

The Role of Physical Activity in Health Capital Optimization: Contributions of NGOs with a Focus on WHO

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Abstract

Background: Physical activity plays a vital role in health management by preventing and managing chronic diseases. Despite its known benefits, global participation levels remain low. Organizations like the World Health Organization (WHO) play a crucial role in promoting physical activity through partnerships and initiatives aimed at increasing awareness and engagement.

Objectives: This article aimed to (i) synthesize contemporary research on the benefits of physical activity, focusing on its impact on physical, mental, and social health, and (ii) explore the shift towards a holistic and collaborative approach in strengthening global public health.

Methods: The study was structured around two key areas. First, it examined how physical activity affected various dimensions of individual health. Second, it explored the implementation of innovative strategies involving new stakeholders to enhance public health efforts. To support these objectives, a literature search was conducted using databases such as PubMed, ScienceDirect, Scopus, Web of Science, and Google Scholar. Keywords included "physical activity," "well-being," "health," and "WHO."

Results: This article highlights the wide-ranging benefits of physical activity, including its positive effects on physical, mental, and social health. It emphasizes the importance of strategic partnerships and cross-sector collaborations in effectively promoting these benefits. Additionally, it explores new ways to involve different stakeholders in efforts to improve global public health through physical activity.

Conclusion: This study emphasizes the importance of physical activity in improving overall health and acknowledges the significant contributions of organizations like the WHO in promoting these benefits. To translate these findings into practice, collaboration between health organizations and local communities is crucial for developing effective physical activity programs. Policymakers should allocate resources towards initiatives that encourage active lifestyles. Furthermore, involving new partners, including educational institutions and businesses, can enhance the impact of these efforts on public health outcomes.

Keywords: Chronic Disease Prevention, Exercise, Global Health, Health Policy, Health Promotion, NCD, Public Health, Social Health.

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1. Introduction

The rise of sedentary behaviors worldwide, driven by technological advancements and globalization, has led to a significant increase in chronic diseases such as diabetes and cardiovascular issues (1). These changes present a growing challenge: balancing societal progress with the preservation of public health. Health organizations, both national and international, advocate for physical activity as a crucial

intervention to mitigate the adverse effects of modernization on public health (2).

Physical activity is a vital component of public health, with its benefits extending to physical, mental, and social well-being (3). However, despite widespread recognition of these benefits by organizations such as the World Health Organization (WHO), global levels of physical activity remain insufficient (2). This gap emphasizes the need to understand the barriers to implementing effective physical

activity programs and to explore strategies to promote active lifestyles on a global scale (4).

Health capital, defined as the collective physical, mental, and social resources contributing to an individual's well-being, is significantly influenced by physical activity (5, 6). Engaging in regular physical activity helps prevent chronic diseases, improves mental health, and fosters a balanced lifestyle. Beyond prevention, physical activity holds therapeutic potential, as seen in practices like prescribing tailored physical activity for specific medical conditions (7). The WHO emphasizes the importance of regular physical activity in preventing and managing non-communicable diseases (NCDs), including heart disease, stroke, diabetes, and various cancers (2). It also contributes to maintaining healthy body weight and enhancing mental health and overall quality of life (8).

Despite these well-documented benefits, one in four adults and three out of four adolescents globally do not meet the WHO's recommended levels of physical activity. Factors such as age, gender, culture, and economic status play significant roles in influencing physical activity levels (9). To address this global issue, the WHO has initiated collaborative efforts with international organizations, including the International Olympic Committee (IOC), the United Nations (UN), and the Fédération Internationale de Football Association (FIFA) (10). These partnerships aim to promote a culture of physical activity and address public health concerns, such as mental health awareness and the importance of regular health screenings and vaccinations.

The global recognition of physical activity's benefits led to numerous initiatives aimed at encouraging more active lifestyles. However, despite these efforts, significant challenges remained in fully understanding and addressing the factors that hindered widespread adoption. While existing studies provided valuable insights into the individual benefits of physical activity, they often fell short in exploring its broader impact on overall well-being, including mental and social health. Additionally, there was a lack of comprehensive research on the barriers that prevented effective implementation of physical activity programs across different populations and settings. Furthermore, the potential role of emerging stakeholders, such as educational and corporate sectors, in promoting physical activity and enhancing public health had yet to be fully explored.

