

Growing demand for female protective sportswear

By Heba Hashem 20 May 2024

As more women participate in contact and ball sports, demand for protective clothing designed for the female body is increasing. WTiN looks at developments, including the implications of new legislation on sex-specific requirements.

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Across the world, women are increasingly participating in what used to be male-dominated sports such as boxing, football, rugby and ice hockey, creating a new niche for performance and protective textile and apparel manufacturers.

In football (soccer in the US and Canada), for example, the number of female players worldwide increased by a quarter between 2019 and 2023, reaching 16.6 million, according to the international governing body FIFA (the Fédération Internationale de Football Association) [1]. Ice hockey, too, is seeing an upswing in female players, with their number worldwide increasing by almost 50% between 2007 and 2022 to reach 229,754, according to the International Ice Hockey Federation [2].

More women are also getting into individual sports such as boxing. England Boxing – the country’s boxing governing body – has witnessed an 88% growth in female members since 2017, the Associated Press reported in May 2023 [3].

Need for female-specific protection

However, as more women have competed in contact sports – which carry an elevated risk of injury – protective sports gear and equipment have yet to adapt to that change. Female sports players, both professional and amateur, often must settle for protective gear designed for male bodies. And that can negatively affect their performance and confidence.

Lindsay Gary, a California-based long-term amateur ice hockey player, who has been involved in the sport since 1999, experienced this first-hand. “I play against full-sized men who have played at high levels in the past, so they shoot pretty hard. I broke my arm once from a slap shot and a chest protector that wasn’t up to the job of protecting me from it,” she told WTiN.

Identifying issues and finding solutions

Gary now sources most of her gear from Michigan, US-based sports equipment manufacturer Warrior Sports Inc, because it offers customised lines and provides adult protection at intermediate sizes, which isn’t necessarily standard [4]. The customised products are expensive and ordering timelines are longer than with off-the-shelf options, but they work better, she said.

“Current gear isn’t great for shorter women. I’m about 1.6 metres tall. For non-goalie women, it’s hard to find hockey shorts that fit their hips, so you either have to wear something too tight or too big, which can impact your movements.”

Warrior Sports incorporates HyperComp, a lightweight carbon-composite material, into its protective hockey gear, including its goalkeeper leg pads and ‘blockers’ (a rectangular piece of protective equipment worn by goaltenders in ice hockey). The material is lighter and stronger than traditional high-density foams found in goalie gear and offers a responsive feel, according to the company.

For Samantha Hatfield, a US amateur ice hockey player in the Tulsa Women’s Hockey League, Oklahoma, finding protective gear for her figure “was an absolute nightmare”. Despite being a standard size of USA18/UK22/EU50 she encountered difficulties finding gear that fitted properly.

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“Men’s sizing, which was the only available option, didn’t accommodate my proportions adequately. Even chest protection posed issues due to differences in bust size. Moving on to shin, elbow pads, and gloves, I realised the standard sizes didn’t align with the nuances of the adult female body,” said Hatfield, who has been playing the sport since 2023.

“Women’s hockey gear still feels like an afterthought in the industry. It’s high time we had gear that’s designed for our bodies, not just sized down from men’s gear. Safety is a big concern too – ill-fitting gear isn’t just uncomfortable; it’s risky on the ice.”

After extensive research, Hatfield decided to source her protective equipment from multiple brands, including Sherbrooke, Québec, Canada-based Stärk Hockey, which caters for a broader range of body types, and Maryland, US-based sports equipment manufacturer STX [5], [6].

Michel Paul, founder of Stärk Hockey, told WTiN women have compromised on comfort and protection for years. “Many have equipment that is either too short or too big, increasing the risk of injury and impeding their mobility. Needless to say, both comfort and protection are must-haves when playing [ice] hockey.”

Although not women exclusive, Stärk Hockey’s Made for Girls (MFG) collection has been the driving force of its marketing and development efforts. According to Paul, two major challenges arise when designing equipment for female players: growth rate and body proportions. These are completely different from industry standards that are used for men’s measurements.

“Female bodies are more difficult to design for because height vs hip vs waist vs bust ratios are all over the place. Our women’s shoulder pad is a close-to-body fit that allows for better mobility and line of sights. We surveyed so many players to make sure we had it right,” said Paul.



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Stärk's MFG collection considers the anatomical differences between men and women. Source: Stärk Hockey

Selecting the right fabrics is also key to developing the protective equipment for women. Stärk Hockey found that stretchable fabrics with good compression strength helped to keep protection in place while adapting to the female body. For example, the brand uses a breathable nylon stretch mesh usually found on sports bras and leggings, which provides secure protection that is not too tight on the body.

