

Electric balaclava to avert chest infections in cold weather

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The smart balaclava. Image courtesy of Stoll GmbH

Researchers have developed a smart balaclava which warms oxygen before it's inhaled to reduce the risk of athletes contracting chest infections in winter.

Nottingham Trent University and German advanced knitting machine manufacturer Stoll GmbH created a prototype to help runners and skiers who can be exposed to increased risk of infections when exercising in the cold.

The technology centres on a knitted patch of electric-conductive yarn over the nose and mouth which emits heat when charged with an electric current.

It is connected to a knitted power socket at the back of the balaclava which contains a plus and minus pole to connect a rechargeable cell battery.

Electricity cannot be felt by the wearer as the current is so low. But when the battery is inserted, the power comes on and the area around the nose and mouth warms up.

Professor Tilak Dias, leader of the Advanced Textiles Research Group at Nottingham Trent University's School of Art & Design, said: "This balaclava is the tip of the iceberg of what can be achieved through collaborative research into smart textiles.

"By using electric-conductive yarns which are so tiny that they cannot be felt by human skin, we're able to provide a consistent level of warmth to a piece of clothing so that a runner only breathes in warm air.



Image courtesy of Stoll GmbH

"It's good example of how [smart textiles](#) can be used to improve people's lives. With the application of heated [textiles](#), we can help reduce the risk of athletes contracting illnesses related to cold weather."

The mask is fully washable and behaves like any other fabric. It features 3-D-knitted pre-shape qualities for a more comfortable fit. Reflective stripes are included for passive visibility.

It is one of a number of sports garments which Stoll have created to illustrate the potential of its machines.

As part of the collaboration, Carlos Oliveira, of the university's Advanced Textiles Research Group, spent two weeks with Stoll in Germany working on the project.

Joerg Hartmann, Head of Fashion & Technology at Stoll, said: "The balaclava has won the Outdoor Industry Award in Gold 2016. This is the proof that the communication across disciplines, industry and research, enhances the degree of innovation."

More information: A marketing video which features the smart balaclava can be viewed on Stoll's [website](#).

Provided by Nottingham Trent University

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