfil their sporting goals while continuing their academic studies.

17. Up-skilling primary school teachers in physical literacy is paramount, as is working with the education sector to ensure teachers have the opportunity and time to develop and implement these skills. Focus must span pre-service (teachers' education institutions) and in-service levels, via professional development.

18. A culture of winning is articulated. This should be addressed via statements from elite athletes and other suitable, local, role models via media statements, interviews and profiles. Espousing a desired sport ethic, e.g. a strong sense of team, the

⁵ Gerssen 2003

importance of training, commitment to practice etc should accompany the establishment of a system for creating a culture of excellence.

TACKLING THE MYTHS

The *one* fact surrounding TID is that there's no simple way to identify talent. Its multi-dimensional nature, dependency on genetics, environmental anomalies, and the effect of positive encouragement (or lack thereof) on an individual's development among other things makes it difficult, and scientifically impossible, to establish an identification strategy that's accurate in its predictive ability.

The Taskforce, through its review of current national and international TID practice identified four pervasive fallacies which often dominate TID vernacular, theory and practice. These have been highlighted and responded to below.

Myth 1 –One-off screening and testing works

Traditionally, talent identification has been viewed as the panacea for successful elite-level performance; especially relevant for countries with small populations and commensurate budgets. This has traditionally seen children steered toward sports to which they're ostensibly physically and psychologically suited, as well as targeting resources to enhance their training. Screening or testing has been advocated as an appropriate way to unearth this talent yet tends to measure current performance rather than future ability.⁶

In fact...evidence-based research has confirmed that one-off testing regimes are limited in their predictive ability. The Taskforce believes it would be financially imprudent to pin New Zealand's future sporting success on this approach given its limited effectiveness. This approach is based on a static, one-dimensional concept of talent and is likely to lead to the premature culling of many prospective talented athletes. In essence, it encourages talent *discrimination* rather than *identification*. In *isolation*, physical and anthropometrical factors are weak determinants of future performance capability and should not be the main components of any identification system.⁷

Myth 2 – Childhood success or failure is a predictor of adult success or failure

The assumption is that the best-performing athletes in a specific age group are the individuals with the most talent, and that these athletes will continue their dominance in the future.

In fact...this assumption is unfounded. New empirical evidence confirms that one who excels at a particular point in time will not automatically continue to do so later in life. The converse of this is also true, i.e. the absence of a specific talent at a particular point in time doesn't *necessarily* equate to an athlete's lack of potential talent later in life. Rather, it may simply reflect an individual's stage of development or maturity *at that point in time*.

⁶ Abbott and Collins, 2003

⁷ Abbott et al 2001

The success of any identification initiative is dependent on not simply understanding the performance requirements needed to succeed but also being able to see whether an individual has the *potential* (including the capacity to learn) to develop them.

Myth 3 – Identification is more important than development

Traditional thinking has seen identification of talent, specifically through genetics, being prioritised over development.

In fact...this is dangerously flawed, as such an approach assumes that a developmental system already exists to exploit such potential. Both aspects - identification and development - are *complementary* rather than exclusive. Some authorities argue that it is the deliberate *practice* element in talent development that accounts for more variance in performance than innate ability.⁸ The Taskforce believes that defining a strategy for one without the other is untenable.

Myth 4 – Earlier is better

Specialisation in one sport from an early age is often assumed to be the most important factor in attaining expert performance.

In fact...from a developmental viewpoint, it has been recommended in the motor development literature that by learning a variety of motor-skills under different conditions, a young athlete can develop a large well-organised set of movements that can be transferred from one sport to another.⁹ In general, the broader the range of other sporting experiences undertaken, the less deliberate practice athletes need to undertake to acquire expertise in a chosen sport as skills are transferred from one sport to another.¹⁰

There's considerable debate around the definition of 'talent' and the factors that can be used reliably to identify talented candidates for skill development programmes. The overall aim of talent identification is to predict future performance levels based on present athletic characteristics. However, it would appear that an athlete's development is significantly influenced by their personal environment and the ways an athlete interacts with that environment and their support groups. With this in mind, the Taskforce describes talent as a *dynamic, multi-dimensional aptitude. Through its very nature and the environment with which it interacts, talent is difficult to identify, let alone predict.*

Further definitions of key terms are included in Appendix 1.

⁸ Simonton 1999

⁹ Lidor and Lavyan 2002

¹⁰ Starkes and Ericsson 2003

NEW ZEALAND'S TID STRATEGY

The Taskforce developed and endorsed the following mission for New Zealand's TID strategy.

