

Welcome to the sportscotland institute of sport's Olympic press pack.

The Institute is proud to be supporting Scotland's athletes as they compete as part of Team GB in the Olympics and Paralympics in Vancouver this winter. As the high performance arm of **sportscotland**, the Institute has a wealth of experts available to provide comment on topical issues and insight, including athletes' preparation and performance.

This pack provides you with a flavour of the Institute's work with Olympic athletes across its range of support services, including technology and innovation, strength and conditioning, expert coaching, physiotherapy, sports psychology, performance lifestyle and video analysis.

Please do not hesitate to get in touch if you require additional information or would like to speak to any of the Institute's experts. We also have a wide selection of images which are available for media use.

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Preparing Scotland's best athletes to perform on the world stage

sportscotland institute of sport

Background

- The institute of sport was founded in 1998
- The institute of sport provides high performance expertise to sport and athletes in Scotland. It's focus is on preparing Scotland's best athletes to perform on the world stage
- In March 2009, the institute merged with **sportscotland** creating the **sportscotland institute of sport** and remains as the high performance arm of **sportscotland**. The institute currently supports around 230 athletes
- Several institute supported athletes will be competing at the Vancouver Winter Olympics and Paralympics in February/March in curling, wheelchair curling, ice-dancing, skiing, bobsleigh, speed-skating and snowboarding. Scots will likely make up over 40% of the GB team
- The institute delivers cutting edge programmes in coaching, performance management, sports medicine, sports science, strength and conditioning, talent confirmation and career and lifestyle guidance
- The institute works together with its partners to build greater success for Scottish sport. Its high performance partners include the six Area Institutes of Sport, Scottish Governing Bodies, UK Sport, British Olympic Association, Commonwealth Games Scotland and the British Paralympic Association.

11 years of sporting success

- Institute supported athletes have won 11 Olympic medals, five of which were gold
- An impressive 43 medals have been won by institute supported athletes at the Paralympics (14 gold, 17 silver, 12 bronze)
- Institute supported athletes have won a combined 43 Commonwealth Games medals (13 gold, 12 silver, 18 bronze)
- The institute has also supported 12 World Champions

Some shining Winter Olympic/Paralympic stars

- Livingston siblings John and Sinead Kerr are seven-time British Ice Dance Champions. They represented GB at the 2006 Olympics in Italy, and were placed 10th
- Curling prodigy Eve Muirhead rewrote history books in 2009 becoming the youngest ever winning skip at a World Championships
- Alpine Skier Noel Baxter, brother to skiing legend Alain Baxter, took home three medals (one gold and two bronze) in 2008 and was ranked 17th in slalom at the World Championships in 2009
- Tom Pendreigh was announced as the first ever Scottish wheelchair head curling coach and GB Paralympic coach.

SIS Olympic staff biographies

Mike Whittingham Director of high performance



Mike Whittingham is the Director of High Performance at the **sportscotland institute of sport**. Within the new organisation he has both strategic and operational responsibility for leading **sportscotland's** investment, strategic input and operational delivery of high performance.

In his role he is responsible for driving success and to ensure that Scottish athletes are given every opportunity to perform to the highest level on the world stage. Planning and process are essential prerequisites of his job and Mike has a strong varied background of senior management within the educational, public and private sector. Every organisation needs a strong figurehead with both a sporting and business brain; and Mike is that man. In addition to this, he is well versed on the political and corporate issues affecting sport in the UK and is able to discuss the different elements these present

Mike has far reaching experience in sport. For fifteen years Mike built up a company that provided consultative advice and support world wide to organisations including Lloyds/ TSB, IAAF, IOC, Kenyan Government, ODA, UK Sport Millennium Dome, UK Athletics and numerous National governing Bodies such as British Swimming and British Triathlon. Mike is an adviser to the Minister of Sport and a Winston Churchill Fellow.

He was a former GB International at 400m hurdles and 800 metres. He has coached and managed a very successful group of athletes that won over 35 major medals at major Championships including Roger Black, Kris Akabussi, John Regis, Jon Ridgeon, Maria Akara and also his own Scottish wife Christine.

