

IMPACTS OF TECHNOLOGY AND INNOVATION IN SPORTS

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ABSTRACT: Sports driven athletes have gained a lot of recognition among people. Along the span of time there was an upgradation in intake of information regarding the human body and its strengths, many realized that their abilities could not be mustered up to a great level. Rapid technology advancement and digitalization have immensely changed the criteria of equipment and mechanism in sports in the past two decades. The criterion of man sketching the boundaries in different sports regarding arenas touching various ideologies which depend on technology has been prevalent. The combination of advancement of equipment in different zones of sports, considering vocational and physical practice, heuristics, practical knowledge, and popular attraction of people has immensely affected the way athletes communicate, practice and applaud with their audience. In the paper “The use of technological innovations in sports” it is explained how technology has taken over the sports field

Keywords: Sports technology, performance enhancement, athlete monitoring

INTRODUCTION

The role of equipment and classical technology in sports has immensely changed in due course of time along with the current stepping up of the crowd in complete sense with equipment advancement and digitalization across industries. Focusing on the incoming technology driven actions it can be concluded that technology is playing a great role in futurizing great sports agendas. By playing “a vital role in becoming the best – on and off the pitch”, digital equipment caters to provide an upgraded level of technology driven sports arena. The game play is considered to be a good time-consuming activity along with its ongoing benefits of the controlled equipment and official considerable activity across the globe which led to great changes including the fan following for the prospering teams with the help of technology driven activities on net. The bonding in equipment processing and technology driven systems is a very interesting process of progression and officializing ideas along with concept driven ideas. Even in ancient times machine learning and setups were mustered up together though in rudimentary forms. For example, the ancient Greeks used criteria for measuring procedures and this was done to ensure fairness like in the Olympic games. The massive change in the world of sports was marked in the 18th and 19th century due to the industrial revolution. Sports equipment were being produced in massive amount introducing standardization. There was development of games like baseball and tennis was being considered and along with its specialization equipment. During the 20th century witnessed a surge in technologies advancements

impacting sports. In the early 1990s, innovation such as the stop-motion camera allowed for the detailed analysis of athletic performance. The use of stopwatches and electronic timings devices became standard in sports like track and field. The 21st century has witnessed the proliferation of wearable technology in sports. Athletes now use devices such as fitness trackers, GPS systems, and rhythmic measurement of heart rates in order to improve their performance. The technology driven machines provide an outlook for the training and injury prevention. Further, the facility of replay and saving options have provided the way to a more precise learning and greater outputs. Further this options also paves way for the referees and coaches to decide an apt way to give decision Also, real time communication along with coaches and team members provide an insight for greater ways and new arenas. Athletes use technology driven systems to enhance their performance and provide valuable insights to create way for greater output and values. The genetic role in sports also pays a greater role as the presence of certain genes classify the rate of winning of the athlete in a particular game.

The bondage and identity that sports carry is a great legacy of what technology demands in complete sense and how the gameplay has been completely taken over to a next level. They also pave the way how sports can be perceived and absorbed by the players.

TECHNOLOGY IMPROVING SPORTS PERFORMANCE

The opportunity that embarks upon the life of a sportsperson is a wholesome package of strength, responsibility and hardships. Here technology paves a greater role for the attainment of goals. Clothing also plays a greater role in various sports where the performance is affected based on the costume of the player as it affects the efficiency while playing the sports. There is also a great role of gameplay in managing the rhythmic contractions of body and blood glucose level is also to be noticed.

- There has been a great fashion of need to wear compression costumes while playing the sport as it maintains the blood sugar level and marks the rhythmic contractions of the body. It has been noticed that the lactic acid accumulation in body which needs to be stopped is also managed by such costumes. The reduction in muscle fatigue is also reduced by such use. Recent studies show that the use of such garments rescues the accumulation of lactic acid in lower muscles and thus improve the speed while playing the sport.
- 3D printing is yet another feature to enhance the performance in long run that is different for particular body shape and size and also defines the movement patterns. The protective gear such as mouth guards, pads and helmets are also important. Complex designs and outputs that vary for different sizes are responsible to cater for improving the performance of the athlete in long run.
- Another greater change that prevails to enhance the performance of the athletes is aerodynamic design as it increases the factors to win in possibly. Athletes seek out the most aerodynamic fabrics and inculcate them in their sportswear to win at first shot. The reduction of air and friction resistance cloths are a great way to pave the winning agenda.