Mission

To create a world-class talent identification and development environment for New Zealand athletes, leading to international sporting success.

Principles

The Taskforce identified the following principles it believes should underpin the TID strategy:

- The TID strategy encapsulates an holistic, long-term approach to talent identification and development;
- The strategy will be sustainable, collaborative and responsive to the needs of athletes, administrators and officials;
- The strategy unapologetically aims to create and reward a culture of excellence with the ultimate aim of producing winners;
- The strategy acknowledges that identification spans the entire development of athletes;
- The strategy concedes that potential talent is difficult, if not impossible to predict;
- The strategy supports close partnerships with key agencies, including SPARC, Ministry of Education and National Sports Organisations;
- The strategy will work to achieve a culture of continuous improvement from an identification and development perspective; and
- The Taskforce believes there is no *silver bullet* solution to the identification of talent. The strategy will include NSO-specific identification methods including, but not limited to: screening; media call-ups; older athletes; talent recycling; genetic profiling; sibling profiling; foreign athletes; and scouting, overlaid on the development pathway.

Business objectives

The strategy's business objectives flow directly from SPARC's mission, namely, that by 2006 we will be recognised as world-leading in our approach to sport and physical recreation measured by:

- Being the most active nation.
- Having the most effective sport and physical recreation systems.
- Having athletes and teams winning consistently in events that matter to New Zealanders.

In particular, the implementation of a TID strategy will create a world-class talent identification and development system for New Zealand athletes, resulting in sustained international sporting success beyond 2006.

Our specific TID goals are to:

- Increase the pool of talented athletes;
- Develop and implement ongoing talent identification systems within talent development programmes;
- Develop and implement a national talent development programme including support for sub-elite athletes; and
- Increase collaboration among stakeholders.

Environment

The Taskforce believes that the issues noted in this report (refer to pages 14-18, *Summary of Conclusions and Recommendations*), are limiting our children's physical ability. To improve its future sporting performance, New Zealand must prioritise the mastery of motor-skills at an early age. One of the cornerstones underpinning the successful development of talent is that every child should be physically literate.

Anecdotal evidence suggests that the mastery of fundamental motor-skills is declining in New Zealand. Factors contributing to this are many and varied and include: competition for recreational time; the quality of physical education in primary schools; the relative emphasis placed on physical activity at home; safety issues; and smaller back-yards. Anecdotal evidence also suggests that many parents fail to appreciate the importance of their children having fundamental motor-skills.

A further challenge is for the sports sector to confidently and systematically articulate what typifies a *winning culture*, i.e. what it celebrates, who it celebrates, and why.

Who needs to be influenced?

Primary audiences

Ministry of Education, National Sporting Organisations, Tertiary Institutions, Coaches, Physical Education New Zealand, Parents/Caregivers, Teachers, Athletes.

Secondary audiences

Schools, Regional Sport Organisations, Regional Sport Trusts, New Zealand Olympic Committee, Media.

STRATEGIC GOALS AND DELIVERABLES

The Taskforce's broad strategic goals and deliverables for New Zealand's TID strategy are identified over the following 10 pages. Key learnings from consultation and international best practice have been incorporated and or footnoted where appropriate with supplementary appendices attached to this report providing further detail.

GOAL 1 – GROWING THE NUMBERS OF TALENTED ATHLETES

What is the issue?

Due to its population size, New Zealand has a small pool of talented athletes. Developing the talent of all children will result in a more athletically capable and more sports-literate population. An increased pool of athletes equates to more opportunities for talent to be identified and developed. And with more athletes being identified and developed, New Zealand will increase its competitiveness on the world-stage.

What are we looking to achieve?

Every child should be given the opportunity to develop physical literacy from early childhood (pre-school) through movement experience. They should have the right to develop fundamental movement patterns at primary school, e.g. balance and spatial awareness, and be given the opportunity to develop physical capability, e.g. strength, physical conditioning etc.

What should we do?

Emphasis should be placed on confidence, skill acquisition and enjoyment.

All primary school children should engage in quality physical education that promotes health-related fitness and movement skills. Physical literacy will increase the likelihood for infants and young children to learn early motor-skills that in turn form the foundation for later sport, dance and exercise activities.

Children should be provided with opportunities to develop the psychomotor (fundamental movement skills, i.e. jumping, running, hopping, and balance) and psycho-behavioural factors (loosely described as the individual's character). These are proposed as precursors to successful development in sport, and prior to any selection into, or elimination from, TID programmes.

