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Physical Activity as a Key Determinant of Health-Related Quality of Life: A Narrative Review

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Abstract

Background. Health-related quality of life (HRQoL) is an important indicator of physical, psychological and social well-being. Regular physical activity is widely recognized as a modifiable factor supporting health promotion, disease prevention and functional independence.

Aim. The aim of this narrative review was to summarize current evidence regarding the relationship between physical activity and HRQoL across different population groups.

Materials and Methods. A narrative review was conducted using literature identified in PubMed, Scopus and Web of Science. The review included international guidelines, systematic reviews, meta-analyses, umbrella reviews and selected original studies published mainly between 2020 and 2025, with earlier landmark publications included for context.

Results. The available evidence indicates that physical activity is consistently associated with better HRQoL in children, adolescents, adults, older adults and individuals with chronic diseases. The most frequently reported benefits include improved physical functioning, mental well-being, social participation and self-rated health. Recent studies also emphasize the role of sedentary behaviour and 24-hour movement behaviours.

Conclusions. Physical activity is an important determinant of HRQoL throughout the lifespan. Promoting regular physical activity and reducing sedentary behaviour should remain key priorities in public health, prevention and rehabilitation.

Keywords: physical activity; health-related quality of life; exercise; sedentary behaviour; public health; narrative review

1. Introduction

Health-related quality of life (HRQoL) has become an important outcome in public health, rehabilitation, clinical practice and sports sciences. It reflects not only the absence of disease, but also physical functioning, psychological well-being, social participation and perceived health status. In the context of population ageing, increasing prevalence of chronic non-communicable diseases and widespread physical inactivity, improving HRQoL is now considered an important goal of health promotion strategies.

Physical activity is one of the most accessible and effective modifiable behaviours influencing health. The World Health Organization recommends regular aerobic and muscle-strengthening activity for adults, daily moderate-to-vigorous physical activity for children and adolescents, and additional balance and functional exercises for older adults [1,2]. These recommendations also emphasize the importance of reducing sedentary behaviour, as prolonged sitting is increasingly recognized as an independent health risk factor [1,2].

The benefits of physical activity extend beyond disease prevention. Regular exercise improves cardiovascular fitness, muscular strength, metabolic health and functional capacity, but it also supports mental health, sleep quality, self-esteem and social functioning [3,4]. For this reason, physical activity is increasingly analysed not only as a preventive factor, but also as a determinant of quality of life.

Previous systematic reviews have shown a generally positive association between physical activity and HRQoL in different populations [5,6]. More recent evidence, including umbrella reviews and systematic reviews published after the 2020 WHO guidelines, confirms that regular physical activity improves physical and mental components of HRQoL, particularly when combined with reduced sedentary behaviour [7,8]. The 24-hour movement paradigm has further expanded this perspective by considering physical activity, sedentary behaviour and sleep as interrelated behaviours influencing health outcomes [9].

Although many studies have examined physical activity and HRQoL, existing reviews often focus on selected age groups or specific clinical populations. An updated narrative synthesis across the lifespan may therefore provide a broader understanding of how physical activity contributes to quality of life in different population groups.

The aim of this narrative review is to summarize and critically discuss current evidence regarding the association between physical activity and health-related quality of life in children and adolescents, adults, older adults and individuals with chronic diseases. The review also considers sedentary behaviour and 24-hour movement behaviours as emerging factors influencing HRQoL.

2. Materials and Methods

This study was conducted as a narrative review of the scientific literature concerning physical activity and health-related quality of life. Publications were identified through electronic searches of PubMed, Scopus and Web of Science. Additional sources were obtained by screening reference lists of relevant review articles and international guidelines.

The search included English-language publications from 2006 to 2025, with particular emphasis on studies published after the release of the World Health Organization Guidelines on Physical Activity and Sedentary Behaviour in 2020. The following keywords and combinations were used: physical activity, exercise, health-related quality of life, HRQoL, quality of life, sedentary behaviour, mental health, children, adolescents, older adults and chronic disease.

Priority was given to international guidelines, systematic reviews, umbrella reviews, meta-analyses and high-quality original studies. Conference abstracts, editorials, letters to the editor, studies focused exclusively on elite athletes and publications without full-text availability were excluded.

