



REVIEW ARTICLE

The Impact of Regular Exercise on Cardiovascular Health: A Literature Review

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

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Accepted for Publication: August 3, 2024

Published: August 30, 2024

DOI: 10.17309/tmfv.2024.4.18

Abstract

Objectives. The study aimed to use a literature review methodology to ascertain the effect of regular exercise on cardiovascular health.

Materials and methods. This review inquiry adhered to PRISMA guidelines for systematic reviews and meta-analyses. Studies had to be published between June 2022 and June 2024. The following search terms were used: (1) regular exercise; (2) cardiovascular health. This study's data source was the Scopus search engine.

Results. A total of six articles were identified from the 229 search results in the database that were modified to meet the specified requirements. According to the results of this systematic review, regular exercise has a positive impact on cardiovascular health, reducing the incidence of morbidity and mortality, improving prognosis, and lowering the risk of heart disease.

Conclusions. The findings indicate that the practice of regular exercise has been proven to have a beneficial effect on cardiovascular health. Thus, engaging in regular exercise can significantly enhance physical well-being and improve the cardiovascular condition.

Keywords: regular exercise, cardiovascular health.

Introduction

Cardiovascular health, which covers the study and management of heart and blood vascular diseases, such as heart disease and stroke, is a crucial component of general well-being. Research emphasizes the importance of promoting cardiovascular health by targeting key risk factors through population-based interventions, such as improving diet, reducing tobacco exposure, and increasing physical activity (Bovet et al., 2023; Soyer et al., 2023; Van Sloten et al., 2023). Research indicates that improved cardiovascular health—which is determined by things like blood pressure, cholesterol, and lifestyle choices—is linked to a lower chance of developing depressive symptoms in the long run, underscoring the connection between mental

and physical health (Aitken et al., 2022). Improve public health outcomes and lowering the worldwide burden of cardiovascular disease require an understanding of and commitment to improve the cardiovascular health profile of populations, especially through addressing modifiable risk factors.

Cardiovascular health is of great importance due to the significant burden of cardiovascular disease (CVD) globally, being the leading cause of death (Sims et al., 2020). Preventable risk factors such as hypertension, diabetes, and obesity contribute to the development of CVD, emphasizing the need for lifestyle modification and risk factor control (Jessica Magali Herrera Abarca et al., 2023). The concept of cardiovascular health as presented by the American Heart Association emphasizes the significance of preventative efforts by highlighting the impact of optimal health habits and factors in lowering cardiovascular mortality and events (Raleigh & Colombo, 2023). Targeting modifiable risk factors including smoking, eating poorly, and not exercising is essential for lowering the incidence of CVD and enhancing general cardiovascular health (Brant & Ribeiro, 2018). As the

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population ages, promoting healthy aging by preventing and slowing the progression of CVD from middle age is critical to improving cardiovascular health and reducing disability associated with CVD in older adults.

Numerous factors can impact cardiovascular health, including well-known risk factors like age, gender, cholesterol levels, smoking, and hypertension as well as less well-known ones like early life effects and newly-emerging ones like environmental pollution (Powell-Wiley et al., 2022). Cardiovascular disease (CVD) risk is greatly influenced by social determinants of health (SDOH), which include things like education, income, social support, and systemic racism (Mannoh et al., 2021). In addition, meteorological factors such as ambient temperature, humidity, and atmospheric pressure have been associated with variations in cardiovascular disease rates, highlighting the potential impact of weather conditions on cardiovascular health (Abrignani et al., 2022). Furthermore, socioeconomic, technological, and environmental factors, including violence, smoking, dietary habits, and environmental pollution, have been identified as contextual determinants affecting CVD, emphasizing the need for comprehensive strategies to address these multifaceted influences on cardiovascular health (Alizadeh et al., 2022).

