

Discussion on the Sports and Exercise Rehabilitation Majors in New Zealand Universities and their Relationships with Aging Society

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Abstract: With the increase in the number of older people around the world, problems in their health have attracted more attention from society. Sports and exercise rehabilitation play an essential role in improving the physical fitness, boosting the mental health and overall quality of life of older people, and thus have gradually become important ways to address the health problems of an aging society. As the main institutions for knowledge innovation and talent cultivation, universities in New Zealand have achieved good results in their sports and exercise rehabilitation majors in terms of curriculum design, research direction and talent output. Based on the theoretical foundation and the needs of an aging society, this paper investigates the current situation and attributes of sports and exercise rehabilitation majors at New Zealand universities, proposes new courses for these majors, and discusses the development prospects of these majors in an aging society. Based on the above studies, the sports and exercise rehabilitation major is crucial for tackling problems in an aging society, but its development still needs to be driven by curriculum reform, technological innovation and other means. Offer theoretical support and some practical ideas for the development and adaptation of the relevant majors at universities in New Zealand.

Keywords: Aging society, Sports and exercise rehabilitation, New Zealand universities, Innovative practices, Curriculum reform.

Introduction

The ageing of the population in China and abroad is becoming more prominent day by day. According to statistics, the proportion of people aged 65 and over in New Zealand is still increasing, and thus the demand for health services will be higher. Older people are generally more likely to have chronic diseases, are at a higher risk of falling, face problems with mental health, and thus need to be taken care of in terms of health. Therefore, sports and exercise rehabilitation have attracted the attention of many people due to their excellent effects on physical function, disease prevention and improvement in quality of life. The sports and exercise rehabilitation major at New Zealand universities is one of the main training grounds for specialised health services, and it has the task of producing high-quality talents for society and driving health-related research. A systematic analysis of how this main function will operate in an aging society will help to clarify its direction of development and positioning, and provide practical reference for the government, educational institutions and other parts of society.

1. The Role of Sports and Exercise Rehabilitation in an Aging Society

1.1 Theoretical Basis and Practical Significance

Sports and exercise rehabilitation are very necessary in our ageing society. The theoretical basis and practical advantages will determine the main position of health management for older people. Sports and exercise rehabilitation integrates various knowledge from exercise physiology, rehabilitation medicine, psychology and sociology at the theoretical level. Exercise physiology has shown that moderate exercise is beneficial for the cardiovascular system, muscles and metabolism. Aerobic exercise can improve cardiovascular health and other functions of the body; thus, it can delay aging and sarcopenia. At the same time, rehabilitation medicine has shown that exercise intervention can increase

the flexibility of joints and strength of muscles to prevent falls and promote postoperative recovery of function. Psychological studies have shown that exercise can effectively reduce depression and anxiety in older people, increase their sense of self-worth and participation in society, and thus improve their mental health^[1].

At present, the multiple levels and many destinations for sports and exercise rehabilitation intervention have been extended to help improve all-around health for older adults. First of all, exercise intervention can prevent and control chronic diseases, reduce the risk of hypertension, diabetes and cardiovascular disease, and improve the quality of life of people with chronic diseases. Second, the rehabilitation exercise training will help the elderly improve their strength, balance and flexibility to live independently for a longer time and reduce the risk of falls. Exercise rehabilitation programmes also offer social support for older people through group activities and help reduce loneliness and improve their mental health and social life. Compared with the old system of medical care, sports and exercise rehabilitation are also economically efficient; thus, the pressure on the health insurance fund can be reduced and healthy ageing will be promoted. Sports and exercise rehabilitation have shown good results in improving the health of older people and are now helping to address problems in our ageing society.

1.2 Analysis of the Demand for Sports and Rehabilitation Services among the Elderly Population

As an ageing society develops, the various needs of older people for sports and rehabilitation services have become more varied and personalised. The main reasons for this are physiological, psychological and social needs. As people get older, the problems in their health are more numerous and diverse; therefore, people in this age group need more specialised and personalised health services.