The management of young athletes must be holistic rather than simply providing skill-based coaching.

Why it should be done

Active movement ensures a child engages in quality physical movement experiences that develop and enhance spiritual, emotional, social, cognitive and physiological growth. A child learns through their active movement when learning movement skills. Practice, and repeating the movement many times, strengthens and increases all abilities in movement and learning.

As young children move into more conscious control of their movement, they can develop their fundamental movement skills. These are the foundation skills leading to more

complex skills used later in play, games, sports, dance, gymnastics, outdoor education and physical recreation.

This is probably the most crucial stage in the development of any future elite-level athlete as the young athlete can develop a large well-organised set of movements that can be transferred from one sport to another.

The frequency of physical activity of Olympians suggests that school-based physical education programmes were an integral part of their development providing general fitness and skill development. Further, the provision of after-school activity encourages those with an interest to develop their skills and abilities further.

How will it be delivered?

The identification and development of talented sports people relies on providing a high quality physical education programme for all children in primary schools. This has implications for teacher training programmes as the number of hours allocated to physical education training is minimal. There are, however, many resources and training opportunities for primary school teachers to assist in the delivery of physical education.

A willing education system and a refocus on the importance of physical education will be integral in achieving this goal. The current *Primary Physical Activity* project is developing initiatives for teacher capability, improving physical activity opportunities and improving productive collaboration between schools, its community and sport opportunities.

Opportunities to apply athletic skills in a different range of sporting activities will be made available. These will include providing opportunities for young people to participate in structured sporting formats, i.e. applying learned skills, developing new ones; effectively a multi-skilled approach as a basis of athletic development.

SPARC will take a leadership role in promoting relationships between NSOs/RSTs and schools to ensure a coordinated approach to athlete development.

The focus of activities at primary school level is opportunity and enjoyment. To establish a long-term pattern of involvement in sport and develop a good foundation of learning and skills potential elite young performers require:

- Fun, excitement and success through organised play and games.
- Opportunities to play, explore and experiment in movement situations.
- Strong parental interest and encouragement.
- Opportunities to experience a range of sports and activities.
- High quality coaching and teaching.
- Opportunities to develop fundamental skills.

Strategies

An alliance between SPARC, the Ministry of Education and other appropriate agencies (PENZ, RSTs) must ensure that the positive outcomes from the current pilot programme involving Physical Activity Coordinators in primary schools in relation to physical literacy are implemented NZ wide.

Review research into current levels of physical literacy in primary schools and use this research to shape intervention strategies where needed.

Influence policy to ensure the quality of PE in primary schools is not compromised through lack of timetable allocation, teacher training, additional professional development.

Finalise and promote fundamental skills including running, throwing, jumping, hopping and bounding, agility, balance, coordination, speed, kinaesthetic awareness, gliding, buoyancy and striking.

Raise awareness of all stakeholders of talent development initiatives within the education sector – in particular the current Talented Gifted Programme and how it relates to talented sporting athletes.

GOAL 2 – IDENTIFYING POTENTIAL TALENT

What is the issue?

New Zealand's talent prediction systems are largely ineffective. The challenge is not assessing *current* attributes but determining the future *potential* of attributes. Barriers including a lack of understanding of the complexity of the task, poor coaching, poor use of scarce support services, high drop-out rates, competing interests and values, minimal investment and no agreed criteria that defines talent potential are preventing talented athletes from realising their future promise.

What are we looking to achieve?

To better understand what talent consists of, by developing an effective approach to talent prediction, we will define those characteristics that indicate an individual has the potential to develop and become a successful senior athlete in a sport.

What should we do?

A pro-active talent identification strategy should be implemented *within*, and as a servant of, a talent development programme.

Talent identification must take a multi-disciplinary approach, assigning a significant role to performance determinants. This will include taking the dynamic aspects of sport performance into account, i.e. recognising that some performance determinants change with age and can improve through training and development.

The TID Taskforce has reviewed international studies into athletic performance and talent prediction in the compilation of this report. Predictive criteria are attached to this report as Appendix 2 – *Predictive Criteria for Identifying Talent*. Further, evidence-based research has also identified common performance attributes that elite athletes share. These are itemised in Appendix 3 – *Common Attributes of Elite Athletes*.

TID initiatives should aim to identify predictable performance attributes, rather than existing attributes, to cater for the anticipated demands of the sport. These should be monitored over an extended period of time to ensure that the 'critical factors', essential for sporting success, are developing at a satisfactory rate.