This study aimed to fill these gaps by synthesizing contemporary research on the multifaceted benefits of physical activity and by examining the shift towards a more

holistic and collaborative approach in strengthening global public health. Specifically, the study (i) synthesized contemporary research on the benefits of physical activity, focusing on its impact on physical, mental, and social health, and (ii) explored the shift towards a holistic and collaborative approach in strengthening global public health.

2. Materials and Methods

This paper is based on an overview of peer-reviewed articles to explore the relationship between physical activity, public health, and health capital management. We consulted databases such as PubMed, ScienceDirect, Scopus, Web of Science, and Google Scholar, using keywords like "physical activity," "well-being," "health capital," and "WHO." Only peer-reviewed articles were selected for inclusion.

The paper is structured into two main parts. The first part examines how physical activity contributes to health capital management, focusing on physical health, mental health, and social well-being. The second part discusses health management through the involvement of organizations like the WHO, ministries of health, and international sports bodies such as FIFA and the IOC. This article aims to offer perspectives on promoting health, preventing disease, and improving global well-being, considering the connections between physical activity, modern society, and public health.

3. Physical Activity's Role in Health Capital Management

Physical activity is essential for human health and well-being (5-10). The concept of 'health capital' encompasses physical, mental, and social resources that contribute to an individual's vitality and overall well-being (5-7). This extends beyond the absence of disease, representing optimal quality of life and balance across various health aspects. Physical activity serves as a key element in developing and managing this health capital (5-7). This section explores how different forms of physical activity act as catalysts for preserving and enhancing health capital, positively influencing physical, mental, and social health.

3.1. *Physical Activity as a Tool for Preserving Physical Health*

Physical activity has long been recognized as an effective means of maintaining physical health. It offers numerous benefits, from chronic disease prevention to improved functional capacities.

3.1.1. Cardiovascular Disease Risk and Prevention

Cardiovascular diseases, including coronary heart disease and hypertension, are leading causes of morbidity and mortality worldwide (9). Their incidence is increasing globally, particularly in developing countries (10), due to less advanced prevention, diagnosis, and management compared to developed nations (11). The risk of developing cardiovascular disease depends on various factors, including individual characteristics, socioeconomic factors, and environmental conditions. Baudin et al. (11) identified

several risk factors for cardiovascular diseases (Table 1), noting a positive correlation between age and cardiovascular diseases. Women are generally less susceptible to cardiovascular disease than men due to estrogen's protective effects. However, this gender difference diminishes or disappears after menopause. A family history of cardiovascular diseases indicates genetic predisposition. Other risk factors, combining physiological, physical, and biological characteristics, can be partially controlled (Table 1).

Table 1. Risk Factors for Cardiovascular Diseases according to Baudin et al. (11)

<i>Risk factors multiplying the risk of coronary accident by more than two times"</i>
Age
>50 years in men, >60 years in women
Family history of early cardiovascular accidents
-MI or sudden death < 55 years in the father (or male first-degree relative)
-MI or sudden death < 65 years in the mother (or female first-degree relative)
AVC <45 years
Smoking (current or quit within the last three months)
Diabetes (treated or untreated)
Dyslipidemia
Cholesterol level >1.3g/l (3.3 mmol/l)
LDL cholesterol level >1.6g/l (4.1 mmol/l)
HDL cholesterol < 0.4g/L (1 mmol/L)
Severe High Blood Pressure

AVC: Age at first Vaginal Childbirth under 45 years, **HDL:** High-Density Lipoprotein, **LDL:** Low-Density Lipoprotein, **MI:** Myocardial Infarction

Numerous scientific studies have established the benefits of physical activity in preventing these diseases (12). Regular physical activity strengthens the cardiovascular system. Moderate-intensity activities (e.g., 30 minutes of daily walking) or high-intensity activities (e.g., sports or serious physical training for at least 3 hours per week) stimulate the heart and blood vessels, promoting better circulation and reducing the risk of atherosclerotic plaque formation. Regular exercise also helps lower blood pressure, improve lipid profiles, and maintain a healthy body weight, all contributing to cardiovascular health. Jolliffe et al. (13) reported that physical activity leads to a 27% reduction in all-cause mortality and a 31% reduction in mortality from myocardial infarction among patients with coronary heart disease. For heart failure patients, it improves maximal oxygen consumption (VO₂ max), exercise endurance, and performance in the six-minute walk test (14).

