



**EXAMINING THE RELATIONSHIP BETWEEN VETERINARIANS AND  
VETERINARY PHYSIOTHERAPISTS IN SOUTH AFRICA  
POST-REGISTRATION OF THE VETERINARY PHYSIOTHERAPY  
PROFESSION**

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DWLAMY001

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## LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
APGSA	Animal Physiotherapy Group of South Africa
BSc	Bachelor of Science
CPD	Continuous Professional Development
IAPTAP	International Association of Physical Therapists in Animal Practice
SAAPRA	South African Animal Physical Rehabilitation Association
SASP	South African Society of Physiotherapy
SAVA	South African Veterinary Association
SAVC	South African Animal Veterinary Council
UCT	University of Cape Town

## GLOSSARY OF TERMS

TERM	DEFINITION
<b>Animal Physiotherapist</b>	A human qualified physiotherapist that specialised their skills to work on animals.
<b>Authorised Veterinary Physiotherapist</b>	A veterinary physiotherapist currently working in South Africa who is authorised by the South African Veterinary Council to perform the services of a veterinary physiotherapist until completion of an examination allowing them to be fully registered (South African Veterinary Council, 2022).
<b>Day One Skills</b>	A guideline for the knowledge, skillset and competencies that are deemed necessary for a veterinary physiotherapist to have in order to practice as a veterinary physiotherapist (South African Veterinary Council, 2022).
<b>Grandfather Clause</b>	A clause that allowed persons working in the veterinary physiotherapy field a period of time wherein they could apply to be registered or authorised with the South African Veterinary Council as a veterinary physiotherapist, subject to training and experience meeting the specific profession requirements (South African Animal Physical Rehabilitation Association, 2020).
<b>Registered Veterinary Physiotherapist</b>	A veterinary physiotherapist that has met all the requirements from the South African Veterinary Council to be registered within the field of veterinary physiotherapy (South African Veterinary Council, 2022).
<b>Veterinarian</b>	A professional who practices veterinary medicine by treating disorders, diseases and injuries in non-human animals (South African Veterinary Council, 2022).
<b>Veterinary Specialist</b>	A veterinarian who specialises in a clinical field of veterinary medicine.

## ABSTRACT

**Background:** Veterinary physiotherapy is a newly promulgated independent profession in South Africa. Veterinary physiotherapists need to work under referral or in collaboration with a veterinarian. A multidisciplinary approach to patient management is beneficial. It is therefore essential to determine the current perception of the veterinary physiotherapy profession by veterinarians.

**Aims and Objectives:** This study aimed to explore the dynamics of the relationship between veterinarians and veterinary physiotherapists, particularly post-promulgation of the veterinary physiotherapy profession. It further aimed to identify the barriers and facilitators to referrals from veterinarians to ensure integration of the profession.

**Methods:** This was a descriptive cross-sectional study that used a mixed method approach. The study population included veterinarians and veterinary physiotherapists registered or authorised with the South African Veterinary Council (SAVC). Three phases of data collection were completed – the qualitative components were covered in phase one and three of data collection through interviews. Four interview participants were specifically selected for the first phase based on their expertise and knowledge of their respective professions. Six interview candidates volunteered for the third phase of data collection, three veterinarians and three veterinary physiotherapists. The quantitative component was derived from phase two, through the questionnaire results. Sample size for the questionnaires were calculated using population numbers provided by the South African Veterinary Association and the South African Physical Rehabilitation for Animals Association, both of which were utilised for the distribution of the questionnaires.

**Data Analysis:** Qualitative data from the interviews was analysed using an inductive thematic approach to identify common themes. Data from the questionnaires was analysed using a descriptive analysis, and correlation tests were conducted to determine the relationship between variables. Statistical significance was calculated and determined using  $p < 0.05$ .

**Results:** The questionnaires were completed by 97 veterinarians and 59 veterinary physiotherapists respectively. Eighty-two percent ( $n = 80$ ) of veterinarians were aware of the promulgation of the veterinary physiotherapy profession, while 65% ( $n = 63$ ) of the veterinarians referred patients to veterinary physiotherapy regularly. Significant correlations were found between the type of veterinary practice and the likelihood to refer to veterinary physiotherapy. Forty-nine percent ( $n = 29$ ) of veterinary physiotherapists receive regular referrals from veterinarians. There was a significant correlation between regular referrals from veterinarians and a higher veterinary physiotherapy caseload. The type of physiotherapy practice was found to significantly correlate with the referrals received. The interviews revealed themes around how communication, location, and understanding of the physiotherapy profession impacted the veterinarian's likelihood to refer. All participants felt that the promulgation was a positive step forward for the veterinary physiotherapy profession.

**Conclusion:** Overall, there appears to be a positive perception of the veterinary physiotherapy profession from veterinarians. However, there is considerable room for growth with regards to veterinary referrals to veterinary physiotherapy. Most participants are happy about the promulgation of the profession and feel that it will assist with the growth of the profession. Recommendations to ensure integration of the veterinary physiotherapy profession into the veterinary field include improving communication between the practitioners, improving promotion of local veterinary physiotherapy practices, and education regarding the scope and function of veterinary physiotherapy profession to veterinarians and the public.

### **Keywords**

Veterinary Physiotherapy; Veterinarians; Promulgation; Veterinary multidisciplinary team.

## CHAPTER ONE: INTRODUCTION

Physiotherapists are movement specialists, concerned with improving the quality of life and function of people through the use of manual therapy, exercise, education, and electrotherapy modalities (World Confederation for Physical Therapy, 2019). Considered an integral role in the management of human health and function, physiotherapists are valuable members of the medical multidisciplinary team (Sharp, 2008). Within the profession of physiotherapy, areas of specialisation and practice have emerged, including sports, musculoskeletal, neurological, and cardiorespiratory physiotherapy (McGowan, Goff, & Stubbs, 2007a). One such specialisation is animal physiotherapy. The benefits of including physiotherapy into the management of certain conditions in human medicine has been well documented for conditions ranging from sports injuries, post-orthopaedic surgery, cardiorespiratory conditions, osteoarthritis, and back pain (Samoy, Ryssen, & Saunders, 2016). However, research on the implementation of animal physiotherapy into veterinary medicine is still lacking (Samoy et al., 2016).

The application of physiotherapy techniques to animals has its earliest documentation dating back to 1939 by Sir Charles Strong, the physiotherapist to the British royal family at the time (Calatayud, 2019). As with humans, animals are affected by orthopaedic, neurological, and systemic diseases that affect their mobility and cause pain. Traditional veterinary management of these patients included surgical and medical methods, with physiotherapy being suggested as “the missing link in veterinary care” (Bockstahler, Levine, Millis, & Wandrey, 2004, p. 2).

Advancements in veterinary diagnostics and surgical methods, together with the positive outcomes observed within the human physiotherapy field, has resulted in an increase in the demand for animal physiotherapy (McGowan et al., 2007a; Millis & Levine, 2014).

Regardless of the species, the goals of physiotherapy intervention are similar, namely, to decrease pain, encourage healing, restore normal joint movement, and ultimately improve mobility and function (Bockstahler et al., 2004; McGowan et al., 2007a; Millis & Levine, 2014; Samoy et al., 2016). Animal physiotherapy intervention techniques to achieve these goals are also similar and can be classified into three different categories. Firstly, manual therapy involves the use of the therapists' hands to perform mobilisations and soft tissue treatment to reduce pain and restore normal kinematics to joints and body segments. Secondly, through the application of therapeutic modalities, to promote healing of damaged tissues and reduce pain (Bockstahler et al., 2004; Millis & Levine, 2014; Samoy et al., 2016). Thirdly, rehabilitation exercises target specific muscle groups, the cardiorespiratory system, and the neurological system to improve the mobility and function of that specific animal (Millis & Levine, 2014; Samoy et al., 2016). The differences between the approaches to animal physiotherapy and human physiotherapy lies in both the structural and functional anatomy, movement analysis of the quadrupedal versus the bipedal species, and the ability to understand animal behaviour in order to identify signs of pain (McGowan et al., 2007a).

### 1.1 Animal Physiotherapy: A History

The field of animal physiotherapy began gaining ground worldwide in the 1980's, with the establishment of associations in various countries. These associations were linked to their respective national physiotherapy associations.

Animal physiotherapy began as a specialisation of human physiotherapy through the establishment of several postgraduate courses in various countries, the pioneers of which were notably the Master in Animal Physiotherapy degrees at the Royal Veterinary College in the United Kingdom and Queensland University in Australia (McGowan et al., 2007a). Special interest groups in animal physiotherapy were developed and recognised by national physiotherapy associations (Edge-Hughes, 2008). The various animal physiotherapy associations and their dates of establishment are summarised in Table 1 below.

*Table 1. Date of Establishment of the Animal Physiotherapy Associations Affiliated to their Respective National Physiotherapy Association.*

<b>SOCIETY</b>	<b>DATE ESTABLISHED</b>
The Association of Chartered Physiotherapists in Animal Physiotherapy	1984 – recognised by the Chartered Society of Physiotherapy in 1987
Finnish Animal Physiotherapy Association	1984 – accepted into the Finnish Association of Physiotherapy in 1997
Dutch Association for Animal Physiotherapy	1989
The Canadian Horse and Animal Physical Rehabilitation Division of the Canadian Physiotherapy Association	1994 – accepted into the Canadian Physiotherapy Association in 2004
Animal Physiotherapy Group of South Africa	1996
Animal Physical Therapy Special Interest Group of the Orthopaedic Section of the American Physical Therapy Association Inc.	1998
Animal Physiotherapy Group of the Australian Physiotherapy Association	1998 – accepted into the Australian Physiotherapy Association in 2004
Belgian Association for Certified Animal Physiotherapists	2006

Source: (Edge-Hughes, 2008).

The International Association of Physical Therapists in Animal Practice (IAPTAP) represents physiotherapists qualified to treat human patients involved in the treatment of animals, provided their national association is a member of the World Confederation of Physical Therapy. The IAPTAP was established to provide an international platform for human physiotherapists involved in animal treatment to connect with each other, provide education opportunities, and promote the industry. It was recognised as a sub-group of the World Confederation of Physical Therapy in 2011 (International Association of Physical Therapists in Animal Practice, 2017).

The Animal Physiotherapy Group of South Africa (APGSA) was legally accepted as a special interest group into the South African Society of Physiotherapy (SASP) in 1996 (Naidoo, Marr, Singh, Du Toit, & Narisamulu, 2008). The APGSA provides support and education opportunities to SASP members interested in working in the field of animal physiotherapy (Animal Physiotherapy Group of South Africa, 2023). At the stage of its inception, qualified human physiotherapists who wished to treat animals were not considered as a first contact practitioner and required a referral from a veterinarian (McGowan et al., 2007a).

In 2017, veterinary physiotherapy became an independently recognised and regulated profession in South Africa (South African Veterinary Council, 2017). Veterinary physiotherapists in South Africa are no longer required to first complete a human physiotherapy degree, but instead can be trained exclusively in the field of veterinary physiotherapy.

Human physiotherapists wishing to work in the field of veterinary physiotherapy now need to apply to the South African Veterinary Council (SAVC) in order to determine whether they meet the requirements to complete the jurisprudence examination that would allow them to practice in the field. All practitioners in the field of animal rehabilitation are now required to be registered with the SAVC (South African Veterinary Council, 2022). This is a first for the veterinary physiotherapy profession worldwide, as South Africa is currently the only country where the veterinary physiotherapy profession is independently recognised and where the industry is regulated by its respective veterinary council. As pioneers in this regard, it would be interesting to assess the impact of this change on the field of veterinary physiotherapy.

## 1.2 Industry Regulation

Within South Africa, the need to establish the veterinary physiotherapy profession as a recognised and independently registered profession separate to human physiotherapy, led to the promulgation of veterinary physiotherapy as a profession in 2017 (South African Veterinary Council, 2017). This followed agreement by stakeholders that a recognised and registered profession was necessary to develop and expand the field. An association was created to represent practitioners working in the field of animal rehabilitation, known as the South African Animal Physical Rehabilitation Association (SAAPRA). A working group of veterinary rehabilitation therapists from various backgrounds was established and were assigned the task of ensuring all practitioners working within the field were represented. This working group focused on developing a scope of practice and a Day One skills list that was communicated with all members within the field at the time, through SAVC and SAAPRA correspondence.

The Day One skills list is a guideline for the knowledge, skillset, and competencies that have been deemed as a requirement in order to practice as a veterinary physiotherapist (South African Animal Physical Rehabilitation Association, 2020). The promulgation process included a grandfather clause period, where all therapists working in the field at the time could apply to be registered with the SAVC. These individuals came from a variety of training backgrounds, including human physiotherapists with further training and experience in animal physiotherapy, veterinary nurses with further training in physiotherapy techniques, and individuals who had completed other animal therapy courses and had at least five years' experience working in the field. The application process consisted of mapping their skills and experience against the list of Day One skills required for a veterinary physiotherapist. Those who were found to meet all the requirements were registered with the SAVC as a veterinary physiotherapist. Those who did not meet all other requirements were provided with authorisation to work as a veterinary physiotherapist, pending the successful completion of a battery of examinations.

Therapists in this category included human trained physiotherapists that had further training in animal physiotherapy, veterinary nurses with additional animal physiotherapy training, as well as individuals who had completed various animal therapy courses and held the relevant clinical experience. These examination dates have yet to be determined and as such, the process of registering individuals through the grandfather clause is still ongoing, although the period for application via this route has now closed. The profession is now acknowledged as a para-veterinary profession under the SAVC, going forward all therapists wanting to work in the field of veterinary physiotherapy and animal rehabilitation are required to be registered with the SAVC as a veterinary physiotherapist (South African Veterinary Council, 2022).

Currently, the only path to automatic registration as a veterinary physiotherapist within South Africa is by completing the Bachelor of Science (BSc) in Veterinary Physiotherapy at Equine-Librium College in Plettenberg Bay, in the Western Cape. Other practitioners who wish to work in the field, including human physiotherapists who are members of the APGSA, are required to apply to the SAVC where their training will be examined on a case-by-case basis.

The registration of veterinary physiotherapy is a considerable advancement in the growth and development of the profession and should aid in maintaining the standards of practicing therapists, as well as increasing the likelihood of referrals (Johnston, 2016). This ensures that all veterinary physiotherapists working in South Africa are competent to perform the full set of skills within the scope of practice of a veterinary physiotherapist and should therefore mitigate uncertainty from veterinarians regarding the qualifications of such practitioners. This should also assist with the integration of the profession into the veterinary healthcare team.

### 1.3 Relevance to the Veterinary Physiotherapy Profession in South Africa

The regulation of the profession of veterinary physiotherapy by the SAVC is still in its infancy in South Africa. Despite its formal recognition, informal feedback from veterinary physiotherapists throughout the country highlight their struggles with obtaining referrals from veterinarians (Lloyd, 2020). There is a lack of evidence explaining the reasons for these low referrals; however, Lloyd (2020) suggested improving communication channels between the two professions to assist with collaboration. Within animal healthcare, the veterinarian is considered the primary caregiver, as they are responsible for the diagnosis and overall management of the patient (McGowan et al., 2007a).

They are also usually the public's first contact and therefore play an important role in advising animal owners regarding their treatment options. In the finalised rules for veterinary physiotherapists proposed by the SAVC, it is stated that veterinary physiotherapists should "work on referral by a veterinarian who has diagnosed the animal or work in consultation with the patient's veterinarian if there is no direct referral" (South African Veterinary Council, 2023, p. 84). "Physiotherapy is often perceived as an alternative therapy, whereas it is in fact complementary to conventional veterinary treatment and best used in collaboration with it" (Sharp, 2008, p. 190). It is therefore imperative that veterinarians have a positive perception and regard of the veterinary physiotherapy profession for the veterinary physiotherapist to be considered an integral part of animal patient care.

Previous studies have identified several other reasons for these low referral rates, including insufficient research into animal physiotherapy, poor collaboration between the professions, inadequate awareness of local services, and a limited understanding of which cases may benefit from physiotherapy (Doyle & Horgan, 2006; Johnston, 2016; Strange & Walley, 2016). Johnston (2016) identified a weak understanding of the veterinary physiotherapy profession and appropriate animal patients amongst veterinarians in Gauteng. Their research suggested that "rehabilitation therapists have an important role to play in educating and developing relationships with veterinarians at individual practices" (Johnston, 2016, p. 58). An increase in knowledge regarding the veterinary physiotherapy profession and its role in the treatment of animals has been shown to improve veterinarians' perceptions, as well as their likelihood to refer cases (Doyle & Horgan, 2006; Johnston, 2016).

Therefore, it would be useful to obtain insight into the current understanding of the veterinary physiotherapy profession by veterinarians, to determine whether this is an area that should be addressed. One would expect the registration of the veterinary physiotherapy profession with the SAVC to have improved the understanding of the profession amongst veterinarians, as there would have been an increased exposure to veterinary physiotherapists. Naidoo et al. (2008) identified a “need for animal physiotherapy specialisation” (p. 16) to increase collaboration between the two professions. The establishment of an accredited BSc in Veterinary Physiotherapy qualification through Equine-Librium College, as well as the registration of the profession with the SAVC, should have had a positive impact on the perception and regard of the veterinary physiotherapy profession.

It is proposed that the present study will provide further insight into the national perception of the veterinary physiotherapy profession, as well as assist with identifying strategies to improve the knowledge thereof. This study will also examine veterinary physiotherapists’ perceptions of the industry that they work in to determine the impact that the promulgation of the profession has had on them. In addition, this research will assist new graduates entering the profession with manners in which they may successfully set up their practices and establish open communication channels with veterinarians in their area. Similarly, it aims to identify methods for currently practicing physiotherapists to use to increase referral rates from veterinarians. It is imperative that the barriers and facilitators to veterinary physiotherapy referrals from veterinarians are identified if we are to continue to grow and establish the veterinary physiotherapy profession. A collaborative team approach to holistic veterinary care can only be of benefit to the overall health and wellbeing of the animal patient.

#### 1.4 Justification for the Study

The veterinary physiotherapy profession has recently been promulgated as an accepted and registered profession by the SAVC. With these changes, it is necessary to gain insight into the perceptions of the para-veterinary profession by veterinarians, as this will impact whether the veterinary physiotherapy profession will be readily integrated into the management and health care of animal patients. It is important to identify both the barriers and facilitators to referral to veterinary physiotherapy, in order to address factors that may prevent the full integration of the profession into veterinary healthcare. It is crucial that veterinarians are involved in promoting the profession of veterinary physiotherapy if it is to be considered a standard practice in veterinary healthcare. In addition, previous studies have not gained insight into the veterinary physiotherapist perspectives regarding the challenges they may face within the industry. The present study aims to fill this gap. The findings from this study will determine the present status of veterinary referrals to veterinary physiotherapists, explore the current demand for veterinary physiotherapy care, as well as identify ways for practitioners to increase their caseloads.

