An Analysis of the Effects of Capital and Technological Investment on Basketball Players and Society

A Research Paper submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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Spring 2025

On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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STS Research Paper

Introduction

We all know a talented athlete somewhere in our life. Maybe from a past club team, a rival high school, a certified baller at the local YMCA, or someone from your hometown that made it to the collegiate level. For the most part, we perceive these people in our lives as exceptional people that both work hard and have innate talents that lead them to their success (Grainger, 2025). This sentiment is even more pronounced for athletes that perform and find success in the upper echelons of their sports in college and professional leagues. For those that equate fame and fortune with success, this can easily be seen in athletes who play in major American sports league have increasingly grown their wealth and popularity over the last decade (Sports Reference LLC, 2025; Ozanian, 2025).

The perception that sports represent a meritocracy is easy to articulate. Teams, leagues, and stakeholders want to succeed and beat their competition, and it makes sense that they recruit and retain the best athletes to help them do so. The athletes with the best skills, physical talents, and work ethic are the most in demand and command big financial contracts for their work. This is a longstanding input/output equation that is relevant in many parts of society like occupation, education, and outcomes; the most hardworking people get paid the most, the smartest students get accepted to top universities, and generally people put in the best work come out with the best outcomes.

While there is some truth to this intuition, it is generally known that these outcomes are not linear; things like family structure, zip codes, childhood, race, wealth, and many other parts of a person's life carry weight in what job they will have, what education they will receive, and what kind of success they will have later in life. In the sports world, this is a less clear concept

since success seems to come from athlete's abilities alone. In this paper, I delve into the structure and organization of basketball and investigate how innovation in basketball technology has been shaped by social and economic forces that have changed the game and its stakeholders. This analysis is modeled through the framework of Social Construction of Technology and will primarily focus on the community around basketball: the athletes, coaches, trainers, and stakeholders that follow players on their athletic journeys.

The Structure of Organized Basketball

Basketball is a perfect medium for investigating the role of technology and capital in sports. It has a long, rich and organized history in the United States from structured youth clubs and high school conferences, competitive nationwide collegiate play, to an internationally recognized professional league (Kelley et al, 2013; Wilco, 2024; NBA, 2021). The pathway for most basketball players to progress to the top professional leagues is well followed and documented (Tremblay, 2025). A talented young player can develop their skills playing in clubs and training camps in their youth, and then bring their talents to compete against local, regional, and even national competitions through their middle and high school conferences. If they are successful, a player can be recognized by college scouts and be recruited to play at the collegiate level where they will face other talented young players from across the country. Following the same steps, coaches and managers of professional organizations will look to draft the next generation of basketball talent from a pool of the best collegiate players.

These steps are closely followed by collegiate and professional basketball players but also make assumptions about the player's financial and social ability to participate in basketball. A player must have the free time to practice and hone their skills, be able to afford comfortable basketball shoes, pay registration fees and dues to play in certain leagues, obtain the right

transportation to get to their games, and at the end of the day, need the right nutrition to recover and grow stronger for the future. With the rise in financial, social, and technological power in the world of basketball, this pathway for players to grow becomes increasingly more complex.

Social Construction in Basketball

To begin understanding how basketball reflects the elements of the Social Construction of Technology (SCOT) framework, we start at the top of the game. Basketball at the professional level in the United States has been on an unending wave of financial growth over the past few decades. Since 2001, league-wide revenues from the National Basketball Association (NBA) have, on average, grown almost half a billion dollars every single year (Teitelbaum, 2024). This growth is fueled by the popularity of basketball, with increased viewership of games, ticket and merchandise sales, and the skyrocketing market for lucrative advertising opportunities. In the framework of SCOT, this reflects the principle that technological development is shaped by human actions. Executives, managers, and shareholders in the NBA business model actively pursue strategies to grow revenue streams, demonstrating that technologies and practices around basketball do not evolve on a purely technical basis, but are shaped by social and economic interests.

Teams within the NBA also act as individual organizations that compete for a share of the growing revenue. This competition drives fierce efforts to achieve the most viewership, sales, and popularity, which all starts with recruiting the best star athletes who can deliver wins, titles, and attention (Nath, 2024). From a SCOT perspective, this highlights relevant social groups whose interpretations and needs influence technological development: team owners, executives, and players all see athletic excellence as the "problem" to solve, and each interprets emerging technologies as potential solutions. The financial incentives for athletes to maximize their

performance position them as active participants who both drive and respond to the development of new training, recovery, and performance technologies.

