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DEAR DISTINGUISHED RESEARCHERS,
DEAR YOUNG SCIENTISTS AND DOCTORAL STUDENTS,
DEAR PARTNERS AND PROFESSIONALS FROM PRACTICE,



On behalf of the Editorial Board, it is my great pleasure to congratulate all authors, reviewers, institutional partners, and readers on the publication of the latest volume of the scientific journal *Smart Innovations in the Recreation, Wellness Industry and Niche Tourism*. This publication represents another important step in the development of our international academic platform. It provides valuable opportunities for young researchers, doctoral students, established scholars, and practitioners to present their scientific achievements, exchange innovative ideas, and strengthen cooperation

among national and international academic, educational, professional, and research networks. Our editorial priority remains the advancement of high-quality interdisciplinary research in which wellness culture, recreation, healthy lifestyles, innovation, and sustainable niche tourism occupy a central position. These fields have growing scientific, social, and economic importance and contribute directly to the development of healthier communities, responsible industries, and a knowledge-based society.

We firmly believe that the studies presented in this volume will encourage further scientific inquiry and support the creation of innovative approaches, services, and professional practices. The published findings provide a meaningful foundation for improving the quality of products and experiences in the recreation, wellness, spa, and tourism sectors while promoting accessible and sustainable healthy lifestyles across all social groups. We are especially proud to support emerging scholars whose dedication, creativity, and academic potential will shape the future of research and professional practice. At the same time, the participation of leading researchers and experienced specialists ensures continuity between scientific knowledge, education, entrepreneurship, and practical application.

We extend our sincere appreciation to our reviewers and partner organisations, including representatives of the Global Wellness Institute, the All-Russian Wellness & Spa Council, the World Cluster for Healthy Aging, the Balkan Cluster for Health, Wellness & SPA Tourism, universities, research institutes, public institutions, municipalities, non-governmental organisations, professional associations, wellness and spa organizations, tourism agencies, and businesses from Bulgaria and abroad.

Congratulations to all contributors on their valuable academic achievements. May this new volume inspire productive dialogue, international collaboration, and further innovation in recreation, wellness, healthy aging, and niche tourism.

With best wishes for continued academic success and professional accomplishment,

Founder & Editor in Chief:

Prof. Bistra Dimitrova, D.Sc.

VOL.7 - ISSUE 1-2 / 2025

TABLE OF CONTENT

Bistra Dimitrova

Editor in Chief Congratulation letter4

Tatiana Tomova

Historical dynamics of instruments for Cupping therapy: an anthropological perspective6

Bistra Dimitrova

*Occupational stress and burnout prevention:
a multilevel framework for workplace wellbeing*14

Nikolina Dimitrova

*The role of judo in biomechanical and neurophysiological
development of school-age children*24

Velichka Alexandrova

Adolescent obesity as a biopsychosocial health challenge33

Maya Chipeva

Wellness food and drinks: Healthy Nutrition programs for scholars43

News & Books on the field

You can download at: <https://scjournal.globalwaterhealth.org/current-issue/>53

HISTORICAL DYNAMICS OF INSTRUMENTS FOR CUPPING THERAPY: AN ANTHROPOLOGICAL PERSPECTIVE

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Abstract

Cupping therapy, one of humanity's oldest therapeutic practices, has evolved from ritualistic healing to evidence-based complementary medicine. This article traces the historical dynamics of cupping instruments, highlighting their anthropological significance, technological development, and symbolic meanings. Using cross-cultural and diachronic analysis, the study outlines the cultural transformation of cupping devices—from animal horns and bamboo to modern glass, silicone, and vacuum apparatus—reflecting broader socio-medical paradigms of body, health, and nature. The results illustrate the interplay between material innovation, ritual symbolism, and the continuity of traditional healing across civilizations.

Keywords: *cupping therapy, medical anthropology, historical instruments, healing symbolism, traditional medicine*

Introduction

Cupping therapy represents one of the oldest known therapeutic modalities in human history (6, 8, 10, 12). This recreational influence has archaeological and textual evidence spanning over five millennia (3, 4, 10, 11). In our contemporary time Cupping therapy is part of the Wellness practices (1, 5, 9, 13-16). Its origins can be traced to multiple early civilisations — including ancient Egypt, Mesopotamia, China, and Greece (20, 21, 26, 28). In the cited countries these practices emerged as both a medical intervention and a ritual act symbolizing purification and the restoration of bodily harmony (2, 7, 18, 23-25). The Ebers Papyrus (ca. 1550 BCE) contains one of the earliest known descriptions of cupping, primarily as a method for “drawing out bad blood” (17, 22, 27, 29, 30). Similarly, ancient Chinese medical texts such as the Mawangdui manuscripts and later the Huangdi Neijing elaborated its role in balancing qi and expelling pathogenic “wind.” In the Greco-Roman tradition, Hippocrates and Galen systematised cupping as part of humoral medicine (6, 8, 9). This aligning the cupping therapy with the regulation of the four bodily fluids — blood, phlegm, yellow bile, and black bile (9). Throughout the Islamic Golden Age, cupping (Hijama) was recontextualised within the framework of prophetic medicine, integrating spiritual purification with humoral balance (26). Physicians like Al-Razi and Ibn Sina (Avicenna) refined its techniques and indications, linking it to specific diseases, body zones, and lunar cycles (7, 28). The practice maintained not only a therapeutic function but also symbolic and social roles, representing cleansing, renewal, and divine alignment.

Methods

A systematic review of the existing literature on various aspects of the terminology and conceptual framework of Stress, Wellness, and Professional Stress was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The review aimed to explore the following key questions:

- What are the most used definitions and contexts for Stress, Wellness, and Professional Stress?
- What is the structural framework of these concepts?
- What are the strengths and limitations?

To identify relevant studies, electronic databases such as Academia Edu, EBSCO, Google Scholar, and Research Gate were systematically searched using the following keywords: (cupping OR instruments) AND (Wellness OR Therapy OR anti-stress OR healing technique) AND (Health prevention) .

Results

Over centuries, cupping instruments evolved from horns and bamboo tubes to metal and glass cups, and in modern contexts, to silicone and mechanical vacuum devices. This technological evolution reflects both advances in material culture and transformations in the conceptual frameworks underlying health and disease. Where ancient practitioners viewed cupping through the lens of vitalism and humoralism, modern interpretations adopt biomedical and biophysical paradigms, explaining benefits through mechanisms such as increased microcirculation, lymphatic drainage, and modulation of the autonomic nervous system (9, 28).

Anthropologically, cupping therapy demonstrates the continuity of traditional healing systems amidst cultural change — adapting to the epistemological shifts from spiritual to scientific yet maintaining its symbolic resonance as a means of extraction and purification. In many cultures, it functions as both a health practice and a cultural identity marker, surviving colonial medical reforms and reemerging in the 21st century as part of integrative and wellness medicine.

The present paper explores the comparative typology of cupping instruments, tracing the interplay between materials, mechanisms, and symbolic meanings. By examining the historical transformation from natural to preformed materials, and from manual to controlled vacuum methods, this study situates cupping therapy within a broader continuum of medical anthropology and technological evolution.

Historical Evolution of Cupping Instruments

The anthropological study of cupping instruments provides insight into the dynamic intersection between material culture, symbolic healing, and scientific rationalization. Each period of

development—ancient, medieval, and modern—reflects a shift in how societies conceptualize disease, purity, and vitality.

1 Ancient Period (Prehistory – 5th Century CE): The earliest evidence of cupping therapy appears in Egyptian papyri (ca. 1550 BCE) and Chinese medical texts from the Han dynasty. Materials included animal horns, bamboo, and pottery. The symbolism centered on “drawing out evil” and balancing vital forces (qi, pneuma, or humors).

2 Medieval and Early Modern Period (6th–18th Century)
Glass cups replaced organic materials, marking the transition to controlled suction via fire. In Islamic medicine, cupping (hijāma) integrated prophetic and Galenic doctrines, emphasizing spiritual purification. European practices adapted the technique for bloodletting, linked with humoral pathology.

3 Modern and Contemporary Era (19th–21st Century:
Industrialization introduced standardized glass and mechanical vacuum cups. In the 20th century, the integration of silicone and electric suction systems modernized application techniques, while maintaining symbolic continuity—detoxification, energy balance, and stress relief. The recent global revival, including Olympic athletes’ use, reframed cupping within wellness and rehabilitation contexts (Ernst, 2022).

4. Symbolism and Cultural Context: Cupping’s symbolic meaning evolved with shifting cosmologies:

- ✓ Purification and extraction (ancient ritual cleansing of “evil winds”).
- ✓ Balance and restoration (humoral or energetic equilibrium).
- ✓ Scientific detoxification (modern biomedical reinterpretation).

Across Asia, Africa, and Europe, the cup served as both a vessel of containment and transformation, embodying the boundary between body and environmental symbol of healing through controlled exchange.

5. Instruments Typology (see Tab. 1):

Table 1. Symbolic and Functional Meanings of Cupping Instruments across Eras

Historical Era	Typical Instruments	Materials	Functional Mechanism	Symbolic Meaning
Ancient	Horns, bamboo tubes, clay vessels	Organic (horn, wood, clay)	Suction via oral extraction or heat	Expulsion of evil, restoration of balance
Medieval	Glass cups, metal cups	Glass, brass	Fire suction	Purification, divine or prophetic healing
Modern	Mechanical, silicone, vacuum cups	Glass, plastic, silicone	Mechanical or electronic suction	Detoxification, recovery, regeneration

- + *Cultural Continuity*: Despite changes in materials, the functional logic of negative pressure remains constant. The therapeutic cup remains a tool for extraction and renewal—translating metaphysical cleansing into biomedical intervention.
- + *Material Innovation*: Transition from natural to synthetic materials mirrors broader technological and hygienic modernization. Glass introduced sterilization; silicone enabled flexibility and accessibility.
- + *Symbolic Persistence*: While the biomedical model demystified the practice, the ritual archetype of cleansing and rebirth persists, confirming the dual physical–spiritual nature of traditional therapies (Csordas, 1994). Figure 1 shows: horn → bamboo → glass → silicone → mechanical vacuum:

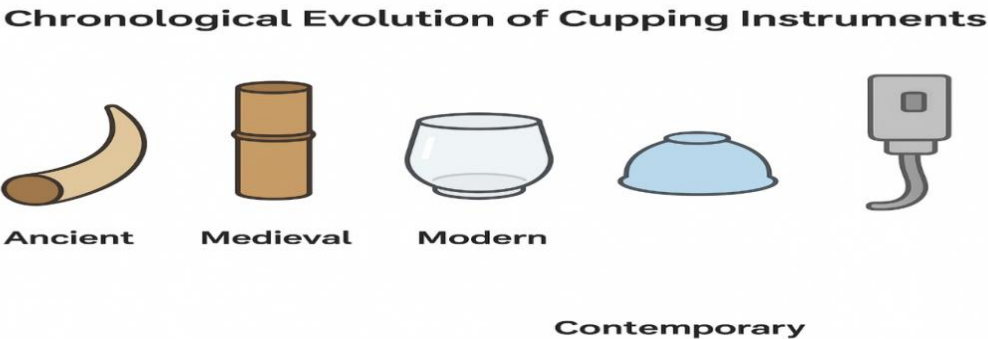


Figure 1. Chronological Evolution of Cupping Instruments

To visually compare the evolution of cupping instruments—from traditional to modern types—based on materials, mechanisms, and therapeutic functions (see tal.2):

Table 2. Classification Framework of cupping instruments

Category	Material Type	Mechanism of Action	Therapeutic Function	Cultural/Historical Context
Ancient Organic	Bamboo, horn, clay	Thermal suction (fire inside cup creates vacuum)	Detoxification, energy balance, relief of muscle tension	Used in traditional Chinese, Tibetan, Arabic and Slavic medicine
Metallic Era	Bronze, copper, iron	Conductive and suction heating	Bloodletting, local hyperemia, stimulation of meridians	Ancient Greece, Egypt, early Islamic medicine
Glass Era	Glass	Fire-induced negative pressure	Analgesic, inflammatory, anti-respiratory therapy	19th–20th century European medicine
Transitional Synthetic	Rubber, bakelite, early plastics	Manual or mechanical pump	Hygienic, reusable, adjustable pressure	Mid-20th century clinical use
Contemporary Clinical	Silicone, biopolymer, polycarbonate	Manual, electric, or pneumatic suction	Myofascial release, lymph drainage, muscle recovery	Physiotherapy, sports medicine, medical wellness
Digital/Hybrid Models	Smart cupping devices, integrated sensors	Digital pressure control, biofeedback	Monitoring circulatory response, data-driven precision therapy	21st century personalized medicine

This typology integrates historical, anthropological, and biomedical perspectives. Figure 2 shows the comparative typology of materials:



Figure 2. Comparative Typology of Functions

The cupping therapy tools have identic Functional Mechanisms:

Suction Principle:

- ✚ Thermal (fire cupping) → ancient and ritualistic origin.
- ✚ Mechanical (pump) → controlled, hygienic modern adaptation.
- ✚ Electronic → precise monitoring, safety standards.

