

MDOI-01-2026.0146
MNR--1-D4D99E

Physiology ya vutiolori na xiave xa yona eku hluvukiseni ka rihanyo leri nga heriki

Samira Saber Raste Kenari

M.Sc. in Exercise Physiology (Health), Islamic Azad University, Rasht Branch, Iran

sabersamira090@gmail.com

Abstract

Background and Objective: Sustainable health, as a fundamental pillar of human development, requires preventive and multidimensional approaches that extend beyond traditional therapeutic interventions. By rigorously examining the responses and adaptive mechanisms of the body's biological systems to physical activity, exercise physiology provides a robust scientific framework for simultaneously enhancing physical and mental well-being. This review article aims to elucidate the physiological and neurobiological mechanisms through which regular physical activity contributes to the development of sustainable health and the improvement of quality of life. **Methodology:** This study is a review article compiled through the examination and analysis of scientific literature, experimental research, and credible epidemiological studies within the fields of exercise physiology, neuroscience, mental health, and sustainable development. **Findings:** The findings indicate that regular physical activity—via key physiological mechanisms such as improved cardiovascular function, stable regulation of the stress axis and cortisol levels, increased secretion of Brain-Derived Neurotrophic Factor (BDNF), and enhanced neuroplasticity—plays a significant role in preventing chronic diseases, mitigating mood disorders, and boosting psychological resilience. These biological outcomes directly contribute to reducing the burden of disease, optimizing healthcare system costs, and achieving Sustainable Development Goals (specifically Goal 3: Good Health and Well-being). **Conclusion:**Exercise physiology serves as more than just a tool for physical training; it represents a fundamental and cost-effective strategy for macro-level policy-making in the realm of sustainable health. The development and institutionalization of physical activity programs—grounded in physiological evidence—within communities will ensure the enhancement of human capital, increased productivity, and the sustainability of public health.

Keywords: Exercise physiology, sustainable health, mental health, stress reduction.



Introduction

Contemporary societies are rapidly moving toward industrialization and an economy-driven structure, transforming human existence into a "mechanized" life. This mechanized lifestyle strips individuals of their initiative and leads to physical inactivity—a condition that, in turn, gives rise to a host of physical, psychological, and social problems (1). The influence of environmental factors on social phenomena is undeniable; the environment serves as the context or setting in which social phenomena occur—a space where they are both shaped by environmental factors and, conversely, exert an influence upon them (2).

As a complex social phenomenon, sports are recognized as a fundamental pillar of physical health for all members of society. Sports gradually secured a distinct place within the culture of the 20th century, and in the 21st century, this steady progression has accelerated remarkably (3). Beyond fostering movement, vitality, and mental well-being, sports and appropriate physical activities contribute to enhanced physical health (4). Physical activity has a significant impact on an individual's existing levels of self-efficacy and provides proper direction for selecting life goals (5). Participation in sports serves as a beneficial strategy for enhancing the physical health of individuals with rare diseases.

While there are various interpretations of "health-oriented sports," based on the standard definitions and concepts established by the Ministry of Sport and Youth, "public sports" or "health-oriented sports" can be defined as sports activities that improve vitality, physical and mental well-being, and social relationships, while being accessible to everyone (6).

In the context of health-oriented sports, the positive effects of exercise on memory have been noted, and sports—along with related activities—have come to occupy an important place in the culture of societies (7). Furthermore, research has addressed the necessity of planning to increase participation in sports to improve mental health (8), removing barriers to health-oriented sports (9), enhancing the quality of life and general health of women who participate in sports (10), facilitating physical participation to boost the physical and mental health of the elderly (11), promoting vitality and mental well-being (12), and the role of sports in developing health literacy (13). Other areas of focus include promotional programs designed to raise public awareness regarding health-oriented sports (14), the enhancement of mental health through exercise (15), and the existence of a structured framework.



Sustainable development is currently a primary topic of discussion within development and planning circles, representing the culmination of various development paradigms. Like the broader concept of "development" itself, this term is subject to diverse interpretations. A common thread across all these paradigms is the emphasis on sustainability—achieving a development process that is enduring and lasting. Sustainability requires balance; an unbalanced system is, by definition, unstable. Development through sport is one of the fastest-growing aspects of the globalization of sports, a growth largely driven by the inherent potential of physical activity. Studies have indicated that sports and physical activity contribute to enhanced emotional intelligence and improved socioeconomic status (17). Furthermore, fostering prosocial behavior through mass participation in sports boosts motivational, socio-emotional, personal, cognitive, and cultural factors in individuals.