The actions that individuals, athletes, and organizations are taking at the professional level reflect a similar pattern at every rung below the NBA, with financial and technological impacts cascading down the developmental pathway for basketball players. Colleges and universities mirror professional incentives, aiming to generate more revenue and prestige through competitive success. They seek to recruit better players, while incoming college athletes recognize the need to choose schools that will best develop their talents for a shot at the NBA. The same dynamic appears at the high school level, where athletes strive to stand out and attract attention from college scouts.

This widespread and profitable demand for elite talent shows how technologies related to training, performance, and recovery become socially constructed. As athletes, coaches, executives, and institutions interpret the growing challenges of competition, they fuel a market for new technologies that aim to solve the problem of athletic development. As SCOT suggests, the momentum behind these innovations is not inevitable or purely technical; it is driven by social groups responding to needs and goals. The result is a push for technological innovation in basketball, shaped and stabilized through actors that stand to benefit from developing and retaining the best players.

Development of Technology

It is clear now that there is a strong social drive to create solutions that address the demand for elite athletes, but technology in sports can be harder to visualize compared to other areas. On the surface, when it comes to game time, players rely on their raw athletic and physical

abilities to secure victory. This contrasts with technologies like smartphones or cars, where the social construction of technology is often more obvious in addressing needs like communication or transportation. In basketball, the technologies are more subtle but just as impactful, improving the ways athletes train, recover, and perform. Within the SCOT framework, these technological developments illustrate how social groups, motivated by competition and financial stakes, identify problems and invest in innovations that offer solutions. Technological innovation in basketball therefore encompasses a wide range of improvements grounded in scientific study, empirical data, and performance analysis.

One example of this technological construction is optimizing food intake. Resource-rich organizations or teams can provide athletes with diets that enhance energy, improve recovery, and build the specific muscle groups needed for peak performance (Beck, 2015). These nutritional strategies are increasingly refined by algorithms that rely on large-scale data research and computational power that are only possible through significant financial and technological investments (Eetemadi, 2020).

Similarly, innovations in training and recovery illustrate how technological artifacts emerge from social needs. Tools like anti-gravity treadmills, reaction training sensors, and automatic rebounding machines represent solutions to specific performance challenges that teams and players anticipate. Recovery technologies such as cryotherapy chambers, sensory deprivation tanks, and red-light therapy devices further extend athletes' capabilities, enabling faster recovery and more intensive training cycles. As SCOT suggests, these technologies gain prominence not merely because they are simply technically superior, but because they align with the socially constructed goals of maximizing athletic output and extending player longevity.

Even during actual gameplay, basketball players are not just using their physical abilities; they are deploying skills, strategies, and decisions that have been enhanced by technology. Innovations like full-body tracking sensors and advanced computational video processing systems generate millions of data points, allowing players and coaches to identify strengths, correct weaknesses, and optimize tactical decisions. Data analytics, driven by powerful computational tools, can even quantify the best moment to pass, shoot, or drive to the basket (Chadhokar, 2025). These examples further illustrate how technological artifacts are socially constructed in response to the problem of producing more effective basketball performance. Over time, SCOT suggests that these technologies are stabilized and normalized and become the established practice across the sport.

In this way, technological innovation in basketball reflects the interaction between economic pressures, stakeholder interests, and social interpretations, consistent with the SCOT framework. The development and adoption of these tools across sports medicine, therapy, and data science are not simply technological inevitability, but outcomes of ongoing social construction processes aimed at producing better athletes.

The Cost of Technological Development

While technological innovation has enabled basketball players to make significant strides in improving their abilities, it comes at a cost. Teams within the NBA invest hundreds of millions of dollars every year into building technological infrastructure designed to train, develop, and accelerate recovery for their players (Robbins, 2024). These investments have helped create healthier, stronger players who help teams win games, boost viewership, and generate higher revenues. These resources also serve as powerful recruiting tools in free agency, allowing teams

to market their development strategies and facilities as advantages that can help transform talented athletes into stars.

At the collegiate level, the pressure to invest in financial and technological resources is no different. Colleges and universities competing in NCAA Division I basketball conferences spend tens of millions of dollars annually to recruit, retain, and develop players (Malone, 2021). Even at Division II and Division III levels, athletes receive funding, specialized training, and access to developmental resources aimed at enhancing performance. Together, the NBA and NCAA have created an entire industry of coaches, trainers, doctors, and data scientists whose sole purpose is to elevate and optimize player development.

