ESPORTS: HEALTH, PERFORMANCE AND SOCIETY

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PREFACE

Over the past three decades, competitive digital gaming has evolved from a marginal recreational activity into a global phenomenon that intersects sport, media, technology, economy, and health. Esports is no longer confined to virtual arenas or entertainment platforms; it has become an institutionalized system of competition involving professional athletes, multinational corporations, regulatory bodies, academic institutions, and global audiences. Despite this rapid expansion, scholarly engagement with esports has often remained fragmented, with economic, sociological, and health-related dimensions examined in isolation rather than as interconnected components of a single ecosystem.

This book emerges from the recognition that esports cannot be adequately understood through a single disciplinary lens. The digital nature of esports challenges traditional definitions of sport, while its platform-based economic structure reshapes labor relations, media consumption, and value production. At the same time, the increasing professionalization of esports has transformed players into athletes exposed to distinct physical, psychological, and occupational health risks that demand systematic scientific attention. Addressing these dimensions together is no longer optional; it is a conceptual necessity.

Esports: The Economy, Society, and Athlete Health of Digital Competition offers an integrated framework that situates esports at the intersection of economic systems, social structures, and athlete health paradigms. Rather than treating esports merely as a technological novelty or cultural trend, this volume approaches it as a complex performance domain shaped by historical processes, institutional power relations, and evolving health practices. By combining perspectives from sports science, sociology, economics, public health, and digital media studies, the book seeks to move beyond descriptive accounts toward analytical coherence.

The chapters in this volume are organized to reflect a cumulative logic. The opening sections establish the conceptual and theoretical foundations necessary to define esports as a legitimate object of academic inquiry. Subsequent chapters examine the social and economic structures that sustain the esports ecosystem, including issues of governance, inequality, digital labor, and platform economies. The latter part of the book focuses on athlete health, tracing the historical neglect of health considerations in esports and documenting the contemporary shift toward preventive, performance-oriented, and public health–informed models of care. The final chapters explore emerging technologies such as artificial intelligence,

virtual reality, and metaverse-based environments, considering their implications for competition, labor, and health in the near future.

This book is intended for scholars, graduate students, and practitioners working in sports science, sociology, economics, public health, media studies, and digital culture. It is also designed to serve as a reference for policymakers, federation representatives, team managers, coaches, and health professionals seeking evidence-based insights into the rapidly evolving esports landscape. By bridging disciplinary boundaries, the volume aims to contribute to the maturation of esports studies as a coherent and rigorous field of research.

Ultimately, this book argues that esports should not be viewed merely as a digital extension of traditional sport, nor as a detached form of entertainment. Instead, it represents a distinct competitive domain that reflects broader transformations in how societies produce value, organize competition, and understand athlete health in the digital age. It is our hope that this volume will encourage more integrative, critical, and health-conscious approaches to the study and practice of esports.

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CHAPTER 1

THE DEFINITION AND SCOPE OF ESPORTS: THEORETICAL PERSPECTIVES

Mehmet Yiğit GÖKMEN[1]

1. Definition of Esports

Esports refers to the organized and competitive play of digital games within regulated environments, where individuals or teams compete under formal rules and structured formats (Tang et al., 2023). Scholars distinguish esports from casual gaming by emphasizing its institutional features, including leagues, tournaments, rankings, officiating systems, and professional training structures (Mendoza et al., 2023). This institutionalization allows esports to function as a performance domain that can be studied with the same analytical rigor applied to traditional sport systems (Kwan, 2025).

The development of esports skills involves rapid decision-making, fine motor control, visual attention, and complex strategic planning, which can be objectively evaluated in competitive settings (Pedraza-Ramirez et al., 2020). These perceptual and cognitive demands have led researchers to adopt sport-science-based assessment tools, including performance analytics and cognitive load measures, to evaluate player expertise (Imanian et al., 2025).

Spectatorship is another defining element of esports because competitive gaming has grown closely connected to streaming platforms and digital media ecosystems (Hamari & Sjöblom, 2017). The rise of platforms such as Twitch has transformed esports into a broadcast entertainment format that attracts global audiences and supports professional careers (Johnson & Woodcock, 2019). Scholars highlight that digitally mediated spectatorship reshapes fan behaviors, community formation, and commercial visibility within the esports ecosystem (Ma et al., 2021).

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examine topics such as performance analysis, player development, organizational structures, media ecosystems, and ethical considerations, each contributing to a more comprehensive understanding of esports as both a cultural practice and an emerging academic field. This conceptual map, therefore, serves as the bridge between foundational ideas and the detailed discussions that follow, allowing the reader to approach esports with a coherent analytical structure.