Liz Mendl High performance manager



Liz Mendl, high performance manager, has been with the **sportscotland institute of sport** for 10 years, ensuring a seamless delivery of valuable services to athletes. Working closely both with Olympic and Paralympic athletes, Liz knows all there is to know about these competitors.

Athletes work with an ever-increasing number of individuals and organisations, from their personal coach to their sport's National Governing Body, and it's Liz's job to make that process easier for them. She ensures that complications are minimised, and identifies issues and gaps to make sure all the athlete's needs are met. Liz is also coordinating the expertise around the athletes in the run up to and throughout Vancouver.

Liz is working with the Scottish Winter Olympic athletes across a range of the winter sports including, wheelchair curling, cross country skiing, ice dancing, bobsleigh, alpine skiing and snowboarding.

A former physiotherapist, Liz has played a role in four Winter Olympics including, being head physiotherapist for the GB team and former physiotherapist to the GB ski team.

Dave Clark
Head of strength and conditioning



Dave Clark has been head of strength and conditioning at the **sportscotland** institute of sport for over a decade. Dave is responsible for an ever growing network of professionals who help Scotland's athletes ensure they are in the best physical shape for competition. Using a range of innovative technologies, including the Muscle Lab used to determine muscle strength and Silicon Coach, a video analysis tool, Dave works with athletes to make sure they are in peak physical condition.

Ahead of the Vancouver Olympics 2010, Dave's role includes overseeing preparation of the ice dancers, skiers, curlers and wheelchair curlers.

Brought up in Zululand, Dave has an MSc in Exercise Science and is an accredited strength and conditioning coach. His previous roles include national fitness coach to the South African and the Welsh rugby teams. His career highlights include coaching Chris Hoy when he won Olympic Gold in the kilo, Dave Florence when he won silver in Beijing and Campbell Walsh when he won Silver medal in the canoe slalom in Athens.

Brian Walker
Head of sports medicine



Dr Brian Walker joined the **sportscotland** institute of sport over six years ago as head of sports medicine. It is Brian's job to help mend athlete's aches and pains ensuring they stay healthy whilst in training and during competition. Brian, with colleagues, works to prevent injury and illness but if they do occur then intervenes to restore health as quickly and safely as possible.

Brian and his physiology partners lead the way when it comes to incorporating technology into sports medicine. From sleep watches to heart rate variability, these technologies all contribute to keeping our athletes in tip top condition in order to compete at the top of their game.

Ahead of Vancouver, Brian has been analysing athlete blood and saliva samples to ensure health and wellbeing during training. He has also been working closely with athletes to monitor their sleep patterns ensuring that they will be able to adjust easily to life over the Ocean, devising solutions such as travel and jet lag strategies. Brian works alongside other institute service providers to ensure the ice dancers, skiers and curlers receive the best support required to compete in their sport.

With 25 years experience as a general practitioner, Brian has also worked as a sports doctor at Edinburgh University, Scottish Rugby and Heriot Watt University. He has a number of medical achievements including a Bachelor of Medicine, Bachelor of Surgery, a post graduate degree in Sports Medicine and he is a Founding Fellow of Faculty of Sport and Exercise Medicine.

Neil Crosbie
Strength and conditioning coach



Neil Crosbie is the **sportscotland** institute of sport strength and conditioning coach for ice dance couple John and Sinead Kerr.

In the run up to Vancouver 2010, Neil met the challenge of delivering S&C support remotely to the Kerr's based in the USA, monitoring and informing their training program design and delivery using Muscle Lab technology and video analysis. Neil also teamed up with experts at Sheffield Hallam University to deploy a portable vibration training device to assist in developing the Kerr's extreme range flexibility.

With a BSc in Biological Sciences from Heriot Watt University, Neil's first job was as a diver working in the North Sea oil industry before turning his enthusiasm and passion for strength training into a career. Neil is now an Accredited Strength and Conditioning Coach (ASCC), tutor and assessor with the UKSCA (UK Strength & Conditioning Association) and has worked at the institute for eight years.

