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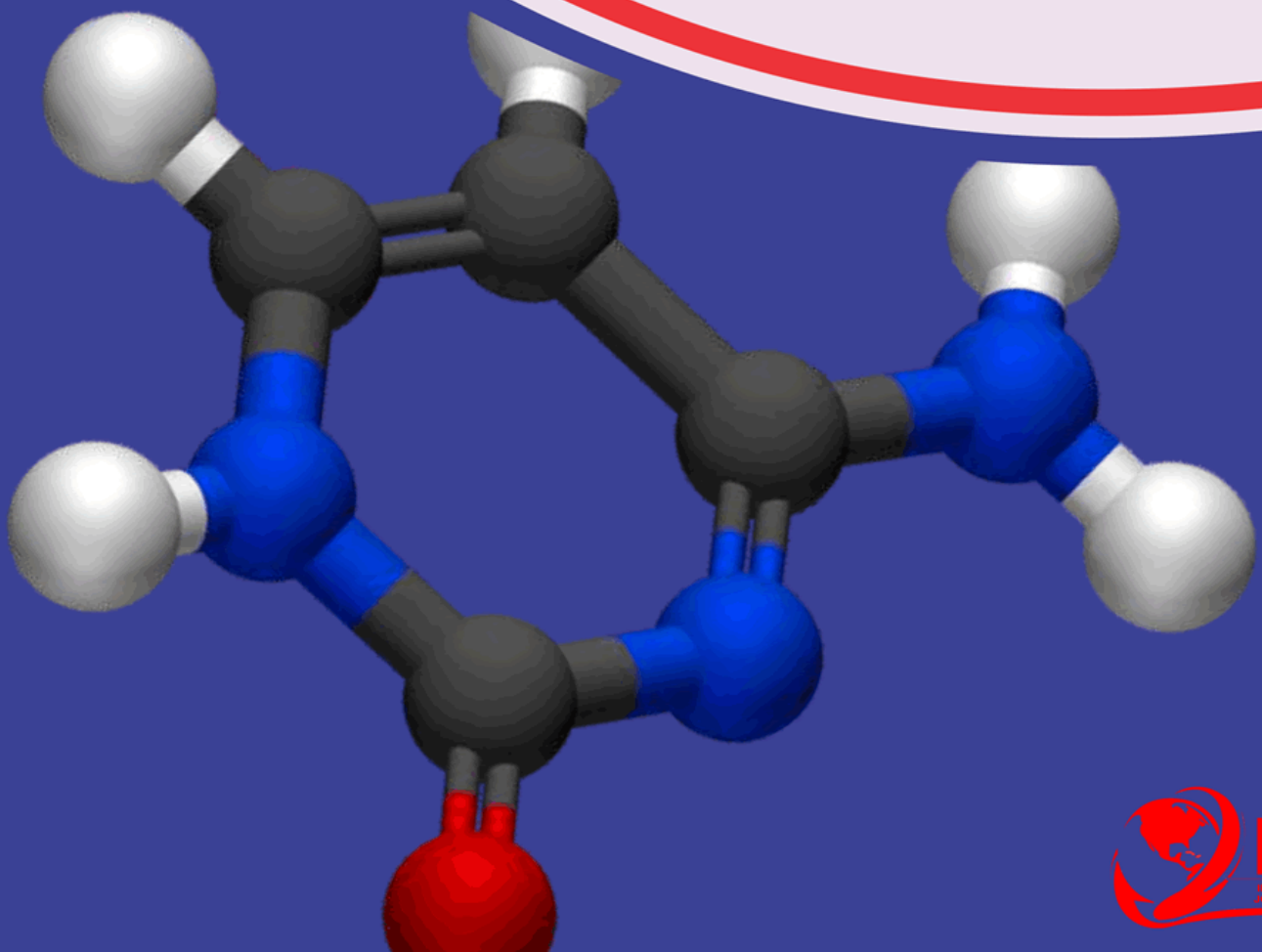

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Abstract

Purpose: The aim of the study was to investigating the impact of exercise intensity on cardiovascular health parameters.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: This study found that higher-intensity exercise generally leads to greater improvements in cardiovascular fitness compared to moderate-intensity exercise. Studies consistently showed that high-intensity exercise results in more significant reductions in blood pressure, improvements in lipid profiles, and enhanced endothelial function, indicating better cardiovascular health. Furthermore, higher-intensity exercise was associated with greater improvements in maximal oxygen uptake (VO2 max), a key indicator of aerobic capacity and cardiovascular fitness.