The talent production system extends beyond professional and collegiate leagues. Youth basketball players seeking to hone their skills, join club leagues, and travel for competition encounter similar demands for technological access. Parents looking to support their children's athletic and social success often make significant financial investments, with the average household spending over a thousand dollars just to participate in basketball (Aspen Institute, 2022). Access to advanced training tools, personalized mentorship, nutrition programs, and recovery technologies offer families with resources a distinct advantage, allowing young players to rapidly develop and compete at higher levels.

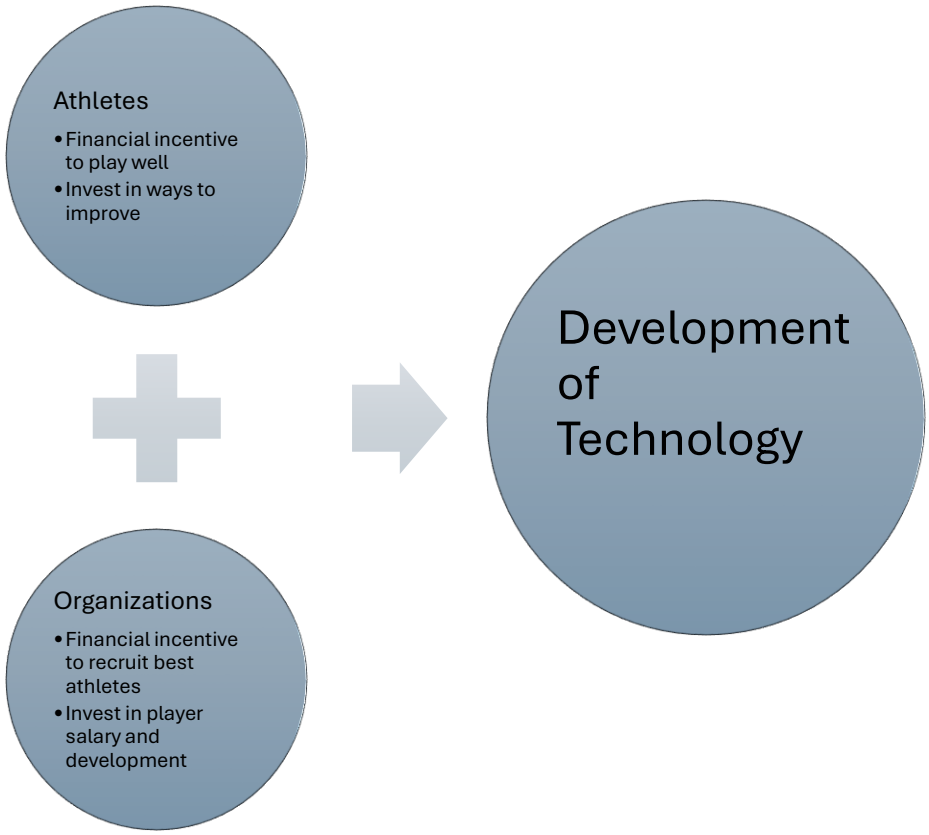
With all the new technological advancements in basketball training, recovery, and strategy, the bar for competition rises at every stage of the basketball pipeline. Financial and social capital now play a central role not only in professional and collegiate success but even in youth and recreational leagues. The rising costs associated with technological development reflect how social groups with greater access to resources are better able to shape, benefit from,

and stabilize new athletic technologies, reinforcing existing structures of opportunity and exclusion.

SCOT and the Impact of Technology on Basketball

Based on how financial influences have powered technological innovation, the technology developed to support basketball offers a clear case for applying the Social Construction of Technology (SCOT) framework. In SCOT, technologies emerge through social processes where different groups interpret and evaluate technological development. Through negotiation, competition, and eventual closure, one interpretation becomes dominant and stabilizes the technology (Bijker et al., 2012). In this analysis, the demand for talented basketball players is framed as the socially constructed problem, while the innovations that enhance athletic performance represent the resulting technological developments.

The key actors surrounding the social construction of basketball technology can be broadly grouped into three categories: fans and viewers, coaches and organizational leadership, and the athletes themselves. In SCOT, the demand for better technologies to enhance player performance is not organic or inevitable, it is driven by the expectations of fans and consumers who want to see high level basketball and are willing to support their teams through cable fees, ticket purchases, and merchandise sales. Recognizing this demand, organizations like the NBA act strategically to improve their basketball output by investing in technologies that can recruit, retain, and develop top players.