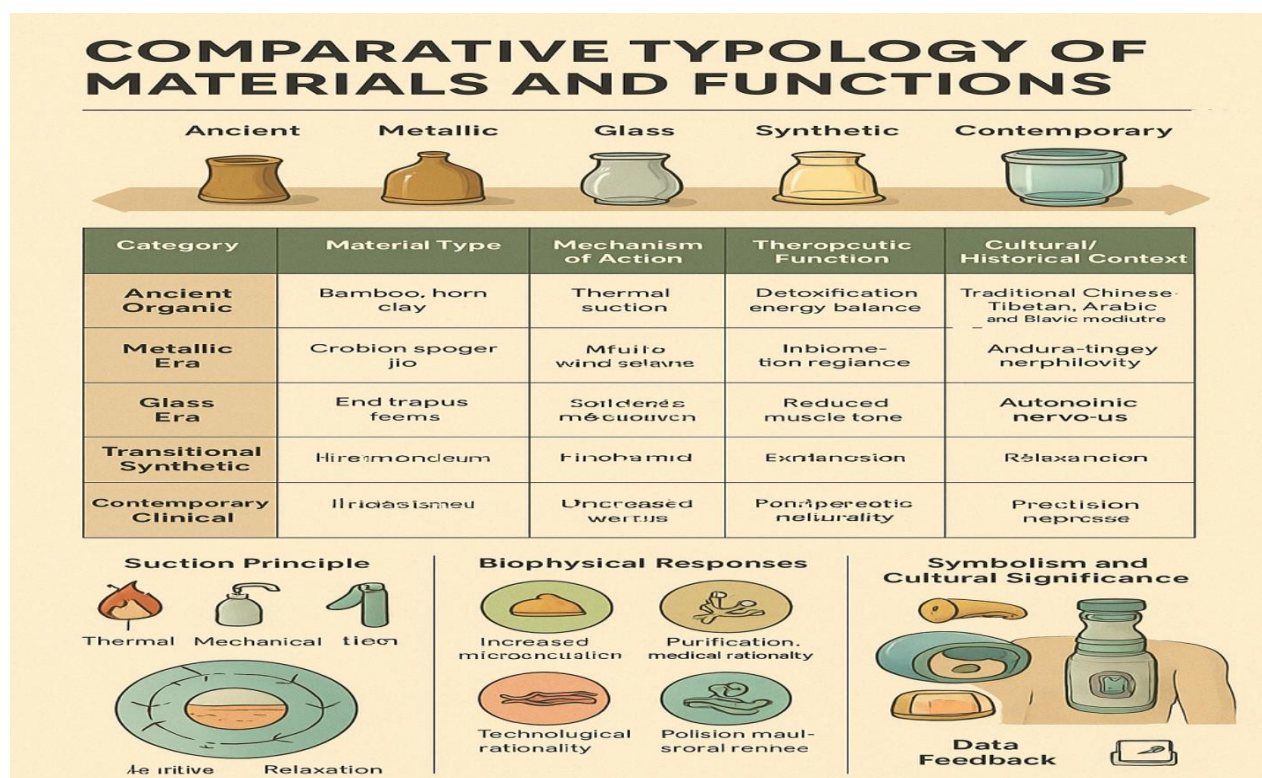


Figure 3. Comparative Typology of Materials

Biophysical Responses:

- ✚ Increased microcirculation
- ✚ Enhanced lymphatic drainage
- ✚ Reduction in muscle tone and inflammation
- ✚ Activation of autonomic nervous regulation

3. Symbolism and Cultural Significance

Horn and Bamboo: Natural connection with the body and cosmos.

Glass: Transparency symbolizing purification and medical rationality.

Silicone and Polycarbonate: Technological rationality and hygiene.

Digital Models: Symbol of precision, personalization, and quantified wellness.

4. Infographic Design Draft

Layout suggestion:

Top section: Evolution timeline (Bamboo → Bronze → Glass → Plastic → Digital)

Middle section: Comparative typology table (like above, color-coded by era)

Bottom section: Circular diagram showing functional mechanisms (suction → circulation → healing → relaxation → data feedback)

Discussion

The historical development of cupping instruments demonstrates that therapeutic technologies are shaped by both practical needs and culturally specific understandings of the body, illness, and healing. The transition from animal horns and bamboo vessels to glass, silicone, and mechanical vacuum devices reflects advances in material production, hygiene, precision, and control. Nevertheless, this technological evolution did not completely replace earlier meanings associated with cupping. Ideas of extraction, purification, restoration, and bodily balance persisted across Egyptian, Chinese, Greco-Roman, and Islamic medical traditions. From an anthropological perspective, cupping instruments should therefore be interpreted as more than functional medical objects. Their form, material, and method of application embody the beliefs and social practices of the communities that used them. Although explanatory models changed—from removing “bad blood,” regulating humors, and balancing qi to influencing circulation and pain—the underlying therapeutic logic remained centered on restoring harmony within the body. The continuing use of cupping also illustrates the adaptability of traditional medicine. Modern vacuum apparatus and standardized cups have made the practice more reproducible and compatible with contemporary clinical settings, while its ritual and symbolic dimensions remain important in many cultures. This coexistence of tradition and innovation helps explain cupping therapy’s persistence across historical periods and geographical regions. However, historical continuity should not be interpreted as sufficient evidence of clinical effectiveness. Anthropological analysis explains the cultural durability and changing material forms of the practice, whereas its safety and therapeutic value require separate evaluation through rigorous clinical research. Future interdisciplinary studies should therefore combine historical, ethnographic, material-culture, and biomedical approaches to clarify how traditional meanings influence present-day use and patient experience.

Conclusion

Cupping instruments embody a living dialogue between ancient ritual and modern science. Their evolution—from horn to high-tech vacuum device—illustrates the adaptability of traditional healing to changing cultural and medical paradigms. Understanding this transformation enriches both medical anthropology and contemporary wellness practices by linking technological progress to enduring cultural symbolism.

|

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OCCUPATIONAL STRESS AND BURNOUT PREVENTION: A MULTILEVEL FRAMEWORK FOR WORKPLACE WELLBEING

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Abstract

Occupational stress and burnout represent challenges to public health, workforce sustainability, and organizational performance. Public discussions often combine established psychological concepts with personal testimony, commercial wellness claims, and recommendations of uncertain validity. This article systematizes source material concerning stress, burnout, panic-like symptoms, and self-regulation, distinguishing conceptually supported propositions from claims requiring clinical verification. A qualitative thematic content analysis was conducted. Statements were coded by conceptual domain, analytical level, intervention type, and evidentiary status, while repetition, promotional language, and first-person testimony were excluded. Five interrelated themes emerged: the adaptive and maladaptive dimensions of stress; occupational mismatch and burnout; the multidimensional nature of panic-like responses; self-regulation and lifestyle practices; and the boundary between supportive wellness measures and clinical treatment. Stress was not identified as uniformly harmful; however, prolonged exposure combined with inadequate recovery, limited autonomy, weak social support, and conflict between personal and organizational values may contribute to exhaustion and impaired functioning. Breathing regulation, progressive muscle relaxation, physical activity, social connection, and work-life boundaries may support recovery, whereas unverified remedies cannot be considered established treatments. Effective management requires an integrated model combining individual skills, organizational prevention, and access to healthcare. Wellness interventions should complement evidence-based assessment and treatment rather than replace them.

Keywords: *occupational stress, panic symptoms, self-regulation, workplace wellness, mental health.*

Introduction

In today's fast-paced and highly competitive work environments, professional stress has become a pervasive phenomenon affecting individuals across industries and organisational levels (2, 4, 6). Professional stress, commonly referred to as occupational or work-related stress, arises when job demands exceed an individual's capacity to cope or adapt, leading to physical, emotional, and behavioral strain (1, 5). While a certain level of stress can serve as a motivator, chronic or excessive stress has far-reaching implications for both employees and organisations (12, 14). Stress is simultaneously a biological response, a psychological experience and a social phenomenon (17, 18). It emerges when environmental demands are appraised as challenging or threatening and when available resources appear insufficient for effective adaptation (15, 16). This broad definition is important because it avoids treating every stress response as pathological. Short-term activation may mobilise attention and action, whereas persistent activation without adequate recovery may undermine wellbeing and performance (10, 19). Classical adaptation model describes stress through alarm, resistance and exhaustion. Although contemporary research has refined this sequence, the model remains useful for differentiating temporary mobilization from prolonged strain. Situational stress tends to diminish after the stressor is removed (11). Chronic stress persists across time or continues after the original

demand has ended. Post-traumatic responses may arise after exposure to an overwhelming event and require a distinct clinical assessment rather than being treated as an extension of workplace tension (9). Occupational stress occurs when job demands are poorly aligned with the worker's abilities, resources, autonomy or needs. The imbalance may involve excessive workload, time pressure, emotional demands, ambiguous roles, insufficient support, limited control or disruption of the boundary between work and private life (21-23). Its consequences may be emotional, cognitive, behavioral and somatic. Reported manifestations include fatigue, dissatisfaction, irritability, sleep disturbance, concentration difficulties, reduced performance and maladaptive coping (3). Such manifestations are not specific to one disorder and should therefore be interpreted within the person's broader medical and psychosocial context (20).

Burnout is more specific than stress. It refers to a work-related pattern characterized principally by exhaustion, psychological distancing or cynicism, and reduced professional efficacy (22). The source text presents burnout as the final stage of prolonged stress; however, the relationship is better understood as conditional rather than automatic. Exposure to stress may increase vulnerability, but occupational context, recovery opportunities, personal resources and organizational practices influence whether burnout develops. A useful organizational perspective is provided by six areas of potential mismatch: workload, control, reward, community, fairness and values (8). These areas shift attention away from interpretations that locate responsibility exclusively within the individual. A worker may practice relaxation and maintain healthy routines yet remain exposed to structurally excessive demands or ethical conflict. Sustainable prevention therefore requires changes in work design as well as individual coping support. The supplied text also connects stress with panic-like experiences, hydration, meditation, physical activity, herbal preparations and folk remedies. These elements represent different categories of knowledge. Some are established self-regulation practices; some are plausible but context-dependent health behaviors; others are personal testimonies or commercial claims. Combining them without qualification risks giving all statements an equivalent scientific status (13). The purpose of the present conceptual article is therefore threefold: first, to organize the material into a coherent model of occupational stress and burnout; second, to identify supportive self-regulation strategies that can be framed responsibly; and third, to clarify the boundary between wellness promotion and clinical treatment. The analysis does not test treatment effectiveness. It evaluates how the source material can be transformed into a defensible framework and identifies propositions requiring empirical investigation.

Research questions

The analysis addressed three questions: (1) Which core concepts structure the source account of stress and burnout? (2) Which personal and organisational responses are proposed? (3) Which claims require qualification because they rely on anecdote, promotional language or insufficient evidence?

Methods

2.1 Study design

A qualitative, document-based thematic synthesis was conducted. The unit of analysis was a Bulgarian-language source text addressing stress, occupational burnout, panic-like experiences and strategies presented as supportive or therapeutic. The design was appropriate because the material did not contain a defined sample, standardized measurements, an intervention protocol or outcome data that would support quantitative analysis. Accordingly, the article reports conceptual findings rather than clinical efficacy estimates.

2.2 Analytical procedure

The text was reviewed iteratively. During initial coding, statements were assigned to descriptive categories: definition of stress; temporal pattern; adaptation process; occupational antecedent; burnout characteristic; emotional, physiological or behavioral manifestation; self-regulation strategy; lifestyle recommendation; natural-product claim; and personal testimony. During focused coding, related categories were consolidated into higher-order themes. Attention was given to causal language, generalization, duplication and the difference between symptom support and disease treatment. A second analytical layer classified each proposition by evidentiary status.

Conceptually established statements were retained in neutral academic language. Plausible but context-sensitive recommendations were presented as supportive measures rather than universally effective interventions. Personal accounts were treated as illustrations of lived experience and not as proof. Brand-specific claims, prices, dosing instructions and assertions of cure were excluded because the source provided no verifiable study design or safety evaluation.

2.3 Scope and limitations

The analysis was limited to the supplied material and did not constitute a systematic review of external literature. No bibliographic verification, risk-of-bias assessment or meta-analysis was undertaken. The absence of primary data precludes conclusions about prevalence, causality or comparative effectiveness. The resulting themes should be interpreted as a structured conceptual model and as a basis for future empirical research.

Because the source included health-related advice, editorial transformation also required attention to scientific responsibility. The manuscript does not diagnose readers, prescribe products or substitute for professional care. Serious or persistent anxiety, recurrent panic episodes, suicidal thinking, chest pain, fainting, severe breathlessness or marked functional deterioration require timely assessment by qualified health professionals.

Results

Four criteria guided the transformation of the material. First, claims had to be proportionate to the information available. Second, stress, burnout, panic attacks and psychiatric disorders were not treated as interchangeable constructs. Third, non-pharmacological self-care was distinguished from clinical management. Fourth, recommendations with potential safety implications were either qualified or omitted. For example, breathing into a paper bag was not retained as a general recommendation because acute breathlessness or chest symptoms may have causes other than panic, and rebreathing may be inappropriate in some situations (tab.1).

Table 1. Recommendations with potential safety implications

Analytical dimension	Operational question	Treatment in the synthesis
Conceptual coherence	Does the statement distinguish stress, burnout and panic symptoms?	Retain after clarification.
Evidence status	Is it a general concept, plausible strategy, testimony or promotional claim?	Label, qualify or exclude accordingly.
Causal precision	Does the text claim that one factor directly causes or cures a condition?	Reduce to an association unless supported by data.
Clinical safety	Could literal application delay care or create harm?	Add a safety boundary or omit.
Level of intervention	Is responsibility individual, organizational or clinical?	Integrate within a multilevel model.