3.1.2. Musculoskeletal System Strengthening

The musculoskeletal system is crucial for mobility, stability, and overall functional capacity (15, 16). Regular physical activity plays a vital role in strengthening muscles, bones, joints, and tendons (15, 16). Resistance or strength training exercises stimulate muscle tissue growth and repair, maintaining muscle strength and flexibility. Exercise also stimulates bone formation, preventing osteoporosis and age-related fractures. In children and adolescents, physical activity positively affects peak bone mass. Regular training programs contribute to modest gains in bone mineral content, reducing the risk of fractures and bone fragility associated with osteoporosis (15, 16). Cotes (16) noted that engaging in physical activity from adolescence to adulthood helps maintain bone mass, protecting against osteoporotic fractures. For older individuals, especially menopausal women, impact physical activity increases bone mineral

density in the spine, femoral neck, and trochanter, reducing fracture incidence.

For individuals with musculoskeletal disorders such as osteoarthritis, rheumatoid arthritis, juvenile idiopathic arthritis, or ankylosing spondylitis, appropriate exercises like aerobic and lower limb muscle strengthening can alleviate pain (17). Regardless of age, regular physical activity positively impacts the musculoskeletal system, increasing functional capacity and muscle mass, decreasing fat mass, reducing osteoporosis risk, and lowering the risk of falls and fractures (16).

3.1.3. *Body Weight Management and Obesity Prevention*

Obesity is a growing global public health concern, linked to increased risk of many chronic diseases, including type 2 diabetes, cardiovascular diseases, and certain cancers. Its association with sedentary behavior is well-established (18). Sedentary behavior refers to any waking period with energy expenditure equal to or less than 1.5 MET while sitting, reclining, or lying down, including activities like sitting with little movement and watching television (19).

A study by Ragaieg et al. (20) among 9-11 year-old students found that time spent on video games and computer use significantly influences children's weight. Overweight frequency was higher among those who played video games or used computers for more than 2 hours on rest days and one hour per day on school days. The study also noted higher overweight frequency among children consuming more than two snacks daily.

Obesity has been classified as a global epidemic by the WHO since 1997 (21) and has become a major public health issue (22). Its consequences affect health, social life, and the economy. Many countries are mobilizing healthcare services to address obesity-related diseases, resulting in substantial costs for state budgets. This situation calls for addressing the causes of obesity rather than just its consequences, with a focus on implementing effective prevention strategies, especially among children and adolescents (23).

Regular physical activity is widely recommended for its health benefits (24). When combined with a balanced diet, it can create a calorie deficit, promoting weight loss in overweight or obese individuals. Regular exercise helps maintain body weight within healthy limits by promoting energy expenditure and regulating appetite.

Regarding the therapeutic aspect of physical activity, it has been shown that in patients with type 2 diabetes, physical activity improves maximal oxygen consumption

(VO₂ max), reduces glycated hemoglobin, and lowers LDL cholesterol (25). Thomas et al. (26) supported this, stating that exercise improves glycemic control, even without weight loss.

3.1.4. *Quality of Life and Autonomy Improvement*

Regular physical activity enhances individuals' quality of life beyond disease prevention. By strengthening musculoskeletal and cardiovascular functions, exercise helps maintain good mobility, independence, and autonomy as we age. Lack of physical activity increases the risk of dependence and loss of autonomy. It's important to note that physical dependence doesn't necessarily imply mental or social dependence. Research shows that physically active individuals often have better endurance and greater ability to perform daily activities, preserving their overall quality of life (25). Older adults, while representing the least physically active population segment, are also the fastest-growing demographic (26).