As a pioneer in this regard, South Africa is the first country in the world where the veterinary physiotherapy profession has been registered with its associated veterinary council. To date, no national studies have investigated the barriers or facilitators of the inclusion of the veterinary physiotherapy profession into the veterinary healthcare team, particularly post-promulgation. It would be interesting to determine whether the promulgation of the profession has had an impact on the growth of the industry within South Africa, particularly from the perspective of the veterinarian.

Internationally, countries wishing to register an independent veterinary physiotherapy profession may look to South Africa to benchmark the best method of implementation. Establishing recommendations that may assist with the integration of the profession into the veterinary field will ensure the growth of the industry nationally, as well as internationally.

### 1.5 Aims

The aim of the present study was to explore the relationships and dynamics between veterinarians and veterinary physiotherapists within the South African context, post-promulgation of the veterinary physiotherapy profession. This was to address the research question of how promulgation had been perceived by these groups and what impact it may have had on the relationships between the professions.

### 1.6 Objectives

The objectives of this study included, to:

- gain an understanding of the justification of the establishment of an independent veterinary physiotherapy profession through the first phase of data collection;
- describe the profile of veterinarians and veterinary physiotherapists within South Africa, including geographic location, qualifications, years of experience, and services offered through the quantitative data collected in phase two of the data collection;
- explore experiences and perceptions within the veterinary physiotherapy and veterinary profession through phases one and three of data collection;
- identify the challenges that veterinary physiotherapists face with increasing their animal client base through phases two and three of data collection;

- explore veterinarians' understanding of the scope of practice of registered veterinary physiotherapists within South Africa through phases two and three of data collection;
- investigate veterinarians' perceptions of the veterinary physiotherapy profession with regards to scope of practice and integration into the veterinary healthcare team through phases two and three of data collection; and
- identify current barriers and facilitators to referrals from veterinarians to registered veterinary physiotherapists within South Africa through phases two and three of data collection.

## 1.7 Structure of the Dissertation

The literature review that follows in Chapter Two will explore an overview of veterinary physiotherapy as a profession, its history, as well as provide evidence to support the inclusion of veterinary physiotherapy into the management of specific animal patients. It will explore potential gaps in the literature to identify areas that may require additional evidence for the inclusion of physiotherapy. Following, studies that have investigated the relationship between veterinarians and veterinary physiotherapists and have identified links to referral rates will be presented. This will allow for further interpretation and comparison of the results gained from this study.

Chapter Three will discuss the study design, the methods used for data collection and data analysis, and the procedures involved in data collection. Instrumentation choice, development of the questionnaires and execution of the interviews will be presented and justified. Ethical considerations regarding the study will be presented. This will be followed by the results section in Chapter Four.

The results from phase two of the study – the questionnaires – will be presented first, followed by the results from phases one and three – the interviews. This will allow for comparison between the interview phases. Chapter Five will include a discussion, where the results from all three phases will be discussed in relation to the study's aims and objectives. Recommendations emerging from this study that may assist with the integration of the veterinary physiotherapy profession into the veterinary field will be included in this section. Thereafter, limitations of the present study will be presented. Finally, Chapter Six will present the conclusion of this study, where the main findings and their interpretation will be summarised.

## CHAPTER TWO: LITERATURE REVIEW

Internationally, the field of animal physiotherapy is growing. The following narrative literature review will consider the position of veterinary physiotherapy within the realm of veterinary medicine by examining the research that supports its inclusion into the management of specific cases, as well as the research conducted regarding the treatment options available to veterinary physiotherapists. It will also examine the relationships between veterinary physiotherapists and veterinarians, and the effect it may have on veterinary physiotherapy patient loads.

### 2.1 Search Strategy

The search strategy for relevant publications consisted of the inclusion of the following terms: (Animal OR Veterinary OR Equine OR Canine OR Feline) AND (Physiotherapy OR Physical Therapy OR Rehabilitation); Perceptions of (Veterinary Surgeons OR Veterinarians). Publications specific to veterinary perceptions of physiotherapy, although limited, were identified as key papers. In addition, papers relating to manual therapy, electrotherapy, and exercise-based therapy on animals were searched for using the following terms: “animal” OR “veterinary” OR “equine” OR “canine” OR “feline” AND “manual therapy” OR “electrotherapy” OR “exercise.” Additional relevant references cited within the reviewed papers were searched for manually. The following databases were included in the search: Primo, PUBMED, EBSCO, Mendeley, Science Direct, Scopus, and Google Scholar. To increase the number of possible relevant publications, no date ranges were included in the search.

## 2.2 Veterinary Physiotherapy – it’s Place in Veterinary Healthcare

Veterinary physiotherapists should be considered an essential component of veterinary healthcare, ensuring the greatest benefit to the animal when practiced in conjunction with standard veterinary care (Sharp, 2008). Physiotherapy assessments are performed to identify areas of pain, alterations in function, asymmetry of movement, and muscle imbalances (McGowan, Stubbs, & Jull, 2007b). The review by Buchner and Schildboeck (2006) entitled *Physiotherapy Applied to the Horse*, suggested that although the techniques used within physiotherapy treatment have been regularly used by veterinarians, there is a need to “develop animal physiotherapy as a separate, well defined professional discipline with a profound scientific foundation and controlled education” (p. 574). Physiotherapy is a profession that encompasses a process of assessment to arrive at a functional diagnosis that incorporates the pathological processes involved, as well as the effect of this pathology on the animal’s overall movement (McGowan et al., 2007b). Conversely, veterinarians are primarily interested in the “patho-anatomical diagnosis - what are the pathological processes occurring and where are they located” (McGowan et al., 2007b, p. 91). Noticeably, these two approaches complement each other and suggest that a collaborative approach to the management of a patient is necessary (McGowan et al., 2007b; Sharp, 2008; Tabor, 2020).

The goals of veterinary practice and veterinary physiotherapy interventions are similar and complement each other; however, they are achieved through different means. The main aim of a veterinary intervention would be to diagnose the primary problem and address the pathological processes at play through means of pharmacological or surgical methods, thereby improving the overall wellbeing and function of the animal (McGowan & Cottrill, 2016).

Similarly, veterinary physiotherapists use clinical reasoning skills to select the most appropriate treatment interventions to improve the comfort and functionality of their animal patient (McGowan et al., 2007a; Sharp, 2008). Veterinary physiotherapists are required to have a good understanding of the biomechanical requirements of the animal, the pathological processes at play, the compensatory mechanisms that the animal has adopted, as well as the proposed physiological responses of the treatment interventions (McGowan et al., 2007a; McGowan et al., 2007b).

The treatment options available in veterinary physiotherapy include manual therapy, electrotherapy modalities, rehabilitation exercises and motor control training, and owner education (Bockstahler et al., 2004; McGowan et al., 2007a; Millis & Levine, 2014). The specific application of the above techniques is dependent on the findings from the physiotherapist's assessment and the desired outcomes for the individual patient. The inclusion of physiotherapy management into mainstream veterinary care will enhance the overall outcome of the patient (Sharp, 2008). Routine or maintenance physiotherapy has the added benefit of monitoring and maintaining strength and comfort levels of an animal (Tabor, 2020). Further, veterinary physiotherapists may provide feedback to the veterinarian regarding any regressions. It is clear that, as in human medicine, collaboration between the two professionals will result in optimal results for animal patients (Tabor, 2020).

### 2.3 The Scope of Practice of Veterinary Physiotherapy

The Day One skillset of a veterinary physiotherapist as documented on the SAVC website includes certain animal conditions that a veterinary physiotherapist is required to be able to competently assess and treat.

Broad categories of case types include orthopaedics, neurology, and cardiorespiratory within the equine and small animal field. The orthopaedics category is further classified as post-surgical cases, degenerative joint disease, soft tissue injuries, sports injuries, and geriatric patients (South African Veterinary Council, 2022). In addition to the case types, a list of treatment modalities and techniques fall into the scope of practice of a veterinary physiotherapy. These include manual therapy techniques, therapeutic modalities, and exercise-based techniques (South African Veterinary Council, 2022).

### *2.3.1 Orthopaedic Patients*

Orthopaedic animal patients include patients affected by orthopaedic conditions that cause pain and limit function. Certain patients would have received surgical interventions for their conditions, while others may be managed conservatively (Millis & Levine, 2014). Physiotherapy for orthopaedic conditions is indicated for both surgical and conservative management in the human as well as the animal patient (McGonagle, Blythe, & Levine, 2014; Millis & Levine, 2014; Samoy et al., 2016). The evidence in support of the inclusion of physiotherapy into the management of specific veterinary patients will be explored below.

#### *2.3.1.1 Post-Surgical Physiotherapy*

Physiotherapy management of animal patients that have undergone various orthopaedic and neurological surgeries have been described in a variety of sources (Bockstahler et al., 2004; Millis & Levine, 2014; Zink & Van Dyke, 2018). In a study conducted in the United States of America in 2016, 70.3% of animal patients referred to physiotherapy were for post-operative rehabilitation (Alvarez, Fox, Van Dyke, & Grigsby, 2016).

One such example is post-operative rehabilitation following the surgical repair of the cranial cruciate ligament in dogs (Alvarez, Repac, Kirkby Shaw, & Compton, 2022). “Cranial cruciate ligament rupture is one of the most common canine orthopaedic conditions in veterinary medicine” (Spinella, Arcamone, & Valentini, 2021, p. 1), resulting in pain, lameness, and loss of function. Similar to physiotherapy following anterior cruciate ligament reconstruction in humans, post-cranial cruciate ligament physiotherapy protocols aim to reduce pain, improve range of movement, decrease lameness, and increase the overall function of the animal (Sharp, 2008).

Unlike research into effective post-operative anterior cruciate ligament rehabilitation, there are no clear evidence-based guidelines for specific post-operative cranial cruciate ligament rehabilitation for dogs (Alvarez et al., 2022; Spinella et al., 2021; Wright et al., 2015). A recent systematic review evaluated the data for rehabilitation following cranial cruciate ligament surgery and concluded that although there was evidence to support the inclusion of post-surgical rehabilitation, there was a lack of class one level evidence, indicating a lack of evidence derived from multiple randomised, blinded, placebo-controlled trials (Alvarez et al., 2022). This lack of conclusive evidence to support physiotherapy intervention may be a barrier to referrals from veterinarians.

The inclusion of veterinary physiotherapy following orthopaedic surgery in horses is also considered to be lacking in scientific evidence. Most of the treatment techniques used follows human-based research (Davidson, 2019), and relates to the application of hot or cold modalities, manual therapies, and exercise prescription.

Exercise prescription can be problematic when extrapolated from human studies, as equine patients are weight bearing following surgery and often the supportive devices used in human participants are not applicable to be used in horses (Davidson, 2019). Veterinary physiotherapists, therefore, need to use their knowledge of healing processes, combined with the assessment of the patient, to implement the appropriate treatment of this patient group.

For example, an equine condition known as over-riding dorsal spinous processes or *kissing spines* occurs when the spinous processes of the thoracic or lumbar vertebrae in a horse makes contact with each other and causes pain (Zimmerman, Dyson, & Murray, 2012). Whether veterinary management is surgical or pharmacological, physiotherapy intervention can assist with relieving the signs and symptoms related to this condition. Physiotherapeutic interventions would include manual therapy to relieve associated soft tissue pain and restrictions, electrotherapy modalities to assist with healing, and an individually tailored exercise programme to improve core strength and mobility (Coyle, 2022). Although there is no specific research that has examined the effects of the inclusion of a physiotherapy programme into the management of these patients, anecdotal evidence suggests there is an experienced benefit. In addition, studies investigating the effects of implementing a dynamic mobilisation exercise programme in horses demonstrated an improvement in the multifidus cross-sectional area and an improvement in the thoracolumbar posture, which would benefit horses that have kissing spine (Shakeshaft & Tabor, 2020; Stubbs, Kaiser, Hauptman, & Clayton, 2011).

Although not exclusively utilised by veterinary physiotherapists, dynamic mobilisation exercises are implemented into rehabilitation programmes to improve core stability, assist with back pain, and improve performance (Clayton, 2016). Similarly, a study evaluated the effects of implementing a core exercise programme following colic surgery on a horse's return to performance. The authors concluded that the implementation was safe and resulted in an expedited return to work compared to horses that did not perform the core programme (Holcombe, Shearer, & Valberg, 2019). This supports the inclusion of veterinary physiotherapy, specifically the implementation of a core exercise programme, into the management of specific equine cases.

#### *2.3.1.2 Competitive/Sporting Animals*

Veterinary physiotherapists play a critical role in the management of animals that are competitive and required to participate in various sporting disciplines. Competitive equine disciplines include, amongst others, racing, show jumping, dressage, eventing, and endurance (Hodgson, McGowan, & McKeever, 2013). Each discipline requires a specific set of skills, conditioning, and training (Clayton, 1991). As with human athletes, horses performing in different disciplines are subjected to varied stresses and strains on their neuromusculoskeletal systems as well as the added forces that a rider contributes to this system (Clayton, Dyson, Harris, van Weeren, & Bondi, 2019; Dyson et al., 2020; Tabor, 2020).

Contradictory to the holistic medical management of human athletes, the approach to the management of equine athletes appears to be quite segregated, with poor communication between the various health professionals (Rogers, Bolwell, & Gee, 2012).

The result of an isolated approach to the management of an equine athlete is that the diagnosed condition is often treated independently to the potential causes or associated changes of that condition (Rogers et al., 2012). This approach does not allow for the comprehensive management of the athlete, potentially decreasing the overall outcome. For example, allied health practitioners commonly treat back pain in competitive horses, but often this back pain is secondary to lameness (Meredith, Bolwell, Rogers, & Gee, 2011; Rogers et al., 2012). If there is poor communication and interactions between the veterinarian and the allied health practitioner, the outcome of the management of the patient will be less than optimal (McGowan et al., 2007b; Rogers et al., 2012; Tabor, 2020). Routine monitoring and physiotherapy management of the non-injured sporting horse would assist with the identification of potential problems that may arise and affect their performance, requiring good communication and a team-centred approach (Dyson, 2002; Tabor, 2020).

Within the equine environment there are several professionals who form part of the multidisciplinary team who manages the athletic horse, including the veterinarian, physiotherapist, farrier, saddle fitter, trainer, and dentist (McGowan & Cottrill, 2016). Communication between these professionals is key to ensuring an optimal balance between the health and welfare of the horse and its performance. A professionally trained physiotherapist should be included within this multidisciplinary team, with a defined understanding of the roles of each of the members. Ideally, the veterinary physiotherapist should be considered a key facilitator in the dynamics between the different professions (McGowan & Cottrill, 2016).

These authors suggested that veterinarians had in fact embraced the inclusion of veterinary physiotherapy, particularly into the management of the competitive sport horse by noting that “the veterinarian-PT multidisciplinary team has become the gold standard in equine sports medicine and rehabilitation” (McGowan & Cottrill, 2016, p. 1).

“Canine sports medicine is the branch of veterinary medicine concerned with injuries sustained by canine athletes, including their prevention, diagnosis, and treatment” (Zink & Carr, 2018, p. 2). Veterinarians work with a large population of dogs that participate in various sporting activities, as well as working dogs used in specific roles. These dogs have specific physical requirements that allow them to fulfil their roles safely and effectively (Zink & Carr, 2018).

Human athletes generally have a team of health professionals with varied training and knowledge who assist in improving their athletic abilities and decrease their risks of injuries. Likewise, canine athletes can benefit from this integrated approach to their management (Zink & Carr, 2018). In the management of canine athletes, it is challenging to coordinate the roles of each of the professionals involved, but it is vital to ensure they are collaborative and patient focused (Kramer, Lamoreaux Hesbach, & Sprague, 2018). The roles of each professional needs to be clearly defined. It is accepted that the veterinarian serves as the primary care practitioner, addressing the medical or surgical needs of the patient as well as referring to associated practitioners (Kramer et al., 2018).

Physiotherapists address their patients' needs through the "disablement model, rather than the medical model of disease" (Kramer et al., 2018, p. 99), resulting in interventions that focus on the impairments of the pathology, rather than on the diagnosis itself. As previously mentioned, treatment choices depend on the specific needs of the canine patient and can include manual therapy, electrotherapy, and exercise rehabilitation, with the choice of treatment based on the physiotherapy assessment findings as well as the veterinary diagnosis. Veterinary physiotherapists therefore play a key role in maintaining and improving the function and performance of canine athletes through exercise prescription that targets the specific needs of the dog, treatment of injuries that the dog may have sustained, and progressive conditioning to return to sport following an injury (Zink & Carr, 2018).

#### *2.3.1.3 Physiotherapy for the Geriatric Animal*

Geriatric patients generally present to the rehabilitation practitioner due to an owner or veterinarian identifying a decline in mobility and daily function (Frye, Carr, Lenfest, & Miller, 2022). Quality of life for an animal is directly linked to their mobility, functional ability, and the presence of pain (Frye et al., 2022). The effects of aging in dogs is similar to that in humans, such as a decrease in metabolic rate and immune competence, as well as the loss of muscle, bone, and cartilage mass (Marcellin-Little, Levine, & Millis, 2014). These changes all influence the geriatric patient's ability to cope with internal and external stresses. In addition, the risk of comorbidities such as cancer, diabetes mellitus, and obesity increases, which must be taken into consideration when implementing a physiotherapy programme for the patient (Marcellin-Little et al., 2014). A team approach to these patients is therefore vital in order to ensure all aspects of their health are taken care of.

Addressing the functional needs of the animal patients has been identified as one of the primary aims of veterinary physiotherapy (Frye et al., 2022; McGowan & Cottrill, 2016). As functional ability is directly related to perceived quality of life for a dog, veterinary physiotherapists play a significant role in the management of the geriatric patient (Mullan & Main, 2007). Physiotherapy management of a geriatric patient would include the use of modalities to decrease pain such as laser therapy. In a study carried out on dogs with decreased mobility as a result of osteoarthritis, the application of low-level laser therapy was reported to be effective in increasing their mobility (Barale, Monticelli, & Adami, 2022). Similarly, laser treatment was shown to be effective in the treatment of elbow osteoarthritis, resulting in a reduction in pain scores (Looney, Huntingford, Blaeser, & Mann, 2018). Exercise prescription would also be included in the physiotherapeutic management of a geriatric patient. A decrease in strength and mobility is common amongst geriatric animals, resulting in an overall loss of function (Rychel, 2010). The implementation of a safe and effective therapeutic programme should assist with the maintenance of the animal's mobility. In addition, obesity is a common problem amongst the geriatric dog population that can be managed with the implementation of a gentle exercise programme (Rychel, 2010). Weight management has been found to be effective in managing symptoms of pain and dysfunction related to osteoarthritis as a result of hip dysplasia (Kirkby & Lewis, 2012).

