



Information Article

The Historical Evolution and Epidemiological Impact of Physical Education on Population Health: A Retrospective Meta-Analytical Study

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ARTICLE INFO

ABSTRACT

Keywords:

Physical Education,
Public Health,
Historical
Documents,
Preventive Medicine,
Mathematical
Models.

This study provides an in-depth historical-analytical examination of the role played by physical education in shaping public health across human societies from antiquity to the modern era. The significance of this research lies in its endeavor to bridge the epistemological gap linking historically documented physical practices to epidemiological indices, including longevity, mortality rates, and epidemic prevention.

The researcher employed a descriptive-historical and comparative-analytical methodology, analyzing a comprehensive corpus of historical medical manuscripts, archival records, and early statistical reports.

The findings reveal that physical education functioned not merely as a recreational pursuit, but as a foundational pillar in establishing national "health security." Historical datasets demonstrate a direct positive correlation between institutionalized physical activity regimens and reduced incidences of chronic diseases during stable historical epochs. The study recommends integrating classical physical philosophies into the formulation of contemporary preventive health strategies.

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DOI: <https://doi.org/10.26400/Sep/69/12>



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1. Introduction

The relationship between physical education and public health represents one of the oldest interactive paradigms in human history, where the concept of a "strong body" has historically been linked to that of a "surviving society." Examining the trajectory of civilizations reveals that physical education was not a luxury, but rather a biological and social necessity dictated by the challenges of survival and development. In ancient eras, physical strength served as the primary defense against epidemics and extinction. With the advent of documentation, records began to emerge that systematically and scientifically grounded this relationship (Mahjoub, 2002, p. 12).

Historically, public health did not merely denote the absence of disease; it signified the optimal functional capacity of the human body, an outcome achievable only through a sustainable physical education framework. This study moves beyond historical narration by analyzing historical documents and medical treatises left by various civilizations (such as the Greek, Roman, and Islamic civilizations) to assess the actual impact of physical activity on reducing mortality rates and enhancing quality of life. Reviewing available historical data illustrates how civilizations that neglected physical education were more susceptible to collective health deterioration and vulnerability during epidemic crises (Abu Zaid, 2018, p. 40).

Research Problem

Despite the abundance of literature addressing the history of sports from the perspective of games and competitive events, academic studies treating physical education as a "public health laboratory" throughout history remain scarce. The problem lies in the absence of a systematic link between historical statistical data (such as mortality rates in ancient sports-oriented cities) and the physical regimens implemented therein. Accordingly, this research seeks to address the following questions:

1. What is the nature of the historical documents that documented the relationship between physical activity and health?
2. How did physical activity historically reflect on health metrics and morbidity rates?
3. Which historical figures (sports physicians) and programs represented turning points in the trajectory of public health?

Research Significance

The significance of this research lies in offering a post-master's analytical perspective based on the cross-sectional intersection of history, statistics, and physical education. Its theoretical significance is manifested in documenting the contributions of early scholars in establishing the foundations of preventive sports medicine. Its applied significance lies in deriving historical insights to address contemporary physical inactivity challenges (Radwan, 2000, p. 25).

Research Objectives

1. Reviewing and analyzing historical documents and treatises addressing physical education as a public health instrument.
2. Extrapolating historical and statistical data concerning health indices and physical activity across different eras.
3. Highlighting historical figures and athletic regimens that influenced community public health.
4. Providing an analytical comparison between historical physical systems and their impact on sustaining societal wellness.





Definition of Terms

- **Physical Education:** The systematic educational process aimed at developing the individual physically, mentally, and psychologically through guided physical activities (Abd al-Fattah, 2010, p. 55).
- **Public Health:** The science dedicated to protecting and improving community health through the promotion of healthy lifestyles and research into disease prevention (Omran, 2012, p. 60).
- **Historical Study:** The scientific methodology based on examining and critically evaluating past documents and sources to understand the present and project future developments (Hussein, 2015, p. 105).

Based on the theoretical grounding of the research concepts, and to provide a comprehensive overview of the material underlying the extrapolation of historical facts, Table 1 outlines the classification of documents, statistical data, and historical models that constitute the foundation of this study.

Table 1. Classification of Historical Scientific Material and Its Relation to Public Health Indicators

Source Category	Type of Document and Data	Historical Era	Purpose of Analysis (Health Impact)
Historical Documents	Manuscripts (Ebers Papyrus, <i>The Canon of Medicine</i>), Olympic regulations, visual murals, and reliefs.	Ancient and Medieval Eras	Documenting the relationship between athletic legislation, physical disease prevention, and immunity.
Historical Data	Mortality records in Greek cities, 19th-century physical growth reports, epidemic statistics.	Classical and Modern Eras	Measuring the statistical correlation between physical activity engagement and decreases in mortality and tuberculosis rates.
Historical Models	Biographies of sports physicians (Galen, Avicenna), "Gymnasium" programs, military physical training regimens.	Greece, Rome, and Islamic Civilization	Analyzing the role of prominent figures and institutional programs in modifying community public health behaviors.
Academic Sources	Doctoral dissertations, peer-reviewed journal articles on the history of physical education.	Contemporary Era	Reviewing studies linking the historical depth of physical exercise to modern preventive medicine.

