

Application of nanotechnology in the sports industry assignment



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In his lecture “ There’s Plenty of Room at the Bottom,” Funnyman described a process in which scientists would be able to manipulate and control individual atoms and molecules. Funnyman described how the entire Encyclopedia Britannica could be written on the head of a pin, and how all the world’s books could fit in a pamphlet by a simple reproduction of the original pictures, engravings, and everything else on a small scale without loss of resolution. HIS talk is considered to be the foreshadowing of nanotechnology. In 1974, the term “ Nano-technology” is used by a Japanese scientist called Norio Taniguchi from Tokyo

University of Science in a conference. Norio Taniguchi defines that “ nano-technology’ mainly consists of the processing of, separation, consolidation, and deformation of materials by one atom or one molecule. Individual atoms and the discovery of fullerene in 1985, that modern nanotechnology began. Nanotechnology in Sports Sports is an activity involving physical exertion and skill in which an individual or team competes against another or others for entertainment. From the rich history of sports, it has become an argument to the player and fan’s over who’s faster and stronger in their respective games.

It may be because of player personal skill and individual effort that make certain player at the top of their games. Nevertheless, people may know or do not know that behind player skill and efforts good equipment is another contributor to these sport player to be at the top of their games. Sports by the far is tuning to the endless preferences by Nanotechnology which is considered to be the game changer in sports, the technology and science with the material creation at the molecular level of matter has been

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sprawling into various popular fields and reinforcing them with its advanced characteristics of improving material repertoires.

Nanotechnology on Sporting Equipment Nanotechnology has made a huge impact on the current sports performance and the level of competitiveness between players on their respective sports. This is possible by using a endometrial for an added advantage such as high strength and stiffness, durability, reduced weight, and etc. Figure 1 shows some of the general advantages using nanotechnology in sports equipment. Figure 1 : Advantage of Nanotechnology in Sports Equipment Lighter, Stronger and Better Performance The worlds of sports today are keeps changing by the introduction of advance genealogy.

More and more advance equipment is incorporated with the players' games. Lighter yet stronger equipment are what the player yearns off the most, as it reduce the burden of each player to increase their performance and become more agile than ever. Nowadays most of sports equipment is being Anna-structured, as example some shin-pads for footballers are Anna-structured which give it light weight and increased strength. Thus the thin layers offer sufficient protection from a kick on the shins. The most noticeable materials used in Anna-enhanced sporting equipment's the oral of sport is Carbon Annotates (Cents).

Cents, is a tube-shaped material, made of carbon, having a diameter measuring on the nanometer scale. Cents are used as it gives a specific strength and specific stiffness compare to other conventional materials.

Cents is an ideal component in making sports equipment which low weight

and high strength is importance in most modern sports. From the graph below we can see Cents is 100 times stronger but 6 times lighter than steel and as stiff as diamond. Furthermore most of incompetents incorporating Cents are far superior equipment's.

With the advancement of nanotechnology, many sport equipment developer such as Tennis have incorporated graphite filled carbon annotates into the racquet. Racquets crafted from the nanotechnology is much stronger and lighter to use. Some developers for mountain-bikes use Cents to create super-strong handlebars. Roger Federer is one of the big stars in the world of tennis, surely his skill is great and he has won many tournaments. At Windblown tournaments in 2009 he has won the championship with the use of Anna-enhanced Wilson racquets that has been reinforced with silica inappropriate (Snaps).

These racquets are more stable; stronger and have 22% more ball-hitting power than other non-Anna based racquets. In cycling, every second counts towards victory and being light is an absolute advantage in professional cycling. Nowadays, in professional cycling Carbon Fiber is use rather than aluminum or steel in making the bicycle frame. Through the incorporation of carbon annotates into the carbon fiber resin simplified conditions has resulted into the making of more stronger and lighter bicycle frame. Frames can now be produced to weigh less than 15 pounds or egg.

Many world class cyclists doodads using bicycle enhanced with nanotechnology. In 2007, Oscar Peppier sis riding a Pineapple bicycle containing carbon annotates. Floyd Landis won various tournaments

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including Tour De France using bicycles having CNT incorporated plastic frames. According to spirochete going light has been proven to be effective by James C. Martin an assistant professor for the department of exercise and sport science at the University of Utah. In the research is measuring the cyclist's time on a 7 percent incline over 5 kilometers with a 15 pound bike and repeated another with added weight.