3.1 Stress as an adaptive process with cumulative costs

The first theme presents stress as neither intrinsically harmful nor fully avoidable. Acute activation can support survival and goal-directed behavior by increasing vigilance and mobilizing resources. Risk emerges when demands remain intense, unpredictable or uncontrollable and recovery is insufficient. The source distinguishes situational, chronic and post-event patterns, suggesting that duration and recovery are central analytical variables. This distinction supports a continuum model in which the same adaptive system may become burdensome when activation is repeated or prolonged.

3.2 Occupational mismatch and burnout

The second theme concerns mismatch between the individual and the organization. Six recurrent domains were extracted: demands relative to capacity; autonomy relative to control; effort relative to recognition; quality of workplace relationships; perceived fairness; and compatibility between personal ethics and job requirements. These domains converge on the proposition that burnout is not merely a failure of personal resilience. It may indicate a sustained disruption in the relationship between employee and work environment. The manifestations

described in the source span emotional exhaustion, diminished motivation, cognitive difficulty, behavioral withdrawal and physical complaints. The breadth of this list requires caution: many symptoms are nonspecific and may reflect medical conditions, anxiety, depression, sleep disturbance or other factors. The analytically robust result is therefore not that burnout directly causes every listed condition, but that prolonged occupational strain may coexist with multidimensional impairment and warrants assessment at both individual and organizational levels.

3.3 Panic-like responses as multidimensional events

The third theme groups panic-like experiences into emotional, physiological and behavioral components. Emotional features include intense fear and catastrophic thoughts; physiological features may include palpitations, dizziness, breathlessness, abdominal discomfort and muscular tension; behavioral responses may include avoidance and sleep disruption. This three-domain representation is useful for explaining why panic is experienced as a whole-body event. Nevertheless, symptom overlap with cardiopulmonary, endocrine, neurological and other conditions means that first or atypical episodes should not automatically be self-classified as panic (fig.1).

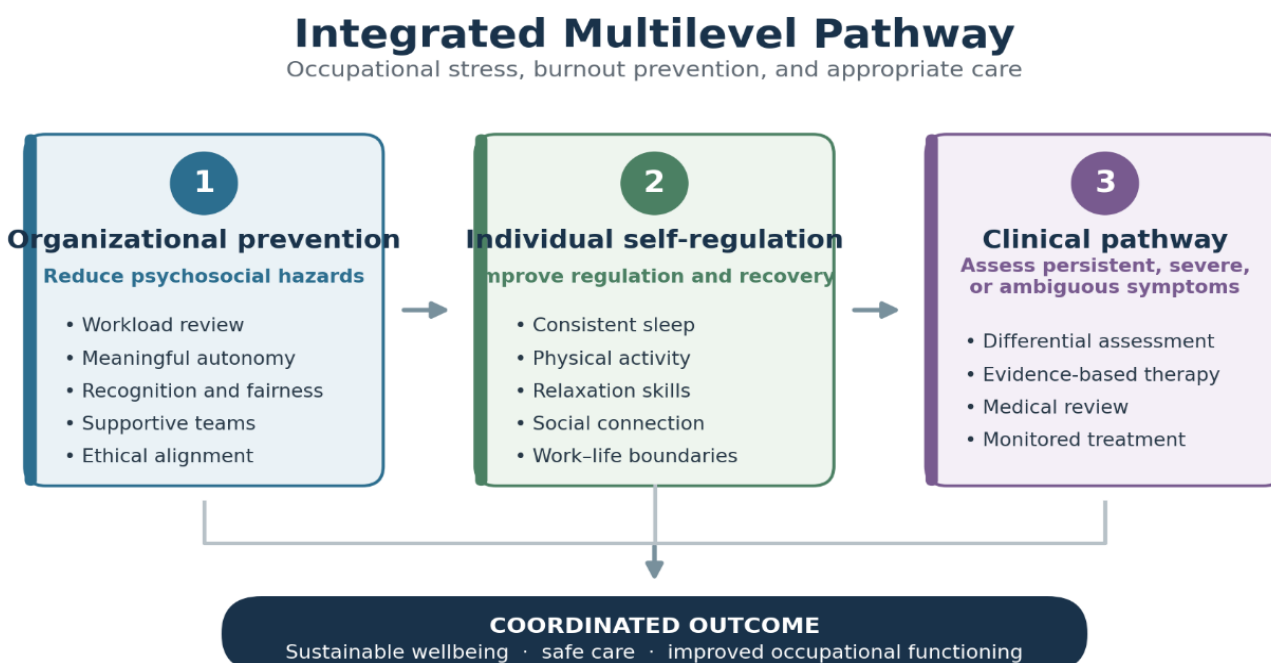


Figure 1. Integrated multilevel response to occupational stress and burnout.

Figure 1. Integrated multilevel response to occupational stress and burnout.

3.4 Self-regulation and recovery

The fourth theme comprises strategies intended to reduce arousal and restore a sense of control. The most defensible measures in the source include slow, comfortable breathing without prolonged breath-holding; progressive muscle relaxation; attention-grounding; regular physical

activity; reduction of excessive stimulant intake; consistent sleep routines; constructive social support; and cultivation of interests outside work. Meditation may also serve as a structured attentional practice when adapted to the individual and, for beginners or vulnerable participants, introduced with appropriate guidance.

3.5 Boundary between wellness support and treatment

The fifth theme emerged from tension between low-risk wellbeing practices and claims that foods, herbs or branded supplements treat panic, depression or severe psychiatric conditions. The source includes testimonials and product descriptions but no controlled evidence, diagnostic verification, interaction assessment or systematic adverse-event reporting. Consequently, these materials cannot support efficacy conclusions. Natural origin does not establish safety, and herbal ingredients may interact with medication, affect pregnancy or lactation, and be unsuitable for particular medical conditions (tab. 2).

Table 2. Differential assessment of levels and objectives with examples

Level	Primary objective	Examples derived from the synthesis
Individual	Improve regulation and recovery.	Sleep routine, physical activity, relaxation, social connection, work–life boundaries.
Organizational	Reduce preventable psychosocial hazards.	Workload review, autonomy, recognition, fairness, supportive teams, ethical alignment.
Clinical	Assess persistent, severe or ambiguous symptoms.	Differential assessment, evidence-based psychotherapy, medical review and monitored treatment.

3.6 Implications for research and practice

Future studies should operationalize the proposed model using validated measures of perceived stress, burnout, work characteristics, sleep, recovery and functioning. Prospective designs could examine whether mismatch domains predict changes in burnout and whether organizational improvements modify this relationship. Intervention trials should specify the population, comparator, duration, adherence, adverse events and clinically meaningful outcomes. Natural products require standardized composition, interaction screening and independent safety monitoring.

For practice, the findings support stepped care. Universal prevention may include healthy work design and basic recovery education. Selective support may target teams or employees exposed to sustained demands. Indicated care should provide prompt access to qualified psychological or medical services. Evaluation should measure not only symptom change but also workload, absenteeism, retention, psychological safety and work quality.

Discussion

The thematic synthesis supports a multilevel interpretation of stress-related problems. At the individual level, stress involves appraisal, physiological activation and coping behavior. At the occupational level, workload, control, reward, social climate, fairness and values shape exposure and recovery. At the clinical level, persistent anxiety, panic symptoms, depressive features and physical complaints may require formal assessment. Treating these levels as interchangeable can produce two opposite errors: medicalizing ordinary adaptive strain or minimizing clinically significant distress as a lifestyle problem. The strongest conceptual contribution of the source is its recognition that stress may be protective in the short term but damaging when prolonged. This prevents the unrealistic objective of eliminating all stress. A more appropriate goal is regulatory flexibility: the capacity to mobilize when necessary and return to baseline after the demand passes. Recovery should therefore be viewed as an active component of performance rather than as inactivity or lack of commitment. The six mismatch domains offer a practical bridge between theory and organizational policy. A wellness program focused only on breathing exercises, meditation or supplements may have limited impact if employees remain exposed to chronic overload, conflicting expectations or unfair treatment. Conversely, organizational redesign without accessible individual support may overlook differences in vulnerability, coping resources and life circumstances. Integrated prevention requires both approaches and should include mechanisms for early identification, confidential referral and follow-up. The source's treatment of panic-like experiences illustrates the need for careful communication. Grounding, gentle breathing and muscle relaxation can help some individuals regulate acute anxiety. However, categorical assurances that every episode is harmless are inappropriate because similar symptoms may occur in medical emergencies. Public-facing wellness materials should advise individuals to seek urgent evaluation for new, severe or unusual chest pain, loss of consciousness, marked breathing difficulty, neurological symptoms or other alarming features. Recurrent episodes also merit professional assessment because effective psychological and medical options are available. A second concern is the transformation of personal testimony into therapeutic recommendation. Lived experience can generate hypotheses and illuminate patient perspectives, but it cannot establish efficacy, dosage or safety. The presence of a named product, consumer price or anecdotal recovery narrative introduces promotional bias. For a scholarly publication, such content should either be studied explicitly as health communication or excluded from treatment recommendations. The same principle applies to broad claims that a natural preparation can treat heterogeneous conditions ranging from stress to severe mental illness. Hydration deserves similar qualification. Adequate fluid intake contributes to normal physiological functioning and may support wellbeing, particularly during heat, exercise or illness. It should not, however, be presented as a primary causal explanation or cure for cellular aging, burnout, panic disorder or depression. Reductionist

explanations may be attractive because they suggest a simple solution, but they obscure the biological, psychological, occupational and social determinants involved.

Conclusion

Stress is an unavoidable component of adaptation, yet its consequences depend on intensity, duration, appraisal, available resources and opportunities for recovery. The supplied material contains an important central insight: prolonged imbalance between demands and resources can affect emotional wellbeing, cognitive functioning, behavior and occupational performance. The analysis further indicates that burnout is best understood as a work-related phenomenon situated at the intersection of the person and the organizational environment.

Five themes organize the proposed framework: adaptive versus cumulative stress; person–work mismatch; multidimensional panic-like responses; self-regulation and recovery; and the distinction between wellness support and clinical treatment. Together they show that effective prevention cannot rely on a single technique. Individual skills such as relaxation, physical activity, sleep regulation and social connection may support recovery, but they do not compensate indefinitely for excessive workload, low autonomy, lack of recognition, unfairness or value conflict.

The source also demonstrates why academic health communication must evaluate evidentiary status. Personal narratives can be meaningful, and traditional practices may merit investigation, but neither testimonials nor commercial descriptions establish therapeutic effectiveness. Claims about herbal preparations, foods or supplements should not be generalized to the treatment of panic disorder, depression or severe psychiatric conditions without appropriate clinical evidence. Product use additionally requires attention to contraindications, interactions and vulnerable populations.

A responsible workplace-wellness model should therefore include three coordinated components. The first is organizational prevention through realistic demands, meaningful control, fair recognition, supportive relationships and ethical coherence. The second is individual capacity-building through accessible education in recovery, emotional regulation and help-seeking. The third is a clear clinical pathway for persistent, severe or diagnostically uncertain symptoms. Each component addresses a different source of risk, and none is sufficient in isolation.

This conceptual synthesis does not provide prevalence estimates or treatment-effect sizes. Its contribution is methodological and practical: it transforms heterogeneous source material into a structured model while preventing anecdotal and promotional claims from acquiring an unwarranted scientific status. The model can inform the development of questionnaires, workplace interventions and prospective studies, but its propositions require empirical testing in defined occupational populations.

In conclusion, the most sustainable response to stress and burnout is neither the elimination of all challenges nor the transfer of responsibility entirely to the worker. It is the creation of environments in which demands are proportionate, recovery is possible, support is accessible and clinical concerns are recognized early. Within such an environment, wellness practices can serve their appropriate purpose: supporting resilience and quality of life while complementing evidence-based occupational and healthcare interventions.

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THE ROLE OF JUDO IN THE BIOMECHANICAL AND NEUROPHYSIOLOGICAL DEVELOPMENT OF SCHOOL-AGE CHILDREN

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Abstract

The growing need for educational approaches that integrate physical, cognitive, and socio-emotional development highlights the relevance of structured martial arts programs in childhood. Aim: To analyze the influence of systematic judo training on the biomechanical, neurophysiological, and social development of primary school-age children. Methodology: A combined research design was applied, including literature analysis, anthropometric assessment, and evaluation of motor and neurophysiological indicators such as SLJ, SRT, 4×10 m speed test, BMI, and variability measures. Descriptive statistics were used to identify age-related trends, sex differences, and intra-group variability. Results: Judo training activated key neurophysiological mechanisms—sensorimotor integration, proprioceptive regulation, vestibular stabilization, and cognitive activation—leading to improved coordination, balance, and motor competence. Explosive strength and flexibility showed the highest variability, while BMI and speed were more homogeneous. The most pronounced increase in explosive strength occurred between ages 10–13, indicating a sensitive period for strength-speed development. Conclusion: Systematic judo practice exerts a multidimensional positive effect on children's physical, motor, and neurophysiological development, emphasizing the importance of age- and sex-adapted training programs and individualized pedagogical approaches.

