



*SPORTS SCIENCE PROVISION
IN
HIGH PERFORMANCE SPORT: A REVIEW*

EXECUTIVE REPORT TO SPORTS COUNCIL NORTHERN IRELAND

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SECTION ONE

1.1 EXECUTIVE SUMMARY

The Sports Council of Northern Ireland (SCNI) accepted a tender from the University of Ulster to undertake a review of the provision of sports science for high performance sport in Northern Ireland. The objectives set for the review placed an emphasis upon evaluation of the sports Science structures supporting sport in Northern Ireland, recording the views of sports persons on the quality of existing services in Northern Ireland and the identification of weaknesses that should be addressed by SCNI.

The review was carried out through March 2004 and the report presented to the Sports Council Northern Ireland on 31 March 2004. The review team interviewed 50 individuals representing the views of governing bodies, athletes, sport science service providers and administrators. The interview results formed the basis of the report.

The findings of the review are significant as they represent a cohesive set of viewpoints held by the respondents in the interviews. The major findings may be summarised as:

- i. The present structures of sports science delivery are unsatisfactory
- ii. There are too few accredited sports scientists
- iii. The sports scientists in Northern Ireland are people of excellent quality but numbers are too small, particularly in sport psychology, nutrition and strength and conditioning
- iv. Coach education in sport science is essential and presently lacking
- v. The provision of sport science in Northern Ireland should draw upon best practice, particularly in the United Kingdom, but must develop a system that is particular to Northern Ireland.
- vi. The service needs greater integration and cohesion

- vii. There is a arrange of perceptions on what constitutes sports science
- viii. Sports desired sports science specific to their sport's needs
- ix. The provision of sports science should extend below the high performance / elite level for sports persons

The report concludes by proposing a set of conclusions and recommendations for the provision of sports sciences in Northern Ireland. Central to these is the need for the Sports Council for Northern Ireland to initiate a working party to draw upon this review and set a vision, draw up goals, develop a structure for delivery and appoint an appropriate person to assume responsibility for a delivery framework that meets the needs of Northern Ireland sport as outlined in this report.

1.2 INTRODUCTION

The Strategy for the *Development of Sport in Northern Ireland* identifies '*Striving for Excellence*', as one of three strategic aims. The Sports Council for Northern Ireland works towards this through three stated objectives:

- 1) To establish an organisation focused on the development of excellence (through the Sports Institute for Northern Ireland);
- 2) To identify talented performers and offer them the support they need, and
- 3) To raise the standard of coaching for high-level performers.

A range of sports science services are currently provided in Northern Ireland including psychology, nutrition, strength and conditioning, physiology, performance analysis and biomechanics (We define sport science as a discipline that encompasses all of the above areas). Such provision has enabled athletes to meet the demands of performance sport. The challenge now, as outlined by Sports Council Northern Ireland, is to integrate these services into a high quality holistic athlete support programme and to establish strong links amongst the various Sport Science Service Providers.

With the establishment of the Sports Institute for Northern Ireland (SINI) and the UK Sports Institute network, much is being learnt, through experience and evaluation, about the provision of sports science services in the UK and Ireland. As many athletes in Northern Ireland are preparing for the 2006 Commonwealth Games in Melbourne, a review of the current provision of Sports Science Services in Northern Ireland is timely.

1.3 BACKGROUND TO THE REPORT

The increased focus upon sports science and its support of athletes at the high performance or elite level, over the past three decades, has generated critical consideration of the efficacy of sports science, the roles of sports scientists, provision of sports science support, and structures and processes for administering the provision of sports science services. Concomitant with such developments have been questions of service provider quality, access to services, budget demands and the development of processes to maximise services. Underpinning all of these is the need for vision, goals, structure, service implementation and evaluation.

The Sports Council Northern Ireland, cognisant of the need to initially review the provision of sports science in Northern Ireland, accepted a tender from the University of Ulster to carry out such a review.

The research project team brought an integration of relevant skills and experience to the review (See Appendix 1). The contemporary world of sport draws upon skills and expertise in sports science, services provision, high performance sport, coaching and the context of major events or competitions in which the elite athlete competes. The members of the research team have such backgrounds in national research for major sports governing bodies and research for a major international sports event.

The terms of reference for the research and an agreed timeframe resulted in this research report.

The research team, with assistance from officers of the Sports Council Northern Ireland, listed major providers of sports science in Northern Ireland and persons involved with sports sciences as administrators, athletes or consultants. Interviews were carried out of such key persons (See Appendix 2) and the results formed the basis of the present report.

1.4 OBJECTIVES OF THE REVIEW

This review has six main objectives as outlined by the Sports Council Northern Ireland. These are;

1. To record the number and qualifications of sport science service providers in Northern Ireland.
2. To record the number and extent of sport science services provided to governing bodies and athletes funded through the Sports Council's funding programmes.
3. To evaluate the structures supporting sport science services in Northern Ireland.
4. To record the views of governing bodies, athletes and providers regarding the quality of Sport Science Services in Northern Ireland.
5. To compare and contrast the current provision of Sport Science Services in Northern Ireland with international best practice.
6. To identify ways in which any identified gaps or weaknesses in the provision of Sport Science Services can be addressed and offer appropriate solutions.

The above objectives are addressed in section three of this report.

Overall, the review had the major objective of determining the perceived effectiveness of sports science services in Northern Ireland and identifying ways in which such services can be developed in the interests of Northern Ireland sport.

SECTION TWO

2.1 LITERATURE REVIEW

The research team carried out a review of literature on the provision of sports science services in high performance sport. The results of this review are included as Appendix 3. It is relevant to note that the literature indicates that successful sporting nations place significant value on sports science in high performance sport.

2.2 METHODOLOGY

Given the need to obtain participant perspectives, to optimise opportunities for drawing out participant views and the relatively limited number of sports science providers in Northern Ireland, it was agreed that semi – structured interviews were the most appropriate method of data gathering. Semi-structured (semi-formal) interviews provide a core of common questions but allow the interviewer to seek additional information such as asking further questions, seeking clarification of initial replies and asking for examples to illustrate responses.

Questionnaires, formal and informal interviews were considered, but would not have allowed the researchers to seek explanations, examples or clarity in response to the participants' answers.

The interview questions were framed to elicit data in accordance with the research objectives and, particularly, to draw out perspectives on the present situation of sports science provision in Northern Ireland and how this could be developed further, if that was seen as necessary by the interview participants (See Appendix 4 for interview questions).

After a pilot study of the interview questions with a small group of sports persons, the interview programme was implemented by the two experienced sports scientists in the research team. This enabled follow-up questions of a technical nature to be asked and questions presented requiring first-hand knowledge of the sports science context.

The interviews were conducted, face to face, apart from a small number of telephone interviews, which were done to comply with the timeframe of the project. It was decided that it was profitable for the research team to engage in the telephone interviews (and three by email) rather than adopting the alternative of omitting such interviews because of the limited timeframe for field research.

The responses of the 50 interviews were collated and form the basis of the following major section of the report.

SECTION THREE - OBJECTIVES**OBJECTIVE 1:** TO RECORD THE NUMBER AND QUALIFICATIONS OF SPORT SCIENCE SERVICE PROVIDERS IN NORTHERN IRELAND

The Table below provides a profile of sports science practitioners in Northern Ireland, highlighting their disciplines, qualifications, working hours and sports with whom they primarily work.

<i>Discipline</i>	<i>Provider 1</i>	<i>Provider 2</i>	<i>Provider 3</i>	<i>Provider 4</i>	<i>Provider 5</i>
Physiology <i>(Total number of practitioners = 5)</i>	<i>Qualifications</i> BSc Sports Science MSc Exercise Physiology BASES accreditation pending (Full-Time) <i>Main sports serviced</i> SINI core sports Cycling Triathlon Judo Motor sports Golf Squash Tennis	<i>Qualifications</i> BSc Physiology PhD Exercise Physiology (Full-Time) <i>Main sports serviced</i>	<i>Qualifications</i> BSc Physiology MMedSci NSCA Strength and Conditioning BASES accreditation (Full-Time) <i>Main sports serviced</i> A range of sports, not known at this time	<i>Qualifications</i> BSc Sports Science MSc Sports Science (Part-Time) <i>Main sports serviced</i> Cycling	<i>Qualifications</i> BSc Sports Science (Part-Time) <i>Main sports serviced</i> GAA
Biomechanics <i>(Total number of practitioners = 1)</i>	<i>Qualifications</i> BEd PE MSc Ergonomics PhD Biomechanics (Part-Time) <i>Main sports serviced</i> Golf Cricket				