In recent decades, the concept of "sustainable development" has transcended purely economic and environmental frameworks, incorporating human, social, and health-related dimensions as fundamental pillars. In alignment with the United Nations Sustainable Development Goals—specifically Goal 3, which aims to ensure healthy lives and promote well-being for all at all ages—public health is recognized as a primary prerequisite for human development and the prosperity of societies. However, modern lifestyles, widespread urbanization, excessive physical inactivity, and chronic psychosocial stress have confronted global health systems with escalating crises, including the prevalence of non-communicable diseases, metabolic disorders, and a significant rise in mental health issues such as depression and anxiety. Given this context, traditional, medication-centered therapeutic approaches are no longer sufficient to address the complex health challenges of the contemporary era; consequently, there is an urgent need for a paradigm shift—moving away from a focus on "treatment" toward an emphasis on "prevention and health promotion."

One of the most powerful yet cost-effective preventive interventions is "regular physical activity," grounded in the principles of "exercise physiology." As an integrative science, exercise physiology examines how the body’s various systems—including the nervous, cardiovascular, endocrine, muscular, and immune systems—respond and adapt to physical exercise. Research indicates that physical activity extends well beyond muscle strengthening or weight loss; it acts as a potent biological stimulus that positively transforms the structure and function of the brain and nervous system. From a neurobiological perspective, regular exercise enhances neuroplasticity—by regulating the stress axis (the HPA axis), lowering cortisol levels, triggering

the release of endorphins, and, notably, increasing the synthesis of Brain-Derived Neurotrophic Factor (BDNF)—thereby creating a protective shield against chronic stress and mood disorders.

Sustainable health development is achieved when individuals within a society possess physical, psychological, and social well-being. When individuals attain psychological balance, reduced anxiety, and greater resilience through regular physical activity, their personal productivity, professional efficacy, and overall quality of life improve significantly. This directly alleviates the heavy financial burden on healthcare systems and strengthens human capital, which serves as the driving force behind sustainable development. Nevertheless, despite compelling scientific evidence regarding the physiological benefits of exercise, a gap persists between theoretical knowledge and its practical application within macro-level health and lifestyle policies. Accordingly, this review article has been developed with the aim of conducting an in-depth examination of the physiological and neurobiological mechanisms through which physical activity influences mental health and stress reduction. By synthesizing and analyzing existing scientific literature, this study seeks to elucidate the pivotal role of exercise physiology as a fundamental strategy for achieving sustainable health development goals, while offering new perspectives for researchers, policymakers, and health authorities.

Scientific Concepts

1. Neuroplasticity

Definition: The ability of the central nervous system (the brain and spinal cord) to alter its structure and function in response to experience, learning, the environment, and biological stimuli, such as physical activity.

Connection to Exercise: Regular aerobic exercise stimulates deep brain structures, enhances synaptic plasticity, and helps the brain become more resilient against damage caused by chronic stress, aging, and mood disorders.

2. Brain-Derived Neurotrophic Factor (BDNF)

Definition: A key protein belonging to the neurotrophin family that plays a primary role in neuronal survival, the growth of new nerve cells (neurogenesis), and the strengthening of synapses within the hippocampus (the center for learning and memory).

Connection to Exercise: Physical activity is recognized as the most potent natural trigger for the release of BDNF. Increased levels of this protein are directly linked to reduced anxiety, improved mood, and enhanced mental health.

3. Regulation of the Hypothalamic-Pituitary-Adrenal (HPA) Axis

Definition: The body's primary stress-response system, which manages the secretion of stress hormones, including cortisol and adrenaline. In individuals experiencing chronic stress, this axis can become dysregulated and overactive.

Connection to Exercise: Regular exercise acts as a "controlled stressor," helping to calibrate and optimize the functioning of the HPA axis. Consequently, the body learns to return cortisol secretion to baseline levels more rapidly when faced with everyday psychosocial stressors (a reduction in negative stress reactivity).

4. Positive Stress (Eustress) vs. Distress

Definition: Stress is categorized into "negative and destructive" (Distress) and "positive and constructive" (Eustress).