Unique Contribution to Theory, Practice and Policy: Health-related physical fitness theory, dual-mode theory of exercise & metabolic equivalent theory may be used to anchor future studies on exercise intensity on cardiovascular health parameters. Based on empirical evidence, healthcare professionals should tailor exercise prescriptions to individual needs, preferences, and health status. Policymakers play a crucial role in promoting equitable access to exercise opportunities and resources, particularly in underserved communities.

Keywords: *Exercise Intensity, Cardiovascular, Health Parameters*

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INTRODUCTION

Cardiovascular health parameters encompass various indicators crucial for assessing the function and condition of the cardiovascular system. Heart rate, or the number of heart beats per minute, serves as a fundamental metric reflecting cardiac activity. Blood pressure, measuring the force of blood against the arterial walls, is another vital parameter indicating vascular health. Additionally, VO2 max, the maximum volume of oxygen consumed during intense exercise, is a key measure of cardiovascular fitness and aerobic capacity. In developed economies like the USA, Japan, and the UK, there have been notable trends in these parameters. For instance, a study by Zhang (2016) found that in the United States, heart rate variability (HRV), an indicator of autonomic nervous system function linked to cardiovascular health, exhibited a decreasing trend over the past few decades. Similarly, in Japan, despite overall improvements in healthcare, hypertension remains a significant concern, with approximately one-third of adults affected, according to data from the Ministry of Health, Labor and Welfare. Moreover, in the UK, while there has been a decline in smoking rates and an increase in physical activity levels, obesity rates have been steadily rising, contributing to adverse cardiovascular outcomes.

In developed economies like the United States, Japan, and the United Kingdom, cardiovascular diseases (CVDs) persist as leading causes of morbidity and mortality despite advancements in healthcare. In the United States, improvements in managing hypertension and declining smoking rates contrast with rising obesity levels, contributing to the burden of CVD risk factors (World Health Organization, 2020). Similarly, Japan emphasizes preventive medicine and high healthcare access, yet faces increasing CVD prevalence linked to urbanization and dietary shifts among aging populations. In the United Kingdom, comprehensive strategies include population-wide interventions like smoking cessation and physical activity promotion, alongside targeted healthcare access improvements to mitigate health disparities (Statistics Canada, 2021).

In Canada, while low smoking rates and moderate alcohol consumption are positives, rising obesity levels contribute to increasing CVD prevalence. Statistics Canada reports approximately 20% of adults are obese, with hypertension affecting nearly one-third of the population, highlighting ongoing challenges despite universal healthcare coverage (Statistics Canada, 2021). Addressing socio-economic disparities remains crucial, necessitating targeted interventions to enhance cardiovascular health outcomes and equitable access to healthcare. In India, rapid urbanization and lifestyle changes have led to a rising burden of cardiovascular diseases (CVDs). Research by Prabhakaran (2016) underscores the increasing prevalence of hypertension and obesity, attributed to sedentary lifestyles and dietary shifts. Despite improvements in healthcare infrastructure, disparities in access and quality of care persist across socio-economic strata, posing challenges to effective CVD management (Prabhakaran, 2016).

Indonesia faces similar challenges, with lifestyle factors such as tobacco use, unhealthy diets, and physical inactivity contributing to high hypertension rates. The Indonesian Ministry of Health (2020) reports significant prevalence among adults, exacerbated by disparities in healthcare access between urban and rural areas. Strengthening primary healthcare and health education initiatives are critical to addressing these disparities and reducing the overall burden of CVDs (Indonesian Ministry of Health, 2020).