<p>Psychology</p> <p><i>(Total number of practitioners = 3)</i></p>	<p><i>Qualifications</i></p> <p>BSc Psychology MSc Psychology PhD Psychology BUPA consultant</p> <p>(Part-Time)</p> <p><i>Main sports serviced</i></p> <p>Athletics Motorcycle racing Soccer</p>	<p><i>Qualifications</i></p> <p>BSc Psychology PhD Psychology AFPBS CPsychol</p> <p>(Part-Time)</p> <p><i>Main sports serviced</i></p> <p>Rugby Cricket Bowls Netball Hockey GAA Swimming</p>	<p><i>Qualifications</i></p> <p>BSc Sports Science PhD Sports Psychology BASES accreditation</p> <p>(Part-Time)</p> <p><i>Main sports serviced</i></p> <p>GAA Blind water skiing Athletics Gymnastics</p>		
<p>Performance analysis</p> <p><i>(Total number of practitioners = 1)</i></p>	<p><i>Qualifications</i></p> <p>PGCE MSc Sport and Exercise</p> <p>(Full-Time)</p> <p><i>Main sports serviced</i></p> <p>SINI core sports</p>				

<p>Strength and Conditioning</p> <p><i>(Total number of practitioners = 4)</i></p>	<p><i>Qualifications</i></p> <p>BSc Sport and Exercise Science NSCA CSS Level 1 Strength and Conditioning</p> <p>(Full-Time)</p> <p><i>Main sports serviced</i></p> <p>SINI core sports Volleyball</p>	<p><i>Qualifications</i></p> <p>BSc Sport Science Assoc Dip Health Sci Level 2 Strength and Conditioning Level 1 Weight Lifting</p> <p>(Full-Time)</p> <p><i>Main sports serviced</i></p> <p>SINI core sports Squash Boxing</p>	<p><i>Qualifications</i></p> <p>BSc Sports Studies Level 1 Strength and Conditioning</p> <p>(Full-Time)</p> <p><i>Main sports serviced</i></p> <p>Rugby</p>	<p><i>Qualifications</i></p> <p>BSc Sports Studies CSCS</p> <p>(Full-Time)</p> <p><i>Main sports serviced</i></p> <p>Rugby</p>	
<p>Nutrition</p> <p><i>(Total number of practitioners = 2)</i></p>	<p><i>Qualifications</i></p> <p>BSc Science MSc Sports Nutrition Dip Nutrition State Reg Dietician Accredited Sports Dietician</p> <p>(Part-Time)</p> <p><i>Main sports serviced</i></p> <p>University Scholars Athletics Boxing Ulster Council GAA SINI core sport (GAA)</p>	<p><i>Qualifications</i></p> <p>MSc Human Nutrition Dip Diet Nutrition Accredited Sports Dietician</p> <p>(Part-Time)</p> <p><i>Main sports serviced</i></p> <p>SINI core sports (Athletics, Hockey and Rugby)</p>			

In addition to the individuals above there is one inactive BASES accredited Sports Psychologist in NI and 5 nutritionists who are qualified to practice sports nutrition, but who are not currently active in this area.

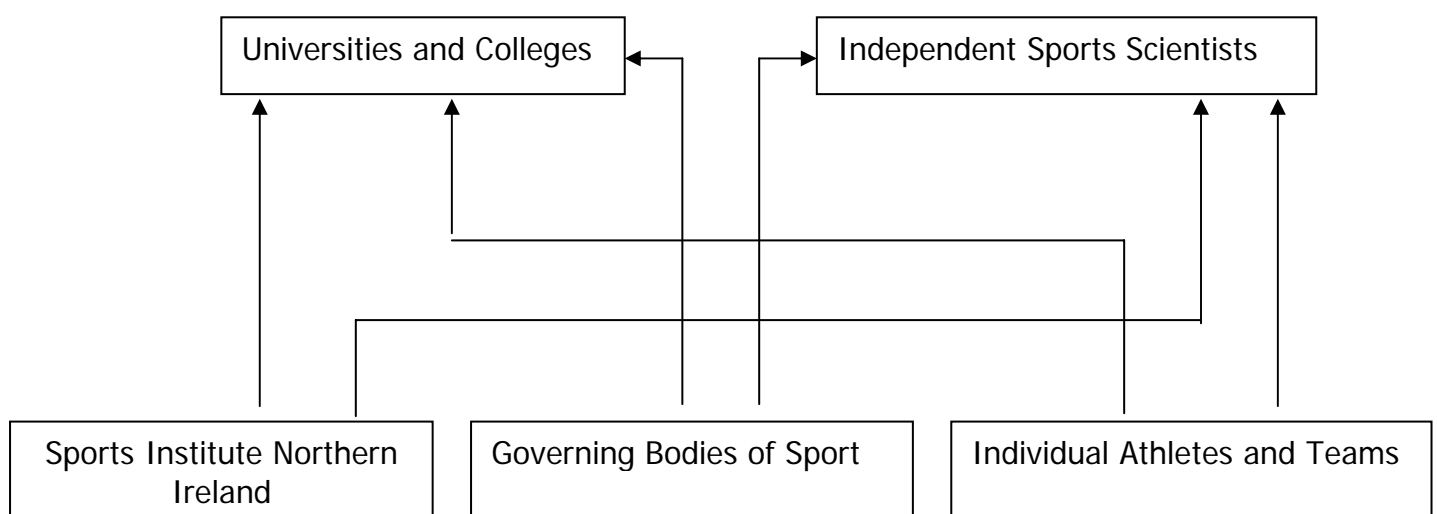
Of the providers, 12 have a university degree and a number have specific specialised qualifications e.g. nutritionists. One participant noted BASES accreditation in sport science support (sports psychology), however, four of the providers had previously been BASES accredited (all in sports physiology) but decided not to go forward for re-accreditation. There are currently three individuals' working towards full accreditation status (all in sports physiology).

However, overall it is apparent that the number of practitioners operating on a full time basis, is very low. This is particularly noticeable in the area of biomechanics and sports psychology.

OBJECTIVE 2: TO RECORD THE NUMBER AND EXTENT OF SPORT SCIENCE SERVICES PROVIDED TO GOVERNING BODIES AND ATHLETES FUNDED THROUGH THE SPORTS COUNCIL'S FUNDING PROGRAMMES.

Accessing sport science support services in Northern Ireland

Chart demonstrating how governing bodies of sport and other bodies access sport science services in Northern Ireland.



Various governing bodies of sport can access sports science services through a number of channels.

- ◆ For the four core sports of SINI (athletics, rugby, hockey and GAA) access is mainly organised through the resident sports scientist. The sports scientist liaises with the sport science co-ordinator (of the University of Ulster) to arrange the testing and monitoring of athletes and teams.
- ◆ SCNI funded and non-funded athletes and teams can access sport scientists by contacting a service provider directly.

The following Tables outline the sports currently availing of sports science support for their performers, through the University of Ulster, the Sports Institute for NI or independent service providers.

*Overview of sports science services provided to governing bodies and athletes
(1998-present).*

University of Ulster	Sports Institute NI (SINI)	Independent Service Providers
<i>Sports whose programmes are in receipt of SCNI funding.</i>		
Judo * (12 athletes) Triathlon * (6 athletes) Swimming * (16 athletes) Badminton * (21 athletes) Athletics * (4 athletes) Cycling *† (6 athletes) Bowls † (6-8 athletes) Boxing † (4-6 athletes) Shooting † (3-5 athletes)	Athletics * ¶ ‡ (13 athletes) GAA * ¶ ‡ (16 athletes) Rugby * ¶ (16 athletes) Hockey * ¶ (16 athletes) Judo * (1 athlete) Motor sports * (1 athlete) Squash * (1 athlete) Tennis * (1 athlete) Cycling * (1 athlete) Gymnastics * (1 athlete) Blind Water Skiing *‡ (1 athlete)	Boxing ¶ Ulster Council GAA ¶ Bowls ‡ Netball ‡ Swimming ‡
<i>Sports whose programmes are not in receipt of SCNI funding.</i>		
Judo * Triathlon * Badminton * Athletics * Cycling *† Gymnastics Volleyball * Netball * Cricket * Rowing * Football * Golf *		

Motor sports *‡		
Various Ulster GAA teams *‡		

Key symbol: * = Physiology; † = Physiology (acclimatisation programme for Commonwealth Games); ‡ = Psychology; ¶ = Nutrition; = Biomechanics

The usage of sports science in NI is comparable to that of the Republic of Ireland. Physiology seems to be the most popular discipline, followed by nutrition and psychology. Cycling, GAA, motor sport, swimming, athletics and rugby are the most popular sports to have used sports science to date. Netball, volleyball, tennis, gymnastics and squash are the sports that have used the service the least. It is the opinion of the review team that there is a latent demand for a greater uptake of sport science in the future. However the value of sport science services needs to be marketed in NI to increase awareness of how sports science can help athletes perform better at competition. This could be achieved by running a series of discipline-based workshops for coaches and performance managers. In addition, the SCNI needs to promote the inclusion of sport science support into preparation programmes for athletes and teams competing at the highest level.

