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## ***Characteristics of Apparel Products for Athletes-Review***

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### ***Abstract***

*Most of the sports athletes wear a combination of different items of clothing i.g, sports shoes, pants and shirts. In some sports, protective gear may need to worn, such as helmets, or American foots, all body armour. In today's health and fitness trend, sportswear has become an essential part of our daily live. Different types of sportswear products require different performance during sports activities. When it comes to choosing clothes for sports activities, it's important to prioritize comfort, mobility and performance features. When it comes to engaging in a sport or demanding fitness regimes, not all clothing is created equal the effect of weather conditions on endurance running performance. Few field studies have examined the effect of weather conditions on the endurance of running performance. In the realm of physical fitness and sports, the attire one chooses can significantly impact performance and comfort. Production system of the factory is really very good. When it comes to high intensity works out, the choice of fabric for active wear is crucial. Active wear brands need a strong manufacturing partner with years of experience in the garment with strong capabilities to handle scratch end products.*

***Keywords:*** *Sportswear, Durability, Market trends, Sports equipment, Active life style, Active wear*

### **INTRODUCTION**

Sports fabrics are technical materials which help to keep the wearer comfortable during exercise. The type of fabric required will depend on the intensity of the exercise and the activity. Yoga clothing uses fabrics with exceptional ability for easy movement which will

likely required fabrics are to be cotton, nylon and lycra. Apparel for long distance running will keep the wearer in good comfort if it has excellent moisture wicking properties to enable sweat to transfer from the insight to the outside for the garment. Performance clothing for the outdoor sports in the winter or snow sports should use breathable fabrics with very good insulation properties. In wealthy and rising economy, sportswear is a major consumption category in the personal health, luxury goods and leisure space, associated with aggressive media presence and marketing strategies of global scope, often centred endorsements from celebrity athletes. At the very highest levels of performance, the durability requirement of costly and technically advanced items of sportswear can as short as a single competitive event. At lower level of competition and participation, there are many possible trades off s between form function, aesthetics (fashion) performance, style, durability and cost.

In today's health and fitness trends, sportswear has become an essential part of our daily lives. But we have never ever thought about, how comfortable and functional sports wears are made. The present article delves into the production process, techniques and the choice and characteristics of fabrics used in sport wears the choice of fabrics for sport wears is the first step in its production process Common fabrics include the following items. Cotton is one of the most common fabrics known for its moisture absorption, breathability and softness. Polyester is a synthetic fibre with qualities like durability, water resistance and easy washing. Spandex is the fabric which is highly elastic, making it particularly suitable for light-fitting sportswear. Acrylic a synthetic fibre is known for its warmth, durability and ease of washing and making it ideal for winter sportswear. Wool a natural fibre is known for its warmth and breathability for sportswear. Choice of fabric should be based on the style and functional requirements of the sportswear to ensure the final product is both comfortable and practical.

In the era of development, the global market for sportswear textile manufacturing industries has increased with the increase in consumption of active sportswear. The sportswear manufacturers not only focused on the market trends but also focused on material diversification with technology enhancement. The performance characteristics of active sportswear directly influence comfort level and athletic performance during sports activities. Different types of sportswear products require different performance characteristics of active sportswear directly influence comfort level and athletic performance during sports activities. Different types of sportswear products require different types of sportswear products require

different performance characteristics. Appropriate moisture and heat management are the key factors for the endowment of the required physiological comfort level. The highly engineered textile based sports goods special characteristics are incorporated in the polymer /fibres/product manufacturing procedures/finishing techniques to obtain the maximum performance and comfort level. In this article current market trends, highly engineered polymers, fibres, fabrics, finishers, nano-material and the recent development in the manufacturing techniques of sportswear are illustrated.

Not all athletes wear clothes with their own brands. It depends on the athletes and their clothing because they feel it represents them and their brand well, while other might prefer to wear more generic or less expensive clothing. It really varies from athlete to a athlete. Personal athletes look in visual wear would depend on the athlete. A sumo wrestler has a different body type than a swimmer because of the sports they play. A lineman in the NFL has a completely different body type as a quarterback, as does a tight end and wide out. Besides that, some individuals look better in casual clothes than others for completely different reasons. It really depends on the individuals.