As well as working with the Kerr's, Neil's career highlights include working with: Libby Clegg who won a silver medal in Beijing, Kenny Anderson who won Commonwealth Gold in Melbourne and the hockey players that represented GB in the Athens and Beijing Olympics.

Ryan King
Strength and conditioning coach



Ryan King is a strength and conditioning coach at the **sportscotland** institute of sport. As lead strength and conditioning coach for the Curling Team, he is responsible for preparing the GB Men's and Women's teams for the Vancouver Olympics 2010.

Ryan's role is to ensure the athletes are in peak physical condition, working closely with technical coaches to create strength and conditioning programmes that integrate fully with their competition schedule.

To help prepare for Vancouver, Ryan has worked with Kenny More (Elite Sports Analysis) and physiologist, Vanessa Zucco, to gather video analysis and heart rate data from a series of games in order to understand the physical demands of competitive curling. Coupled with further lactate test results gathered by Vanessa, Ryan has used this information to build bespoke cardio vascular aerobic and anaerobic conditioning specific to the curlers needs.

Ryan also works closely with physiotherapist, Mandy Belch, to ensure each athlete is physically screened and that the programmes are individualised and relevant to the athlete's physical needs.

Holding a BSc (Hons) Sports Coaching and Development degree, and having lectured, coached and trained a wide range of individuals in a variety of sports and subjects, Ryan's approach is based on a valuable combination of scientific knowledge and practical experience. His career highlights include coaching European and World gold and silver medalists (men's Curling) and supporting GB swimmers based in Grampian to the Beijing Olympics.

Rebecca Joyce
Physiotherapist



Rebecca Joyce is the **sportscotland** institute of sport physiotherapist providing support to the GB Alpine skiers - Ed Drake, Dougie Crawford, Noel Baxter, Dave Ryding, Andy Noble.

In the run up to Vancouver 2010, Rebecca is responsible for providing physiotherapy support to the skiers at home and abroad. This includes injury management, prevention and developing sports specific testing in order to enhance performance.

Rebecca previously worked with the NHS for seven years but built on her own interests as a keen skier and snowboarder to focus her career in the Winter Sports arena. She has been with the institute since September 2008.

She has been working closely with the Alpine skiers on return to snow protocols and developing a measurement tool for return to sport post injury. Rebecca also works with cross country skiers and snowboarders.

Malcolm Fairweather
Head of sports science and innovation



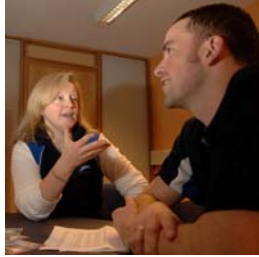
Dr Malcolm Fairweather is the **sportscotland** institute of sport's head of science and innovation. Responsible for bringing a wealth of science expertise and hi-tech equipment to Scotland, he manages colleague's skills in exploring their support knowledge; as well as impressive gadgets and gizmos to give Scottish athletes and coaches the competitive edge. Natural talent is just the starting point for a world class athlete. The cutting edge innovation provided by Malcolm and his network of scientists helps the athletes make the most of their talent.

Pioneering the application of specialised knowledge and use of advanced technology such as state of the art testing and monitoring equipment, sport science is able to make a valuable contribution to the coaching process.

Ahead of Vancouver, Malcolm has been working closely with wheelchair curling head coach Tom Pendreigh to improve skill acquisition and technique of the Paralympic athletes. Adopting new techniques is not easy and this work has been carried out with John Marchant (psychology) to help mentally prepare the athletes. Malcolm, John and Tom have designed bespoke training scenarios for each athlete in training to ensure continual progression of technique and strategy. The decision to move the athletes position on the ice, from the 'front' line (as near to the target as rules allow) to the 'back' of the ice sheet, near the hack and further away from their target was a challenging one. They have introduced, through Tom's innovation, back of house delivery techniques over and above front of house techniques. As a result of this work, the GB athletes will be the only nation applying back of house techniques at Vancouver.

Prior to his role at the **sportscotland** institute of sport, Malcolm was a school teacher and then a university lecturer/researcher before embarking on career in sports science and innovation. He received his PhD in Motor Behaviour from Louisiana State University and has published in numerous national and international journals. He is well recognised as a leader in the field of sports acquisition.