Information and advice of sports science service providers should be readily available to athletes and coaches at all times. To that end, it is imperative that a database of sports science service providers is made known to all governing bodies of sport in Northern Ireland. An example of best practice is the BASES service providers' web database. Service providers should be graded based on BASES accreditation status and experience.

Finally, sports science programmes need to be supported for at least two years in advance of competitions as this will greatly help sports scientists to develop meaningful relationships with performance managers, coaches and athletes in order to devise worthwhile sports science programmes that have sufficient time to make a difference.

OBJECTIVE 3: TO EVALUATE THE STRUCTURES SUPPORTING SPORT SCIENCE SERVICES IN NORTHERN IRELAND

Support to sports science services in Northern Ireland

There are a number of strategic programmes within NI and the UK that support the current sports science structure. This support is received in a direct and indirect way by many organisations, such as the British Association of Sport and Exercise Science (BASES), UK Sport, SCNI and various universities (through mentoring/providing skill/practising sports science).

a) The two universities (UU and Queens) within NI offer a range of sport science services to many athletes and teams. These services are financially supported by university departments. Queens University in particular is currently planning to invest substantial funds into a complete upgrade of their sports science facilities. Both universities, through their placement programmes offer excellent opportunities for potential sports scientists to gain knowledge and experience. There are also a number of opportunities for postgraduate students to conduct research (applied and theory based) into various aspects of sports science.

Discussion Note:

Additional funding would provide physical resources that would enhance the delivery of sports science services in NI. In order for more placement opportunities to be developed, it is suggested that SCNI and SINI liase with both universities to financially support talented placement students in an area pertinent to sport science. There are also excellent opportunities for joint (between SINI/University) postgraduate research student appointments to conduct work in all aspects of sports science.

b) The Sports Council has worked in an ad hoc way with representatives from BASES over many years and has been involved in a number of aspects of work relating to sports science including the funding of athletes and governing bodies to avail of

sports science services, the production of a Sports Medicine Exercise and Science Register and administrative support to occasional BASES events. Over the past two years, the SCNI has been proactive in implementing a sports science/sports medicine working party. This initiative is tasked with implementing various policies associated with sports science.

Discussion Note:

It is the opinion of the review team that a sports science working party independent of a sports medicine group be set up to implement various policies within the area of sports science support service. It is suggested that organisations associated with sport science delivery in NI explore the possibility of securing financial support for sports scientists other than those associated with SINI. This will help all sports scientists within NI to develop not only their knowledge base but also their contact database.

c) BASES is the leading organisation representing sport and exercise scientists within NI, and it has a number of initiatives that help NI scientists become more established. (1) The organisation runs a programme that can monitor individuals progression through a period of supervised experience. The aim of this programme is to provide individuals with the necessary experience to work with teams and athletes. (2) The BASES World Class Guarantee' Accreditation Scheme (WCGAS) is specifically tailored to those individuals and laboratories that are providing sport science support services to athletes on 'World Class' (WC) sport programmes and Home Country Sports Institute programmes, or to other elite athletes. The WCGAS is recognised as the UK's primary quality assurance framework for work in the application of sport science to elite sport by the British Olympic Association (BOA), UK Sport, and the Home Country Sports Institutes. There are no sports scientists in NI registered on the World Class Guarantee Accreditation Scheme. (3) The BASES workshop programme is designed to provide sport and exercise scientists with current information, views, skills and the sharing of experiences, which relate to improving practice in specific disciplines. The workshop programme is run through the BASES Education and Training Committee and consists of a number of 'core'

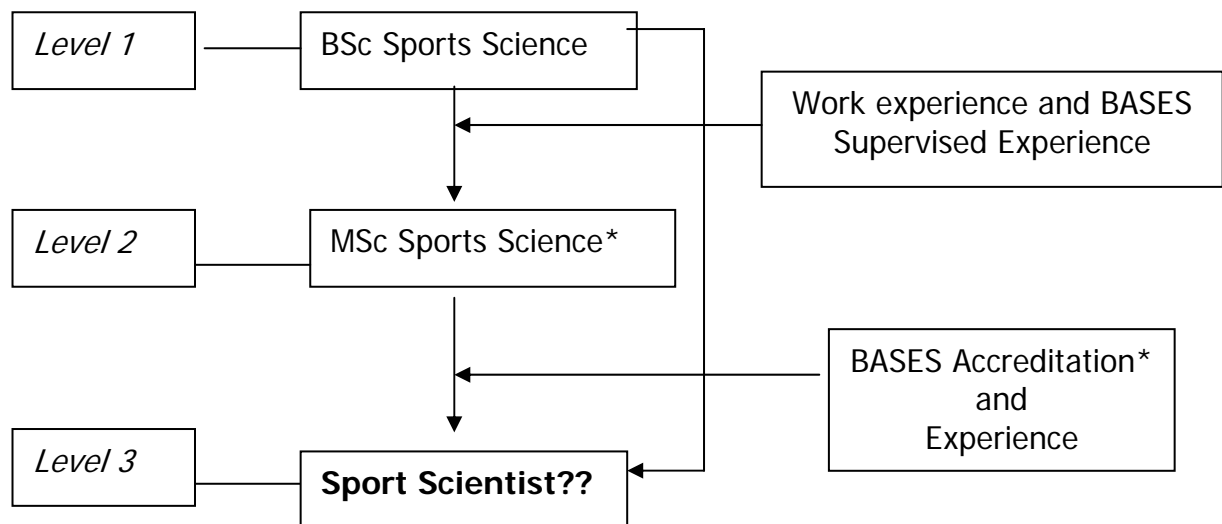
workshops, which normally run twice in any 18-month period. In addition, topical areas are covered that may be new, challenging and innovative. Most workshops are aimed at those individuals on the BASES supervised experience route for accreditation. However, many workshops also inform, update and provide a forum for discussion for accredited and re-accredited sport and exercise scientists. The workshop programme offers a unique, exciting and extremely progressive contribution to Continual Professional Development (CPD), however the location of the various workshops can be a barrier for regular attendance by those from Northern Ireland.

- UK Sport is the main supporter of the various home country Sport Institutes, including SINI. The support received to date for one sports scientist has been very much on an ad hoc basis. One sports scientist has recently received financial aid to travel to an international conference (support was also received from Sport and Recreation (UU), Sports Union (UU) and SINI). UK Sport has hosted on at least two occasions, the World Class Coaching Conference, where a team of coaches and a sport scientist from NI attended. Attendance at these conferences is vital for sports scientists as they provide an opportunity to network and strengthen contacts with other sport scientists across the U.K.

UK Sport recently published a sports science and sports medicine strategy for 2004—2012. It highlights that there is a limited opportunity for young sports science graduates to gain competencies and instil 'values' required to work within the World Class Performance Plan (WCPP). UK Sport suggests that the establishment of graduate internships is needed as part of CPD for an effective and successful World Class Sport Science Programme. An opportunity could exist for SINI to be proactive in setting up a regional graduate internship programme for local graduate students. This would greatly facilitate the need for local highly qualified sports scientists.

Analysis of current academic sports science structures

Current academic structure through which a potential sports scientist may proceed into a high-performance sporting environment in Northern Ireland



* In many cases it is not typical for a practising 'sport scientist' in Northern Ireland to have completed a postgraduate qualification and BASES accreditation.

Individuals within NI normally follow one academic route in becoming a sport scientist. A degree in sports science is a starting point for many people. The University of Ulster offers an undergraduate course in sports science. As this is a new career pathway initiative by the university, it is envisaged that within the next 3 years there will be a number of highly motivated people aiming to work within sports science in NI. The course offers training in the use of basic laboratory equipment pertinent to sports testing and also provides potential sports scientists with the necessary theoretical knowledge. SINI and both universities are proactive in providing undergraduate placement opportunities in the areas of exercise physiology and strength and conditioning. However, the SINI are not offering any sport science or strength and conditioning placements in 2004/2005, due to budget constraints.