Blain et al. (27) report that physical activity has preventive effects in older adults, delaying dependence. They indicate that minimal aerobic capacities (estimated at 13-14 ml/kg/min) are needed for independent living, and an increase in maximum oxygen consumption (by about 3-4 ml/kg/min) could delay entry into dependence by 6 to 7 years (27). Given these benefits, encouraging older adults to engage more in physical activities is crucial.

To summarise, physical activity is a vital tool for maintaining physical health, offering benefits ranging from cardiovascular disease prevention to enhanced quality of life (11). Regular exercise strengthens the cardiovascular and musculoskeletal systems, helps maintain a healthy body weight, and preserves autonomy and independence. Healthcare professionals, policymakers, and society should promote physical activity to enable everyone to benefit from its positive effects on physical health and lead fulfilling, active lives. Beyond physical health, physical activity also significantly impacts mental and psychosocial well-being.

3.2. *The Role of Physical Activity as a Tool for Safeguarding Mental Health*

Mental health is crucial for individual well-being. The World Health Organization ranks mental disorders second in morbidity cost, just after heart diseases (28). Mental health problems often worsen due to human rights violations and discrimination. Various factors influence mental health, and with the increasing prevalence of mental disorders and stress

in modern society, it's important to find ways to maintain and improve mental health. Physical activity has emerged as an effective tool for this purpose. This section examines how physical activity positively affects mental health, focusing on stress reduction, mood enhancement, anxiety management, and depression prevention.

3.2.1. *Stress Reduction*

Many people experience daily stress, which can harm mental health. Regular physical activity helps alleviate stress. During exercise, the body releases endorphins, natural pain-relieving hormones that create a sense of well-being. Exercise also reduces cortisol levels, a stress hormone, promoting calmness and relaxation. Boudet (29) noted that regular physical activity provides psychological protection against stress, offering a chance to step back from problems and enjoy personal time.

Crews and Lander (30) analyzed 34 studies comparing active individuals to less active ones. They found that aerobically fit subjects showed reduced responses to psychosocial stressors, such as lower heart rate, blood pressure, sweating, and body heat, compared to the control group. Plante and Rodin (31) observed that individuals with good physical fitness have less intense stress responses and recover more quickly from stressful situations. Brown et al. (32) reviewed about twenty studies on the relationship between occupational stress and physical activity. They discovered that people who reported higher levels of physical activity were less prone to anxiety, burnout risk, and absenteeism, and were more productive.

3.2.2. *Mood Enhancement*

Mood relates to the presence or absence of anxious and depressive symptoms in individuals. Physical exercise is often called a "mood enhancer" because it positively affects emotional state. Research shows that regular physical activity improves mood, decreases irritability, and increases feelings of happiness (31, 33). This improvement in depressive and anxious symptoms occurs in both mentally healthy individuals (34) and those with psychiatric disorders (35).

3.2.3. *Anxiety Management*

Many studies support the benefits of physical activity for anxiety and depression (36). Anxiety is a common mental health disorder that can affect daily functioning and quality

of life. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM), about 4% of the general population experiences anxiety (37). Symptoms usually start during adolescence and are more common in females.

Physical activity effectively manages anxiety. Petruzzello et al. (37) conducted a meta-analysis on the anxiety-reducing effects of acute and chronic exercise. They found that physical activity had minimal to moderate effects on "trait" and "state" anxiety. Several mechanisms explain why exercise reduces anxiety. During exercise, attention focuses on the activity itself, which can distract from anxious thoughts. Exercise also triggers the release of brain chemicals that calm the nervous system, helping to reduce anxiety symptoms (37).

3.2.4. *Prevention of Depression*

Depression is a serious mental disorder affecting an increasing number of people worldwide. It's characterized by a depressed mood and/or lack of motivation. Like anxiety disorders, depression is more common in women (5-9% in women and 2-3% in men) (37).

Many scientific studies have explored the links between physical activity and depression in the general population. Most epidemiological, experimental, and meta-analytical research confirms that physical activity positively affects depressive symptoms (28, 33, 37). These studies also show that physical activity can help prevent depression.

Exercise stimulates endorphin production and improves mood regulation, which can help prevent depressive episodes. It can also boost self-confidence and self-esteem, positively impacting overall mental health. A study of sedentary individuals showed an increase in depressive symptoms compared to those who engaged in moderate or intense physical activity (38).