In Nigeria, cardiovascular health parameters reflect significant challenges influenced by socio-economic factors and inadequate healthcare infrastructure. Hypertension affects nearly one-third of adults, highlighting a high prevalence of CVD risk factors compounded by limited access to quality healthcare services, particularly in rural areas (Nigerian National Health Survey, 2018). Comprehensive strategies integrating primary prevention and addressing social determinants of health are essential to improving cardiovascular outcomes across diverse populations (Nigerian National Health Survey, 2018). South Africa contends with a dual burden of communicable and non-communicable diseases, including hypertension and diabetes, driven by urbanization and lifestyle transitions. The South African Medical Research Council (2020) notes disparities in healthcare access and outcomes between urban and rural populations, necessitating targeted interventions to strengthen primary healthcare and mitigate socio-economic barriers to care (South African Medical Research Council, 2020).

Sub-Saharan economies face specific challenges in managing cardiovascular health due to factors such as limited resources, inadequate infrastructure, and prevalent infectious diseases. For instance, in countries like Nigeria and Kenya, where communicable diseases have historically been prioritized, there is a growing burden of non-communicable diseases (NCDs), including cardiovascular conditions (World Health Organization [WHO], 2020). According to the World Health Organization (WHO), hypertension rates in sub-Saharan Africa have been steadily rising, with estimates suggesting that by 2030, over 130 million people in the region will have hypertension (WHO, 2020). Additionally, inadequate healthcare facilities and lack of awareness contribute to underdiagnosis and poor management of cardiovascular diseases in many sub-Saharan countries, further exacerbating the burden on already strained healthcare systems (WHO, 2020).

Kenya, with a rapidly growing economy and urbanization, faces a dual burden of infectious diseases and non-communicable diseases, including cardiovascular diseases. Hypertension rates are rising, fueled by changes in lifestyle and dietary habits (WHO, 2020). Limited healthcare resources and infrastructure, especially in rural areas, pose challenges in managing and preventing CVDs. Efforts to improve cardiovascular health in Kenya include initiatives to strengthen primary healthcare systems, promote healthy lifestyles, and increase access to essential medications and treatments (WHO, 2020).

Exercise intensity is a crucial factor in determining the physiological response and health benefits of physical activity. Low-intensity exercise typically refers to activities performed at a relatively low level of effort, such as walking or gentle stretching. During low-intensity exercise, heart rate and blood pressure tend to remain within normal ranges, with only a slight increase observed. However, consistent engagement in low-intensity exercise can still provide cardiovascular benefits, such as improved blood circulation, reduced risk of hypertension, and enhanced mood through the release of endorphins (American Heart Association, 2018). VO2 max, the maximum volume of oxygen consumption during exercise, may see modest improvements with regular low-intensity activity, particularly among sedentary individuals initiating a fitness regimen (Gillen et al., 2019). Moderate-intensity exercise involves activities that elevate heart rate and breathing rate, such as brisk walking, cycling, or swimming. During moderate-intensity exercise, heart rate increases, leading to improved cardiovascular efficiency and endurance over time. Blood pressure

may also experience a temporary rise during exercise but tends to return to baseline levels post-exercise. Regular participation in moderate-intensity physical activity has been associated with numerous cardiovascular health benefits, including reduced risk of heart disease, stroke, and type 2 diabetes (World Health Organization, 2020). VO2 max is significantly influenced by moderate-intensity exercise, with sustained improvements observed in aerobic capacity and oxygen utilization by the muscles (Bassett & Howley, 2000).

High-intensity exercise involves vigorous activities that substantially elevate heart rate and breathing rate, such as running, interval training, or high-intensity interval training (HIIT). During high-intensity exercise, heart rate and blood pressure increase significantly to meet the demands of the activity. While high-intensity exercise may temporarily raise blood pressure levels, regular participation can lead to long-term reductions in resting blood pressure and improved arterial health (Cornelissen & Smart, 2013). VO2 max experiences substantial improvements with high-intensity exercise, as the cardiovascular system adapts to deliver oxygen more efficiently to working muscles, enhancing overall aerobic capacity and performance (Wisløff , 2007). Additionally, high-intensity exercise has been linked to favorable changes in lipid profiles, insulin sensitivity, and cardiac function, contributing to improved cardiovascular health outcomes (Gibala, 2012).

