IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES
ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Dec 2022

Science and Technological Trends in Sports: The Present Scenario

Dr. Mohammed Ajaz Sheikh

Director of Physical Education and Sports

D. B. Science College, Gondia

Email- ajazz.sheikh@gmail.com

Abstract

Wearable gadgets in sports measuring a few bodily or physiological amount of an character have already come to be part of every day existence for plenty humans. While such easy gadgets output specially the statistical values of measured portions or matter activities, needs in game are greater stringent. Quantities of hobby should be measured in wider variety, with extra precision, and with better sampling frequency. We present a brief creation to motor gaining knowledge of in game and its desires for era back-up. We gift homes and obstacles of diverse sensors used for game pastime sign acquisition, way of verbal exchange, and homes and obstacles of verbal exchange channels. We shed a few mild at the evaluation of diverse components of game pastime sign and facts processing. We present timing, spatial, and computational electricity constraints of processing. Attention is given additionally to the kingdom of the artwork facts processing strategies together with gadget gaining knowledge of and facts mining. In end we present a few technological tendencies and demanding situations in sports, together with Internet of Things, clever game system, and actual-time biofeedback structures and packages.

Keywords: Wearable gadgets, Sports, physiological, sensors, technological tendencies.

Introduction

Physical recreation is becoming more and more important in our lives. It is an important and necessary factor for a healthy existence and there is no doubt that it contributes to our well-being. While gaming was once synonymous with physical leisure, it may no longer be. In a sense, we can classify leisure physical activities into leisure games, or leisure, beginner games and expert games. Each of the three classes has a different position in society and consists of people with extraordinary goals. But one element is not unusual for all of them; desire and desire to quantify one's bodily pastime. The technology used in the game is growing very quickly; the modern era has homes and capabilities that were most easily imagined a few years ago. Internally, for example, it is easiest to analyze a gymnast's movement in a positive element through video recordings, while talented gymnasts can equip their uniforms with motion sensors that authenticate their movements. Such structures can provide a comprehensive assessment of their movement in three-dimensional space based on a kinematic version of the athlete. Similar examples can be found in various sports. Today, cheaper toys and hobby tracking devices have been introduced. Devices with armbands provide statistical parameters and selected body time substance functions. For example, they count the steps taken during the day, can detect falls, sleep quality, etc.

Typically, such devices collect the movements or physiological techniques of the consumer at a low frequency and random accuracy that is reasonably adequate. for his purpose.

Technology in sports

Signals and facts processing in recreation comments structures degrees from tremendously simple to extraordinarily stressful and time consuming. The processing wishes on one hand and the processing abilities however depend upon quite a number of things and situations: time of processing, region of processing, processing complexity, to be had processing electricity, to be had battery capacity, etc. Time of processing relies upon at the kind of comments. If the comments is concurrent, given for the duration of the motion, the processing ought to be done in actual time. If the comments is terminal, given after the motion is completed, then the device can manage to pay for to do the whole lot in post-processing.

Review of literature

Human-Centered Computing (HCC) places the customers on the middle of layout and improvement. HCC is an interdisciplinary subject that intersects laptop technological know-how, psychology, and cognitive technological know-how. HCC specializes in the layout and implementation of computing structures that help human beings's sports and human improvement It is the technological know-how of designing computations and computational artifacts in help of human endeavors (Jaimes, Sebe, & Gatica-Perez, 2006).

Aim of the study:

The specific aim of this scholarly qualitative study was to explore the impact of modern technology on sports performance.

Methodology:

A thorough on-line and offline search procedure was applied for the acquisition of evidence in this systematic qualitative study. An analysis of the paper was systematically done through online databases: PubMed, Google Scholar, and Google Advance Search.

Sport background of feedback systems

Motor gaining knowledge of, a method of gaining knowledge of new movements, is crucial in any sport. Motor gaining knowledge of is primarily based totally on repetition. Numerous accurate executions, on the whole numerous thousand of them, are required to accurately analyze a positive movement. According to sports activities experts, remarks is the maximum vital idea for gaining knowledge of, besides the exercise itself. It may be concluded that motor gaining knowledge of closely relies upon at the remarks given to the learners. In this paper we are able to attention at the opportunities of era subsidized motor gaining knowledge of enhancements. During the exercise, the natural (inherent) remarks records is supplied internally via human feel organs. Augmented remarks is supplied via way of means of outside source, historically via way of means of teachers and trainers, these days additionally via way of means of technical gadget and devices.

