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TECHNOLOGICAL ADVANCES IN SPORTS CLOTHING

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Abstract: The study was to the basketball male players as subjects who had represented interuniversity level tournaments.The study was physiological characteristics a.Aerobic power b.Anaerobic power c.Vital capacity d.Resting pulse rate.The study was to the following psychological characteristicsa.,Anxiety,b.Aggression,c.Self-concept d. Locus of control . For the purpose of this study one hundred and fifty university level male basketball players were randomly selected from the west zone interuniversity basketball tournament. The ages of the subjects were between 18 and 27 years. To find out the relationship of selected physiological and psychological variables to Basketball performance, product moment method of correlation was used.To find out the combined relationship of set variables of physiological and psychological variables to Basketball performance, multiple correlation method was used.To predict the Basketball performance on the basis of selected physiological and psychological variables, multiple regression analysis was used.The level of significance was set at .05 levels.

Introduction:

Technology has a long standing and successful relationship with sports. Without technology sports as we know would be vastly different. Athletes capitalize on advances from engineering, material science, biomechanics, communication and information technologies to maximize training and performance. Scientists are developing technologies that are transforming every aspect of sports, including coaching, judging, sports arenas and spectator experience. A report from The Institute of Mechanical Engineers says that "Technology is as much a part of an athlete's armory as nutrition, training and coaching". They suggest that technological innovation is now an integral part of sport at the highest level and that Olympic competition is not just about who is fastest but whose kit is smartest.

The sports clothing should be cool, quick drying, shrink and fade resistant, wash and wear, sun protective, comfortable, durable, stretchable and according to need of sports . Sports clothing technology is engineered with high-tech equipments and outfitted with fibers that can help athletes move faster, jump higher and have an overall edge on the competition. The following are the sports clothing technology innovations.

Moisture wicking fabrics-Moisture management is one of the performance criteria in today' apparel industry which decides the comfort level of the fabric. It is defined as the controlled movement of water vapour and perspiration from the surface of the skin to the atmosphere through the fabric. Clothing must be designed to allow the body's heat balance to be maintained under a wide range of environmental conditions and body activity. It should fulfill this function without inhibiting the evaporation of humidity caused by perspiration and thus not interfering with the temperature regulation of the body. Moisture wicking clothing removes the sweat through the fabric structure and then evaporates from outside of the fabric which helps to control the body temperature. This innovative clothing (moisture management clothing) is very useful if worn next to the skin at the time of activity to keep the skin dry and make the wearer feel comfortable. For Sportsmen being able to concentrate fully on their sporting activity, it is essential that their clothing is comfortable to wear which is the best way of giving their individual performance an extra boost.

Nowadays sportswear companies have designed sweat-recycling material to help skin stay cool to overcome the problem with moisture-wicking technology. The problem is more the athletes sweat, the harder it becomes to keep them cool and dry instead of athletes could take advantage of their hard work and extra sweat to cool them down. The newly invented fabric features distinctive, small blue rings embedded in the material. They contain a polymer known for its cooling properties. When an athelete sweats, the rings are engineered to expand and spread across the skin to a degree and help to drop the temperature of the fabric and wearer for a prolonged period. The more the wearer sweats, the more the rings swell and work to keep them cool.

Sun Protective Clothing (Ultraviolet Protection)-The sun damage done to every exposed part of our body is cumulative over your lifetime, adding to your risk of premature skin ageing and skin cancer. The skin cancer foundation has always recommended covering up the skin wearing sun protective clothing. Clothing is a simple and effective protective tool. It provides a physical block that does not wash and wear off and shade the skin from both UVA (Ultraviolet A) and UVB (Ultraviolet B) rays .Fabrics are made of fibers woven or knitted together and have lots of tiny spaces in between interfacings. UV can directly pass through these holes to reach the skin. The tighter the knit or weave, the smaller the holes and less UV can get through .Now a day's fashionable light and bright sun protective UPF labeled sports clothing is available in the market. The American society for Testing and Materials has recently developed standards for manufacture and labeling of sun protective products. The units for UV protection are called UPF (Ultraviolet Protection Factor).The UPF rating measures the amount of UVA and UVB radiation that penetrates the fabric and reaches the skin.