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CHAPTER 2

ACADEMIC DEBATES ON WHETHER ESPORTS CONSTITUTES A REAL SPORT

Mehmet Yiğit GÖKMEN[1]

1. A Conceptual and Academic Struggle

The debate over whether esports should be regarded as a real sport represents one of the most significant conceptual challenges in contemporary sport studies (Wollesen et al., 2025). As competitive gaming evolved from informal local events into global tournaments watched by millions, scholars found themselves confronted with activities that looked, felt, and operated like traditional sports, yet emerged entirely from digital environments. These developments forced a reconsideration of long-standing assumptions underlying the definition of sport, including the roles of physicality, institutional governance, embodied skill, and cultural legitimacy (Kanellopoulos & Giossos, 2024b; Parry, 2019).

The debate is rooted in the tension between historical understandings of sport and the realities of digital competition. Traditional sports have been defined through frameworks that emphasize physical exertion, bodily movement, spatial presence, and direct interaction with material environments (Parry, 2019). Esports disrupts these categories by relocating competition into virtual arenas where performance relies on fine-motor coordination, cognitive processing, strategic reasoning, and technologically mediated interaction (Campbell et al., 2018). This contrast has generated significant disagreement about whether physicality must remain central to sport, or whether modern definitions should accommodate the increasingly digital nature of human activity.

At the same time, the institutional and cultural expansion of esports complicates simplistic dismissal. Over the past two decades, esports has developed features typically associated with recognized sports: professional leagues, training

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sophisticated strategies, and participate in highly organized leagues supported by coaches, analysts, and medical staff (Pedraza-Ramirez et al., 2025; Pu et al., 2021; Üçüncüoğlu & Çavuşoğlu, 2020). Esports is increasingly recognized as a site where new forms of embodiment, competition, and spectatorship are emerging. The digital arena serves as both a performance environment and a cultural space where players navigate identity, pressure, teamwork, and public visibility. As sport continues to adapt to technological change, esports provides a model for understanding how athletic competition might evolve in networked societies (Kemp et al., 2020; Smith & Ditizio, 2021).

Today, the central question is not whether esports is a sport but how sport must evolve to remain relevant. The integration of virtual and physical domains, the rise of cognitive athleticism, and the restructuring of global media ecosystems all suggest that hybrid forms of competition will shape the future of sport (Thiel & John, 2018). Esports stands at the forefront of this transformation, offering a compelling case for rethinking what sport means in the twenty-first century.

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CHAPTER 3

PARADIGM SHIFTS IN ESPORTS HEALTH: A HISTORICAL ANALYSIS FROM ATHLETE HEALTH TO PUBLIC HEALTH

Mahmut Çağatay NAZLICAN[1]

1. The Early Era of Digital Games and the Invisibility of Health (1970–1995)

The early period in which digital games emerged is characterized by a clear "paradigm of invisibility" in the evaluation of esports from the perspectives of athlete health and public health. During the 1970s and 1980s, digital games were primarily discussed within the frameworks of technological innovation, entertainment, and cognitive skill development, while their potential physical and psychosocial health impacts were largely absent from both scientific inquiry and policy agendas (Kent, 2001; Wolf, 2008).

In this period, playing digital games was not considered within the scope of either sport or health domains. Individuals who played games were not defined as "athletes," nor was the relationship between gaming duration or style and physical health subjected to scrutiny. This reflects an early digital gaming culture in which health was implicitly excluded from consideration. Health emerged as a topic only when pathological conditions became visible, and preventive approaches were virtually nonexistent (Newman, 2013).

Although the widespread proliferation of arcade venues in the 1980s increased the time spent playing digital games, this increase was not evaluated as a public health risk. Gaming was commonly perceived as a standing or short-duration activity, and prolonged sedentary behavior patterns had not yet been defined as a problematic area in scientific literature. Consequently, the concept of physical inactivity was not associated with digital gaming during this period (Biddle et al., 2017).

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health have become more permeable, and preventive health strategies are now widely acknowledged as central to the sustainability of the esports ecosystem.

In conclusion, the historical development of esports from the perspectives of athlete health and public health demonstrates a clear evolution from neglect to prevention and from individual responsibility to collective governance. The future of esports depends not only on technological innovation or economic expansion but on the successful integration of health as a foundational design principle. Ensuring the long-term legitimacy and sustainability of esports as a social practice will require the institutionalization of health-oriented paradigms across educational, organizational, and policy domains.