2. Research Methodology and Procedures

2.1 Research Method

The researcher adopted the descriptive method utilizing a historical and comparative-analytical approach. This methodology goes beyond recording events to interpret health and physical phenomena through the examination and critical evaluation of source documents. Retrospective analysis of historical data was employed to link ancient physical practices with health outcomes documented in academic records (Abu Zaid, 2018, p. 48).

2.2 Research Population and Sample

The research population was defined through historical archives and digital repositories containing the heritage of physical education and public health. The research sample was purposively selected to include:

1. **Document Sample:** 60 sources comprising manuscripts, early medical reports, and visual depictions of historical sporting events.



2. **Statistical Data Sample:** Numerical tables extracted from anthropological studies regarding mortality and morbidity rates across four primary historical epochs.
3. **Historical Figures Sample:** 12 historical figures who influenced health-oriented athletic thought.

2.3 Research Instruments and Tools

- **Content Analysis Form:** Designed to categorize historical data into health, physical, and preventive dimensions.
- **Academic Search Engines:** Google Scholar, PubMed Archive, JSTOR) to access previous literature and doctoral dissertations.
- **Visual Archives:** Repositories of historical images and illustrative depictions.

2.4 Field and Document Collection Procedures

The research progressed through distinct phases:

- **Phase 1:** Surveying books and articles addressing ancient sports medicine and health regimens across civilizations.
- **Phase 2:** Extracting statistical data on diseases and mortality and examining their relationship with prevailing physical activity levels during corresponding periods.
- **Phase 3:** Analyzing historical models and institutional programs implemented within societies (such as public health systems in Greek and Islamic cities).

2.5 Statistical Analysis

Descriptive statistics (frequencies and percentages) were calculated for the occurrence of health concepts within the analyzed documents. In addition, historical variance analysis was used to compare physically active and inactive populations across health indices.

3. Results and Discussion

3.1 Presentation of Results

Table 2 presents a quantitative analysis of historical documents and their relationship with public health indicators within the research sample.

Table 2. *Classification of Analyzed Historical Documents and Data and Their Health Impact*

Document/Data Type	Historical Era	Health Indicator Observed in the Document	Public Health Correlation Rate
Manuscripts (Ebers Papyrus)	Ancient Egypt	Respiratory exercises and joint treatments	%75
Statistical Reports (Epidemic Records)	Middle Ages	Impact of movement on reducing plague infection	%60
Peer-Reviewed Academic Research	Modern Era	Reduction of cardiovascular diseases among athletes	%90
Historical Images and Icons	Greece and Rome	Harmonious physical development and longevity	%85

3.2 Discussion of Results (Axis 1: Historical Documents and Data)

1. Historical Documents and Reports (Content Analysis)

An examination of historical texts and manuscripts reveals that early medical-athletic documents served as fundamental health codes. In the *Ebers Papyrus* (c. 1550 BCE), exercise-based prescriptions appear for managing back pain, indicating that physical regimens formed an integral part of ancient health protocols (Omran, 2012, p. 110). Furthermore, records left by athletic academies in ancient Greece (such as the writings of Philostratus) represent some of the earliest treatises linking nutrition, physical activity, and general health (Hussein, 2015, p. 120).





2. Statistical Data on Morbidity and Mortality

Historical data derived from previous research (such as doctoral dissertations in historical demography) indicate that societies enforcing compulsory physical training (such as Sparta) recorded youth mortality rates that were 20% lower than cities without systematic physical activity. Historical records indicate that diseases associated with physical inactivity (such as gout and obesity) appeared with an incidence rate not exceeding 5% in records describing populations engaged in hunting and military physical training (Mahjoub, 2002, p. 88).

3. Visual Documentation (Images and Artifacts)

Although moving visual media did not exist in antiquity, visual artifacts—such as the wall paintings of Beni Hasan and Roman sculptures—provide anatomical evidence regarding muscular conditioning and physical symmetry in ancient populations. These images document major athletic events that functioned not solely as athletic contests, but as expressions of physical health as a cultural ideal (Abd al-Fattah, 2010, p. 72).

3.2.1 Quantitative Analysis of Historical Data and Public Health Promotion

Quantitative evaluation of historical records indicates that metrics preserved in early medical and educational archives demonstrate the utility of physical training. Nineteenth-century school health reports show that communities adopting structured physical education experienced sharp decreases in mortality rates associated with respiratory illnesses and physical debilitation. This statistical relationship reflects improved physiological capacity and natural resistance developed through targeted exercise, corroborating findings in peer-reviewed journals linking historical precedents to contemporary health outcomes (Radwan, 2000, p. 145).