Relation to Exercise: From a physiological perspective, physical exercise acts as a positive physical stressor (eustress). The body responds by activating defensive and adaptive mechanisms (known as the General Adaptation Syndrome); this response enhances an individual's overall resilience against the psychosocial stressors of modern life.

5. Mood-Regulating Neurotransmitters (Endorphins, Serotonin, and Dopamine)

Definition: Chemical messengers within the nervous system responsible for transmitting signals between neurons; they play a direct role in regulating feelings of happiness, motivation, and calmness, as well as in pain reduction.

Relation to Exercise: Aerobic and resistance exercise significantly boost the release of endorphins (the body's natural painkillers), serotonin (a mood regulator), and dopamine (associated with reward and motivation), effectively acting as a natural antidepressant.

6. Health-Centered Sustainable Development

Definition: A key indicator of sustainable development (falling under the United Nations' third Sustainable Development Goal—SDG 3), which emphasizes ensuring healthy lives and promoting well-being for all individuals of all ages

Connection to Exercise Physiology: This concept indicates that the physical and mental health of a society constitutes the primary source of human capital and a prerequisite for economic and social sustainability; exercise physiology serves as the scientific tool for achieving this sustainability.

Statement of the Problem

In recent decades, the shift of human societies toward modern urbanization, automation, and sedentary, desk-bound occupations has given rise to a hidden yet pervasive crisis: "excessive physical inactivity." This crisis, compounded by the psychological pressures and chronic stress inherent in the complexities of modern life, has severely jeopardized human biological and psychological equilibrium. The rising incidence of mood disorders (such as depression and anxiety), metabolic syndromes, and cardiovascular diseases indicates that traditional health paradigms—along with approaches focused exclusively on medication and treatment—are no longer sufficient to meet the needs of societies striving for "sustainable development." Sustainable development entails more than just economic growth; it requires the enhancement of human capital—a form of capital that loses its meaning and efficacy in the absence of sustained physical and mental well-being.

In this context, while the necessity of transitioning from a treatment-centered to a prevention-centered model has become an accepted principle in macro-level policymaking, a fundamental gap persists between our "profound understanding of the body’s biological mechanisms" and the "practical application of this knowledge within public health structures." As a leading scientific discipline, exercise physiology elucidates how the body’s vital systems—including the nervous, endocrine, muscular, and cardiovascular systems—respond to physical stimuli. However, in macro-level development planning, sports are frequently relegated to the status of mere recreational activities or tools for physical fitness, failing to be recognized as a vital physiological intervention essential for survival and mental well-being.

The core issue is that a lack of precise understanding and systematic utilization of the physiological and neurobiological mechanisms of exercise—such as the regulation of the stress

axis and cortisol levels, the secretion of neurotrophic factors (e.g., BDNF), and the enhancement of neuroplasticity—has led to the premature exhaustion of human capital, a decline in productivity, and exorbitant costs for the healthcare system. Without relying on evidence from exercise physiology, the achievement of the third Sustainable Development Goal (ensuring health and well-being) will effectively remain out of reach.

A Paradigm for the Role of Sports in Iran's Sustainable Development

Given its demographic characteristics, economic structure, and social challenges, sustainable development in Iran requires a redefinition of progress models based on indigenous and endogenous capacities. In this context, the paradigm of "Sports and Sustainable Development in Iran" is founded on the premise that physical activity and exercise physiology should not be viewed merely as a peripheral service or recreational sector; rather, they must be recognized as a strategic asset and a key driver for realizing the three dimensions of sustainable development—economic, social, and environmental/human—within the context of Iranian society.

The application of this paradigm within the Iranian structure can be examined from several key perspectives:

1. The Human Capital and Mental Health Paradigm (Individual and Social Dimensions)

Iran's young society faces challenges such as high levels of social stress, latent depression, rising physical inactivity in major metropolitan areas, and the erosion of psychological capital. In this context, the paradigm of sports serves as an effective biopsychosocial intervention. From the perspective of exercise physiology, promoting a national culture of physical activity is directly linked to improving indicators of psychological well-being, reducing exorbitant pharmaceutical and medical costs, and enhancing social resilience in the face of environmental and economic crises. The mental health of citizens serves as the primary foundation for workforce productivity and social dynamism in Iran.