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CHAPTER 4

THE HISTORICAL DEVELOPMENT OF ATHLETE HEALTH IN ESPORTS

Yusuf DİRİCAN[1]

Introduction: From "Play" to Professional Athletes

In the early 2000s, digital games were largely perceived in both academic literature and public discourse as leisure activities. Consequently, the physical and psychological effects of competitive gaming practices on players were not systematically examined for a considerable period. Early studies primarily focused on gaming culture, online communities, and digital interaction patterns, while player health was treated as a secondary or marginal concern (Witkowski, 2012). This perspective was rooted in the widespread but reductionist assumption that digital games did not require "bodily effort."

However, as competitive digital gaming became increasingly institutionalized, this perception gradually lost its validity. From the mid-2000s onward, the rise of LAN tournaments, the formation of professional league structures, and the establishment of sponsor-backed teams transformed esports from an amateur entertainment activity into a semi-professional and eventually a fully professional sporting domain. As emphasized by Taylor (2012), this transformation was not limited to economic growth; it also fundamentally redefined players' labor processes, time use, and performance expectations. Players were no longer merely "individuals who play," but professional actors expected to produce sustained performance.

This process of professionalization significantly altered the daily practices of esports players. Training schedules extending to 8–12 hours per day, dense tournament calendars, international travel, and the obligation to remain constantly visible on live-streaming platforms imposed substantial physical and mental demands on players (DiFrancisco-Donoghue et al., 2019). Unlike

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In conclusion, the future of esports athlete health reflects a transition from individual awareness to institutional responsibility, and from voluntary practices to mandatory regulation. Digital health technologies, AI-driven analytics, and international standards are reshaping esports as a sustainable, human-centered sport. This transformation positions esports not only as an economic and cultural phenomenon, but also as an ethically grounded and health-oriented performance discipline.

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CHAPTER 5

THE HISTORICAL DEVELOPMENT OF PHYSICAL TRAINING PROCESSES IN ESPORTS

Yusuf DİRİCAN[1]

1. Physical Training in Esports: A Conceptual and Scientific Framework

The global professionalization of esports has rendered explanations of performance based solely on cognitive variables such as reflexes, reaction time, and in-game knowledge insufficient. In professional players in particular, prolonged exposure to intensive training and competition has made multidimensional health outcomes increasingly visible, including musculoskeletal complaints, visual fatigue, sleep disturbances, and stress-related strain (DiFrancisco-Donoghue et al., 2019; Zwibel et al., 2019). Consequently, modern esports performance management has moved away from a "purely in-game skill" perspective toward a broader framework grounded in sport science, ergonomics, and health management (Reitman et al., 2020).

From a conceptual standpoint, "physical training" in the context of esports is not confined to traditional sport objectives such as developing strength or endurance. Rather, it is defined as a multidimensional domain aimed at managing postural loads associated with prolonged sitting, reducing overuse risks resulting from repetitive upper-extremity activity, and supporting performance sustainability under high cognitive load (DiFrancisco-Donoghue et al., 2019; Zwibel et al., 2019). At the practical level, this approach emphasizes components such as postural control, core stabilization, scapular endurance, muscular endurance of the hand–wrist complex, and brief "active break" strategies (DiFrancisco-Donoghue et al., 2019).

Models developed to systematically explain the components of esports training highlight the multidimensional structure of esports performance. Within this framework, it is argued that in-game technical and tactical skills must be evaluated

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CHAPTER 6

MUSCULOSKELETAL DISORDERS IN ESPORTS AND DIGITAL GAMING AND PREVENTIVE MEDICINE PRACTICES

Mesut ULUÖZ[1]

1. Introduction

Esports, which has emerged through the institutionalization of competitive forms of digital gaming, has transformed over the past fifteen years from a purely entertainment-based activity into a multi-layered sport ecosystem with global economic, cultural, and health dimensions. Today, esports is defined as a highly interactive and rapidly expanding structure that encompasses professional leagues, clubs, athletes, broadcasting platforms, and a wide range of stakeholders (Reitman et al., 2020). This transformation process has also led to an increase in the physical and psychosocial demands placed on esports athletes, highlighting the necessity of addressing esports not only from a performance perspective but also through a comprehensive health framework.