Research on exercise has made a significant contribution to cardiovascular health by establishing a strong link between physical activity, fitness levels and reduced risk of cardiovascular disease (Myers, 2003). Studies have shown that active individuals tend to develop less coronary heart disease and experience milder forms of the condition compared to sedentary individuals (Myers, 2003). Furthermore, the integration of wearable fitness trackers, such as the Fitbit Charge HR, into research has provided valuable insights into the relationship between physical activity, resting heart rate, and markers of cardiovascular and metabolic disease (Leong, 2018). Furthermore, investigation of strategies such as chronic heat exposure has demonstrated improved vascular function, reduced arterial stiffness, and increased endothelium-dependent vasodilation, all of which are important aspects of cardiovascular health (Feng et al., 2023). Despite these advances, challenges remain in translating experimental findings into clinical practice, highlighting the continued need for further breakthroughs in the field of cardiovascular research and exercise science.

The purpose of this study is the impact of regular exercise on cardiovascular health through a literature review approach. The results of this literature review are expected to provide a deeper understanding of how regular exercise affects cardiovascular health, provide insight into the optimal type and duration of exercise, and identify populations most likely to benefit significantly from this exercise habit.

Materials and Methods

Study Participants

Articles from international publications that were indexed by the reliable Scopus database made up the research population. Articles with an H-Index that were published in international journals with an Elsevier webpage between June 2022 and June 2024 make up the sample that was chosen. This study uses primary and secondary sources as its two categories of research data sources. A data coding

sheet was the tool used in this inquiry. This functioned as an internal audit and provided insight into the exclusion of certain research from the synthesis.

Using the keywords “regular exercise” and “cardiovascular health”, articles published in Scopus between June 2022 and June 2024 were located. How the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) standards are used is depicted in the flow diagram (Figure 1) (Karo-Karo et al., 2023; Moher et al., 2016) were followed during the identification, screening phase, conformity, and inclusion processes to produce a total sample of 6 articles out of a total of 229 articles.

The bibliometric analysis considered the following components: The entire number of authors, the field of study (regular exercise and cardiovascular health), the type of research (experimental, descriptive, correlational, and other), the annual pattern of articles published between June 2022 and June 2024, the distribution of publications to the first author's institution, the total number of authors, and the average number of citations per article were all taken into account.

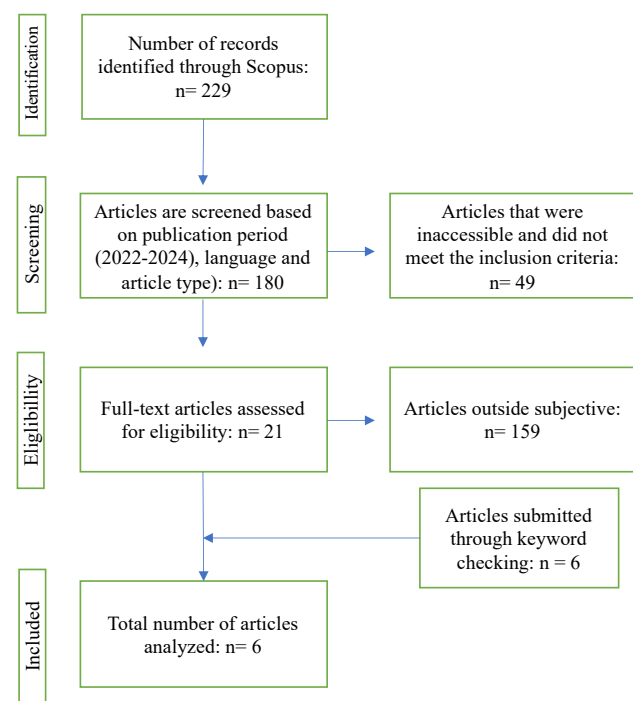


Fig. 1. Diagram showing the flow for choosing articles

Study Organization

The literature was examined with consideration given to the following: the trend of articles published annually between June 2022 and June 2024; the distribution of publications at the first author's institution; the number of authors; the field of study (cardiovascular health and regular exercise); the type of study (experimental, descriptive, correlational, other); and the average number of citations per article publication.