Coach supported motor gaining knowledge of is depicted in Fig.2. A train or an teacher is following or tracking athlete's movements and offers the remarks approximately the performance, results, and recommendation approximately viable improvements. With this form of remarks technical gadget isn't always essential because the sensors may be train's eyes, the processing and tracking may be completed for my part via way of means of the train, the remarks to the athlete is given in any of the conventional ways: via way of means of oral recommendation, via way of means of drawings, via way of means of displaying the appropriate action, etc.

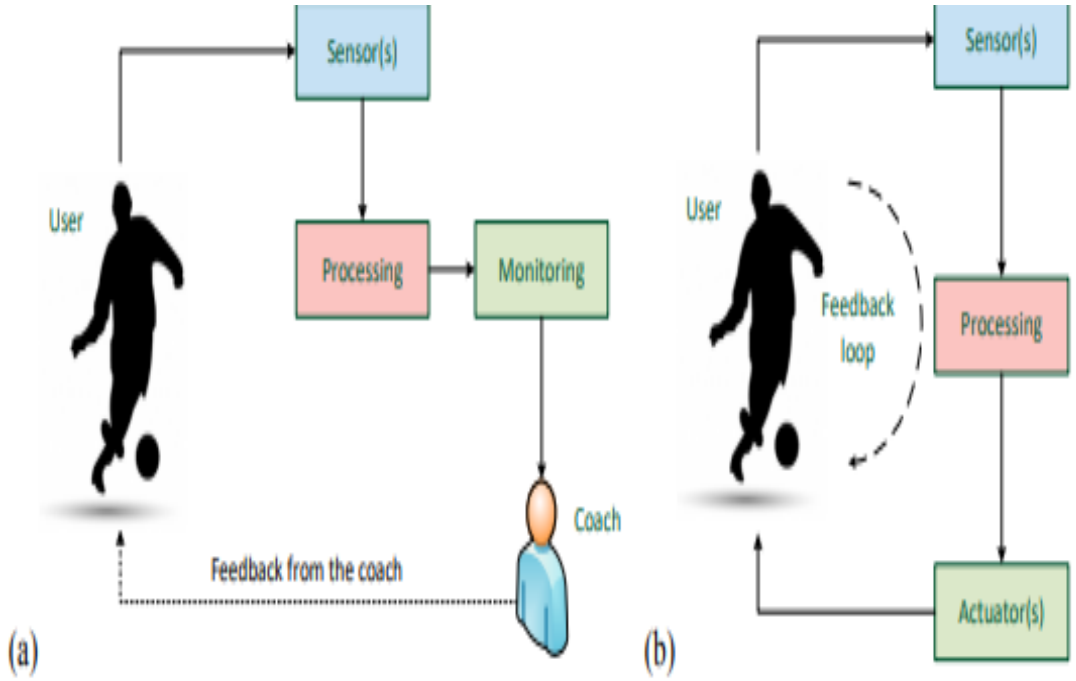

Fig-2 improved feedback during the established motor learning

Motor learning that supports traditional teaching can be improved by the introduction of a technical device that can measure, calculate and provide the locations of the movements made. Figure 2 shows the technical setup using the sensor, processing and monitoring block. An important reason for the use of technical equipment is the possibility of obtaining imperceptibly incomprehensible or miles beyond human capabilities statistics. For example, a teacher cannot see the pressure applied during a gymnast's jumps, or the teacher cannot see the exact place where the tennis ball hits the racket during a serve. With the help of a special technical device, both the pressure of the gymnast and the impact point of the tennis ball can be measured, calculated and delivered. For example, in Figure 2, the sensor could be a too-fast, too-accurate digital camera recording a tennis serve. The live video is processed and the ball score is calculated. The instructor receives a graphical representation of the service, followed by many applicable parameters on the instrument screen. The teacher can then look at the facts and possibly make a recommendation to the tennis player.