Keywords: *judo; motor development; neurophysiological mechanisms; children*

Introduction

In contemporary educational settings, there is an increasing need to integrate sports activities that support not only physical development but also the cognitive, social, and emotional growth of students (24, 26). Judo, as a martial art with a clearly structured philosophy and methodology, offers a unique opportunity to combine motor activity with educational and social functions (7, 25). As highlighted in the monographic text, "*judo... shapes a value system, social skills, and psychological resilience*" (2, 6, 14-18), making it a particularly significant tool in the context of digitalisation, reduced physical activity, and increased aggression among children and adolescents (3, 22, 35). At the same time, contemporary research in recreation and health prevention emphasises the importance of integrated models for physical and psychosocial development (1, 11-13). Approaches based on wellness concepts and holistic methods demonstrate high effectiveness in forming healthy habits and sustainable behavior in children and youth (8, 9, 32). In the Bulgarian context, studies on the biomechanical aspects of physical education (10, 34) and on motor development in early childhood (1) further support the need for structured, evidence-based programs. These models align with international concepts of motor development (21, 23, 31) and highlight the role of diverse motor stimuli for optimal growth. Created by Jigoro Kano as a system for physical, intellectual, and moral development, judo is

grounded in the principles of *Seiryoku-Zenyo* (maximum efficiency) and *Jita-Kyoei* (mutual welfare and benefit), which foster self-control, respect, discipline, and social responsibility (30, 33). This philosophical framework positions judo as a pedagogical model that extends beyond sport training and contributes to the holistic personal development of children (19, 27, 29). In this context, there is a clear need to investigate the influence of systematic judo practice on the neurophysiological, motor, and physical development of primary school-age children, which represents the central focus of the present study (5, 20, 28).

Methods

Objective

To analyze the influence of systematic judo training on the biomechanical, neurophysiological, and social development of school-age children.

The methodology of the study applies a combined approach integrating scientific literature analysis, biomechanical measurements, and assessment of motor and neurophysiological indicators in school-age children. Structured observation and testing were conducted to evaluate key anthropometric, coordination, and strength characteristics, including standing long jump (SLJ), sit-and-reach flexibility test (SRT), 4×10 m shuttle run speed test, and body mass index (BMI), as well as variability analysis through standard deviations.

The data were processed using descriptive statistics to identify age-related trends, intra-group differences, and sex-specific patterns. The methodological framework is aligned with the biomechanical and pedagogical principles of judo, with emphasis on evaluating its influence on neurophysiological mechanisms, motor control, and physical development. The study was conducted in accordance with ethical standards for research involving children, ensuring informed parental consent and participant anonymity.

Limitations and Future Research

This study is limited by its cross-sectional design and the narrow age range of participants. Future research should apply longitudinal methods and include broader developmental and biomechanical assessments to deepen understanding of judo's long-term effects.

Results

The obtained data indicate that judo training activates four key neurophysiological mechanisms that play a critical role in the development of motor control and cognitive functions in children (Figure 1).

	Sensory-Motor Integration through contact, grip, movement and falling
	Proprioceptive Regulation through control of position and balance
	Vestibular Stabilization through rotational movements, falls and transitions
	Cognitive Activation through tactical challenges, technique selection, response

Figure 1. Role of Judo in Neurophysiological Development

Figure 1 illustrates the mechanisms of sensorimotor integration, proprioceptive regulation, vestibular stabilization, and cognitive activation. Motor activity in judo simultaneously engages all these systems, supporting the development of coordination, balance, spatial orientation, and the ability to make rapid tactical decisions. The activation of these processes forms a complex neurophysiological foundation for acquiring motor skills and enhancing overall motor competence. This confirms that judo functions not only as a physical activity but also as an effective means of neurophysiological development in childhood.

Figure 2 (“Motor Development 8–12 years”) presents the characteristic age-related curve of motor development and outlines two clearly defined periods. The first is the growth zone (ages 8–10), during which accelerated development of coordination, balance, rhythm, and intermuscular synergy is observed. The second is the stabilization zone (ages 11–13), characterized by the optimization of motor habits and a gradual decrease in the rate of improvement. These trends are fully consistent with biomechanical models of child development and highlight the need for age-adapted training programs that account for sensitive periods in the acquisition of motor skills.

The gradual increase in the motor index within this age range provides a foundation for a more detailed analysis of individual physical qualities. In this context, the following section examines the structure of the physical profile of 7-year-old children, offering a more comprehensive view of strength, coordination, and anthropometric indicators in early school age.

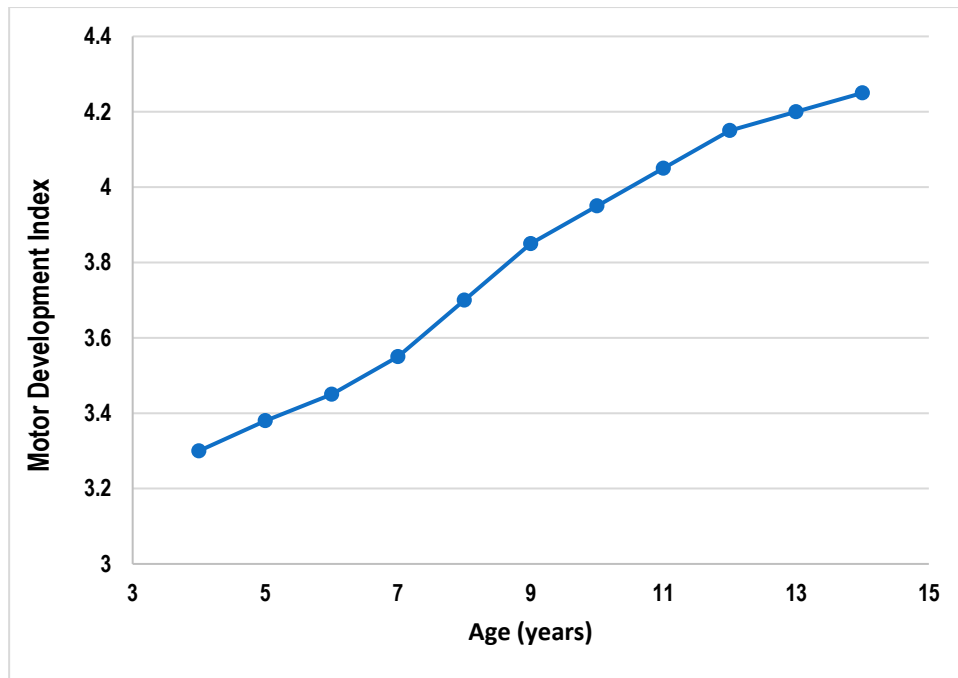


Figure 2. Motor Development (8–12 years)

Figure 3 presents a multidimensional physical profile of 7-year-old boys and girls, assessed through key anthropometric and motor indicators. The analysis shows consistently higher values in boys across most measured parameters, which is characteristic for this age group and reflects early differences in muscular strength and motor activity.

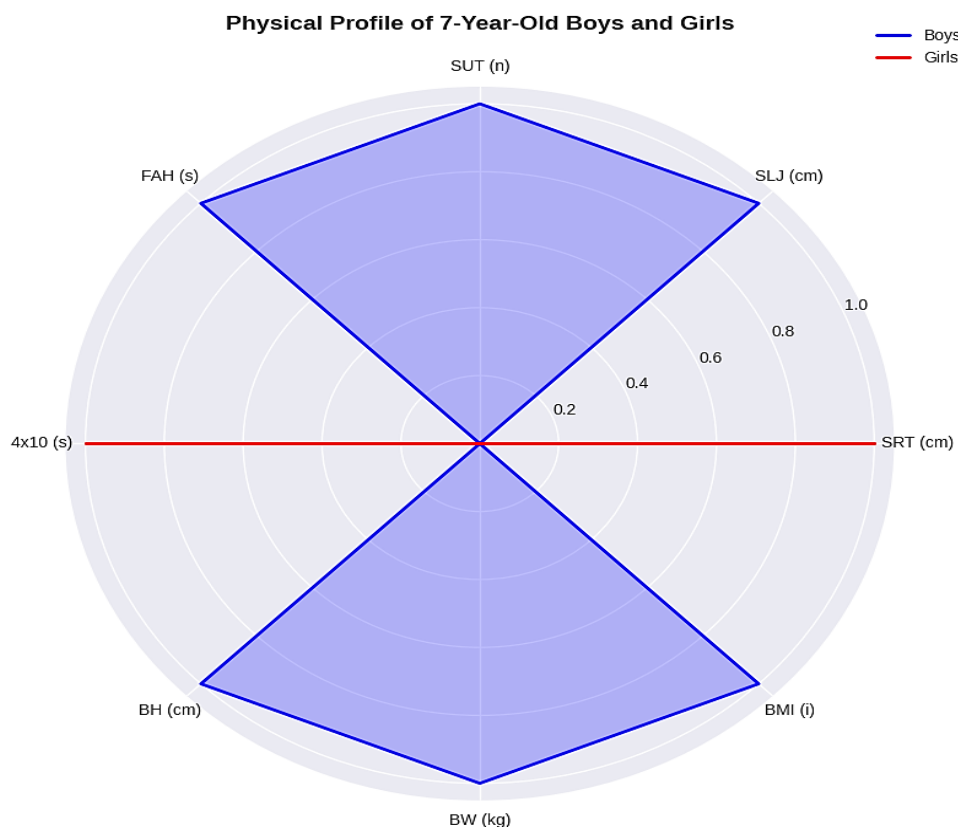


Figure 3. Multidimensional Physical Profile of 7-Year-Old Boys and Girls

Low variability is observed in indicators such as BMI and speed, suggesting a relatively homogeneous body composition and baseline quickness. In contrast, explosive strength (SLJ) and flexibility (SRT) demonstrate high variability, highlighting substantial individual differences in the development of these qualities. These results reveal substantial heterogeneity in the motor development of children in early school age and highlight the need for an individualized approach when planning training tasks in introductory judo education. Understanding this structure of the physical profile is essential for determining optimal training load and selecting exercises that correspond to the children's biological and functional readiness.

A smooth transition to the next stage of the analysis requires examining not only mean values but also the dispersion of results, which provides deeper insight into intra-group differences.

In this regard, the following section analyzes the variability of physical indicators, presented in Figure 4. The standard deviations of key physical and anthropometric indicators in 7-year-old boys and girls. The highest variability is observed in SLJ (explosive strength) and SRT (flexibility), reflecting considerable individual differences in the development of these qualities. In contrast, BMI and the 4×10 m speed test show the lowest variability, suggesting a more homogeneous group structure in terms of body composition and baseline speed. These findings indicate that strength and coordination abilities are the most individually differentiated at this age, whereas anthropometric characteristics and speed are more stable and uniformly developed.

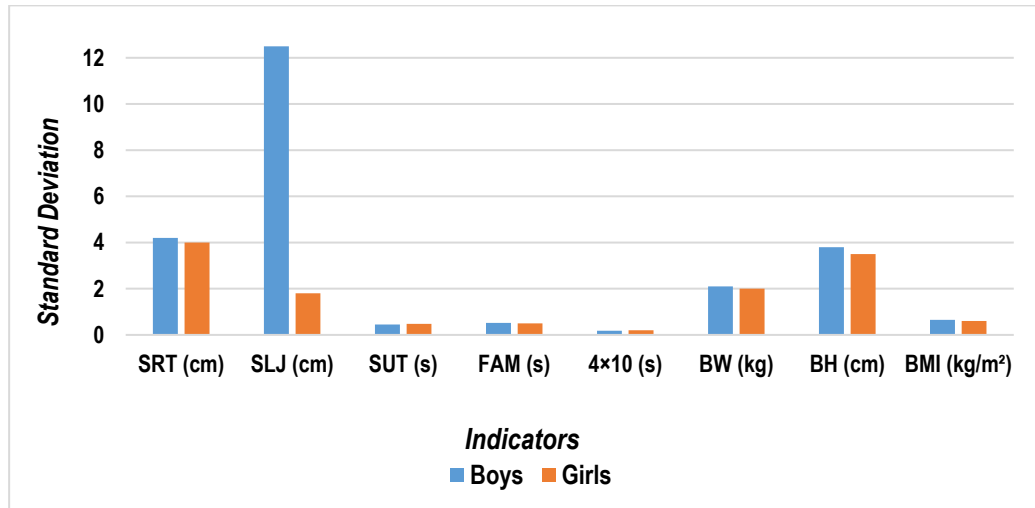


Figure 4. Variability of Physical and Anthropometric Indicators in 7-Year-Old Children

Figure 5 (“Horizontal Jump Distance by Age and Gender”) presents the age-related dynamics of explosive strength in boys and girls, assessed through the standing long jump. The data show a stable and consistent increase in both sexes, with the most pronounced improvement occurring between the ages of 10 and 13. This interval coincides with accelerated biological maturation and increased neuromuscular plasticity, identifying it as a critical window for the development of strength-speed qualities.

This period is particularly suitable for teaching and refining dynamic techniques, controlled falls, rotational movements, transitions between stances, and techniques requiring impulse generation and stabilization.

Figure 5 clearly demonstrates that explosive strength not only increases with age but also develops at different rates in boys and girls, underscoring the need for sex- and age-adapted training programs.

