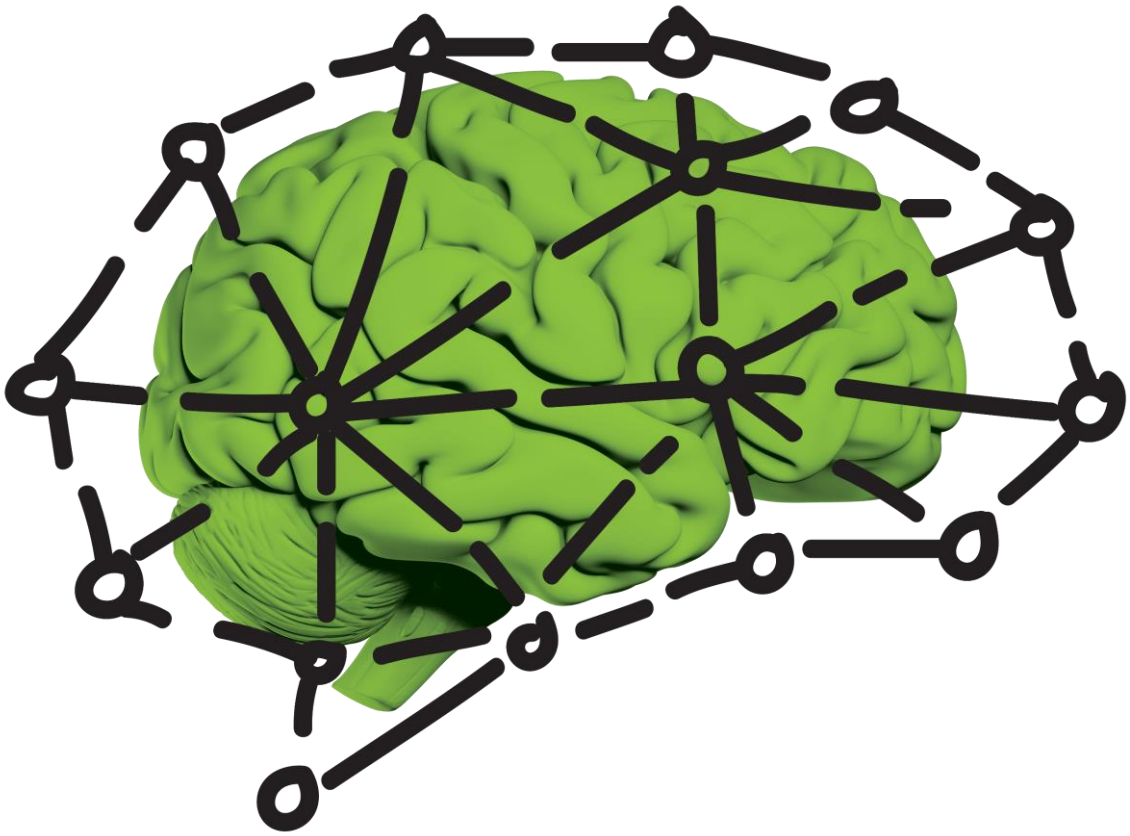
FRANCIS+ HEALTH

NSW Ministry of Health



Exercise Physiology - Horizons Scanning and Scenario Generation Report

July 2019

TABLE OF CONTENTS

INDEX OF FIGURES AND TABLES

1 Executive Summary

The purpose of this document is to outline the methodology, approach and themes raised by the literature and exercise physiology stakeholders to inform the Workforce Modelling phase of the NSW Ministry of Health's Workforce Planning Methodology. It should be noted that the views expressed in the report are not necessarily those of the NSW Ministry of Health.

The Exercise Physiology Horizons Scanning and Scenario Generation Project is driven by the NSW Health *Health Professionals Workforce Plan 2012-22* (the Plan), which sets out the framework for addressing the workforce implications of increasing demand for health services in NSW. The Plan establishes that it is unsustainable to simply increase staffing without considering changing workforce practices and introducing more efficient and effective models of care.

The Plan outlines that the Workforce Planning and Talent Development (WP&TD) Branch is responsible for developing and modelling projections for Allied Health workforces in line with forecasted health service delivery requirements.

Exercise physiologists are qualified allied health professionals with clinical skills and knowledge to prescribe, deliver and evaluate exercise interventions for patients. These interventions are delivered in a variety of settings including acute hospital or outpatient settings, population health, workplace health and rehabilitation, aged care, fitness centres, and in sport settings (ESSA, 2019). The Exercise Physiology Workforce Horizons Scanning and Scenario Generation Project (the Project) supported stakeholders to participate in the development of a driver model that articulates key demand and supply drivers for the exercise physiology workforce in NSW.

This Project identified several demand drivers for the exercise physiology workforce including:

- Government funding research and policy
- Ageing populations and increasing complexities
- Service and referral pathways
- Changing recommendations to standards of care
- Overall awareness of the profession
- Service coverage and accessibility.

Several supply drivers were identified for the exercise physiology workforce including:

- The profile of the profession
- Workforce recruitment and retention in rural and remote areas
- Workforce planning
- Graduate numbers and availability of placements
- Opportunities in the public verses private sector
- Skill mix.

In addition to the driver model, throughout the Project several key challenges and opportunities were identified. Key challenges indicated by stakeholders included:

- Limited consumer and professional awareness of the exercise physiologist's role
- Scope of practice and professional overlap with other professions

- Career pathways and professional development opportunities
- Access to comprehensive data on the workforce
- Rural and remote service accessibility and availability.

Opportunities identified by stakeholders included:

- Increasing involvement in service planning and leadership
- Multidisciplinary team participation
- Improvements to the reporting structure and governance of exercise physiologists
- Enhancing the evidence base of exercise physiology
- Improving support to the Aboriginal community
- Improved role delineation and scope of practice
- Improving the profile of the profession; and
- Technological enhancements.

2 Introduction

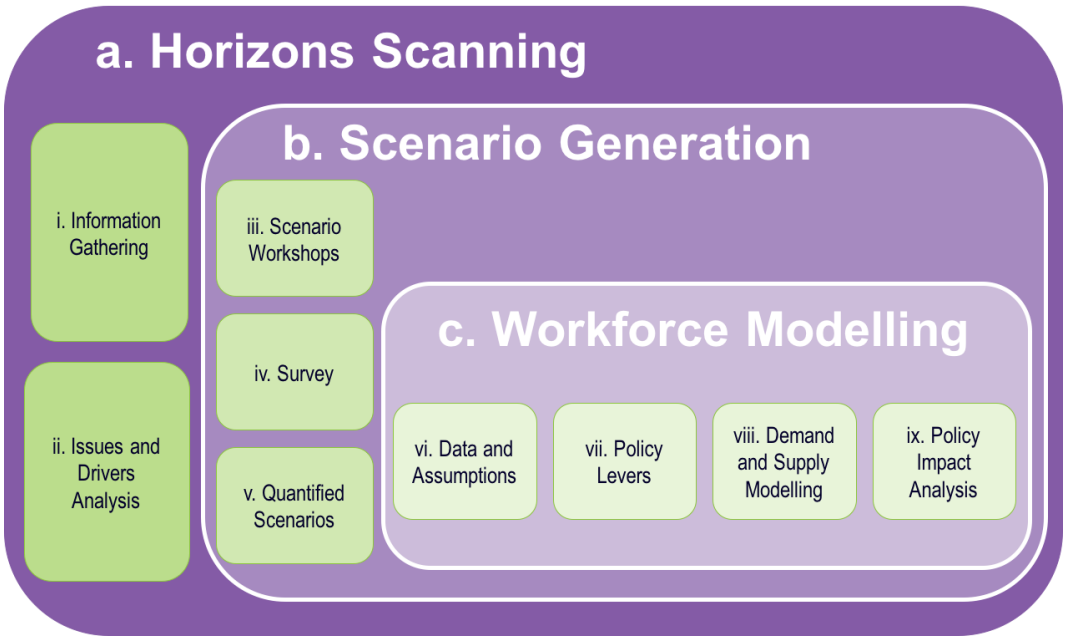
The Exercise Physiology Horizons Scanning and Scenario Generation Project is driven by the NSW Health *Health Professionals Workforce Plan 2012-22* (the Plan), which sets out the framework for addressing the implications of increasing demand for health services in NSW on Allied Health workforces. The Plan establishes that workforce planning requires consideration of changing workforce practices and the emergence of more efficient and effective, but increasingly more complex models of care. The Plan outlines that the Workforce Planning and Talent Development (WP&TD) Branch is responsible for developing and modelling projections for the Allied Health workforce in line with forecast health service delivery requirements.

The Horizons Scanning and Scenario Generation Project (the Project) offered an opportunity for exercise physiology stakeholders in NSW to participate in taking a short, medium and long-term view of workforce implications for their field. In this, several system-wide influencing factors require consideration, including (but not limited to):

- The need to shift the provision of service from an institutional focus, towards a patient-centric model
- An increasing focus on early intervention and prevention models of care
- The impacts of information and community technology (ICT) on the exercise physiology profession, how technology supports their role, its capabilities and challenges with access, and the overarching statewide eHealth and NSW ICT strategies
- An emphasis on collaborative, multidisciplinary teams across care settings and balancing health profession specialisation with generalisation to address the increased demand for care, particularly amongst patients with complex, long-term conditions and the ageing population
- A need to consider the geographic distribution of workforce to align with changing population demographics and health needs
- Broader NSW-wide and national programs of work including, for example, Leading Better Value Care and the National Disability Insurance Scheme (NDIS).

The purpose of this document is to outline the methodology, approach and themes raised in the literature and by exercise physiology stakeholders to inform the Workforce Modelling phase (Stage C in **Error! Reference source not found.**) of the methodology. It should be noted that the views expressed in the report are not necessarily those of the NSW Ministry of Health.

Figure 1: Ministry of Health Workforce Planning Methodology



2.1 Methodology

This Project focuses on the Horizons Scanning and Scenario Generation phases of the NSW Ministry of Health's Workforce Planning Methodology.