3.3. *The Role of Physical Activity as a Safeguard for Social Well-being*

Social well-being is a crucial component of overall health, alongside physical and mental aspects. It includes the quality of social relationships, inclusion, and satisfaction in community interactions. Physical activity serves as an effective tool for maintaining social well-being (39), enhancing social cohesion, reinforcing community bonds, promoting inclusion, and improving quality of life.

3.3.1. *Social Cohesion and Community Bond Strengthening*

Physical activity creates opportunities for people to come together through shared interests (40). Team sports, group exercise classes, and outdoor activities facilitate social gatherings and positive interactions. Participants in sports and physical activities often form stronger connections and friendships, which contribute to a sense of community belonging.

3.3.2. *Promotion of Social Inclusion*

Physical activity enables individuals from diverse backgrounds to engage in common pursuits, promoting social inclusion. It creates an environment where people can interact, cooperate, and learn from one another, regardless of their differences (40). Examples include adapted sports clubs for individuals with disabilities, fitness programs catering to various ages and abilities, and community initiatives encouraging broad participation. These activities help reduce social barriers and facilitate inclusion (40).

3.3.3. *Reduction of Social Isolation*

In modern societies, social isolation is an increasing concern with negative impacts on mental health and well-being. Group physical activities encourage collaboration, cooperation, mutual respect, and teamwork, helping individuals develop essential social skills (40). These activities provide opportunities to combat isolation through social interactions (40). Regular participants in group physical activities are less likely to experience loneliness and isolation, as they engage with others who share similar interests (28, 40).

3.3.4. *Improvement of Quality of Life*

Physical activity significantly contributes to enhancing individuals' quality of life. It promotes positive social relationships and strengthens community bonds, creating a supportive and rewarding social environment. Research indicates that socially active individuals engaged in physical activities generally experience better mental health, increased life satisfaction, and a more positive perception of their overall well-being (41, 42).

Physical activity plays a vital role in safeguarding social well-being. Through its promotion of social cohesion, strengthening of community ties, encouragement of inclusion, and reduction of social isolation, physical activity

contributes to the creation of more fulfilling and supportive societies. It is essential for policymakers, healthcare professionals, and society to recognize the importance of physical activity in improving social well-being. Encouraging participation in collective and inclusive physical activities can lead to environments that support positive social interactions, strong relationships, and overall enhancement of social well-being for all individuals.

4. **Perspectives on the involvement of international health and sports organizations in aiding public health**

The World Health Organization (WHO) actively promotes physical activity to prevent noncommunicable diseases. A WHO report (43) highlighted that 56 million people worldwide died from diseases like cardiovascular conditions, cancers, and chronic respiratory illnesses. Sedentary behavior significantly affects health, diet, and the environment. Studies indicate that regular physical activity helps prevent and treat noncommunicable diseases such as heart problems, strokes, diabetes, and certain cancers (9). It also combats hypertension, overweight, and obesity, while enhancing mental health and life quality (9).

In 2019, the WHO launched "More Active People for a Healthier World," a global action plan for 2018-2030 (44). This initiative, developed through wide-ranging consultations, involves governments, various sectors, and private entities (44). It emphasizes physical activity as a tool against noncommunicable diseases by showcasing its benefits.

The WHO observes slow progress in global physical activity, primarily due to limited awareness and investment. It suggests specific activity levels for different age groups (5-17 years, 18-64 years, and 65+ years), recommending over 60 minutes of activity at least 3 times weekly for health benefits.

This guidance includes individuals with illnesses, who are encouraged to participate in adapted physical activities based on their condition. Collaboration between healthcare providers and physical activity specialists is advised. This approach expands health management beyond traditional medical settings.