Physiologically speaking, older people are often more likely to have reduced bone mass and muscle atrophy, and joint diseases are also common problems. Therefore, mobility will decrease, pain will increase and the risk of falls will be relatively high. Exercise rehabilitation services for the above problems, such as strength training and balance training, can help improve people's physical fitness. Many older people have chronic illnesses, such as heart and blood vessel diseases, diabetes and arthritis. Personalised Exercise Programs have been shown to reduce symptoms and improve the quality of life to some extent.

In terms of psychological needs, as older people retire and face changes in life, they often lose their sense of purpose in society and may experience loneliness and anxiety due to health issues or the loss of loved ones. Physical exercise and exercise rehabilitation can boost the mental health of older people by improving their physical condition and promoting the release of dopamine. Group exercise programmes can also offer emotional support for older adults and help them feel more connected to society and less lonely.

Older people's need for a sense of belonging and participation in society has also promoted the development of sports and rehabilitation services. The older people can take part in community sports activities to reduce feelings of isolation and meet new friends. With the increase in health awareness among older adults, more and more people are now interested in exercising for good health and are actively seeking rehabilitation services to live a long, healthy life and maintain their vitality.

Different people in older age have different health problems and thus different needs. Elderly people in good health generally have a later onset of ageing and better physical condition due to aerobic exercise and low-intensity strength training. Those who are not well need more personalised attention, such as fitness tests and exercise for balance. Disabled older people need to receive all sorts of rehabilitation services to help them live independently and enjoy life to the fullest.

Older people are in higher demand for sports and rehabilitation services, but there are many barriers to accessing these services in practice, such as lack of funds, weak community support systems, other economic problems, etc. In the future, cooperation among professional education in universities and social service organisations will be necessary. By cultivating more professional talents and improving the quality of service, we will be able to meet the increasing rehabilitation demands of older people better.

2. Current Situation and Features of Sports and Exercise Rehabilitation Majors in New Zealand Universities

2.1 Program Structure and Educational Models

Sports and Exercise Rehabilitation majors at New Zealand universities are well-known for their various curriculum designs and advanced educational models that fully embody the combination of theory and practice. The contents of the program are generally all sorts of things, such as exercise physiology, rehabilitation medicine, anatomy, sports psychology and public health policies. The structure of this subject is interdisciplinary, so it can provide students with a wide scientific foundation and help them study all the various aspects of exercise rehabilitation in detail.

Universities in New Zealand have introduced various kinds of educational models to foster the professional abilities of students, such as case studies, laboratory work and community service. We will be taught the theory of learning in class, and we will also participate in some practical rehabilitation exercise projects, such as community-based rehabilitation programs for older adults and design of rehabilitation training for patients with certain illnesses. The model will have students use what they have learned in class to solve real-life problems. To meet the different learning needs of all students and attract more international students and career changers, many universities have introduced flexible study plans, such as a combination of online and offline classes and modular course design.

2.2 Research Directions and Social Values

Research by New Zealand universities in the field of sports and exercise rehabilitation is focused on innovation and the needs of society; thus, the international academic influence of this subject is expanding. Research directions include health intervention for older people, exercise therapy of chronic diseases, neurological rehabilitation technology and exercise and mental health. Among them, research on health interventions for older people has attracted much attention, and in particular, the design of exercise programmes to address sarcopenia, osteoporosis and falls in older age.

The results of this study have increased the foundation of knowledge in the area of exercise rehabilitation and provided new directions for application. Low-impact exercise training for older adults has been added to many community rehabilitation programmes to help reduce the number of falls among older people. At the same time, many universities are working with the government and other organizations to jointly develop and carry out health policies. Through the cooperation mentioned above, research on exercise rehabilitation in New Zealand has successfully translated laboratory results into community practice; thus, not only has the health of older adults improved, but so too has the pressure on the healthcare system been reduced considerably, and the social value of such scientific research has also been shown.

