LEADERS PERFORMANCE INSTITUTE

KEISER® ENGINEERING HUMAN PERFORMANCE™

A Female Lens on Performance

What it takes to help women and girls thrive in elite sport

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Thomas Hamill Photography

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Raising the performance ceiling

When it comes to untapped performance potential, female athletes and coaches often have the most to gain.

For a start, women and girls, so often overlooked in research and too often overlooked in high performance environments, are not always competing on a level playing field with their male peers.

Yet, as this Special Report demonstrates, there are organisations taking steps to raise the performance ceiling for their female athletes and coaches.

On the athlete side, Kansas City Current's performance department, headed by Garga Caserta, is a case in point. Their best-in-class services are attuned to the needs of Head Coach Vlatko Andonovski and it showed in their strong NWSL season. Caserta outlines his department's blueprint in chapter one.

Off the field, England Rugby is among the organisations actively showing its players that motherhood is no longer just a post-career option. The recent return to play of Abbie Ward is a case in point says England Rugby's Senior People Partner Chloe Francis. Francis, as she explains in chapter two, is overseeing the continued development of her organisation's player (and coach) maternity policy.

On that note, there were numerous mothers competing at the Paris Olympics (Team USA had 16 alone) in what was the first Games where 50 per cent of the athletes were women. It represented progress, but was not reflected in the coaching ranks.

High Performance Sport New Zealand recognised the discrepancy years ago and, as Helene Wilson and Jody Cameron explain in chapter three, HPSNZ has taken steps to create more opportunities for women to coach in high performance. We detail how they're doing it.

Finally, in chapter four, we consider the 'gendered environment' of sport and its impact on injury risk and occurrence. The UK Sports Institute is at the vanguard of the movement to explore the bio-social factors that contribute to female athletes suffering ACL ruptures, concussions and ankle sprains more frequently than males. We hear from Joanne Parsons and Stephanie Coen, who are two of the academics leading the research in this space.

While much work remains to be done to realise the potential of women athletes and coaches, we hope to strike a note of optimism that resonates with you. We also hope to give you something practical to take back to your teams.

Know your limits? Four factors that allow the Kansas City Current to balance challenge and support in their players' athletic development

Photo by Jonathan Bachman/Getty Images

Female soccer players place great emphasis on facilities, resources and support when it comes to plying their trade. It can prove to be the difference when clubs compete for their signature.

On that front, the teams of the NWSL are able to match almost anything on offer across the globe, which explains the array of American and global talent that fills rosters across the league.

The Kansas City Current, who made this season's semi-finals, are no exception. Team captain, Lo'eau LaBonta, enjoyed a remarkable campaign in midfield; Malawian forward Temwa Chawinga hit the ground running in her debut season, while defender Hailie Mace received her first call-up to the USNWT.

Additionally, Vlatko Andonovski, the Current's Head Coach, slipped back into club football with consummate ease in leading the team to fourth in the regular season.

Joining Andonovski was Garga Caserta, who was appointed Head of Performance in early 2024. Caserta was also returning to the club game after a five-year hiatus that took in a spell alongside Andonovski at the USWNT.

In preseason, Caserta delivered a presentation to the players in which he outlined what they could expect from the new performance system and how Caserta and his colleagues would liaise with other departments. He also promised to sustain continuous dialogue with each and every player. By the time Caserta uttered his final words, the players were brought-in.

"At the end I said: 'the moments that suck are what unite us and make everything worth it'," he tells the Leaders Performance Institute, adding that he used a stronger word than 'moments' to make his point.

"Because if you've been in sports, what do you talk about? That you had a great time, that you won a championship? Not really. You go back and say 'remember that day we did that ridiculous fitness test?' or 'we had that one day where everything went wrong?'."

However, it does not take much for challenge to deteriorate into threat. "It can turn very easily depending on the actions and communication from the leadership," adds Caserta, acknowledging the balancing act any club faces.

It is not an issue in this corner of Missouri, where the Current strives to build an environment that enables their players to stretch themselves while feeling a sense of physical and psychological safety.

In this chapter, we explore four ways that Caserta and the KC Current strive to maintain that level of challenge and support.

"If, for example, I start seeing some glaring deficiencies in their ability to keep up with the intensity of their position, their ability to cover the ground, or a lack of strength that's demonstrated by an inability to express force in certain moments, then I can intervene in a detailed manner."