The WHO is establishing partnerships with organizations like UNESCO, FIFA, and the IOC to broaden its reach. This strategy aims to create effective collaborations for promoting physical activity's health benefits. The WHO is also exploring sponsorship opportunities with sports bodies and prominent figures. These partnerships seek to improve information dissemination. Using sports and influential

personalities, the WHO aims to effectively communicate the advantages of physical activity, inspiring diverse audiences to adopt active lifestyles. Collaborations between the WHO and sports organizations offer a fresh approach to addressing challenges posed by sedentary behavior and noncommunicable diseases. These alliances enable the WHO to reach varied audiences through sports' global appeal. Major events like the FIFA World Cup and Olympics provide platforms to convey the importance of physical activity to millions. These partnerships blend the WHO's medical knowledge with sports organizations' enthusiasm and mobilization ability to educate the public about sedentary lifestyle risks and promote active living. They also support physical activity programs in schools, communities, and sports institutions. The WHO's strategic alliances with sports bodies represent a collaborative approach to global health challenges. Using sports to encourage active, healthy living, these partnerships amplify the WHO's message across diverse audiences. This cooperation between medical and sports sectors offers a promising avenue for long-term improvements in global public health.

5. Addressing Challenges in Physical Activity Promotion: Recommendations for Inclusive and Effective Strategies

Addressing Challenges in Physical Activity Promotion: Recommendations for Inclusive and Effective Strategies Physical activity offers numerous social benefits, including improved social cohesion and reduced isolation. However, these advantages are not universally accessible. Social norms, stigma, and physical barriers can exclude certain individuals from group activities. A more inclusive approach is needed, one that accounts for diverse physical abilities, interests, and needs. The World Health Organization (WHO) has been at the forefront of promoting physical activity to combat noncommunicable diseases. Despite their efforts, global progress in increasing activity levels remains slow, primarily due to limited awareness and insufficient investment.

While the WHO provides age-specific physical activity guidelines, implementing these recommendations presents significant challenges. Innovative approaches, such as France's "sport on prescription" program, show potential but require extensive collaboration between healthcare providers and physical activity specialists. This represents a notable shift from traditional healthcare models.

To address these issues, we propose the following recommendations for policymakers, healthcare

professionals, and non-governmental organizations: (i) invest in accessible sports infrastructure, focusing on disadvantaged urban and rural areas; (ii) create affordable physical activity programs through subsidies or reduced fees; (iii) develop culturally tailored awareness campaigns that highlight the benefits of physical activity; (iv) integrate physical activity considerations into urban planning, including green spaces and safe cycling and walking paths; and (v) involve local communities in planning and implementing physical activity programs to ensure relevance and acceptability.

Implementing these recommendations can help reduce barriers to physical activity and encourage active lifestyles across diverse social, cultural, and geographic contexts. This approach recognizes the complexities of promoting physical activity and aims to create more equitable and effective strategies for improving public health through exercise.

By adopting these measures, we can work towards a more inclusive and active society, where the benefits of physical activity are accessible to all, regardless of their background or circumstances. This holistic approach has the potential to significantly impact public health outcomes and contribute to the global effort to reduce noncommunicable diseases.

6. Conclusion

This article has emphasized the critical role of physical activity in managing health capital, particularly in our increasingly sedentary society where noncommunicable diseases are prevalent. We examined the engagement of non-governmental organizations, especially the WHO, in promoting physical activity through cross-sector collaborations and strategic partnerships. The WHO's multidimensional approach, involving various stakeholders, signals a shift towards a more holistic and collaborative public health management strategy. As sedentary lifestyles and noncommunicable diseases continue to pose challenges, physical activity emerges as a collective responsibility rather than just an individual choice. The partnerships between non-governmental entities and other stakeholders offer a promising avenue for global dissemination of this vital message, uniting medical and sports expertise to shape a healthier future. Moving forward, it is crucial to develop inclusive, accessible physical activity initiatives and to evaluate their long-term impact, with the ultimate goal of integrating regular physical activity into daily life for improved public health outcomes and enhanced quality of life for all.

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Youssef BALLAH YOUSSEUF: conception and design. Youssef BALLAH YOUSSEUF: analysis and interpretation of the data. Youssef BALLAH YOUSSEUF: drafted the article. Mohamed ALI ARAS: critically revising the manuscript for intellectual content. Youssef BALLAH YOUSSEUF & Mohamed ALI ARAS: visualizations. All the authors gave their final approval to the version that will be published.

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