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# BODY GUARDS

Karters put their bodies on the line every time they go racing. This is why the FIA has developed a new standard for rib and chest protectors that will prevent injuries across the sport

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MARC CUTLER

Aspiring Indian karting talent Shahan Ali Mohsin hopes to emulate his idol Fernando Alonso, having already won the 2016 Asian Karting Championship and the Indian National Championship twice.

The 13-year-old was tipped to compete in this year's prestigious Trofeo Andrea Margutti Karting race in Italy but withdrew after just two practice sessions due to pain from a relapsed rib injury sustained in a race last year. Ali Mohsin was told by medical specialists that it could take between 10 to 12 weeks to fully recover, preventing him from competing in the following CIK-FIA Academy Trophy, a potentially career-defining race.

It is an all-too common issue in the competitive world of karting, the only motor sport discipline that does not require racers to wear a harness. Drivers sit in rigid seats that expose the upper part of their body as it is subjected to bumps and knocks induced by high grip levels.

They have the option to wear body protection along with their overalls but for the moment it is not mandatory. Even for those who choose to do so, they do not necessarily know if the equipment they are using meets the standards required to protect them.

The FIA is planning to change that with the first-ever Karting Body Protection Standard, which is set to be discussed by the World Motor Sport Council this month and if approved is set to become mandatory by 2021.

"We know that there are a lot of drivers already using chest and rib protectors but currently there is no FIA standard, so there is no way for the drivers to know what is a good protector or not," says Nuno Costa, FIA Head of Safety Equipment Homologation. "The target is to design and put together a protector that can give protection to the rib and chest at the same time, and become standard across the sport." ▶

The FIA is developing a new safety standard for karting to protect drivers who are vulnerable to rib and chest injury.





**INDUSTRY SUPPORT**

The standard has been a decade in the making with consultation from the FIA's Industry Working Group to ensure that the product will be a cost-effective solution for drivers at grassroots level.

Stefano Begnozzi, founder of protective equipment manufacturer Bengio High Safety Tech, believes it is vital for drivers to be protected every time they get into a kart.

"We believe it's absolutely essential that kart drivers wear a rib and chest protector, not only to protect themselves in case of an accident but always," says Begnozzi. "Every time a driver sits in his seat he is subjected to strong and continuous shocks caused by the very rigid chassis, which over time can cause serious injury to his ribs."

Begnozzi started his company after his son Alessandro, a promising kart driver, suffered a serious chest injury in an ordinary race accident which almost forced him to quit racing. He now produces high-tech carbon fibre and Kevlar reinforced products.

Along with Bengio products, there are some other rib and chest protectors already on the market, including the Alpinestars Bionic rib support brace that uses fibreglass to disperse energy away from the impact point and poly

fabric to protect against abrasion. OMP also offers a rib waistcoat that uses a carbon shell and padded interior for comfort, and has buckle-less closures for extra safety.

Now the FIA wants to ensure that these products not only meet the highest standards but also become mandatory for all championships run by the CIK-FIA, karting's governing body.

"What we found is that in the market we have some really good rib protectors, which deliver the safety standard that drivers need," says Costa. "But there are also some protectors that the drivers use which do not give any sort of protection in the important areas."

The new FIA standard is for a combined chest and rib protector that drivers can wear under their race suits. It will be designed to protect against three forms of injury: impact with flat or curved structures; impact with steering wheel or edge of seat; and impact with steering column. It will be made to withstand 60J of energy to the chest and 100J of energy to the ribs, ensuring that the force transmitted to the body is no more than 1kN during an impact.

All parts of the product will be permanently connected and must allow for free movement of the arms, body, head and neck while being worn. Drivers will be able to tailor the vest to

their body size to ensure that it is comfortable, with dedicated versions for female drivers to be made available.

Manufacturers will even be given time for their product to be used on track before it is made compulsory, to allow them to catch up with existing products and to ensure that drivers are satisfied with how it performs.

"The target is to make it recommended until December 2020, and then from 2021 it will be compulsory," says Costa. "And the reason is because we need to give time for the industry to come up with final products and to approve them, and to make them available on the market."

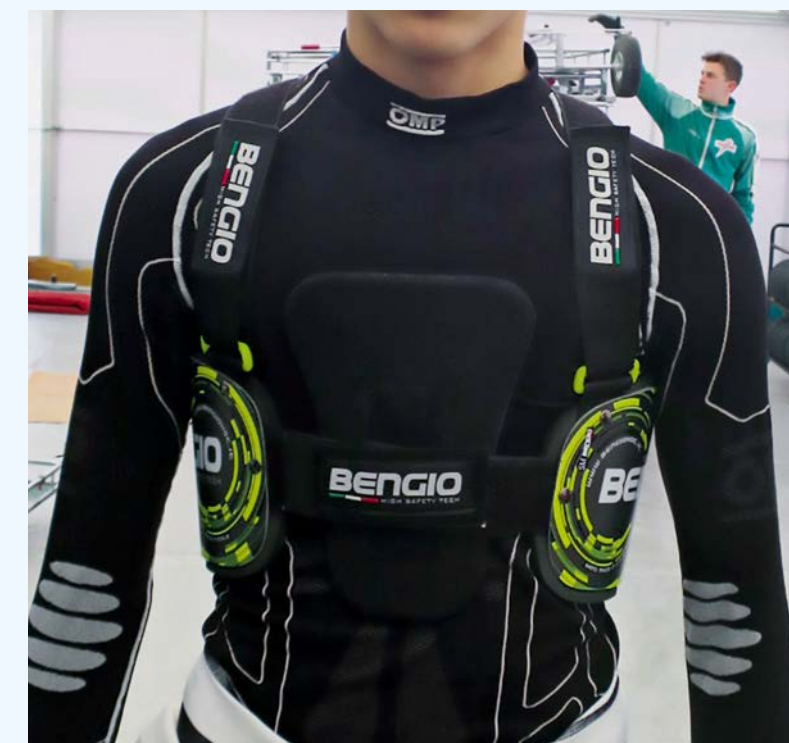
"This will give manufacturers time to build new products that can meet the FIA standard and give time for the drivers to use them."