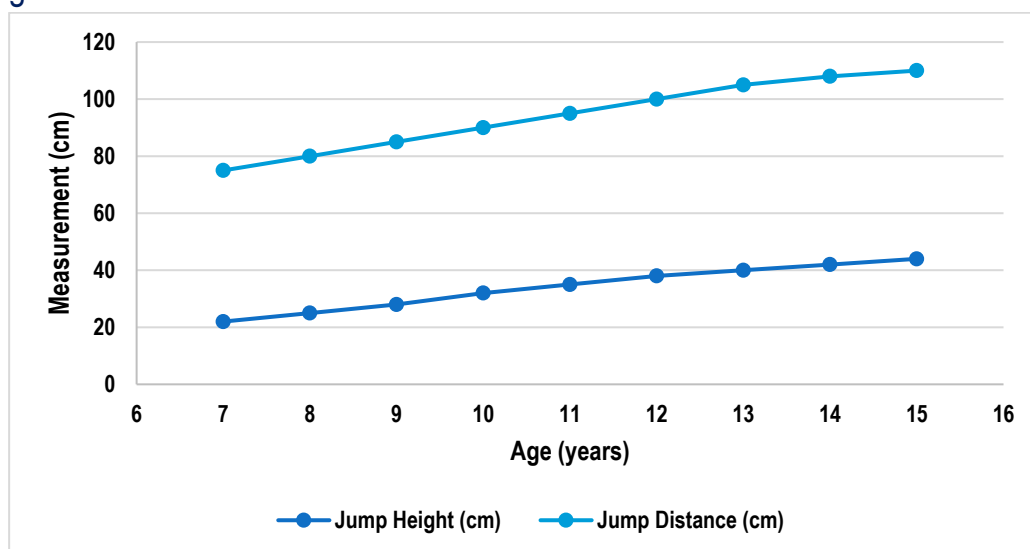


Figure 5. Horizontal Jump Distance by Age and Gender

The statistical analysis reveals clearly defined age-related trends and sex differences in the main physical and anthropometric indicators. A stable increase in explosive strength and coordination abilities is observed with advancing age, with the most intensive development occurring between 10 and 13 years. Comparisons between boys and girls show higher mean values in boys across most indicators, particularly in explosive strength (SLJ) and flexibility (SRT). The variability analysis indicates that strength and coordination qualities are the most individually differentiated, whereas body composition (BMI) and speed (4×10 m test) are more homogeneous. This pattern of dispersion suggests that, in early school age, children differ most strongly in abilities related to neuromuscular control and explosiveness, which has direct implications for planning training tasks. The summarized results outline a clear structure of neurophysiological, motor, and physical development in primary school-age children, emphasizing the role of judo as a complex stimulator of motor and cognitive functions. The observed trends in mean values, variability, and the age-related dynamics of explosive strength provide a solid foundation for interpreting the mechanisms underlying these changes.

Discussion

The results obtained confirm that systematic judo training exerts a multidimensional influence on children's development by simultaneously stimulating neurophysiological, motor, and physical components. The activation of sensorimotor, proprioceptive, and vestibular

mechanisms, as demonstrated in Figure 1, aligns with contemporary models of integrated motor learning, which emphasize that coordination and balance develop most effectively through complex, multi-layered motor tasks. The age-related dynamics presented in Figure 2 and Figure 5 highlight the presence of sensitive periods during which explosive strength and coordination abilities develop at an accelerated rate. This corresponds to the biological patterns of growth and maturation described in the literature and reinforces the need for targeted planning of training loads during the ages of 10–13.

Conclusion

The obtained results confirm that systematic judo training exerts a multidimensional and significant influence on the development of children in early school age. The activation of key neurophysiological mechanisms—sensorimotor integration, proprioceptive regulation, vestibular stabilization, and cognitive activation—creates a foundation for accelerated acquisition of motor skills and improved motor competence.

The analysis of the physical profile reveals clear differences between boys and girls, as well as substantial intra-group variability, particularly in strength and coordination indicators. This highlights the need for an individualized approach when planning training tasks and for adapting the training load to each child's biological and functional readiness.

The age-related dynamics of explosive strength reveal a clearly defined sensitive period between 10 and 13 years, during which strength-speed qualities develop most intensively. This interval should be purposefully utilized for teaching techniques that require impulse generation, stabilization, rotational movements, and controlled falls.

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ADOLESCENT OBESITY AS A BIOPSYCHOSOCIAL HEALTH CHALLENGE

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Abstract

Background: Puberty is characterized by rapid biological, cognitive and social change. Excess adiposity during this period may interact with pubertal timing, body-image development and peer evaluation, creating risks that extend beyond cardiometabolic health. Objective: To synthesize current evidence on the social and psychological risks associated with obesity during puberty and to describe the epidemiological context using World Health Organization (WHO) data. Methods: A structured narrative review and secondary descriptive analysis were conducted using WHO global estimates, WHO Global Health Observatory definitions, the 2021/2022 Health Behaviour in School-aged Children (HBSC) report, and selected peer-reviewed reviews on puberty, obesity and psychosocial outcomes. Published aggregate percentages were compared descriptively; no individual-level data or inferential tests were used. Results: WHO estimated that more than 390 million persons aged 5–19 years had overweight in 2022, including over 160 million with obesity. The prevalence of overweight, including obesity, rose from 8% in 1990 to 20% in 2022, while obesity rose from 2% to 8%. HBSC data showed marked gender and socioeconomic inequalities: overweight or obesity affected 27% of boys and 17% of girls, and 27% of adolescents from less affluent families compared with 18% of affluent peers. Obesity during puberty was associated with weight stigma, bullying, body dissatisfaction, low self-esteem, impaired quality of life and increased vulnerability to depressive symptoms. Conclusions: Adolescent obesity is a chronic, multifactorial disease embedded in social environments. Prevention and care should be developmentally appropriate, family-centred, non-stigmatizing and supported by school, community, health-system and policy interventions.

Keywords: *adolescent obesity; puberty; weight stigma; body image; mental health; social inequality; bullying*

Introduction

Adolescence, defined by WHO as ages 10–19 years, is a period of rapid physical, cognitive and psychosocial development in which health-related behaviours and social identities become consolidated (1, 4, 7-9, 29-32). Puberty is the biological component of this transition and includes endocrine activation, sexual maturation, growth acceleration and changes in body composition. Although adolescence and puberty overlap, they are not synonymous: pubertal timing varies substantially within chronological age groups (19-22). This distinction is important because most international surveillance systems report age-standardized BMI rather than Tanner stage or hormonal markers (3, 5, 8-11). Obesity is classified by WHO as a chronic, relapsing disease arising from interactions among genetics, neurobiology, eating behaviour, access to healthy diets, commercial forces and the broader environment (2, 29-31). For persons aged 5–19 years, WHO defines overweight as BMI-for-age greater than one standard deviation above the WHO Growth Reference median and obesity as greater than two standard deviations (30-32). BMI is useful for population surveillance but is a surrogate for adiposity and does not directly capture

body composition, fat distribution, pubertal stage or individual metabolic health. Puberty may amplify obesity-related vulnerability. Physiological insulin resistance increases during normal pubertal development, body composition changes differently in girls and boys, and social comparison becomes more salient (16-18, 25). Obesity has been associated with earlier pubertal development in girls; evidence in boys is more heterogeneous, although recent work also indicates meaningful relationships between adiposity and pubertal timing (12-14, 26). At the same time, visible body changes may increase exposure to weight-based teasing, peer exclusion and internalized stigma. The public-health importance of this interaction is substantial. WHO estimates indicate that adolescent obesity has quadrupled since 1990 (23, 27, 31). Its consequences include earlier risk of type 2 diabetes and cardiovascular disease, but also poorer quality of life, impaired school performance, stigma, discrimination and bullying (22, 28, 30-32). The social and psychological burden is not an inevitable consequence of body size alone; it is produced through interactions between health status, identity development, family resources, school climate, media ideals and unequal access to supportive environments (15, 29).

This review aims to: (i) describe the global epidemiology of excess weight among school-aged children and adolescents using WHO data; (ii) examine puberty-specific biological and psychosocial pathways; (iii) synthesize social and psychological risks; and (iv) propose developmentally appropriate, non-stigmatizing priorities for prevention and care.

Methods

Design and data sources

A structured narrative review was combined with secondary descriptive analysis of published aggregate data. Core epidemiological sources were the WHO obesity fact sheet updated in 2025, the WHO Global Health Observatory indicator metadata, the NCD Risk Factor Collaboration pooled analysis of 3,663 population-representative studies, and the WHO/HBSC international report from the 2021/2022 survey (29-32). The HBSC report covers 11-, 13- and 15-year-olds in 44 countries and regions across Europe, central Asia and Canada.

Eligibility and synthesis

Documents were eligible when they addressed: prevalence or definitions of overweight/obesity in ages 5–19; the interaction of adiposity with pubertal development; or social and psychological outcomes in children and adolescents. Priority was given to WHO publications, large surveillance reports, systematic reviews and clinically oriented peer-reviewed syntheses (29-32). Adult-only studies, commercial materials and sources that did not distinguish observation from treatment claims were excluded from the conceptual synthesis.

Statistical approach

Only descriptive comparisons were made. Absolute percentage-point change was calculated as the later prevalence minus the earlier prevalence. Relative change was expressed as the ratio of 2022 to 1990 prevalence. For HBSC comparisons, percentage-point gaps were calculated

between boys and girls and between low- and high-affluence groups. No confidence intervals were reconstructed, no hypothesis tests were conducted, and no causal inference was attempted. Values may differ slightly across WHO webpages because of rounding and differences between modelled estimates and survey summaries.

Puberty-specific limitations

WHO global estimates include ages 5–19, while HBSC includes ages 11, 13 and 15. These ranges overlap substantially with puberty but do not measure biological maturation directly. The term “during puberty” is therefore used developmentally, not as a claim that all observations were stratified by pubertal stage. This limitation should be addressed in future studies through Tanner staging or validated hormonal and maturation indicators (29-32).

Limitations

This article is a narrative review and secondary descriptive analysis, not a systematic review or meta-analysis. The WHO global estimates cover ages 5–19, extending beyond the biological boundaries of puberty, and HBSC data are regional rather than globally representative (29-31). HBSC height and weight may be self-reported in participating systems, and body-image indicators are subjective by design. Published aggregate figures do not permit adjustment for confounding or analysis of interactions. Causal conclusions should therefore not be drawn from the descriptive comparisons.

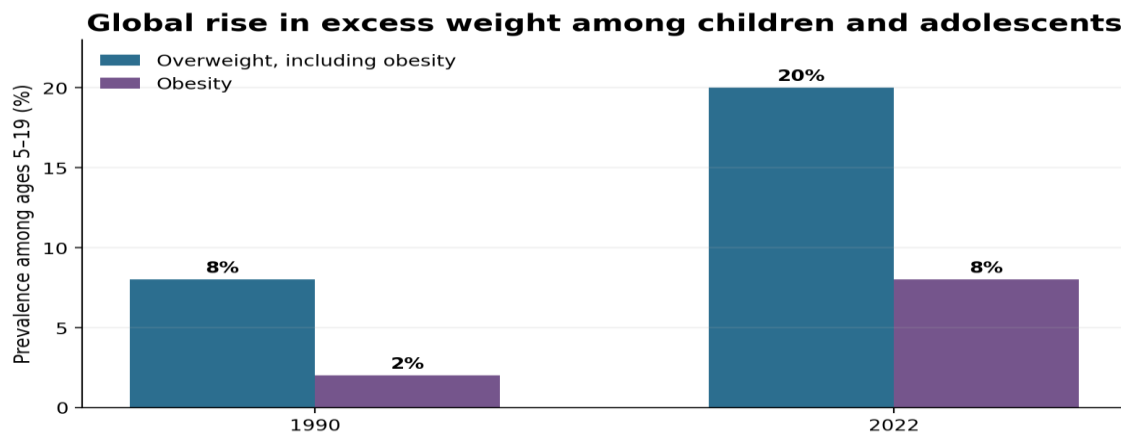
Results

Global epidemiological burden

In 2022, more than 390 million children and adolescents aged 5–19 years had overweight, including more than 160 million living with obesity (29, 31). Overweight prevalence, including obesity, increased from 8% in 1990 to 20% in 2022, an absolute rise of 12 percentage points and a 2.5-fold relative increase. Obesity increased from 2% to 8%, a six-percentage-point rise and a fourfold relative increase. WHO reported that they were overweight in 21% of boys and 19% of girls in 2022 (32).