Statistical Analysis

Article titles, abstracts, and keywords were condensed in order to create a core set of publications that could be

Table 1. Summary table of studies

No	Author and Years	Method	Main Result
1	Thijssen et al., 2022	Discusses the benefits, risks, and recommendations of exercise and sports.	Exercise reduces cardiovascular morbidity and mortality, improving prognosis.
2	Schrader et al., 2022	ELITE study in Germany with 4602 participants.	Participants who exercised frequently had a more favorable cardiovascular risk profile.
3	Luchkova et al., 2022	Physical training with forced swimming for 4-6 weeks.	Exercise on a regular basis raises H2S levels in cardiac tissue and mitochondria.
4	Gu et al., 2022	Independent sample t test and nonparametric test used for analysis	Frequent exercise cures heart abnormalities and reduces <i>Drosophila</i> longevity
5	Mannakkara & Finocchiaro, 2023	Discusses the benefits, risks, and recommendations of exercise and sports.	Exercise reduces cardiovascular morbidity and mortality, improving prognosis.
6	Gardner & Beck, 2023	Safely prescribe exercise for adults at risk of heart disease	Emphasizes physical inactivity as a risk factor for heart disease.

used and then reviewed. Since they didn't want to leave out anyone who couldn't access their research, the review writers only took into account open access articles for their review study. The subsequent inclusion and exclusion criteria were applied to choose only pertinent research that solely focused on a particular topic.

Results

Research shows that regular exercise has a positive impact on cardiovascular health by reducing cardiovascular morbidity and mortality, improving prognosis, and lowering the risk of heart disease.

Discussion

Frequent exercise reduces cardiovascular risk factors and enhances general well-being, which both contribute to improved cardiovascular health. Regular exercisers have decreased rates of arterial hypertension, diabetes, nicotine use, and elevated BMI, according to studies like the ELITE study conducted in Germany. These findings demonstrate the beneficial effects of physical activity on cardiovascular health (Schrader et al., 2022). Moreover, regular physical activity has been shown to improve cardiovascular function in older adults, leading to better blood-related indicators and reduced vascular stiffness, ultimately benefiting heart rate variability and autonomic nervous function (Wang et al., 2021). Furthermore, a single bout of exercise has been found to provide immediate cardioprotection by reducing cardiac and vascular damage in response to prolonged ischemia and reperfusion injury, suggesting an immediate benefit of exercise on cardiovascular health (Thijssen et al., 2022). Overall, following recommended activity levels can lead to significant cardiovascular adaptations, reducing the risk of chronic disease and mortality (Nystoriak & Bhatnagar, 2018).

Regular exercise has a significant positive impact on cardiovascular morbidity, which is supported by various research studies. Studies such as the ELITE study in Germany showed that frequent exercise was associated with a lower

prevalence of cardiovascular risk factors such as arterial hypertension, diabetes, and increased BMI (Gondim et al., 2015; Schrader et al., 2022). Additionally, research in chest cancer patients undergoing anthracycline chemotherapy highlighted the potential of exercise training to reduce the risk of cardiac dysfunction and functional disability, ultimately improving long-term health outcomes in these patients (Foulkes et al., 2020). Furthermore, physical activity has been shown to reduce the risk of cardiovascular death, with a linear relationship between activity level and reduced risk of cardiovascular death, emphasizing the importance of regular exercise in preventing cardiovascular disease (Löllgen & Papadopoulou, 2018). Regular exercise not only improves cardiovascular health but also positively affects psychosocial factors, stress levels, depression, and general well-being, further underscoring its holistic benefits on cardiovascular morbidity (Gondim et al., 2015; Schrader et al., 2022).

