Technology Within Sports

By Victoria Garza
Innovations

- Wearable/Treatment Technology
- Player Tracking
- Equipment Development
- Instant Replay
What does wearing/treatment technology do for athletes and what is it?

Technology in the sports world has adapted so much to the needs of athletes, such as advancements in tracking stats, burned calories and strength building which allows for more understanding of abilities and even the impact of training on one’s body. Even more simple advancements like cupping, scrapping, and physical training stretches have tested the limit of time.

Types of wearable/treatment Technology

- Sensors
- Virtual Reality
- Data Tracking
- Timing Systems
- ABS (automated ball and strike calling system)
- Cupping
- Scrapping
- Massaging
- Recovery Boots
- Stretching
**HEART RATE MONITORING**

Determines the heart's response to the increase of competition and training. The response is useful to know the intensity of the exercise and how it affects the athletes individually. It's important to know the condition of the athlete's body.

**INTEGRATED SENSORS**

Monitors and displays the electrocardiography electrodes. Developed for the use to track the movement and other elements needed to know for the improvement of an athlete's performance.
Personal Experience on Wearable Technology

Through the years, many different “new and better” advancements have been discovered, which inherently helped the sports world. Since being an athlete, I too have had my fair share in experimenting in treatments. I recently have injured my back and have tried many different treatments which vary from; stem, cupping, and scrapping. Which these many not fully fit the category of “wearable” technology but allow an incite of how far innovations have come.

Types I’ve Used:
- Stem
- Cupping
- Scrapping
- Heart Sensor
Player Tracking

(KINEXO) Definition- Tracking system that captures variety of data such as speed, acceleration and mechanical load to provide information that gives you insight of what is need for strategizing and or decreasing injury.

Companies:

KINEXO- USA, 2022
Oura- Finland, 2013
Nowsta- USA, 2014
StrechSense- New Zealand, 2012
Jabbr- Denmark, 2022

Types of Tracking Technology

Global Positioning Systems (GPS)
Local Positioning System (LPS)
Inertial Measurement Units (IMU)
Types of Player Tracking

GLOBAL POSITIONING SYSTEMS (GPS)

Used to track the position and movements of players on outdoor fields. GPS transmits location data, movements, speed and distance. Commonly paired with GNSS to increase accuracy and reliability.

LOCAL POSITIONING SYSTEMS (LPS)

Used to track the positions and movements of players in an indoor environment. Based on Ultra-Wideband signals, which provides (currently) the most reliable data.

INTERIAL MEASUREMENT UNITS (IMU)

Sensors consist of accelerometers and gyroscopes, allowing measurement of acceleration and velocity. Data on moments and change in players direction are also provided.
Film watching and tracking stats were the gateway to the advancements we have today.

However, watching film and tracking stats is not new “advancement”, but that is what I do. Personal I haven’t experienced super advanced player tracking.
Equipment Development

Types of Equipment Development:

• Football
  Position-Specific Helmets

• Softball
  Mash Composite Barrel & VTZ Connection

• Soccer
  Adidas Copa Mundial & Nike Mercurial Dream Superfly & Elite

• Tennis
  Wilsons “Clash” Rackets
Examples of Equipment Development

POSITION-SPECIFIC HELMETS

Latest advancement made by collaborating medical experts and engineers to allow for a safer and better performing helmet. Better protection from the new technology is expected to help reduce the number of head related injuries. Such as concussions which led to the biggest concern, CTE.

CTE is a brain disorder caused by repeated head injuries that worsen and cause memory loss, impaired judgment, aggression and depression.

MASH COMPOSITE BARREL & VTX CONNECTION

Introduction of new carbon fiber composite design that allows for larger "sweet spot", softer barrel and more pop. The two walls, inner layer which is tapered and then covered by a cantilevered design provides a more powerful pop throughout the whole barrel. The VTX connection system then allows for energy transfer with reduced vibrations and smoother swing.

No more stinging and hurt hands after contacting with barrel, smoother swing.
Equipment Development that I’ve Seen

Personally, I’ve used many new bats and have seen what the new technology has to offer. My bat is a Louisville Slugger 2022 LXT, it is a Single-Disc Speed Composite Barrel which was made to have a larger and more powerful pop area. I also used to have a 2016 Louisville Slugger and the difference is day and night. Older bats have less pop but, on the upside, don’t break as much as the newer bats.

Types of bats I’ve used and the differences:
Louisville Slugger 2022 LXT- Lots of pop and powerful, doesn’t break
Easton Ghost 2022- Most pop on a bat, broke 3 different times
Easton Ghost Single Barrel Unlimited- Very light and has some pop but doesn’t have good grip
Instant Replay

Instant replay has grown popularity within the 21st century due to the ensuring of rules and keeping standards that can be regulated properly. Instant replay eliminated human error and has become crucial of all games. NHL, NFL, NBA, MLB, and European soccer leagues all use instant replay to help determine unclear plays and or incorrect calls.
“THE INSTANT REPLAY GAME”

1989 Chicago Bears vs the Green Bay Packers. Packers winning touchdown was reviewed due to belief that player, Majkowski stepped across line of scrimmage before firing pass, Officials felt the same way, so the footage was reviewed. It was first given to the Bears and then changed to the Packers. This caused an uproar of different emotions from all sides of the game. This moment in NFL history was extremely conservational and has given a back up on instant replay “cons”.

MLB HISTORICAL MOMENTS

June 2, 2010, Detroit Tigers vs Cleveland Indians, Armondo Galarrga was one out from a perfect game when umpire Jim Joyce made a bad call at 1st base stating the batter was safe when he was clearly out. Due to this call Tigers pitcher was stripped of a perfect game.

Chicago White Sox Hurler Philip Humber secured perfect game against Seattle Mainer due to strikeout of Brendan Ryan who was called on a check swing as a full swing. Umpires made bad call without any help from 1st basemen coach who just didn’t want to be next to Jim Joyce.

These historical moments could’ve been correctly changed if Instant replay was involved, and it widely thought about on how it would've changed the tide of the games.
Instant Replay

I personally haven’t used instant replay in a game but using recordings to see how plays could’ve gone. I think it’s important to me to see how I could have done things differently or even show how I should keep doing specific things. Also, it’s something that helps me understand the game more and have better softball IQ.
Conclusion of the Impact of Innovations of Technology within Sports

Wearable/Treatment technology, Player tracking, Equipment Development, and Instant replay all have been huge technology innovations that have shifted the sports world. Personally, I think wearable/treatment technology has allowed for athletes to know themselves and opponents better furthering for a more skillful approach to their game. Player tracking has also allowed for a better understanding of one’s abilities but in more depth, which has caused for a better performance out of athletes. Equipment Development has been crucial to the sports world due to the increase of performance for all type of athletes ranging from; football, soccer, tennis, baseball, and all the rest. However, a vital innovation that has been brought to the game has been instant replay. Instant replay has single handedly taken human error away and enforced rules. All these things have changed the sports world and as technology continues to evolve so will the game.
Citation Page


• Next generation player tracking by Kinexon. KINEXON. (n.d.). https://kinexon.com/technology/player-tracking/