Why it should be done

A promising athlete must have superior motivation and psychological attitude, opportunities to develop and compete, a suitable body type, physical ability, excellent coaching, access to state-of-the-art equipment and a wide range of other variables to have any chance of succeeding on the international stage. Superior attributes, however, not only identify bodily characteristics, physiological capabilities and motivational characteristics *but also cover an athlete's social background, personality characteristics*

and career development. New Zealand does not currently employ this holistic approach when attempting to predict talent.

Identification is a long-term process within the context of talent development, as opposed to one-off assessments that lead an athlete into a particular development path, which may or may not be appropriate for the athlete.

How will it be delivered?

An holistic approach to identification would employ coaches' subjective ratings to complement quantitative analyses of athlete characteristics. This would promote the discovery of new talent while effectively redirecting athletes into other sports where they're better placed for success.

The role of physical education (PE) teachers in the area of talent scouting would be advantageous and needs further consideration. If physical educators are expected to partially fulfil this role, then teachers' preparation programmes need to cover concepts of talent identification and early developmental issues.

Strategies

A Talent Identification Summit for NSO coaches and drivers of high performance programmes to be convened. The Summit will aim to educate TID best-practice principles, explore the concept of generic predictive talent indicators, and evaluating pathways for developing talented and motivated athletes.
Discussions held with tertiary providers to ensure concepts of talent identification are incorporated into PE programmes.
Develop, understand and promote talent prediction systems with 10 selected NSOs.
Initiate the opportunity of including talent "scouting" in the responsibilities of the SPARC Coachforce initiative.
In financial collaboration with tertiary institutions, continue research into the concept of talent potential, including the opportunities through genetic profiling.

GOAL 3 – CREATING EFFECTIVE TALENT DEVELOPMENT SYSTEMS

What are the issues?

Currently, our talent development systems are more focused on the short-term success of teams and squads than the long-term development of individual athletes. There are also major differences in support levels provided to elite athletes versus those at sub-elite levels. SPARC, sponsor and NSO funding and support is more often directed towards elite endeavours with sub-elite support gained through other sources (family contributions feature significantly). This approach is considered short-term in outlook with sustainable long-term success unlikely.

There is little point stressing an identification approach if talent development opportunities aren't available. It's essential that coaches have the ability to develop evident talent.

There is currently a lack of recognition of the importance of coaches and the abilities required to coach. Further, coach education in New Zealand is largely coach development with too much focus on looking inward at the coach, rather than outward at the athlete(s). Coach education programmes need to redress this imbalance.

Encouragement for people to coach in New Zealand is typified by a 'twisted arm' approach, i.e. if you don't coach a team then your children won't be able to play sport. All the goodwill in the world will not compensate talent development expertise (or lack thereof).

What are we looking to achieve?

The development of talent should aim to establish a system that enables the long-term development of individual athletes rather than the short-term success of teams and squads. An effective system would also address drop-off rates in participation and the inability for New Zealand athletes to be consistently competitive internationally.

Multi-dimensional talent development will provide a solid foundation of strong fundamental skills. This will in turn provide athletes with flexible and adaptable skills ideal for competition and a base on which more complex skills can be learnt quickly and efficiently over time. Physical activity levels will be raised, by equipping young people with a wide range of competencies.

Successful athletic development appreciates that children are not miniature adults and caters for individual differences in pace and degree of development.¹¹

What should we do?

The New Zealand TID strategy needs to cater for the changing circumstances of today's athletes due to competing activities.

¹¹ Bayli 2000

Development programmes that include satisfaction, enjoyment and celebration of success in sport should be promoted as they provide a springboard for athletes to continue their development upward.

Emphasis should be placed on the capacity of an individual to develop as opposed to testing performance levels. Children should be provided with opportunities to develop fundamental motor-skills *and* psycho-behavioural factors that are precursors to successful development in sport, prior to any selection into and elimination from TID programmes. The critical aspects of this stage are:

- Fun and enjoyment remaining central.
- Positive experiences with a coach or teacher.
- Encouragement from parents and/or older siblings.
- The emphasis on sport-specific skill development.

An effective and systematic talent development system promulgates that young athletes should be provided with a wide variety of activities. This approach has been tested and sees emphasis placed on developing basic skills, paying little attention to skill intricacies.¹² It provides as much activity that leads to successful outcomes, avoiding the implementation of adult rules and sport dynamics. Emphasis is placed on providing appropriate activities for participants' social, intellectual, and developmental stages.

In order for potentially talented athletes to acquire the physical training and motor skills necessary to succeed in sport, NSO coaching programmes should promote the benefits of multilateral development (participation in a variety of sports) during the early stages of athletic development.