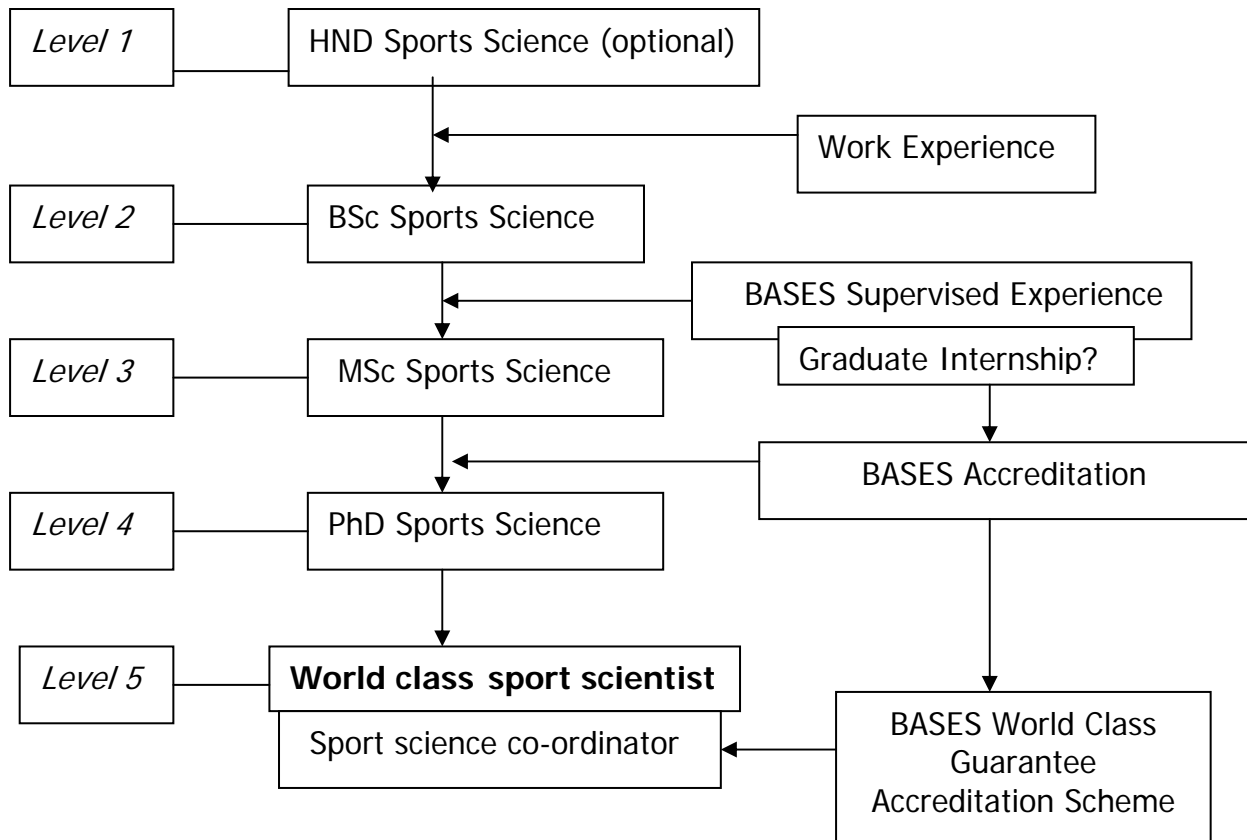
The University of Ulster offers postgraduate qualifications in sports science.

The information above highlights a number of weaknesses in the current sports science in Northern In particular:

- As there are few BASES qualified sports scientists in NI, it is very difficult for a mass of new sports scientists to become BASES accredited, as these junior individuals need to be supervised by an accredited individual preferably in the same region.
- NI needs more sports scientists qualified to PhD level, particularly in the areas of physiology and strength and conditioning.
- No sports scientists are involved in the BASES World Class Guarantee Accreditation Scheme.
- More undergraduate placement opportunities are needed for junior sport scientists, and perhaps some of the newly qualified sports scientists could benefit from a SINI graduate internship programme. A mentoring scheme is required to support and guide junior sports scientists whilst working with local athletes and teams.

In terms of mapping an academic and career pathway for sports scientists in NI; as well as taking into consideration the above, it is suggested that individuals graduate with an undergraduate and a taught and research postgraduate degree. Throughout this term of education, potential sports scientists should be associated with BASES accreditation or world-class performance programmes, and avail of any existing and new initiatives from UK Sport (i.e. graduate internships etc). Only individuals with experience and knowledge should be regarded as suitable candidates for a sports science co-ordinators position.

Proposed academic structure through which a potential sports scientist could proceed into a high-performance sporting environment



OBJECTIVE 4: TO RECORD THE VIEWS OF GOVERNING BODIES, ATHLETES AND PROVIDERS REGARDING THE QUALITY OF SPORT SCIENCE SERVICES IN NORTHERN IRELAND.

The 50 interviews were made up of 13 service providers; 20 performance or high performance managers; 7 athletes; 10 administrators or sports managers. The views can be summarised as follows and the responses are often followed by a discussion note from the research group.

Question 1 - What do you understand by the term Sports Science?

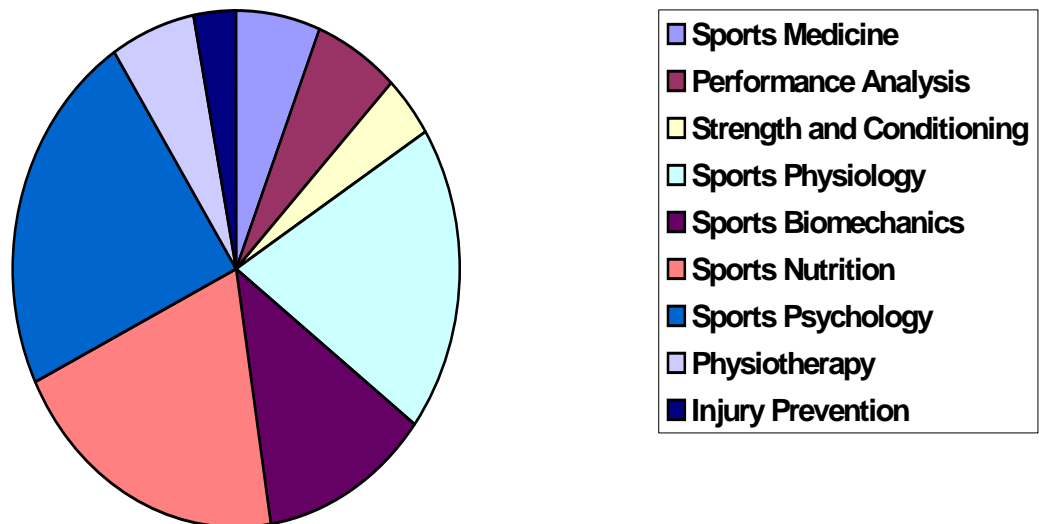
Responses emphasised applying science to assist performance e.g. "scientific applications to improve sport performance", "anything scientific which may enhance sports performance". The athletes unequivocally saw it as "back-up for athletes" or the "technical support of sport". A number of participants saw sports science in a limited perspective e.g. "study of biomechanical and physiological factors that contribute to effecting individual performance in sport", "research based".

Discussion Note:

A cause of concern was the wide variation of perceptions as to what constitutes sport science. This was compounded by a participant who replied "[it is] very academic and difficult for coaches to understand"; this indicates an urgent need for clarity, communication and a common understanding of what sports science is, in the Northern Ireland context.

This need is illustrated by an analysis of all participants (23) who provided their understanding of which facets of sport knowledge constituted "Sports Science".

Understanding of Sports Science



The athletes all noted biomechanics, nutrition and sports psychology in their list.

Discussion Note:

Persons involved with sports science in Northern Ireland place an emphasis upon sports physiology, sport nutrition, sports psychology and sports biomechanics (to a lesser extent). The medical sciences (sports medicine, physiotherapy and injury prevention) are often seen as elements of sports sciences. The reality of service provision, however, does not reflect this perceived importance of specific services held by the research participants. There is a lack of understanding of sports science in Northern Ireland. This clearly highlights the need for more sports science education and awareness amongst individuals.

Question 2 - Perceptions of Provision of Sports Science in NI

This question prompted the fullest and most informative responses of the interview participants. Across all participants, this response had a commonality and unified perspectives from athletes, performance managers, service providers, administrators and consultants.

An athlete encapsulated the common views when stating that sport science services are characterised by “not being very accessible, no communication and poor structure.” An administrator and past elite performer believed that “Northern Ireland does not take sports science seriously.”

The main areas of response were:

- ◆ Poor quality (e.g. not very good, a lack of commitment, lack of quality, clearly inadequate, with 13 respondents;
- ◆ Poor accessibility and limited, with 10 respondents;
- ◆ Poor communication: lack of integration; no coherent strategy; need for a sports sciences team to be developed (23);
- ◆ The number of sports science providers are too few, some good providers but they are too limited - there is a distinct lack of sports psychologists, bio mechanists and nutritionists (16);
- ◆ SINI has been good (4);
- ◆ University of Ulster has been good (4);
- ◆ Coaches need education and a development of awareness of Sports Science (4);
- ◆ The service should be extended to include developing athletes (10);
- ◆ Many sports ‘outside of SINI’ are not provided for (4);
- ◆ Not enough sports scientists being developed;

Discussion Note:

The responses to this interview question were clear. There was a strong perception of a poorly structured service of variable quality with limited providers. On a positive

note, several experienced respondents noted that the quality of service provided by SINI and UJJ was comparable to that available in the rest of the UK.