The selected literature was analysed qualitatively. Particular attention was given to study population, type of physical activity, assessment of HRQoL and consistency of reported findings. The evidence was synthesized narratively and organized according to major population groups.

3. Results

3.1. Physical Activity as a Determinant of Health-Related Quality of Life

Current evidence consistently identifies physical activity as one of the strongest modifiable determinants of health-related quality of life (HRQoL). Regardless of age, sex or health status, individuals who engage in regular physical activity generally report better physical functioning, psychological well-being, social participation and overall health perception than inactive individuals. These findings have been confirmed in international guidelines as well as numerous systematic reviews and umbrella reviews published over the last two decades.

The positive association between physical activity and HRQoL is explained by several complementary mechanisms. Physiologically, regular exercise improves cardiovascular fitness, muscular strength, body composition and metabolic health, leading to greater functional capacity and reduced risk of chronic diseases. At the same time, physical activity contributes to improved psychological well-being by reducing symptoms of anxiety and depression, enhancing self-esteem and supporting cognitive performance. These adaptations translate into better self-perceived health and greater satisfaction with daily functioning.

Recent evidence also highlights the importance of movement behaviours beyond structured exercise. Sedentary behaviour has emerged as an independent determinant of health, with prolonged sitting being associated with poorer physical and mental health outcomes even among individuals who achieve recommended levels of physical activity. Consequently, contemporary public health recommendations emphasize both increasing physical activity and reducing sedentary time.

Another important development is the adoption of the 24-hour movement behaviour framework. Rather than evaluating physical activity, sedentary behaviour and sleep separately, this approach considers them as interconnected components of daily behaviour that collectively influence health. Individuals meeting recommendations for all three behaviours consistently demonstrate higher HRQoL than those meeting only one or two recommendations.

Overall, the reviewed literature demonstrates that regular physical activity positively affects multiple dimensions of HRQoL. Although the magnitude of these benefits varies according to age, baseline health status and exercise characteristics, the direction of the association remains remarkably consistent across different populations.

3.2. Physical Activity and Health-Related Quality of Life in Children and Adolescents

Childhood and adolescence represent critical periods for establishing behaviours that influence health throughout adulthood. Regular physical activity during these stages supports healthy growth and development while contributing to physical, psychological and social well-being. Consequently, promoting active lifestyles among children and adolescents has become an important public health priority.

Systematic reviews consistently demonstrate that physically active children report better HRQoL than their inactive peers. Improvements are observed in physical functioning, emotional well-being, self-esteem and social relationships. Participation in organized sports and recreational activities additionally promotes teamwork, communication skills and social integration, supporting both psychosocial development and quality of life.

Physical activity also contributes to cognitive development and educational outcomes. Children who engage in regular exercise demonstrate better attention, executive function and academic performance than those leading sedentary lifestyles. Although these effects are influenced by multiple environmental and socioeconomic factors, the overall evidence suggests that maintaining adequate physical activity supports both health and learning.

At the same time, sedentary behaviour has become increasingly common among young people. Extended recreational screen time and reduced outdoor activity are associated with poorer physical fitness, lower psychological well-being and reduced HRQoL. Recent studies indicate that limiting sedentary behaviour while increasing physical activity provides greater benefits than focusing on exercise alone.

The concept of 24-hour movement behaviours further reinforces this perspective. Children who simultaneously achieve recommended levels of physical activity, obtain sufficient sleep and minimize sedentary behaviour consistently report better physical, emotional and social outcomes. These findings support integrated health promotion strategies that address multiple movement behaviours rather than physical activity in isolation.

Despite clear evidence regarding the benefits of regular exercise, a substantial proportion of children and adolescents worldwide remain insufficiently active. Family support, school environment, socioeconomic status and access to recreational facilities strongly influence participation in physical activity. Therefore, effective interventions should combine school-based programmes, community initiatives and family involvement to encourage lifelong healthy habits.

Collectively, the available evidence indicates that regular physical activity contributes substantially to HRQoL during childhood and adolescence. Encouraging active lifestyles from

an early age may provide immediate health benefits while establishing behaviours that persist into adulthood.

3.3. Physical Activity and Health-Related Quality of Life in Adults

Adulthood is a period during which lifestyle behaviours substantially influence both current health and future disease risk. Among these behaviours, regular physical activity remains one of the strongest predictors of health-related quality of life. Adults who maintain active lifestyles consistently report better physical functioning, greater vitality and higher life satisfaction than individuals who are physically inactive.