Advancements in technology have seen the incorporation of smart textiles in sports equipments. These fabrics can monitor heart rate, regulate body temperature and even provide feedback on posture and movement. Such innovations are paving the way for a more connected workout experience, offering athletes real-time data to enhance training the efficiency. For instance tops embedded with LED lights increase visibility for night time runners, marrying safety with functionality in smart ways. Sustainability has become an integral part of modern sportswear development. With growing environmental awareness, many brands are shifting toward eco-friendly materials and processes. Recycles fibres and organic fabrics are gaining popularity, along with consumers demand for ethical fashion choices. This shift not only reduces the carbon footprint of athletes' apparel but also sets a precedent for the industry to follow. As we look to the future, the emphasis on sustainability will likely continue to shape the innovation of active wear, ensuring that high-performance does not come at the plant's expenses.

There are many factors to consider when selecting athletic products. For best athletic performance the garments should neither physically restrict the athlete nor psychologically

detract from the players' performance, due to the concerns about how he or she looks aesthetic factors such as school colours, garments style, and uniform size and fitness must considered. Additionally athletic apparel products should be assisting the body natural ability to regulate temperature running in a variety of conditions. The products keep runners comfortable, protected, and focused on performing at their best. The ecological environments play an important role in athletics. In athletics, the environmental aspects vary over a wide range. For instance, the 1982, Farnham Marathon was run in rain with an ambient temperature of 42 degree centigrade and a wind of 32 kph. The weather for the 1984 Guild for Marathon was even worse. It was run on March 20th in a maximum ambient temp of 6 degree wind gusting to more than 48 kph and heavy rain in the second half Hot conditions pose more of a danger for the runners.

In the mid 20th century marked a significant shift. As athletes turned more competitive, there was an actual drive to the functional of sports apparel. Synthetic materials like nylon and polyester, developed out of war time innovations, began in filtering the sports domain. These fabrics were lighter and offered a degree of flexibility and moisture resistance that was previously unattainable. In 1970.s fitness looms saw a rise in individuals striving for healthier life styles, creating an unprecedented for functional yet fashionable sportswear. This era brought about stylish gym gear and ushered in a wave of fitness icons popularized various trends.

From the discussion with a production of head, it was learned that a lot of about production processes details and production flow. The manager also emphasizes whatever recent changes that had done to improve factory performance in terms of labour productivity. Most of the orders do not require garment washing. The production system of the factory in reality is very good. They set sewing lines such a way that finishing tasks such as processing, packing and carton making done in the time is called assembly line with online finishing. They do not have separate finishing department. Each floor have department from cutting to packing goods. While working in the factory for more than two years by the author, it was found that production processes of the factory are almost similar to other factories. It will be very interesting to know why sportswear manufacturing companies are different. How sportswear manufacturers make its goods and supplies to brands.

The No Name Company founded in 2018 having their head quarter in Delhi NCR region, have leading active wear manufacturer in India. They are specialized in producing high-quality active wear, meticulously crafted to match our specific design and needs. No Name manages the entire production process, from sourcing premium fabrics and trims to pattern making, cutting, stitching and finishing each piece with precision. Their commitment to transparency and excellence ensures that your brands' active wear are both stylish and functional. No Name offers a unique Flexi MOQ approach allowing brands to start with just 100 pieces per style. This flexibility is ideal for new or growing demands looking to scale production as their business expands. Additionally No Name provides a range of sampling options, including free, paid and new products development, making it easier for brands to bring their designs to life. With their focus on quality and customer satisfaction No Name is a top choice for any active wear brand looking to succeed.

Aligning organizational processes to assure preparedness for on-time delivery and the accomplishment of strategic goals is the process of operational excellence, as an active manufacturer. At pearl global operational success is essential to achieving our objective and exceeding our standards. Their procedures are the epitome of their principles. They put lot of emphasis on processes. Co-operation and trust as we adjust to the ever evolving fashion industry. They design all apparel with the aid of their studios and services all across cop and centralized design teams in NY and LONDON updating their production systems with the latest trends. As a result they offer business the latest market Intel and design services. Pearl Global Core is co-creating designs with customer partner teams along with the required aesthetic, price and functionally.