Oceania prime for opportunity

Meanwhile, Fempro Armour, an Australian manufacturer of female chest and body armour, has been focused on developing protective gear designed specifically for the female body [7].

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"In women's protective gear, it's not the textile that is important, it's the armour itself. The reason why it's hard to create is because we have hundreds of women's body shapes, whereas men only have a handful, so they're easier to cater for," Stephanie Bofinger, CEO and founder of Fempro Armour, told WTiN.

Leading Australian sports pose market gap

The company plans to launch a new female-specific protective sports gear to Rugby Union and Australian Football League (Australian rules football) athletes in July 2024, with plans to expand into additional sports. Currently in testing, the armour will function like an airbag, absorbing energy and using viscoelastic memory foam to push the impact away from the player.

"Our protective gear is impact-tested in Italy. The armour distributes the impact energy over the whole plate to minimise the impact point, and then it absorbs the energy like airbags in our cars and pushes it back away from the body," explained Bofinger, who is a former professional athlete, an ex-international swimmer and currently an avid motorcyclist.



Fempro create garments and armour for motorcycling, martial arts, mountain biking, horse riding and soon, rugby. Source: Fempro

Leveraging Kiwi sporting heritage

Innovation in women's protective sports gear is also taking place in New Zealand, where QP Sport, a developer and manufacturer of chest and breast guards, is running final tests on a new patented women's chest protector for ball and team sports, including rugby – NZ's most popular sport, football (soccer) and (field) hockey [8].

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"We've tested extensively in the last 12 months in New Zealand, which is a great market to undertake R&D in ball and team sports due to high levels of participation by women in the country. This research is being compiled and we will present to sports codes in 2024," Richard Shearer, owner and general manager of QP Sport, told WTiN.

The company has focused the breasts, which are a particularly vulnerable area for female athletes in contact sports. Their location on the anterior chest wall and lack of musculoskeletal protection makes them more susceptible to direct blows and injuries[9].

"Our new product offers appropriate protection to the female chest in sports like soccer, rugby and basketball. The key benefits are avoiding painful hits and allowing more enjoyment and confidence in one's sport," he said.

The company started its work delivering protection for fencing and martial arts for women, which have traditionally been the market for QP Sport's chest and breast protectors. However, in recent years, ball and team sports have become the new ground for its products.

"Karate and fencing protectors are not suitable for ball and team sports – such as rugby, soccer, football, and basketball – where we need softer protectors designed to protect against ball and player impacts, as opposed to powerfully executed strikes or strikes from weapons," said Shearer.

While sportswear manufacturers recognise that more women are playing contact sports, many are still reducing the size of current lines and classifying it as a female version: "Since sporting equipment became a thing, the concept of 'shrinking it and pinking it' has been how female sports equipment is developed. We want no part in that approach and design our products from the ground up for females," said Shearer.

For now, the main issue in developing women's protective sports gear is selecting materials that protect against injury and pain, assessing the need for density, hardness, flexibility and thickness, he said.



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QP Sport develops breast protection for a wide range of activities. Source: QP Sports

Legislation to address requirements

As the number of women taking up contact sports continues to rise, the protective equipment market is expected to see more innovations that cater to the female body shape.

Over the next few years (2024-2032), the global market value of women's protective sports equipment is projected to grow at a compound annual growth rate (CAGR) of 4.2%, potentially reaching US\$4.44bn by 2032, said Rahul Varpe, digital marketing manager at Delaware, US-based global market research and management consulting company Global Market Insights [10].

"This growth can be attributed to several factors, including the increasing involvement of women in sports, heightened awareness regarding the importance of sports equipment, the burgeoning health and fitness trends, and enforcement of strict regulations concerning the use of protective gear during sports," he said.

Regulatory and standardisation pressure is also encouraging innovation. For example, the European Union (EU) general product safety regulation – adopted in May 2023, coming into force from December (2024) (11) – states that consumer product manufacturers should be forced to address the gender safety gap by developing standards [11].

"Products could present different risks for different genders, and standardisation activities should take that into account to avoid discrepancies in terms of safety and therefore a gender safety gap," the regulation states.

Furthermore, last October (2023), the EU's executive, the European Commission, issued guidelines about the application of the EU's personal protective equipment (PPE) regulation 2016/425 [12], [13]. Those guidelines explicitly mention that "PPE must be designed and manufactured in order to provide the highest possible comfort as well as effectiveness for each wearer, thus for different morphology types and for all genders."

There are also ongoing discussions at EU level to assess the inclusiveness of EU standards for products, said Ariane Gatti, communication and policy manager at the Brussels-based Federation of the European Sporting Goods Industry.

"This is just preliminary work, but it shows the growing interest and awareness of regulators about the need to take into account the gender perspective of protective products," she said.

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