SCIENCE IMPROVE ATHLETES' HEALTH AND SAFETY

Along with the extensive level of gameplay it is necessary for the athletes to manage their body fatigue level accordingly. Extensive human endurance needs to be maintained and managed by the complete race of sportsman to enhance the performance accordingly.

- Breathable fabrics are considered to be a great outflow of winning race and in order to beat the competition. Graphene-infused fabrics enhance moisture absorption and breathability, and research has shown that graphene can improve thermal regulation by evenly distributing heat across the fabric, thereby maintaining optimal body temperature. The honeycomb pattern also enhances the performance of players. Phase change material (PCM) is another breakthrough in thermal regulation. PCM are a special class of substances that release or absorb sufficient energy at the phase transition (e.g., from solid to liquid) to provide useful heat or cooling. Among the different types of PCM, paraffins, such as eicosane, octadecane, polyethylene glycol (PEG), and nonadecane are used in textile products to absorb and release thermal energy, thereby providing better temperature control. When an athlete's body temperature rises, the PCM absorbs the excess heat. When it drops, the stored heat is released, maintaining a stable body temperature.
- Another feature that is also considered to be fatal in a way is itching and rashes that hinder the growth of gameplay to some extent and needs to be avoided as soon as possible. Any player is built in such a way that he sweats a lot and that is because of intense practice and hard work in middle of all of this there comes a cause to prevent the microbial growth which is done by using fabrics with nanoparticles. The commonly used nanoparticles-based metals are silver, copper, titanium, zinc and gold.
- Sun protection is yet another important factors that can considerably decrease the performance and can lead to a vulnerable disease at times .The UV rays are considered to be harmful and man needs protection from it as soon as possible especially in the game where field work is required in ground open in the sun demands protection from sun .Therefore the fabrics are made in such a way that they offer protection against the sun including titanium dioxide and zinc oxide often incorporated in the fabric. The protection of around 50+ can be provided by using graphene that can be added to synthetic fibres like spandex.

IMPORTANCE OF TECHNOLOGY IN SPORTS

Technological advances have enabled athletes to monitor and analyse their performance in real time. Devices such as smartwatches and fitness tracking apps provide detailed data on heart rate, speed, distance and keeping a track of travelled distance side by side. All these factors provide the coaches to keep a track of their players and make improvement accordingly.

- **Prevention of physical deterioration**

There occurs a need to classify the problematic situations or parameters to defend the injury in any case to stop hindering the growth of player in sport. Technology provides a way to identify those problems and prevent any kind of injury. There has also been a facility where injury free movements can be practiced in a virtual world. Fans can play and enjoy instant replays, multiple camera angles and real time data during sporting events.

- **Coaching and gameplay**

VAR (video Assistant Referee) in football has helped to minimise the errors in result making and ensured fairer decisions. There have been various companies that ensure free gameplay without

any errors and considering the apt rules to maintain the team spirit.

- **Technology driven results**

There has been a vast improvement in technology driven gameplay that ensures sport free of any bias or error and makes the fan also believe in the ideology. Technology helps to identify the patterns of play and develop competitive strategies.

CONCLUSION

Technology is slowly becoming a boon in the world of sports and its usage can be expanded profitably. The human actions are a wholesome result of the nature and surroundings that can develop considerably and provide a greater span of knowledge. There are many agendas that are to be fulfilled in a given span of measure to provide better results and capable identities. Sports tech provides a framework to identify different clue points that can advance the game play. It has been identified that by 2030 all three levels of a consortium will be greatly affected which includes athletes, consumers and managers. Athletes are to be greatly nourished and trained for the betterment of their own sense and capability. Consumers are the race that will suffice the job of instigating the values and in enjoying the gameplay they will procure. On the other hand, managers have the job to fruitfully plan the events and manage the events accordingly. Basically, there are two major ideas and roles that are to be fulfilled the game changing plan and beneficial results for possible future. The consortium should provide relevant insights for decision-makers and other stakeholders in sports and raise promising directions for future research.

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