## **UNDERSTANDING SPORTSWEAR**

Sports fabrics are technical materials which help to keep the wearer comfortable during exercise. The type of fabric required will be depended upon the intensity of the exercise and the activities. Gym or Yoga clothing uses fabrics with exceptional stretch ability for easy movement which will likely require the fabric to be cotton, nylon or lycra. Apparel sweat to transfer from the inside to the outside of the garment for long distance running will keep the wearer in good comfort if it has excellent moisture wicking properties to enable sweat to transfer from the inside to the outside for the garment. Performance clothing for outdoor sports in the winder or snow sports should use breathable fabrics with very good insulating

properties. The best athletic wear for some forms of exercise, for example cycling, is typically light weight stretching and form fitting rather than bulky so it does not create interference with the activity, standardized sportswear may also function as uniform. In team sports, such as baseball, football or basketball, the opposing teams are usually identified by the wearing the same colour of clothing. Individual team members can be recognized by a batch number or a shirt. Sportswear design must consider the thermal insulation needs of wearer. In hot situations, sportswear should allow the wearer to stay cool while in cold situations, sportswear should help the wearer to stay warm. Moisture wicking fabrics are designed to move perspiration away from the body to the fabric outer surface where it can evaporate. These fabrics are typically soft, lightweight, stretchy and well suited for active wear. Headgear is required for most sports with high risk of head injuries, such as American foot ball, bobsledding and cycling sports of all types may require eye or space protection depending on the players need. Eye protection is an additional support provides by sports goggles. Mouth guards are used in many sports including but not limited to rugby, lacrosse, boxing, water polo, ice hockey, American hockey, foot ball, basket ball, boxing and others. Golf attire though, is also being influenced by modern fabrics and trends that stress function and durability.

Modern sportswear stands as a fusion of technology and fashion, crafted to enhance athletic performance, while maintaining a sense of style. At the core of sportswear, design is the fabric choice which has seen immense innovation in recent years. Key among these advances is the use of moisture wicking materials which draw sweat away from the body. This promotes evaporation, keeping the skin dry and comfortable, a crucial feature for athletes pushing their limits. Synthetic fibres such as polyester and nylon are often blended with natural options like cotton to strike a balance between breathability and moisture control. The combination ensures durability and flexibility essential qualities for rigorous activities. Sportswear also embraces ergonomic design, prioritizing the natural movement of human body. This evident in features like strategic stitching and seamless construction, which minimize which minimizes friction and reduce the risk of chafing. For athletes who require an extensive range of motion such as yoga and runners, the inclusion of stretching form of fitting materials enable unrestricted mobility. This blend of comfort attire to sleek body hugging designs.

## **PRODUCTION PROCESS FLOW OF SPORTS WEAR**

The production technique of sportswear is the core part of its production process. Different techniques affect the performance, appearance and comfort of the some of the common production techniques and their characteristics are cited below. Flat seam technique is the most common sportswear production technique suitable for various fabrics and styles. Its main feature is the use of flat seams for sewing with the stitching exposed. This technique is cost effective and simple but may result in visible wear and tear on the stitching. Seam sewing technique is suitable for various fabrics and styles. It uses a concealed stitch with the stitching wrapped inside the fabric. This technique offers durable and aesthetically pleasing seams but is relatively more expensive. Aesthetic technique is ideal for sportswear that requires elasticity and breathability. It uses adhesive thread for sewing with the stitching glue inside the fabric. This technique offers fewer stitches and comfort but is more expensive. Thermal bonding technique is suitable for sportswear requiring breathability and elasticity. It uses a thermal bonding thread for sewing with the stitching melting during the bonding process and merging with the fabric. This technique offers seamless and comfortable finish but is more expensive.