Evidence from systematic reviews demonstrates positive associations between physical activity and virtually all dimensions of HRQoL. The largest improvements are observed in physical functioning, general health perception, emotional well-being and vitality. Importantly, these benefits have been reported across different countries, occupational groups and socioeconomic backgrounds, suggesting that the relationship between physical activity and HRQoL is universal rather than population-specific.

The reviewed studies further indicate that the relationship between physical activity and HRQoL is dose-responsive, although even modest increases in activity provide measurable benefits. Adults who transition from sedentary lifestyles to moderate levels of physical activity often experience substantial improvements in self-rated health, daily functioning and psychological well-being. This observation has important implications for public health, as relatively small behavioural changes may produce clinically meaningful improvements in quality of life.

Mental health represents another important component of HRQoL during adulthood. Depression, anxiety, occupational stress and burnout have become increasingly prevalent in modern societies. Regular physical activity has consistently been associated with lower levels of psychological distress, improved stress management and greater emotional resilience. Consequently, exercise is increasingly recognised as an effective non-pharmacological strategy supporting mental health.

Recent evidence also highlights the detrimental effects of prolonged sedentary behaviour. Adults spend a considerable proportion of the day sitting at work, during transportation and while using digital devices. Excessive sedentary time has been associated with poorer cardiometabolic health, lower physical functioning and reduced HRQoL, even among individuals meeting physical activity recommendations. Replacing prolonged sitting with light or moderate physical activity therefore represents an important component of contemporary lifestyle recommendations.

Overall, current evidence indicates that maintaining regular physical activity throughout adulthood contributes to better HRQoL by improving physical health, supporting psychological well-being and reducing the burden of chronic diseases. These findings reinforce the

importance of promoting active lifestyles through workplace interventions, community programmes and public health initiatives.

3.4. Physical Activity and Health-Related Quality of Life in Older Adults

Population ageing is one of the most significant demographic changes worldwide, increasing the importance of strategies that support healthy ageing and maintain health-related quality of life (HRQoL). Although ageing is associated with progressive declines in muscle strength, mobility, balance and cognitive function, these changes can be substantially attenuated through regular physical activity.

Evidence consistently demonstrates that physically active older adults report higher HRQoL than their sedentary counterparts. Improvements are observed in both physical and mental domains, including mobility, functional independence, emotional well-being and perceived health status. Maintaining the ability to perform activities of daily living independently appears to be one of the strongest contributors to quality of life in this population.

Exercise programmes that combine aerobic, resistance, flexibility and balance training produce the greatest benefits. Such interventions improve muscular strength, reduce the risk of falls, preserve mobility and support functional independence. Participation in group-based exercise programmes additionally promotes social interaction, reducing loneliness and supporting psychological well-being.

Regular physical activity has also been associated with better cognitive performance. Studies indicate that exercise may slow age-related cognitive decline, improve executive function and preserve memory. Although the underlying mechanisms are complex, improved cerebral blood flow, neuroplasticity and reduced systemic inflammation are considered important contributing factors. Despite these benefits, physical inactivity remains common among older adults. Chronic diseases, pain, fear

of falling and limited access to exercise programmes frequently reduce participation in physical activity. Consequently, exercise interventions should be individualized, adapted to functional capacity and supported by healthcare professionals to maximize long-term adherence.

Overall, the available evidence strongly supports regular physical activity as an essential component of healthy ageing. By preserving physical function, cognitive performance and social participation, exercise contributes directly to maintaining HRQoL in later life.

3.5. Physical Activity and Health-Related Quality of Life in Individuals with Chronic Diseases

Chronic non-communicable diseases remain the leading cause of disability worldwide and are frequently associated with reduced HRQoL. Cardiovascular diseases, type 2 diabetes, obesity,

chronic respiratory diseases, musculoskeletal disorders and cancer often impair physical functioning while negatively affecting emotional well-being and social participation. Improving quality of life has therefore become an important objective of comprehensive disease management.

Current evidence supports physical activity as an integral component of treatment for many chronic conditions. Exercise improves cardiorespiratory fitness, muscular strength, metabolic control and functional capacity while reducing disease-related symptoms. These physiological adaptations translate into greater independence and better self-perceived health.