Photo by Amy Kontras/ISI Photos/Getty Images

1

Conditioning work that's relevant to the game

In an exciting campaign, Andonovski's KC Current developed a reputation for pressing opponents, quick transitions and relentlessness in attack. These traits are by-products of a training environment where physical and tactical preparation are twin pillars of conditioning.

"Practice is basically a conditioning system to be able to perform the sport," says Caserta. As such, the players know that anything they are asked to do in the gym or in warm-up exercises will have direct transfer to the field.

Caserta works closely with Andonovski and his coaching staff to devise training programs. "It is naive and almost overconfident of someone to think that they can define exactly what type of running is needed, for example, to prepare a player to fulfil that position without playing," he continues. "That means we need to have exercises that have them play the way we want to play."

Naturally, it takes players time to get up to speed with the needs of their position, but Caserta is afforded scope to make suitable adaptations both at an individual and team level. "I'm very comfortable in the notion that we don't know 100 per cent what's going on in the body and how players are adapting to be able to do the things that we ask," he says. "But if, for example, I start seeing some glaring deficiencies in their ability to keep up with the intensity of their position, their ability to cover the ground, or a lack of strength that's demonstrated by an inability to express force in certain moments, then I can intervene in a detailed manner." It is a question of reverse-engineering the performance deficit, starting from the knowledge of what movement skills or patterns are required and adapting them to the individual athletes.

Photo by Geoff Stellfox/Getty Images

2

Careful manipulation of training variables

KC Current players understand that when they are asked to push further, they are not placed at increased injury risk. "Everyone is aware of potential injuries – it has affected teams for a long time," says Caserta, mindful that the Current's roster was not injury-free in 2024. "But if players have been conditioned, have adapted, and have recovered appropriately, they should be able to push a little bit further if the concepts around the training, the design and the variables within the exercise were considered appropriately." This point is critical. "It's not just the minutes but the actions that are encouraged during the exercise." A variable might be the size of the playing space or whether the goalkeepers are participating or not. Small-sided games in particular offer numerous potential variables. "We can move the right variables while maintaining some control over their program."

Caserta has the ears of his technical staff and it makes a difference. In fact, it is not unheard of for him to interject in training to tell them 'let's go, they need it, keep pushing it'. He would never take an undue risk but nor does he wish to do the players or technical staff a disservice.

"The coaches are accustomed to having a sports scientist say 'cut here, let's stop' or 'they're doing too much'," he says. "And this year I more often said 'no guys, let's keep going. Don't cut it'. These are modern coaches, very aware of the sports science side, the risks, and very dedicated to creating a well-developed training environment."

"I've come to the conclusion that velocity is a more defining factor for improvement than other things that may be defined as 'intensity'."

Photo by Al Chang/ISI Photos/Getty Images

3

Common norms are not always useful, especially in women's sport

As Caserta explains, common norms in performance may not be harmful, but they may not always be helpful either. "We should be able to continue pushing things as long as the progressive overload is reasonable and there is an appropriate amount of recovery," he says. "The problem is that there are so many copy and paste methods."

Caserta refers to the post-game box to box runs beloved by unused substitutes, which he does not necessarily agree is best for them. "It's something players have always done. I almost feel like a young sports scientist would feel weird and worried if they didn't do it. But it might not be the most appropriate."

But what if a player requests it? "That's absolutely fine," says Caserta. "We can do it without posing a higher risk, for example, but it might not be the thing they need."

In a similar vein, Caserta and KC Current take existing datasets and try to apply them in unique ways. "The definition of intensity within our system is max velocity," he says, aware that others focus on heart rate. "I've come to the conclusion that velocity is a more defining factor for improvement than other things that may be defined as 'intensity'." His rationale is simple: "a small-sided game, for example, is much more dense than another exercise. There's a lot more actions happening within a certain amount of time, but each action is no more intense than another."

During a session, Caserta might tell coaches that 'we need to control velocities'; and "we know now that we can control velocity through some of those training variables". These variables can be anything, from the target of the exercise to the space maintained between the players or a coach's verbal cues.