Table 1. Selected WHO and WHO/HBSC prevalence indicators. Sources: WHO (30) and WHO Regional Office for Europe [8]. Values are rounded published estimates

Indicator	1990	2022	Descriptive change
Overweight, including obesity, ages 5–19	8%	20%	+12 percentage points; 2.5-fold
Obesity, ages 5–19	2% (31 million)	8% (>160 million)	+6 percentage points; fourfold
Overweight by sex, ages 5–19	Not used	21% boys; 19% girls	2-percentage-point sex gap
HBSC overweight/obesity	21% in 2018	23% in 2022	+2 percentage points

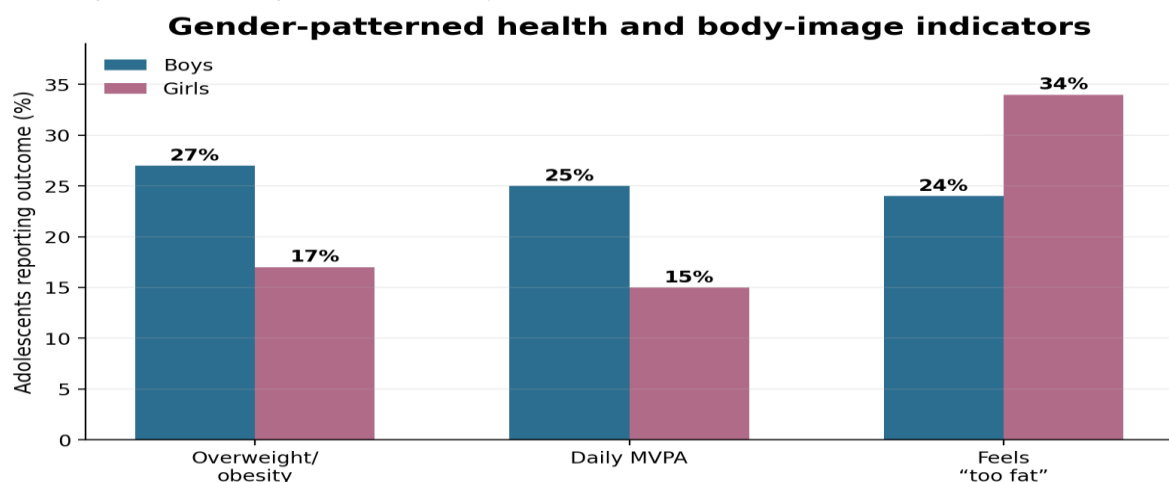


Source: WHO global estimates for children and adolescents aged 5–19 years.

Figure 1. Global prevalence of overweight and obesity among children and adolescents aged 5–19 years, 1990 and 2022. Secondary visualization of WHO estimates (29).

Social inequalities and behavioral context

The HBSC survey showed that overweight and obesity were socially patterned. In 2022, prevalence was 27% among boys and 17% among girls, a ten-percentage-point gap. Adolescents from less affluent families had a prevalence of 27%, compared with 18% among more affluent peers, a nine-percentage-point difference (29). These inequalities occurred alongside differences in access to protective behaviours. Only 25% of boys and 15% of girls achieved 60 minutes of moderate-to-vigorous physical activity daily. Less affluent adolescents were also less likely to report healthy dietary behaviours and regular activity. Body-image findings did not mirror measured weight prevalence. Approximately 34% of girls and 24% of boys reported feeling “too fat” (28, 29). Thus, boys had higher measured overweight/obesity, whereas girls more frequently perceived their bodies as too large. This divergence illustrates why anthropometry, body image and psychological distress must be assessed separately. It also cautions against messages that intensify appearance surveillance.



Source: WHO/HBSC 2021/2022 survey, ages 11, 13 and 15 across 44 countries and regions.

Figure 2. Gender-patterned weight status, daily physical activity and body-size perception in the WHO/HBSC 2021/2022 survey (29). The three indicators measure different constructs and should not be interpreted as a single scale.

Pubertal and developmental mechanisms

Normal puberty includes transient reductions in insulin sensitivity, rapid growth and sex-specific changes in fat and lean mass (29-32). When severe adiposity is present, these physiological processes may combine pre-existing insulin resistance and cardiometabolic risk. Adipose tissue also participates in endocrine signaling. Evidence consistently links higher childhood adiposity with earlier pubertal timing in girls, while the direction and magnitude of associations in boys vary by population and marker of maturation (25, 26). Pubertal timing has social meaning. Adolescents who mature earlier or whose bodies differ visibly from peer norms may receive unwanted attention, teasing or exclusion. Girls experiencing early maturation may face intensified body surveillance and sexualization; boys may experience pressure to conform to muscular ideals. These pathways are shaped by gender norms rather than biology alone. Clinical assessment should consider maturation, growth trajectory, family history, cultural context and the adolescent's own experience.

Social health risks

Weight stigma is a central social risk. It includes stereotyping, teasing, bullying, discriminatory treatment and the assumption that body weight reflects personal failure. Youth with higher body weight are more likely to report weight-based victimization, and stigma can occur in peer, family, educational, healthcare and digital settings. The effects may include social withdrawal, reduced participation in physical activity, avoidance of healthcare and deteriorating school engagement. Socioeconomic inequality acts both upstream and downstream. Families with fewer resources may face higher prices for nutritious foods, unsafe environments for activity, limited recreational opportunities, time scarcity and greater exposure to inexpensive energy-dense products. Obesity-related stigma may subsequently affect educational participation and social mobility. The WHO / HBSC affluence gradient indicates that individual counselling alone cannot correct structurally unequal exposure (30).

Psychological health risks

The psychological correlates most consistently reported in the literature are body dissatisfaction, lower self-esteem, depressive symptoms and reduced health-related quality of life (22-24). A meta-analysis found that obesity was associated with a substantially higher risk of body dissatisfaction and an increased risk of low self-esteem, although associations with anxiety and depression were less consistent across observational studies. This heterogeneity reflects differences in age, sex, severity of obesity, stigma exposure, measurement and study design. Directionality is bidirectional and context dependent. Psychological distress may follow bullying, functional limitation and internalized stigma. Conversely, depression, sleep disturbance, adverse experiences or medication may affect eating, activity and weight trajectory. Shared determinants, including poverty, family stress and commercial food environments may influence both mental health and obesity. It is therefore scientifically inappropriate to treat obesity as a simple cause of psychological disorder or to assume that every adolescent with obesity is

psychologically impaired. Body dissatisfaction can also contribute to restrictive dieting, binge eating, avoidance of movement and other disordered behaviours (tab.2).

Table 2. Social and psychological risk pathways during adolescence. Synthesized from WHO guidance and peer-reviewed reviews (29-32). Associations do not establish deterministic outcomes.

Risk domain	Potential pathway	Possible adolescent outcome	Assessment implication
Weight stigma and bullying	Teasing, exclusion, discrimination, internalized stereotypes	Distress, school avoidance, social withdrawal, reduced activity	Ask directly about weight-based victimization and school safety.
Body image	Pubertal change, appearance ideals, social comparison	Body dissatisfaction, low self-esteem, disordered eating	Assess perception separately from measured BMI.
Depressive symptoms	Stigma, functional limitation, shared determinants	Low mood, anhedonia, impaired functioning	Screen when indicated; evaluate suicide risk when clinically relevant.
Socioeconomic disadvantage	Food cost, neighbourhood safety, access barriers	Unequal exposure and reduced opportunity for protective behaviour	Assess material constraints; avoid attributing risk to motivation alone.
Healthcare stigma	Dismissive communication or diagnostic overshadowing	Delayed care and reduced trust	Use person-first language and evaluate symptoms on their merits.

Weight-centred prevention that uses fear, shame or public weighing may therefore be counterproductive. Psychological safety requires confidential assessment, and attention to eating-disorder symptoms across the weight spectrum.

Implications for prevention and clinical care

A comprehensive response requires action across four levels. First, policy should improve food environments and regulate marketing of energy-dense, nutrient-poor products to minors. Second, schools should support nutritious meals, daily activity, anti-bullying policies and confidential pathways to counselling. Third, families should receive practical support that respects culture, finances and caregiving constraints. Fourth, healthcare should assess growth, pubertal development, metabolic risk, mental health, sleep, eating behaviour and stigma exposure. Treatment goals should extend beyond weight change. Relevant outcomes include metabolic health, fitness, sleep, quality of life, participation, emotional wellbeing and reduced weight-based victimization. Adolescents should participate meaningfully in decisions, and communication should use person-first, non-moralizing language. Mental-health referrals are indicated when distress, impairment, eating-disorder symptoms or suicidality are identified; obesity treatment and psychological care should proceed in coordination rather than

sequentially. Future research should distinguish chronological age from biological maturation and report results by sex, socioeconomic position and obesity severity. Longitudinal designs are needed to clarify the direction of relationships among pubertal timing, stigma, body dissatisfaction, depression and weight trajectory. Intervention studies should measure adverse psychosocial effects as well as metabolic outcomes. Surveillance should incorporate validated indicators of weight stigma, bullying, quality of life and disordered eating.

Table 3. Multilevel response to obesity during puberty. Adapted conceptually from WHO recommendations

Level	Priority actions	Psychosocial safeguard
Policy and community	Affordable healthy foods; safe spaces; active transport; marketing regulation	Avoid campaigns that use fear, blame or stigmatizing imagery.
School	Inclusive physical education; nutritious meals; anti-bullying enforcement; counselling access	Do not publicly weigh, rank or isolate students by BMI.
Family	Supportive routines for meals, sleep and activity; model respectful body talk	Focus on health and function rather than appearance or blame.
Healthcare	BMI-for-age plus clinical assessment; pubertal history; metabolic and mental-health screening	Use confidential, person-first communication and shared decisions.
Research and surveillance	Disaggregate by age, sex and socioeconomic position; measure pubertal stage and stigma	Include adolescent-reported outcomes and avoid BMI-only definitions of success.

Research priorities

The use of BMI also requires precision. BMI-for-age is appropriate for population surveillance but does not diagnose individual health status in isolation. Clinical studies should complement it with growth trajectory, body composition where appropriate, cardiometabolic markers, functional measures and adolescent-reported wellbeing. Most importantly, research should test whether non-stigmatizing environments improve both participation and health.

Discussion

The reviewed evidence positions obesity during puberty as a developmental and social-health issue rather than solely an anthropometric problem. The global increase is unequivocal: obesity prevalence among ages 5–19 quadrupled between 1990 and 2022. Yet the psychosocial burden is unevenly distributed and depends on gender norms, socioeconomic resources, pubertal timing, stigma exposure and access to supportive services. The puberty–obesity relationship should not be reduced to energy balance. Pubertal endocrine changes alter insulin sensitivity, appetite, sleep, body composition and social salience. At the same time, adolescents gain autonomy over food and activity within environments strongly shaped by family resources, transport, schools, advertising and digital media. WHO therefore emphasizes healthy food environments, physical activity, sleep, limits on harmful marketing and adolescent-responsive services (29).

The HBSC findings reveal two distinct gendered patterns. Boys showed higher measured overweight/obesity and higher activity participation, whereas girls more often perceived themselves as too fat. This apparent paradox is clinically important. It shows that body dissatisfaction is not a direct proxy for obesity and that girls may experience appearance pressure even at lower BMI. Boys may be under-recognized because larger body size can be culturally normalized or interpreted as strength. Gender-responsive care should avoid reinforcing either thinness ideals or muscularity pressures. The affluence gap supports a proportionate-universalist approach: universal prevention for all adolescents, with intensity and resources scaled to disadvantage. School meals, safe active transport, inclusive physical education and restrictions on marketing can modify exposure without singling out adolescents by body size. Clinical services should provide individualized assessment and treatment without using blame, humiliation or simplistic advice.

Conclusion

Obesity during puberty is associated with significant social and psychological risks, but these risks are neither uniform nor inevitable. WHO data document a fourfold increase in obesity prevalence among children and adolescents aged 5–19 between 1990 and 2022. During the same developmental period, rapid body change, peer evaluation and unequal access to protective environments can intensify vulnerability to stigma, bullying, body dissatisfaction, low self-esteem, impaired quality of life and depressive symptoms.

An effective response must reject the false choice between physical and mental health. Prevention and treatment should address metabolic risk while protecting dignity, belonging and psychological safety. Developmentally appropriate care is family-centred, gender-responsive, attentive to pubertal timing and socioeconomic context, and free from blame. Population progress will require coordinated policies, supportive schools and communities, adolescent-responsive healthcare and research that evaluates wellbeing as rigorously as body size.

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WELLNESS FOOD AND DRINKS: HEALTHY NUTRITION PROGRAMS FOR SCHOLARS

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Abstract

The increasing emphasis on healthy lifestyles has highlighted the importance of integrating wellness nutrition into educational environments to promote physical health, cognitive development, and long-term well-being among schoolchildren. This study examines the role of wellness food and healthy beverages in supporting comprehensive school nutrition programs that encourage balanced dietary habits and healthy lifestyle behaviors. A narrative review and conceptual analysis were conducted using scientific literature, international nutrition guidelines, and policy documents related to school nutrition, wellness promotion, and public health. The proposed framework emphasizes the consumption of nutrient-dense foods, including fruits, vegetables, whole grains, lean proteins, dairy products, and functional beverages, while reducing the intake of ultra-processed foods, added sugars, saturated fats, and sugar-sweetened drinks. The paper also discusses the contribution of healthy school meal programs to improved academic performance, concentration, physical development, and disease prevention. Wellness-oriented nutrition programs are presented as multidisciplinary interventions that combine healthy menu planning, nutrition education, sustainable food practices, and the promotion of healthy eating behaviors within educational institutions. The findings suggest that comprehensive school nutrition strategies should integrate evidence-based dietary recommendations, food safety standards, local and seasonal food products, and environmentally sustainable practices to enhance both student health and educational outcomes. Furthermore, collaboration among educators, nutrition specialists, healthcare professionals, families, and policymakers is essential for the successful implementation of effective nutrition programs. The proposed wellness nutrition model provides a practical framework for developing healthy school food environments that support lifelong healthy habits. Future research should evaluate the effectiveness of these programs using longitudinal studies and official national and European statistical data to assess their impact on health indicators, dietary behaviors, and educational achievement.