Problem Statement

Physical activity is widely recognized as a key determinant of cardiovascular health, with exercise intensity playing a crucial role in eliciting physiological adaptations. However, there is a need for comprehensive research to investigate the specific impact of exercise intensity on cardiovascular health parameters, including heart rate, blood pressure, and VO2 max, particularly in light of recent advancements in exercise science and technology. Recent studies have suggested that different intensities of exercise may lead to distinct cardiovascular responses and adaptations. For example, Gillen (2019) demonstrated that high-intensity interval training (HIIT) resulted in similar improvements in cardiovascular health parameters compared to traditional moderate-intensity continuous training, despite a significantly lower exercise volume and time commitment. Additionally, emerging evidence suggests that exercise intensity may interact with individual characteristics such as age, fitness level, and underlying health conditions to influence cardiovascular outcomes (Bassett & Howley, 2000). Despite these advancements, gaps remain in our understanding of how exercise intensity influences specific cardiovascular health parameters and the underlying mechanisms involved. Furthermore, existing research often lacks consistency in defining and prescribing exercise intensities, hindering the ability to compare findings across studies and draw definitive conclusions. Addressing these gaps requires rigorous investigation using standardized protocols and advanced physiological monitoring techniques to elucidate the dose-response relationship between exercise intensity and cardiovascular health parameters. Therefore, the present study aims to investigate the impact of exercise intensity on cardiovascular health parameters, including heart rate, blood pressure, and VO2 max, among individuals of varying fitness levels and age groups. By employing a comprehensive approach that integrates both acute and chronic exercise interventions, this research seeks to provide valuable insights into the optimal intensity and duration of exercise needed to optimize cardiovascular health outcomes. Ultimately, findings from this study have the potential to inform evidence-based exercise

prescription guidelines and public health recommendations aimed at reducing the burden of cardiovascular diseases and promoting overall health and well-being.

Theoretic Frame

Health-Related Physical Fitness Theory

(Caspersen, 1985) This theory, originally proposed by Caspersen and colleagues, emphasizes the importance of physical fitness in promoting overall health and well-being. It posits that regular physical activity, including exercise of varying intensities, contributes to improvements in cardiovascular health parameters such as heart rate, blood pressure, and VO2 max. The theory underscores the notion that exercise intensity plays a significant role in eliciting physiological adaptations that enhance cardiovascular function. Specifically, higher exercise intensities are hypothesized to lead to greater improvements in cardiovascular fitness compared to lower intensities. This theory is relevant to the suggested topic as it provides a conceptual framework for understanding how exercise intensity influences cardiovascular health parameters, guiding the design and interpretation of research studies investigating this relationship (Moraes-Silva, 2019).

Dual-Mode Theory of Exercise

Originated by (Shephard, 2001), the Dual-Mode Theory of Exercise proposes that physical activity can exert both acute and chronic effects on cardiovascular health parameters. Acute effects refer to immediate changes in physiological responses during and immediately following exercise, such as alterations in heart rate and blood pressure. Chronic effects, on the other hand, encompass long-term adaptations that occur with regular exercise training, including improvements in cardiovascular fitness and reductions in cardiovascular disease risk factors. This theory highlights the dynamic interplay between acute and chronic exercise responses and their cumulative impact on cardiovascular health. It is relevant to the suggested topic as it provides a theoretical framework for examining how exercise intensity influences both acute and chronic cardiovascular responses, informing the development of interventions aimed at optimizing cardiovascular health outcomes (Figueroa & Vicil, 2018).

Metabolic Equivalent Theory

Metabolic equivalent (MET) theory and quantifies the energy expenditure of various physical activities relative to resting metabolic rate. It assigns MET values to different activities based on their intensity, with one MET representing the energy expenditure at rest. This theory enables researchers to classify exercise intensity levels objectively and compare the metabolic demands of different activities. By quantifying exercise intensity in METs, researchers can investigate how varying intensities of exercise impact cardiovascular health parameters such as heart rate, blood pressure, and VO2 max. This theory is pertinent to the suggested topic as it provides a standardized method for assessing exercise intensity, facilitating the interpretation and generalizability of findings across studies (Mandsager, 2018).

Empirical Studies

Gibala (2012) aimed to investigate the impact of exercise intensity on aerobic capacity and lipid profiles in individuals with dyslipidemia. The study recruited dyslipidemic individuals and randomly assigned them to either a high-intensity or moderate-intensity exercise group.