2.3 The Alignment of Talent Cultivation and Industry Needs

Talent cultivation in sports and exercise rehabilitation at New Zealand universities is closely linked to the demands of the industry, so it has been developing in a very adaptive way. First, the curriculum design should consider the actual needs of the aging society for rehabilitation professionals. Institutions aim to promote the all-round development of students' skills in the design of exercise intervention, personalised rehabilitation training and psychological support for older adults to train them in the field of elderly health management. The above education goals can help older adults over the age of 60 live well^[4].

Second, the university organises internships and other forms of cooperation among students and enterprises. Many institutions have established long-term cooperation agreements with rehabilitation medical institutions, nursing homes and sports organisations, etc. Students can directly participate in the work of these platforms and gain some experience and knowledge of the industry. Some universities have also organised industry-certification courses for students to obtain both academic degrees and professional qualifications after graduation and improve their employment prospects.

Finally, the feedback mechanism of the universities and the industry is also continuously improving. Periodically contact the leading companies in the industry and employers to update the content of the curriculum and teaching methods according to changes at the companies. Fluctuations will help the talented people produced by New Zealand universities take on all sorts of jobs more easily and meet the health service needs of an aging society; thus, the connection between higher education and

industry will be further strengthened.

3. Innovative Practices of the Sports and Exercise Rehabilitation Major in Responding to an Aging Society

3.1 Curriculum Reform in Light of the Needs of an Aging Society

With the changes in the health needs of older people in recent years, many universities around the world have begun to modify their courses for sports and exercise rehabilitation. The reform will be in line with the actual needs of older people in the health service area. Update the content of the curriculum and introduce new teaching methods to provide students with all-round and practical education.^[5]

First, the update of curriculum content will focus on addressing the common health problems of older people systematically. Bone degeneration, muscle loss (sarcopenia), cardiovascular diseases and other issues in older people's minds are all very common health problems for seniors. Thus, some colleges have started to organise special courses. Students will be able to design and conduct scientific exercise programmes for older people according to the above modules. These programmes focus on the recovery and maintenance of physical function, but also address the improvement of mental health and all-round quality of life for older people.

Curriculum reform has also promoted the development of all kinds of new teaching methods to improve students' practical skills and interdisciplinary thinking. For example, many universities have introduced scenario simulation technology in their courses to have students observe and deal with all kinds of problems that may arise in the rehabilitation of older people in a virtual environment. The above technologies can show the results of all kinds of rehabilitation plans and help students learn about all the different ways to solve serious health problems.

At the same time, with the rise in demand for specialised sports and rehabilitation services among older people, universities have begun to cooperate with medical and rehabilitation institutions to adjust the content of their curricula in line with the actual needs of these industries. Some universities have also collaborated with hospitals, nursing homes and community rehabilitation centres to have industry experts regularly participate in curriculum planning and provide students with practical experience in real work situations.

3.2 The Application of Technological Innovation in Geriatric Rehabilitation

New technologies have developed many new ways to help older people with health problems, and now they are attracting the attention of researchers and teachers in sports and exercise rehabilitation at universities around the world.

First, there have been some achievements in the development and application of wearable devices for rehabilitation services. Now, many kinds of health-monitoring devices have been developed to collect real-time health data on older people, such as steps taken, heart rate and blood oxygen levels, sleep quality, etc., in order to help create personalised exercise plans. A remote-monitoring system can be used to help older people exercise at home and be observed 24 hours a day by rehabilitation staff; thus, the rehabilitation services will be more effective and accurate.

Artificial intelligence is now being applied to the problem of older people's care. Based on the health data and medical history of the patients, the AI will recommend a suitable formula and modifications to the rehabilitation plan. For example, in strength-and-balance training, AI can adjust the strength and frequency of exercise based on new information about the health of older adults at that time to prevent injury caused by too much or too little exercise^[6].