Financial incentives impact all levels of basketball, affecting organizations, players, and their families. Players financial incentive to compete at the highest level; perhaps landing collegiate scholarships, gaining access to top training environments, and having a shot at professional organizations like the NBA where contracts regularly land players millions of dollars in salaries, bonuses, and endorsements. This dynamic between players striving for opportunities, organizations seeking revenue, and investors driving innovation reflects how social groups construct technologies that enable superior athletic performance. Technological progress in basketball, therefore, is not the result of linear technical advancement but rather the outcome of social negotiation and competition over what constitutes athletic excellence.

However, applying the social constructivist perspective with SCOT has limitations. As Langdon Winner argues, social constructivism offers insights into how social groups shape the

development of technology, but it tends to ignore the experiences of those who are excluded from these processes (Winner, 1993). So far, this analysis has covered how capital and social incentives drive technological innovation, but less attention is paid to how these advancements exclude and raise barriers to entry to social groups unable to participate in the growth. SCOT provides a useful lens for understanding the social shaping of basketball technologies, but it must be considering how technological advancement affects existing social inequalities.

Those Left Behind

Barriers to entry exist across American society in education, employment, healthcare, and access to financial resources. Race, income, and other demographic factors significantly impact the scale of these barriers, and result in profound differences in educational attainment, household income, and mortality rates (Anderson et al., 2004). Outcomes based on race are often a center of attention, with white Americans most generally referred to as the most advantaged population and typically with outcomes better than other demographics. Yet, the NBA presents a striking contradiction: over 80% of NBA players are non-white with 70% of players being African American (Lapchick, 2023). Given the NBA's status as the most prestigious and selective basketball league in the world, this high level of African American representation appears, at first glance, to defy broader patterns of social inequality.

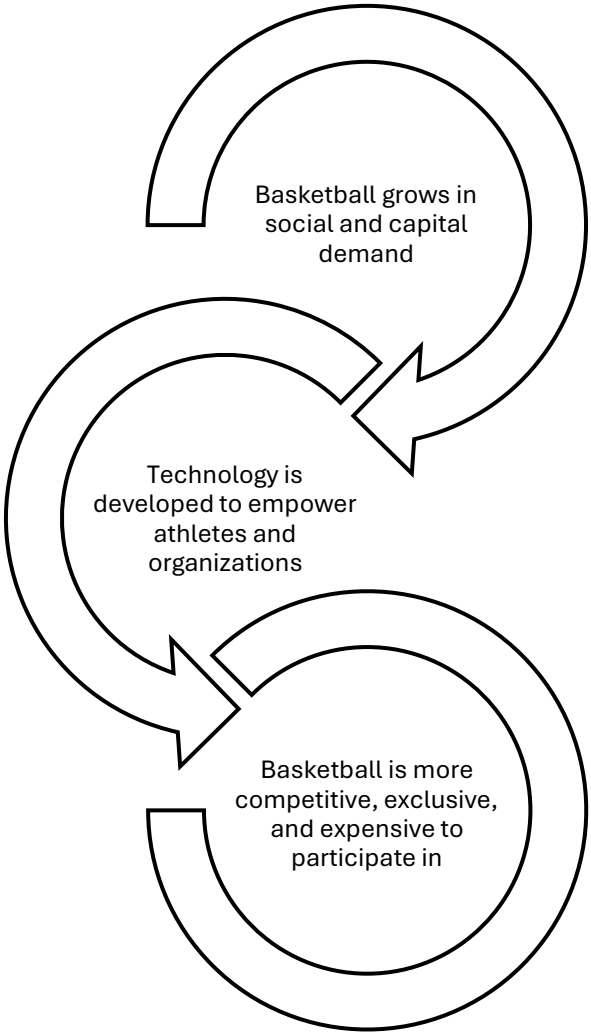
This surface level contradiction has deeper, socially and financially constructed roots, that have led to basketball being a prevalent sport in African American communities (Klimowicz, 2018). Basketball has historically had lower barriers to entry compared to other major sports like baseball and hockey. This accessibility has made basketball more prevalent in African American communities, while the high costs associated with equipment, travel, and maintenance in sports like hockey and baseball results with much lower African American participation in the NHL and

MLB (Whyno, 2022; Brown, 2024). With more strategies and methods coming into widespread adoption among top competition, basketball players looking to get to the next level will have to ride the technological wave, or risk being left behind.