The process used throughout the Project comprises four components: an information gathering phase, an issue and driver analysis phase, scenario workshops, and a workforce survey. Different approaches were used during each component to draw out relevant information as described below.

2.1.1 Literature search and review

An initial literature search was conducted using Google Scholar and major databases including Wiley Online, JSTOR, OVID, SAGE, and MEDLINE which formed the foundation of the literature review. These databases were utilised because of the reach of all health science and medical journals. Key words relevant to the exercise physiology workforce were identified and utilised such as exercise physiology and science as well as more generalist searches around the therapeutical benefit of exercise intervention. Recent publications were prioritised, and available published data were considered. To augment the initial findings, a comprehensive search of organisational and grey literature was also undertaken.

2.1.2 One-to-one stakeholder interviews

A series of one-to-one interviews were conducted in the initial stages of the Project. The interviewees were chosen as they represented a cross section of stakeholders and included universities, the professional association, and exercise physiologists working for Local Health Districts (LHDs) and Specialty Health Networks (SHNs). These interviews provided an opportunity for a deeper exploration into what stakeholders perceived to be the key workforce drivers, challenges and opportunities. The interviews provided a focused framework for development of the horizons scanning and scenario generation workshops. Individuals who took part in the interviews also attended the horizons scanning and scenario generation workshops.

2.1.3 Stakeholder online survey

An online survey was designed to gather 'high-level' views from the workforce to support validation of the driver model. Distribution was targeted to all exercise physiologists employed by NSW Health and 37 responses were collected, which was considered a relatively high level of engagement against the overall FTE numbers of the workforce.

The survey contained a series of questions relating to potential workforce demand and supply drivers, as well as potential challenges and opportunities faced by the workforce. The questions were informed by the initial findings from the literature review and the first horizons scanning workshop. Respondents were asked to identify the level of significance of the drivers, potential challenges and opportunities in addition to prioritising them based on the perceived level of impact.

2.1.4 Horizons scanning workshop

The horizons scanning workshop was conducted on the 8th April 2019. Key exercise physiology stakeholders representing LHDs and SHNs, NSW based universities and representatives from professional bodies participated in the workshop and as a group identified overarching workforce demand and supply drivers. A list of the stakeholders engaged throughout the Project and those who attended both workshops is available in *Appendix 7.1.*

Issues raised by stakeholders in the workshop, augmented with themes from the literature review and survey results, informed the initial development of the exercise physiology driver model. The model was then validated at the following scenario generation workshop.

2.1.5 Scenario generation workshop

The scenario generation workshop was held on the 17th May 2019 and built upon themes that were explored in the horizons scanning workshop. The same participants from the horizons scanning workshop were invited to maintain consistency.

The exercise physiology driver model, based upon emerging themes, was validated with the participants. In addition, stakeholders explored a series of future scenarios to determine their plausibility, potential impacts on the workforce and hypothesised methods by which the workforce could address them.

3 Overview of the Workforce

Exercise physiologists are qualified allied health professionals with the skills and knowledge to prescribe, deliver, and evaluate exercise interventions for patients. These interventions are delivered in a variety of settings including acute hospital and outpatient settings, population health, workplace health and rehabilitation, aged care, fitness centres, and in sport settings (ESSA, 2019). The workforce is spread across both public and private sectors, with exercise physiologists predominately working in private settings.

Areas of practice for exercise physiologists currently include (but not limited to) cancer, cardiovascular, renal, mental health, metabolic disorders, musculoskeletal disorders, neurological/neuromuscular disorders, respiratory/pulmonary disorders and paediatric health (ESSA, 2018). Exercise physiologists can provide treatment for patients who have an existing medical condition or injury, or who are at risk of developing one (ESSA, 2018).

Exercise physiology is considered an emerging profession, growing as a result of the increasing evidence for the efficacy of exercise in the course of treatment.

3.1 Scope of practice

Exercise physiologists are responsible for providing exercise interventions aimed at preventing or reducing the impact of disease or injury. According to the ESSA Foundational Scope of Practice document, responsibilities of exercise physiologists are:

- Screening, assessing and applying clinical reasoning to ensure the safety and appropriateness of exercise and physical activity interventions, including conducting tests of physiological measures
- Assessing movement capacity in people of all ages and levels of health, wellbeing or fitness
- Development of safe and effective individualised exercise plans and interventions
- Provision of health education, advice and support that enhances a person's health and wellbeing, including nutritional advice and information on relevant prescribed medicines
- Provision of exercise intervention and education for those at risk of developing a chronic condition or injury
- Provision of clinical exercise prescription, for those with existing chronic and complex medical conditions and injuries
- Provision of exercise-based rehabilitation and advice for patients in the acute and sub-acute stage of injury, surgical intervention, or during recovery to restore functional capacity and wellbeing (ESSA, 2018).

3.2 Professional Bodies and Associations

Exercise and Sports Science Australia is the peak professional body that represents the exercise physiology workforce at a national level, and this is the only body that oversees and provides governance to exercise physiologists in Australia.

3.2.1 Exercise and Sports Science Australia

Exercise and Sports Science Australia (ESSA) is recognised by the Federal Government as the professional governing body representing exercise physiologists, exercise scientists and sports scientists in Australia. As the workforce is self-regulated and overseen by ESSA, there is no requirement to register as a practitioner with the Australian Health Practitioner Regulation Agency (APHRA). For an exercise physiologist to claim against Medicare, they require registration with ESSA.

3.3 Entry to the profession

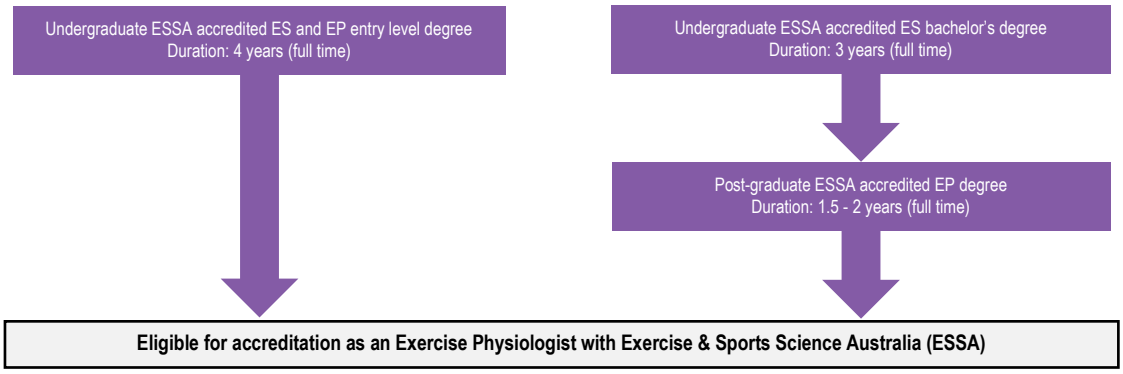
To become an exercise physiologist eligible for accreditation with ESSA, a candidate must have completed a recognised undergraduate or postgraduate degree (ESSA, 2019). Undergraduates must either undertake a 4-year accredited exercise physiology course or a 3-year exercise science course and postgraduate exercise physiology degree (ESSA, n.d.). Postgraduates must satisfy the ESSA Exercise Science and Exercise Physiology Standards, which includes at least 500 hours of practicum and the Recency of Practice requirements for annual accreditation (ESSA, 2019).

Across Australia, 30 universities offer programs that award full or provisional accreditation status with ESSA (ESSA, 2019). There is significant growth in the number of graduates completing human movement degrees in the past decade, almost doubling in numbers from 1,246 in 2006 to 2,253 in 2015 (Stevens & Nancarrow, Graduate Destination Report, 2017). A list of current full and provisional accredited exercise physiology university programs can be found in *Appendix 7.2*.

Exercise physiologists working for NSW Health are employed under the NSW Health Service Health Professionals (State) Award 2019.

Figure 2 below shows the pathway to enter the exercise physiology profession.

Figure 2: Pathways for accreditation to the Exercise Physiology profession



3.4 Workforce Characteristics

The following section details the key workforce characteristics for the Exercise Physiology profession.

3.4.1 National exercise physiology workforce characteristics

ESSA, the professional body representing exercise physiologists, holds demographic information on their members and provided the most recent figures for exercise physiologists practicing across Australia in public, private, and academic roles. Although membership of ESSA is highly recommended, it is not mandated and therefore these figures do not necessarily represent the entirety of exercise physiologists working in NSW or nationally.

In 2018, there were 5,101 accredited exercise physiologists nationally (ESSA, 2018). As of June 2019, there were 40.4 full-time equivalent (FTE) exercise physiologists employed within NSW Health.

Other key characteristics of the workforce include:

- The workforce is distributed across both the public and private sectors, with employees predominately working in private settings (40.4 FTE working for NSW Health out of a total of 1,881 registered exercise physiologists in NSW).
- A younger workforce, with most exercise physiologists working in NSW Health aged under 45 (96%) and evenly distributed across genders (NSW Ministry of Health Workforce Talent and Development Branch, 2019).
- An increasing number of graduates undertaking exercise physiology and sports science degrees each year; between 2006 and 2015, the number of graduates almost doubled (Stevens & Nancarrow, The Exercise & Sports Science Australia Graduate Destination Report, 2017)
- The workforce continues to grow steadily each year as demonstrated below in Table 1.