Susie Elms
Head of Performance Lifestyle



Susie Elms has been head of performance lifestyle at the **sportscotland** institute of sport since 1998. In her role Susie provides advice on achieving the all important sport-life balance by helping athletes to juggle their education, job, lifestyle and training demands during and after their career in sport.

From choosing the right university course, to helping athletes manage their lives at home while they compete abroad, Susie is on hand to provide support and advice 24/7.

Prior to this role, Susie was a lecturer in Sports Coaching and Sports Development at Edinburgh's Telford College. She holds a degree in Physical Education from Dunfermline College of Physical Education and a post-graduate degree in Athlete Career and Education Management from the Australian Institute of Sport.

Over the water

Olympic ice dancers – John & Sinead Kerr

Ice dancing siblings John and Sinead Kerr have been supported by the institute for over five years and even called on their expert support team when they relocated to the USA in 2006. As they look ahead to Vancouver, it is clear that the brother and sister duo have reaped the benefits of unrivalled facilities and high performance expertise provided to them by the institute's team of experts.

With a squad of seven working in various guises, the Kerrs aren't missing out on the unique support provided back in their home nation. Their travelling support team has provided a hugely valuable addition to their New Jersey based operation. Co-ordinated by high performance manager Liz Mendl, who juggles the support for a number of Scotland's athletes, the Kerrs receive regular visits from several institute experts to their training facility in New Jersey.



John and Sinead have consistently worked with the same members of staff over a number of years enabling each of them to develop a strong understanding of ice dancing and the duo's fitness as well as collaboratively working towards helping them achieve their goals.

Institute physiotherapist Sue Warwick and exercise physiologist Vanessa Zucco have worked with John and Sinead to improve their overall condition and fitness between competitions. Video analysis expert, Andy Kerr has also visited the pair as well as travelled with them around the world as they compete. Whilst sports psychologist, Misha Botting keeps the pair focused and ensures they are mentally prepared to compete at their best.

Strength and conditioning coach, Neil Crosbie, is a regular visitor to New Jersey. He works closely with the duo's own coach Evgeny Platov, to ensure they have a fitness plan to match their competitive goals. Collectively the team also ensure that they maintain continuity of presence with John and Sinead, not just dip in and out when they are back in the UK.

Neil, himself a West Coast Swing competitor, has also utilised his own contacts to help the Kerr's develop their choreography. As a result they have worked with world renowned choreographer Robert Royston to help them to deliver a polished performance on the ice. This helped see them pick up a bronze medal at the European Championships this year, something they are looking to build on in Vancouver.

The creation and maintenance of a strong working relationship with the Kerr's coach coupled with a dedicated, expert team has delivered a genuinely flexible solution as the siblings' needs have evolved, at home and abroad.

Back to the future

Innovation in wheelchair curling

Keeping a competitive edge over rival teams at the top end of high performance sport is a tricky business. When a team does well, opposing sides follow their lead and each new innovation soon becomes the norm. After the success of the wheelchair curling squad winning silver at the Olympic Games in Turin 2006, and the bronze they won in the World Championships in 2007, the **sportscotland** institute of sport wheelchair curling coach, Tom Pendreigh, identified a need to tackle the increasing challenge of competitive advantage with other international teams who had also formed dedicated teams of experts around them.

At this point, Tom began discussion with Senior Sports Psychologist John Marchant, and Head of Sports Science and Innovation, Malcolm Fairweather on ways in which they could gain an edge over their competitors.



They agreed with the players that the best way to do this was to closely assess the stone delivery position in wheelchair curling. Wheelchair curlers traditionally throw from up front at the hog line, closer to the target. Able bodied players push off from the hack, a position that is further away from the target, but allows them to deliver a wider repertoire of delivery solutions. The idea was to move the wheelchair curlers from the hog line,

to the back of the rink near the hack. Taking this new delivery option into the wheelchair game would theoretically give the team an opportunity to develop their playing choices by assessing where best shots could be made from.