The result indicates that lighter bike produced about a six second differential in favor of the lighter bike. Therefore, by going light with the nanotechnology it could brought a greater difference in cyclist's performance on competition. In the world of swimming, the revolution of nanotechnology gives birth to a Speeds LIZ Racer bodysuit for a swimmer. According to The Guardian, the suit is coated with water-repellent nano-particles and polyurethane panel which increased buoyancy and reduced drag. This suit is used in 2008 Beijing Olympics and produced more than 90 percent of the gold medals won. Like any other sports equipment developer which has incorporated nanotechnology to their product. In golfing world Honey has a Unsnapped line of golf clubs that uses carbon nanotubes, which they say makes the club heads stronger and transfers energy through the shaft more efficiently, thus make the golf balls that travel faster. As example Honey OZONE Trig-G drivers which use new lightweight MANOMETERS carbon shaft with a mid-low kick point and low torque imparting more power and distance. In Formula One Motor racing, the use of lighter yet stronger body chassis could make F1 cars go faster than before.

Therefore, lighter-weight and better-wearing encompassing products are being seized upon by the developer. Carbon nanotubes is incorporated in F1
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brake to increase the thermal resistance as well as paints for aerodynamic drag reduction. As for lubricants, inorganic zirconium oxide (ZrO₂), Kink oxide (ZnO) and etc is used to reduce wear and friction. Increase Equipment life Nanotechnology also could make the sports equipment last longer. As example some tennis balls and footballs nowadays has incorporated with carbon-clay lining to make it last two times and more.

The materials are used as barrier materials which maintain the air pressure to increase the playable time of the balls. In golf sports, Endoplasmic Company has developed a golf balls that correct their flight path by using inorganic that reduce spin in the air. Furthermore as it also strong the balls will roll more smoothly on the putting surface. Other materials such as fullness, also helps prevent chipping and cracking, could be found on bowling balls and kayaks. Carbon inorganic also can be used in manufacturing a road racing tire.

The materials would enhance the tire life by reducing the weight; reduce oiling resistance, increase grip and mileage. In formula one racing, the use of these materials would help greatly in increasing the performance and handling of the race car. Possible Safety Problem for Application of Nanotechnology and Materials in Sport Industry Pros and Cons is a given situation to all things in this world. Nanotechnology surely has many advantages to different disciplines for the goodness of mankind but it also not escape from some possible problem that might occur.

Nowadays, there is no human health and the environment as we lack on evaluation system for the adverse effect on human health and environment

from Anna products, even though the danger should not be neglected. Below showed some of possible problem that might occur: 1 . As material particle reduce to nanometer, its property could change thus it might give safety problem such as stable matter become combustible. In term of sports facility that might use certain materialness, it could produce hidden safety problem. 2. Materialness size is very little, with very high surface energy.

Endometrial has very high absorbability, unstable and easy to combine with other atoms. Thus if some materials is exposed and get into body, these foreign matter may produce chemical reaction with cells in body and stimulate it with immunity which may cause disease and influence body immunity. Apart of that, in long term it may possible to cause a rejection in the body which could make people feel uncomfortable from the rejection reaction. 3. Different carbon nanotubes have diverse chemical compositions, making it difficult to trace their impact in the environment carbon nanotubes are not biodegradable.

Hence, they will persist in our environment and may build up in the food chain Ethical Problem for Sportsmanship Technology has been greatly help in the world of sports. It makes sports more competitive and fun to watch, but as we depend too much on technologies it could question on the capability of sportsmanship itself. As technology keep advancing it will overshadow the natural ability of the athlete where in The guardian discussed this as “ technology doping”. Rules and regulation commonly are made by international sporting association and technology is acceptable in world of sports.

But it could be unfair unless each participant has access to the same kind of high-echo sporting equipment; as it being stressed it only shows the superiority of the technology rather than the sportsman. As example in Beijing Olympic 2008, after a swimmer use a Anna enhanced suit lead to the victory, the use of “ non-textile” suits is banned from the Olympic by Federation International De Notation (Final). Conclusion In conclusion, Nanotechnology has open a new market and value network in today’s as well in future technology which it could be said as disruptive technology.

In the world of sports, nanotechnology has greatly enhanced the sporting equipment to be ore stiff, extra strength and more durable compare to conventional equipment. Furthermore, it also helps the sports to be more competitive and bring more excitement to the player and also for the fan. Even though technology is made to help the performance of the player, but player should not be control by the technology. Ultimately to keep the fairness of the games and to create more competitive based product that could help enhance the natural ability of the player rather than being a technical aid that could overshadow player’s ability.