Table 1: Number of Accredited Exercise Physiologists in Australia by year

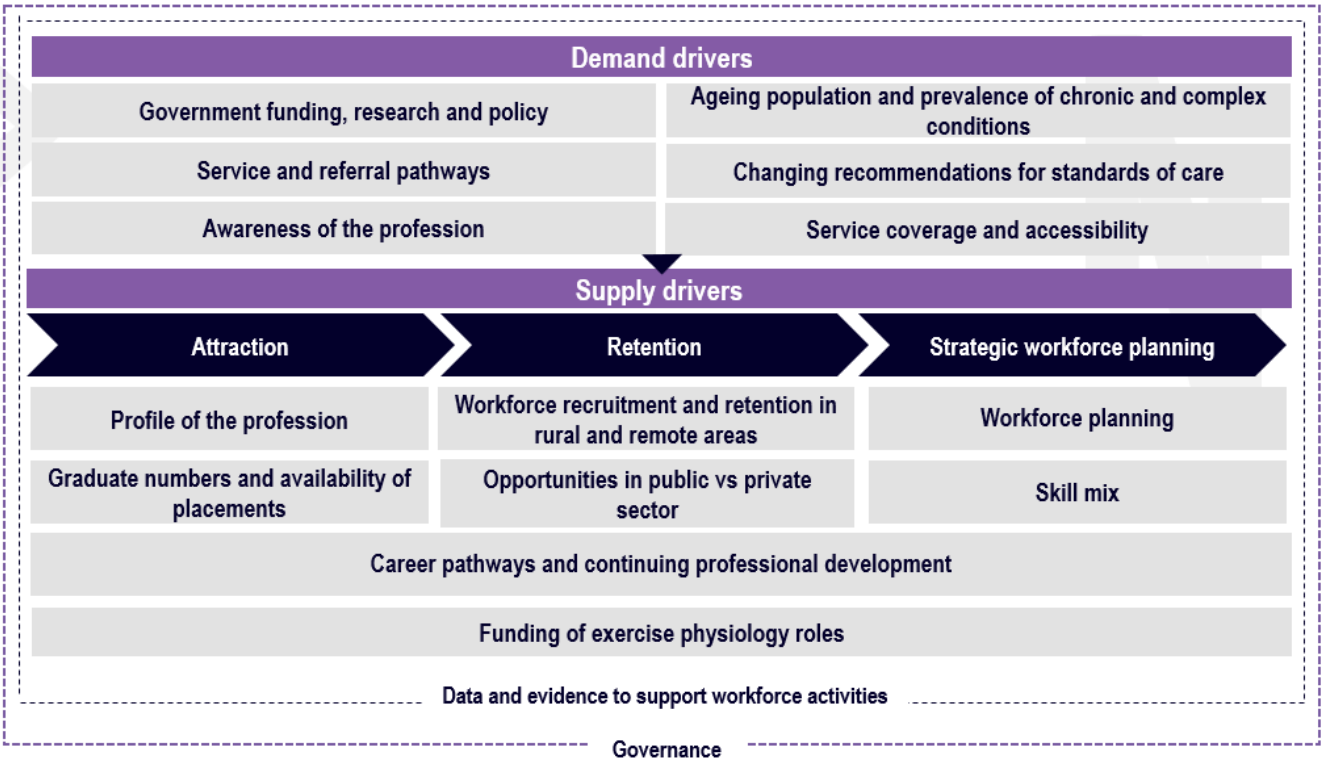
	2011	2012	2013	2014	2015	2016	2017	2018
No. of Accredited Exercise Physiologists nationally	2,016	2,509	2,937	3,359	3,637	4,165	4,626	5,101
Increase from previous year	-	24%	17%	14%	8%	15%	11%	10%

Source: ESSA Annual Reports 2011 to 2018

4 Summary of the Key Demand and Supply Drivers

The section below provides a summary of the key drivers as identified during the Project which impact demand and supply, on and for, the exercise physiology workforce. The driver model in Figure 3 below brings together these drivers that were identified, developed and validated through the workforce horizon scanning process with key exercise physiology stakeholders.

Figure 3: Exercise Physiology – Demand and Supply Driver Model



4.1 Demand Drivers

Demand drivers are defined as the factors that shape and influence demand for the exercise physiology workforce. Demand drivers discussed in this section are a synthesis of themes identified by stakeholders and those collated from the literature.

Table 2: Overview of the key demand drivers for the exercise physiology workforceTable 2 below provides a high-level overview of the demand drivers. A more detailed explanation and analysis of each driver follows.

Table 2: Overview of the key demand drivers for the exercise physiology workforce

Demand Driver	Description
Ageing population and prevalence of chronic and complex conditions	Incidence of chronic and complex disease, cancer and other conditions such as mental health based on population growth and demographic characteristics, including age and geographic distribution
Government funding, research, and policy	Scope, focus, and access to services as determined by government funding and expenditure on exercise physiology services (e.g. Medicare Benefit Scheme or NDIS)
Service and referral pathways	Modes of accessing services provided by exercise physiologists both in community and hospital
Changing recommendations for standards of care	Evolving models of care based on growing evidence that recommend exercise prescription and active therapy as part of routine care
Awareness of the profession	Patient and professional awareness of exercise physiology services based on consumer expectations, knowledge and perceptions
Service coverage and accessibility	The coverage and accessibility of exercise physiology services based on geographic (particularly rural) and economic distribution

4.1.1 Ageing population and prevalence of chronic and complex conditions

The ageing population as well as the increasing in complex and chronic disease rates are transforming the priorities of healthcare and its methods of delivery. Stakeholders indicated that due to the increasing bodies of literature and changing standards of practice, there are additional areas of opportunity for exercise physiologists to treat and be involved in multidisciplinary care settings emerging. This was determined to be one of the biggest drivers of demand for the profession.

At present, exercise physiologists are widely employed in cardiac rehabilitation programs and mental health inpatient facilities, however there are emerging opportunities for involvement in other areas of care including weight management, osteoporosis, diabetes (pre-diabetic and type-2) and cancer rehabilitation (Soan, Street, Brownie, & Hills, 2014). Some prominent areas of care identified through literature, and corroborated by stakeholder interviews, are outlined in the following section.

Ageing population

Australia's ageing population is expected to have a significant impact on the demand for exercise physiology services as the population continues to age. The population of adults aged 75 years or greater is predicted to double in the next 20 years (Hewitt, Refshauge, Goodall, Henwood, & Clemson, 2014). Elderly people are among the population groups at heightened risk of inactivity and sedentary lifestyles. Surveys have indicated that clinicians are less likely to offer exercise advice or prescriptions to older adults, therefore this particular age cohort is at even greater risk (Singh, 2002).

Falls pose a significant risk to people aged 65 or over with one-in-three having a fall each year in NSW (CEC, n.d.). Annually, falls are responsible for 27,000 hospitalisations and 300 deaths and are more common for residents of aged care facilities or patients in hospital (CEC, n.d.). Several initiatives across NSW are part of the overall Falls Prevention Strategy. These include community-based initiatives such as *Stepping On* and *Active and Healthy* for consumers, as well as the NSW Falls Prevention Program aimed at healthcare providers and NSW public hospitals (NSW Health, n.d.). Stakeholders reported exercise physiologists have a role to play in these types of initiatives, not only in preventing falls but also in the active rehabilitation of those prone to falls.

In a recent review of the Australian Aged Care Funding Instrument, it was recommended that exercise physiologists be recognised as Aged Care Providers to increase the provision of exercise interventions in aged care facilities (Post, Corlis, Penington, & Parfitt, 2018). Greater utilisation of exercise services in aged care is linked to improved health status, optimal ageing as well as significantly reducing the risk of falls in aged care homes (Singh, 2002).

Stakeholders reported that there is a significant opportunity for exercise physiologists to engage with older people within aged care facilities, hospitals and in the community to prescribe exercise both as a falls prevention mechanism but also increase activity to prevent deconditioning.

Mental Health

Stakeholders indicated that mental health was emerging as a new area utilising exercise physiologists. Mental health conditions affect many Australians each year, with approximately 18% of the NSW population reported to have had a mental health condition at any one time (NSW Health, 2014). According to the Royal Australian and New Zealand College of Psychiatrists (RANZCP), people with serious mental illness have a life expectancy of 10 to 32 years less than that of the general population, and that approximately 80% of this discrepancy is attributed to the significantly higher rates of physical illnesses, such as cardiovascular diseases and cancer experienced by this population (RANZCP, n.d.).

NSW Health's *Living Well: A Strategic Plan for Mental Health in NSW 2014-2024* highlights the urgent need to address the physical health needs of mental health patients. According to a national survey of people living with psychotic illness in 2010, 45% of the participants were classified as obese, compared with 21% of the general population (Morgan, et al., 2012). 96% of those surveyed were further identified as being either sedentary or undertaking low levels of exercise, with the most common reasons recorded being lack of motivation, tiredness and pain or discomfort (Morgan, et al., 2012).

There have been a number of initiatives in NSW to address these findings. Two examples are the ESSA "Addressing the Physical Health of People with Mental Illness" joint position statement (ESSA, 2017) and the NSW Government endorsed Healthy Active Lives (HeAL) statement. HeAL is an international collaboration led by NSW clinicians and comprised of

consumers, family members of those with mental illness, researchers as well as clinicians from a range of disciplines. HeAL describes a series of principles, processes and interim goals to improve the physical health of young people who experience psychosis (iphYs, 2015).

The wealth of evidence supporting the need for a holistic approach in managing mental illnesses indicates a clear demand for physical health experts. Exercise physiologists possess the suitable knowledge and skills to collaborate in a multi-disciplinary team (MDT) to deliver such a plan and this is supported by the Mental Health Australia consensus statement which outlines the need for exercise physiologists involvement in mental health specialties (Mental Health Australia, n.d.).

Based on the stakeholder survey, a number of respondents (45%; n=16) indicated they currently work in a mental health setting within NSW. Stakeholders agreed that mental health was a growing area for demand for exercise physiology services, both in the community and inpatient settings.

Cancer Care

Incidences of cancer are increasing in Australia, growing from 43,000 new cases in 2015 to an expected 49,000 new cases annually by 2021 (Cancer Institute NSW, n.d.). One in two Australians will have a cancer diagnosis by the age of 85, increasing the need and demand for cancer treatments overall in NSW (Cancer Institute NSW, n.d.).