Photo by Dustin Markland/Getty Images

4

Finally, do not pursue female differentiators for the sake of it

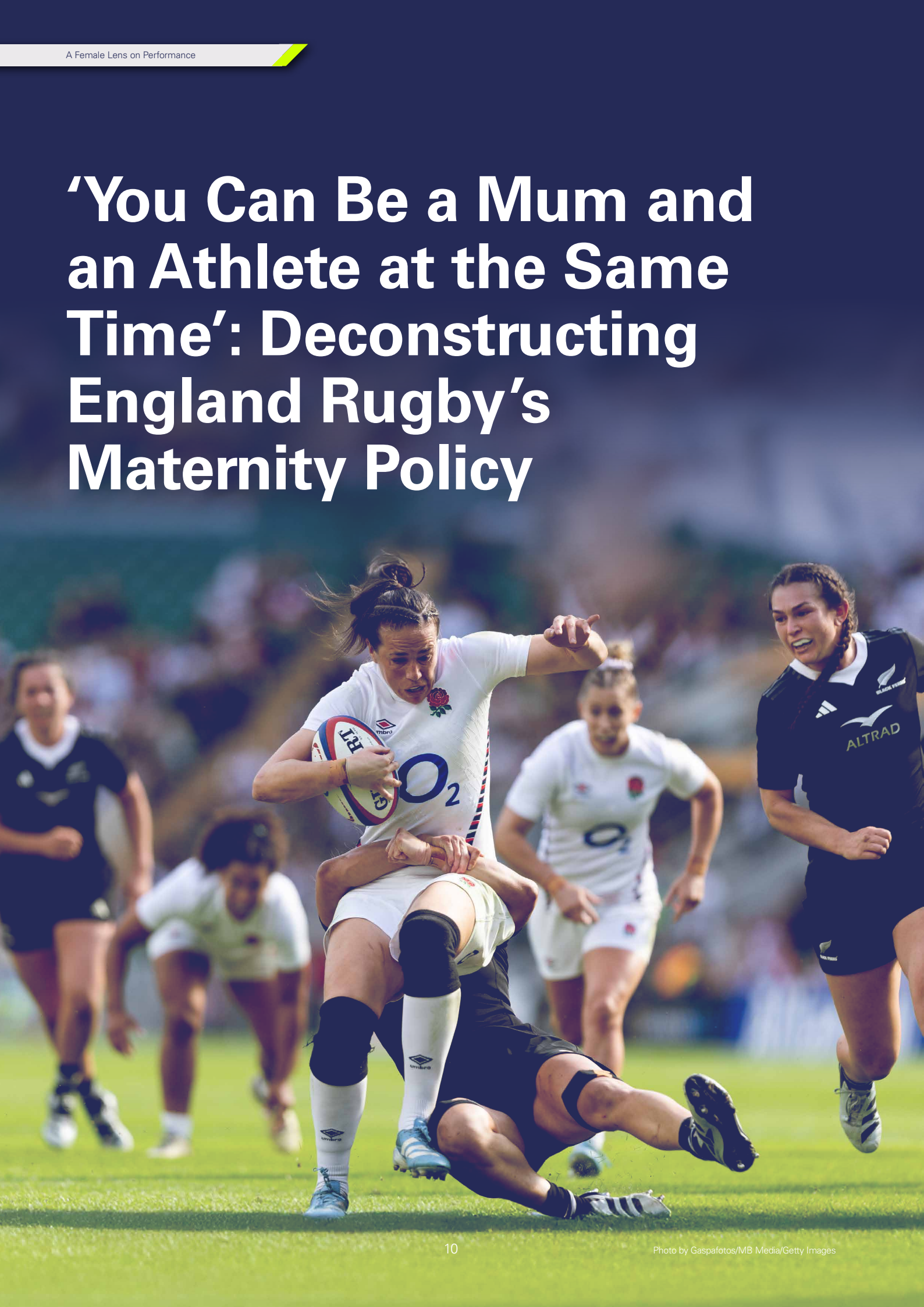
Yes, there continues to be regular occurrences of ACL injuries in women's soccer, but more research is needed into the root causes before any protocols can be adopted. The same goes for the impact of the menstrual cycle and its phases.

Caserta is aware of the discourse and believes that performance teams in soccer are too often chasing female performance differentiators where the supporting evidence does not yet exist.

"There are some obvious differences between females and males," he says before adding that sports scientists should not go chasing those.

He believes it is counterproductive to chase research around the menstrual cycle simply because the topic attracts a lot of attention. "Research shouldn't be about recognition, and professional sports environment is not the place for research. The team and athletes suffer from it rather than benefit."

‘You Can Be a Mum and an Athlete at the Same Time’: Deconstructing England Rugby’s Maternity Policy



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In March 2024, Abbie Ward became the first England international to return to play – and score a try – having taken maternity leave.