**QUALITY ASSURANCE**

Steve Tillett, owner of Tillett Racing Seats, believes that the standard will help drivers in determining which products offer protection, versus those that claim to be up to standard.

"I'm fully in support of the rib protector element of this standard," says Tillett. "Because you get a situation where there are products on the market which aren't up to standard, but they

**At the moment karters have the option to wear body protection, but it is not mandatory. That may change for 2021.**



Prototype rib and chest protectors based on the standard have already been tested at the track by safety equipment manufacturers such as Bengio.



purport to be up to standard, so it's misleading for the customers."

Tillett has a history of producing padding for karting seats back when he used to compete in 1978, which then evolved into rib protection for drivers. He even worked with 2014 World Endurance Champion Anthony Davidson in the early stages of his career.

"I constructed my whole business based on the fact that [karting] race seats damaged people's bodies," explains Tillett. "The pressure on the ribs is quite severe, as the whole weight of the driver is taken on the ribs."

"I had such a problem with a driver called Anthony Davidson that I started to bind them up," says Tillett. "I made a double density foam around the ribs and ended up making this rib protector which wasn't really on the market. I actually laminated a rib composite protection around him, and that was when he got his works drive," adds Tillett. "I made this composite rib protector around his chest that worked, and got him racing even though he had broken ribs."

However, Tillett is not a fan of the chest protection element of the FIA standard as he believes it will be uncomfortable for drivers to wear under their overalls.

Yet the same was said about the HANS device, that helps protect the head and neck of a driver, when it was first launched. Back when Formula 1 tested the device in 2001, there was a lot of apprehension over how much it restricted the driver in the cockpit. World champions such as Jacques Villeneuve notably voiced their concerns but as the design was refined, more championships started to adopt it. Now you would find it difficult to see someone racing competitively without using a HANS device, even down to National Formula Ford level.

Begnozzi believes that the new Karting Standard will have the same effect on the sport.

**'A driver is subjected to strong and continuous shocks, which over time can cause serious injury to his ribs'**

"Drivers don't like the news, but this standard will give them more protection and safety," he says.

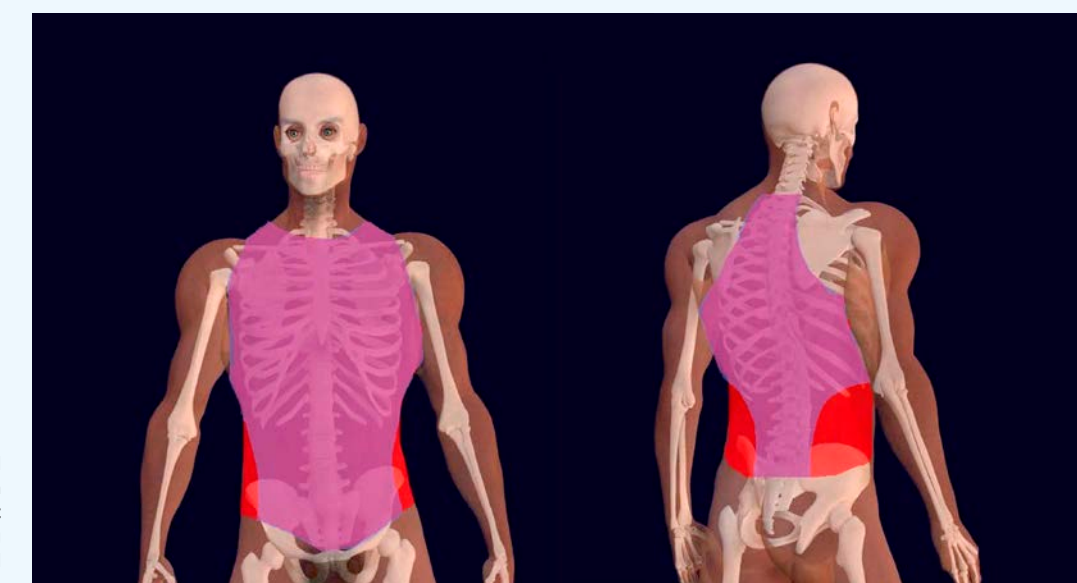
Certainly, the data suggests that a chest protector has become necessary in karting. A review from the DMSB, Germany's national sporting authority, found that many karters had suffered thoracic injuries.

"Setting fresh standards for a product has been quite challenging because some manufacturers were not sure about the need of the chest protector," admits Costa. "For the rib

protector there is not a challenge at all because when you go to the international competitions all the drivers are already using the rib protector as they need it to be able to drive the kart. They apply a lot of lateral force against the seat and they need the rib protector to protect themselves from injury or from getting pain.

"For the chest protector there is more negativity because some manufacturers didn't see so many accidents where drivers would get injuries to the chest as they saw with rib injuries, so from their point they are more reluctant about the need for these sorts of devices. But the data that we have available, for example from the DMSB, shows that drivers do get injured in this area and we want to protect them."

It is all part of the FIA's safety focused work across motor sport. Whether it is the Halo frontal protection device in Formula 1 or body protection in karting, the FIA is determined to ensure that safety always comes first. ◀



The FIA has developed a standard for a combined rib and chest protector for karting that it wants to be used in all CIK-FIA series.