UPF 15-24 is Good UV protection
UPF 25-39 is Very Good UV protection
UPF 40-50 is Excellent UV protection
UPF 50+ is the maximum rating given. The ultraviolet protective factor (UPF) of clothing depends on several factors including weave and chemical additives such as UV absorbers or diffusers used in manufacturing.

Antimicrobial fibers- Withthe growingpublic health awareness of the pathogenic effects and stain formation caused by microorganisms, there is an increasing need for antimicrobial fabrics in many application areas. Sportswears are extreme use fabrics; often have antimicrobial finishes, including silver and triclosan/triclocarbon. These chemicals are hazards to human and environmental health. The widespread use is thought to have contributed to the spike in antibiotic resistance and to endocrine disruption in humans.

Researchers have discoveredan antibacterial polymer that can be used in everyday products and in sportswear without causing resistant bacteria.KTH chemistry researcher Josefinlllergard said that they got around the problem of resistant bacteria by creating an antibacterial surface in which polymer binds with cellulose .This antibacterial polymer attaches stability to cellulose and therefore cannot be released into the environment. It is an environmental friendly way to control bacteria. Cellulose is the most common organic substance in nature and primary structure component of plant cell walls. The active polymer is so strongly bonded to the fibers of cellulose material that it does not loosen or leak into the environment via water and prevents contamination of soil and water .The new polymer actually attracts bacteria because of opposite charge and only non-toxic nitrogen oxides remains after it is burned. Researcher says in future the antibacterial polymer will be replaced with an entirely renewable material.

Smart Clothing- Smart clothing is an ultimatum of sports clothing technology functioning as work out gear that can monitors vital signs. Companies like AiQ and Fraunhofer have been leading the charge in innovations to sports clothing technology since 2012.AiQ's BioMan fabric monitors vital signs such as heart, respiration and skin temperature. The next generation of wearable electronics will become even more wearable and functional,

shedding some of the bulky casing and integrating directly into clothing from smart socks to hot jackets

Sensoria smart socks that can relay information such as speed and weight distribution and the form of your foot during standing, walking and running. These socks can also act as a pedometer and let the wearer know how far they have traveled on foot.

The Fraunhofer fitness shirt includes textile electrodes conductive portion of fabric that pick up electrical activity from the cardiac muscle as well as elastic band around the chest measures breathing. The shirt tracks both medical and performance measures, including heart rate, respiratory activity, arterial oxygen saturation, posture and movement.

South korea'sKolonGlotech.Inc.Heatex technology is the world's first heat-generating textile. Heatex fabrics uses a conductive polymer to create the heat itself. The fabric heats uniformly rather than creating hot spots like other heated clothing designs and should prove more comfortable.

Smart clothing is highly functional and also serves the purpose of being fashionable as well.

Performance Clothing- Performance apparel fabrics are becoming an essential part of modern wardrobe. U.K. Textile companies are investing time and money into developing and manufacturing these types of fabric. Trainers and sporty or casual influenced outfits are often more readily worn than suits, and performance textiles developed for competition are being integrated into high end fashion, with sports styles adapted to make fashion statements both on the high street and through high fashion. Sportswear has increasingly acquired its own sartorial language, one based on function, colour and performance. In manipulating the idea of casual and sportswear, designers have pushed the boundaries of what performance apparel fabrics can be in terms of inventiveness, fun and sophistication.

Technological innovation is now an integral part of sport at the highest level. The high performance sport is driven by technology, from sports nutrition to psychology to clothing and footwear. Poorer countries do not compete in sports with lot of technology. So decisions should be made on popular judgments for rules to restrict technological advances in sports

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