Numerous clinical trials have indicated the beneficial role of exercise for the physical and mental wellbeing of patients with cancer, across various types and stages (Cormie, et al., 2018; Taylor, et al., 2004; Barbaric, Brooks, Moore, & Cheifetz, 2010). In 2018, the Clinical Oncology Society of Australia (COSA) amended their Position Statement to embed exercise as a standard prescription, noting that, "*accredited exercise physiologists and physiotherapists are the most appropriate health professionals to prescribe and deliver exercise programs to people with cancer*" (COSA, 2018). Furthermore, the Position Statement outlines the importance of a unified care team undertaking their duty to encourage physical activity for their patients, and that patients adhere to exercise guidelines (COSA, 2018).

Stakeholders reported that the recommendations were already having a positive impact on the perception and awareness of exercise physiology as a profession, as well as the potential to continue to grow demand for exercise physiologists in clinical cancer care settings.

Cardiac Care

Half of the Australian population do not engage in adequate levels of exercise, leading to a two-fold increase in the risk of developing cardiovascular disease (Briffa, et al., 2006). Studies have demonstrated that cardiac rehabilitation programs with a strong element of support for exercise physiologist involvement have been successful in changing exercise behaviours, preventing or delaying subsequent cardiac arrest and events , improved quality of life, and reducing the risk factors for co-morbidities (Soan, Street, Brownie, & Hills, 2014; Brubaker, Ross, & Joo, 2016; Petter, Blanchard,, Kemp, Mazoff, & Ferrier, 2009; Walthera, et al., 2008; N, 2012).

The engagement of exercise physiologists for patient care post cardiac events is growing, and prospects of further growth is promising following the National Heart Foundation of Australia's recommendations that individuals should be referred to a 12-week supervised exercise program following a cardiovascular event (Briffa, et al., 2006). This is expected to further impact on the demand for exercise physiologists once embedded into standards of care for cardiac patients.

Diabetes

Diabetes is the leading cause of morbidity and mortality globally, and costs Australia $835 million dollars annually (Lim, Bertram, Barendregt, & Vos, 2010). The prevalence of diabetes in Australia is rising, with a further 1% of the population affected by diabetes each year (Hordern, et al., 2012). Exercise has been proven to improve glycaemic control, body composition and general wellbeing, which contributes in preventing or treating the onset of type 2 diabetes (Hordern, et al., 2012).

A Position Statement from ESSA in 2012 noted that exercise training should be an essential component for any treatment plan for persons diagnosed or at risk of type 2 diabetes, and this training should be managed by an appropriately qualified professional (either an exercise physiologist or physiotherapist) (Hordern, et al., 2012).

50% (n=18) of the respondents in the stakeholder survey noted working in clinical areas related to diabetes. As rates of diabetes and associated complications and those at risk of diabetes continue to grow, there is an increasing opportunity for exercise physiologist led interventions in this space.

Chronic Obstructive Pulmonary Disease and Respiratory Rehabilitation

Chronic Obstructive Pulmonary Disease (COPD) typically occurs in people aged 45 and over due to the slow nature of development of the condition (AIHW, 2018). Approximately 5% (1 in 20) of Australians aged over 45 reported having COPD, and its prevalence reported even higher in Aboriginal and Torres Strait Islander population at 8.8% for the same age cohort (AIHW, 2018; Australian Bureau of Statistics, 2013). COPD was also reported to be the fifth leading cause of death during 2015 (AIHW, 2018).

Similar to findings linking physical activity with improved outcomes for cardiac conditions, respiratory rehabilitation has been recognised as an effective means of managing COPD symptoms and delaying the deterioration in lung function and health status (Yang, et al., 2018). Lung Foundation Australia, in conjunction with the Thoracic Society of Australia and New Zealand, developed the *COPD-X Plan: Australian and New Zealand Guidelines for the management of Chronic Obstructive Pulmonary Disease*. These guidelines recommended the inclusion of regular physical activity tailored to the individual's capabilities by an exercise physiologist or physiotherapist (Yang, et al., 2018). Exercise physiologists have also been acknowledged as playing a role in the assessment of exertional oxygen and the exercise rehabilitation of associated co-morbidities (Yang, et al., 2018). These guidelines have been endorsed by numerous professional bodies, including the Royal College of Nursing Australia and the Australian Physiotherapy Association, with the potential to increase the recognition in the value of exercise physiologists in care management of COPD patients.

4.1.1 Government funding, research, and policy

Stakeholders identified that government funding and policies have a direct impact on the workforce as well as the direction and breadth of the services they provide within the public health system. A number of statewide and national policy areas that impact on demand for the exercise physiology workforce are detailed below.

National Disability Insurance Scheme

The National Disability Insurance Scheme (NDIS) commenced on 1 July 2013 to offer a way of providing support for all Australians under the age of 65 living with a permanent and significant disability. The NDIS enables individuals with disabilities to access mainstream and community services through insurance, to help support them to improve their quality of life.

Under the NDIS, the Improved Health and Wellbeing and the Improved Daily Living scheme provides funds to consumers to access either individual or group advice related to their disability (NDIS, 2018). Exercise physiologists, as eligible providers under the scheme, can provide expert services to eligible consumers as part of tailored management plans. Most recent figures available show 17,730 individuals utilising exercise therapy and services as part of their NDIS package (COAG Disability Reform Council, 2019). As the NDIS becomes more widespread and embedded into standard care for those with a disability, it is expected that demand for exercise physiology and similar services will rise.

Medicare Benefits Scheme (MBS)

Exercise physiologists must be accredited through ESSA in order to provide services under Medicare (The Department of Health, 2014). Medicare rebates from an exercise physiologists, however, are only available following a referral from a General Practitioner (GP).

There are a number of Chronic Disease Management (CDM) Medicare items available for GPs to manage the health care of people with chronic or terminal medical conditions, including those requiring multidisciplinary team-based care from a GP and at least two other health or care providers. Eligibility for allied health services through this pathway is based on the presence of a chronic condition – one that has been present for six months or longer. There is no publicly available list of eligible conditions however they could include cancer, cardiovascular disease, diabetes, musculoskeletal conditions, and stroke (Department of Health, 2016).

There are particular MBS Items in which exercise physiologists can claim, including the aforementioned CDM items as well as ones for people with type 2 diabetes and specific allied health services for people of Aboriginal and Torres Strait Islander descent (The Department of Health, 2014). These items variously allow for patients to claim either one-on-one or group exercise physiology sessions. Analysis of these items showed 2.3 times increase in patients claiming benefits under these items between the 2012 and 2017 (Medicare Australia). Growth of claims represent growing demand for the services of qualified allied health professionals, including exercise physiologists.

Leading Better Value Care

The Leading Better Value Care (LBVC) program is a series of initiatives and funding packages available for NSW LHDs and SHNs to implement change programs. These initiatives focus on individuals with osteoarthritis, osteoporosis re-fracture, chronic heart failure, chronic obstructive pulmonary disease (COPD), diabetes, high risk foot services, falls, and renal supportive care. These are being tested and are in various stages of trial in selected NSW Health facilities, with planned roll out across more locations and settings. By the end of 2018, it was expected that LBVC initiatives would be present in more than 100 NSW Health facilities (NSW Health, 2018).

Currently there is no data or literature regarding the role of exercise physiologist in these initiatives; however, stakeholders engaged in the Project noted there is a growing role for exercise physiology in the LBVC initiatives with some LHDs employing exercise physiologists as part of their services.

Get Healthy

Get Healthy is an NSW Health delivered free phone-based health coaching service aimed at supporting lifestyle changes in adults. The service is operated by allied health professionals, including exercise physiologists, who provide up to ten (10) healthy lifestyle coaching phone

sessions over 6 months to participants. Individuals can either access the services themselves by calling or via referral by a GP or other healthcare provider.

An evaluation of the Get Healthy program showed an increasing demand on the services since its inception (NSW Health, 2013). It also demonstrated the positive impact on participants, with those losing an average of 3.8kg (4.0kg for Aboriginal participants), higher consumption of fruit and vegetables and undertaking more physical activity at the end of the 6 months (NSW Health, 2013). As a result of these encouraging findings, the Get Healthy service expanded to incorporate an Aboriginal-specific program to better align services to priorities identified in the *NSW Healthy Eating and Active Living Strategy 2013-2019* (O'Hara, McGill, Ahmed, McElduff, & Rissell, 2016). These successes not only highlight the value of the Get Healthy service but also the role of health coaches, including exercise physiologists.

Go4Fun

Approximately one-quarter of Australian children are overweight or obese. Obese children more likely to remain overweight into adulthood and likely to develop lifestyles diseases, such as diabetes (Henderson, et al., 2015). Reducing the prevalence of obesity in children by 5% over the next 10 years is a NSW Premiers Priority.

Go4Fun is a 10-week child obesity treatment program aimed at improving nutrition and increasing exercise in children. The program runs a weekly two-hour session that covers healthy living education and education. The program is run by allied health professionals including exercise physiologists. The program is operated by LHDs across the state with plans to extend in the future. There is significant opportunity for growth of exercise physiology to lead these services and demonstrate the value of movement in childhood in reducing risk factors associated with obesity.

4.1.2 Service and referral pathways

There are several service and referral pathways that allow individuals to access exercise physiology services, including:

- Referral as an inpatient
- Referral to an outpatient clinic
- GP referral to Medicare eligible services or private provider (see **Error! Reference source not found.** above)
- Self-referral to private provider or to a service such as Get Healthy.

Stakeholders reported that service pathways and referrals are one of the most significant drivers of demand for services provided by the exercise physiology workforce, however, is highly contingent on the awareness of their role and services available for other health professionals to refer to.

4.1.3 Changing recommendations for standards of care

As the body of evidence for the efficacy of exercise in treatment grows, an increasing number of organisations, such COSA, are amending their recommendations for treatment to include exercise prescription. As treatment guidelines are updated to include exercise prescription into standard practices of care, the demand for exercise physiology services are expected to increase.