The existing literature indicates that, unlike traditional sports, esports is characterized by high levels of sedentary behavior, prolonged screen exposure, and repetitive fine motor movements (Kari et al., 2021). These distinctive structural characteristics increase the risk of various health problems among esports athletes, including musculoskeletal disorders, visual strain, sleep disturbances, and psychological stress (DiFrancisco-Donoghue et al., 2019; Trotter et al., 2021). Consequently, esports requires an interdisciplinary evaluation that goes beyond conventional sports medicine approaches in the context of athlete health.

An examination of the physical health profiles of esports athletes reveals that repetitive loads on the upper extremities are particularly prominent. Prolonged use of keyboards, mice, or controller devices can lead to overuse syndromes in the wrist, elbow, and shoulder regions (Sheppard & Wolffsohn, 2018). In addition,

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CHAPTER 7

MUSCULOSKELETAL OVERUSE INJURIES AND SURGICAL CONSIDERATIONS IN ESPORTS

Mesut ULUÖZ[1]

1. Introduction

With the professionalization of digital competitive environments, esports has evolved beyond being an activity focused solely on cognitive performance and has become a performance context characterized by continuous loading of specific musculoskeletal structures, high repetition volumes, and prolonged static postures. In particular, professional and elite-level players are reported to engage in daily training routines lasting several hours throughout the year; this intensive repetition cycle increases the clinical visibility of overuse-related symptoms and postural disorders, especially in the upper extremities (hand–wrist–elbow) (Kari et al., 2018/2021). The widespread perception of esports as an activity involving "low physical exertion" does not eliminate clinical risk; on the contrary, the coexistence of repetitive fine motor activity and sedentary behavior generates a distinct risk profile (Reitman et al., 2020).

Current literature indicates a high prevalence of musculoskeletal complaints among esports participants, particularly pain and functional discomfort localized in the neck, shoulder, back, and hand–wrist regions. For example, an integrated health management model focusing on esports health reports that, in addition to eye strain, players frequently experience neck and back pain as well as hand–wrist complaints, highlighting the need for a multidisciplinary health management approach (DiFrancisco-Donoghue et al., 2019). Similarly, more recent field data demonstrate that a substantial proportion of players report musculoskeletal symptoms, predominantly clustered in the neck, shoulder, hand, and wrist regions (Kurniawan et al., 2024). These findings challenge the prevailing assumption that

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are essential for sustaining performance and preventing reinjury (Watson et al., 2022). Application of progressive loading principles and objective return-to-performance criteria substantially contributes to long-term outcomes.

From a clinical perspective, management of surgically relevant orthopedic injuries in esports players must adopt a preventive as well as therapeutic outlook. Ergonomic optimization, regular physical activity programs, postural awareness training, and monitoring of training load represent effective strategies for reducing surgical necessity (DiFrancisco-Donoghue et al., 2019). These approaches support not only player health but also performance continuity and career longevity.

In conclusion, surgically relevant orthopedic injuries in esports players represent a significant clinical domain requiring integrated management by sports medicine, orthopedics, and rehabilitation disciplines. The scientific and clinical evaluations presented in this chapter aim to contribute to the development of evidence-based, sustainable surgical approaches tailored to the unique biomechanical and performance demands of esports. Future prospective and long-term follow-up studies are expected to further elucidate esports-specific surgical outcomes and strengthen clinical guidelines in this emerging field.

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CHAPTER 8

DO ESPORTS ATHLETES FACE AN INCREASED RISK OF OBESITY?

Serkan VAROL[1]

1. Introduction: Esports, Sedentary Lifestyles, and Obesity Risk

Esports has emerged as a globally professionalized competitive activity involving prolonged screen-based engagement, structured training schedules, and increasing economic stakes. While esports athletes demonstrate high levels of cognitive performance and fine motor control, their activity profiles differ substantially from those of traditional athletes, particularly with respect to physical movement and energy expenditure. These differences have prompted growing scholarly interest in the potential health risks associated with competitive gaming, including overweight and obesity (Taylor, 2012; Reitman et al., 2020).

Sedentary behavior has been identified as an independent risk factor for obesity, cardiometabolic disease, and all-cause mortality, even among individuals who meet recommended physical activity guidelines. According to the World Health Organization, sedentary behavior is defined as waking activity characterized by energy expenditure ≤1.5 metabolic equivalents in a seated or reclined posture (World Health Organization [WHO], 2020). Esports athletes frequently engage in extended periods of sedentary behavior during training and competition, often exceeding six hours per day, which places them in a high-risk category from a public health perspective (Saunders et al., 2020).