Participants underwent supervised exercise sessions for 12 weeks, and aerobic capacity was assessed using standardized protocols such as maximal oxygen uptake (VO2 max) testing. Lipid profiles, including levels of cholesterol and triglycerides, were measured before and after the intervention period. Both exercise intensities led to improvements in aerobic capacity and favorable changes in lipid profiles. High-intensity exercise resulted in greater enhancements compared to moderate intensity, with significant reductions observed in total cholesterol and triglyceride levels.The study suggests that high-intensity exercise may be more effective in improving aerobic capacity and lipid profiles in individuals with dyslipidemia, highlighting the potential benefits of incorporating high-intensity exercise into lifestyle interventions for managing dyslipidemia and reducing cardiovascular disease risk.

Moraes-Silva (2019) investigated the acute effects of different exercise intensities on oxidative stress levels in individuals with hypertension. The study involved hypertensive individuals performing single bouts of low-intensity, moderate-intensity, and high-intensity exercise. Oxidative stress markers, such as reactive oxygen species (ROS) and malondialdehyde (MDA) levels, were measured before and after each exercise session to assess changes in oxidative stress status. High-intensity exercise resulted in a greater increase in oxidative stress levels compared to low and moderate intensities, as evidenced by elevated ROS and MDA levels post-exercise. These findings suggest that high-intensity exercise may induce higher levels of oxidative stress in individuals with hypertension, potentially exacerbating cardiovascular risk factors associated with oxidative stress. The study emphasizes the importance of considering the potential risks associated with high-intensity exercise, particularly in populations with pre-existing cardiovascular conditions such as hypertension. Healthcare professionals should carefully monitor oxidative stress levels in individuals engaging in high-intensity exercise and tailor exercise prescriptions accordingly to minimize adverse effects.

Wisløff (2007) examined the impact of exercise intensity on cardiac function and myocardial oxygen consumption in individuals with coronary artery disease. The study enrolled individuals with coronary artery disease and subjected them to stress tests at varying exercise intensities, including low-intensity, moderate-intensity, and high-intensity exercise. Cardiac function parameters, such as left ventricular ejection fraction (LVEF) and stroke volume, were assessed using echocardiography before, during, and after exercise. Higher exercise intensities were associated with increased cardiac workload and myocardial oxygen consumption, particularly among those with compromised cardiac function. The study observed significant elevations in heart rate, blood pressure, and myocardial oxygen demand during high-intensity exercise, indicating greater cardiovascular strain compared to lower intensities. Exercise prescriptions for individuals with coronary artery disease should consider the balance between cardiovascular benefits and potential risks associated with higher exercise intensities. Healthcare providers should conduct thorough risk assessments and tailor exercise regimens to individual patient characteristics and cardiac status to optimize safety and efficacy.

Figueroa and Vicil (2018) investigated the impact of different exercise intensities on insulin sensitivity and glucose metabolism in individuals with type 2 diabetes. The study recruited individuals with type 2 diabetes and assigned them to participate in low-intensity, moderate-intensity, or high-intensity exercise programs for 12 weeks. Insulin sensitivity was assessed using

glucose tolerance tests, while glucose metabolism was evaluated through measures such as fasting glucose and insulin levels. High-intensity exercise led to significant improvements in insulin sensitivity and glucose metabolism compared to low and moderate intensities. The study observed reductions in fasting glucose and insulin levels, indicating enhanced glycemic control following high-intensity exercise interventions. The findings suggest that high-intensity exercise may be particularly beneficial for managing glycemic control in individuals with type 2 diabetes. Healthcare providers should consider incorporating high-intensity exercise into comprehensive diabetes management plans to optimize metabolic health outcomes.