Question 3 – International Best Practice

The responses to this question revealed a lack of understanding of international best practice except for that of the United Kingdom (8) or Australia (12). The National Coaching and Training Centre (NCTC) in the Republic of Ireland was seen in a positive light (6).

Discussion Note:

The dissemination of best international practice would materially assist local practitioners and service providers.

For a fuller overview of international best practice please see objective five and literature review (appendix 3).

Question 4 – Perceptions of Best Practice in Northern Ireland Compared with International (outside the UK) Best Practice

The consensus reflected by 32 participants was that “the quality is good but the quantity is poor”.

Discussion Note:

The response to this question, given the lack of knowledge of international models indicated in the previous question, may reflect personal beliefs rather than experiential knowledge about best practice internationally. There is an opportunity for SCNI to draw from best practice internationally and to consider its relevance to Northern Ireland. Having reviewed models of international sport science provision, the review team and relevant respondents with international experience unanimously felt that the current UK model provides the most relevant model of best practice for the development of sports science in Northern Ireland.

Question 5 - Enhancing the Provision of Sports Sciences in Northern Ireland

Having commented upon the state of sport science in Northern Ireland (see above), the respondents now had the opportunity to state how the provision of sport science services could be enhanced.

Recommendations included:

- More top quality sports scientists to be available;
- "SCNI needs to take a lead";
- SINI should be central to the delivery of sport science to high performance sport in NI, but they require more qualified scientists;
- Better source of information;
- Make the career attractive;
- Need for a follow on programme after testing;
- More sport specific testing;
- Services become available throughout Northern Ireland;
- Educate coaches;
- More sport science facilities;
- Develop bursaries or scholarships or internships for developing sports scientists.

The participants noted a particular lack of local sports scientists in the areas of sports psychology, sports biomechanics, sports nutrition and strength and conditioning.

Discussion Note:

The responses illustrate the major finding apparent in this research report, that the provision of sports science in Northern Ireland needs structuring, staffing and servicing in a planned, enhanced and integrated programme.

Question 6 - Sports Science in Northern Ireland compared with United Kingdom

The vast majority of respondents felt that the provision of sport science in Northern Ireland lagged behind that of the rest of the UK, particularly in terms of structure and the number of skilled providers. Four respondents felt that sports science services in Northern Ireland are comparable with other areas of the United Kingdom, in terms of the quality of individuals. Although SINI was seen as a step in the right direction by two interviewees, it was thought that the EIS and Loughborough provided good models.

Discussion Note:

It is the opinion of the review team that the development of sport science in Northern Ireland should draw upon best practice from the UK, but develop their own model unique to the requirements of local sport.

Question 7 - Different Requirements for Different Sports

Of the interviewees who responded, 26 agreed that different sports had different requirements in the provision of sports science. One respondent disagreed, advocating age-group services. Another respondent noted that "some sports need science testing but the labour intensive nature of sports science necessitates generic testing and consultancy".

Discussion Note:

There is a clear consensus that sports require a specific service; this creates a challenge for SCNI to develop a structured sport science service with limited resources.

Question 8 - Ranking the Provision of Sports Science

	Sports Psychology	Bio-mechanics	Sports Physiology	Performance Analysis	Sports Nutrition	Other
1	8	2	9	2	4	
2	3	4	7	6	8	Sports Medicine 1
3	5	4	5	2	5	
4	2	7	1	4	3	
5	5	4	-	5	3	

1 = Most important, 5 = Least important. N=26.

Three respondents suggested that all disciplines are equal in the importance of elite development. Not all respondents provided the range 1-5 for this question.

3.3 ORGANISATIONAL

Only a select group of interviewees (*those associated with sports science support organisations such as BOMC, UK Sport, SIS etc*) were required to provide answers to the following organisational based questions.

Questions 1 and 2 - Links with the Provision of Sports Science

Apart from the respondents who had organisational links (university or SINI), the four remaining respondents for this question who were employed by an organisation, provided no common answers. The self-employed respondents, as with the organisational employees, had links with sports scientists on an ad hoc basis.

Question 3 - Enhancing Linkages with the Provision of Sports Science

The 13 respondents to this interview question stressed the following: linking coaches into sports science; more technical support and resources; integration of service delivery; links between Northern Ireland and the Republic of Ireland; and, an emphasis placed upon integration and best practice.

Question 4 - Accredited Sports Science Support Laboratories.

One respondent noted their sports science facilities as being BASES accredited with one having approval pending. One respondent was unsure.

Discussion Note:

There appears to be a need for a specific accreditation body such as BASES or the BOA to explicitly educate service providers on the accreditation process and requirements for accreditation.

Question 1 - Recommendations for Improving Provision of Sports Sciences in Northern Ireland

The responses to earlier questions (see: sports science in NI, Questions 2, 4, 5; Organisational, Question 3) should be considered in conjunction with the responses to this present question (see Appendix 5 for complete list of recommendations).

Discussion Note:

The responses are presented to provide a broad indication of participant views. They should be considered in the context of the respondents' advocacy for a stronger structure for sports science in Northern Ireland.

Question 2 - Rating of Sports Science Services to a variety of User Groups

The question associated with the table below involves using a scale of 1-5 rate the services below. (1=Excellent 2= Above Average 3= Average 4 = Below Average 5 = Definitely Inferior)

	<i>Sports Science Services For:</i>				
	Elite Athletes	Coaches	SINI Sports	Non-SINI Sports	Developing Athletes
1	3	1	3	-	-
2	6	-	5	3	2
3	9	3	9	3	8
4	8	16	4	11	9
5	2	7	3	6	9

N=28.

The service providers did not show a distinctive subset from the responses of the full interview group.

Discussion Note:

The responses are not surprising in their relatively low rating of services for coaches, non-SINI sports or developing athletes, as they are illustrative of responses made to previous questions in this research report.

Question 3 - Unique Opportunities to Develop Sports Science

Responses to this question reflected earlier answers to interview questions e.g. coaching considerations, integration of sports science, BASES accreditation, prioritising, internships and so on.

Discussion Note:

Underpinning responses to this question is a strong theme of education: education of coaches, developing potential sports scientists, sport science staffing of the universities, internships/bursaries and BASES workshops, education regarding political status ("are we UK or Ireland"), and the use of university expertise.

Question 4 - Prioritising of Sports Science Funding

In answer to the question "Do you believe sports science should be prioritised?" 33 respondents replied "yes". Priorities listed were:

- Enhance current sport science structure;
- Greater number and range of sports science services;
- Education of coaches;
- Greater quality in delivery of sport science service;
- More highly trained sport science staff.

OBJECTIVE 5: TO COMPARE AND CONTRAST THE CURRENT PROVISION OF SPORT SCIENCE SERVICES IN NORTHERN IRELAND WITH INTERNATIONAL BEST PRACTICE

Best sports science practice

This report notes elements of best practice. To develop an in-depth comparison of current provision against best practice is beyond the scope of this report. The information is inconsistently presented online and in print formats and does not lend itself to a ready comparison of service provision. Additionally, the services of other countries are not necessarily linked to similar structures in Northern Ireland.

There is a range of material on international practice that the researchers have considered. A member of the research team has extensive experience in another country as a Professor of Sport and High Performance Manager, and worked closely with providers of sports science, in another country. This familiarity with another national structure and sports science provision underpins an awareness of the difficulty of generating ready comparisons with Northern Ireland. A further member of the research team has a depth of experience in sports science and sports experience as a participating athlete at the highest levels of international competition. His knowledge base also indicates that a full and rigorous international comparison would be a task beyond the scope of this report. In addition, contact with international colleagues during the period of the research report confirmed the absence of suitable comparators from which conclusions could readily be drawn.

The elements of International Best Practice, with which the Northern Ireland sports science provision may be compared, are distinct and noted in the report but may be considered as including:

- A clear vision driving the provision
- The buy-in from key stakeholders
- Complete support for high performance sport

- Adequate funding for operation and research
- A full range of sports science providers, adequately staffed and available
- Administrative support
- Education in sports science, and close working relationships with local Higher Education establishments
- Clearly defined parameters for involvement
- Planned in advance

The report notes the need for a sports science working party with leadership from the highest level. We regard this as critical, and the working party will need to establish a sound knowledge base. Apart from including key personnel and then meeting with significant persons who have first hand understandings of the provision of sports science, it is critical that the committee enters into dialogue with the providers of sports science in other countries and consequently establishes, for itself, a firsthand understanding of what is done. The available literature does not adequately offer this.