With two years practice and game development opportunity ahead, the players and Tom took on the associated challenges and set to work immediately. The radical decision to play from the back (as well as the front) meant the wheelchair curling team had to learn an entirely different set of skills in order to be able to play stones with the same power and accuracy as before. Physiotherapist Kirsty Sinclair and Strength and Conditioning Coach Paul Coyle were drafted in to profile the athletes' physical condition and to work with them specifically on strength and muscle development.

The challenges associated with the development of new skills include short term performance dips experienced by the squad as they adapted to the technical changes in their game. The predicted dip in performance was fundamentally woven into the periodisation process and once the athletes were technically comfortable with their new position, their performance began to gradually improve along with their confidence.

In conjunction with their physical improvement, it was important to also work on the team's psychological adaptation especially taking into consideration the effect of the performance dip on the athletes' mental attitude to their own performance. John Marchant worked with psychometric profiles for each member of the squad to support the changes they faced. This personality type indicator tool helped to pinpoint the strengths and weaknesses that each individual athlete had to contend with. John then collated the information and shared it with the group to aid and improve team cohesion and dynamics on ice. Although changing the mindset of established athletes wasn't easy, the profiling facilitated a greater understanding of how they could work as a unit to maximise their potential and ensured that the athletes' maintained confidence and belief in their long term goal, which is Vancouver 2010.

The coaches and experts working with the wheelchair curlers throughout this project have begun to see their hard work paying off, with a team who are more unified, happier and more performance focused than ever before. The goal for the team is that when they head to Vancouver in March that they transfer their innovation mission into new success.

Keeping Cool

Physiology and Curling

Curling is a varied sport of high skill, mental strategy and high physical effort. Athletes must be able to deliver intermittent bursts of energy into sweeping, with varying lengths of recovery before delivering their own shots. Vanessa Zucco, an Exercise Physiologist at the **sportscotland** institute of sport, has been working with the GB Men and Women's curling teams for the past two years to best prepare them for success at the 2010 Winter Olympic Games in Vancouver.

The mixed nature of curling suggests that athletes require very good overall upper and lower body strength and well developed cardiovascular fitness in order to cope with the demands of the game, which usually lasts around three hours. It is well documented that physical fatigue has a direct impact on skill and performance, which is of particular interest for curlers.



During the two year period leading up to the 2010 Winter Olympics, the aim has been to ensure that both the male and female squads are prepared physically and mentally for their campaign. The team at the **sportscotland** institute of sport have worked hard to develop their knowledge of the physical demands of curling, which has allowed them to provide individualised and focused training programmes for each athlete. A combination of laboratory-based testing and curling specific on-ice profiling has been applied to both teams in order to achieve their goals.

The laboratory-based analysis is conducted four times per-year and is broken down into pre-season testing, in-season testing, completion phase testing and end-phase testing. This feeds into training schedules and shows fitness levels for each athlete at these key points in the season.



On-ice competition analysis was completed during the first year at both local and international level. A combination of video recordings and physical analysis allowed the team to understand the impact of a competitive match on the athletes. However due to the nature of curling competition full analysis was only possible at the start and end of games, which missed out key variations during the match.

During the second year, on-ice profiling was completed under mock competition conditions. This allowed the team to generate a complete picture of how the athletes perform and react throughout the duration of a game.

All of this work has involved an interdisciplinary team of providers who have contributed to the planning, collection, analysis and discussion of strategies and the implementation of outcomes. The team includes David Hay (men's coach) and Nancy Murdoch (women's coach) as well as performance analysis, strength and conditioning, physiotherapy, sports medicine, nutrition and psychology.

The team at the SIS have combined their expertise to ensure that the GB teams are suitably prepared for their hardest demands, especially towards the end of the week-long competition when levels of mental and physical fatigue start to increase.

Hands on *Physiotherapy on the slopes*

As one of the fastest non-motorised activities in the world, alpine skiing is a sport that is very tough on the athlete's physical condition. Flying down a hill at speeds of up to 130 mph puts massive stress on the human body and that is what **sportscotland** institute of sport dedicated snowsport physiotherapist Rebecca Joyce has to contend with. She travels with the alpine ski team and provides on the spot physiotherapy to the athletes as they travel the world and chase their dreams of competing at the Winter Olympics.