Ward, a lock who also plays for the Bristol Bears, was the Red Roses' first contracted player to both use the Rugby Football Union's player maternity policy and return to action.

She played her first match for Bristol 17 weeks postpartum and was called up to the England squad for the 2024 Women's Six Nations at the turn of the year. Her try came in the Red Roses match against Italy.

"I just wanted to show that it's possible – and it is – you can be a mum and an athlete at the same time," she said during the 2023 ITV documentary *A Bump in the Road,* which followed Ward during the weeks building up to the birth of her daughter, Hallie, and her return to play.

"I think there's still work that needs to be done, but my hope is that things like this will help move stuff in the right direction," she added.

We have seen athletes return to action before but, in England, there was no precedent for a rugby player to return, not only to the club game but international level. So much is contingent on selection in a team sport, but Ward has often stated her ambition to be the best second row player in the world. She was one of the first beneficiaries of the RFU's player maternity policy, which was first introduced in 2022 and was updated in 2023. Features include 26 weeks' full pay for maternity leave; financial support for travel and accommodation costs for the players and their children; support for childcare during training camps and competitions; and an automatic 12-month contract extension for centrally-contracted England players.

The RFU have been approached by sports organisations across the world who want to know how they built their policy, but, as Chloe Francis, the union's Head of People Operations, tells the Leaders Performance Institute, it is a constant work in progress. A new version is due ahead of the 2025 World Cup.

"We were really open at the start and said to everybody 'this needs to evolve and essentially we had to wait for somebody to go first to understand what would work and what might need reviewing'," says Chloe. In the event, there were two teammates: Ward and Vickii Cornborough, who gave birth to twins and has since retired from rugby. "Their feedback has been key."

In this chapter, we speak to Chloe about the challenges of maintaining an up to date maternity policy in the world of rugby.

"We're really clear: no pressure at all. If you want to take the time out for 26 weeks and just enjoy having a little baby, then please do."

Photo by MICHAEL BRADLEY/AFP via Getty Images

There are some notable features in your maternity policy. How did they come into being?

CF: This was a project that I inherited from my predecessor when I joined the RFU, my first meeting was with the playing group, who were fully involved in the creation and provided feedback alongside the RPA General Secretary, Christian Day, who was in all those meetings and was really supportive.. We also spoke to the physios and S&C, as we didn't want to put them under undue pressure. It was all joined up. The idea was to remove the stress or pressure to return; that there's no worry outside of what you're going to put on yourself already.

Who else was involved?

CF: Our doctors made sure that the clinical elements worked, while our lawyers ensured legal compliance. More recently, there has been involvement from Sarah Hunter, our Defence Coach who had her first baby recently, we discussed how important it is to encourage more women into sport in all roles, and you can't do that if the right policies are not in place to make it possible; and from Sarah's perspective as a coach, if we want more women coaches, which we really do, we've got to facilitate that.

Having read your policy, it seems you offer milestones rather than timelines, which removes the time pressure.

CF: We're really clear: no pressure at all. If you want to take the time out for the 26 weeks, or longer, and just enjoy having a little baby and the changes that come with that then please do. Equally, if you want to come back after two weeks and you want to start on the programme, go for it because we're here and we'll go with you.

How much has changed since your first policy?

CF: The first policy was about two pages long. [Editor's note: the latest version, seen by the Leaders Performance Institute, runs to 21 pages]. It was an interim. Then all the work happened quite soon after that where we started looking at what

other sports were doing and what other rugby unions were doing. We decided to add the re-contracting because it felt inappropriate that someone pregnant or on maternity leave could be told 'we don't have a contract for you'. Everyone in the Union was really supportive and it was well-received. We'll keep learning though as we said we would. It's going to keep changing. The fundamental thing is that we're able to deliver what we promise.

From whom have you taken inspiration?

CF: New Zealand Rugby primarily – the travel piece was almost lifted directly from their own policy – although we did change ours slightly because what we added in as well was that if you didn't want to travel with your infant, we would also pay reasonable childcare costs for your infant to stay at home. We didn't want the pressure of just one option. We don't want to pressure anyone to be like, 'well, you must bring your child with you' because some players may want that time to focus solely on training and preparing for their tournaments but with the comfort of knowing their infant is looked afterat home. I recently spoke to Aileen Bailey, the Head of HR at the Irish Rugby Football Union after Ashleigh Orchard returned to play in the Paris Olympics. We had a really good chat and are in agreement that if they're going to do something they'll talk to us and vice versa. So that if they're going to go one step further, we can match it.