Osteoarthritis is one of the most common musculoskeletal pathologies diagnosed in adult canine patients, resulting in pain, impaired function, and a reduction in quality of life (Fox, 2016). It is essential that the management of these patients follows a multimodal approach, with a focus on pain reduction and improved mobility (Rychel, 2010).

Veterinarians, therefore, need to communicate to their clients the options available to manage this lifelong disease as best as possible (Fox, 2016; Rychel, 2010). The majority of patients with osteoarthritis require pharmacological assistance to manage their pain, and veterinarians are responsible for the prescription of these medications (Gruen et al., 2022). Physiotherapy can be used in conjunction with drug therapy to manage pain, using manual therapy and therapeutic modalities (Bockstahler et al., 2004; Millis & Levine, 2014). A multimodal approach to pain management for patients with osteoarthritis, where veterinary and physiotherapy intervention are combined, should be more effective in improving their overall quality of life and function (Alvarez et al., 2016).

#### *2.3.1.4 Neurological Patients*

Physiotherapy is also indicated for neurological animal patients to decrease pain, reduce secondary complications, and improve their overall function using electrotherapy modalities, manual therapy, and targeted rehabilitation exercises (Millis & Levine, 2014). Liaison with the primary veterinarian is essential in the appropriate physiotherapy management of a neurological patient, as the diagnosis of the lesion will significantly affect the rehabilitation programme design, as well as the prognosis (Sims, Waldron, & Marcellin-Little, 2015). Neurologically compromised dogs will range in functional abilities and presentation, and the attending physiotherapist must be able to fully assess the patient to determine the most appropriate treatment plan (Sims et al., 2015). The success of a neurological rehabilitation programme is affected by the physiotherapist's ability to design an appropriate physiotherapy programme for each individual animal patient (Olby, Halling, & Glick, 2005). "Spinal cord injury is the most common neurologic disease treated by most veterinary rehabilitation facilities" (Sims et al., 2015, p. 3).

Spinal cord injury can result from trauma, intervertebral disc disease (both acute and chronic), and fibrocartilaginous embolism. The early implementation of locomotion-based exercise activity that involved weight bearing and continued for a period of at least eight weeks was demonstrated to be effective in the treatment of animal models with spinal cord injuries (Battistuzzo, Callister, Callister, & Galea, 2012). This is relevant to physiotherapeutic intervention, as physiotherapists can design appropriate rehabilitative exercise programmes that address the specific needs of the individual patient.

Intervertebral disc disease is one of the most common pathologies causing spinal cord compression and neurological deficits in dogs and cats (Bergknut et al., 2013). Management of animal patients with intervertebral disc disease includes surgical intervention or nonsurgical management (Millis & Levine, 2014). Although there are very few well designed studies that prove the efficacy of physiotherapy intervention for intervertebral disc disease, the inclusion of physiotherapy for the post-surgical management of dogs with intervertebral disc disease has been suggested to shorten recovery time and reduce the complications from confinement (Bruno et al., 2020; Jeong, Piao, Rahman, Kim, & Kim, 2019). The nonsurgical management of patients with intervertebral disc disease includes cage confinement, pharmacological intervention, and physiotherapy (Millis & Levine, 2014; Nessler, Flieshardt, Tünsmeier, Denning, & Tipold, 2018).

Another common canine neurological condition that veterinary physiotherapists encounter is degenerative myelopathy. This condition is described as “a slowly progressive degenerative disease of the central nervous system that most severely affects the thoracic spinal cord segments” (Thomas, Olby, & Sharon, 2014, p. 625).

Physiotherapy intervention for dogs with degenerative myelopathy has been reported to prolong ambulation as well as increase survival time (Kathmann, Cizinauskas, Doherr, Steffen, & Jaggy, 2006). Clinical reports and anecdotal experience have demonstrated positive outcomes with the implementation of physiotherapy treatment into the management of dogs with neurological conditions. However, a review of the available literature supporting the rehabilitation of common canine neurologic diseases determined the need for more controlled, blinded, prospective studies to improve the evidence-based effectiveness of rehabilitation (Spinella, Bettella, Riccio, & Okonji, 2022).

### *2.3.2 Cardiorespiratory Physiotherapy*

The use of cardiorespiratory physiotherapy techniques is well accepted as standardised care for critically ill human patients in hospital (Edge-Hughes, 2012; Pouzot-Nevoret et al., 2018; Pryor & Ammani Prasad, 2008). However, this is not yet the case in small animal hospitals. Cardiorespiratory physiotherapy encompasses techniques that are used to improve lung function, mobilise and clear secretions, improve oxygenation, and prevent the development of pneumonia in ill or recumbent patients (Edge-Hughes, 2012; Millis & Levine, 2014). The techniques used include positioning and postural drainage placement, percussion, vibration, nebulisation, and appropriate exercise (Edge-Hughes, 2012; Millis & Levine, 2014). Although there is very little research that specifically examines these effects on animal patients, many of the evidence-based techniques used in human care are built on studies performed on animals (Gee & Williams, 1979; King et al., 1983; Wong, Paratz, Wilson, & Burns, 2003).

A recent study considered the feasibility and benefits of transferring human chest physiotherapy techniques onto dog patients with airway fluid accumulation (Pouzot-Nevoret et al., 2018). The results suggested that the techniques chosen were well tolerated and easily adapted to the dog patient (Pouzot-Nevoret et al., 2018). The same author more recently researched the use of specific airway clearance techniques, including assisted cough and prolonged slow expiration, for dogs suffering from respiratory distress secondary to airway fluid accumulation (Pouzot-Nevoret et al., 2021). Results demonstrated an improvement in hypoxemia and the total number of days without oxygen therapy for the dogs that received chest physiotherapy versus the dogs that did not (Pouzot-Nevoret et al., 2021). These studies support the inclusion of chest physiotherapy into the management of respiratory compromised dogs, but further research is required to determine the clinical benefits. The researcher could find no published studies detailing the inclusion of respiratory physiotherapy into the management of respiratory compromised equine patients.

#### 2.4 Veterinary Physiotherapy Treatment Modalities

Veterinary physiotherapists have a wide range of modalities and treatment techniques that fall within their scope of practice as set out by the SAVC (South African Veterinary Council, 2023). The choice of treatment intervention is dependent on the findings from a full physiotherapy evaluation of the animal, which would include taking into consideration the owner as well as feedback from the veterinarian (McGowan et al., 2007a; Millis & Levine, 2014). These treatment modalities can be broadly categorised into manual therapy techniques, therapeutic modalities, and exercise prescriptions (Samoy et al., 2016).

This section will explore some of the evidence supporting the inclusion of these treatment techniques into the physiotherapy management of animal patients. A full literature review of all modalities is beyond the scope of the present dissertation.

#### *2.4.1 Manual Therapy*

Manual therapy techniques involve the use of the therapist's hands, and are skilled techniques that aim to induce relaxation, improve range of movement, decrease pain, and improve restrictions of soft tissue and articular structures (Gross Saunders, Walker, & Levine, 2014). Manual therapy techniques are indicated for pain, tissue restriction, and loss of articular range of motion that usually occurs as a result of neuromusculoskeletal dysfunction (Gross Saunders et al., 2014). They include techniques such as massage, myofascial release, joint mobilisation, and passive range of movement (Samoy et al., 2016).

Although manual therapy techniques are often used in the management of animal patients, much of the evidence to support their inclusion appears to be based on human studies (Atalaia, Prazeres, Abrantes, & Clayton, 2021). There is an overall lack of randomised clinical trials that support targeted parameters, dosages, and applications specific to the animal patient (Atalaia et al., 2021). A systematic review reporting on musculoskeletal mobilisation and manipulation practices that have been utilised in the veterinary discipline aimed to review the scientific literature available that supports the inclusion of manual therapy into veterinary treatment (Hausler, Hesbach, Romano, Goff, & Bergh, 2021). The authors only identified 14 studies that fit their inclusion criteria: 13 equine and one canine study. The studies varied in quality and had a wide range of outcome parameters, with no standardisation of treatment techniques or dosages.

Regardless of the fact that all of the studies reported positive or therapeutic effects, it was challenging for the authors to deduce well-founded conclusions due to the diversity of studies included for review (Haussler et al., 2021). Further studies are evidently required to be able to quantify methods that may specifically evaluate the effects of implementing manual therapy techniques into the management of animal patients.

#### *2.4.2 Therapeutic Modalities*

The inclusion of therapeutic modality use in the management of a patient aims to influence the physiological responses of the target tissue through the application of thermal, sound, electrical, and light energy (Niebaum, McCauley, & Medina, 2018). Therapeutic modalities should only be integrated into the treatment plan provided that the physiotherapist has a good understanding of the physiological effects on the target tissue, as well as knowledge of the contraindications to their use (Niebaum et al., 2018). The authors identified broad indications for the use of the different modalities to include pain modulation, enhancing the healing phases, muscle stimulation, and improvement of joint range of movement.

A literature review specific to the inclusion of electrotherapeutic modalities into the management of animal patients was conducted in 2021 (Bergh, Lund, Boström, Hyytiäinen, & Asplund, 2021). After reviewing 41 studies, the authors came to a conclusion that no current electrotherapies have sufficiently strong scientific evidence to support clinical effects in the treatment of horses, dogs, or cats with conditions affecting muscles, joints, nerves, or bones (Bergh et al., 2021). This was due to the low quality and high bias of these studies.

The modalities that were indicated warranted further high-quality research, including pulsed electromagnetic field therapy, neural electrical muscular stimulation, transcutaneous electrical neural stimulation, and percutaneous electrical neural stimulation.

Similarly, a review of the literature pertaining to the application of thermal therapy and cryotherapy also found the studies to be of poor quality, with no standardisation of the parameters used (Atalaia et al., 2021). In the same review, the studies supported the inclusion of high-power laser therapy in the treatment of tendon and ligament injuries (Pluim et al., 2018), as well as the treatment of suspensory ligament injuries using ultrasound therapy (Carrozzo, Toniato, & Harrison, 2019). Future studies on the use of specific modalities detailing exact parameters and protocols are necessary to validate their use in veterinary specific case types.

### *2.4.3 Exercise Prescription*

Veterinary physiotherapists are often involved in the implementation of a therapeutic exercise programme into the management of a wide variety of patients, from the geriatric animal to the competing sports animal (McCauly & Van Dyke, 2018). A full evaluation of the patient's abilities and requirements must be performed prior to the implementation of a rehabilitation programme to ensure that it is suitable for the specific patient. In addition, continuous re-evaluation must be carried out to monitor the effect of the programme (McCauly & Van Dyke, 2018).

When reviewing the literature available to support the inclusion of exercise programmes, it should be specific to either the type of exercise modality, or the condition treated. For example, a review carried out on the use of water treadmills in the rehabilitation of sports horses with musculoskeletal injuries reported that it was most beneficial for horses with subacute and chronic tendon and ligament injuries, as well as horses with osteoarthritis (Muñoz et al., 2019). Equine dynamic mobilisation exercises, or core exercises, have been shown to increase the cross-sectional area of the multifidus muscle in the thoracic and lumbar area (Stubbs et al., 2011), improve short term thoracolumbar posture (Shakeshaft & Tabor, 2020), and improve stride quality when combined with gymnastic training (De Oliveira et al., 2015). The use of water treadmills in canine patients have been reported to assist with weight loss (Chauvet, Laclair, Elliott, & German, 2011), target activation and strengthening of specific muscles (Vitger, Bruhn-Rasmussen, Pedersen, Fuglsang-Damgaard, & Harrison, 2021), and alter joint kinematics at different water levels (Bliss, Terry, & de Godoy, 2022). As with all therapeutic exercise programmes, the veterinary physiotherapist should select the most effective option based on their goals and the abilities of their patient.

When considering which treatment techniques to implement in their management of a patient, veterinary physiotherapists need to use their understanding of animal anatomy, biomechanics, and pathologies, combined with the results from their evaluation in order to be successful. As detailed above, there is minimal class one evidence to support the use of specific techniques and modalities within the veterinary physiotherapy field. Veterinary physiotherapists often rely on research within the human physiotherapy realm to determine best practice.

## 2.5 Veterinary Physiotherapy – Barriers to Referrals

Human physiotherapists are considered essential practitioners within the medical healthcare team, providing evidence-based care for their patients (McGowan et al., 2007a). Despite the literature presented on the role that physiotherapy can play in conditions and functional issues, the integration into veterinary care is still considered an additional extra and non-essential. The role of the veterinary physiotherapist does not form part of veterinary curricula, nor is it considered a standard practice (McGowan et al., 2007a). Within South Africa, students studying veterinary science at the University of Pretoria do not receive comprehensive information on veterinary physiotherapy or rehabilitation (Johnston, 2016). This may lead to a poor understanding of the scope of practice of veterinary physiotherapists.

Previous studies conducted within South Africa and abroad have identified high levels of awareness of animal physiotherapy, but lower referral rates of patients from veterinarians to animal physiotherapists (Doyle & Horgan, 2006; Johnston, 2016; Strange & Walley, 2016). A study conducted in Gauteng identified that although 96% of the veterinarians surveyed were aware of the animal physiotherapy industry, only 48% had referred patients to a veterinary physiotherapist (Johnston, 2016). Similarly, in an earlier study conducted in KwaZulu Natal, 100% of veterinarians were aware of animal physiotherapists, but only 7.4% had referred animal patients for physiotherapy (Naidoo et al., 2008). Internationally, studies carried out within Ireland and the United Kingdom reported similar results, with higher levels of awareness, but lower referral rates (Doyle & Horgan, 2006; Strange & Walley, 2016). These studies suggest that there does not seem to be a direct correlation between veterinarians' increased awareness of the veterinary physiotherapy profession and their likelihood to refer. Possible reasons for these poor referral rates will be explored below.

### *2.5.1 Lack of Standardised Training of Animal Physiotherapists*

Prior to the promulgation of the veterinary physiotherapy profession, human physiotherapists who wished to enter the field of animal physiotherapy had very few options to complete their training. These included international master's degrees, postgraduate courses run by the APGSA, and other rehabilitation courses (Johnston, 2016; Naidoo et al., 2008). These courses were not comparable in terms of the training provided and therefore did not provide a standardised set of skills for the animal physiotherapy field. In addition, there were other professionals providing animal rehabilitation and therapy with varying degrees of training and skillsets (Johnston, 2016). The lack of standardised training of animal physiotherapists has been reported as a barrier to referrals from veterinarians in several studies (Doyle & Horgan, 2006; Johnston, 2016; Naidoo et al., 2008).

A study conducted in Durban, South Africa explored the perception that veterinarians and physiotherapists held towards animal physiotherapy (Naidoo et al., 2008). All of the respondents were aware of physiotherapy for animal patients, and the majority identified a need for postgraduate specialisation in animal physiotherapy. International masters' programmes had been available at the time, but were costly and therefore presented as a barrier to many who wished to pursue this route (Naidoo et al., 2008). Worldwide, special interest groups in animal physiotherapy have provided some form of continuous professional development (CPD) training, however this had not been standardised (McGowan et al., 2007a). At this stage, animal physiotherapists had not been considered first line practitioners and only worked with referrals from a veterinarian.

Without the standardisation of postgraduate training, certain veterinarians may have been reluctant to refer to practitioners without knowledge of their qualifications (Doyle & Horgan, 2006; Johnston, 2016; Naidoo et al., 2008). Physiotherapists interviewed in the 2008 study also commented on the need for further specialised animal training to feel confident in the field (Naidoo et al., 2008). This may have prevented them from marketing their ability to treat animals.

Since the promulgation of the profession and the subsequent registration of therapists with the SAVC, all veterinary physiotherapists working in the field within South Africa must possess specific Day One skills to ensure competence in practicing as a veterinary physiotherapist (South African Veterinary Council, 2022). Their training is assessed and may require examination by the SAVC prior to registration, ensuring that all practitioners in the field within South Africa have a standardised skillset and specific expertise (South African Veterinary Council, 2022). In addition, there is now a BSc in Veterinary Physiotherapy degree available in South Africa at Equine-Librium College. This degree offers a full-time four-year programme that meets the Day One skillset requirement of a veterinary physiotherapist, and graduates are automatically registered as veterinary physiotherapists with the SAVC (South African Veterinary Council, 2022). The expectation of this would be to have an overall positive shift in the perception of the profession from veterinarians.

### *2.5.2 Regulation of Animal Rehabilitation Practitioners*

Prior to the registration of the veterinary physiotherapy profession in South Africa in 2017, there was no governing body that regulated all therapists involved in the field.

All veterinary physiotherapists are now required to be registered with the SAVC, which involves complying to the rules and regulations set out by its council (South African Veterinary Council, 2022). The lack of regulation was discussed as a possible barrier to referral in both the study conducted in Ireland in 2006 (Doyle & Horgan, 2006), as well as the study conducted in South Africa (Johnston, 2016), with veterinarians commenting that a register of qualified professionals would assist in ensuring referral to a trained and registered practitioner. Within South Africa, both the SAVC and SAAPRA now provide lists of registered veterinary physiotherapists on their websites that are accessible to the public and all veterinary healthcare practitioners (South African Animal Physical Rehabilitation Association, 2020; South African Veterinary Council, 2022). This allows for the verification of registered professionals and should encourage confidence in veterinarians to refer to veterinary physiotherapists.

### *2.5.3 Awareness of Local Facilities*

A common finding in many of these studies was a lack of awareness of available physiotherapists in the area (Doyle & Horgan, 2006; Johnston, 2016; Strange & Walley, 2016). A study conducted in England reported that 52.8% of the veterinarians interviewed wanted to “see an increase in the promotion of local services” (p. 28), while 36.2% reported a “lack of awareness concerning the availability of local physiotherapy services” (Strange & Walley, 2016, p. 28). Several veterinarians interviewed in the Irish study reported an interest in referring to a physiotherapist but being unable to locate one (Doyle & Horgan, 2006). The South African study reported that 30% of veterinarians agreed that local veterinary physiotherapists needed to promote their services better within their area (Johnston, 2016).

Since the promulgation of the profession and the registration of veterinary physiotherapists, SAAPRA has undertaken to promote the profession to veterinarians and the public through CPD talks for veterinarians, being present at veterinary conferences, and social media marketing (South African Animal Physical Rehabilitation Association, 2020). The SAVC promoted the profession through an awareness campaign that was run in November 2021, which involved showcasing *a day in the life of a veterinary physiotherapist* as well as by establishing an annual national veterinary physiotherapy day (South African Veterinary Council, 2021). This campaign was primarily directed at veterinarians but would have been available to all followers of their social media platforms. One would expect these methods to have had a positive impact on the awareness of the profession.

