

Research on the Exercise Prescription to Reduce the Health Problems of the Elderly Caused by Social Environment in China

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Abstract: Combining the current situation of China's social structure and the health condition of the elderly, using scientific methods to point out the application methods and scope of exercise prescription. What kind of health problems Chinese society brings to the elderly, and how these health problems should be solved by exercise prescription? This includes customized exercise prescriptions based on region, condition, health status, medical history, family environment, age, and gender. A census of health conditions was conducted using a large body of public health literature, which was then combined with physiological and psychological scholarly articles to develop a matched treatment program using the concept of exercise prescription. Chinese older adults need to be provided with individualized and tailored exercise prescription programs based on region, economic conditions, health status, medical history, family environment, age, and gender.

Keywords: senior health, public health, exercise prescription, psychosocial health, kinesiology

1. Introduction

With the acceleration of China's aging population, the health issues among the elderly are becoming increasingly prominent. According to a report by the World Health Organization (WHO), China is experiencing one of the most rapid increases in its aging population globally. By 2040, it is projected that the proportion of individuals aged over 60 in China will reach 28%, driven by factors such as extended life expectancy and declining fertility rates [1]. WHO defines health as the absence of disease or infirmity and a state of complete physical, mental and social well-being [2]. Customized exercise prescriptions have been recognized globally as an effective method to improve the quality of life and health conditions of elderly individuals. However, in the unique social and cultural environment of China, there is still a lack of comprehensive research on how to formulate and implement such exercise prescriptions to meet the health needs of the elderly effectively.

This study aims to delve into the impact of China's unique social environment on the health issues faced by the elderly population. This research is interested in understanding how factors such as China's social and cultural characteristics, family structure, and distribution of medical resources intersect with the health status of older adults to gain a comprehensive understanding of the health challenges this population group faces. Additionally, a vital objective of this study is to design and

propose tailored exercise prescriptions for different individuals. These prescriptions will consider various factors such as geographical location, physical condition, medical history, family environment, age, and gender. For instance, for elderly individuals residing in different regions (e.g., urban and rural areas), this paper will investigate how to optimize exercise prescriptions to cater to their distinct lifestyles and health needs. This study also plan to further evaluate the effectiveness and impact of these tailored exercise prescriptions in real-world applications. This will be achieved through a comprehensive assessment of the physical health status, quality of life, and psychological well-being of older adults following the implementation of these exercise prescriptions.

2. Analysis of the Factors Affecting the Health Status of the Elderly in China

The health status of elderly individuals in China is influenced by various complex and intertwined factors. Study emphasizes that service demand is an important factor affecting the health of Chinese elderly individuals. There are significant differences between the health and social care needs of elderly individuals and the perspectives of healthcare and social service providers [3]. These differences may result in inadequate fulfillment of the health needs of elderly individuals, thus affecting their overall well-being. This challenges how to accurately understand and meet their specific service requirements when designing health interventions for the elderly.

On the other hand, research investigates the factors influencing the psychological health of elderly individuals from the perspectives of living environment and community belongingness. In places with a favorable living environment and strong community identification, elderly individuals generally have better psychological health [4]. This highlights the crucial role of the community environment and a sense of belonging in the health of elderly individuals, suggesting that when formulating exercise prescriptions for the elderly, the impact of the community environment and social support systems should be fully considered.

Furthermore, study explicitly identifies lifestyle factors, particularly unhealthy habits such as smoking, excessive alcohol consumption, poor dietary habits, and lack of exercise, as having a significant impact on the health status of elderly individuals [5]. The research indicates that changing these unhealthy lifestyle habits is key to improving the health status of elderly individuals. This raises a specific research question: How to effectively integrate these influencing factors within China's complex social and living context to design scientifically sound and practical exercise prescriptions that meet the diverse health needs of the Chinese elderly population?

3. Analysis of Optimizing Strategies for Exercise Prescription

In improving the health status of elderly individuals in China, optimizing exercise prescriptions has proven to be particularly important. Firstly, study revealed a significant positive correlation between social support and the health-related quality of life among elderly individuals in rural China [6]. This raises the important point that the design and implementation of exercise prescriptions should not only focus on the physical health of older adults but also prioritize their psychological and social well-being. For instance, incorporating group activities and outdoor exercises into exercise prescriptions can provide strong social support, thereby improving the quality of life for older adults. This social-level intervention strategy underscores a holistic approach to maintaining the health of elderly individuals.

Secondly, study emphasized the importance of assessing and managing pain in older adults, which is particularly crucial in the design of exercise prescriptions [7]. Chronic pain is prevalent in elderly individuals and may limit their willingness and ability to engage in physical activities and exercises. Therefore, when developing exercise prescriptions, healthcare professionals must carefully evaluate

older adults' pain conditions and select exercise types and intensities that can alleviate pain and improve physical function based on their circumstances.

Furthermore, research further highlighted the effectiveness of primary healthcare-based physical activity interventions in improving physical activity levels among older adults [8]. This finding points to an essential practical pathway: by actively involving and supporting primary healthcare institutions, exercise prescriptions can be more effectively promoted and implemented within the healthcare system. This not only ensures the scientific rigor and accuracy of exercise prescriptions but also enables more elderly individuals to access this effective health management service conveniently.

These optimization strategies collectively aim at a core objective: making exercise prescriptions more person-centred, comprehensive, and feasible, thereby making a more effective contribution to improving the health status of elderly individuals in China.