Despite black African American players still forming the majority in the NBA, their share has declined over the past decade (Lapchick, 2023). A similar decrease appears in NCAA Division I basketball, where 75% of players are non-white and 54% are black which reflect a similar diversity, but have also declined modestly over time (NCAA, 2018). Although these demographic shifts are far from extreme, they suggest that rising costs and technological demands may be reshaping access to elite basketball opportunities. Given the relatively small number of elite players, even slight demographic shifts may signal deeper structural changes in who is able to compete at the highest levels. These numbers in the NCAA and NBA are certainly not alarming since the decline in black and African American players is small. Especially given the small population of elite players, a change in 5-10 players could shift entire percentage points in demographics, which points to a different story in what populations could be left behind in basketball.

In an article in the Marquette Sports Law Review, Earle Smith discusses how racism plays a role in how the NBA and its leadership make decisions and the reflection of broader racial inequalities in society coming into basketball (Smith, 1999). In that period, the demographic makeup of the NBA was almost 80% black and African American, and notably, Smith writes about the rise of foreign-born NBA players that are used as a tool to balance the racial composition of the NBA. Today's NBA is still majority black and African American, with definitive growth in players from abroad, seeming to point away from the scope of just race, but to a more nuanced shift in demographics.

In a research paper for the International Review for the Sociology of Sport, Joshua Dubrow and Jimi Adams investigated the role that race, and several demographic conditions have on the success of basketball players and the chances of making it to the NBA (Dubrow et al, 2012). Their basis was researching the popular idea of a black basketball player that works their way out of poverty to find success in the NBA. They found that regardless of race, income and family structure were statistically significant indicators of the chances of making it to the NBA. Black and white players in the NBA had higher rates of being from a middle- or upper-class income family, and both had lower rates of non-two parent households than their counterparts in the general population. Combined into a statistic of having a compounded disadvantage of lower-class structure and non-two parent household, the results indicate that NBA players are much less likely to come from a disadvantaged background.



Technology in broader society has simultaneously improved quality of life in so many metrics but has also exacerbated inequalities in the development and deployment of digital technologies (Ifeanyi-Ajufo, 2023). Technology wields the same double-edged sword in the basketball world. Today's NBA players and teams are stronger, faster, and more skilled, with players scoring more points per game than ever before (Anderson, 2021). However, for most people, this means that it is more expensive across the board to participate in basketball from being a fan, to running an organization, and to playing and competing in the sport (Shea, 2022).

Fans must spend more to watch games, organizations and teams must invest more to compete, and players must dedicate more of their time and resources to be able to effectively compete. Those who don't have the resources, or the income, or the family structure, i.e. privilege, will not be able to participate in the sport of basketball. Technology in basketball will be yet another consideration for the next generation to battle with as more and more inequities in broader society come to light.

Closing Thoughts

To conclude, technological innovation in basketball is socially constructed, driven by capital investment, and has reshaped the ways in which society participates in and engages with the sport. Advances in basketball technology have altered the traditional pathways for athletes aspiring to reach collegiate and professional leagues. Where basketball once required just a public court, a good pair of shoes, and a shared ball; success at the highest levels increasingly demands access to expensive technologies, specialized training methods, and advanced recovery strategies. As a result, a pathway that historically allowed talented athletes from a variety of backgrounds to pursue educational and professional opportunities has narrowed. Access to the tools, methods, and strategies necessary for elite development now often depends on financial privilege and resource availability.

This emerging dynamic within basketball reflects broader issues in society. Technology enables incredible advancements and offers new solutions to complex problems, but its benefits are often distributed unequally. Those with the resources to access and leverage technological innovations continue to move ahead, while those without such access face growing barriers. Although technological innovation holds the promise of societal progress, it can also deepen existing inequalities if its development and deployment are not carefully managed. The long-

term consequences of an increasing dependence on technology in sports and society remain uncertain and addressing these inequities will require intentional policies and a greater public awareness of how access to technology shapes opportunities and outcomes.

In essence, the issues arising from technological innovation in basketball are representative of larger structural challenges facing the United States and the world. As technology continues to advance, we need to ensure that its benefits are equitably shared across all social groups across all sectors of society.

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