#### *2.5.4 Understanding of Physiotherapy Techniques*

Johnston (2016) explored the perception of veterinary physiotherapists through questionnaires distributed to veterinarians in Gauteng, South Africa. A section of the questionnaire included a self-evaluation of the knowledge of specific physiotherapy techniques held by veterinarians and used in veterinary physiotherapy. Their results indicated a low level of understanding of the specific techniques that veterinary physiotherapists use in their everyday practice. Interestingly, when comparing equine veterinarians to small animal veterinarians, the equine veterinarians held a higher level of understanding of the physiotherapy profession, which correlated with a higher referral rate (Johnston, 2016). This suggests that the level of understanding of the profession correlates with the veterinarians' likelihood to refer. Similarly, the results from the Irish study demonstrated a significant correlation between the veterinarian's knowledge of physiotherapy techniques and their likelihood to refer to veterinary physiotherapists (Doyle & Horgan, 2006).

This implies a positive relationship between a veterinarian's understanding of the profession and subsequent referrals to veterinary physiotherapists.

Both studies also explored veterinarian's awareness of the indication of physiotherapy for specific conditions (Doyle & Horgan, 2006; Johnston, 2016). In both studies, the highest rated conditions deemed appropriate for physiotherapy referral were back and neck problems, ligament, joint, and tendon injuries, and fractures (Doyle & Horgan, 2006; Johnston, 2016). In the Irish study, skin problems, wounds, and respiratory conditions were reported as least appropriate for physiotherapy referral; while in the South African study, veterinarians considered soft tissue damage, inflammatory conditions, wounds, and skin conditions as least important (Doyle & Horgan, 2006; Johnston, 2016).

This suggests that although the awareness of commonly treated generic conditions appeared high, the scope of a veterinary physiotherapist may be poorly understood. Certain conditions that may benefit from the intervention of a veterinary physiotherapist are not being referred by veterinarians, and therefore missing the opportunity for the holistic treatment of the animals in their care. In addition, the awareness of the conditions commonly treated by physiotherapists did not seem to correlate directly with referrals in both studies results (Doyle & Horgan, 2006; Johnston, 2016). Only 26% of the Irish veterinarians who were aware of physiotherapy had referred cases (Doyle & Horgan, 2006), while in the South African study only 48% of the veterinarians who were aware of physiotherapy had referred cases (Johnston, 2016). This suggests that awareness of the profession alone does not directly correlate with an increase in referrals.

### *2.5.5 Evidence to Support Physiotherapy Intervention*

The study carried out in Ireland that investigated veterinarians' perceptions and use of animal physiotherapy reported that 96% of the respondents thought that there needed to be a growth in evidence for the use of physiotherapy for veterinary conditions to establish the profession within the veterinary industry (Doyle & Horgan, 2006). This opinion was common in other studies exploring veterinarian perceptions and the use of adjunct treatments such as physiotherapy. Barriers to the inclusion of physiotherapy into the veterinary sector was explored in the United Kingdom by Strange and Walley (2016). An increase in the evidence-base of physiotherapy treatment modalities was proposed by 81.1% of respondents, to increase the referral rate to physiotherapy (Strange & Walley, 2016). Similarly, 64% of the veterinarians surveyed in the Gauteng study expressed the importance of published research to improve physiotherapy use (Johnston, 2016). A study specifically considering the referral rates of veterinary surgeons for rehabilitation following surgical management of cranial cruciate ligament disease in dogs found that 55% of surgeons recommended rehabilitation for all cases (Eiermann et al., 2020). This study suggested that "future evidence-based guidelines on postoperative rehabilitation therapy after cranial cruciate ligament surgery in dogs would be considered helpful according to 92% of all respondents" (Eiermann et al., 2020, p. 86).

A review of equine physiotherapy interventions revealed a lack of reliable, controlled studies that advocated for the use of specific treatment techniques, suggesting that more well-designed studies are needed to provide sufficient evidence of therapeutic efficacy (Atalaia et al., 2021; Buchner & Schildboeck, 2006).

For veterinarians to recommend physiotherapy, modalities in the profession need to be supported by a sound evidence-based approach (Buchner & Schildboeck, 2006; McGonagle et al., 2014).

### *2.5.6 Interprofessional Communication*

Each profession within a healthcare team should have their specific place and function (Rowland, 2014). One of the key factors to consider in a well-functioning, multidisciplinary healthcare team is good communication (Rowland, 2014). Veterinarians and veterinary physiotherapists need to communicate effectively regarding the patient's diagnosis, treatment plan, and progress if the combined approach to the management of the patient is to be beneficial. A common finding discussed a need for improved communication between the two professions (Doyle & Horgan, 2006; Johnston, 2016; Strange & Walley, 2016). Building relationships with physiotherapists was proposed by 66% of the surveyed veterinarians as important, and the majority considered good communication between the professions to be highly important (Johnston, 2016). Similarly, close liaison between the professions would be beneficial in ensuring relevant referrals from veterinarians (Doyle & Horgan, 2006). Additionally, 27.6% of veterinarians suggested that simplifying the referral process could increase referrals to physiotherapy (Strange & Walley, 2016).

### *2.5.7 Cost of Veterinary Physiotherapy Treatment*

An area explored as a potential barrier to veterinarian referrals to veterinary physiotherapy was the concern regarding the additional expense that the client would incur.

Johnston (2016) listed the cost of veterinary physiotherapy as a barrier to veterinary referrals to veterinary physiotherapy, with 59% of small animal general practitioners and 43% of small animal specialist veterinarians indicating this as a reason for non-referral. This seemed to be a similar concern in the international studies, with cost being indicated as the main barrier to veterinary physiotherapy referrals amongst the majority of veterinarian respondents (Strange & Walley, 2016). Physiotherapy for companion animals was often considered a luxury and an additional expense to an already strained budget for their animal's healthcare (Johnston, 2016; Kassolik, Andrzejewski, & Gilar, 2009). One veterinarian suggested that if pet medical aids covered physiotherapy, they would be more likely to refer (Johnston, 2016). If animal physiotherapists are able to demonstrate that the addition of physiotherapy to an animal patient's treatment regime would assist with recovery time and decrease the use and cost of medications post-injury, it would assist to encourage the inclusion of veterinary physiotherapy into veterinary management (Knowles & Mackintosh, 1994).

However, in the Irish study, 55% of respondents considered that cost would not discourage owners from seeking animal physiotherapy treatment, specifically within the equine field (Doyle & Horgan, 2006). Interestingly, this sentiment was echoed amongst the equine veterinarians in the South African study, with only 7% of respondents identifying cost as reason for non-referral (Johnston, 2016). This may suggest that the cost of physiotherapy treatment for equine patients is less of a barrier. The reasons suggested for this included the idea that equine patients are more likely to be competitive athletes and it is therefore more economically viable to include physiotherapy treatment to assist with performance enhancement and return to sport post-injury (Johnston, 2016; Knowles & Mackintosh, 1994).

### *2.5.8 Public Perceptions of Animal Care*

The perception of the animal owner regarding the care of their animals is another component to consider regarding the potential barriers and facilitators to veterinary referral. The animal owner is ultimately responsible to make the final decision to take their animal to physiotherapy or not. A full analysis of the perception of the public regarding veterinary physiotherapy is beyond the scope of the present review; however, a study conducted in 2019 reported a significant relationship between the veterinarian recommending physiotherapy for the animal following cranial cruciate ligament disease surgery and their client attending physiotherapy (Lafuente, Alves, & Chun, 2019). In addition, clients who received additional information regarding physiotherapy were more likely to take their animal to a physiotherapist (Lafuente et al., 2019). This suggests that veterinarians are an important advocator of veterinary physiotherapy and could assist with facilitating an increase in the caseload of veterinary physiotherapists. However, findings from the study by Johnston (2016) indicated that on occasion, when veterinarians did refer, clients were not compliant with attending physiotherapy. Therefore, veterinary physiotherapists may need to provide additional information when promoting their profession to the public.

## **2.6 Summary**

Veterinary physiotherapy is a growing field internationally; however, it is yet to be accepted as a standard practice within veterinary healthcare. Although the evidence base for the inclusion of veterinary physiotherapy is growing, there is a general lack of class one studies that advocate for its use for certain conditions (Bergh et al., 2021; Haussler et al., 2021). Most of the modalities used in the treatment of animal patients rely on evidence from human-based medicine and may not always be best practice or applicable to the animal population.

It is essential that veterinary physiotherapy expands its specific evidence base to validate its inclusion into the veterinary multidisciplinary team. Veterinarians are generally considered to be the primary contact for the public regarding concerns related to their animal's health. Therefore, it is imperative that veterinarians have a good understanding and regard of the veterinary physiotherapy profession so as to refer patients that would benefit from physiotherapy.

Previous studies have identified a link between a client's likelihood to consult a physiotherapist if their veterinarian had recommended so, which demonstrates the importance of ensuring veterinarians refer appropriate cases, as described by the SAVC (Lafuente et al., 2019; South African Veterinary Council, 2022). The SAVC's rules for veterinary physiotherapists within South Africa state that veterinary physiotherapists are required to "work on referral by a veterinarian who has diagnosed the animal or work in consultation with the patient's veterinarian if there is no direct referral" (South African Veterinary Council, 2023, p. 82). This highlights the importance of effective communication and collaboration between the two professionals.

Previous studies have identified potential reasons for veterinarians not referring to veterinary physiotherapy, such as lack of an evidence base, concerns regarding the expense, and a poor understanding of the profession; however, to date no studies have been carried out within South Africa post-promulgation of the veterinary physiotherapy profession. In addition, there have not been any studies that have explored the experiences of the veterinary physiotherapist. The present study aimed to fill that gap and provide recommendations to improve the veterinarian and veterinary physiotherapist partnership.

## CHAPTER THREE: METHODOLOGY

### 3.1 Study Design

The present study was descriptive and cross-sectional in design and consisted of a mixed-method approach that was a sequential exploratory design. The study was conducted in three phases: phase one and phase three were qualitative components and comprised of semi-structured interviews. In phase two, two self-developed questionnaires were administered to collect largely quantitative data for analysis. A mixed methods approach was considered suitable for the research question as it allowed the researcher to gain deeper insight into the relationships between the two professional groups, and also allowed for the analysis of the different perspectives (Shorten & Smith, 2017).

Qualitative research is a form of social inquiry that focuses on the way people interpret and make sense of their experiences and the world in which they live (Jackson, Drummond, & Camara, 2007). The basis of qualitative research lies in the interpretive approach to social reality and in the description of the lived experience of human beings. These methods were chosen to fulfil the objectives stated above. Interpretations vary amongst individuals and the interpretivist approach facilitates the capture of behavioural phenomena (Otani, 2020). The present study was modelled against the interpretive paradigm, which is concerned with understanding the world as it is from the subjective experiences of individual veterinary surgeons and veterinary physiotherapists (Pulla & Carter, 2018).

## 3.2 Study Participants

The study targeted registered veterinarians in small animal and equine practice, as well as registered and authorised veterinary physiotherapists within South Africa.

### 3.2.1 Veterinarians

#### 3.2.1.1 Inclusion Criteria

Participants were included in the study if they were currently practicing veterinarians, registered with the SAVC. The veterinarians were required to be working in equine and/or small animal practice and have their practice based within South Africa.

#### 3.2.1.2 Exclusion Criteria

Full time research-based veterinarians, production animal veterinarians, and wildlife veterinarians were excluded from participating in the study as their patient base would not typically fall into the scope of practice of a veterinary physiotherapist.

### 3.2.2 Veterinary Physiotherapists

#### 3.2.2.1 Inclusion Criteria

Veterinary physiotherapists were eligible to be included in the study if they had been registered with or authorised by the SAVC (and had been issued with a SAVC number) and were a SAAPRA member. Participants were required to be currently practicing as veterinary physiotherapists and based within South Africa.

### *3.2.2.2 Exclusion Criteria*

Veterinary Physiotherapy students were excluded from the study as they would not have been working in the field at the time of the study.

### *3.2.3 Sample Size Determination for the Questionnaires*

The initial sample size was calculated using the registration numbers available on the SAVC website at the time of compiling the study proposal, with a total of 3471 registered veterinarians and 210 veterinarian specialists (South African Veterinary Council, 2022). However, with the denial from the SAVC to assist with the distribution of the questionnaires to their members, the adjustment to the recruitment method via the SAVA was made. Therefore, the sample size was amended to be based on the number of SAVA members. There were 2000 veterinarian members registered with the SAVA at the time. Unfortunately, there was no means to determine how many fit the inclusion criteria.

The initial sample size of the veterinarian physiotherapists was also calculated using the number of registered members listed on the SAVC website at the time of writing the proposal. According to the SAVC website, there were 60 registered veterinary physiotherapists and 71 authorised veterinary physiotherapists, resulting in a total of 131 veterinary physiotherapists permitted to practice within South Africa at the time (South African Veterinary Council, 2022). This number was also revised due to the adjustment to the recruitment process to use the SAAPRA for the distribution of the questionnaire. At the time, the SAAPRA comprised of 70 registered veterinary physiotherapists.

Based on the above numbers, with a 95% confidence interval ( $z = 1.96$ ), a 5% margin for error, and a standard deviation of 0.5, the ideal sample size for veterinarians would be 324 of the 2000 registered SAVA veterinarians. The ideal sample of veterinary physiotherapists would be 60 of the 70 SAAPRA members. The calculations were performed using the sample size calculator on the Qualtrics website (XM).

### 3.3 Instrumentation

The collection of data involved a three-fold, mixed methods approach and included individual semi-structured interviews and two online questionnaires.

#### 3.3.1 Interviews

Interviews provide more in-depth insight into the knowledge, experience, and perspectives of research subjects with respect to the study topic (Bourgeault, De Vries, & Dingwall, 2010). A semi-structured approach to the interviews was employed. This involved a one-on-one in-depth conversation with the participant and included a combination of questions, both open and closed-ended, and was frequently supplemented with additional follow-up questions (i.e., questions asking why or how; Adams, 2015). A list of questions relating to the study objectives was created by the researcher (Appendix A), using official communication from SAAPRA and the SAVC at the time of promulgation to the time of the interviews to formulate questions, with the interview being guided by the interviewee's responses (South African Animal Physical Rehabilitation Association, 2020; South African Veterinary Council, 2017, 2022).

The researcher also made use of her own experiences as well as conversations with other veterinary physiotherapists to design questions that addressed the research objectives. The first phase of interview questions was conducted to obtain an understanding of the promulgation process, as well as the changes that occurred in the veterinary physiotherapy profession (Appendix A). The aim of these interviews was to obtain as much information as possible regarding the promulgation decision and process, as well as to form a general perception regarding feedback from those who would be affected by it. In addition, all interviewees had been in their respective professions for a significant period of time prior to the promulgation, and as such their experiences with the change in the environment of the veterinary physiotherapy profession were considered invaluable.

The questions formulated for the interview allowed for the participants to provide details regarding their own experiences and opinions surrounding the topic. This allowed for the interviewer to formulate additional questions based on their responses (Bless, Higson-Smith, & Sithole, 2013). The analysis of the first phase of interviews, as well as the results from the questionnaires in phase two, assisted in structuring the second round of interview questions in the third phase. This allowed for more detailed and specific individual feedback from the participants to discuss their experiences and opinions of working in the field.

The second phase of interview questions (Appendices B and C) aimed to explore the experiences that veterinarians and veterinary physiotherapists had with each other at ground level. The questions were designed to obtain a more thorough understanding of the perception of the veterinary physiotherapy profession held by veterinarians, as well as the personal experiences that veterinary physiotherapists had with veterinarians.

The interviewees' opinions regarding the promulgation of the profession and their knowledge of the process were also discussed. Lastly, questions regarding recommendations for further growth of the veterinary physiotherapy field were also explored. All participants included in the second round of interviews had completed the questionnaires (Appendices D and E) and would have therefore held a better understanding of the purpose of the research.

Qualitative research in the form of interviews has specific considerations in terms of the reliability and validity of the instrument and the results (Brink, 1993). The validity comprises both the accuracy of the findings and the instrument used to measure these findings (Brink, 1993). The content and flow of the original interview questions was reviewed and discussed with the study supervisors prior to conducting the interviews to ensure the questions covered the objectives of the relevant phases.

According to (Brink, 1993), recommendations to increase the validity of interviewee responses include:

- ensuring that the interviewee has an adequate understanding of the nature and the purpose of the research, which was achieved through the means of an information letter that was distributed to the participants (Appendix F) as well as by the interviewer providing a brief introduction before each interview commenced;
- comparing the results obtained with other evidence, which was achieved by comparing the results from all three phases through the notion of triangulation;
- confirming the findings with the interviewee, which was achieved by sharing the transcribed interviews to each participant for their feedback and clarification; and

- keeping accurate and detailed field notes, which was achieved by the researcher through the practice of self-reflective journaling throughout the process.

The reliability of qualitative research speaks to the consistency of the data obtained (Brink, 1993). A significant factor to consider is interviewer bias, whereby interviewers must be skilled in soliciting information from the participant without affecting or influencing their feedback. In the present study, interviewer bias was mitigated through the use of open-ended and neutral questions (Bless et al., 2013). Comments from the interviewer were aimed at clarification or expansion of the participants' experiences and views.

The interviews were recorded, and the transcription of the interview was sent to each participant to ensure accuracy of their input. Other disadvantages to using interviews include being time-consuming nature, which limits the number of participants and may affect the representation of the population (Adams, 2015). The use of a mixed-methods approach using both the questionnaires and interviews to supplement each other attempted to ensure a true representation of the population being studied (Adams, 2015). Advantages to the use of interviews includes that it allows for the investigation into a matter prior to the design of a general population questionnaire, as well as allowing for post-survey analysis of themes that are required to be explored in more detail (Adams, 2015).

### *3.3.2 Questionnaires*

The following phase of data collection used online questionnaires. Questionnaires are instruments used to gather information from a specific population that are analysed to obtain quantitative information regarding that population (Ornstein, 2013; Slattery et al., 2011).

Two questionnaires were used, one aimed at veterinarians, and another aimed at veterinary physiotherapists. The veterinarian questionnaire (Appendix D) was based on a questionnaire used by Johnston (2016) in similar research, with changes to the layout and style, as well as the addition of questions based on the specific objectives of the present study. The veterinary physiotherapy questionnaire (Appendix E) was developed by the researcher and based on the veterinarian survey, the objectives of the present study, and the feedback obtained during the first phase of data collection. The questions were designed to be unambiguous and specific, with a logical flow to the layout.

The confidentiality of responses was clearly stated in the introductory paragraph and informed consent section, as this has been reported to increase survey response rate (Bruce & Chambers, 2002; Eysenbach, 2004; Nulty, 2008). The validity and reliability of the questions was achieved through a validation process and pilot study, which is detailed in the procedure section below.

### 3.4 Procedure

The study was conducted in three phases. Phase one consisted of individual interviews with purposively identified experts in their field. Phase two consisted of two questionnaires: one questionnaire designed for veterinarians and other questionnaire designed for veterinary physiotherapists. Phase three consisted of individual interviews with practitioners in the veterinary and veterinary physiotherapy fields.