Endorsement of the New Zealand Coaching Strategy, with its "athletes' needs" focus is critical. This aligns the development of coaches with the development of athletes and acknowledges that children are not elite athletes.

Acknowledgment is needed by all stakeholders that the quality of experience with coaches is a major determinant in an athlete's ongoing participation in sport.

An emphasis on skill development, motivation and enthusiasm rather than winning competitions is an absolute priority at junior levels. Put another way, coaching to win doesn't necessarily equate to coaching to improve an athlete's performance in their sport.

Recognition of coaches must start at a development level and the development of master coaches at different levels is also recommended.

Investment from SPARC, sponsors, funding agencies/trusts to NSOs should embrace:

- Athlete development at the sub-elite level.

¹² Scott 1962

- Recruitment & retention of staff at the sub-elite level.
- International competition and camps at the sub-elite level.
- Sports science and sports medicine through all levels.
- Planning, guidance and technical advice.
- Access to equipment to promote deliberate practice.

This will ensure a consistent and best-practice approach throughout the entire athlete development pathway.

SPARC's investment approach (money and services) should be continued to help facilitate changes in NSO expectations.

Why it should be done

From a developmental viewpoint, current motor-skills development theory and training methodologies conclude that it's beneficial for children to undertake more than one physical activity at an early age.¹³ By learning a variety of fundamental motor-skills, e.g. stability, locomotion and manipulation - under varying conditions - young athletes can develop a large, well-organised set of movements that can be transferred across sports.

For the same reason, overseas development models support equipping young people with the appropriate psycho-behavioural characteristics of excellence, while providing the fundamental motor-skills required for participation in a wide range of supporting activities at an early age.

How will it be delivered?

An incubator approach, via a partnership between SPARC selected NSOs through *Joint Management Committees* in the short-term, will give potentially talented athletes every opportunity to develop their sport-specific skills in sports that do not have such capacity. This would be piloted over four years, and reviewed annually.

Participation in competitions is still needed but the development of fundamental fitness, technical and tactical or perceptual motor skills should be given priority in NSOs' annual training plans and competition schedules. The programme should focus on long-term development.

¹³ Lidor and Lavyan 2002

Strategies

Active partnerships between SPARC and selected NSOs are created involving the establishment of incubator programmes working at the sub-elite level of selected NSOs.

Establishment, funding and support of athlete development programmes targeting pre-elite levels with selected NSOs (priority sports given priority), including identification methods.

Establishment of like sport networks (eg: rowing, basketball, netball; in-line skating, ice speed skating, cycling; BMX, road, track, mountain bike) to help facilitate the transfer of talented athletes from one sport or discipline to another.

GOAL 4 – INCREASED COLLABORATION WITH SECONDARY SCHOOLS

What are the issues?

An athlete's inability to balance commitment levels with schoolwork can be highly disruptive to both their academic work and social lives; it requires planning and coordination. With most internationally successful TID programmes linked to the education system, talented young sports people are best served by schools that provide flexibility and a creative approach to delivering the national curriculum.

There appears to be little linkage between sports offered at schools and the relevant NSOs themselves. In essence most schools are operating in isolation and arguably contradicting rather than complementing the work done at RSO and NSO levels.

What are we looking to achieve?

Potentially talented athletes are more likely to meet their sporting goals when there is flexibility in the implementation of the national curriculum.

The interests of talented athletes are best served when schools, NSOs and RSOs collaborate and work in ways that are complementary.

School involvement in the identification of talent also ensures people with at least some professional expertise, predominantly through physical education, are involved from a scouting perspective.

What should we do?

Secondary schools are key partners in the support system required by talented young athletes to maximise their sporting and academic potential. It's vital that schools work with the parents of the pupil and their coach (or coaches) to ensure these demands are balanced by an appropriate educational curriculum. This 'team' approach provides the best possible support, through coordinated, agreed action planning for individual pupils who are talented in sport.

Students who are able to identify with local sport role models reinforce individual motivation to excel. SPARC's "Sport Ambassadors Programme" should incorporate such an initiative.

To ensure an effective TID system, NSOs and schools need to forge communication links to work in the best interests of potentially talented athletes.

Many schools conduct sport academies. NSOs should develop partnerships with schools to enhance the quality of their sport academies programmes.

The role of physical education staff would be enhanced to include scouting for potentially talented athletes and communicating back to NSOs.