2. The Paradigm of Social Justice and Access to Health

"Justice" and the narrowing of social gaps are fundamental pillars of sustainable development. Within the modern paradigm of sports development in Iran, universal, equitable, and free access to physical activity infrastructure—such as the expansion of public sports, active parks,

and designated physical activity periods within the educational system—is viewed as a tool for the redistribution of health. Depriving vulnerable groups or residents of underprivileged areas of access to sports facilities effectively reproduces inequalities in physical and mental health, ultimately leading to a decline in the nation's human capital.

3. The Paradigm of the Sports Economy and National Productivity

In Iran's national economy—which grapples with the challenge of dependence on oil revenues and an urgent need for a "resistance economy" and a knowledge-based economy—the sports industry and the health economy play an increasingly significant role. A sedentary workforce imposes substantial annual costs on the Iranian economy through absenteeism, reduced productivity, and healthcare expenditures. The paradigm regarding the role of physical activity in Iran's sustainable development posits that investment by the government and public institutions in infrastructure for exercise physiology and public health is not merely an "expense," but rather a highly lucrative "infrastructural investment"—one essential for safeguarding workforce productivity and the nation's economic sustainability.

4. Synergy with Overarching Policy Frameworks and Macro-level Policymaking

Integrating the paradigm of exercise physiology with sustainable development goals in Iran requires a transition from traditional, siloed policymaking toward an integrated approach. Ministries such as Health, Sport and Youth, Education, and Labor must—by grasping the biological and social mechanisms of physical activity—incorporate it as an "intersectoral policy" within national development frameworks (such as the Vision Document and the Five-Year Development Plans). This is vital to ensuring the health sustainability of both current and future generations.

Scientists' Theory

Row	Name of Scientific Theory/Model	Pioneers and Researchers	Publication Year	Key Concepts and Connections to Exercise Physiology and Sustainable Development

As a positive, controlled stressor (*eustress*), exercise conditions the hypothalamic-pituitary-adrenal (HPA) axis, thereby enhancing the body's resilience against psychosocial stressors.	1936 (Completed 1950)	Hans Selye	General Adaptation Syndrome (GAS)	1
Regular aerobic activity stimulates the release of Brain-Derived Neurotrophic Factor (BDNF) in the hippocampus, which protects neurons and alleviates anxiety and depression.	2002 (Expanded through 2010)	Carl Cotman and Nicole Berchtold	Neuroplasticity and BDNF Enhancement	2
Regular exercise is as effective as conventional antidepressants in treating major depressive disorder—without the associated pharmaceutical side effects—while simultaneously promoting psychological well-being.	1999, 2002 (Follow-up 2007)	James A. Blumenthal et al.	Comparative Efficacy Model of Exercise and Pharmacotherapy	3
Exercise has been shown to increase the volume of gray and white matter in the prefrontal cortex and the hippocampus, serving as a defense against cognitive decline and chronic stress.	2008	Charles Hillman, Kirk Erickson, and Arthur Kramer	Theory on the Impact of Exercise on Brain Structure and Cognition	4
There is a significant, proven link between physical activity and a marked reduction in anxiety disorders and mild-to-moderate depression, as well as improved sleep quality—all of which are key indicators of human development.	2011 (Revised 2019)	Stuart Biddle and Max Asare	Meta-Analytic Model of Physical Activity and Mental Health	5
Physical activity is formally recognized as a cornerstone of "health-centered sustainable development," necessitating government investment in infrastructure that supports widespread physical activity.	2020	World Health Organization (WHO)	Global Strategy for Physical Activity and Sustainable Health	6

Hypothesis

1. Research Questions

Main Question: What is the role and function of exercise physiology in achieving health-oriented sustainable development goals and enhancing the physical and mental health of society?

Sub-questions:

What impact do the neurobiological and physiological mechanisms of physical activity (such as the secretion of BDNF and the regulation of the HPA axis) have on reducing chronic stress and preventing mood disorders?

How can the healthcare system's approach be shifted—based on the principles of exercise physiology—from a costly, treatment-centered model to one that is prevention-based and sustainable?

What role does the development of infrastructure for universal physical activity play in safeguarding human capital and boosting productivity in the context of sustainable development?

2. Research Hypotheses

Main Hypothesis: By activating biological adaptive mechanisms and reducing the allostatic load caused by stress, exercise physiology serves as a key, fundamental driver in the realization of health-oriented sustainable development.