### *3.4.1 Phase One: individual Interviews with Experts in the Field*

The first phase of data collection involved individual interviews conducted by the researcher with two veterinarians and two veterinary physiotherapists that had been purposively identified as key role players within their respective fields. The first veterinarian had, until recently, been the SAVC chairperson, and therefore held considerable insight into the promulgation process. They had also been a practicing veterinarian both prior to and post-promulgation. The second veterinarian was an experienced specialist surgeon at a specialist veterinary centre in Cape Town who had been in practice for over 20 years. Their caseload involved large numbers of orthopaedic and neurological patients. Both veterinary physiotherapist participants were members of the working group that had been involved with the promulgation of the veterinary physiotherapy profession. The first veterinary physiotherapist owned a successful physiotherapy practice in Gauteng, while the second veterinary physiotherapist participant had been involved at the college which offered the BSc in Veterinary Physiotherapy degree. Both veterinary physiotherapists had experience in the veterinary physiotherapy field prior to and post-promulgation.

Although the primary aim of phase one of the study was to gain insight into the promulgation of the veterinary physiotherapy profession, it also explored the participants' experiences of the veterinarian and veterinary physiotherapist relationship. The responses from this phase assisted with the construction of the questions included in the questionnaire. A set of semi-structured questions (Appendix A) was developed by the researcher to address the aims of this phase, however the interviews were ultimately guided by the participants responses so as to mitigate any bias. The interview questions were checked and amended by the research supervisors.

The interview process was broadly structured to commence with obtaining basic professional information from each participant and would move on to a discussion regarding the promulgation of the veterinary profession. Following, the participants' experiences regarding the relationship between the two professions would be explored.

Once ethical approval was obtained from the Human Research Ethics Committee in the Faculty of Health Sciences at the University of Cape Town (UCT; Appendix G), the interview participants were contacted via email through their respective publicly accessible email addresses on their company websites. The participants were sent an information sheet (Appendix F) as well as an informed consent form (Appendix H). Upon their agreement to participate in the study, each participant signed the informed consent form and were asked to provide a suitable date and time to conduct the interviews. Once the appointment was confirmed, a Zoom link was emailed to each participant. A set of semi-structured questions were used to frame the interviews (Appendix A); however, the research encouraged the conversation to flow and was directed by the interviewee. The interview was recorded to iCloud and the automatic transcription function was enabled. A computer-generated transcription was created, along with the audio and video recordings. Each transcription was edited and corrected by the researcher to ensure accuracy of transcription. The written transcription was then sent to each participant to verify their responses prior to the analysis of the data.

### *3.4.2 Phase Two: Questionnaires*

#### *3.4.2.1 Questionnaire Design*

The questionnaire aimed at the veterinarian participants was developed based on a previous questionnaire used in similar research (Johnston, 2016), as well as feedback from the individual interviews conducted in phase one of the present study. The amendments made to this questionnaire included changes to the layout, the separation of small animal and equine conditions, the exclusion of a few questions, and the inclusion of questions pertaining to the promulgation.

Additional open-ended questions were also included to the questionnaire (Appendix D). A second questionnaire, aimed at the veterinary physiotherapist participants was self-developed by the researcher with a similar format and structure to the veterinarian questionnaire (Appendix E). The information gained from the interviews was also used to refine the structure of both questionnaires. The questionnaires were designed to address the specific aims of obtaining demographic data of the two populations, the percentage of veterinarians referring to veterinary physiotherapists, the percentage of veterinary physiotherapists receiving regular referrals, and the percentage and types of patients presenting to both professional groups.

The questionnaires included basic demographic information, as well as closed- and open-ended questions. Slattery et al. (2011) stated that closed-ended questions allowed for ease of scoring and comparing data, whereas open-ended questions allowed researchers to understand the importance of specific issues in greater detail.

A combination of the two different question types was used to facilitate the process of obtaining comprehensive insight into the perceptions of the veterinary physiotherapy profession and the challenges experienced with the referral system. The questionnaires were developed and loaded onto the SurveySparrow platform ([www.surveysparrow.com](http://www.surveysparrow.com)), an online platform that allows for the development and distribution of surveys via email, social media, and through direct links. The platform enables the development of a variety of question types. The final questionnaires were user-friendly on both mobile and laptop devices, and each took less than 15 minutes to complete. Ensuring ease of use and minimal completion time has been reported to assist with improved response rates (Bruce & Chambers, 2002; Slattery et al., 2011).

#### *3.4.2.2 Validation*

Each questionnaire was independently sent to two external expert reviewers (i.e., a veterinarian and a veterinary physiotherapist) for an assessment of the content in relation to the aims of the study. The questionnaires needed to be assessed for validity to ensure they answered the research questions, as well as for reliability to ensure the questions were not ambiguous or confusing (Ornstein, 2013; Santesso et al., 2020; Slattery et al., 2011). The external reviewers were purposely selected based on their knowledge of both veterinary medicine and veterinary physiotherapy, as well as their knowledge of the promulgation process. In addition, both questionnaires were sent to an independent physiotherapist based at UCT. The reviewers were sent an email detailing the aims of the study, what their required involvement would be, and were requested to sign an informed consent form if they agreed to participate.

Once the signed informed consent form was received, the reviewers were sent a link to the questionnaire, as well as a copy of the questionnaire in PDF format to assist with ease of commenting. The reviewers were asked to return their feedback within two weeks. The feedback from the reviewers was utilised to make changes to the final questionnaire. The changes ranged from grammatical errors, refinement of questions and answer choices, as well as changes to the flow of the questionnaire.

#### *3.4.2.3 Pilot Study*

Following the validation of the two questionnaires, a pilot study was conducted prior to the final questionnaires being administered. A pilot study is employed to test the instrument used, in this case the questionnaires and the platform, to identify any potential problems and to assess the reliability of the tool (Ornstein, 2013; Slattery et al., 2011).

Two veterinarians and two veterinary physiotherapists were asked to complete the questionnaires and provide feedback regarding the content, the ease of use, and the time taken to complete. Participants for the pilot study were purposefully chosen by approaching veterinarians and veterinary physiotherapists known to the researcher to maximise feedback. Minor modifications to the questionnaires were made based on their recommendations. Their responses to the questionnaires were not included in the final data analysis as the layout of the questions had been altered. They were asked to complete the questionnaire once again after the changes had been made and to provide feedback on whether the flow had improved.

#### *3.4.2.4 Recruitment of Participants and Distribution of Questionnaires*

Initially, the SAVC and SAAPRA were contacted via email to request assistance with the distribution of the questionnaires to their members (Appendix I). A favourable response was received from SAAPRA, who were willing to assist with distributing the study information and questionnaire link to their veterinary physiotherapy members via email and WhatsApp message. The SAVC declined the request for assistance to distribute the questionnaire to their database of members via email as they did not allow for this in their protocols. They suggested that a list of facilities could be obtained from their website, however no contact details were included in that list which made it difficult to distribute the questionnaires via the SAVC.

This led to an adjustment in the distribution of the questionnaires to veterinarians by requesting assistance through the South African Veterinary Association (SAVA). Members of this association are veterinarians in private practice that represent the profession to the SAVC. All members of the SAVC must be registered with the SAVC, and they would therefore have access to similar lists of veterinarians. This amendment in the distribution method was approved by the Human Research Ethics Committee at UCT on the 25<sup>th</sup> of May 2022 (Appendix G). Following the approval, a letter requesting assistance with distribution of the questionnaires was sent to the president of the SAVC (Appendix I).

Following approval from the SAVC and SAAPRA, the link to the veterinarian and veterinary physiotherapy questionnaires, as well as a short introduction, was emailed to them. Each association then distributed the link to the questionnaires via email to their databases.

A follow-up request for a reminder to complete the questionnaires was sent to both the SAVA and SAAPRA two to three weeks after the initial request. It is uncertain whether the reminder emails were distributed to their respective databases.

In addition, the researcher utilised social media and veterinary physiotherapy WhatsApp groups to distribute the questionnaire links, as well as reminders prior to the closure of the questionnaires. Colleagues and relevant friends and family of the researcher were also encouraged to assist with the distribution of the questionnaire links to veterinarians and veterinary physiotherapists. The links remained open for five weeks. The veterinary questionnaire was completed by 107 participants, and the veterinary physiotherapy questionnaire by 59 participants. Participants were requested to indicate their willingness to participate in phase three of the study by sending an email to the researcher.

### *3.4.3 Phase Three: Individual Interviews*

Phase three of the present study was originally intended to be conducted as focus groups of veterinarians and veterinary physiotherapists, with a minimum of four participants in each group. Unfortunately, due to the low response rate and the difficulty of identifying a convenient time for the participants, it was decided to conduct individual interviews with the participants who had agreed to participate in phase three. This change was approved by the Human Research Ethics Committee at UCT (Ref: 053/2022; Appendix G). The participants were informed of this change and were requested to sign an informed consent form prior to the interview (Appendix H). As above, the interview questions (Appendices B and C) were designed to expand on the results obtained from the questionnaire data.

These questions were checked and amended by the research supervisors. Once again, each interview followed a semi-structured format, but was ultimately guided by the interviewee.

The interviews were conducted by the researcher over the Zoom platform. Three veterinarians and three veterinary physiotherapists were interviewed. The low number of interviewees in this phase was due to the lack of interest shown by participants in the questionnaires to partake in the third phase. Further attempts were made to get more participants through email and WhatsApp messages, but due to the time constraints, it was necessary to proceed and finalise the study with the number recruited. The participants represented different spheres of each profession, which did allow for varying perspectives.

The aim of the interviews was to collect personal accounts and experiences of the working relationships between the two professions. The interviews were recorded and transcribed by the researcher. A copy of the written transcription of their interview was sent to each participant for verification prior to the analysis of the data. Participants were allocated one week to provide feedback regarding changes or clarifications, otherwise the data was considered representative of their opinions.

### 3.5 Data Analysis

Due to the data being both qualitative and quantitative in nature, data analysis of the three phases was carried out independently. The data analysis of the quantitative component (i.e., phase two) will be presented first, followed by the qualitative components (i.e., phases one and three).

### 3.5.1 Quantitative Data Analysis: Phase Two Questionnaires

The data from SurveySparrow was exported directly into IBM SPSS Statistics (Version 22.0). The data was screened and cleaned, and no problematic missing data was found. Data missing from certain questions was due to the question not being relevant to the participant; for example, where the veterinarian only treated small animal patients, they would not have been required to answer the questions related to equine treatment. Participants not meeting the inclusion criteria were removed from the data sets. For the veterinarian participants, six of the original 103 participants were removed due to their practice type falling into the exclusion criteria, leaving 97 participants. No participants were excluded from the veterinary physiotherapy data sets as all participants ( $n = 59$ ) met the inclusion criteria.

Descriptive analysis of the percentages of the participants' responses to specific questions are presented where appropriate. The question related to veterinary referrals was of most interest due to the objectives of the present study, that is, specifically the objective to assess the factors that were likely to be associated with veterinary referrals to veterinary physiotherapists.

In order to perform correlation tests, the four option answer choices to question 16 in the veterinarian questionnaire (i.e., "How often do you refer to a veterinary physiotherapist?") were combined into two groups, which merged the options of *All the time* and *Often* together, and the options of *Seldom* and *Never* together.

Similarly, the answers from question 16 in the veterinary physiotherapist questionnaire (i.e., “What is your experience with vet referrals from vets in your area?”) were also grouped into two categories (i.e., namely “I get regular direct vet referrals from the local vets” plus “I get a few direct vet referrals from the local vets into one category” and “I get approval from the local vets once the client has contacted me” plus “I struggle to get the vets in my area to refer the patients to physiotherapy” into another category). To check for associations between variables and referrals, an independent-samples two-proportions z-test was used, with a 5% level of significance.

### *3.5.2 Qualitative Data Analysis: Phase One and Three Interviews*

Narrative analysis of the interview transcripts was performed using an iterative, inductive, thematic analysis process. The objectives of the first phase were to assess the process of promulgation and its impact on the veterinary physiotherapy profession, and to identify barriers and facilitators to referrals to veterinary physiotherapists. Themes that linked to the objectives were identified following the six-step framework of Braun and Clarke (2006), namely familiarisation, coding, generating themes, reviewing themes, defining and naming themes and write-up. The researcher familiarised herself with the information from the interviews by completing the transcription herself, as well as by reading through the transcripts repeatedly. The interviews were transcribed verbatim to reduce the likelihood of transcription bias. Words or phrases were identified as relating to the objectives. Sub-themes that appeared in two or more of the datasets were considered relevant. The sub-themes and themes were sent to the supervisors to be reviewed. The themes and sub-themes identified during this process are outlined in Table 2 and Table 3 below.

*Table 2. Emerging Themes from Phase One.*

THEMES	SUBTHEMES
<b>Theme 1:</b> Consensus regarding the need for regulation of the veterinary physiotherapy profession	<ul style="list-style-type: none"> <li>▪ Adequate training and skills</li> <li>▪ Established scope of practice</li> <li>▪ Integration into multidisciplinary team</li> <li>▪ Resistance to the promulgation</li> </ul>
<b>Theme 2:</b> Facilitators to referrals to veterinary physiotherapists	<ul style="list-style-type: none"> <li>▪ Personal experiences</li> <li>▪ Professional dynamics</li> <li>▪ Access</li> <li>▪ Communication</li> </ul>
<b>Theme 3:</b> Barriers to referrals to veterinary physiotherapists	<ul style="list-style-type: none"> <li>▪ Poor understanding of the field and what we do</li> <li>▪ Lack of evidence</li> </ul>

The identification of themes and subthemes in the third phase of interviews followed the same process outlined above. There was some overlap in the themes identified from both phases.

*Table 3. Emerging Themes from Phase Three.*

THEMES	SUBTHEMES
<b>Theme 1:</b> Professional dynamics	<ul style="list-style-type: none"> <li>▪ Communication</li> <li>▪ Promotion of services</li> <li>▪ Understanding</li> <li>▪ Personal experiences</li> </ul>
<b>Theme 2:</b> Logistics	<ul style="list-style-type: none"> <li>▪ Practice type</li> <li>▪ Location</li> <li>▪ Facilities</li> </ul>
<b>Theme 3:</b> Clients	<ul style="list-style-type: none"> <li>▪ Cost</li> <li>▪ Awareness</li> </ul>
<b>Theme 4:</b> Registration of the profession	<ul style="list-style-type: none"> <li>▪ Positive views</li> <li>▪ Concerns</li> </ul>

### 3.6 Ethical Considerations

This study was carried out in line with the requirements of the Declaration of Helsinki (World Medical Association, 2013). Ethical approval was obtained from the Human Research Ethics Committee in the Faculty of Health Sciences at UCT on the 4<sup>th</sup> of February 2022 (HREC Ref 053/2022). Amendments made to the study design with regard to questionnaire distribution and the change in the third phase of data collection were approved by same ethics committee (Appendix G).

Participation in this study was voluntary. Participants of the first phase of study were contacted via email using their practice details that were available to the public. They were provided with an information sheet (Appendix F) and requested to sign an informed consent form (Appendix H). Participants included the second phase of the study were recruited through the distribution of the survey link via the SAVA and SAAPRA, as well as through contact via various WhatsApp groups. The welcome page of the questionnaire detailed information about the research study, as well as what was required of the participants. An informed consent box was required to be selected prior to gaining access to the questionnaire. No personal identifiers were included in the questionnaire. Participants included in the second phase of the study were asked at the end of the questionnaires to contact the researcher via email if they were interested in participating in the third phase. Participants in phase three were also asked to sign an informed consent form prior to their interview taking place. Transcription of the interviews from the first and third phase of the study did not include any personal identifiers.

Data from all three phases was stored on the researcher's personal iCloud drive in a password protected folder, as well as on a password protected USB device. All recordings, transcriptions, and back-ups will be stored with password protected access, restricted to the researcher and supervisors, for a period of six years on UCT's data centre, Ziva Hub.

Risks to participants included a risk of divulgence of personal information. This risk was mitigated by the steps detailed above. The study results will be made available to participants through via publication, as well as by a presentation of the results at an upcoming SAAPRA conference. The participants of the study did not receive an individual benefit by participating but would assist the veterinary physiotherapy profession by providing insight into the perception of the profession by veterinarians as well as recommendations on how to improve the referral systems between veterinarians and veterinary physiotherapists. Veterinarians would gain greater exposure to the registered veterinary physiotherapy profession and its scope of practice, as well as an improved understanding of the role of veterinary physiotherapists within animal healthcare.

### 3.7 Summary

In summary, data collection involved a mixed methods approach with data being collected in three phases. Phase one and phase three were qualitative in nature and involved the use of semi-structured interviews, conducted over Zoom, with participants working in the veterinary and veterinary physiotherapy fields. Phase two involved the distribution of two questionnaires, one to veterinarians and another to veterinary physiotherapists within South Africa. The qualitative nature of both phases one and three allowed for in-depth personal feedback on their experiences within their respective fields and with other professionals.

Thematic analysis of the qualitative data obtained allowed for the development of common themes regarding the relationship between veterinarians and veterinary physiotherapists. The quantitative data from phase two allowed for the generation of demographic information on the two populations, as well as providing a general representation of the groups' experiences within their fields.

## CHAPTER FOUR: RESULTS

The following chapter presents the results from all three phases of the study. The data was both qualitative and quantitative in nature. As such, the results from each phase are presented separately.

The main aim of the present study was to explore the relationships and referrals between veterinarians and veterinary physiotherapists within the South African context. Results from the second phase questionnaire component will be presented first, through an analysis of the quantitative data obtained from the questionnaires completed by veterinarians and veterinary physiotherapists. Results from the phase one individual interviews will be presented thereafter, in the form of themes relating to the objectives and aims. Finally, the phase three results will be presented as further themes uncovered by the additional interviews with professionals currently working in the veterinary team environment within South Africa. These themes were identified using an iterative thematic analysis process.