How does your policy support players receiving fertility treatment or suffering after child loss?

CF: They are able to fully benefit from the RFU policy which is in place for all colleagues, which also includes additional time off for anyone who's baby is taken into neo-natal care, however, if a player came to us and said 'I'm going to start having IVF treatment', we'd say 'tell us what you need, we'll make it work' as we know it may need a more bespoke approach; We plan to return to these areas to make the policy even more comprehensive and specific for the playing group.

Would a player talk to a member of your medical team if they were planning to start a family?

CF: Yes, and our doctor has been amazing. It was early in 2024 that we updated the policy to make clear the link between our medical team and their specialists. We want to make sure

Photo by Gaspafotos/MB Media/Getty Images

that the specialists understand that this isn't just a standard pregnancy – this is a pregnancy where the mother will be playing and training. Also, all options will be presented to the player regarding the delivery of their care and what it might mean for returning.

It might also help the players feel comfortable talking about it with other people who are involved with the team.

CF: Definitely. Abbie found that the players had lots of questions for her because she was the first one that came back in. Like, 'how was it?' or 'how does it feel now with little Hallie?'

What needs to be in place for your policy to be as impactful as possible?

CF: It helps that the clubs have supported it. That massively helped Abbie because obviously for a lot of her time when she came back she was in her club environment at Bristol. Then there's our operations Manager, Harriet Martin, who was brilliant because she said 'whatever Abbie needs, let's do it'. She ordered travel changing tables, which is essential at training camp venues with limited changing facilities. If Hallie is onsite Abbie would not have to take her all the way back to her room. Harriet also arranges 'family days' where everyone can bring in their kids. She's been amazing.

What's next?

CF: We need to revisit what happens when the baby turns 12 months and their parent is still in camp. We've got a World Cup in 2025 and the players will be in camp for 17 weeks. So we've got to offer something different because we can't have a parent away from a baby for that long. I feel like it was successful, and I am so grateful to everyone who supported the creation of it, but as we promised we would, we need to keep revisiting it and evolving it to make sure it stays as successful for our team.

"We decided to add the re-contracting because it felt ridiculous that someone pregnant or on maternity leave could be told 'we don't have a contract for you'."

Photo by ADRIAN DENNIS/AFP via Getty Images

Photo by Gaspafotos/MB Media/Getty Images

The Key Features of the RFU Player Maternity Policy

- Players must inform team medical personnel and the RFU People Team as soon as they know they are pregnant. A risk assessment will be conducted to ensure the safety of the player and the unborn child.
- Players may reduce their activity and play based on the risk assessment. Options include taking annual leave, starting maternity leave, or transferring to alternative roles like community coaching or internships.
- Regular multidisciplinary meetings involving the RFU medical team, People Team, and the player's healthcare providers to manage the pregnancy in the context of elite sports. Individualised plans for returning to play post-pregnancy, including considerations for breastfeeding.
- Contracts will be extended for at least 12 months to ensure continuity and support. Pregnant players will be included in contract negotiations and discussions.
- Players can travel with their infant and a support person, with the RFU covering reasonable travel and accommodation costs. Safe, private spaces for breastfeeding and storing breast milk will be provided.
- Up to 52 weeks of maternity leave, with the first 26 weeks at full pay for those with 52 weeks of continuous service.
- One week of paid leave per treatment cycle for fertility treatments. Support and additional leave for players affected by pregnancy loss.
- Continuous access to medical, nutritional, and strength and conditioning support throughout pregnancy and postpartum. Scheduled appointments with healthcare providers to monitor health and progress.

‘The best coach for a job may be a woman – it’s about broadening people’s perspectives’

Thomas Hamill Photography

Former road cyclist Elyse Fraser, who retired from competition in 2020, is now one of New Zealand Cycling's most respected coaches.

"I feel like I have lots to give," she told the Otago Times in 2022. "I learned so much about the sport when I was in it and I think it is a really nice way to give back and encourage the next generation."

By then she was settling into her new vocation. "I get to focus on helping other people become awesome," she said, before adding modestly: "I think I'm probably a much better coach than I was an athlete."

That may be her opinion, but it's a fact that Cycling New Zealand's Endurance Development Coach is one of the few women coaching within high performance cycling.