The concept of Exercise is Medicine has substantially influenced contemporary clinical practice by emphasizing exercise as an evidence-based therapeutic intervention rather than solely a preventive behaviour. Structured exercise programmes have demonstrated beneficial effects across numerous chronic diseases, improving both clinical outcomes and HRQoL. Importantly, the benefits are observed regardless of age, provided that exercise programmes are appropriately individualized.

Psychological improvements are equally important. Living with a chronic disease is frequently associated with anxiety, depression, reduced self-confidence and social isolation. Regular physical activity promotes emotional well-being, increases self-efficacy and facilitates social interaction, thereby reducing the psychological burden associated with chronic illness. For many patients, these improvements are as meaningful as changes in clinical indicators.

Nevertheless, maintaining long-term participation in exercise programmes remains challenging. Fatigue, pain, fear of symptom exacerbation and limited access to supervised rehabilitation frequently reduce adherence. These barriers highlight the need for individualized exercise prescriptions, patient education and multidisciplinary support aimed at facilitating sustainable lifestyle changes.

Collectively, current evidence indicates that physical activity should be considered a standard component of comprehensive management for individuals with chronic diseases. Beyond improving disease-specific outcomes, regular exercise contributes substantially to better HRQoL by enhancing physical function, psychological well-being and social participation.

3.6. Physical Activity, Sedentary Behaviour and Mental Health

Over the past decade, research has increasingly recognised the interaction between physical activity, sedentary behaviour and mental health as an important determinant of HRQoL. While the physical health benefits of exercise are well established, accumulating evidence demonstrates that regular physical activity also supports emotional well-being, cognitive function and psychological resilience throughout the lifespan. Individuals who engage in regular physical activity consistently report lower levels of depression, anxiety and perceived stress than inactive individuals. Exercise has been associated with improved mood, greater self-esteem, higher life satisfaction and better sleep quality. These associations have been observed

across healthy populations as well as among individuals living with chronic diseases, suggesting that the psychological benefits of physical activity are broadly applicable.

The mechanisms underlying these effects involve both biological and behavioural pathways. Exercise stimulates the release of neurotransmitters associated with mood regulation, promotes neuroplasticity and improves cognitive performance. At the same time, participation in physical activity strengthens self-efficacy, encourages social interaction and provides effective strategies for coping with daily stress. Together, these mechanisms contribute to better mental health and improved HRQoL.

Contemporary research further indicates that sedentary behaviour should be considered an independent health risk factor rather than simply the absence of physical activity. Prolonged sitting and excessive recreational screen time have been associated with poorer mental health, lower perceived well-being and reduced quality of life. Importantly, these adverse effects may persist even among individuals who achieve recommended levels of physical activity.

These observations have contributed to the development of the 24-hour movement behaviour framework, which integrates physical activity, sedentary behaviour and sleep into a single model of healthy behaviour. Evidence suggests that individuals who simultaneously achieve adequate levels of physical activity, minimize sedentary time and obtain sufficient sleep consistently report the highest HRQoL. This integrated perspective represents an important shift in public health recommendations and provides a more comprehensive understanding of lifestyle factors influencing health.

Overall, the reviewed evidence demonstrates that promoting regular physical activity alone is insufficient. Effective strategies for improving HRQoL should also encourage reductions in sedentary behaviour and the adoption of balanced daily movement patterns that include adequate sleep and regular physical activity.

4. Discussion

The present narrative review provides a comprehensive overview of current evidence regarding the relationship between physical activity and health-related quality of life (HRQoL) across different population groups. Despite considerable heterogeneity in study designs, participant characteristics and assessment methods, the reviewed literature consistently demonstrates that regular physical activity is positively associated with higher HRQoL. This consistency across age groups and health conditions strengthens the evidence supporting physical activity as one of the most important modifiable determinants of quality of life.

One of the principal findings emerging from this review is that the benefits of physical activity extend beyond improvements in physical health. Earlier research primarily focused on physiological outcomes, including cardiovascular fitness, muscular strength and metabolic health. However, more recent studies increasingly recognise the multidimensional nature of HRQoL, demonstrating that regular physical activity also enhances psychological well-being,

cognitive performance, emotional resilience and social functioning. These findings highlight the importance of evaluating physical activity within a broader biopsychosocial framework rather than solely through clinical indicators.