COSA amended their position on the ideal standards of cancer care in 2018 to embed exercise prescription into all cancer care regimes (COSA, 2018). These standards note that all members of the care team have a duty to encourage activity and recommend patients adhere

to exercise guidelines, and that best practice cancer care includes referral to an accredited exercise physiologist or physiotherapist. Stakeholders reported the significance these guidelines were having on the impact on the demand for exercise physiologists in cancer clinical care settings and noted this would continue to grow.

Similar recommendations have been made in mental health settings, with RANZCP recommending that exercise intervention should be tailored and integrated into all in-patient and community mental health settings. This recommendation is supported by the Mental Health Australia consensus statement which outlines the need for exercise physiology involvement in mental health specialties (Mental Health Australia, n.d.). Stakeholders reported that exercise physiology-led interventions in mental health presented itself as the next big opportunity for growth in the profession.

4.1.4 Awareness of the profession

Stakeholders noted that limited public and professional awareness of the exercise physiology role impacts the demand on services. It was noted by stakeholders that limited awareness impacts a consumer's ability to understand and seek out exercise physiologist treatment. This could also lead to exercise physiology's omission from multidisciplinary team planning in healthcare settings, even where exercise interventions could benefit a patient's overall health outcomes. Stakeholders reported that awareness of the profession is highly contingent on the continued growth of the evidence base and governance of the profession as previously detailed. Stakeholders reported that a misunderstanding of the role and scope of practice may result in referrals being directed towards other professions or services. Growing the awareness of the profession was highlighted by stakeholders engaged in the Project as the driver that will have the most significant impact in the future.

4.1.5 Service coverage and accessibility

Rural and remote service availability was noted by stakeholders as an issue for the exercise physiology workforce throughout the Project; however, there was limited literature or evidence to suggest there were maldistribution in the way rural and remote areas access their services. As an emerging profession with still a lot of growth to be realised, stakeholders reported of the benefits that establishing services in rural and remote areas would for improving both patient outcomes in these areas and increasing opportunities for exercise physiologists to work in non-metropolitan regions.

4.2 Supply Drivers

This section provides a detailed analysis of the supply drivers impacting the exercise physiology workforce as informed by the literature and stakeholder engagement. Supply drivers are defined as factors that contribute to the availability, sustainability and size of the workforce.

Table 3 below provides a high-level overview of the supply drivers, followed by a more detailed explanation and analysis of each supply driver.

Table 3: Overview of the key supply drivers for the exercise physiology workforce

Supply Driver	Description
Profile of the profession	Professional voice, image and representation of the exercise physiology profession
Graduate numbers and availability of placements	The number and location of placements; and the volume of graduates available to the profession
Career pathways and professional development	Availability of career progression and continual professional development and education for practitioners
Workforce recruitment and retention in rural and remote areas	Workforce retention of exercise physiology practitioners based on geographic location
Workforce planning	Aligning the needs and priorities of the system with those of its workforce, and appropriate planning (i.e. maternity / backfill)
Opportunities in the public vs private sector	The number of exercise physiologist positions in the public vs private sector
Skill mix	Advanced practice and other combinations of skills/knowledge that contribute to the future of the workforce
Funding of exercise physiology roles	Funding of public sector exercise physiology positions and activities

4.2.1 Profile of the profession

Stakeholders acknowledged that the profile of the exercise physiology workforce is a key driver in attracting potential students and professionals into the workforce. The profile of the profession represents the professional voice, image and overall representation of the workforce. Stakeholders identified that growing the profile of the profession, such as through marketing and awareness-raising, would improve people's perception and understanding of the value and role of exercise physiologists. Whilst data shows an increasing number of students graduating from university with exercise and sports science and exercise physiology degrees, it not known why students seek out the opportunity to study these degrees. Better leveraging the networks of professional associations, such as ESSA, would also assist in growing the profile of the profession.

4.2.2 Graduate numbers and availability of placements

Stakeholders reported that there has been a significant growth in graduates completing exercise physiology and sports science degrees; the number of annual graduates undertaking these degrees almost doubled between 2006 and 2015 (Stevens & Nancarrow, 2017).

Clinical placements are considered a significant supply driver for any allied health workforce, with the quality and experience of students an important factor in building a sustainable workforce. Stakeholders engaged throughout the Project reported that, whilst there were no significant barriers to offering or finding placements, often there were limited availability of public health or hospital-based placements and inconsistency in regard to the level and profession of supervisors. Stakeholders reported that some placements may be supervised by professionals other than an exercise physiologist (i.e. nursing or other allied health). Stakeholders noted that it was ideal that exercise physiologists would be most suited to overseeing students clinical placements, however, in instances where this is not possible, were confident that students were meeting their supervision requirements with the appropriate oversight by the university.

4.2.3 Career pathways and professional development

Clear career pathways and ensuring access and time to undertake continuing professional development was identified as a key supply driver by stakeholders. More focus on establishing structured career pathways and further training opportunities for exercise physiology practitioners will assist in engaging the current workforce, particularly as the governance structures develop that support other allied health professions.

Ongoing professional development is essential for maintaining and enhancing health practitioners' skill sets and ensuring future opportunities for career progression. Stakeholders reported there are limited career pathways or opportunities for progression due to the low numbers within the workforce, particularly at higher level grades.

ESSA requires members to engage in Continuing Professional Development (CPD) each year to retain currency of their registration by attending training and events as well as informal learning activities such as conference attendance or project work. Professional development opportunities such as being able to attend conferences, knowledge sharing sessions, and annexed time and budget to contribute to research or partake in clinical trials were identified as potential options for maintaining enthusiasm and engagement amongst staff.

Specialising in a specific domain or service, such as mental health or cancer care, is highly dependent on the individual seeking out and finding opportunities in these pathways. Upon graduation, students are considered to have generalist skills so the opportunity to specialise is another opportunity for career progression for the exercise physiology workforce.

The opportunities for training and professional and career development did not emerge throughout the literature review, however, stakeholders indicated that professional development pathways can be difficult due to the nature of current departmental structures and reporting lines within the public sector. Stakeholders felt that career pathways may be impacted as exercise physiologists in permanent roles tended to remain in these roles and limited job opportunities impacted on career pathways.

4.2.4 Workforce recruitment and retention in rural and remote areas

Understanding what attracts and retains skilled staff, whilst also recognising the challenges of the role, assists with workforce planning in terms of recruitment and retention. Whilst there was limited literature or comprehensive data demonstrating the distribution of exercise

physiologists in rural and remote areas, stakeholders reported that in areas where NSW Health does not employ exercise physiologists, similar services may be provided by external exercise physiologists via contractual agreements or in alternatively classified roles such as project officers.

Public sector opportunities in rural and remote areas can be further limited by low exercise physiologist turnover, current departmental structures, lack of dedicated exercise physiology departments and lack of full-time positions within the workforce (Victorian State Government Health & Human Services, 2018). Stakeholders felt that the exercise physiologist workforce was only small which may limit opportunities and career progression. This could result in exercise physiologists seeking alternative positions in the private sector or working in other professions.

4.2.5 Workforce planning

Stakeholders indicated that workforce planning was important for ensuring the workforce is adequately sized and positioned to manage future demands expected to emerge for exercise physiology services.

A survey completed by ESSA found that 35% of respondents felt extremely satisfied with work, and a further 48% were somewhat satisfied (Stevens & Nancarrow, Graduate Destination Report, 2017). More than 50% of respondents planned on remaining in the profession for more than 10 years. During the stakeholder interviews and survey, no respondents (n=36) indicated that they were looking to retire in the next 10 years, demonstrating that attrition may continue to remain low in the coming years.

It was noted, however, that workforce planning was limited by the size and visibility of the current workforce. Stakeholders identified areas that may affect the ability for the workforce to appropriately adapt, including:

- Limited advocacy at a local and state level, reducing opportunities for exercise physiologists to engage in workforce discussions and miss opportunities for workforce enhancements
- Difficulty in recruiting to positions due to delays in recruitment processes and difficulty securing talent with the appropriate skill mix
- Reliance on temporary contractors or temporary positions that cause uncertainty for the funding the exercise physiologist positions within the public sector.

Ensuring strategic workforce planning, that considers the voice and role of exercise physiology in delivering important healthcare interventions, presents a significant opportunity for the workforce to evolve.

4.2.6 Opportunities in the public vs private sector

Whilst no literature is available around the opportunities in the public sector compared to the private sector, stakeholders reported that currently there are limited opportunities in the public settings due to the relatively small workforce. Stakeholders also reported limited full-time or permanent opportunities exist in the public sector and that contractors are used on a temporary basis to deliver services in the public setting. Developing a better understanding of the role of exercise physiologists in both public and private healthcare settings will be required to inform future workforce planning and modelling for this small workforce.

4.2.7 Skill Mix

Exercise physiologists can work in a variety of care settings both within community, outpatient and inpatient settings. Exercise physiologists currently work within areas such as mental health, cardiovascular health, cancer care, renal, falls, diabetes services and aged care. This represents a significantly diverse skill set that exercise physiologists can specialise in. Growing literature validating exercise as effective treatment is increasing the opportunities for exercise physiologists to practice and extend in a growing number of areas, however being skilled in more than one domain could be an area for exploration for the workforce.

4.2.8 Funding of exercise physiology roles

The funding of exercise physiology roles was a challenge raised during the Project by stakeholders. As previously mentioned, stakeholders have identified the use of part-time, temporary positions or contractors for services requiring an exercise physiology intervention.

As a small workforce that is limited in terms of advocacy and presence at senior levels in the NSW public health system, stakeholders felt there were more FTE expansion opportunities given to more established professions, such as physiotherapists. As the profession continues to grow its profile and presence, funding opportunities may be more prevalent to increase the number of roles available to exercise physiology professionals.

4.3 Overarching Enabler

Governance was defined by stakeholders as an overarching driver for the workforce and a factor that drives and affects both the demand and supply drivers of the workforce.