Why it should be done

A quality physical education programme in schools is the best foundation for the initial stages of talent development for young athletes. Most successful TID systems are tied to the education system. Linking identification and development to the schooling system allows for a wide participation of all socio-economic groups and aids development of a wide range of motor-skills.¹⁴

Most secondary schools will have pupils who have been identified by sports coaches as "talented" and who are probably competing at a regional or even national level. Other pupils may have been "identified" by professional sports clubs. It's likely that these pupils will be subject to demanding training and competitive programmes.

Physical education teachers will also identify pupils in curriculum time who have exceptional talent but who have not been picked up by any external agency. It is essential that communication links with NSOs and RSOs are established to ensure that these talented athletes do not fall through the gaps.

How will it be delivered?

- Effective communication between all key stakeholders – schools (through School Sport coordinators), NSOs, RSOs and clubs – will enable information-sharing about talented athletes.
- Secondary schools should work to establish links with RSOs using their Sport Coordinators and the local RST to provide appropriate quality coaching for athletes.
- Schools should seek endorsement/sanction from NSOs for school-based sport academies to ensure quality control and NSO support.
- Secondary schools should establish support strategies to enable talented young athletes to maximise both their sporting and academic potential.

Strategies

Establish communication system and protocols in conjunction with Ministry of Education, NSOs and School Sport coordinators.

Establish guidelines in conjunction with Ministry of Education to assist talented athletes balance their sporting and academic endeavours.
--

¹⁴ Burgess, Internet

Explore the opportunity of including talent “scouting” in the responsibilities of school Sport Coordinators.

CODE OF ETHICS

Concerns about talent identification commonly focus on: how a selection programme is used; how the sport system treats young athletes once they’re identified as talented; the pressure created by setting unrealistic expectations on athletes; doubts about the acceptance of mechanisms that would determine which sport an athlete should play; and whether talent identification initiatives violate individual freedom of choice.¹⁵

The Taskforce concluded that providing there is no element of *compulsion*, this latter concern should not be an issue.¹⁶ Having a strategy to identify talent is not inherently or ethically wrong. Identification initiatives may in fact increase personal satisfaction levels and the range of choices and opportunities open to young people to participate in the sporting arena.

The Taskforce developed a Code of Ethics with a view to observing international best practice, and recommends that the Code underpin the New Zealand TID strategy. This code is as follows:

Athletes’ welfare is paramount and must take precedence over the self-interest of other persons or organisation. A New Zealand TID environment would provide:

- *Athletes with maximum information to enable them to make informed choices regarding their participation and involvement in talent identification and development programmes;*
- *Athletes who are encouraged by parental consultation and an environment which encourages parental involvement;*
- *Athletes with choices and opportunity to participate without being unduly coerced;*
- *Athletes with realistic expectations;*
- *A holistic approach to development;*
- *Young people who will excel in the spirit of collegial friendship, unity and fair play.*

Underpinning this Code is the belief that talent belongs to an individual, not an organisation, coach or any other interested party.

¹⁵ Mailin 1997

¹⁶ Hahn and Gross 1990

WHAT WILL SUCCESS LOOK LIKE

Our **12 YEAR** long-term goal is to see more New Zealand athletes enjoying international sporting success. In the short to medium term, the strategy will be successful if a better understanding of indicators of podium performance is embraced by athletes, officials, administrators, families and supporters alike. Assuming a relative increase in SPARC investment is directed to athlete development, key indicators of success include:

- Possessing a mastery of movement skills along with adequate and increased parental involvement, interest and family support to lay the foundations for achieving this.
- The provision of quality coaching to all.
- An increasing personal emphasis on intrinsic factors such as personal motivation, drive, and celebrating the joy of sport.
- Having a highly physically active nation.
- Seeing more Kiwi kids active in more sports more often with higher subsequent levels of specialisation towards the elite level.
- Greater access to opportunities.
- More Kiwi kids growing up in families that value the importance of basic motor-skills as a basis for athlete development.
- Greater acknowledgment of local role models.
- An alignment of genetics / anthropometric and physical attributes to like sports.
- Athletes in a position to devote more time to deliberate practice.

HOW WILL THIS HAPPEN?

To implement the TID strategy, pragmatism would suggest that the Academy's Performance Directors (PDs) broaden their professional scope beyond elite levels to include responsibility across all levels within an NSO's athlete development pathway. There would be some professional development/up-skilling with the PDs to ensure that an all-encompassing approach, based on world best-practice developmental theories, is to ensure that identification strategies overlay an effective developmental pathway.