Keywords: *Wellness nutrition, healthy food, school nutrition, public health, health promotion, educational policy, sustainable nutrition.*

Introduction

Schools are important environments for implementing wellness programs (7, 9, 21). Healthy nutrition is fundamental for child development, educational success, and disease prevention. Current evidence supports diets rich in fruit, vegetables, whole grains, legumes, dairy products, and adequate hydration while limiting sugar and ultra-processed foods (13, 22). Nutrition during childhood and adolescence is a major determinant of physical growth, cognitive development, psychological well-being and long-term health (11, 12). School-age children require nutritionally balanced diets to support rapid biological development, learning capacity, immune function and participation in daily physical activity (4, 6, 16, 18). However, contemporary dietary patterns are increasingly characterised by high consumption of ultra-processed foods, energy-dense snacks

and sugar-sweetened beverages, together with insufficient intake of fruits, vegetables, whole grains and other nutrient-rich foods (1, 25). These patterns may contribute to overweight and obesity, micronutrient deficiencies, metabolic disturbances and the early development of noncommunicable diseases (26, 28). Educational institutions provide a strategic environment for addressing these challenges because children consume a substantial proportion of their daily food and beverages at school. Schools also influence nutritional knowledge, social norms and the development of food preferences (27, 30). Consequently, school nutrition should not be limited to the provision of meals. It should be understood as a comprehensive health-promoting system that integrates food quality, nutrition education, food safety, behavioural support and environmental sustainability (8, 10). When consistently implemented, such a system may improve dietary behaviour while contributing to academic concentration, school participation and overall well-being. Within this context, wellness nutrition represents an integrative approach that prioritises nutrient density, dietary balance, hydration and the formation of sustainable eating habits (14). Wellness-oriented school menus may include fruits, vegetables, whole grains, legumes, lean proteins, dairy products or appropriate alternatives, and beverages with limited or no added sugar (15). At the same time, they should restrict excessive amounts of added sugars, sodium, saturated fats and highly processed ingredients. Healthy beverages are particularly important because hydration supports physiological and cognitive functioning, whereas frequent consumption of sugar-sweetened drinks may substantially increase energy intake without providing adequate nutritional value (2). The effectiveness of school nutrition programmes depends on more than the nutritional composition of individual meals. Food availability, affordability, sensory acceptability, cultural relevance and the social conditions in which meals are consumed can influence student participation and dietary choices. Educational activities should therefore be connected with practical experiences such as food preparation, school gardens, menu planning and the interpretation of food labels (3). Local and seasonal products may further support dietary diversity, regional food systems and environmentally responsible consumption. Sustainability objectives should complement rather than compromise nutritional adequacy, food safety or equitable access (5). A multidisciplinary and whole-school approach is required to translate these principles into practice. Educators can integrate food literacy into the curriculum, nutrition professionals can develop evidence-based menus, healthcare specialists can support health monitoring, and families can reinforce healthy practices outside school (19). Policymakers and school administrators are responsible for establishing standards, allocating resources and creating regulatory environments that limit the marketing and availability of nutritionally poor products. Student participation is equally important because programmes designed without considering children's preferences and cultural backgrounds may experience low acceptance and limited effectiveness (20, 29). Despite growing interest in healthy school food environments, substantial differences remain in program design, implementation capacity and outcome evaluation. Short-term improvements in nutritional knowledge do not necessarily result in sustained behavioural or health changes. Socioeconomic inequalities may also affect access to healthy food and participation in school meal programmes. Rigorous assessment using national and European statistical data, standardised health indicators and longitudinal

Methods

Results

International Scientific Journal for Smart Innovations

by educational level illustrates the size of the target population participating in school-based nutrition programs by providing pupils with regular access to fresh fruit, vegetables, milk, and dairy products, together with nutrition education activities. (tab. 1).

Table 1. Distribution of pupils by educational level in Bulgaria, 2024/2025 school year

Educational level	Number of pupils	Percentage of all school pupils (%)
Primary education (Grades I–IV)	237,579	33.3
Lower secondary education (Grades V–VII)	178,692	25.0
Upper secondary education (Grades VIII–XII)	297,227	41.7
Total school pupils	713,498	100.0

Source: Adapted from the Bulgarian National Statistical Institute (NSI), *Education in the Republic of Bulgaria, School Year 2024/2025*.

The program supports the development of healthy dietary habits during childhood and complements school-based health promotion initiatives. The data demonstrate that primary and lower secondary education comprise the largest proportion of pupils, emphasizing the importance of implementing healthy nutrition interventions during the early stages of education. Table 2 presents the participation of pupils in school meal programmes. The data indicate that school meals represent an important component of the daily nutritional intake for a substantial proportion of students (tab.2).

Table 2. Participation of pupils in the Bulgarian School Fruit, Vegetables and Milk Scheme (2024/2025)

Indicator	Value
Schools participating	<i>Insert official number from 2024/2025 report</i>
Pupils covered	<i>Insert official number</i>
Distribution of fresh fruit and vegetables	Yes
Distribution of milk and dairy products	Yes
Nutrition education activities	Yes
Educational gardens and practical activities	Yes

Source: Ministry of Agriculture and Food of the Republic of Bulgaria. *School Fruit, Vegetables and Milk Scheme, Annual Report*

Through the combined provision of healthy foods and educational activities, the scheme contributes to improving nutrition knowledge, encouraging healthier food choices, and promoting lifelong healthy eating behaviours among Bulgarian schoolchildren. Participation rates differ across educational levels, suggesting variations in the accessibility of school food services. The European context is illustrated in Figure 1, which compares fruit and vegetable consumption among children across European countries. Table 2 demonstrates that the Bulgarian School Fruit, The data reveal considerable variation in dietary habits, with several countries reporting lower-than-recommended daily consumption of fresh fruit and vegetables. These findings underline the continuing need for nutrition education and policies promoting healthier food

choices. Vegetables and Milk Scheme constitute an important component of school-based nutrition programmes (fig.1)

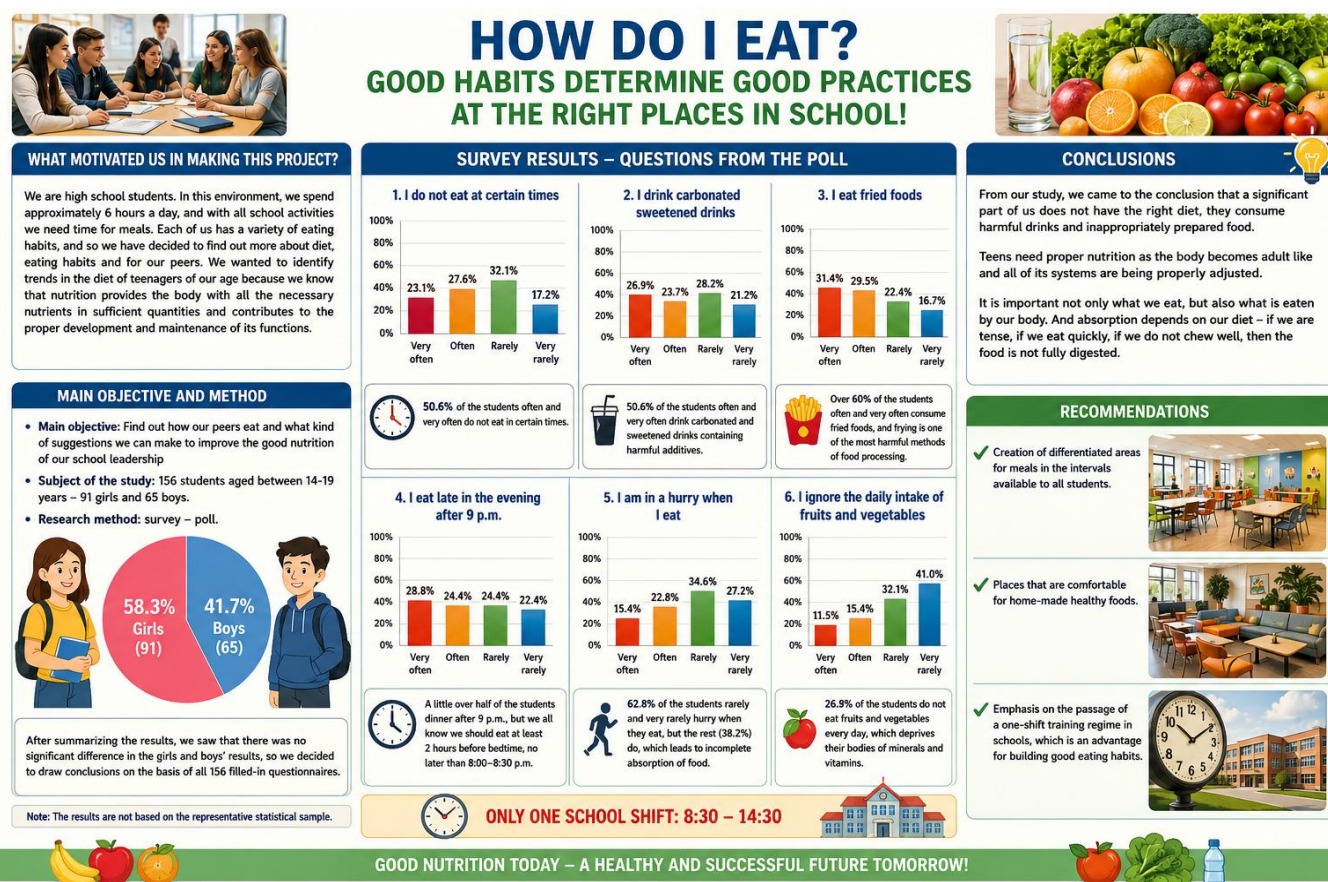


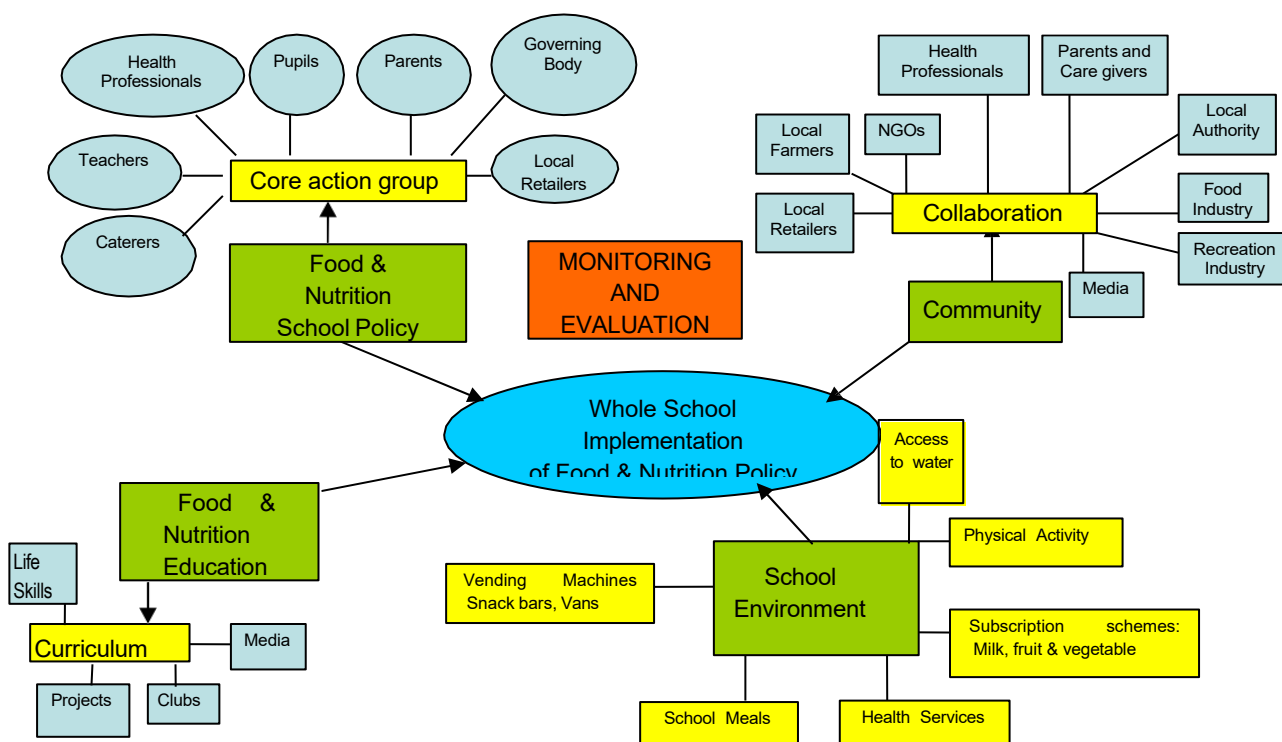
Figure 1. The European context which compares fruit and vegetable consumption among children. The health consequences of inadequate dietary habits are reflected in Table 3, which presents the prevalence of childhood overweight. Based on the healthy school menu principles implemented by Burgas Municipality,

Table 3. Frequency of Healthy Food Groups Included in School Menus (Burgas Municipality Healthy School Nutrition Programme)

Food group	Frequency in weekly menu
Fresh vegetables	Daily (5 days/week)
Fresh fruit	Daily (5 days/week)
Milk and dairy products	Daily (5 days/week)
Whole-grain bread and cereals	Daily (5 days/week)
Lean meat (turkey, rabbit, beef)	2–3 days/week
Fish	1–2 days/week
Legumes	1–2 days/week
Spinach and leafy vegetables	≥1 day/week
Fresh fruit smoothies / shakes	1–2 days/week
Water (main beverage)	Daily
Sugar-sweetened beverages	Not recommended

Source: Adapted from the Burgas Municipality Healthy School Nutrition Programme and school menu recommendations.