Drone technology utilized in sports:

The unmanned drone era with an embedded digital digicam facilitates to take super snap shots and motion pictures from height. A Drone is simply, in easy phrases, a flying robot. This plane is normally managed from a specialised far flung control, and with the assist of shrewd software program can tune all matters withinside the air. Many athletes (runners, basketball gamers, skiers, climbers, etc.) are the usage of drones to reveal their practise to peer whether or not any adjustments may be created. A moderate development in non-public fine time for the competitor will take off seconds or smash a 2nd. Nowadays a sports activities occasion has been greater real and realistic to air. The predominant benefit of the usage of drones or unmanned plane in critical global sports activities is their being capable of get in the direction of global athletes.

Snick-o-Meter:

The Snick-o-meter identifies whether or not a snick occurred. A snick whilst the cricket ball comes in touch with the bat is a nice noise. That is expressed withinside the captured audio sound-waves. There is frequently confusion approximately whether or not the ball has made touch with the bat, or a batsman's gear. Among the prevailing techniques, Rock et al. in probed the usage of wavelets for area detection in cricket signals. Wavelet-primarily based totally functions had been extracted and an synthetic neural network (ANN) machine become educated on them. The ANN classifier become educated to inform the numerous instructions apart. The accuracy of the machine become 97.five percentage on uncooked trying out data. Rock et al. in supplemented their elegance machine's efficacy with the resource of the use of centering their hobby on extraction of wavelet region descriptors for the fast period of the snicks. Additionally, they made use of time region-based definitely higher order statistical functions, inclusive of skewness and kurtosis, and have been able to gain a category price of a hundred percent on unprocessed finding out statistics.

Wearable GPS era:

Global Positioning System era has been applied for a while in aggressive game, which include in practise sporting activities in addition to in the course of play. By the usage of Electronic Performance and Tracking System (EPTS) gadgets, groups can tune the motion of gamers on the pitch and accumulate huge quantities of records approximately their overall performance. In 2006 the primary tries to affirm GPS for discipline game programs had been made. Although GPS has been licensed for aggressive sports activities sports, a few questions stay concerning the suitability of GPS for monitoring rapid high-speed runs. Consequently, GPS has been usually utilized in American football, baseball, basketball, rugby union and league and soccer. GPS performance in comparing human locomotion is tormented by unique elements as described for validity in element above. That is, pattern price, speed, project duration, and project kind every in phrases of GPS reliability. The GPS is a monitoring tool that accesses the GPS satellite tv for pc signal (or comparable satellite tv for pc networks consisting of GLONASS,

GNSS, BDS or NAVIC) to triangulate its very own position.

Modern track and field events using technology:

Track and discipline varies from maximum different disciplines, as it's miles measured in meters and seconds simplest. Within tune, a fragment of a 2nd could make all of the difference. Which is why the system which tracks tune and discipline race information must be as dependable as particular as practicable. An digital beginning pistol is any other innovation used to enhance tune occasion startups. In addition, whilst the runner begins, they'll observe their development the usage of Radio-Frequency Identification (RFID) chips. These chips are so precious that during trendy they have got come to be popular. RFID chips can be bandaged to shoes to reveal the pace, distance and sample of a runner.

Aerodynamics:

While without a doubt any game will be used to demonstrate this new function of high-tech tennis, fencing, swimming, golf, and cycling – is a superb example. In the twenty first century, global-elegance tennis gamers (and their coaches and trainers) could have a clean understanding of the legal guidelines of aerodynamics in an effort to absolutely draw close the game and obtain a bonus over opponents . Therefore whilst engineer broaden technological gadgets for sports activities they have got to research the real aerodynamics of the respective video games and sports activities.

Conclusion

There isn't any doubt that athletes in novice and expert recreation will usually attempt for higher results; in keeping with the Coubertin's Olympic moto: "Faster, higher, stronger!" Application of technology and era can also additionally provide vast aggressive advantage, what's in today's exceedingly aggressive and commercialized recreation really priceless! The cognizance of this paper is extended motor studying with using era. While it isn't debatable that era can outperform human senses in nearly all aspects, one query remains; can technology make a step into the area of training? With a wonderful solution a great quantity of opportunities open. For example, a clever eCoach that follows athlete's movements and offers recommendation primarily based totally on all of the statistics to be had from athlete's non-public records and statistics to be had withinside the "recreation cloud". Perhaps the arena of training will alternate forever.

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ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 11, Iss 11, Dec 2022

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