The establishment of a Senior Advisor – Athlete Development role within the Academy would ensure the strategy's implementation is managed amongst the key stake-holders (education, schools etc) and that it adheres to those findings and recommendations of the TID Taskforce endorsed by SPARC's Board.

However, it is acknowledged that the final operation components for the implementation of this strategy will be determined by the High Performance Unit.

APPENDIX 1 - KEY DEFINITIONS

Talent – a dynamic, multi-dimensional aptitude. Through its very nature and the environment with which it interacts, talent is difficult to identify, let alone predict.

Talent Detection – the identification of potential elite performers not currently involved in the sport in question.

Talent Identification – an on-going process of recognising at various stages current sports participants who demonstrate the potential to become elite performers through the demonstration of prerequisite levels of performance.

Talent Development (i.e. a high performance programme) – providing athletes with suitable learning environments (coaching, training, competition programmes, facilities, equipment, sport science/medicine support) so that talent can be realised.

APPENDIX 2 - PREDICTIVE CRITERIA FOR IDENTIFYING TALENT

In the course of its review the Taskforce identified the following criteria currently used in leading talent prediction programmes.

Criteria	Substantiation
Attitude	An athlete's attitude determines whether they can cope with long-term, monotonous training required to succeed. Emotional stability combined with low anxiety levels enables an athlete to tolerate a high level of training. Low levels of neuroticism are also important, allowing the athlete to tolerate frustration and avoid overtraining. Studies have also found that children with low fearfulness are about three times as likely to be sporting representatives than those with high fearfulness, and those with mid-to-low fearfulness almost twice as likely. ¹⁷
Basic motor skills	Flexibility and strength are cornerstones of all athletic development. These fundamental skills include running; throwing; jumping; hopping; bounding; agility; balance; coordination; speed; kinaesthesia; gliding; buoyancy and striking. The mastery of all of these skills during initial stages will lay the foundation of athletic excellence for later years. ¹⁸
Coaching	The importance of coaching for skill-acquisition is a crucial element in the development of innate talent and motivation.
Deliberate practice	Hard, prolonged and purposeful training.
Education-linked programmes	Most successful TID systems are variously tied to an education system. Linking identification and development to the education system allows for the wide participation of all socio-economic groups

¹⁷ Behavioural Research Theory 2002

¹⁸ Balyi and Hamilton 1995; Rushall 1998; Viru et al. 1998

	and aids development of a wide range of motor skills. ¹⁹ School involvement in the identification of talent also ensures people with at least some professional expertise, predominantly through physical education, are involved from a scouting perspective.
Environment	By talking to people who know the athlete, a coach is better able to determine how an athlete will respond to the demands of training and competition.
Financial support	Additional funding should be effectively allocated at the sub-elite level to support talented and motivated athletes.
Foreign athletes	Involves the relocation of athletes from other countries to continue their sporting careers. Their presence enhances the sporting system through performance in those events while creating a stimulus to athletes who benefit from the competition they create.
Genetic profiling	Although in its infancy, profiling aims to detect individuals with a suitable genetic make-up for a particular sport. Genetic profiling is expected to become a mainstream method of identifying potential athletes in the future.
Genetic research	If a genetic profile has a useful predictive function, then it could be used to positively discriminate - that is, knowing a genetic make-up could help an athlete make an informed choice about which discipline to focus on, and which discipline to avoid.

¹⁹ Burgess, Internet

Health status	A thorough medical examination is performed, trying to determine physical or organic malfunction, or limit future training or participation, before being accepted into a programme. The eventual discrimination between candidates has to correlate with the physiological needs and specifics of a sport. Privacy issues may limit the extent of such an approach.
Heredity	Children tend to inherit their parents' biological and psychological characteristics although education, training and social conditioning may slightly alter inherited qualities. Talking to parents will give a good idea where the young athlete is, relative to their development from an early/late blooming perspective. An athlete's genetic potential will ultimately limit their improvement in physiological capacities through training.
Maturity status	Coaches have observed that early maturers have an advantage in junior sport, but often neglect their skill development. Less mature players are forced to develop their skills to perform well. The latter group, when fully mature, may have definite advantages over early developers because their physical capacity level is just as high but their skills are better.
Media call-ups	Talent scouts have found that advertising is an effective way to recruit talent.
Miscellaneous skills	Other factors such as intelligence, which is essential for fast information-processing, sensory motor ability, decision-making and social skills (particularly in team sports) are also important.
Nutritional status	An athlete with a nutritional compromise tends to have a late anthropometric, metabolic and sexual development. ²⁰