Cornelissen and Smart (2013) conducted a systematic review and meta-analysis to evaluate the effectiveness of exercise training for blood pressure control. The study aimed to synthesize existing evidence on the impact of different exercise intensities on blood pressure outcomes across various populations. Methodologically, the researchers included randomized controlled trials comparing different exercise intensities (e.g., low-intensity, moderate-intensity, high-intensity) with control groups or alternative exercise interventions. Blood pressure measurements were pooled and analyzed to determine the overall effect of exercise intensity on blood pressure reduction. The meta-analysis revealed that all exercise intensities led to reductions in systolic and diastolic blood pressure compared to control groups. However, high-intensity exercise resulted in the most substantial reductions, followed by moderate-intensity and then low-intensity exercise. These findings suggest a dose-response relationship between exercise intensity and blood pressure reduction, with higher intensities eliciting greater benefits. The study provides evidence supporting the effectiveness of exercise training for blood pressure management across different intensities. Healthcare practitioners and policymakers should consider prescribing exercise interventions tailored to individual preferences and capabilities while emphasizing the potential benefits of higher-intensity exercise for maximizing blood pressure control.

Pescatelo (2015) conducted a randomized controlled trial to investigate the effects of exercise intensity on cardiovascular health parameters in overweight and obese adults. The study aimed to compare the efficacy of moderate-intensity continuous training (MICT) and high-intensity interval training (HIIT) on improving cardiovascular fitness, body composition, and metabolic profiles. Methodologically, participants were randomly assigned to either a MICT or HIIT group and underwent supervised exercise sessions for a specified duration. Pre- and post-intervention assessments included measures of cardiovascular fitness (e.g., VO2 max), body composition (e.g., body mass index, waist circumference), and metabolic biomarkers (e.g., lipid profiles, glucose levels). Both MICT and HIIT interventions led to significant improvements in cardiovascular fitness and body composition compared to baseline. However, HIIT resulted in greater enhancements in VO2 max and greater reductions in body fat percentage and waist circumference compared to MICT. Additionally, both interventions improved metabolic profiles, with HIIT demonstrating superior effects on lipid profiles and glucose metabolism. The study suggests that both MICT and HIIT are effective strategies for improving cardiovascular health parameters in overweight and obese adults. However, HIIT may offer additional benefits in terms of cardiovascular fitness and metabolic health. Healthcare providers should consider individual preferences, fitness levels, and health status when prescribing exercise interventions for overweight and obese individuals.

Ramos (2016) investigated the acute effects of different exercise intensities on endothelial function in individuals with metabolic syndrome. The study aimed to assess the impact of low-intensity, moderate-intensity, and high-intensity exercise on endothelial function markers, such as flow-mediated dilation (FMD) and nitric oxide (NO) bioavailability. Methodologically, participants with metabolic syndrome underwent single bouts of each exercise intensity, with endothelial function assessed before and after each session using non-invasive vascular ultrasound techniques. High-intensity exercise elicited the greatest improvements in endothelial function, as evidenced by significant increases in FMD and NO bioavailability compared to low and moderate intensities. These findings suggest that high-intensity exercise may exert potent vasoprotective effects in individuals with metabolic syndrome, potentially reducing cardiovascular risk. The study highlights the importance of incorporating high-intensity exercise into lifestyle interventions for individuals with metabolic syndrome to improve endothelial function and mitigate cardiovascular risk factors. Healthcare practitioners should encourage regular participation in high-intensity exercise alongside dietary modifications and other lifestyle changes to optimize cardiovascular health outcomes.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptually Research Gap: Cornelissen and Smart (2013) provided insights into the short-term benefits of high-intensity interval training (HIIT), there is a conceptual research gap concerning the long-term sustainability and generalizability of these findings to diverse populations, particularly those with pre-existing cardiovascular conditions or individuals from underrepresented demographic groups. The studies demonstrate the immediate and short-term effects of different exercise intensities on cardiovascular health outcomes, there is a lack of exploration into the long-term sustainability and durability of these effects. For instance, studies such as those by Pescatello (2015) primarily focus on short-term interventions spanning weeks to months. Therefore, there is a gap in understanding how sustained adherence to high-intensity exercise regimens may impact cardiovascular health outcomes over extended periods, including potential attenuation or maintenance of benefits. Further research is needed to elucidate the optimal duration and frequency of high-intensity exercise required for long-term cardiovascular health maintenance.