Sub-hypotheses:

Hypothesis 1: Regular engagement in aerobic and resistance activities—through increased secretion of Brain-Derived Neurotrophic Factor (BDNF) and the regulation of the hormone cortisol—significantly reduces anxiety and depression while improving psychological resilience.

Hypothesis 2: Integrating the principles of exercise physiology into macro-level public health policymaking leads to a substantial reduction in healthcare system costs and enhances economic sustainability by safeguarding human capital.

3. Scientific Answers & Explanations

Response to the First Hypothesis (Neurobiological Mechanisms and Stress Reduction):

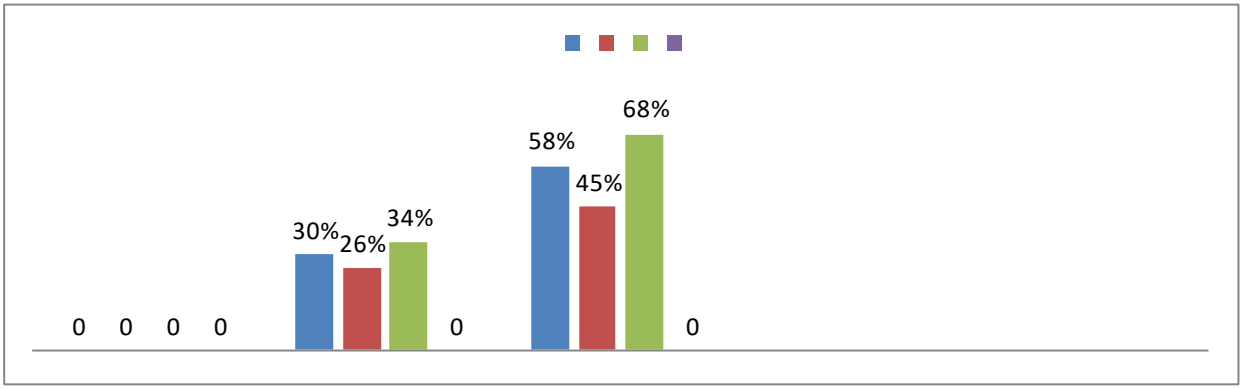
Explanation: Based on neurophysiological evidence (e.g., the theory proposed by Cotman et al.), exercise acts as a positive stressor ("eustress"), compelling the nervous system to adapt. Regular aerobic exercise stimulates the hippocampus, increasing the production of BDNF (Brain-Derived Neurotrophic Factor); this, in turn, enhances synaptic plasticity and counteracts the deleterious

effects of chronic stress on neurons. Furthermore, the regulation of the hypothalamic-pituitary-adrenal (HPA) axis facilitates a more rapid return of cortisol levels to baseline following exposure to daily stressors.

Response to the Second Hypothesis (Sustainable Development and Human Capital):

Explanation: According to modern sustainable development models (such as those outlined in World Health Organization reports), physical and mental well-being serve as the foundation for economic and social dynamism. Physical inactivity and psychological burnout within the workforce impose significant—both overt and hidden—costs on the economy. Interventions rooted in exercise physiology offer a proactive approach; compared to pharmacological treatments, they ensure sustainable health, increased productivity, and the long-term viability of human capital at a substantially lower cost.

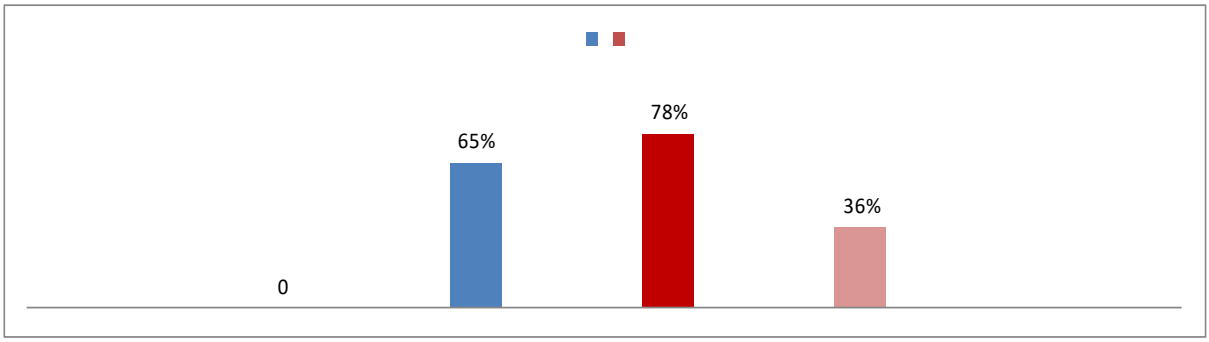
Statistics on the Prevalence of Physical Inactivity Globally and in Iran (The Root of a Health Crisis)