'When a skier crashes at 80 – 90mph, they could pretty much injure anything, which is why strength and proprioception (the ability to sense the position, location, orientation and movement of the body and its parts) have to be optimal.' says Rebecca.



Rebecca's physiotherapy role has to be proactive and spontaneous, working with the coaches and athletes on minimising the risk of injury as well as treating athletes who are carrying injuries. With an emphasis on prevention and recovery, Rebecca works remotely with the other experts at the institute to help to maximise performance at every opportunity.

The physiotherapy programme is very closely linked with the strength and conditioning support they receive from the institute. Her participation in the strength and conditioning programme is focused mainly on helping to build the strength of the athletes, their core stability and the flexibility of the athletes. She also feeds into their technical coaching sessions, looking at problem areas and providing knowledge which informs and connects with what the skiers do on the slopes.

The communications pathways between the SIS and Rebecca are very strong and even over the competition period, whilst she is away with the squad, she is in constant contact with the expert teams at the institute. The competition season is intensive with a great deal of time expended in travelling from place to place. The athletes could spend two days travelling and two days training on the slopes with a competition the next day before moving onto the next place.

During the off season, she works from the institute putting the athletes through their paces with help from her SIS colleagues, devising and monitoring individually tailored programmes to ensure each athlete is progressing towards their goals and receiving the best support possible.

Working day to day with the alpine team as they race at competitions all over the world is exciting, and no two days are the same. The snow-capped location of the races means that Rebecca has to ski to be on hand at the site, which has provided her with an intimate understanding of the mishaps that can occur whilst on piste.

'Due to the ski element of my job I have had one calamity after another, from crashing and wiping out the national Swiss coaching team, to breaking a chairlift which ultimately caused an entire slalom race to stop. You could say that my ski life is very unpredictable and dramatic!'

Rebecca has a grueling schedule ahead of her as she delivers seamless SIS support whilst the athletes attempt to score vital qualification points to secure places on the GB Olympic team in January. The healing hands of the institute physiotherapists may not be able to ensure victory in Vancouver, but they can ensure best preparation and support for the journey as the athletes focus on the task in hand.

Sports science & innovation factsheet

It is not only on the field activity that has helped these athletes get to Vancouver, various cutting edge innovations have been harnessed to help improve the performance of Scotland's finest.

Sleep watches

Getting a good night's sleep is important for everyone, especially high performance athletes. By monitoring sleep patterns, experts can identify and find solutions for a range of issues which may affect performance such as stress.

VO2 max

Defines athletes' ability to utilise oxygen. From gained information coaches and sports scientists can set training levels and adjust training schedules.

Blood lactate testing

Provides coaches and athletes with information on how well the athletes' body is dealing with levels of exercise intensity. It allows for informed and accurate training manipulation.

Specialist heart rate monitoring tools and hormone analysis

A training tool that helps athletes ensure they are working at prescribed intensities. Utilises strategies to create an understanding of fatigue, stress and recovery to optimise performance and recovery from illness.

Muscle lab

Electronic muscle assessment calculates optimum training levels. This hi-tech equipment is used to calculate the perfect exercising intensity for each athlete at a given point in their schedule. This is particularly useful in pre competition where recovery from international travel is part of the mix

Performance analysis

Vital for analysing an athlete's performance as well as that of their opponents, to gain the competitive edge. It's much more than video analysis and includes feedback on game patterns, biomechanics, technique analysis and coordination patterns.

Remote performance analysis

The institute is exploring, together with Elite Sports Analysis, remote performance analysis web service to provide notational analysis data as it happens all over the world. The work is carried out here in Scotland where online video is captured from in-event circumstances, it is analysed and then made available via a secure website.

Sport specific power tools

Such as power cranks in cycling. These tools give detailed analysis of the power that athletes are creating, looking at optimal performance and efficiency as well as rehabilitation of left right balance/imbalance.

Altitude tents and core temperature analysis

Measures an athlete's ability to acclimatise and adapt to new environments.