Fraser is one of a growing number of local women high performance coaches who have benefited from enrolling in High Performance Sport New Zealand's Women in High Performance Sport coach development programmes, the subject of this chapter.

Te Hāpaitanga

Te Hāpaitanga, which means 'to lift; to raise' in English is an 18-month programme that 'provides a range of opportunities for a number of future women high performance coaches to test and develop their coaching capability, and to develop new skills to navigate a complex and challenging career in high performance sport' as HPSNZ's website explains.

"Elyse as a graduate of Te Hāpaitanga was identified by her sport and is now working in the environment learning and growing alongside some world-class high performance coaches," Helene Wilson, the HPSNZ Women in High Performance Sport manager, tells the Leaders Performance Institute on Teams.

Wilson is joined by her colleague Jody Cameron, HPSNZ's Te Hāpaitanga lead, who explains that New Zealand Cycling is one of several national sports organisations to positively engage with the programme. "The NSOs are really looking at building their ecosystem,

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"The coaches are learning under extreme circumstances. The theory pieces during the camp were around flow, confidence, self-efficacy; all of those things that you need as a coach."

Thomas Hamill Photography

being diverse, offering more for the athletes," she says. "It makes for a better opportunity for everybody."

Te Hāpaitanga has its origins in the Women in High Performance Sport pilot project, which was announced by the former Minister for Sport and Recreation, Grant Robertson, in 2018. Robertson allocated $2.7 million in funds to address systemic issues associated with gender equity in high performance sport.

"We have to give him that kudos for starting the movement here in New Zealand," says Wilson. "Here at the time, I think the team at HPSNZ picked up that and acknowledged that increasing the number of women coaching in high performance was the biggest challenge; and it still remains."

HPSNZ's Women in High Performance Sport strategy takes a top-down and bottom-up approach, as inspired by the work of kinesiologist Nicole LaVoi. "You can't develop women and then put them in a system that's still the same."

Workshops that provide challenge and support

The Te Hāpaitanga programme includes five two-day residential workshops aimed at developing 'personal and professional capabilities in a collective learning environment that is challenging and growth promoting,' as the HPSNZ website explains.

Cameron tells the tale of a recent residential camp at Aoraki / Mount Cook, where the latest cohort of prospective high performance coaches were tasked with climbing the mountain alongside three experienced climbers. "The coaches are learning under extreme circumstances," she explains. "The theory pieces during the camp were around flow, confidence, self-efficacy; all of those things that you need as a coach."

Self-leadership is a critical support tool. Wilson works with HPSNZ coaching consultant Tristan Collins to deliver within a framework of "knowing oneself". Wilson says: "You need to know which self to deploy in certain situations; and that's as simple in coaching as you've got to know yourself well, your identity, your self-worth to be a high performance coach, but you've also got to understand leadership in terms of the interpersonal relationships for the outcomes that matter."

These are particularly important for women coaches in a results-driven business, where it is incumbent on these individuals to share more about themselves and their capabilities. "We don't want to put the women in situations where they aren't respected because people don't think they have the credibility to do the job."

Nor is Te Hāpaitanga about activism. "There's a place for activism in the Women in Sport movement, but if you're trying to be the person who is employed and part of the team in high performance, that's a very hard road

to tread," Wilson continues. "Women who want to be a high performance coach have got to get better at skilfully articulating what they have to offer, how they can offer it, and bank those skills so they are seen as part of the team, not as someone who's fighting."

'You can't learn about high performance coaching unless you've been in it'

A number of NSOs have committed, through the Women in High Performance Strategy to creating a real world high performance work experience where valued women have opportunities in high performance to hone their craft.

"We work directly with the high performance directors to offer bespoke opportunities to coaches so they can learn through experience on the job," says Cameron. There is a growing number of former athletes returning to high performance and it is improving not only diversity, but the work being done. "It's a huge thing in sport, those opportunities to grow into a coach, looking two to three cycles away, and transitioning into what a high performance coach could be."

It is perhaps the most effective way of enabling these women to feel responsibility and a sense of leadership. "You can't learn about HP coaching and the nuances of pressures, complexities and the volatile nature of it until you have actually been in it," says Wilson. "By partnering with the sport to design a Residency Experience for the women, we can set up bespoke support systems around them in the sport to learn about themselves, learn about their interpersonal relationships and learn about the world that they're actually working in."