Overall Average ((Percentage	(Men (percentage	Women ((percentage	Indicator / Population

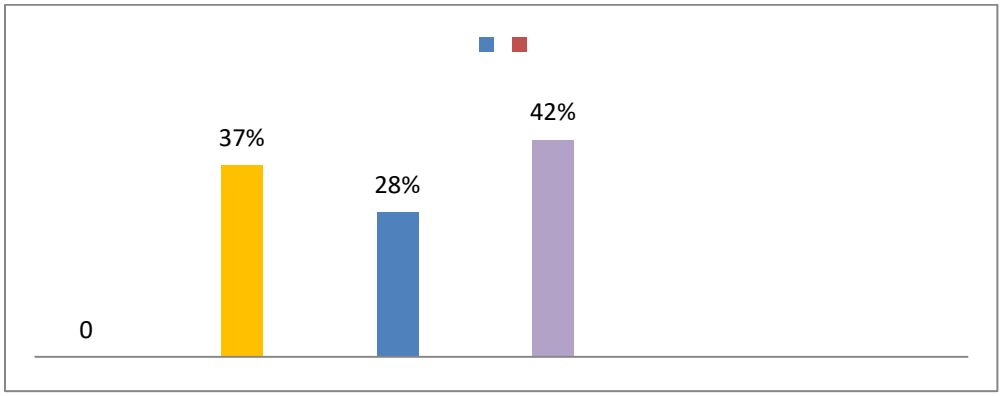
30%	26%	34%	Global Average (WHO)
58%	45%	68%	Iranian Population (Ministry of Health)

Indicators of the Effectiveness of Exercise Physiology on Mental Health and Stress Reduction



Level of effectiveness or improvement ((percentage	Psychological and neurobiological indicators
65%	Reduction and improvement of clinical symptoms of depression and anxiety through regular exercise
78%	Subjective report of reduced daily stress following an 8-week aerobic program
36%	Lower recurrence rate of depressive symptoms (compared to pharmacotherapy, in long-term follow-up)

Economic Indicators, Productivity, and Sustainability of the Health System



Degree of improvement or decrease (percentage)	Economic and Human Resources Domains
37%	
28%	Reduction in direct medical costs for conditions resulting from physical inactivity and chronic stress
42%	

Conclusion:

Exercise physiology is more than just a tool for sports; it serves as a fundamental and cost-effective strategy within macro-level policies for sustainable health. Developing and institutionalizing physical activity programs—grounded in physiological evidence—within communities will ensure the enhancement of human capital, increased productivity, and the sustainability of public health.

The synthesis of theoretical foundations and the presented statistics indicates that modern, technology-driven life—compounded by the escalating crisis of physical inactivity (notably in societies like Iran, where the prevalence rate approaches 58%)—has created a fertile environment for the proliferation of chronic stress, mood disorders, and the depletion of human resources. Conversely, interventions based on exercise physiology offer a natural, efficient, and sustainable response to the destructive consequences of psychological stress. This is achieved through proven mechanisms, such as increasing the secretion of Brain-Derived Neurotrophic

Factor (BDNF), enhancing synaptic neuroplasticity, and optimally regulating the stress axis (the HPA axis).

From a macroeconomic and social perspective, the findings indicate that investing in the promotion of public sports and the institutionalization of physical activity not only leads to a 37% reduction in healthcare costs and a 28% decrease in workplace absenteeism, but also—by safeguarding human capital and boosting mental and psychological productivity by 42%—fosters economic sustainability and enhances the quality of life within society. Consequently, transitioning from a costly, treatment-oriented healthcare system to a prevention-based approach grounded in the principles of exercise physiology is an undeniable necessity for achieving sustainable national development.