4. Theoretical Foundations and Practical Process of Optimizing Exercise Prescriptions

The optimization of exercise prescriptions first requires a thorough understanding of the physiological characteristics of the elderly population. Different age groups of older adults exhibit varying exercise capacities, and there are also noticeable differences between males and females in terms of physical function and response to exercise [9]. For instance, bone density, joint flexibility, and cardiorespiratory function present different patterns of change across age and gender. Thus, more comprehensive testing is required before implementation.

Additionally, temperature and geographical variations are crucial factors to consider to ensure that older adults can appropriately and safely exercise in different environments. On a psychological level, research suggests that social support significantly enhances the willingness of older adults to participate in the exercise, as social interaction provides positive psychological feedback and encouragement [10]. The diversity of geographical and climatic conditions in China profoundly impacts the physical activity and health of the elderly population. In the northern regions, particularly in the northeast, the winter temperatures can be extremely low, leading to decreased outdoor activities among older adults. Consequently, to meet the exercise needs of the elderly in these areas, exercise prescriptions may need to focus more on indoor activities such as tai chi, yoga, and strength training. Conversely, in the south's warmer and more humid regions, older adults may be more willing to engage in outdoor activities such as walking and square dancing.

The extensive regional variations in China also mean significant differences in the availability of resources and facilities across different areas. For instance, parks and sports facilities are generally abundant and well-developed in urban areas, especially in first-tier and second-tier cities. However, such resources may be relatively scarce in rural or more remote areas. Therefore, exercise prescriptions must be tailored to different regions' resource conditions.

Optimizing exercise prescriptions can be effectively implemented through collaboration with local community committees, charitable organizations, and sports venues. For instance, medical institutions can closely work with community committees to jointly design exercise programs tailored to the specific needs of elderly individuals, considering their varying ages, genders, and health conditions. Such collaboration ensures that exercise prescriptions align more closely with the daily lives of the elderly and benefit from sustained support at the community level [11]. Additionally, partnering with charitable organizations and sports venues can provide elderly individuals with diverse and professional exercise resources, such as access to sports facilities, equipment, and coaching guidance. This contributes to the long-term and sustainable implementation of exercise prescriptions.

At the societal level, China has a rich tradition of collective culture, which is particularly evident among the elderly population. Social interactions are considered an integral part of life. For instance, square dancing has become a popular social and physical activity among Chinese senior citizens.

Social support, such as encouragement and companionship from family, friends, and neighbours, plays a significant role in maintaining exercise habits among older adults. This aligns with the findings of Hawley-Hague et al., which suggest that social interactions provide positive psychological feedback and encouragement.

5. Analysis of Optimization Results

According to the findings of a research conducted in 2014, there is a direct correlation between the level of physical activity in older adults and subsequent healthcare utilization as they age [12]. This study suggests that older adults with higher physical activity levels tend to have lower healthcare utilization rates in the following four to five years than those with lower activity levels. Therefore, regular assessment and monitoring of the physical activity levels of older adults is crucial when prescribing exercise regimens to evaluate their effectiveness and make necessary adjustments. High-tech products such as smartwatches and wearable devices are increasingly significant in this area. These devices can continuously monitor vital physiological indicators of the elderly, such as heart rate, number of steps taken, sleep quality, and more. The data collected can be quickly and accurately provided to medical teams for analysis and feedback. For instance, smartwatches can track daily step counts and duration of physical activity, enabling doctors or other healthcare professionals to better understand a patient's activity level and adjust exercise prescriptions accordingly.

Furthermore, a Japanese research primarily focuses on the aerobic capacity of older adults residing in communities [13]. They found that regular assessments of aerobic capacity can help evaluate and track changes in the physical functioning of older adults. This assessment method enables people to determine whether exercise prescriptions effectively enhance the physical functioning of older adults and provide a basis for adjusting the prescriptions as needed. Aerobic capacity assessments typically include walking tests, such as the 6-minute walk test (6MWT) or walking speed test.

In China, a populous and rapidly aging country, these techniques and assessment methods can assist healthcare teams in providing personalized exercise prescriptions for older adults and enable broader health monitoring and interventions, thereby optimizing the allocation of medical and healthcare resources across society. The findings of these tests can be used to modify exercise recommendations to effectively increase older persons' aerobic capacity.

6. Conclusion

With the accelerated aging of China's population, providing tailored exercise prescriptions for the elderly has become a crucial task. This research explores how China's unique social and cultural environment impacts the health status of older adults and delves into various factors influencing their health. Through comprehensive research on public health literature, and physiological and psychological articles, a set of personalized exercise prescription programs for the elderly was proposed, taking into account different regions, economic conditions, health status, medical history, family environment, age, and gender. The research findings indicate that by considering these factors holistically and optimizing the design and implementation of exercise prescriptions, people can effectively enhance the health levels and quality of life of older adults.

However, it is important to acknowledge that this study is not exhaustive. Although this article has discussed numerous factors influencing the health of older adults, there are still other social, economic, and cultural factors that require further investigation. Additionally, optimization strategies for exercise prescriptions need long-term empirical research in larger populations to validate their effectiveness and applicability.

Future research can further explore how to adjust and refine exercise prescriptions in different cultural and geographical contexts. It can also investigate how to better utilize modern technologies

such as smartwatches and wearable devices for health monitoring and feedback to enhance the effectiveness of exercise prescriptions.

In conclusion, through in-depth research and practice, it is more confident in providing more precise and effective exercise prescriptions for China's elderly population, thereby improving their health status and quality of life.

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