### 4.1 Phase Two: Veterinarian and Veterinary Physiotherapist Questionnaires

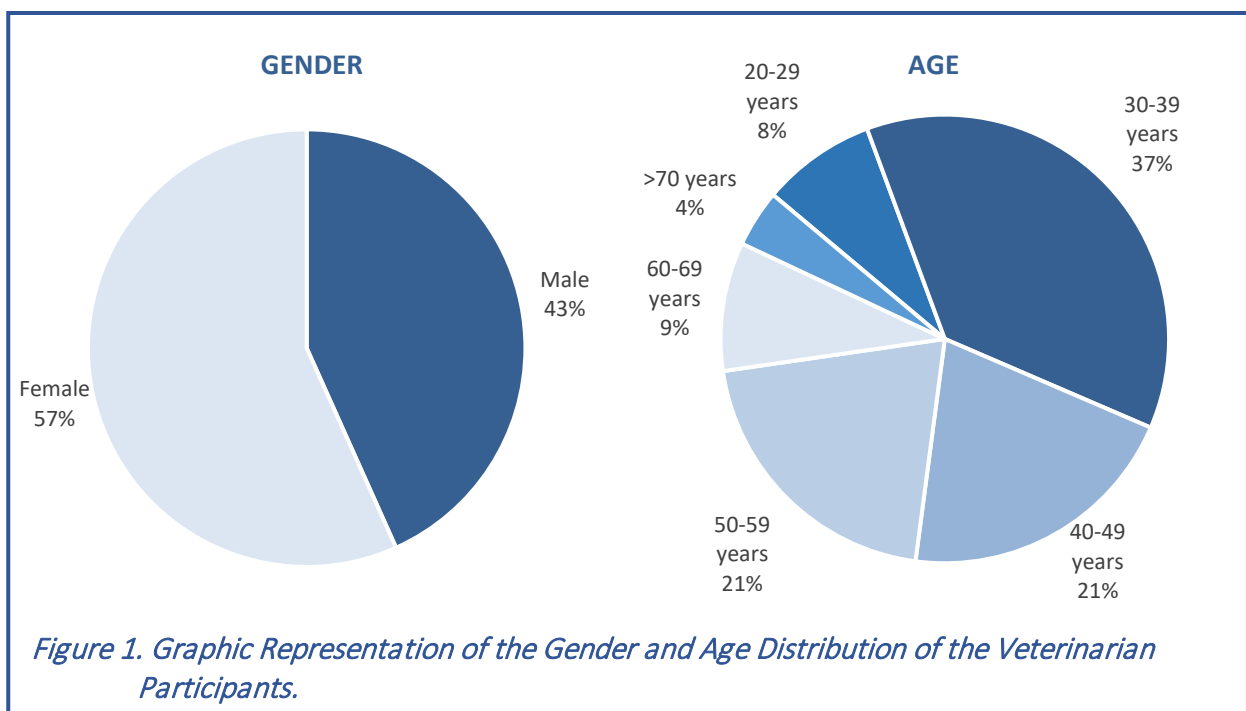
This section of the results presents the findings from the veterinary and veterinary physiotherapy questionnaires in terms of the demographics of the participants, their caseload and type, and the referral relationship between the two professions.

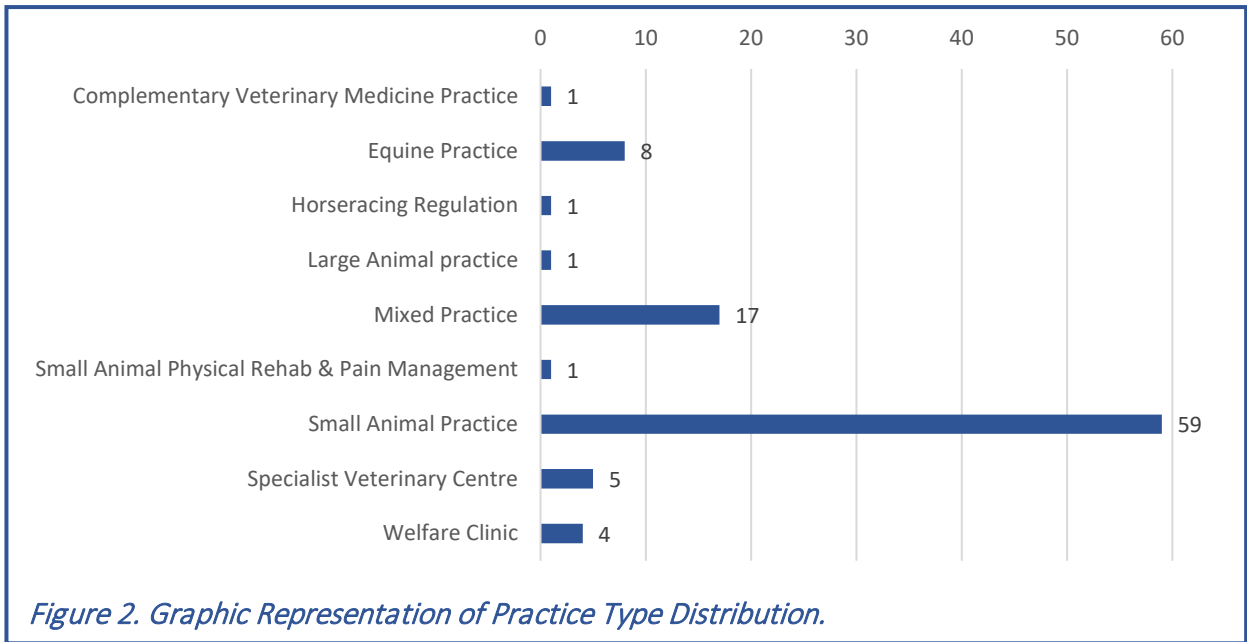
#### 4.1.1 Veterinarian Questionnaire

One hundred and three (103) individual responses were received from veterinarians, 97 responses met the inclusion criteria and were included in the data analysis. The results from the veterinarian questionnaire are presented below.

##### 4.1.1.1 Demographics

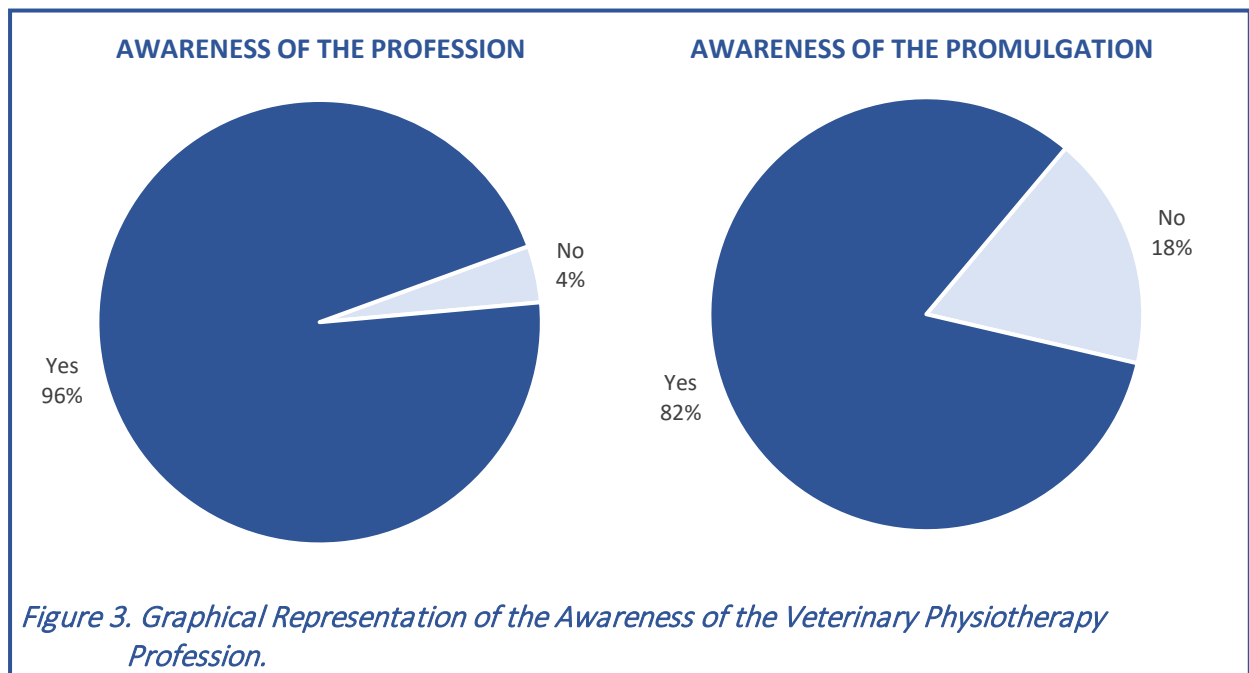
The distribution of age and gender of the veterinarian participants ( $n = 97$ ) are summarised in Figure 1 below. The majority of participants were female ( $n = 55$ , 57%) and fell into the 30–39 year old age group ( $n = 36$ , 37%). The distribution of the veterinarians practice types are displayed in Figure 2 below, with the majority of participants ( $n = 59$ , 61%) practicing within a small animal practice.



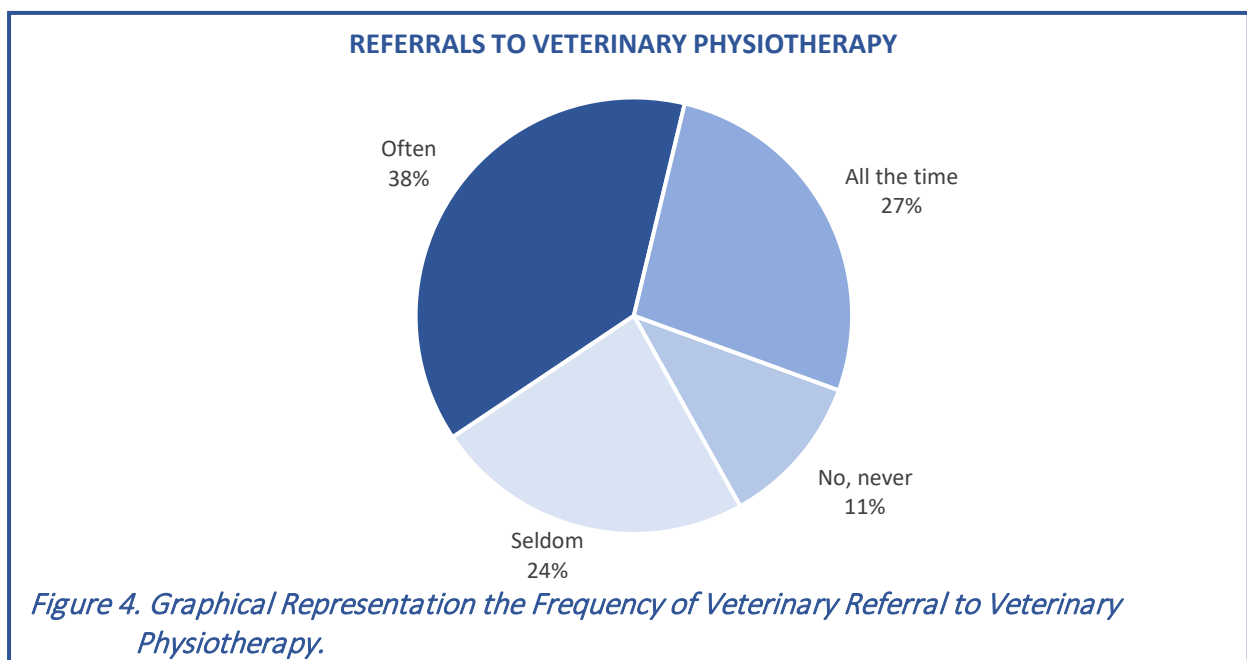


#### 4.1.1.2 Awareness and Referrals to Veterinary Physiotherapy

Of the veterinarian participants, 96% ( $n = 93$ ) were aware of the veterinary physiotherapy profession, while 82% ( $n = 80$ ) were aware that the profession has been promulgated (Figure 3).



The majority of the veterinarian participants became aware of the promulgation through communication from the SAVC ( $n = 37, 46\%$ ), discussions with veterinary physiotherapists ( $n = 21, 26\%$ ), and via colleagues ( $n = 14, 18\%$ ). Rehabilitation work was performed in 50% of veterinary practices. The majority of this work was carried out by veterinary physiotherapists ( $n = 29, 62\%$ ), followed by veterinarians doing the rehabilitation work themselves ( $n = 10, 21\%$ ). Of the 97 veterinarian participants, the majority ( $n = 63, 65\%$ ) indicated that they *often* or *all of the time* made referrals to veterinary physiotherapy (Figure 4). The top three reasons for referring to veterinary physiotherapists included “I have seen the benefits of using a physiotherapist for certain cases” ( $n = 47, 49\%$ ), “I believe there is evidence to support the inclusion of physiotherapy in certain cases” ( $n = 44, 45\%$ ), and “I have a good working relationship with the physiotherapist in my area” ( $n = 38, 39\%$ ). One inputted response was “physiotherapy is adjunctive to veterinary medicine and can be applied in all orthopaedic and neurological conditions, and many more.”



Interestingly, a significant relationship was found between veterinarians with additional qualifications and their likelihood to refer. Veterinarians who held additional qualifications were significantly more likely to refer than veterinarians who did not, with a z-score of -2.139 ( $p = 0.028$ ). In addition, those with a poor or average understanding of the physiotherapy profession were significantly less likely to refer than those with a satisfactory, good, or excellent understanding, with a z-score of -4.144 ( $p = 0.000$ ).

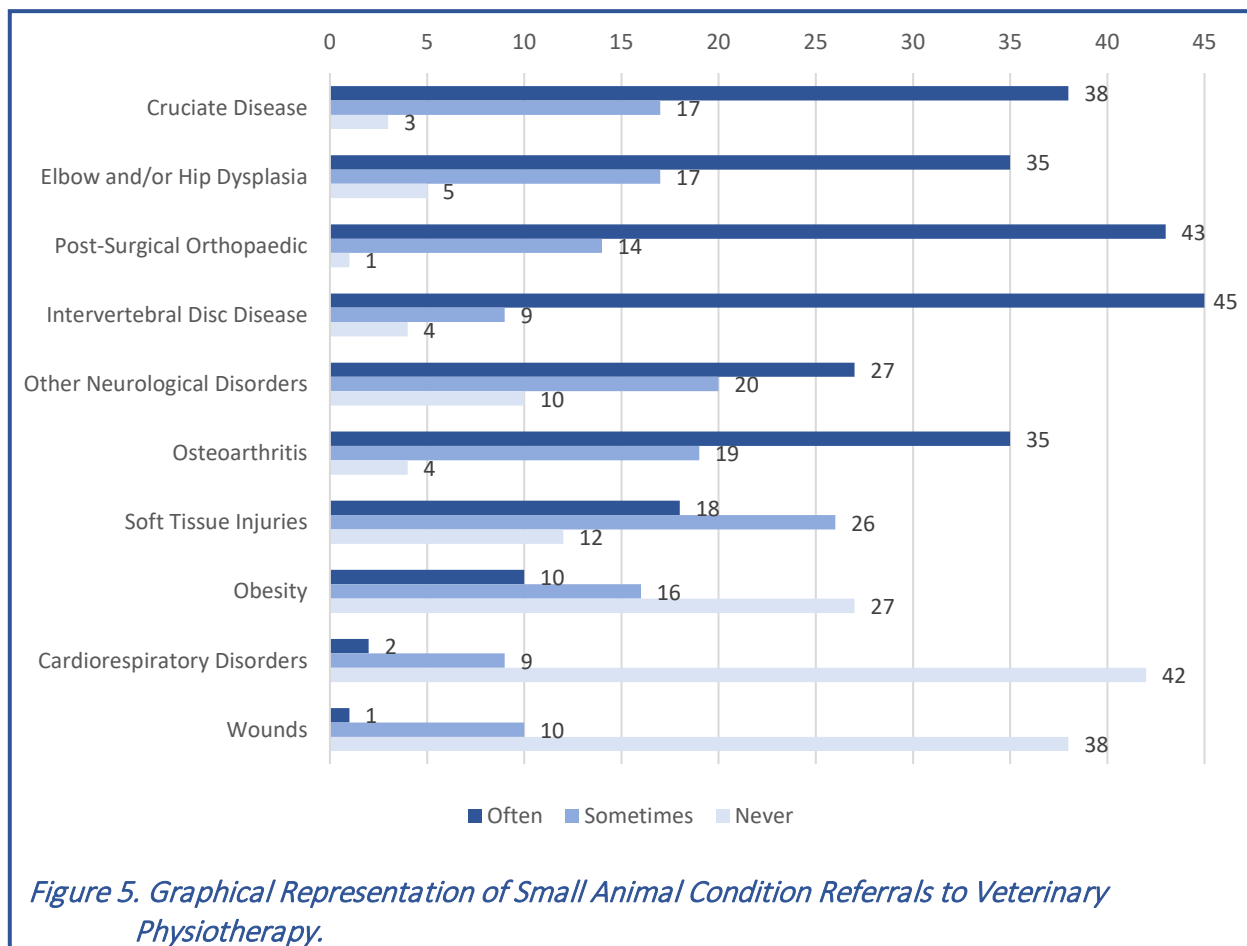
Veterinarian practice type was also found to be significantly associated with referrals. When comparing a specialist veterinary centre with a mixed practice, and a small animal practice with a mixed practice, there were significant associations found with veterinarians that regularly referred, with z-scores of -2.544 ( $p = 0.011$ ) and -3.168 ( $p = 0.002$ ) respectively. This indicates that veterinarians within a specialist veterinary centre and a small animal practice were more likely to refer to veterinary physiotherapy than veterinarians within a mixed practice. Veterinarians located in a welfare clinic were significantly less likely to refer than the other practice types. No associations were found when comparing the other practice types.

The top three reasons for not referring cases to veterinary physiotherapy included “the service is not available within a reasonable distance from me” ( $n = 13, 13\%$ ), “I do not know the physiotherapists within my area” ( $n = 15, 15\%$ ), and “I am concerned about the cost to the client” ( $n = 12, 12\%$ ). Other inputted responses included “depends on case demographics,” “we might suggest it, but clients do not always follow our recommendations,” and “the operating surgeon or referral practice usually has this discussion with the client. Not a GP unless he/she is doing the surgery him/herself.”

