

# Trends and suggestions of sports protective gears

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## Trends of sports protective gears

Sports protective gears, wearable or attachable on human body, aims at prevention of sports injuries. According to various functions, the products are divided into two categories: impact protective products and support protective products. Impact protective products are made to reduce the impact and friction. They are often used while doing ball sports, roller sports, martial arts and boxing. Support protective products are made to increase support strength of joint and muscle and prevent from sprains, strains or stopping the injuries to get worse; the common usages are for long running, climbing or at important sports competitions.



The below picture is the trends of sports protective gears. Based on the material and structure, the analysis is elaborated as followed.

1. The current tendency of impact protective products are close-fitting as the major appealing design. With the view of material usage, the improve direction to enhance shock absorbing effect as to reach the features of lightness, thinness and softness. In terms of structure design, the improvement leads the whole-piece cushion pad into the multiple-pieces with trench-and-matrix cushion pad. So, the effects of lightness, softness, close-fitting, positioning and free movement could be made. Once the products are close-fitting, they can go with all sorts of athletic apparel, team uniform without influencing the appearance.
2. Support protective products currently are mainly designed as set tapes. In terms of materials, the improvements are to enhance the taping functions such as low-irritative adhesive, water-resistant adhesive, far infrared, Chinese herbal medicine. Thus, the products can achieve the low-irritative, waterproof, blood circulation boosting effects and reduce lactate and souring and aching set tapes feelings. The improving direction is from rolling tape to set tapes based on the injured body part and functional design together with a clear instruction note. Without professional nurses or doctors, people know how to use the set tapes.

## Innovative cases of sports protective products

### American paintball game – The top brand, Dye and its gear

- Price: NT\$ 1,000-3,600 / piece
- R&D by a group of professional players, material professionals and a team of designers
- A whole-body systematic protective design based on the detailed body-part functions
- Close-fitting and comfortable gear with ventilation and moisture-managing functions to reduce the body temperature
- External material: heat-compressing modeling, anti-shock multiple foams with ergonomics design for the free movement of four limbs
- Close-fitting protection without dispositioning goes with the team apparel
- When the players swoop and climb forward, their whole body will be best protected



### Shock Doctor ULTRA SHOCKSKIN – Protective Gear

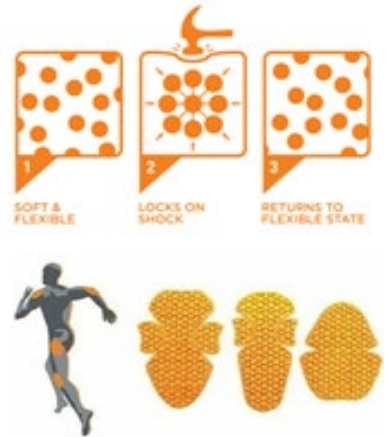
- Price: NT\$ 2,200+2,000-
- SHOCKSKIN: Integral power stretch cloth and uniquely wrapped with ventilation cushion
- 5-PAD PROTECTION: The protection design is based on the body movements. The upper-body apparel and shorts are equipped with 5 pads.
- AIRFLOW: Power stretch net provides the lower back, the two sides of the waist and the laps with the largest ventilation and movement range.
- ANTIMICROBIAL FABRIC: Unique antimicrobial textile can prevent from odor
- Compared with the old model, the protection is 30% lighter and more importantly, it increases sports endurance and performances.



<https://www.shockdoctor.com>

**The British-invented material, D3O, provides the anti-shock function for protection gear**

- Price: NT\$ 3,000- / kg
- Invented by a team of sports and material experts
- The soft material of d3o can absorb the shocking force while bumping happens and afterwards it will become soft again.
- The skating shoes usually needs 20 to 25 centimeters thick foam. Now only 4 centimeter thick d3o. The thickness is reduced to one to sixth to reach the protective effect.
- Currently, the d3o-made products include skating shoes, skiing cap, protective gear, gloves, shoes and cavalier cap and other items in the market.
- In consecutive two years, d3o has obtained the SMART Award which the British government encourages the innovative technology applications.
- The introduction videos of British material, D3O.
- <https://www.youtube.com/watch?v=LgeQpQmCdEI>
- <https://www.youtube.com/watch?v=67aJbH2DYNA>

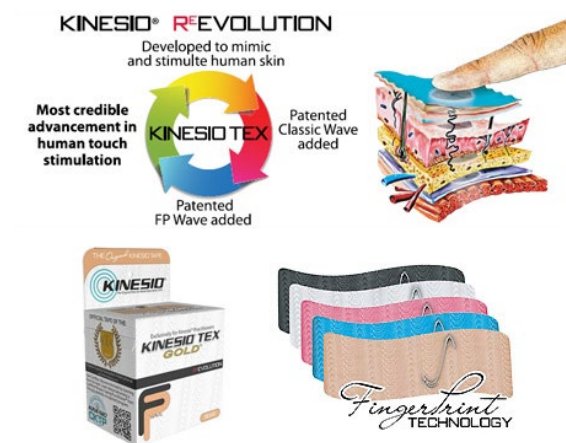


**G-FORM SPORTSWEAR**



**American G-Form Impact Protection**

- Price: NT\$ 2,100-3,500-
- R&D by a team of sports and material experts
- With G-Form RPT, a patented technology, the protection can absorb more than 90% impact force instantly.
- In combination of PORON-XRD, a skin-thin and elastic material, the protection provides more flexibility, lightness, ventilation and better moisture management.
- iPad with this protection dropped from 300-foot altitude remains impact.
- Punched by cricket ball at the speed of 132 kilometer per hour, iPad stays in one piece.
- Video: <http://youtu.be/vOQhUjBUyda>