Second, VR and AR technologies have created some new experiences and opportunities for the rehabilitation of older people. Virtually, people aged 60 and over can feel that they are 'virtually travelling', motivating them to exercise voluntarily in rehabilitation and help achieve their goals, such as improving balance, cardiovascular and respiratory fitness, etc. AR can show people how to exercise in real time and give instructions; for example, it can help older people learn to do exercise rehabilitation exercises correctly and safely under virtual guidance.

With the development of telerehabilitation platforms, some technical support has also been added to distribute geriatric rehabilitation services. Wearable devices, artificial intelligence, online guidance and

other services have all been added to the platform to help older people in rural areas or those with mobility problems access professional rehabilitation services.

3.3 Multi-party Cooperation in Professional Development

In the course of promoting the development of the sports and exercise rehabilitation major, New Zealand universities are paying more and more attention to multi-party cooperation and building a collaborative network with institutions such as universities, governments, industries, non-profit organisations, etc.

One of the many types of this multi-party cooperation is cooperation between universities and medical institutions. Set up internship and research bases for students to carry out all kinds of practical rehabilitation projects, such as community health promotion activities for older adults and hospital-based post-operative rehabilitation services. The above practical experience has given the students some skills that are difficult to learn in class; thus, they can handle real-life problems better after graduation.

Cooperation with the government will increase the social contribution of university research. New Zealand universities have developed national health policies based on empirical research and are helping to shape these policies. For example, some exercise intervention and health management programmes for older people developed by universities have been introduced into the public health plans in New Zealand to help the government address the health problems of an ageing population.

Universities are working with enterprises to carry out research and development in technology and industrialisation to promote the rapid development of rehabilitation technology. Wearable devices and telerehabilitation platforms developed in cooperation with technology companies are typical cases of how technology can be applied in this field and how the scientific research results of universities can be widely used in the market.

Non-profit organizations are also part of the cooperative network and have been leading many initiatives in community health promotion and public welfare. Working together with the organisations mentioned above, universities will better meet the actual needs of older people and develop more targeted rehabilitation projects. Increase the number of people who can use rehabilitation services and strengthen the social service function of universities.

3.4 The Need for Policy and Financial Support

Although the universities in charge of sports and exercise rehabilitation majors have achieved some results, more progress cannot be made without policy and financial support. The government should introduce corresponding policies to address the problem of an ageing population and improve the use of educational resources and the sustainability of vocational education. Increase the enrollment quota for the major of sports and exercise rehabilitation to meet the growing demand for talent, strengthen interdisciplinary research projects that combine all kinds of fields, such as sports medicine, psychology and social work, to develop all-round health management solutions, set up special scholarships to attract and cultivate more outstanding professionals, and continuously provide new ideas and professional abilities for this field.

At the same time, good funds should be provided for universities to carry out new-technology and application-oriented research. An increase in the amount of research funds will promote the development of new rehabilitation technologies, such as AI-assisted rehabilitation and personalised exercise-plan tools. The above technologies will increase the efficiency of rehabilitation and meet the changing needs of the people.

Policy formulation should also promote cooperation between universities and private enterprises to spread the results and technological applications of achievements, so that educational and research results can quickly meet the actual needs of society. Through all kinds of policies and financial support, the university's sports and exercise rehabilitation major can better address the problems of an aging society, meet the health management needs of older people, and offer more all-encompassing and new ideas.

Conclusion

Through a systematic analysis of the relationship between sports and exercise rehabilitation majors in New Zealand universities and an aging society, this paper finds that the sports and exercise rehabilitation major is of great assistance to an aging society. It can help the older people in society be healthier and is also beneficial for the healthcare system. New Zealand universities have good teaching and research resources, and thus can also help advance the development of this field. In the future, universities should strengthen the design of courses according to the demands of an aging population, increase the integration of theory and practice, and promote the application of advanced technologies such as wearable devices and virtual reality in exercise rehabilitation to enhance the accuracy and efficiency of interventions.

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