Regular exercise has a significant positive impact on improving prognosis across a range of health conditions. In stable coronary heart disease patients, higher levels of physical activity are associated with a reduced risk of all-cause mortality, with hazard ratios showing a lower risk of death in patients with higher levels of physical activity (Bouisset et al., 2020; Hendrawan et al., 2024). Furthermore, exercise has been associated with favorable prognostic factors in chest cancer patients, with higher skeletal muscle volume associated with better outcomes, potentially reflecting patients engaging in exercise during treatment (Altundag, 2019). Furthermore, regular exercise has been shown to maintain protective mechanisms in the cardiovascular system, counteracting age-related damage and improving outcomes in elderly people with cardiovascular disease (Pagano et al., 2013). These findings underline the importance of regular exercise in improving prognosis and overall health outcomes.

Regular exercise plays an important role in lowering the risk of heart disease by improving cardiovascular health and reducing cardiovascular risk factors. Studies have shown that physical activity reduces the burden of risk factors such as arterial hypertension, diabetes, nicotine use, and increased BMI, all of which are significantly less

prevalent in individuals who exercise frequently (Schrader et al., 2022). In addition, exercise has been found to improve physiological functions, including improved endothelial function, oxygen extraction, and catecholamine spillover, which are beneficial to cardiovascular health (Kaleta et al., 2017). In addition, regular exercise normalizes blood pressure, decreases body weight, reduces vascular resistance, and promotes structural adaptations in the cardiovascular system, such as increasing the number of capillaries and arteries, which ultimately protects against chronic and acute coronary disease (Luchkova et al., 2022). Therefore, engaging in regular physical activity is a key component in reducing the risk of heart disease and improving overall cardiovascular well-being.

Conclusions

Based on the impact of regular exercise on cardiovascular health: a literature review, it can be concluded that regular exercise has a positive impact on cardiovascular health by reducing cardiovascular morbidity and mortality, improving prognosis, and lowering the risk of heart disease.

Acknowledgment

We would like to thank everyone who has helped us make this study feasible.

Conflict of interest

The authors declare that they have no conflicts of interest.

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Вплив регулярних фізичних вправ на стан здоров'я серцево-судинної системи: Огляд літератури

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 6 с., 1 таб., 1 рис., 33 джерела.

Мета дослідження. Мета дослідження полягала у використанні методології огляду літератури щодо з'ясування впливу регулярних фізичних вправ на стан здоров'я серцево-судинної системи.

Матеріали та методи. Під час проведення цього оглядового дослідження дотримувалися рекомендацій PRISMA для систематичних оглядів і мета-аналізів. Наукові роботи мали бути опубліковані в період з червня 2022 по червень 2024

року. Було застосовано наступні пошукові терміни: (1) регулярні фізичні вправи; (2) стан здоров'я серцево-судинної системи. Пошукова система Scopus використовувалася в якості джерела даних для проведення цього дослідження.

Результати. Загалом з 229 результатів пошуку в базі даних було відібрано шість статей, які були модифіковані відповідно до зазначених вимог. Згідно з результатами цього систематичного огляду встановлено, що регулярні фізичні вправи позитивно впливають на здоров'я серцево-судинної системи, сприяючи зниженню рівня захворюваності та смертності, покращуючи прогноз та зменшуючи ризик розвитку кардіологічних захворювань.

Висновки. Результати дослідження свідчать про сприятливий вплив практики регулярних фізичних вправ на стан здоров'я серцево-судинної системи. Таким чином, регулярні заняття фізичними вправами сприяють значному зміцненню фізичного самопочуття та покращенню стану серцево-судинної системи.

Ключові слова: регулярні фізичні вправи, стан здоров'я серцево-судинної системи.

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Cite this article as: Sari, L. P., Karo Karo, A. A. P., Keliat, P., Abady, A. N., Nugroho, A., Syaleh, M., Winata, D. C., & Al Munawar, A. (2024). The Impact of Regular Exercise on Cardiovascular Health: A Literature Review. *Physical Education Theory and Methodology*, 24(4), 651-656. <https://doi.org/10.17309/tmfv.2024.4.18>

Received: 01.07.2024. Accepted: 03.08.2024. Published: 30.08.2024

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