Psychological comfort is a state of mind, feeling the presence of pain and discomfort. Human psychology, regarding clothing comfort, broadly depends upon many factors such as age, health, environment, weather, occasion, social status, economic background, profession, religion and territory. Physical comfort is usually determined by the human skin. When the body temperature changes from normal, the body releases or produces heat to maintain the normal body temperature. The interaction of the wearer's skin with the garment is describing tactile comfort. Sportswear is usually worn right next to the skin. That is why the feeling of a person towards a garment is of major concern. Thermo-psychological/Thermal comfort depends upon many factors. The comfort is mainly related to the thermal equilibrium of the wearer.

The production process flow of a sportswear manufacturing company, the production process of the factory is really very good. They set sewing lines such a way that finishing tasks such as pressing, tagging, and carton making are done in the line. This line is called assembly line with online finishing. They do not have separate finishing department, each floor have department from cutting to packing goods.

## **SPORTSWEAR MANUFACTURER**

Golf has a long tradition of specialist attire that reflects the tradition of Scottish aristocrats taking in fresh air while walking around the golf course, swinging their golf clubs and exercising in refined, genteel sorts of way. Golf attire though is also being influenced by modern fabrics and trends that stress function and durability. Golfers like athletes in other sports athletes are first and public figures second. Athletes in all sports are showing a preference for moisture wicking fabrics, crisp details and modern fashionable colours.

The production technique of sportswear is the core part of its production process. Different techniques affect the performance, appearance and comfort of the garment. Below are some of the common production techniques and their characteristics. The most common sportswear production technique suitable for various fabrics and styles is flat seam technique. Seam swing technique is ideal for sportswear for various fabrics and styles. Adhesive technique is ideal for sportswear that requires elasticity and breathability. Thermal bonding technique is suitable for sportswear requiring breathability and elasticity.

The interaction of wearer's skin with the garment describes tactile comfort. Sportswear is usually worn right next to the skin. That's why the feeling of a person towards a garment is major concern. Tactile comfort is also categorized as sensorial comfort, and it does not have any direct relation to thermal regulation. Factors affecting comfort are shown in different fabrics feelings. Fabric roughness, roughness, fabric softness and fabric surface friction are directly related to tactile comfort. As tactile comfort is the interaction of the skin with the garment, so the rough fabric will irritate the skin, soft fabric provides comfort and fabric surface friction will return the static charge properties.

The demand for sustainable and eco-friendly materials is another trend set to redefine athletic apparel. As global awareness around environmental issues grows, consumers are increasingly choosing brands committed to reducing environmental foot prints. Innovations in fabric technology such as recycled polyester and organic cotton are paving the way for high performance gear that doesn't compromise on environmental values. Companies are exploring waste minimizing production techniques, ensuring we can enjoy high quality sportswear, while caring for our planet.

Hollow polypropylene micro fibres are used because of their high breathability, light weight and softness. These fibres are highly elastic and have perfect temperature control and thermal isolation. Their seamless construction ensures superb comfort next to skin with excellent moisture delivery. The fabric structure and physical properties of fabrics also play an important role for clothing comfort of the garment. In athletics garments, knitted fabrics have their usages area in comparison with woven fabrics. Knitting warp and weft have special properties concerning the flexibility of the textile structure due to their mesh structure consequently they are predestined for tight and close fitting sports textiles as athletic apparel products

## **CONCLUSION**

Some of the analysts attribute the growth in sales to an intrinsic change in the way active wear is designed. The production of sportswear is not just a simple manufacturing process, but it involves multiple stages and details. Thermal equilibrium will be set up when the heat produced by the body's metabolic action or physically activity is equal to the heat dissipated or heat lost from the body. Buying sports apparel online in India is to discover the perfect balance of form and function for the apparel enthusiast. All emergent trends collectively unveil a promising future for sportswear making athletic garments more personalized, sustainable and inclusive. In apparel industry, designers must have knowledge of textile properties and constructions in tandem with a basic understanding of human physiology and issues to do with a survival. Sustainable fashion is not just a trend but a necessary if we are continue resource dependent industries like apparel in the long run factory sources fabrics from buyer recommended fabric supplies. Polyester and nylon are the go-to fabrics because they are moisture wicking, durable and light weight. Cost is imperative to consider when selecting active wear manufacturer.

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