As previously stated a full comparative analysis of sports science in NI with other international providers is beyond the scope of the current report, however the review team thought it beneficial to provide a brief comparison with the Scottish Institute of Sport (SIS).

The SIS was established in October 1998 to support the development of high performance sport in Scotland. A member of the Sportscotland group of companies, the Institute is funded by the Sportscotland Lottery Fund. In 2002, the SIS moved to a new purpose built facility in Stirling, which provides an inspirational environment and a focus for high performance coach development and learning. As the operational nerve centre, the Institute's new home promotes excellence in Scottish sport, encouraging interaction and harnessing energy to develop a culture of shared knowledge and winning. As a dynamic, modern, forward thinking, and cutting edge organisation, the SIS reflects these aims and this culture of excellence in everything they do.

There are six area Institutes throughout Scotland. The six area Institutes of Sport are: Central Scotland, East of Scotland, Grampian, Highland, Tayside and Fife, and West of Scotland. In addition, the Scottish Institute of Sport and the six Area Institutes of Sport are part of a UK-wide network of centres linked through the UK Sports Institute (UKSI). This system ensures that Scottish athletes have access to the very best support, wherever they are based. This structure is similar to that of the Republic of Ireland, where access to sports science support services are available to carded players/athletes not only at the National Training and Coaching Center (NCTC), but also through, a nationwide network consisting of over 320 service providers offering support services.

Staffing

Sports science staff within the SIS is made up of one co-ordinator, one officer, 2 physiologists and one psychologist (*total of 5 full-time sports science staff*). The SIS pays the salaries of all staff. A member of the Elite Sports Analysis team is located within the institute to service performance analysis and biomechanics. There are approximately 5 physiologists and 5 psychologists working within the area institutes. It is the view of the SIS that a sports dietician will soon be employed on a full time basis. The SIS staff have many UK and internationally based colleagues, who provide the necessary performance sports delivery skill sets; this collaboration helps drive forward the SIS growing network of sports science delivery.

Overall structure

Development of the Institute's sport science support structure has taken pace over the last year, and can be summarised by the employment of four new staffing appointments. The Institute's new sports science personnel are full employees and add a further dimension to the Institute and area institute sports science network and support structure.

All support staff within the SIS are supervised by one sports science co-ordinator. This individual manages the delivery of sports science services to performance managers. To help the Institute's sport science co-ordinator with the management

and administration of sport science projects, the Institute has a sport science officer. The main role of the sport science officer is to provide new and further opportunities to effectively link the institutes administrative and business support systems.

One physiologist and a psychologist work within a three-way support programme. Both of these sport scientists are based at Heriot Watt University and provide two days support to the East of Scotland Institute, one-day support to the University and a further two days to Institute athletes. The University provides excellent facilities and a supportive academic environment for sports science delivery. Likewise, within Central Scotland, a physiologist provides a similar mix of delivery time to the Central Scotland Institute, the University of Stirling, and the Institute. Linking the delivery of the Scottish Institute and Area Institute to Sport Science Services, presents opportunity for the efficient transfer of delivery methods and the recognition of performance pathway needs.

To develop consistency in sports science delivery, the Institute uses a project management support process. This process encourages sport science providers to spend vital time viewing and understanding athletes and coaches needs, prior to presenting them with a formal support plan. This support plan will now be reviewed.

Internal sports science structure

Sports science service support is structured around three levels of sports science feedback and review. Across levels 1-3, information is considered within an integrated framework of analysis. This approach to reviewing sports science support output provides an insight into important cross-disciplinary information. As such, a big picture of athlete assessment and monitoring can be recognised, and this information helps to guide the coaching process throughout programme cycles. For example, feedback can be provided directly to an athlete so that they understand the implications, which may be recognised within training behaviour and preparation. Individual sports scientists are responsible for particular sports within the SIS. This approach seems to work extremely well.

Level One

Unilateral meetings are held to address key feedback and action issues within the relevant sports science discipline area. For example:

- Exercise Physiology
- Biomechanics
- Skill Acquisition
- Sports Psychology
- Performance Analysis
- Nutrition

Level Two

Integrated meetings are held to address key issues within the sports science integration process. These meetings may involve interdisciplinary sports science discussion by professionals who presently provide support to an athlete or team. For example:

- Exercise Physiology
- Biomechanics
- Skill Acquisition
- Sports Psychology
- Performance Analysis
- Nutrition

Level Three

Integrated programme meetings are held at which sports science support and feedback is considered alongside information from the other athlete support service areas. For example:

- Sports Science
- Sports Medicine
- Strength and Conditioning
- Performance lifestyle

The sports science officer is currently working on the introduction of a new knowledge accumulation system, that will allow coaches and support staff to view sports science projects and integrated support information within a 'one-stop shop' and archiving environment. The archiving process will allow central storage and confidential access to the coaching programmes and support service materials, thereby promoting the ability to better communicate and integrate support, understanding and resources.

Uptake of Sports Science Services

Uptake of sports science services within the SIS is excellent. All sports regularly use various disciplines of sports science to help increase athletic performance. Integration among disciplines and other support services help to increase uptake. Physiology is the most common discipline followed by psychology. It has been reported however, that uptake within some area institutes is affected by limited knowledge of coaches.

Education and training of staff

All sports science staff within the SIS are continually encouraged to attend workshops and conferences on a regular basis. Each member of staff has the privilege of attending at least one international conference yearly. For example, this year the physiologists are attending the European College of Sports Science Conference in France. The cost of attending workshops and conferences are met entirely by the SIS. All staff attending conferences are asked to present the most important findings to the rest of the staff on their return. This is a very effective way of providing education and training to sports scientists. Nearly all staff are qualified to a postgraduate level. Some staff are BASES accredited, some working towards accreditation and some registered on the World Class Accreditation Scheme. Junior staff at the SIS were keen to point out that they continually learn from senior sports science staff. The SIS provides no structured educational workshops to coaches and performance managers.

Funding support

The SportsScotland lottery programme funds the SIS. Any detailed information regarding financial spend on sport science was found difficult to obtain. It was calculated that approximately 19% (the 2nd highest spend) of all costs in 2002 and 2003 (within the SIS) were on sports science and sports medicine. This cost was associated with staff, equipment, programmes, conducting of services and travel.

Discussion note:

When considering a comparative analysis, the review team would also guide the reader to the bullet points outlined previously (see pages 35-36). The following outlines the main differences between the Scottish Institute of Sport and current sport science support structures in NI.

- Although Northern Ireland has its own Sports Institute, it has a limited number of satellite centers, which mainly cater for strength and conditioning. There are no structured area centers in NI offering sports science support. The satellite/area center approach in NI needs to be more carefully considered.
- Whilst NI has many quality physiologists and psychologists, these individuals do not necessarily work in an integrated way. Athletes and teams may call upon the services from a number of independent scientists without any integration. SINI however, do integrate support services where possible.
- In terms of staffing, SINI as a matter of urgency need to increase staff appointments. To the SIS's five full-time sports science staff (not to mention strength and conditioning staff), SINI have one sport scientist (physiologist), and this appointment is shared with the UU. SINI also have one member of staff employed by Elite Sports Analysis. In order to seriously consider sports science in NI, SINI need to make a further four appointments, entailing a co-ordinator, an officer, a psychologist and a physiologist. To our knowledge, Queens University has three sport science appointments in the pipeline. Perhaps more joint appointments (between SINI and the Universities) would be worthwhile.
- Within SINI, the one sport scientist is responsible for the management of all core sports. This again may reflect a lack of staff, and no doubt hampers the

progress of the core sports, as the sports are not getting quality time with a sports scientist, i.e. the resident sports scientist is spread too thinly. It is suggested that particular sites within NI look after certain sports (for example, SINI to manage four sports, UU to manage four sports, whilst Queens could manage four sports).

- All relevant organisations and agencies need to make more money available for the prioritisation of sports science support in NI.
- Uptake of sports science services needs to be addressed in NI. This as previously documented could be done through educational workshops.
- Although sports scientists in NI do attend some conferences and workshops, the allocation of funds to attend conferences tend to be unstructured and very ad hoc. All sports scientists (like those in the SIS) need to be aware of their travel budgets in order to select the most worthwhile conferences and workshops.

OBJECTIVE 6: TO IDENTIFY WAYS IN WHICH ANY IDENTIFIED GAPS OR WEAKNESSES IN THE PROVISION OF SPORT SCIENCE SERVICES CAN BE ADDRESSED AND OFFER APPROPRIATE SOLUTIONS

The research project had the primary objective of reviewing the provision of sports science in high performance sport in Northern Ireland. The 50 interviewees who formed the source of data upon which this report is based, comprised virtually all providers and key persons working in sports science in Northern Ireland.