4.3.1 Governance

Governance was continuously raised throughout the Project by stakeholders as the key influencing factor of both supply and demand for the exercise physiology workforce. Governance was defined by stakeholders as the structures (i.e. reporting lines) that supervise, manage, support and advocate for the exercise physiology workforce within an organisation.

As a small, but increasingly emerging profession, stakeholders expressed that current structures for exercise physiologists are not aligned as dedicated departments within organisations. Stakeholders expressed that the reporting structure of exercise physiologists, and the variations between LHDs, SHNs and services has impacts on the workforce. Similar to other allied health and clinical staff, established divisional streams mean there is variety in the way the profession report within an organisation. For example, stakeholders noted was that exercise physiologists could report either through specific service lines (i.e. cardiac rehab or cancer care), via allied health departments or through internal project teams. These structures are usually historic, and stakeholders reported that exercise physiologists are not necessarily managed by someone from their own profession. How the workforce best adapt to different organisational structures will be instrumental in raising the profile and awareness of the profession.

Internal advocates for the workforce were noted as key to influencing and driving their workforce's agenda whilst growing the number of services they are best placed to deliver. This not only requires promoting a better understanding of the value of exercise physiology to patient outcomes, but also the workforce improving and clarifying their own positions and scopes of practice within organisations. Stakeholders reported limited opportunities to influence service enhancement decisions where exercise physiology's value could be demonstrable in some of the organisational structures that exist.

5 Challenges Encountered by the Workforce

This section details some of the key current and anticipated challenges encountered by the exercise physiology workforce.

5.1.1 Consumer and professional awareness of exercise physiology

As discussed in the supply drivers, stakeholders reported that general knowledge about the value, role and scope of practice of an exercise physiologist was limited, both from the perspective of consumers but also from other medical and health professions. This challenge limits the ability of exercise physiology to grow as a profession, as demand for their services is diminished if competing with other allied health professions with higher profiles and a more established presence within the healthcare system, such as physiotherapy and occupational therapy (as detailed below).

5.1.2 Scope of practice and professional overlap

Stakeholders identified the significant impact that overlapping scope of practices with other allied health professionals, such as physiotherapists, has on the exercise physiology workforce. This presents a challenge when differentiating the value of exercise physiologist services with other exercise-led interventions, particularly in facilities or departments where other allied health professions have a more established presence. Stakeholders involved in recruitment indicated that there is a perceived lack of documentation about the exercise physiology scope of practice, and the perceived overlap with other professions using exercise as therapy modality.

5.1.3 Career pathways and professional development opportunities

Career progression opportunities for the workforce are limited due to the smaller number of positions available, limited higher grade positions, low staff turnover, part-time positions and the use of non-permanent staff. Less than 50% of the workforce feel that they have clear development opportunities or progression pathways, with the major barriers identified being a perceived lack of jobs and lack of recognition (Stevens & Nancarrow, Graduate Destination Report, 2017).

Stakeholders reported that many exercise physiologists have direct reporting lines to managers not from an exercise physiology background (most often, medical or nursing) or to other departments outside of allied health. This may cause a gap in management awareness of an exercise physiologists professional practice and therefore the opportunities to pursue professional development activities (Victorian State Government Health & Human Services, 2018).

5.1.4 Access to comprehensive data on the workforce and its demand drivers

Throughout the project, access to comprehensive data on the workforce was difficult to obtain. Issues regarding the availability of data include:

- Limited ability to understand current and potential demand for exercise physiology services
- Limited peer reviewed or grey literature supporting the workforce size, characteristics and capability
- Limited data supporting the accessibility and availability of services and workforce in rural and remote areas, including potential skill mix opportunities.

Being able to access comprehensive data on the workforce and its demand drivers would support the workforce to better understand their role within the overall health system and how they could grow further.

5.1.5 Rural and remote service accessibility and availability

Stakeholders reported that the distribution of the workforce is focused in metropolitan areas with less of a presence in rural and remote locations. It was reported that rural and remote LHDs may not employ exercise physiologists directly and rely on contracts or refer externally when exercise physiology services are required. This presents a challenge for the workforce that is seeking to grow its presence in the public health system.

6 Opportunities Available to the Workforce

Throughout the course of the Project, several opportunities for the exercise physiology workforce were identified to be explored and developed in the future.

6.1.1 Involvement in service planning and leadership

Stakeholders identified that exercise physiology presence and involvement during service planning and within leadership positions would provide the mechanism to improve the visibility of the profession and the services provided. During the Scenario Generation workshop, stakeholders identified increased involvement in service planning and leadership as the most likely opportunity to be realised by the profession, with several potential solutions put forward including:

- Identification of a lead clinician from each LHD and Specialty Network – a "go to" person that could act as a voice for the profession, supported by allowance of time
- Non-clinical skills training to develop in skills such as leadership, including the provision of clinical time to upskill
- Exercise physiology representation on LHDs and hospital committees and increased involvement in consultation pieces for service planning
- Involvement in ACI and LBVC supporting clinical redesign and quality projects as clinically appropriate.
- Reducing variation in the way exercise physiologists work across NSW (e.g. standardisation of eMR reports).

6.1.2 Multidisciplinary team participation

Throughout the Project, stakeholders identified multidisciplinary team participation and developing the evidence base of exercise physiology equally as the most impactful opportunities for the workforce. Stakeholders suggested the biggest opportunity for the workforce would be to report via allied health departments, where they would be able to increase networking with other allied health professions, provide an opportunity for clearer role delineation whilst enhancing patient-centred care.

Improved discussions between ESSA and the Australian Physiotherapy Association (APA) was also put forward as a potential solution to encourage further multidisciplinary participation.

6.1.3 Enhancing the evidence base for exercise physiology

Stakeholders noted that the evidence base for exercise physiology is growing, and ranked enhancing the evidence base, along with MDT participation, as the most impactful opportunity areas for the workforce. Stakeholders noted that clinical research needs to be strengthened in the profession to continue this development.

Stakeholders suggested that large scale, multi-LHD research would be beneficial to enhancing the evidence base for exercise physiology-led interventions. There is a significant opportunity for the exercise physiology workforce to demonstrate their role in leading exercised-based interventions across a range of clinical areas.

6.1.4 Improving the reporting structure and governance for exercise physiologists

A reoccurring theme was that different reporting and governance structures could to support the growth and enhancement of the exercise physiology workforce. Potential solutions generated throughout the Project to this challenge included:

- LHDs with clearer reporting lines and strong governance for exercise physiologists to provide advice and mentorship to other organisations in establishing similar structures
- Educational support to understand governance provided to exercise physiologists
- Opportunities for exercise physiologists to be involved in statewide networks (e.g. ACI Falls Network) to build skills, enhance their profile, and provide networking opportunities
- Exercise physiology advocates in each LHD that provide expertise and opportunities to act as a voice for roles and services
- Facilitate the professional development of exercise physiologists by providing career pathways, support and collaboration opportunities.

6.1.5 Supporting the needs of the Aboriginal community

Stakeholders agreed that more concerted efforts to support the needs of the Aboriginal community and improve accessibility is a significant opportunity area for the workforce. Some strategies generated included:

- Increasing the number of Aboriginal people pursuing an exercise physiology degree. Aboriginal students could be further supported by allocating funding to reimburse their placements
- Incorporating Aboriginal education as a core component of exercise physiology degrees, as per recommendations from the Aboriginal and Torres Strait Islander Health Curriculum Framework (Commonwealth of Australia (Department of Health), 2014)
- Designing adaptable health models based on the needs of Aboriginal communities, particularly in rural and remote areas
- Strengthening relationships and partnerships between exercise physiologists and Aboriginal members of the MDT, such as Aboriginal Health Workers, Aboriginal Health Practitioners, other Aboriginal clinicians across allied health, nursing and medicine
- Implementing mentorship programs to support potential and current Aboriginal employees – these could be clinical, cultural or both
- Embedding Aboriginal cultural safety and competency as a component of ESSA accreditation.

6.1.6 Improve role delineation and scope of practice

Throughout the Project, clear role delineation with other allied health professions and clear scope of practice for the profession was identified as a significant opportunity for the workforce. Stakeholders highlighted that hiring managers had difficulty understanding the scope of practice of exercise physiologists work within; which may translate into other professionals being recruited over exercise physiologists. Stakeholders identified that production of standardised key documentation, such as position descriptions, would enable managers to make more informed decisions and build a case for hiring more exercise physiologists within their services.

6.1.7 Improve the profile of the profession

As previously highlighted in the challenges faced by the workforce, improving the image of the profession is another opportunity area. Stakeholders identified the following potential solutions to improve the profile of the profession:

- Increasing advertising and marketing with a focus on current health priorities or popular areas in the public eye (for example cancer)

- Improved public visibility through NSW Health information, presentations, media articles and an awareness day focused around exercise physiologists
- Exercise physiology presence in community settings such as health centres, schools and aged care facilities
- Better standardisation of the role of exercise physiologists through generic and/or specialised position descriptions
- Integration of exercise physiology as a standard care of practice in GP and other healthcare settings
- Increased presence in Position Statements from peak medical bodies, such as those released by COSA.

6.1.8 Technological Enhancements

Telehealth applications include video conferencing, teleconferencing and email have an emerging place in exercise delivery for exercise physiologists (Victorian State Government Health & Human Services, 2018). These platforms may provide opportunity to deliver services to those who may not have face-to-face accessibility to exercise physiology services, particularly in rural and remote locations (Campbell, McAllister, & Eley, 2012; Jones, McAllister, & Lyle, 2015; Moffatt & Eley, 2010). Technological enhancements were identified as an opportunity by stakeholders in future service delivery models.

Telehealth applications are currently being adopted by exercise physiologists to provide exercise delivery, technique analysis, monitoring program progress, participating in multidisciplinary conferences, among other uses to keep contact with clients (Victorian State Government Health & Human Services, 2018).