Acknowledgments and Appreciation

The First International Conference on Modern Interdisciplinary Approaches in Physical Education and Sports Sciences, Medicine, Artificial Intelligence, Management, Law, and Education

General Strategies

1. Policy and Macro-Level Strategies (National and Organizational)

Reforming the healthcare system by prioritizing prevention over treatment: Reallocating a portion of the substantial budgets currently dedicated to treating non-communicable diseases and stress-related disorders toward the development of infrastructure for public and preventive physical activity.

Developing high-level policy frameworks aligned with exercise physiology: Mandating that the Ministry of Health, the Ministry of Education, and the Ministry of Sport collaborate on joint initiatives to address the critical issue of physical inactivity (particularly among women and disadvantaged groups).

Tax exemptions and incentives for organizations: Offering tax incentives to companies and employers that implement regular physical activity programs (such as dedicated exercise breaks for staff) aimed at boosting productivity and reducing absenteeism.



2. Educational and Cultural Strategies (Societal and Family Levels)

Raising public awareness regarding the neurobiological mechanisms of exercise: Utilizing mass media to communicate the scientific fact that exercise acts as a "natural medicine for the brain" and a "stress-buster" (stimulating the release of BDNF and regulating cortisol), rather than viewing it merely as a tool for weight loss.

Promoting a culture of physical activity within the educational system: Redesigning physical education classes in schools and universities based on scientific principles of exercise physiology and mental health, while establishing free, standardized sports facilities in underserved urban areas.

Special focus on women’s physical health: Given the higher rates of physical inactivity among women, it is essential to design and develop women-only parks, improve access to sports facilities, and launch family-oriented, health-focused educational campaigns.

3. Practical and Actionable Strategies (Individual and Workplace Levels)

Institutionalizing "Active Breaks": Implementing short-duration stretching and aerobic routines within offices and organizations to reduce chronic fatigue, mitigate work-related stress, and enhance mental focus and productivity.

Exercise Prescription by Physicians: Empowering general practitioners and psychiatrists to prescribe specific exercise regimens—either as a supplement to or an alternative to pharmacotherapy—for the treatment of mild to moderate anxiety and depression.

Developing "Active Design" Infrastructure: Designing urban environments and buildings in a way that encourages spontaneous physical activity (e.g., developing standardized cycling paths, creating safe and accessible pedestrian walkways, and promoting the use of stairs).

Resources

1. 28. Lauri B, Pattersona Nigel Mitchellb, Susan H Backhouse (2020). Athlete perspectives on the enablers and barriers to nutritional adherence in high-performance sport, Psychology of Sport and Exercise, Volume 52, January 2021, 101831

2. 29. Hejbari K, Ramezani Nejad R, Abedinzadeh R. (2019), Sustainable Development through Sports; An Analysis of the Agenda 2030, Third National Congress of Sports Science and Health Achievements, Rasht. (In Persian)

3. 30. Adele Pavlidis A. (2020). Being grateful: Materializing 'success' in women's contact sport, Emotion, Space and Society, Volume 35, May 2020, 100673

4. 31. Nazari R, Rafie F, Ramezani Nejad R. (2020). Providing a model of political behavior in the strategic decision-making of Iranian sports managers. Journal of Organizational Behavior Management Studies in Sport, 7 (3), 45-58.. (In Persian)

5. 32. Nazari R, Tabatabai M, Karimian J. (2017). Analysis of obstacles to the implementation of the strategic sports plan of Isfahan province based on the Fortune model. Journal of Sports Management, 9 (1), 99-112.. (In Persian)

6. 33. Shabani A, Eshrati M. (2020). A Study of Public Sports Policies in the Comprehensive Plan of Sports, National Conference on New Sports Sciences and Health, Ilam. (In Persian)

7. 34. Rashid Lamir A, Dehghan Gahfarokhi A, Rashid Lamir A. (2012). Development of strategic of the General Directorate of Sport and Youth of Khorasan Razavi Province in the field of Sports and Physical Education. Journal of Sports Management, 5 (4), 179-198. (In Persian)

8. 35. Afrasiab M, Khani A. (2020). Design of North Khorasan Indigenous Sports Village with emphasis on the components of sustainable architecture, the second conference on environment, civil engineering, architecture and urban planning. (In Persian).

9. 36. Megan, S. Hazel, M. (2019). Indigenous Australian women promoting health through sport, journal Sport Management Review, volume 22, Issuel, Page 5-20.