### Kinesio® Tex Gold FP Nano Finger-Print Tape

- It is the initial brand for rolling muscle tape and also the pronoun of muscle tape.
- In 2013, the Finger-Print Technology, the latest patent registration, changed the adhesive of the tape into the human finger printing tape plus the Dot design. It makes a breakthrough from the traditional muscle tape. The features are described as followed:
  - A touch of Nano material is even softer
  - Deep set provides better adhesive performance
  - Imported cotton increases the level of ventilation
  - Finger printing technology strengthens gripping power and better comfort
  - Meet quality demands of all kinds of muscle tapes
  - Low irritation and no latex
  - The suitable usage is for the high-level sports protection and medical purpose.



### SpiderTech muscle tape is the application of artificial skin technology

- In terms of technology application and innovation, SpiderTech shall be ranked number two. It comes from Canada and the ancestor of set muscle tapes.
- The advantages of SpiderTech muscle tape is to bind the muscle tape, skin, and deep constituents together as a whole. It is unlike the traditional tape, thick and hard.
- SpiderTech muscle tape is the application artificial skin technology. It is thinner and more elastic. When the skin stretches, the tape moves the surface

### British Adidas Protective Sports Wear for Ball Games

- Last year, Adidas made a presentation of Techfit Powerweb, a functional close-fitting and protective sportswear. The renovating TPU energy tap, an innovative design belonging to Adidas. And it makes a huge wave of fashion on the sports field.
- TPU energy tape goes with key muscles with stretching feature. It is able to uplift 1.1% movement power, 4% vertical jumping level, 5.3% physical strength, 2.6% swimming speed and reduce 1.1% oxygen consumption of athletes. Short-sleeved garment Price: NT\$ 2,500-, Shorts NT\$: 3,000-



#### A. Suggestions on the development of sports protective products

##### High-end sports protection development platform

Footwear & Recreational Technology Research Institute, National Chung-Shan Institute of Science & Technology, Cycling & Health Tech Industry R&D Center, Medical and Pharmaceutical Industry Technology and Development Center, and Plastics Industry Development Center co-established the High-end sports protection development platform. Its mission is to assist the sports protection industry in Taiwan. The main directions include intelligent material and high effectiveness, design systemization, analysis digitalization, product diversification, re-enforced the technology and supply chains. High-end sports protective products are the major force for the European and American high-end markets.

##### Intelligent materials and high function

When the STF material receives the impact, its will instantly link between molecules to reduce the external forces and create protective effects. We suggest that the SFT intelligent cushioning material technology could be introduced

into manufacturers, and develop highly protective sport products which fight against high impact.

Besides, low irritation air-breathing adhesive tapes and moderate Chinese herbal tapes could be also introduced to the domestic medical-tape manufacturers, they may develop the modularity pre-cut taping protections which can enhance blood circulation function and relieve bruises and ache.

#### B. Systemic design

Through the introduction of 3D design into Taiwan, the manufacturers simulate the condition: When a human body put on the protection, they would measure the pressure on the body and the tension of elastic cloth. Based on the sports protection key points, they design and develop the close-fitting protective gear.

According to the sports categories, sports medicine and body sizes, the modularity design of sports taping could be introduced to Taiwanese manufacturers and develop modularity sports taping products. Users do not need to cut and they can do the taping by themselves simply by following the instructions. It is a convenient home use product.

By introducing the matrix bonding design with independent matrix cushion structure, the close-fitting and air-breathing functions can be improved. Together with the technology of seamless bonding design and develop TPU taping technology replacing stitching technology. The

movable and comfort level could be further increased.

#### C. Analysis digitalization

Usually, we get to know the effects of sports protection by asking the users and how they feel. This is a method without any concrete digit analysis. Manufacturers need to cooperate with the research institutes. They can setup the modern facilities and carry out sports analysis and clinical trials. Furthermore, they can take these data as reference to find a correct direction for innovative R&D and improve their products. Sports impact analysis, sports performance analysis and function analysis shall be established for developing sports protective products. They can help the industry to establish the development data and marketing references.

#### D. Product diversification

Sports protection manufacturers can apply STF intelligent cushioning material and systemic design so as to elevate quality and save time and cost of new-product development. When the new products are completed, manufacturers shall carry out a technological testing and keep the analysis. In the future, they can use these data to do marketing and upgrade customer trust. More importantly, they can develop multiple high-end sports protective products such as baseball, football, basketball, ski and cricket, etc.