Roles can take almost any shape and form. "We don't need them to be the head coach of a team or the lead coach in an individual sport, we just need them in the environment as part of the coaching team."

The NSO has a critical role in identifying where people can add strategic and high performance value to the system.

"By partnering with the sport to design a Residency Experience for the women, we can set up bespoke support systems around them in the sport to learn about themselves, learn about their interpersonal relationships and learn about the world that they're actually working in."

Ed Sykes/SWpix.com

Thomas Hamill Photography

"What can we do to partner with you?" is one of Wilson's first questions when discussing residencies.

New Zealand's Satellite Network: giving back to the community

One of New Zealand's competitive advantages is its size. "We're really connected because we're a small country," says Wilson, who explains that women, who may or may not be successful in their Te Hāpaitanga application are invited to join a wider HPSNZ Satellite Network with aspiring female coaches across the nation and, increasingly, beyond. "We are capturing everyone who shows interest in one day being in high performance," adds Cameron, who sets up each woman on Te Hāpaitanga with a mentor to provide support, guided observation and feedback. Elyse Fraser herself is a mentor to aspiring cycling coach Tess Madden. "We call it 'tuakana-teina'," says Wilson of the Māori concept that refers to the relationship between an older, wiser person (tuakana) and a younger person (teina) where mutual learning happens.

Giving back to the programme is important. "The resident from the Residency Experience becomes a mentor in Te Hāpaitanga. There's all this interconnectedness that the network continues to build and grow."

Wilson also hosts online meetings on a monthly basis for the residents who are all types of leadership roles within high performance. "We have this socially-constructed learning space," she says. "It's a safe space for them to go 'I don't know, I've got this challenge that I don't know how to navigate, can you help me answer some of these questions?' or 'this is what I did, this is what I tried, this is the learning'."

The future

When Wilson ponders the future of the Women in High Performance Sport Strategy and shifting women's coaching within that, she reflects on the fact that every member of the first cohort of Te Hāpaitanga is still working in high performance.

She and her team conduct extensive feedback on all elements of the programme and the results are evident at a time when women's sport has never been more visible in New Zealand.

"Women are coming in thinking they're more capable, with connections through the network," says Wilson. "They think they've got a career option for coaching in New Zealand. That shone up at the baseline, but what we're seeing now is that the people, national sports organisations and the mentors are starting to believe in them too."

The sports are starting to say 'we can't lose this person' and more than 50 per cent of alumni have retained their job or found other work either in New Zealand or abroad. There is an eight per cent drop-off rate, which is to be expected. "Everybody aspires to be high performance but it's not actually for everybody," adds Wilson.

Shifting the coaching visibility of women in high performance is a challenge, but an exciting one. "If you define high performance as out-learning your opposition, and you're constantly learning to be better faster than your opposition, then the world's changing constantly in high performance; the context, the behaviours, the culture, the performance standards.

"So this work has to evolve and change. We are constantly learning all the time and that's what keeps us excited."

Thomas Hamill Photography

Kim Smith's journey

Kim Smith's Residency Experience at Volleyball NZ has benefited all involved. Smith took a 12-month placement in a targeted women's coach development role having come to an arrangement with her school (Smith worked as a teacher) while also balancing her responsibilities as a new mother.

"Between school and Volleyball NZ I was able to put together a really flexible arrangement which worked for me, my baby, the school and the sport," the former Black Fern and Volley Fern told the HPSNZ website.

Smith's advocate was Volleyball NZ's Performance Manager, Colleen Campbell, who said: "Already we are seeing the benefits of the role and particularly what Kim brings to it." Smith facilitated a programme designed by women for women.

Campbell added: "Prior to being part of the Residency Experience and having Kim on board we had only two women coaches. Since she started her Residency we've been able to increase that to five qualified coaches at a national level which is very exciting for our sport."

"We supported Kim to do that," says Helene Wilson. "I supported Kim's leadership learning while in that coach developer position; and then there were coaches that came out of Kim's programme that then came to Te Hāpaitanga."

Campbell and Smith also worked with various learning groups within Volleyball NZ to understand how neglecting a gendered lens can impact job descriptions and put women off applying. It is now taken into consideration. "One of those national coaching roles was a job share role for two women who put an application in together because they enjoyed coaching in teams and wanted to share the workload, were parents and potentially time deprived, so they wouldn't have otherwise applied for the role."