The increasing use of mobile devices has allowed trials of remote monitoring to demonstrate the value of assessing patients remotely, including the ability to monitor a patient's location, distance, speed, heart and respiratory rates as well as take ECG data using client's own devices (Maddison, et al., 2014). Exercise physiologists could have a role to play in healthy behaviour and lifestyle modifications for these types of remote interventions and presents an opportunity for innovation in the way they deliver care.

7 Appendices

7.1 Stakeholders engaged in the project

Name	Organisation
LHD Representatives	
Abbie Pumpa	Murrumbidgee LHD
Amy Perram	South Eastern Sydney LHD
Andrea Tyler	Nepean Blue Mountains LHD
Anna Manski	South Western Sydney LHD
Anthony Tyson	Illawarra Shoalhaven LHD
Brianna James	South Western Sydney LHD
Christine Bruntsch	Northern Sydney LHD
Dr Nathan De Vos	Sydney LHD
Elizabeth Calleja	Nepean Blue Mountains LHD
Georgina Rose	Central Coast LHD
James Hewitt	Central Coast LHD
Jane Turner	Sydney LHD
Julia Capper	Northern Sydney LHD
Kristine Grainger	Northern Sydney LHD
Kylie Everman	Northern NSW LHD
Maggie Ellis	Murrumbidgee LHD
Matthew Kolasinski	Hunter New England LHD
Nancy Van Doorn	Sydney Children's Hospital Network
Nicola Maitland	South Western Sydney LHD
Peter Woodgate	Western Sydney LHD
Rishi Baldeo	South Eastern Sydney LHD
Universities	
Angelica Thompson-Butel	Australian Catholic University
Jack Cannon	Charles Sturt University
Jeanette Thom	University of New South Wales
Marc Brown	University of Wollongong
Peter Sinclair	University of Sydney
Professional Bodies and Other	
Alex Lawrence	Exercise & Sports Science Australia

7.2 Universities providing ESSA approved degrees

University	Courses Provided
Australian Catholic University	Bachelor of Exercise and Sports Science Master of Clinical Exercise Physiology
Central Queensland University	Bachelor of Exercise and Sport Sciences: ESSA Accredited Stream
Charles Sturt University	Bachelor of Exercise Science Master of Clinical Exercise Physiology
Curtin University	Bachelor of Science: Exercise, Sports and Rehabilitation Science – Exercise and Sports Science Major
Deakin University	Bachelor of Exercise and Sports Science: ESSA Sequence Master of Clinical Exercise Physiology
Edith Cowin University	Bachelor of Science: Exercise and Sports Science Bachelor of Science: Sports Science and Football Bachelor of Science: Exercise and Rehabilitation Science
Federal University Australia	Graduate Diploma of Clinical Exercise Physiology
Griffith University	Bachelor of Exercise Science: ESSA Stream Graduate Diploma of Exercise Science
James Cook University	Bachelor of Sport and Exercise Science Bachelor of Sport and Exercise Science / Bachelor of Business Bachelor of Sport and Exercise Science / Bachelor of Education: Secondary Bachelor of Exercise Physiology: Clinical Postgraduate Diploma of Exercise Physiology
La Trobe University	Bachelor of Exercise Science Master of Exercise Physiology Bachelor of Exercise Science / Master of Exercise Physiology
Murdoch University	Bachelor of Sports Science: ESSA Sequence Bachelor of Exercise Physiology Bachelor of Sport and Exercise Science Graduate Diploma in Clinical Exercise Physiology* Bachelor of Sport and Exercise Science / Graduate Diploma in Clinical Exercise Physiology*
Queensland University of Technology	Bachelor of Exercise & Movement Science Bachelor of Clinical Exercise Physiology Bachelor of Exercise and Movement Science / Bachelor of Health Science (Public Health) Bachelor of Exercise and Movement Science / Bachelor of Behavioural Science (Psychology)
Royal Melbourne Institute of Technology (RMIT) University	Bachelor of Applied Science: Exercise and Sport Science
Southern Cross University	Bachelor of Sport & Exercise Science* Bachelor of Exercise Science & Nutrition*

	Bachelor of Sport & Exercise Science / Bachelor of Education* Master of Clinical Exercise Physiology
University of Canberra	Bachelor of Exercise and Sport Science Bachelor of Exercise Physiology and Rehabilitation
University of Newcastle	Bachelor of Exercise and Sport Science: Exercise Science stream
University of New England	Bachelor of Exercise and Sports Science Bachelor of Clinical Exercise Physiology
University of New South Wales	Bachelor of Exercise Physiology
University of Notre Dame Australia	Bachelor of Exercise and Sport Science Bachelor of Exercise and Sport Science (Honours) Bachelor of Exercise and Sport Science / Bachelor of Behavioural Science Bachelor of Exercise and Sport Science / Bachelor of Preventive Health Bachelor of Exercise and Sport Science / Bachelor of Biomedical Science Graduate Diploma of Clinical Exercise Physiology Master of Exercise Science
University of Queensland	Bachelor of Exercise and Sports Science (Honours)Bachelor of Clinical Exercise Physiology (Honours) Master of Clinical Exercise Physiology
University of South Australia	Bachelor of Exercise and Sport Science Bachelor of Exercise and Sport Science / Bachelor of Nutrition and Food Science Bachelor of Exercise and Sport Science / Bachelor of Psychological Science: Counselling and Interpersonal Skills Bachelor of Clinical Exercise Physiology Graduate Diploma in Clinical Exercise Science
University of Southern Queensland	Bachelor of Sport and Exercise: Honours – Clinical Exercise Physiology
University of the Sunshine Coast	Bachelor of Sport and Exercise Science: ESSA Minor** Bachelor of Clinical Exercise Science
University of Sydney	Bachelor of Applied Science: Exercise and Sport Science Bachelor of Applied Science: Exercise and Sport Science (Honours) Bachelor of Applied Science: Exercise and Sport Science / Master of Nutrition & Dietetics Bachelor of Applied Science: Exercise Physiology Bachelor of Applied Science: Exercise Physiology (Honours) Master of Exercise Physiology Bachelor of Applied Science: Exercise and Sport Science / Bachelor of Science: Nutrition and Dietetics (Honours) Bachelor of Applied Science: Exercise, Sport and Nutrition
University of Tasmania	Bachelor of Exercise Science Bachelor of Exercise Physiology (Professional Honours)

University of Technology Sydney	Bachelor of Sport and Exercise Science: Exercise Science Major Bachelor of Sport and Exercise Science: Exercise Science Major / Bachelor of Arts in International Studies Bachelor of Sport and Exercise Science: Exercise Science Major / Bachelor of Creative Intelligence and Innovation
University of Western Australia	Bachelor of Science with a 1st Major in Sport Science and 2nd Major in Exercise & Health*** Bachelor of Exercise Rehabilitation Science Graduate Diploma in Exercise Rehabilitation Formerly Graduate Diploma Science: Exercise Rehabilitation (50300) Master of Clinical Exercise Physiology
Western Sydney University	Bachelor of Health Science: Sport and Exercise Science
University of Wollongong	Bachelor of Exercise Science Bachelor of Exercise Science & Rehabilitation Master of Clinical Exercise Physiology Graduate Diploma in Exercise Rehabilitation
Victoria University	Master of Clinical Exercise Science and Rehabilitation Bachelor of Exercise Science: Sport Practice Bachelor of Exercise Science: Clinical Practice

8 References

AIHW. (2018, July 24). *COPD (chronic obstructive pulmonary disease) snapshot.* Retrieved May 26, 2019, from https://www.aihw.gov.au/reports/chronic-respiratory-conditions/copd/contents/copd

Australian Bureau of Statistics. (2013, November 27). *Australian Aboriginal and Torres Strait Islander Health Survey: First Results, Australia, 2012-13.* Retrieved May 26, 2019, from https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4727.0.55.001Main+Features12012-13?OpenDocument

Barbaric, M., Brooks, E., Moore, L., & Cheifetz, O. (2010). Effects of Physical Activity on Cancer Survival: A Systematic Review. *Physiotherapy Canada, 62*(1), 25-34. doi: 10.3138/physio.62.1.25

Briffa, T., Maiorana, A., Sheerin, N., Stubbs, A., Oldenburg, B., Sammel, N., & Allan, R. (2006). Physical activity for people with cardiovascular disease: recommendations of the National Heart Foundation of Australia. *MJA, 184*(2), 71-75.

Brubaker, P., Ross, J., & Joo, K. (2016). Contemporary Approaches to Prescribing Exercise in Coronary Artery Disease Patients. *American Journal of Lifestyle Medicine, 12*(2), 130-139. doi:10.1177/1559827615625482

Campbell, N., McAllister, L., & Eley, D. (2012). The influence of motivation in recruitment and retention of rural and remote allied health professionals: a literature review. *Rural and Remote Health, 12*. Retrieved from http://www.rrh.org.au

Cancer Institute NSW. (n.d.). *All Cancer Data NSW*. Retrieved 03 27, 2019, from Cancer Institute NSW: https://www.cancer.nsw.gov.au/understanding-cancer/cancer-in-nsw/all-cancers-nsw-data

CEC. (n.d.). *Clinical Excellence Commission*. Retrieved from Falls Prevention: http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/falls-prevention

COAG Disability Reform Council. (2019). *COAG Disability Reform Council Quarterly Report - 31 March 2019.* NDIS. Retrieved from https://www.ndis.gov.au/media/1358/download

Commonwealth of Australia (Department of Health). (2014). *Aboriginal and Torres Strait Islander Health Curriculum Framework.*

Cormie, P., Atkinson, M., Bucci, L., Cust, A., Eakin, E., Hayes, S., . . . Adams, D. (2018). Clinical Oncology Societ of Australia Position statement in cancer care. *Medical Journal of Australia, 209*(4), 184-187.