Empirical studies examining esports athletes and high-frequency video game players indicate mixed but concerning trends regarding body composition and lifestyle behaviors. DiFrancisco-Donoghue et al. (2019) reported that many competitive esports players exhibit insufficient levels of moderate-to-vigorous physical activity, suboptimal dietary patterns, and irregular sleep schedules—factors consistently associated with increased obesity risk. Similarly, systematic

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esports participation and obesity outcomes. Greater collaboration between sports scientists, public health experts, and esports organizations will be essential for translating research findings into practical interventions and policy reforms (Reitman et al., 2020).

In conclusion, esports athletes may indeed face an increased risk of obesity, but this risk is neither inevitable nor irreversible. With targeted, evidence-based health promotion strategies embedded within esports ecosystems, it is possible to align competitive success with sustainable athlete well-being. Addressing obesity risk in esports should therefore be viewed not as a limitation of the field, but as an opportunity to shape healthier models of digital sport for the future.

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CHAPTER 9

THE SOCIOLOGY OF ESPORTS, SOCIAL PERCEPTIONS, AND GENDER POLICIES

Mehmet YÖNAL[1]

1. Conceptualizing Esports as a Social Field

Esports has moved beyond competitive activities organized around digital games and has today become a distinctive social field situated at the intersection of youth culture, digitalization, and identity politics. This field should not be understood merely as a competitive arena where individual performance and technical proficiency are displayed, but rather as a multilayered structure in which social relations, cultural norms, and power struggles are produced and reproduced. For this reason, the analysis of esports should not be limited to economic indicators or technological innovations; instead, it must be supported by the conceptual tools offered by sociological theory.

Pierre Bourdieu's theory of fields provides a powerful theoretical framework for analyzing this multidimensional structure of esports. According to Bourdieu, fields are arenas of struggle with their own internal logics, rules, and hierarchies, in which actors are positioned through different forms of capital (Bourdieu, 1984). From this perspective, esports emerges as a semi-autonomous field institutionalized through professional leagues, tournaments, streaming platforms, and sponsorship networks, while simultaneously being surrounded by amateur communities and online player cultures (Taylor, 2012).

One of the fundamental factors shaping positioning within the esports field is the distribution of cultural capital. Cultural capital materializes through players' game knowledge, strategic thinking abilities, mastery of the metagame, and fluency in in-game jargon. Participation at high competitive levels is recognized not only as an indicator of mechanical skill but also as evidence of familiarity with these cultural codes. Players' communication styles, humor, and adherence

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developing a sustainable and inclusive structure. Through such steps, esports may evolve not merely as a form of competition but as one of the key arenas of social transformation in the digital age.

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CHAPTER 10

LOOKING AHEAD: THE EVOLUTION OF ESPORTS, TECHNOLOGY, AND SOCIAL IMPACTS (2025+)

Mehmet YÖNAL[1]

1. Personalized Esports Experiences Through Artificial Intelligence

Artificial intelligence (AI) is widely regarded as one of the core technological components that will shape the future of esports in terms of both game design and player experience. Rapid advances in machine learning and deep learning algorithms influence not only competitive performance but also training processes, audience engagement, governance structures, and ethical debates within the esports ecosystem. Today, esports has become one of the digital sport domains in which data-driven decision-making processes are employed most intensively (Witkowski et al., 2023). In current applications, AI is primarily used to analyze player performance in a personalized manner. In-game behaviors—such as reaction times, decision-making speed, positional tendencies, and intra-team interactions—are evaluated through multidimensional datasets. AI-powered analytical tools enable the development of individualized training programs tailored to each player. As a result, traditional "one-size-fits-all" training models are increasingly being replaced by adaptive learning systems that focus on players' specific strengths and weaknesses (Hooshyar et al., 2021).

This transformation also fundamentally reshapes coaching practices and technical staff structures. AI-based coaching systems automate opponent analysis and provide real-time decision-support mechanisms by simulating possible strategic scenarios. Advanced analytical software used in professional leagues can integrate historical match data with live gameplay to generate tactical recommendations. Witkowski et al. (2023) argue that such systems reduce the "intuitive" dimension of esports while rendering performance more predictable

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inequality play a decisive role in shaping its societal function. In this sense, esports should be regarded not merely as an entertainment industry but as a social arena in which digital justice is actively negotiated (Taylor, 2022).

Ultimately, games and esports will shape the future not only through technological innovation but through the ways in which these innovations are governed, controlled, and distributed. In the post-2025 era, the trajectory of esports will depend on the quality of the balance established between technological possibilities and ethical responsibilities. To the extent that this balance can be achieved, esports will transcend being merely watched or played and become a lived, learned, and socially transformative domain.

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