It was apparent to the research team approximately three-quarters of the way through the interviews, that saturation had been reached in the methodological sense. Saturation refers to the stage when the accumulated data generated by the research methodology does not generate any new findings by continued research i.e. the data was virtually complete after 30 interviews and the final 20 interviews did not add significantly new information. They did however reinforce the tentative findings formulated from the first 30 interviews.

This research report has noted the broad responses of interview participants to the interview questions. The research team believes that the following concluding statements reflect the interview participants' perceptions of the present state of sport science provision in Northern Ireland.

Conclusions

The responses of participants' interviews for this review are relatively clear in their groupings. They provide the strengths of common perception and the basis for the following conclusions and recommendations.

The present report has the following conclusions:

1. That there is a concern about sports science in Northern Ireland held presently by all sectors in Northern Ireland sport.

2. That a small group of able practitioners deliver sports science at present but they are too few in number – spreading services too thinly. Northern Ireland particularly needs more sports psychologists, sports bio mechanists, sports nutritionists and strength and conditioning practitioners.
3. That a thorough and fully structured plan is needed for future development of sports science provision in Northern Ireland.
4. Communication and education about sports science is variable and not well regarded.
5. That best practice and the structure and processes of sports science delivery in other parts of the United Kingdom, and overseas, is in advance of that which occurs in Northern Ireland.
6. Priorities for improvement in the provision of sport science are needed.
7. There is a clear concern that coaches need education in sports science and about its provision.

Recommendations

1. That a vision for the provision of sports science in Northern Ireland be established by a small working party.
2. That, from the vision, goals are developed for the provision of sports science, these goals would address: sport science in Northern Ireland; high performance sport; delivery; an integrated structure of the components of sports science; sports science provision; accreditation of personnel; communication and education; sport science for levels below the elite; staffing and processes of delivery.
3. A Sports Science Co-ordinator be appointed by SCNI to develop a detailed plan for sports science, based upon the goals set in 2 above, and within an allocated budget and clearly delineated resources. The Sports Science Co-ordinator would then assume responsibility for implementing such a programme.
4. That processes are set in place to communicate with governing bodies of sport about sports sciences with a newsletter and website.
5. That the education of coaches in sports science is addressed and maintained, perhaps through the delivery of workshops.
6. That the plan for sports science provision also considers: satellite centres/services; best practice from other regions or countries; increasing the number of providers; and, developing bursaries/scholarships/internships.
7. That procedures be set in place to develop sports scientists and to enhance opportunities for the study and practice of Sports Science. Integral to this is the development of practitioner experience in the sports scientists in balance with academic and professional training.
8. That a web-based sports science registry be set up at SCNI.
9. That sports science equipment be reviewed – to include access, quality, availability and comparability.
10. All relevant organisations and agencies need to make more money available for the prioritisation of sports science support in NI.
11. That the provision of sport science in Northern Ireland be reviewed in 2009.

APPENDICES

APPENDIX 1 - Consultant Profiles

Gareth Davison: B.A (Hons), MSc, PhD

Dr Davison is currently a Lecturer in Exercise Physiology and Academic Sports Science Co-ordinator at the University of Ulster. In his latter role, he directs the Sports Science Services within the only BASES accredited Exercise Physiology laboratory in Northern Ireland. Dr Davison has considerable experience in Sports Science testing of amateur and professional athletes. He was the programme director for acclimatisation preparation for the 1998 Commonwealth games squad, and Sports Science Advisor to the UK Athletics Anti-Doping Policy Support Committee (1997-2002). Dr Davison currently sits on the Northern Ireland Sports Medicine and Sports Science working group. Dr Davison has a wealth of knowledge and experience in elite sport, having represented Northern Ireland in a number of high profile athletic competitions. He is an accomplished Exercise Scientist with a number of publications in highly respected journals, and is a member of the Physiological Society, BASES and the American College of Sports Science.

Nigel Dobson: BSc (Hons), MSc (Loughborough), PhD (Sheffield)

Nigel Dobson is the current Head of Sport and Recreation at UU and has been involved in the professional business of sport for the last sixteen years. During this period he has played professional football (Cardiff City FC), worked for the Sport and Recreation Departments of two local authorities (Cardiff and Sheffield), worked as a Research Fellow at a University, a consultant for a commercial leisure company and a Senior Manager on major events at UK Sport. On behalf of European Sports Partnership Ltd, Nigel recently worked at an Executive Management level at the XVII Commonwealth Games in Manchester.

Nigel worked for Cardiff City Council to develop a range of recreation and social activities schemes; a Passport to Leisure scheme, the city's Leisure Strategy and a programme of events for the City of Cardiff Athletics Stadium and the city-wide summer festival. As well as writing a national events strategy for UK Sport, Nigel established the current framework for assessing the economic impact of sporting events in the UK, and has undertaken impact studies of sport and leisure activities across the UK, including those for persons with a disability. In 2000 he completed a PhD on the long-term impact of Sheffield's investment in sport and culture as a catalyst to local regeneration. He has several journal articles and is on the approved list of 'world class advisors' run by UK Sport for major sports and leisure activities.

Nigel has recently directed a host of consultancy projects. Moreover, he has business planning, management and economic development experience of over 80 national, European and World Championship events across a range of major sports.

Professor Colin Boreham: BSc, MA, PhD

Colin Boreham is currently Professor of Exercise Science at the University of Ulster, and is one of the foremost sports scientists in the UK, with over 30 years experience in the field. He has considerable experience of elite sport, having been an international athlete (GB and NI) for 13 years, including representation at Commonwealth, European and Olympic games (1984) as a Decathlete. He has managed several GB and NI athletics teams and has acted as fitness consultant to the Irish Rugby Squad (1987-1990). He was a member of the British Olympic Association Exercise Physiology Steering Group (1996-2000), and a member of the Research Assessment Panel for Sports Related Subjects (1997-2001). Professor Boreham is an accredited BASES sports scientist, and is a highly experienced provider of Sports Science Support, having run the Exercise Science laboratory at Queens University for 15 years as a BASES accredited Laboratory Director. He is an accomplished Exercise Scientist with over 60 publications to his name, and is a Fellow both of the European College of Sports Sciences and the American College of Sports Medicine.

Robin McConnell: BEd, MPhil, PhD

Dr Robin McConnell is currently a Senior Lecturer in Sports Studies at the University of Ulster. He is the former High Performance Manager of the New Zealand Rugby Football Union, and past Professor of Sports and Head of School of Sports Studies in New Zealand. Dr McConnell is an established academic and experienced international consultant, having led a number of high quality research projects such as lead researcher with the Special Olympic Games. He has been consultant to five national teams, offering expert advice on sports leadership, development and management. Dr McConnell has published several books on rugby, one of which is an international best seller. He is the writer of "getting set" in New Zealand – Ministerial Taskforce Report on Sports and Recreation.

APPENDIX 2 - Interviewees

Performance Managers

- Allen Clarke (Rugby)
- Eugene Young (GAA)
- David Reid (Athletics)
- Sally Bell (Hockey)
- Bill O'Hara (Yachting)
- Jim Watt (Tennis)
- Douglas Bain (Equestrian)
- Ciaran Rice (Motor Sport)
- Gordon Reid (Rowing)
- Robert McVeigh (Shooting)
- Jack Monaghan (Boxing)
- Pat McCrory (Boxing)
- Jim Toland (Judo)
- Ann Pool (Triathlon)
- Doreen Miskelly (Bowls)
- Jim Humphreys (Bowls)
- Roy Millar (Soccer)
- Ruth McQuillan (Swimming)
- Nick Wright (Volleyball)
- Brendan Edwards (Golf)

Athletes

- Eammon O'Kane (Boxing)
- Lisa Bradley (Judo)
- Claire Curren (Tennis)
- Andrew White (Cricket)
- Julie Douglas (Swimming)
- Madeline Perry (Squash)
- David McCann (Cycling)

Service Providers

- Dr John Brown (UUJ)
- Declan Gamble (UUJ/SINI)
- Denise Martin (SINI)
- John Cleary (SINI)
- Ruth Wood-martin (Independent)
- Sharon Madigan (Independent)
- Dr Robert Gamble (Queens)
- Belfast Institute
- Causeway Institute
- Fermanagh College
- Dr Eric Wallace (UUJ)
- Dr Mark Elliott (Independent)
- Dr Ailsa Anderson (UUJ)

Administrators/Others/etc

- Peter McCabe (SINI)
- Ronnie Smyth (SINI)
- Jill Poots (SCNI)
- Paul Johnston (SCNI)
- David Seaton (SCNI)
- Dr Shaun Ogle (SCNI)
- Dr Michael Cullen (Musgrave)
- Dr Greg White (BOMC/EIS)
- Scott Walker (UK Sport)
- Dr Paul Gaston (UK Sport)
- Miss Claire Johnston (Scottish Institute of Sport)

Declined Interviewees (but hold BASES accreditation)

Paul Boyle

Appendix 3 – Literature Review

The present review included a review of the literature on the provision of sports science for high performance sport. Relevant databases were searched and an extensive review made of website material.