COSA. (2018). *COSA Position Statement on Exercise in Cancer Care.* Retrieved from https://www.cosa.org.au/media/332488/cosa-position-statement-v4-web-final.pdf

Department of Health. (2016). *Chronic Disease Management - Provider Information*. Retrieved August 2018, from http://www.health.gov.au/internet/main/publishing.nsf/Content/mbsprimarycare-factsheet-chronicdisease.htm

ESSA. (2017). *Addressing The Physical Health of People With Mental Illness.*

ESSA. (2018, 4). *Accredited Exercise Physiologist Scope of Practice.* Retrieved 3 14, 19, from Exercise & Sports Science Australia (ESSA): https://www.essa.org.au/Public/Professional Standards/AEP Scope of Practice_071218.pdf

ESSA. (2018, 4). *Accredited Exercise Physiologist Scope of Practice.* Retrieved 3 14, 19, from Exercise & Sports Science Australia (ESSA): https://www.essa.org.au/Public/Professional Standards/AEP Scope of Practice_071218.pdf

ESSA. (2019). *2019 Accredited Exercise Physiologist (AEP) form - 4 Year ESSA Accredited Course.* Retrieved from Exercise & Sports Science Australia: https://www.essa.org.au/Public/APPLY_NOW/Accreditation/Exercise_Physiology_Accreditation.aspx

ESSA. (2019). *2019 Accredited Exercise Physiologist (AEP) form - ESSA accredited course UG + ESSA accredited course PG.* Retrieved from Exercise & Sports Science Australia (ESSA): https://www.essa.org.au/Public/APPLY_NOW/Accreditation/Exercise_Physiology_Accreditation.aspx

ESSA. (2019, 03 14). *Accredited Exercise Physiologists (AEPs)*. Retrieved from Exercise & Sports Science Australia (ESSA): https://www.essa.org.au/Public/Consumer_Information/What_is_an_Accredited_Exercise_Physiologist_.aspx

ESSA. (n.d.). *How Do I Become an Accredited Exercise Physiologist*. Retrieved 03 14, 2019, from Exercise & Sports Science Australia (ESSA): https://www.essa.org.au/Public/APPLY_NOW/How_do_I_become_an_excercise_physiologist.aspx

Henderson, L., Lukeis, S., O'Hara, J., McGill, B., Innes-Hughes, C., & Rissel, C. (2015). *Evidence and Evaluation Summary (2011-2015).*

Hewitt, J., Refshauge, K., Goodall, S., Henwood, T., & Clemson, L. (2014). Does progressive resistance and balance exercise reduce falls in residential aged care? Randomised controlled trial protocol for the SUNBEAM program. *Clinical Interventions in Ageing*, 369-375.

Hordern, M., Dunstan, D., Prins, J., Baker, M., Singh, M., & Coombes, J. (2012). Exercise prescription for patients witrh type 2 diabetes and pre-diabetes: A position statement from Exercise and Sports Science Australia. *ScienceDirect*, 25-31.

iphYs. (2015). *What is HeAL?* (iphYs) Retrieved May 24, 2019, from https://www.iphys.org.au/what-is-heal

Jones, D., McAllister, L., & Lyle, D. (2015). Stepping out of the shadows: Allied health student and academic perceptions of the impact of a service –learning experience on student's work readiness and employability. *Journal of Teaching and Learning for Graduate Employability, 6*, 66-87. doi:https://doi.org/10.21153/jtlge2015vol6no1art574

Lim, S. S., Bertram, M. Y., Barendregt, J. J., & Vos, T. (2010). Assessing the cost-effectiveness of drug and lifestyle intervention following opportunistic screening for pre-diabetes in primary care. *Diabetologia*, 875-881. doi:10.1007/s00125-010-1661-8

Maddison, R., Rawstorn, J., Rolleston, A., Whittaker, R., Stewart, R., Benatar, J., . . . Gant, N. (2014). The remote exercise montioring trial for exercise-based cardiac rehabiliation (REMOTE-CR): a randomised controlled trial protocol. *BMC Public Health, 14*(1236), 1471-2458.

Medicare Australia. (n.d.). *Medicare Item Reports.* Retrieved from Australian Government - Department of Human Services: http://medicarestatistics.humanservices.gov.au/statistics/mbs_item.jsp

Mental Health Australia. (n.d.). *Consensus statement on the role of Accredited Exercise Physiologists in the treatment of mental disorders: A guide for mental health professionals*. Retrieved 03 27, 2019, from Menthal health Australia: https://mhaustralia.org/general/consensus-statement-role-accredited-exercise-physiologists-treatment-mental-disorders-guide

Moffatt, J. J., & Eley, D. S. (2010). The reported benefits of telehealth for rural Australians. *Australian Health Review, 34*, 276-281. doi:https://doi.org/10.1071/AH09794

Morgan, V., Waterreus, A., Jablensky, A., Mackinnon, A., McGrath, J., Carr, V., . . . Saw, S. (2012). People living with psychotic illness in 2010: The second Australian national survey of psychosis. *Australian and New Zealand Journal of Psychiatry, 46*(8), 735-752. doi:10.1177/0004867412449877

N, O. (2012). Exercise-based cardiac rehabilitation in patients with coronary heart disease: meta-analysis outcomes revisited. *Future Cardiology, 8*(5), 729-751. doi:10.2217/fca.12.34

NDIS. (2018, 06 1). *NDIS Price Guide - Victoria, New South Wales, Queensland, Tasmania.* Retrieved from National Disability Insurance Scheme: https://www.ndis.gov.au/media/344/download

NSW Health. (2013). *NSW Get Healthy Information and Coaching Service - The first five years 2009-2013.*

NSW Health. (2014). *Living Well - Strategic Plan for Mental Health in NSW 2014-2024.* Retrieved from https://www.health.nsw.gov.au/mentalhealth/reform/Documents/living-well-strategic-plan.pdf

NSW Health. (2018, 09 21). *Leading Better Value Care*. Retrieved from NSW Health: https://www.health.nsw.gov.au/Value/Pages/leading-better-value-care.aspx

NSW Health. (n.d.). *Falls Prevention Policy*. Retrieved from https://www.health.nsw.gov.au/falls/Pages/default.aspx

NSW Ministry of Health Workforce Talent and Development Branch. (2019). Workforce Data Extract: provided by email.

O'Hara, B., McGill, B., Ahmed, N., McElduff, S., & Rissell, C. (2016). *The Get Healthy Information and Coaching Service.* NSW Ministry of Health and the Apple Institute. Retrieved from https://www.gethealthynsw.com.au/assets/nsw/pdf/medicalprofessionals/FINAL-171906-GHS-Aboriginal-Evaluation-Report-ART.pdf

Petter, M., Blanchard,, Kemp, K., Mazoff, A., & Ferrier, S. (2009). Correlates of exercise among coronary heart disease patients: review, implications and future directions. *European Journal of Preventive Cardiology, 16*(5), 515-526. doi:10.1097/HJR.0b013e3283299585

Post, D., Corlis, M., Penington, A., & Parfitt, G. (2018). Exercise physiology in aged care: Perceptions and acceptability from the perspectives of family members and care staff in the residential aged care environment. *Dementia, 0*(0), 1-14. doi:10.1177/1471301218816246

Singh, M. A. (2002). Exercise Comes of Age: Rationale and Recommendations for a Geriatric Exercise Prescription. *Gerontology Series A; Biological Sciences and Medical Sciences*, 262-282.

Soan, E., Street, S., Brownie, S., & Hills, A. (2014). exercise physiologists: essential players in interdisciplinary teams for noncommunicable chronic disease management. *Journal of Multidisciplinary Healthcare, 2014*(7), 65-68. doi:10.2147/JMDH.S55620

Stevens, C., & Nancarrow, S. (2017). *Graduate Destination Report.* Southern Cross University.

Stevens, C., & Nancarrow, S. (2017). The Exercise & Sports Science Australia Graduate Destination Report. Retrieved from javascript://[Uploaded files/Advocacy/Industry reports/Graduate-destination-report_final_LR.pdf]

Taylor, R., Brown, A., Ebrahim, S., Joliffe, J., Noorani, H., Rees, K., . . . Oldridge, N. (2004). Exercise-Based Rehabilitation for Patients with Coronary Heart Disease: Systematic Review and Meta-analysis of Randomized Controlled Trials. *The American Journal of Medicine, 116*, 682-692. doi:10.1016/j.amjmed.2004.01.009

The Department of Health. (2014, July 23). *Follow-up Allied Health Services for People of Aboriginal and Torres Strait Islander Descent (MBS items 81300-81360) Fact Sheet.* Retrieved May 24, 2019, from Australian Government Department of Health: https://www.health.gov.au/internet/main/publishing.nsf/Content/mbsprimarycare_mbsitems81300_81360

The Department of Health. (2014, January 18). *Group Allied Health Services under Medicare for people with Type 2 diabetes - Information for Providers.* Retrieved May 24, 2019, from Exercise & Sports Science Australia: https://www.health.gov.au/internet/main/publishing.nsf/Content/health-mbsprimarycareitems-ahgs-diabetes-factsheet

Victorian State Government Health & Human Services. (2018). *Victorian Allied Health Workforce Research Program - Exercise Physiology Workforce Report.*

Walthera, C., Möbius-Winklera, S., Linkea, A., Bruegelb, M., Thieryb, J., Schulera, G., & Halbrecht, R. (2008). Regular exercise training compared with percutaneous intervention leads to a reduction of inflammatory markers and cardiovascular events in patients with coronary artery disease. *European Journal of Preventive Cardiology, 15*(1), 107-112. doi:10.1097/HJR.0b013e3282f29aa6

Yang, I., Brown, J., George, J., Jenkins, S., McDonald, C., McDonald, V., . . . Dabscheck, E. (2018, August). *The COPD-X Plan: Australian and New Zealand Guidelines for the management of Chronic Obstructive Pulmonary Disease 2018.* Retrieved May 26, 2019, from https://copdx.org.au/wp-content/uploads/2019/02/COPDX-V2-56-Dec-2018-Web.pdf