#### 4.1.1.3 Case Specific Referrals

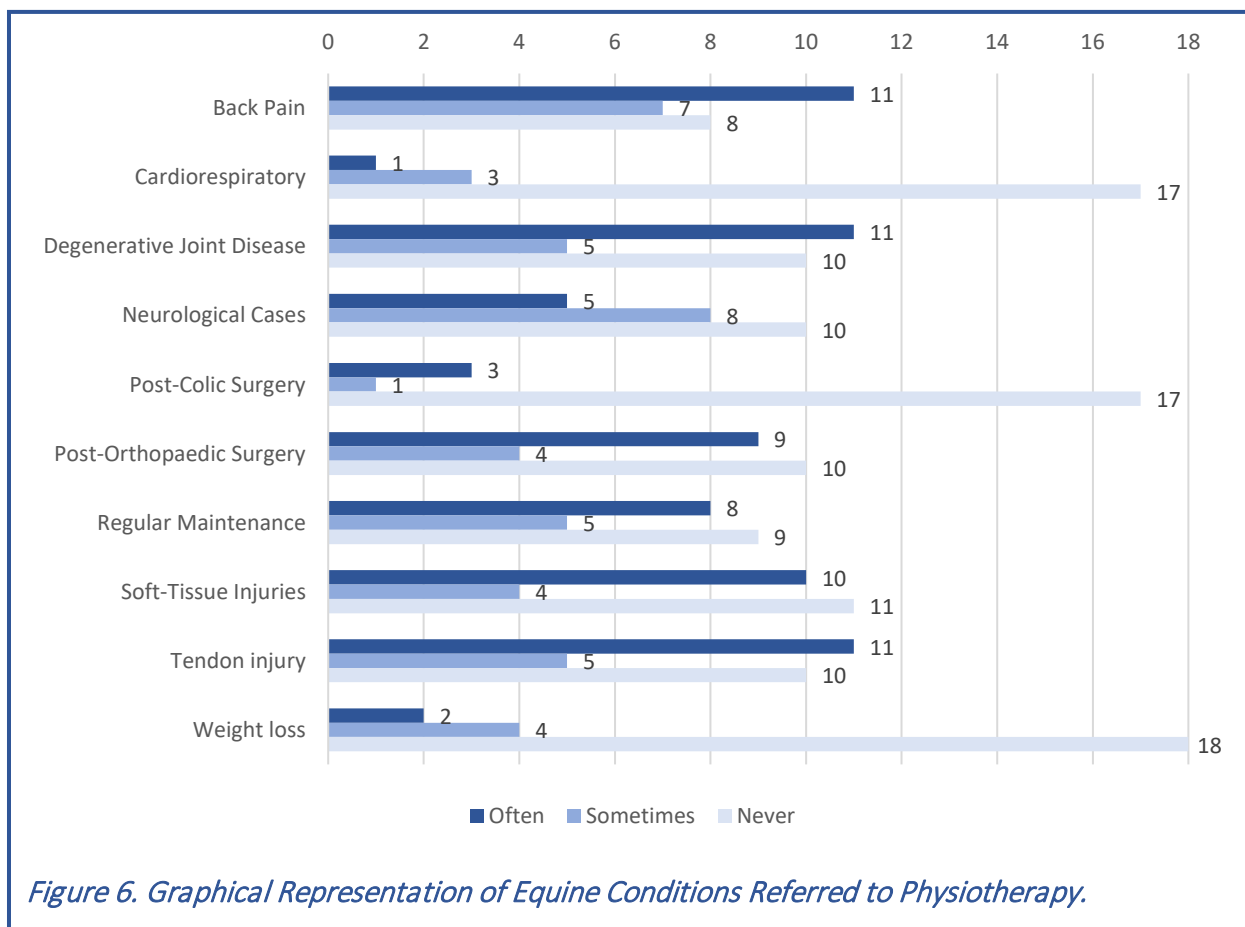
##### a) Small Animal Conditions

The small animal conditions most likely to be regularly referred to physiotherapy (Figure 5) *often* were intervertebral disc disease ( $n = 45, 77\%$ ), post-surgical orthopaedic conditions ( $n = 43, 74\%$ ), cruciate disease ( $n = 38, 66\%$ ), elbow and hip dysplasia ( $n = 35, 61\%$ ), and osteoarthritis ( $n = 35, 61\%$ ). Small animal conditions that are less likely to be referred (*never* and *sometimes*) were cardiorespiratory ( $n = 51, 98\%$ ), wounds ( $n = 48, 96\%$ ), obesity ( $n = 43, 81\%$ ), and soft tissue injuries ( $n = 38, 68\%$ ).



## b) Equine Conditions

Overall, the percentage of equine referrals were less than those of the small animal referrals (Figure 6). The equine conditions most likely to be referred regularly to veterinary physiotherapy *often* were tendon injuries ( $n = 11, 42\%$ ), back pain ( $n = 11, 42\%$ ), degenerative joint disease ( $n = 11, 42\%$ ), soft tissue injuries ( $n = 10, 40\%$ ), post-orthopaedic surgery ( $n = 9, 39\%$ ), and athletes for regular maintenance or conditioning ( $n = 8, 36\%$ ). Equine conditions that were less regularly referred (*sometimes* and *never*) were weight loss ( $n = 22, 95\%$ ), cardiorespiratory illness ( $n = 20, 92\%$ ), neurological cases ( $n = 18, 78\%$ ), and post-colic surgery ( $n = 18, 86\%$ ).



#### *4.1.1.4 Effect of the Promulgation on Referral*

Overall, 92% ( $n = 89$ ) of the veterinarians indicated that the promulgation positively impacted their likelihood to refer to physiotherapists. A summary of the reasons for this included an increased confidence in the training and qualification of the veterinary physiotherapists, as well as the accountability that registration with the SAVC would carry with it.

#### *4.1.1.5 Veterinary Perception of the Veterinary Physiotherapy Profession*

When asked whether veterinary physiotherapy should be considered an integral part of animal care, 85% of the veterinary participants ( $n = 82$ ) agreed, 12% ( $n = 12$ ) were neutral, while only 3% ( $n = 3$ ) disagreed. Further comments regarding the relationship between the two professions identified “communication and integrity” as being key in maintaining a successful working relationship. In addition, positive experiences with referrals to veterinary physiotherapists promoted this relationship. Suggestions to improve the inclusion of veterinary physiotherapy included improved marketing of the profession to veterinarians and the public, as well as educating veterinarians to improve their understanding of the profession.

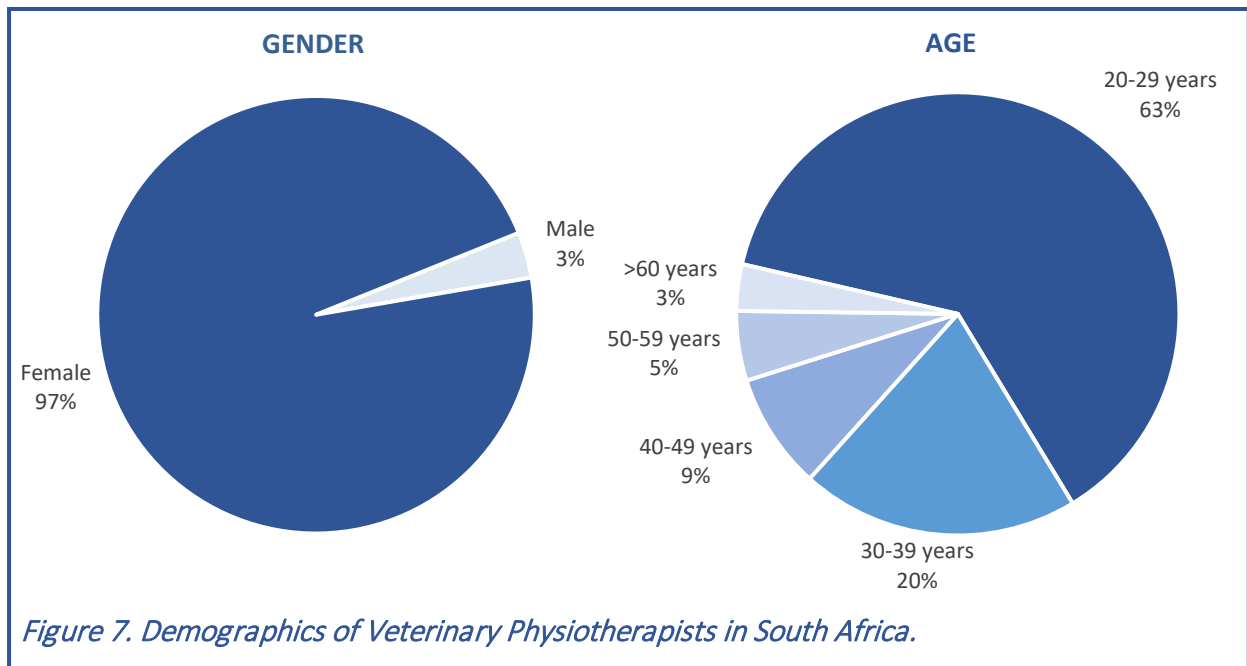
### *4.1.2 Veterinary Physiotherapist Questionnaire*

This section presents the results of the questionnaire for the veterinary physiotherapists ( $n = 59$ ). All respondents met the inclusion criteria and were included in the results.

#### *4.1.2.1 Demographics*

The distribution of gender and age of the veterinary physiotherapists ( $n = 59$ ) who completed in the questionnaire are represented in Figure 7 below.

Two participants were male (3%), while 57 participants were female (97%). The majority of participants were between 20–29 years of age ( $n = 37, 63\%$ ).



#### 4.1.2.2 Place of Work

The majority of veterinary physiotherapists were located in a mobile clinic ( $n = 28, 48\%$ ), followed by independent veterinary physiotherapy rooms ( $n = 14, 24\%$ ). Eight (14%) veterinary physiotherapists were located within a veterinary practice, while seven (12%) were located in veterinary physiotherapy rooms affiliated to a veterinary practice.

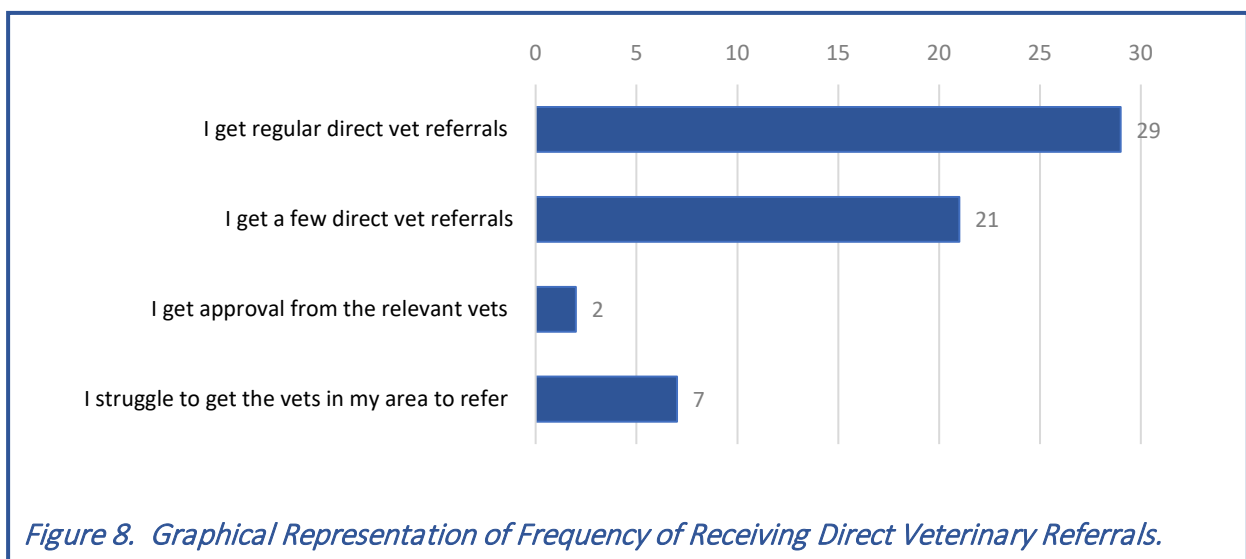
#### 4.1.2.3 Caseload

The majority of veterinary physiotherapists reported treating between 11–20 patients per week ( $n = 20, 34\%$ ), followed by between 21–30 patients per week ( $n = 17, 29\%$ ). The mean percentage of equine compared to small animal patients is 39:61%.

When asked about the growth of their caseload, 58% ( $n = 34$ ) of veterinary physiotherapy participants selected the option of “my caseload continues to increase.” New patient sources included veterinary referrals (41%) and word of mouth from previous clients (57%).

#### 4.1.2.4 Veterinary Referrals

Many of the veterinary physiotherapists reported receiving regular referrals directly from veterinarians in their area ( $n = 29$ , 49%), while 36% ( $n = 21$ ) reported receiving a few direct veterinary referrals, and 12% ( $n = 7$ ) reported struggling to have the veterinarians in their area to refer (Figure 8).



When comparing the caseload of the veterinary physiotherapist to their experience with veterinarian referrals, the veterinary physiotherapists who reported receiving regular direct veterinary referrals were statistically more likely to have a caseload of more than 20 patients per week with a z-score of -2.755 ( $p = 0.006$ ).

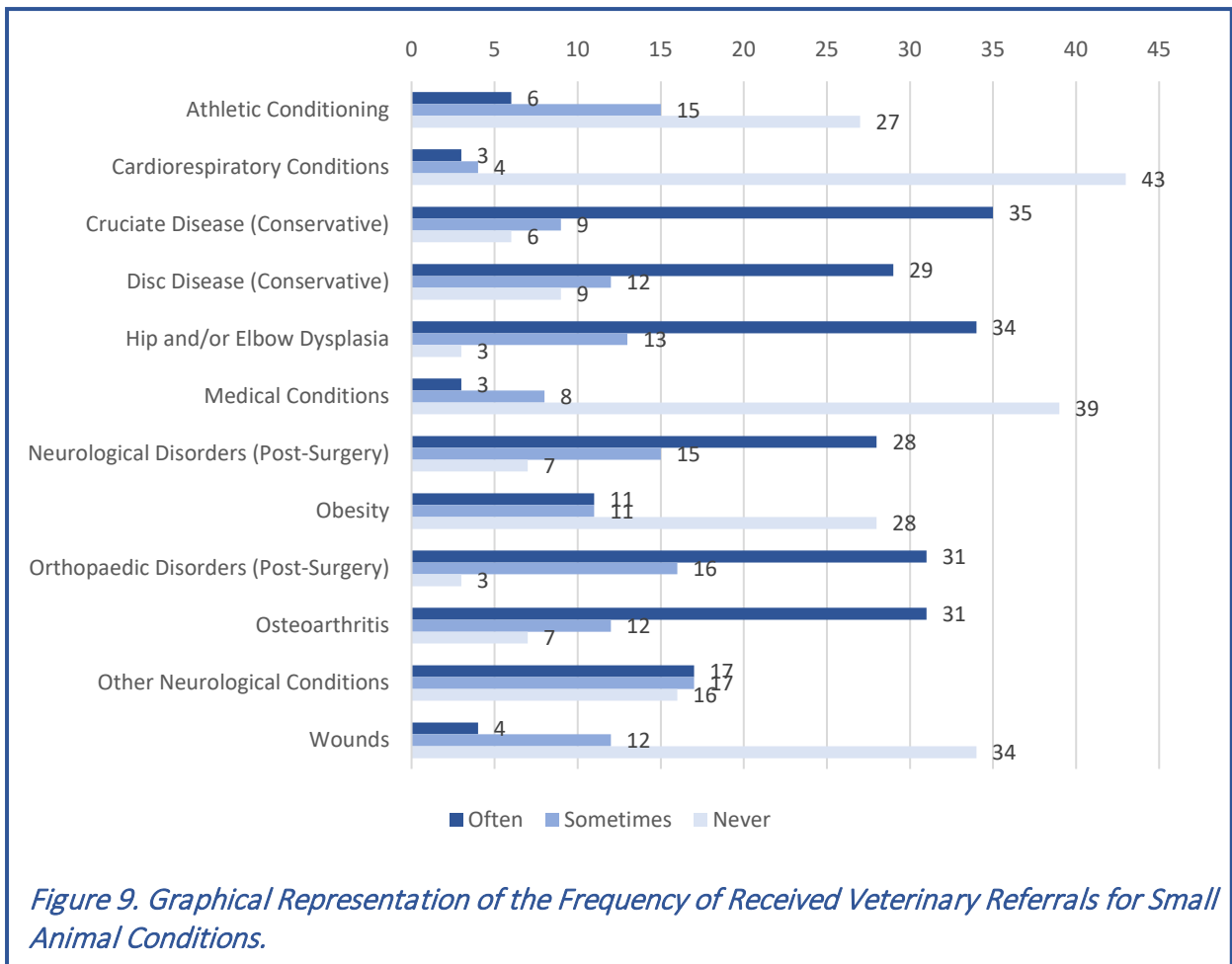
There was also a significant correlation between veterinary physiotherapists who reported struggling to have veterinarians in their area refer patients and those that had a caseload of less than 20 patients per week, with a z-score of 2.094 ( $p = 0.036$ ).

Veterinary physiotherapists located in an independent veterinary physiotherapy practice were statistically more likely to experience more regular direct veterinary referrals than veterinary physiotherapists in a mobile clinic, with a z-score of 3.557 ( $p = 0.000$ ). Similarly, veterinary physiotherapists located in a practice affiliated to a veterinary practice and those within a veterinary practice were statistically more likely to experience more regular veterinary referrals than mobile clinics with a z-score of -3.205 ( $p = 0.001$ ) and -2.224 ( $p = 0.026$ ) respectively. No significant difference was found when comparing independent veterinary physiotherapy practices with a practice affiliated to a veterinary practice ( $z = -0.393$ ,  $p = 0.694$ ), or with a practice within a veterinary practice ( $z = 0.814$ ,  $p = 0.416$ ).

#### 4.1.2.5 Case Specific Referrals

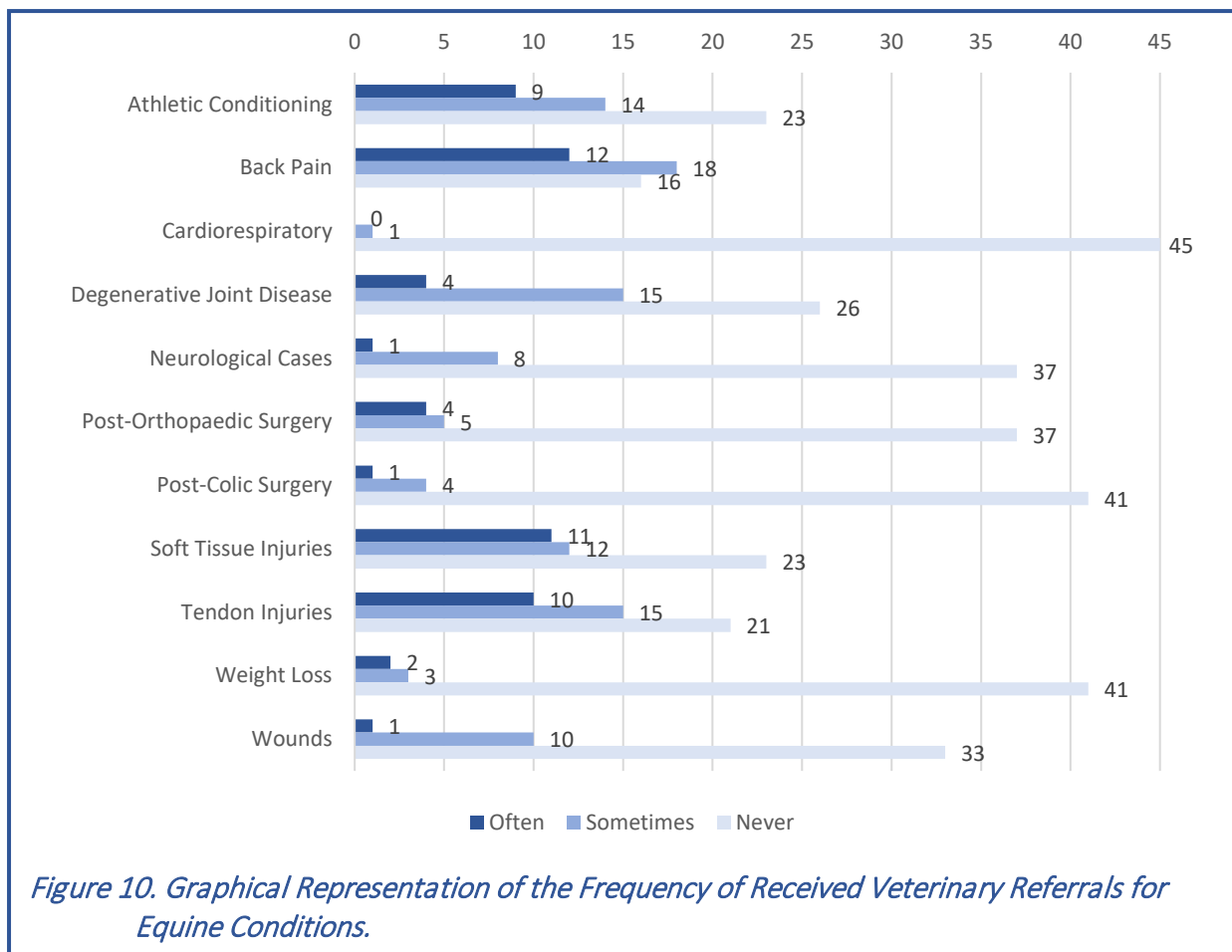
##### a) Small Animal Conditions

The small animal conditions directly referred to veterinary physiotherapists are represented below (Figure 9). The small animal conditions that veterinary physiotherapists most frequently (*very often* and *often*) received referrals for were cruciate disease ( $n = 35$ , 70%), elbow and hip dysplasia ( $n = 34$ , 68%), osteoarthritis ( $n = 31$ , 62%), and post-surgical orthopaedic conditions ( $n = 31$ , 62%). The small animal conditions that were least frequently referred (*seldom* and *never*) were cardiorespiratory conditions ( $n = 43$ , 86%), wounds ( $n = 34$ , 68%), and medical conditions ( $n = 38$ , 74%).