The menus emphasize frequent inclusion of fruits, vegetables, dairy products, whole grains, healthy beverages, and lean protein sources while reducing fried foods and refined bread. The program also specifies replacement of white bread with whole-grain bread, inclusion of smoothies and fresh fruit, weekly spinach, and greater use of turkey, rabbit, and beef as lean meats. Table 3 demonstrates that the Burgas healthy school nutrition programme prioritizes the regular inclusion of nutrient-dense food groups in weekly school menus. Fresh fruits, vegetables, dairy products, whole-grain foods, and water are provided daily, forming the foundation of healthy dietary intake. Lean protein sources, including turkey, rabbit, and beef, are offered several times per week, while fish and legumes contribute additional high-quality protein and essential micronutrients. Weekly inclusion of leafy vegetables, particularly spinach, together with fruit smoothies and fresh seasonal produce, supports adequate vitamin, mineral, and dietary fiber intake. The program also promotes healthier culinary practices by replacing refined bread with whole-grain alternatives and discouraging sugar-sweetened beverages. These menu characteristics are consistent with contemporary recommendations for school nutrition and wellness promotion and provide a balanced dietary pattern that supports children's growth, cognitive performance, and long-term health.



Source: Sustain, 2019

Figure. 2. Whole school implementation of a food and nutrition policy

To design and implement a food and nutrition school policy it is important to unite all relevant stakeholders. Efforts will be more effective when they are undertaken by an action group representative of the broader school community. Core action groups should consist of representatives of the school governors, teachers, parents, pupils, caterers, local retailers and health professionals. Pupils also need to be equally involved as stakeholders in the development

of policy and health based interventions. Children and young people should always be consulted on matters concerning the promotion of healthy eating as they are likely to better understand the factors acting as facilitators or barriers to success. Figure 2 shows the whole school implementation of a food and nutrition policy:

Discussion

Nutrition policy should extend beyond the delivery of theoretical information and address the broader institutional conditions that shape food-related decisions. A comprehensive approach may combine evidence-informed nutrition education, practical food-literacy activities, nutritionally balanced school meals, supportive physical environments and the active participation of families and local communities. Such integration may strengthen students' capacity to understand food labels, evaluate dietary information and make informed choices. It may also contribute to the prevention of obesity, micronutrient deficiencies and diet-related noncommunicable diseases. Nevertheless, interventions should avoid moralising language and excessive emphasis on body weight, as these approaches may reinforce weight stigma, body dissatisfaction and unhealthy eating behaviours.

The potential public health value of school-based nutrition policy lies in its capacity to reach diverse population groups during formative developmental periods. By reducing economic and environmental barriers to healthy food, educational policies may also help address nutrition-related inequalities. However, isolated educational activities are unlikely to produce sustained behavioural change when the surrounding food environment remains inconsistent with the messages communicated in the classroom. Effective policies therefore require coordination among education authorities, public health institutions, school administrators, healthcare professionals, families and food-service providers. The available evidence should be interpreted cautiously because intervention programmes vary considerably in their duration, content, theoretical foundation and outcome measures. Changes in nutritional knowledge do not necessarily translate into sustained dietary behaviour or improved clinical outcomes. Furthermore, differences in socioeconomic status, cultural background, food availability and institutional resources may influence both program implementation and effectiveness. Future intervention studies should employ longitudinal, cluster-randomised or well-designed quasi-experimental methodologies.

Research should assess dietary behaviour, food literacy, psychological well-being, anthropometric and metabolic indicators, academic outcomes, equity effects and implementation fidelity. Longer follow-up periods are needed to determine whether observed improvements persist beyond the intervention. Its effectiveness, however, depends on sustained institutional commitment and rigorous evaluation rather than short-term educational initiatives alone.

Conclusions

The integration of wellness-oriented nutrition into educational policy represents a potentially important strategy for promoting sustainable health behaviours across the life course. Educational institutions influence not only students' knowledge but also their daily dietary environments, social norms and access to healthy food. Wellness nutrition programs should become a strategic element of educational policy. Process and economic evaluations would further clarify feasibility, scalability and cost-effectiveness. Overall, embedding wellness nutrition within educational policy may generate long-term public health benefits when it is comprehensive, inclusive, culturally responsive and supported by healthier school food environments.

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SCIENTIFIC PROJECT PHASE 1

Successfully concluded the 5-year participation of the National Sports Academy in the Construction and Development of the Center for Excellence "Heritage BG."

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Sofia University St.St. Kliment Ohridski

Leading Scientific Partner:

National Sports Academy "V. Levski"

“Heritage BG” Centre of Excellence”



The project “Creation and development of “Heritage BG” Centre of Excellence” contributes to implementation of cohesion policies at a national and community level, enhancing the impact of investment in science and research, developing integrated research and innovation in various scientific fields. The main aim of this project proposal is to improve the research environment and research quality as well as the marketing of their outcome in the spheres of Component 4 “New technologies in creative and recreation industries” (procedure BG05M2OP001-1.001, OP SEIG).

General overview of the project >>>

- Activities aiming at creation of a new material base for research infrastructure allowing to plan much bigger and more complex projects.
- Activities aiming at modernising of already existing infrastructure, including transforming of national monuments of culture into an up to date research facilities.
- Activities aiming at providing a new top notch equipment for the needs of the project and enabling the researchers to take an active part in multidisciplinary and international projects of high science and material return.
- Activities aiming at creation of a viable and energetic network of research and institutions.

The Centre of Excellence “Heritage BG” (CoE “Heritage BG”, CoE) aims to enhance R&D capacity in ISIS priority areas by creating and maintaining a complex of new and distributed high-level research infrastructure.

The complex provides research in accordance with good standards and practices, including training young scientists by engaging in a tangible scientific and development process.

The research domain is multidisciplinary scope >>>

1. Humanities and Arts – Philology; History and Archeology; Philosophy; Religion and Theology; Theory of Arts; Art; Music and dance art; Theater and film art.

2. Social, business and legal sciences – Sociology, anthropology and cultural sciences; Psychology; Public communications and information sciences; Administration and Management; Economics; Tourism; Pedagogy of training in (...).
3. Natural Sciences, Mathematics and Informatics – Computer Science and Computer Science.
4. Engineering – Architecture, Construction and Surveying.

Target groups >>>

Researchers

Innovators

Teachers

PhD

students

Post-doctoral

students

Young

scientists

Postgraduate

students

Participants in scientific research

Main activities at national level >>>

Provision of newly built infrastructure complexes; Increasing the number of researchers working under improved conditions; Appointment of new researchers; Preparation of doctoral students, post-doctoral students and postgraduate students in the thematic areas of CoE in accordance with ISIS; Acquisition of intellectual property rights; Joint research projects between CoE and business.

Main activities at international level >>>

Participation in leading R&D of leading national and foreign researchers in joint teams, incl. young scientists; Participation in R&D of scientists from other countries and / or Bulgarian scientists who work in foreign scientific organizations; Training of Bulgarian scientists through transnational mobility and international cooperation; Specializations abroad for CoE researchers; Participation of CoE in international research networks; Building strategic partnerships.

The effect we are expected >>>

– Improving the environment for research, improving the quality of research, the acquisition of new technologies and new content for the creative and recreational industries, knowledge transfer, market realization of results.

– Inclusion in the European area of science and innovation in the field of cultural heritage, cultural and creative industries, cultural tourism through the exchange and collaboration of partners with different backgrounds.

Combining the scientific potential of partner organizations (scientific, academic, business-related), together with the potential of associate partners, through interdisciplinary teams for collaborative research, applied research, experimental development and innovation.

Discovering and promoting new and improved knowledge about the cultural and natural riches of Bulgaria through new technologies for selecting, processing, describing and providing free access to samples of Bulgarian heritage (in the form of text, audio, video, virtual reality products, etc.

Development of methodologies and standards for the evaluation of cultural heritage sites.

Realizing a new vision of making cultural heritage a real resource for the creative and recreational industries at EU level, including by developing marketing strategies for the creative industries and tourism.

The new infrastructure is based on the “knowledge triangle” – education, research, innovation. Provides advanced scientific equipment and scientific capacity as well as conditions for new competences and skills.

Supporting electronic infrastructure for shared remote access of researchers (working in their organization, in national or multinational scientific initiatives) to specialized scientific equipment, data, scientific products and additional targeted services.

Alternative opportunities for public access to knowledge, information and services through cloud technologies, Heritage BG specialized Data Center, integration web portal complemented by traditional but effective technologies for public communication (Educational TV, Internet).

National network of scientific and educational units for shared work and shared knowledge as an integral part of the pan-European research complex, providing similar services and conducting research at the same levels and quality, but geographically distinctive to serve a region.

International infrastructure for access by researchers from other countries to research and initiatives from different institutions.

New tangible and intellectual assets that will significantly improve and expand the systems of research, research, development, and innovation at national and European level.

NEW WELLNESS EVENTS

THE HISTORIC FIRST STUDENTS ADMITION FOR THE BACHELOR DEGREE PROGRAM



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Prof. Bistra Dimitrova, D. Sc. & the Scientific team of the national Sports Academy

BOOK FOR THE BACHELOR DEGREE NEW EUROPEAN PROFESSION

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OF A CENTER FOR EXCELLENCE "HERITAGE BG"

УЕЛНЕС КУЛТУРА

ИНДЕКСИ, ДЕСТИНАЦИИ И УСЛУГИ

**WELLNESS CULTURE,
INDEXES, DESTINATIONS AND SERVICES**

*Textbook for the new Option:
"Wellness & Spa Advisor"*

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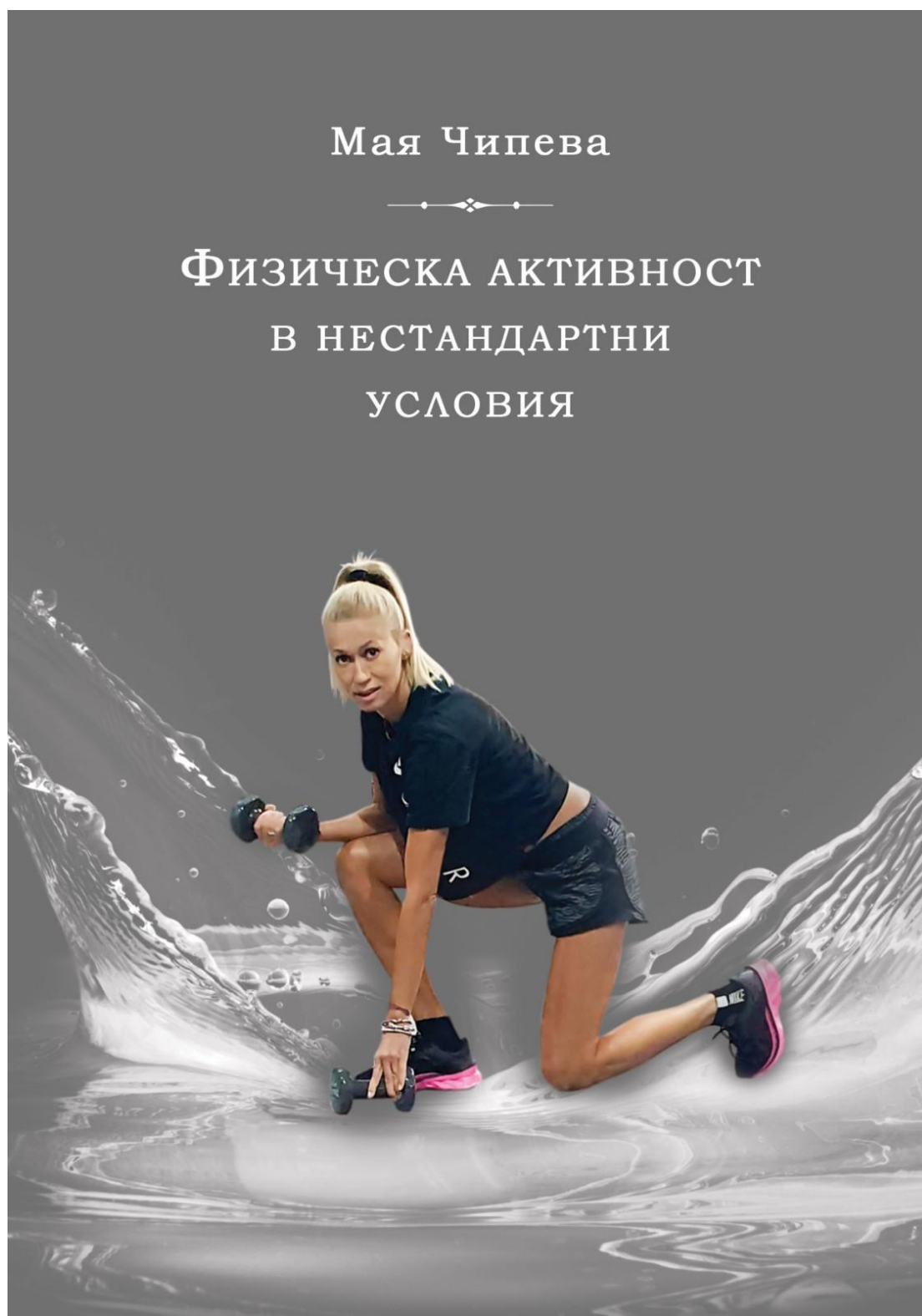
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