The literature is sparse on the provision of sport science for high performance in the domain of informing on the effectiveness of philosophies underpinning delivery and of effective delivery structures and processes. There is a wealth of information within specific sectors of sports science on the technical and scientific aspects of such fields.

A strong theme in the literature is that of the globalisation of sport and the accompanying emphasis upon sports science as tool for enhancing performance in elite sport. There are clear initiatives being taken by governments, governmental bodies and quasi-government bodies to develop sports science structures and delivery mechanisms. The New Zealand Sports Foundation, (1999); provides an overview of six international systems.

The literature does provide insights into specific government support of high performance sport. Corporate sponsorship and private funding are noted and the formation of national bodies provides considerations for SCNI in developing a structure for sport science delivery. However, such institutionalised support is dependent upon the culture, values, sport practices and sport environment of the particular country and the review committee urges SCNI to draw from relevant literature and models but to shape a structure that fits NI. (A quick search for internet information illustrates the range of organisations. See, for example the websites of the Australian Institute of Sport, Korea Sports Science Institute, Sport and Exercise Science New Zealand, and UKSI.) In South Africa initiatives are being undertaken and references are appended of samples of other moves in this field: Irish Sports Council, (2004); Augmentation de l'appui aux athlètes (2003); Quebec supports high performance athletes, (2003); Xu, (1998). Within countries there

have been regional, state and provincial centres set up but these have rarely been subjected to any strict evaluation process.

The link between sport science and high performance is featured more strongly in the literature than the link between sport science and lower levels of participation. There is less emphasis in the literature on sports science for the special populations such as disabled athletes, than for the elite able-bodied athletes.

Perspectives on the role of sports science and its future in sport are very limited and Nigg (1993) provides an exception. The future delivery of sports sciences is a clear consideration for SCNI. Nigg (1993) postulates that there will be three basic developments in sports science in the twenty-first century. These have implications for all sport organisations critically considering their developing use of sport science. He notes:

- (1) the expansion of research into movement science and forms of human and animal locomotion,
- (2) a shift from a discipline-oriented approach to a question-oriented multi-disciplinary approach
- (3) the attraction to sports science of excellence and expertise from other disciplines.

In stating that "movement science will be one of the most important and most recognised science fields in the twenty-first century" (p.345), Nigg (1993) illustrates the challenge to futures oriented bodies, such as SCNI, to be imaginative in considering possibilities in sports science.

Sports science delivery to high performance athletes takes place under the aegis of a sports organisation. It is critical that, at the time of establishing the bureaucratic structures, within which a delivery programme operates, that the organisation maximises its own potential for leadership and delivery in the provision of sports

sciences. Shilbury (2000) raises important considerations in this field and the need to recognise broader contexts and possibilities of leverage. He suggests the examination of changing sport industry structures and how sporting organisations respond to these changes. A range of research has been carried out, in Canada primarily, on sports organisations by Rail (1988); by Olafson and Hastings (1988) on administrative behaviour in sport organisations; Haggerty (1988) on control and information systems; and Thibault, Slack and Hinings (1994) on strategic planning in sports organisations.

The effectiveness of sports science programmes, rarely analysed critically, does not present a helpful range of literature. The organisational effectiveness of Hellenic sports organisations was one study which drew upon 400 respondents and five variables, including one of sports science support, but the literature generally, is relatively sparse (Papadimitriou and Taylor, 2000).

Sports science developments are constantly shifting and moving into new fields of experimentation, research and design, analysis and support for practitioners. The review group found that the literature most relevant to the present review was located in academic journals and internet sources. Associated with consideration of source material the review group, on critical reflection of the literature and with their particular fields of expertise, strongly recommend that SCNI develops a clearing-house or resource room, at SCNI or SINI or one of the universities, which becomes a repository of current articles, research and practitioner information, journal subscriptions and both generic and sport-specific sport science information. Additionally, information from conferences such as the international Sports Science Congress, noted in the course of this literature survey, and publications from organisations such as the ICSSPE (International Council of Sports Science and Physical Education) could be read. In such a Northern Ireland Sports Science Clearing House (possibly sponsored for naming rights) such materials would be available to all sports persons.

Although it is beyond the scope of the present review, the review group would be pleased to recommend a list of websites, journals, practitioner magazines, and information sources for SCNI to consider.

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Appendix 4 – Interview Questions

INTERVIEW QUESTIONNAIRE

Introduction

The University of Ulster has been commissioned by the Sports Council for Northern Ireland to conduct a review into Sports Science Service Provision in High Performance Sport in Northern Ireland. In order to meet the aims and objectives of the review, your participation in the interview process is extremely important.

INTERVIEW SCHEDULE

Background

1. Could you give me your age and gender?
2. What qualifications do you hold?
 - i) General or academic
 - ii) Sports and/or coaching
 - iii) Sports science based or directly related
 - iv) A recognised sports science accreditation
3. Could you give me a brief overview of your sports-related background?
4. What is your role in relation to the provision of sports science in Northern Ireland?
5. What is your present position? (How long have you been in this position?)

Sports Science in Northern Ireland

1. There are different perceptions held of what constitutes 'Sports Science'.
What do you understand by the term?
2. Could you outline for me your perceptions of the present provision of sports

science in Northern Ireland? (The following prompts may assist: strengths, weaknesses, service provision, numbers of quality practitioners, athletes' needs, present structures, numbers of sports scientists available etc.)

3. Could you describe your understanding of international best practice or any other exemplary programme in the provision of sports science?
4. Could you describe your perception of the provision of sports science services in Northern Ireland compared with the best international practice?
5. Are there any specific suggestions you would make to enhance the provision of sports science services in Northern Ireland?
6. Are sports science services in Northern Ireland comparable with other areas of the United Kingdom? (Please explain your answer.)
7. Are there differing requirements across sports for the provision of sports science that the SCNI should consider?
8. Please rank the various aspects of sports science provision in order of importance, as you perceive them, with 1 as the most important.

Sports Psychology [] Biomechanics [] Sports Physiology []

Movement/Notational/Performance Analysis [] Sports Nutrition []

Other (Please name) [] _____

Organisational

1. If you are in an organisation (i.e. not self-employed), could you please describe the links with, or provision of, sports science that your organisation provides? OR
2. If you are self-employed, could you please describe the links with, or provision of, sports science that you provide?
3. If you were to make any recommendations to enhance your organisation's (or your own) linkages with, or provision of, sports science, what would these be? Please give your reasons for these recommendations.
4. Is your organisation sports science accredited?

Open Section

This section allows for the interviewee to provide any other views that are held on the provision of sports science in Northern Ireland. This section will also comprise particular questions related to the interviewee's responses, or questions directly relevant to the subject.

1. Do you have any recommendations on how the provision of sports science services for high performance sport could be improved?
2. Using a scale of 1-5 please rate the services below. (1=Excellent 2= Above Average 3= Average 4 = Below Average 5 = Definitely Inferior)

Sports science services for elite athletes	[]
Sports science services for coaches	[]
Sports science services for SINI sports	[]
Sports science services for non-SINI sports	[]
Sports science services for developing athletes	[]

3. Are you aware of any unique opportunities to develop sports science provision in the future?
4. Do you believe, sports science funding should be prioritised?
If so, what would you see as the priority? (The following prompts may assist: training; education; coach development; internships; scholarships; service provision; buying in services from beyond Northern Ireland etc.)

Appendix 5 - Recommendations for Improving Sports Science Provision

- Annual meetings with Governing Bodies.
- Cover age gaps to elite.
- Greater coordination.
- More quality people to deliver a service.
- In team sport more focus on squad testing.
- Satellite centres developed (SINI, UUU and Queens in the Belfast area).
- Better communication and coach knowledge.
- A clear vision for Sports Science in Northern Ireland.
- Better monitoring of services.
- Full time staff.
- Marketing of benefits needs to be better.
- Involves CGC in Sports Sciences.
- Sports scientists to have applied knowledge.
- Large audit to determine expertise.
- Establishing best practice to share.
- Blood profiling for athletes.
- More nutritionists.
- Sports Science co-ordinator to be appointed.
- Field based and co-ordinated resources.
- Deliver sport psychology to juniors.
- Greater integration among service providers
- Greater integration among coaches and providers of sport science
- More awareness of Sports Science suggested.