Another important observation concerns the consistency of positive associations across the lifespan. Although the mechanisms responsible for improving HRQoL differ according to age and health status, the overall direction of the reported effects remains remarkably similar. In children and adolescents, physical activity supports healthy development, psychosocial functioning and the establishment of lifelong healthy behaviours. During adulthood, regular exercise contributes to maintaining physical capacity, preventing chronic diseases and improving mental health. Among older adults, preserving independence, mobility and cognitive function becomes particularly important, whereas in individuals with chronic diseases physical activity primarily supports rehabilitation, symptom management and functional recovery. These differences indicate that recommendations should be tailored to individual needs while maintaining the common objective of improving quality of life.

The reviewed evidence also reflects an important shift in contemporary public health research. Historically, studies concentrated on the amount of physical activity required to achieve health benefits. More recent investigations increasingly emphasize the importance of sedentary behaviour as an independent health determinant. Growing evidence suggests that prolonged sitting adversely affects physical and psychological health even among individuals who meet recommended physical activity levels. Consequently, current recommendations advocate replacing sedentary behaviour with light or moderate movement whenever possible rather than focusing exclusively on structured exercise.

An equally important development is the growing acceptance of the 24-hour movement behaviour concept. This approach recognises that physical activity, sedentary behaviour and sleep are interdependent components of daily behaviour that collectively influence health outcomes. Evidence reviewed in this study suggests that individuals who simultaneously achieve adequate physical activity, minimise sedentary behaviour and obtain sufficient sleep consistently report the highest HRQoL. This integrated perspective represents a meaningful advancement in lifestyle medicine and provides a more comprehensive framework for future public health recommendations.

From a practical perspective, the findings of this review have important implications for healthcare professionals, educators and policy-makers. Although the health benefits of physical activity are well established, physical inactivity remains highly prevalent worldwide. Therefore, effective interventions should extend beyond encouraging individual behaviour change and include environmental, educational and organisational strategies that facilitate physically active lifestyles. School-based programmes, workplace health promotion, accessible recreational facilities and community initiatives all have the potential to increase physical activity participation and improve population health.

Several limitations of the available evidence should be acknowledged. First, a substantial proportion of published studies are observational, limiting conclusions regarding causality.

Second, considerable heterogeneity exists in the assessment of both physical activity and HRQoL, making direct comparisons between studies difficult. Third, many studies rely on self-reported measures of physical activity, which may introduce recall bias and overestimate activity levels. Finally, relatively few studies originate from low- and middle-income countries, limiting the generalisability of current evidence to diverse cultural and socioeconomic settings.

Future research should prioritise longitudinal and intervention studies using standardised measurement tools and objective assessments of physical activity. Greater attention should also be paid to identifying optimal exercise programmes for specific populations and to investigating the interaction between physical activity, sedentary behaviour and sleep. Such research may contribute to more precise and individualised recommendations aimed at maximising improvements in HRQoL.

Overall, the available evidence consistently supports regular physical activity as a fundamental component of health promotion throughout the lifespan. The findings presented in this review reinforce current international recommendations advocating physically active lifestyles while highlighting the need to reduce sedentary behaviour and adopt a comprehensive approach to daily movement behaviours.

5. Conclusions

The present review demonstrates that regular physical activity is consistently associated with better health-related quality of life across children, adolescents, adults, older adults and individuals living with chronic diseases. Improvements are observed in physical functioning, psychological well-being, social participation and overall self-perceived health, indicating that the benefits of physical activity extend far beyond disease prevention alone.

Current evidence further suggests that reducing sedentary behaviour should be considered an essential complement to increasing physical activity. The emerging concept of 24-hour movement behaviours provides a more comprehensive understanding of lifestyle factors influencing HRQoL by integrating physical activity, sedentary behaviour and sleep within a single behavioural framework.

Although additional longitudinal and intervention studies are required to strengthen causal evidence, the available literature consistently supports physical activity as one of the most effective, accessible and cost-effective strategies for improving HRQoL. Consequently, promoting physically active lifestyles should remain a central objective of public health policy, preventive medicine, rehabilitation and health education.

Disclosure

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