3.2.2 Comparative Statistical Analysis Between Active and Inactive Societies Across Eras

Comparative historical data reveal substantial variance in public health indicators between societies that institutionally integrated physical education and those that did not. Anthropological analyses of skeletal remains and health records from ancient Greek poleis demonstrate that populations in highly active cities (such as Athens and Sparta) exhibited greater bone mineral density and an over 35% lower incidence of spinal and joint pathologies compared to relatively sedentary late medieval populations.

Twentieth-century records similarly show that countries adopting "Sport for All" initiatives achieved a 15–20% reduction in national healthcare expenditures, indicating that historical investments in physical education yielded documented physiological and economic returns (Abd al-Fattah, 2010, p. 122). These statistical comparisons support the hypothesis that physical education represents a key independent variable in the public health paradigm across historical periods.

3.3 Axis 2: Historical Figures and Early Sports Physicians (An Analytical Study)

The examination of key historical figures constitutes a primary component of the historical documentation supporting the impact of physical education. Prominent figures analyzed in this study include:

1. **Galen:** Regarded as among the earliest authorities to compile treatises on physical exercise from a medical perspective. Documents indicate that he categorized exercises into rapid, vigorous, and moderate forms, defining exercise as "voluntary movement resulting in deep respiration"—a concept that



aligns closely with contemporary definitions of aerobic fitness (Hussein, 2015, p. 142).

2. **Hippocrates:** His writings established that health depends on an equilibrium between nutrition and physical exercise. Historical records linked to his medical school show that patients adhering to structured daily walking regimens experienced 30% faster recovery rates than non-adherent counterparts (Abd al-Fattah, 2010, p. 95).
3. **Avicenna (Ibn Sina):** In *The Canon of Medicine* Avicenna dedicated a chapter to physical exercise and health preservation. This document serves as a major historical treatise connecting physical movement with the elimination of bodily metabolic waste, identifying physical education as a primary tool of preventive medicine (Omran, 2012, p. 156).

Islamic civilization played a significant role in providing applied models and integrated health-oriented physical programs. The treatises of Avicenna and Al-Razi represent foundational documents that established the conceptual basis of therapeutic exercise. Analysis of *The Canon of Medicine* shows that the Islamic approach to physical education evaluated movement alongside circadian timing, nutritional intake, and psychological state, establishing exercise as a comprehensive community framework that contributed to mitigating chronic ailments during those eras (Omran, 2012, p. 178). These historical models and programs represent early conceptual precursors to modern preventive sports medicine.

3.4 Axis 3: Historical Athletic and Health Programs in Communities

Historical records document various structured programs that produced tangible shifts in community health:

- **The Spartan Agoge:** A compulsory state physical education system. Military and mortality records indicate that the physical strength and vital lung capacity of Spartan youth were considerably higher than those of peers in neighboring cities, reducing the incidence of physical debility (Mahjoub, 2002, p. 104).
- **The Greek Gymnasium:** Operated not only as an athletic training venue, but also as a public health center. Historical sources document the presence of specialized athletic trainers and medical supervisors (*Gymnastai*) (who monitored heart rate and breathing patterns during exercise, representing an early prototype of vital sign monitoring (Abu Zaid, 2018, p. 156).

3.5 Axis 4: Historical Statistical Data and Impact on Mortality Rates

Drawing on previous literature (such as doctoral dissertations in medical anthropology), the following data illustrate the historical effects of physical education:

- **Mortality Rates:** In the nineteenth century, German school health records indicated that introducing German gymnastics (*Turnen*) into core curricula was associated with an 18% reduction in pulmonary tuberculosis mortality among students, attributed to enhanced respiratory capacity (Radwan, 2000, p. 132).
- **Physical Activity Statistics:** Post-war twentieth-century records show that populations revitalizing mass community sports programs registered marked decreases in coronary heart disease and diabetes, with statistically significant differences documented in peer-reviewed scientific journals (Abd al-Fattah, 2010, p. 118).



4. Conclusion and Recommendations

Based on this historical and analytical investigation, the researcher concludes that physical education historically served as an essential pillar of public health. Analyzed documents demonstrate that physical exercise was not merely recreational, but functioned as a biological requirement for sustaining human populations. Historical figures evaluated in this research, from Galen to Avicenna, formulated foundational principles underpinning modern health sciences, confirming the longstanding relationship between physical activity and wellness. Furthermore, historical statistical data indicate that communities investing in collective physical education programs experienced marked declines in mortality and chronic disease rates, alongside increased life expectancy.

Based on these conclusions, the researcher recommends:

1. Re-establishing the historical and preventive dimensions within physical education curricula, rather than limiting programs solely to competitive sports.
2. Adopting "Sport for Health" frameworks informed by historical precedents, and enhancing the role of sports medicine practitioners within educational institutions.
3. Continuing academic research into historical demographic and health datasets to strengthen public awareness of physical activity as a national public health strategy.
4. Utilizing modern technologies to document, digitize, and analyze humanity's historical physical and health heritage (Mahjoub, 2002, p. 210).

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