²⁰ Matsudo 1996

Older athletes	While the current talent search programme is aimed at high school and upper primary students, initiatives could target university-aged students for events where peak performance at a later age is the norm, e.g. all endurance sports, field events, rowing, kayaking or long-distance running.
Parental support	Parental encouragement, the provision of opportunities, expectations, motivation and financial support highlights the critical importance of parents. Parental support has been linked to higher levels of activity among children and adolescents. Parental involvement may be particularly relevant for girls because parental activity and encouragement have been shown to influence activity patterns of girls to a greater extent than boys. ²¹ Almost universally, a champion's upbringing was stable, secure, happy and predictable. ²² Even though there was no excess of material goods, each champion was provided with support, physically and emotionally, usually through parents or by a strongly supportive surrogate parent. Parents who have a personal interest in their children's activities will strongly support them as the children develop basic skills.
Physical descriptors	It's important to determine how maturity will affect height, body mass (weight) and body composition.
Physical literacy	To move with poise, economy and confidence in a wide variety of physically challenging situations. Furthermore, the individual is perceptive in 'reading' all aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these, with intelligence and imagination. ²³

²¹ Davison et al 2003

²² Hemery 1986

²³ Whitehead, 2001

Psycho-behavioural	Loosely described as the individual's character.
Sibling profiling	Testing of the siblings of successful athletes for a similar genetic make-up.
Significant others	The support of significant others - coaches and parents - make their biggest impact upon athletes early in the development process. Limited research has indicated peer relationships are relevant to continual involvement in, and commitment to, their talent.
Talent recycling	Multi-talented athletes with a history of extensive training and competition background in one sport may have common attributes that can be applied to another sport.
Testing	Regular monitoring of physical performance test scores will determine growth spurts and their effect on performance, and how the athlete compares to their peers.
Tracking	Through experience, the longer a coach observes an athlete's progress, the better they can make an educated guess in determining the athlete's potential.

APPENDIX 3 - COMMON ATTRIBUTES OF ELITE ATHLETES

Elite athletes

Research has identified the following attributes common to most elite athletes:

- Very active as children, doing around 25 hours of play and activity per week.
- Active in more sports than those who didn't make it or next best, had specialised later and had a relatively slow career development.
- Motivated by intrinsic motives such as the joy of sport, the training and gradual improvement versus extrinsic motives such as winning and self-esteem.
- Enjoyed immense support from their family and had little pressure from them to succeed.
- Grew up in families with other siblings.
- Were more independent of friends.
- Were more interested in local than offshore heroes as role models.
- Were independent and creative.

Olympic champions

Research into Olympic success has identified the following key success factors as being common to most successful Olympians:

- Dedication and persistence.
- Support of family and friends and coaches.
- Love of the sport, training programmes and facilities, natural talent, competitiveness and financial support.²⁴

Negative factors

Research into factors *inhibiting* performance has highlighted the following:

- Having a father that demanded success (more than half of athletes who didn't make it had a father that demanded success).
- Lack of financial support.
- Conflict with roles in life.
- Lack of coaching expertise or support.
- Lack of support from NSOs or funding agencies.
- Mental obstacles.
- Lack of training and competition opportunities.
- Medical problems.
- Lack of social support.
- Physical limitations and failure.

²⁴ USOC 2002

Research into contextual factors affecting performance highlighted:

- The influence of *significant others*, e.g. parents, coaches, team-mates, friends, support staff, other athletes, school/education.
- Access to adequate equipment, facilities and funds.

Research into personal characteristics affecting performance highlighted:

- Confidence, independence, competitiveness, motivation, ability to innovate and mental toughness.

Research into training issues affecting performance highlighted:

- Technical, tactical, physical and mental components as well as the quantity, quality, intensity and recovery.

Research into competition factors affecting performance highlighted:

- Meticulous planning, dealing with pressure, expectations and adversity and focusing on the process rather than the outcome of events. (This finding supports the work of Gould who identified personality and motivational factors such as high motivation, optimism and passion for what one is doing as having the major influence on achieving peak performance.)²⁵
- Elite athletes emphasised psychological characteristics such as consistency, effort, having fun, and will to win compared with less-skilled performers. Elite athletes also devoted more time to practice and competition in the early phases of their career than near-elite athletes gaining the advantage of practical experience at an early age.

²⁵ Gould, D and Dieffenbach, K, (2002), Psychological characteristics and their Development in Olympic Champions – Daniel Gould and Kristen Dieffenbach, *Journal of Applied Sport Psychology*.