Injury risk and occurrence: why gendered environments leave female athletes paying the price

Photo by Jurij Kodrun/Getty Images

ACL ruptures, concussion and ankle sprains are examples of injuries that occur with greater frequency in female athletes than male.

Sports science and medicine has come on leaps and bounds in recent decades and still this disparity persists.

Some have attributed this to biological factors such as body shape, muscle mass, joint laxity or hormones. All are important, but they don't paint the whole picture.

There are also biosocial factors i.e. the gendered environment, which we explore in more detail in this final chapter.

What is the 'gendered environment'?

The gendered environment refers to the socially constructed roles, behaviours, expectations and identities that influence individuals' experiences and opportunities across society. If you were asked to consider the differences between men and women or boys and girls beyond the biological, your answer would be influenced by the gender norms reinforced everyday through social institutions, social interactions and wider cultural products.

How does this affect girls and women in particular?

Both sport and the wider environment have largely been constructed by men for men. There is evidence all around us. As a woman, is your phone too big for your hand? Do you struggle to reach the top shelf? Mobile devices and furniture are often built to a male norm. It's the same with cars, where women are 47 per cent more likely to be seriously injured in a car crash due to seats and safety features that were designed with men as the default. Similarly, gender

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norms mean that men and women or boys and girls are expected to behave in certain ways. This can place women and girls at a disadvantage.

How may this manifest in sport?

Injury risk was the topic of focus in a research paper published in November's British Journal of Sports Medicine. The paper, titled 'Gendered environmental pathways to sports injury', combines both clinical and social science perspectives to pose "new biosocial questions" about injury risk in sport, as one of its authors, Stephanie Coen, said at a public lecture at London South Bank University later that month. Coen (a health geographer) was joined onstage by her co-author, Joanne Parsons (a physiotherapist). They highlighted four stages where the gendered environment becomes apparent in sport.

1. **Pre-sport:** "There are repeated societal messages from an early age as to the way that girls and boys should move," said Parsons, using 'you throw like a girl' as an example. "So much of the focus of injury prevention programmes is how to move differently or move more safely; and it seems plausible that the movement patterns you learn early in life can affect how you move later on during sports and could place girls and women at greater risk."

2. **Training environment:** Increased strength is generally protective against sports injury and too often women and girls don't feel supported or welcome when weight training.

3. **Competition:** In a world where aggression and risk-taking are seen as masculine traits, girls and women may try to fit in; and it could lead to increased injury risk.

4. **Treatment environment:** "There's evidence that women are less frequently offered ACL reconstructive surgery as a treatment option," said Parsons. "Do healthcare professionals place different expectations and values on women's rehabilitation versus men's? There is research to show that this bias exists in other areas of healthcare. We need to explore this in sports medicine."

Are these gendered factors more important than biological factors?

Certainly not. In fact, they are likely interconnected. Coen said, "We're trying to use this sort of metaphor of 'widening the lens' because we see it as just a way to add more scope for possible solutions."

What do Parsons, Coen et al want to achieve?

As Parsons said: "Instead of thinking that girls and women are inherently injury prone, we need to think of the ways that sport environments could be making them injury prone." It won't be easy. "How do we change society?" said Coen. "I think that's the main challenge with our approach: it seems like such a big hack."

Are any sports organisations considering the gendered environment?

In Britain, the UK Sports Institute has led the way. An application for a British Academy Innovation Fellowship meant that the Institute could hire Coen for a year to conduct research with former UK Sport-funded female athletes who have retired within the last five years. The purpose was to interview these former athletes and explore how women's sporting environments – their social and cultural context when training and competing – influenced their experiences of both minor and major injuries.

What are the limitations inherent in the research?

Firstly, Parsons and Coen spoke to a small sample size of limited diversity. They also focused on the training and competition environments, even if pre-sport and treatment contexts were raised. In short, and as ever, more research is needed.

What's next?

Beyond further research, Parsons honed in on three areas:

1. **Training environments:** "We can also evaluate the physical spaces where athletes train and compete, so you can have a look at whether there is gendered messages or imagery and weight training spaces, locker rooms, examination rooms."
2. **Role models and support systems:** "Trying to ensure that there are positive women role models around, especially at younger ages."
3. **Addressing gendered responsibilities:** "We can consider how gendered roles and responsibilities like childcare or work hours, may interfere with an athlete's progress in sports or rehabilitation for both men and women."

"Instead of thinking that girls and women are inherently injury prone, we need to think of the ways that sport environments could be making them injury prone."

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