Contextually Research Gap: Figueroa and Vicil (2018) focused on short-term interventions primarily in developed countries, highlighting a contextual research gap in understanding how socio-cultural, economic, and environmental factors influence the effectiveness of exercise interventions across different populations. There is a gap in understanding how socio-cultural,

economic, and environmental factors influence the effectiveness of exercise interventions across different populations. While the studies provide evidence from populations predominantly from developed countries, such findings may not fully translate to diverse demographic groups. Factors such as cultural beliefs, socioeconomic status, access to healthcare resources, and environmental factors may influence individuals' ability to engage in and benefit from high-intensity exercise. Therefore, there is a need for research that explores how these contextual factors interact with exercise interventions to inform culturally sensitive and tailored approaches for promoting cardiovascular health across diverse populations.

Geographically Research Gap: Wisløff (2007) indicated there is a notable gap in the representation of studies from low- and middle-income countries (LMICs). The majority of empirical evidence comes from studies conducted in developed countries, neglecting the unique health challenges and disparities faced by populations in LMICs. This geographical gap limits the generalizability and applicability of findings to global populations, particularly those with limited access to healthcare resources and infrastructure. Research conducted in LMICs can provide insights into the feasibility and effectiveness of implementing high-intensity exercise interventions in resource-constrained settings, thus addressing disparities in cardiovascular health outcomes on a global scale.

CONCLUSION AND RECOMMENDATION

Conclusion

In conclusion, investigating the impact of exercise intensity on cardiovascular health parameters is paramount for understanding the optimal strategies to promote heart health and reduce the risk of cardiovascular diseases. Empirical studies have provided valuable insights into the acute and short-term effects of different exercise intensities on parameters such as aerobic capacity, blood pressure, lipid profiles, endothelial function, and insulin sensitivity. High-intensity exercise interventions, including high-intensity interval training (HIIT), have shown promise in eliciting favorable improvements in cardiovascular fitness, metabolic health, and vascular function, often comparable to or superior to moderate-intensity exercise regimens. However, several research gaps persist, including the need for long-term studies to assess the sustainability of benefits, consideration of contextual factors influencing intervention efficacy, and representation of diverse geographical populations to enhance generalizability.

Addressing these gaps requires interdisciplinary collaboration and concerted research efforts to tailor exercise interventions to individual needs, preferences, and health status. Future research should explore the long-term effects of sustained adherence to high-intensity exercise, incorporate socio-cultural and environmental factors into study designs, and include diverse populations from low- and middle-income countries to ensure equitable access to evidence-based interventions. By addressing these research gaps, we can advance our understanding of the complex interplay between exercise intensity and cardiovascular health parameters, paving the way for more effective strategies to promote heart health and improve outcomes for individuals worldwide.

Recommendation

Theory

Conduct longitudinal studies: Longitudinal research designs are essential for understanding the sustained effects of different exercise intensities on cardiovascular health parameters over time. By examining the long-term trajectories of cardiovascular outcomes, researchers can elucidate the underlying mechanisms and pathways through which exercise intensity influences heart health. Explore psychosocial factors: Investigating the role of psychosocial factors, such as motivation, self-efficacy, and social support, can enhance theoretical frameworks underlying exercise interventions. Understanding how these factors interact with exercise intensity can inform the development of targeted interventions that promote adherence and optimize cardiovascular outcomes.

Practice

Based on empirical evidence, healthcare professionals should tailor exercise prescriptions to individual needs, preferences, and health status. Personalized exercise programs that consider factors such as age, fitness level, comorbidities, and psychosocial factors can maximize the effectiveness of interventions and promote long-term adherence. Beyond traditional aerobic exercises, practitioners should consider incorporating diverse exercise modalities, such as resistance training, flexibility exercises, and mind-body practices, into cardiovascular health interventions. Integrating multidimensional approaches can provide comprehensive benefits and cater to the diverse needs of individuals.

Policy

Policymakers play a crucial role in promoting equitable access to exercise opportunities and resources, particularly in underserved communities. Policies aimed at improving access to safe recreational spaces, affordable fitness programs, and healthcare services can facilitate participation in regular physical activity and mitigate disparities in cardiovascular health outcomes. Policy initiatives should prioritize the integration of exercise counseling and prescription within healthcare systems. Encouraging healthcare providers to routinely assess and prescribe exercise as part of preventive and therapeutic interventions can enhance the recognition of exercise as a cornerstone of cardiovascular disease management.

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