#### b) Equine Conditions

Figure 10 below depicts the frequency of the veterinary referrals received for equine conditions. The equine conditions most regularly referred (*very often* and *often*) were back pain ( $n = 12, 26\%$ ), soft tissue injuries ( $n = 11, 24\%$ ), tendon injuries ( $n = 10, 22\%$ ), and athletic conditioning ( $n = 9, 20\%$ ). The equine conditions least frequently referred (*seldom* and *never*) were cardiorespiratory conditions ( $n = 45, 98\%$ ), post-orthopaedic surgery ( $n = 43, 93\%$ ), post-colic surgery ( $n = 41, 89\%$ ), weight loss ( $n = 39, 85\%$ ) and wounds ( $n = 33, 78\%$ ).



#### 4.1.2.6 The Effect of the Promulgation

Most veterinary physiotherapists reported to be happy with the registration of the veterinary physiotherapy profession ( $n = 37, 63\%$ ). When asked to elaborate on their response, the veterinary physiotherapists felt that the promulgation had standardised the profession and assisted with the promotion of the veterinary physiotherapy profession to veterinarians. Some participants commented that the registration ensured regulation and accountability of the service provided to the patients.

Approximately half ( $n = 32, 54\%$ ) of the veterinary physiotherapists agreed that there had been an impact on their practice following the promulgation of the profession.

The participants reported that they had experienced better working relationships with veterinarians and an improved perception from the veterinarians and clients. In contrast, 32% ( $n = 19$ ) of the veterinary physiotherapists reported that they had not experienced an impact on their practice. These veterinary physiotherapist participants also commented that their clients were only interested in the results of their treatments and not in their qualifications.

#### 4.2 Phase One: Interviews with Key Role Players in the Veterinary and Veterinary Physiotherapy Field

Two veterinarians and two veterinary physiotherapists were interviewed in the first phase of the study. This group of participants consisted of one male and three females, with a mean years of experience of 20 years. To enable concise reporting in this section, the following identifiers will be used when referring to two veterinarians and the two veterinarian physiotherapists interviewed during phase one:

- **Vet 1:** the previous SAVC chairperson;
- **Vet 2:** the specialist small animal surgeon;
- **Vet PT 1:** the principal of the college offering the BSc in Veterinary Physiotherapy degree; and
- **Vet PT 2:** the private practice owner who participated in the working group involved with the promulgation of the profession.

The interviews yielded the three broad themes (that have been detailed in Table 2 above and repeated here again). The data obtained from the interviews will be grouped according to these themes and presented below.

*Table 2. Emerging Themes from Phase One.*

THEMES	SUBTHEMES
<b>Theme 1:</b> Consensus regarding the need for regulation of the veterinary physiotherapy profession	<ul style="list-style-type: none"> <li>▪ Adequate training and skills</li> <li>▪ Established scope of practice</li> <li>▪ Integration into multidisciplinary team</li> <li>▪ Resistance to the promulgation</li> </ul>
<b>Theme 2:</b> Facilitators to referrals to veterinary physiotherapists	<ul style="list-style-type: none"> <li>▪ Personal experiences</li> <li>▪ Professional dynamics</li> <li>▪ Access</li> <li>▪ Communication</li> </ul>
<b>Theme 3:</b> Barriers to referrals to veterinary physiotherapists	<ul style="list-style-type: none"> <li>▪ Poor understanding of the field and what we do</li> <li>▪ Lack of evidence</li> </ul>

#### *4.2.1 Consensus Regarding the need for Regulation of the Veterinary Physiotherapy Profession*

Prior to the promulgation of the veterinary physiotherapy profession, there was no regulation of therapists working in the field of animal rehabilitation. This meant that there was no specified skillset or qualification required to work in the field, which could have created confusion within the veterinary profession as “there was such a diverse group of people out there, and a lot of them weren’t really sure what they were doing... caused a bit of damage to the understanding of the profession” (Vet PT 1). In addition, there was no control over the therapists from a regulatory board, which could have increased the perceived risk of working with them as “vets... were really pro the promulgation, and they’ve often had quite bad experiences with people out in the field, and a lot of it they felt was because there wasn’t proper education” (Vet PT 1).

#### *4.2.1.1 Adequate Training and Skills*

All four of the interviewees agreed that the promulgation of the profession was necessary to further the veterinary physiotherapy field and ensure that practitioners were adequately trained and qualified, noting “if you’ve got proper training, you should be recognised and registered and protected as a profession” (Vet 1). Vet 2 commented that “physiotherapy, to an extent, is operator dependent, it’s dependent on the skills of the person who does it,” implying that more skilled and better trained individuals would have more successful results. The two veterinarians interviewed reported positive experiences working regularly with veterinary physiotherapists who they considered to be well trained and knowledgeable in their field of practice. They felt confident referring patients to veterinary physiotherapists based on their skillsets and qualifications.

Vet 1 commented that “the veterinary physiotherapists in South Africa are very well trained and qualified,” which instilled confidence when referring patients for physiotherapy. According to Vet PT 1, the aim of the promulgation was to develop a “gold standard of a vet physiotherapist.” It is to be noted that this participant was involved with the development of the curriculum at Equine-Librium College, currently the only recognised undergraduate training centre for veterinary physiotherapists in South Africa.

In order for the registration of the profession to be completed, a training institute was required to offer a curriculum that covered the list of competencies of a veterinary physiotherapist. Vet PT 1 was very involved in this process, noting “because it’s going to be a professional field, that we need to speak to vet council to make sure that these people can actually work in the field.”

The development of the veterinary physiotherapy qualification and the promulgation of the profession was carried out simultaneously, to ensure that the level of education provided matched the requirements of the profession by the SAVC. In addition, the participants considered that registration with the SAVC further assisted with expanding the profession, by ensuring practitioners retain their skill level to standard with the requirement to maintain CPD compliance, noting “I also think it kind of forces, in a good way, people to do CPD, because our profession keeps on changing and we need to keep on growing” (Vet PT 1).

#### *4.2.1.2 Established Scope of Practice*

One participant suggested that the scope of practice established during the registration of the profession had assisted with raising the standard of the veterinary physiotherapy profession within South Africa, with Vet PT 1 indicating “we’ve lifted the standard in general.” Veterinary physiotherapists who were interested in registering with the SAVC were aware of the skillset and qualification requirements. Proof of meeting this skillset is required for individuals wishing to apply to the SAVC to be registered as a veterinary physiotherapist. Practitioners would be required to ensure that their knowledge and skills were within the scope of practice, as Vet PT 1 reported “with regulation it guides people as to what they should know, and where they should be, and what their scope is.”

Vet 1 was adamant that remaining aligned with one’s scope of practice would be essential in assisting with the integration of the veterinary physiotherapy profession into the veterinary team.

The scope of practice of a veterinary physiotherapist does not include a diagnosis of the patient's pathology "the diagnosis has to come from a vet... the recognition that you need a veterinary diagnosis before you can institute [physio] treatment" (Vet 1). By establishing a scope of practice, it would be helpful to delineate the roles of the various veterinary professionals, thereby assisting with the integration of veterinary physiotherapy into the veterinary healthcare team.

#### *4.2.1.3 Integration into the Multidisciplinary Team*

The participants agreed that the registration of the profession would assist with the integration of veterinary physiotherapy into the veterinary multidisciplinary team. Veterinarians would be more likely to refer to registered individuals as this would imply that the individual was sufficiently trained. In addition, they would be held accountable for their actions within the field. Vet 2 reported that "the problem was referring to people that are not registered with the South African Veterinary Council is that at the end of the day, as a veterinarian you still run the risk because that is the advice that you gave, professional advice that you have given if it goes wrong, and that is what you advise the client. Whereas, when the physiotherapists are registered, you know they take on a certain amount of responsibility."

In addition to ensuring that veterinary physiotherapists have the correct qualifications, regulation of the profession by the SAVC ensures accountability of veterinary physiotherapists. Vet 1 noted that "I really believe and understand the necessity for registered professions rather than people doing their own thing from a point of control both ways, control for the profession, and control for the public."

Another highlight was that veterinarians now held a better understanding of what physiotherapists offer, with Vet PT 1 indicating “I think the vets are more educated on exactly what it is that we can offer and are therefore more willing to involve us in ‘a whole team approach.’”

#### *4.2.1.4 Resistance to the Promulgation*

There was, however, some resistance to the promulgation. Individuals within the veterinary rehabilitation field were fearful that their specific needs would not be met during the registration of the profession. There was also concern about not fulfilling the scope of practice and, therefore, not being able to work. “I think fear was another very big thing because a lot of people were fearful that they won’t be allowed to work anymore” (Vet 2).

There was also concern regarding the terminology of physiotherapy being used and the registration of such a diverse field of rehabilitation therapists under one profession, regardless of their training. This concern should have been mitigated by the rigorous process of mapping applicants’ skills to the proposed competencies of a full-scope veterinary physiotherapist, as well as having a diversity of representatives on the committee. This was confirmed by Vet PT 1 who noted that they had “set up a work group that involved all the different people from different fields.” Vet 1 described the process as “robust and objective,” with an “overarching desire for every applicant to be accepted as a veterinary physiotherapist.”

In contrast, Vet PT 2, who was involved in the promulgation process, experienced a lack of transparency with the process and reported that often decisions were made without consensus, noting that “there was a lot of discussion about making decisions by consensus, but things often went forward despite us not having consensus, without any sort of real reasoning as to why the process was going forward.” There was no further elaboration provided.

#### *4.2.1.5 Post-promulgation*

Although three of the participants considered that the promulgation of the profession had, and will still have, a positive effect on the veterinary physiotherapy profession, Vet PT 2 reported that it had not impacted their practice in any way. There remains individuals working in the field of animal rehabilitation who are not eligible for registration and are, therefore, not under the jurisdiction of the SAVC. “The people who need to be regulated usually aren’t registered with Veterinary Council, and therefore, the vet council don’t have jurisdiction over them...so far I don’t think anything much has changed practically” (Vet PT 2).

The same participant also reported that the registration had not led to an increase of veterinary referrals to their practice, although prior to the promulgation they had previously established communication channels with the veterinarians within their area. In addition, a veterinary physiotherapist participant considered that the public were mostly not aware of the registration of veterinary physiotherapy and would continue to use practitioners of their choice, regardless of their qualifications.

Vet PT 2 commented that “the only difference is that your registration number must now go on your invoice so that the medical aids will pay you,” and supported that medical aids would only cover the expenses of physiotherapy provided by registered practitioners.

#### *4.2.2 Facilitators of Veterinary Referrals to Veterinary Physiotherapists*

In addition to the registration and regulation of the veterinary physiotherapy profession, several other factors that affected referrals were identified.

##### *4.2.2.1 Personal Experiences*

The veterinarians interviewed had a positive perception of the veterinary physiotherapy profession, which had been developed through their personal experiences. Their patients that had been referred to veterinary physiotherapy had visibly benefitted. “I have seen a vast difference between those dogs that have post-operative rehab and physio compared to those that are just left to recover themselves” (Vet 2). Veterinary physiotherapy treatment complements veterinary treatment and allows for a more holistic approach to patient care: “I saw improvement in the patients that she saw, and I saw how ethically it could work, and how well it could work when a para veterinary profession and veterinarian can work so well together” (Vet 1).

The veterinarians also commented on the team approach having the best outcomes, and noted that “this is one profession, it’s a team of people, and I really believe in that team approach” (Vet 1), and “those dogs, you can clearly see those that have had some rehab during that period, they’re generally ahead of the rest” (Vet 2).

The holistic approach to patient management would ultimately benefit the patient, as long as the communication between the professionals is sound.

#### *4.2.2.2 The Professional Dynamics*

Veterinarians and veterinary physiotherapists have a different skillset and scope of practice that needs to be adhered to, to assist with the uptake of veterinary physiotherapy across the country. It was suggested that veterinary physiotherapists should ensure the correct *top-down* approach to managing a patient, with the veterinarian as the head of the team and primary contact of the patient, with Vet 1 noting “the recognition that you need a veterinary diagnosis before you can institute treatment.”

The participant believed that this approach would assist with more buy-in from veterinarians who may currently hesitate to work with physiotherapists, as veterinary physiotherapists need to “commit to recognise that the diagnosis is in the hand of the vet” (Vet 1). In contrast, Vet PT 2 considered that this approach would “practically not be feasible... as a lot of the patients who do need our services won’t get to us.”

When considering referrals, Vet 2 did not think that patients required referrals from the veterinarian to the veterinarian physiotherapist, as they considered veterinary physiotherapists to be very well trained, noting “I really do think the veterinary physiotherapists in South Africa are very well trained and qualified... I’d have absolutely no problem with physiotherapist being the primary consultant.”

However, they suggested that due to the familiarity that the public had with veterinarians, it may improve public perception and uptake if they first consulted the veterinarian and were subsequently referred to the physiotherapist “just to launch the profession, doing it through a veterinary practice and getting them on board I think is really important for you” (Vet PT 2). This opinion was shared by Vet PT 1 who believed that as veterinarians were primarily first contact practitioners for the public, they should be advocates of the veterinary physiotherapy profession to assist with public buy-in, as well as to improve referral rates. The participant continued to elaborate that they considered it important for veterinarians to have an understanding of the role of physiotherapists to ensure regular referrals “that’s maybe why it’s important for them to understand what it is that we do, so that they know when they can and should be referring” (Vet PT 1). Regardless of the specifics of the approach, all of the participants agreed that a holistic veterinary team approach towards patient management would be the most beneficial.

#### *4.2.2.3 Access to Veterinary Physiotherapists*

The location of the veterinary physiotherapist and ease of access was also considered to increase the referral rates from veterinarians. Both of the veterinarians interviewed had physiotherapy practices that were affiliated to them and/or had their premises located nearby. Vet 1 expressed that having access to a veterinary physiotherapist by having “a practice on our grounds at our veterinary clinic,” assisted with their understanding of physiotherapy and their scope of practice. It also allowed for a more streamlined referral process and increased the uptake from clients.

Additionally, the veterinary physiotherapists were able to assess and treat the in-patients post-operatively which initiated communication with the referring veterinarian, as well as opened communication channels with the owner of the patient. "Routinely with our orthopaedic cases, we will offer the client an initial in-house physiotherapy session post-surgery, usually the day after surgery, and that just gives the physiotherapists access to the patient and the owner, and it gives them an introduction, and it gives them some sort of, I suppose, subconscious consent from us that it's a good idea' (Vet 2). This assisted with the transition from hospital-based to post-discharge physiotherapy which Vet 2 believed "creates a much better uptake and buy in." The proximity of the veterinary physiotherapy practice improved the communication between the two professions, as well as provided ease of access for the client (i.e., the patient's owner).

#### *4.2.2.4 Communication*

One of the challenges to referrals identified through the interviews was initiating contact with veterinarians as a veterinary physiotherapist, as Vet PT 2 noted that "the biggest challenge is establishing functional communication channels." Veterinarians could be difficult to contact, which made it challenging to ensure effective holistic management of a patient, as well as encourage further referrals. "The ability to communicate back and forth has a big role to play in maintaining the referral relationship and having an active interaction" (Vet PT 2).

As discussed above, the challenge of communication was lessened where the physiotherapy practice was located within or nearby the veterinary practice, as both professionals had easier informal access to each other. To work effectively in a multidisciplinary team, communication between the professions must be good.

Both veterinarians discussed the importance of referral back to the veterinarian if the patient did not progress as expected, with Vet 2 noting “I must say that the physios generally are really good at sending the patient back if they feel they’re not making progress... so I think there’s value as well from a monitoring point of view.” This was intended to build trust from the veterinarian that the physiotherapist would abide by their scope of practice and communicate with the veterinarian if a regression in the patient’s condition occurred.

Communication with the referring veterinarian should be ongoing, and individual physiotherapists need to refer to the veterinarian when necessary. Formal patient reports should be succinct and include information pertinent to the veterinarian. Vet 2 considered that, although they appreciated receiving feedback on the patient’s progress, reports from veterinary physiotherapists were often “too long-winded” and that “physiotherapists have a tendency to over interpret.” Informal communication through WhatsApp was considered an efficient way to communicate with veterinarians once a professional relationship had been established. Vet PT 2 described having the best working relationships with veterinarians when they could communicate via WhatsApp, as they considered this the most effective method of discussing patients. Identifying the most preferable way to communicate between the two professions would be essential to build and maintain their working relationship and ensure continuity of care for the patient.

#### *4.2.3 Barriers to Veterinary Referrals to Veterinary Physiotherapists*

As listed in Table 2 above, subthemes emerged that may be considered a barrier to veterinary referrals to veterinary physiotherapists.

#### *4.2.3.1 Poor Understanding of the Physiotherapy Profession*

As a newly established independent profession, education regarding the role of physiotherapy within the veterinarian team is key to increasing the likelihood of veterinary referrals. Veterinarians who do not have a good understanding of physiotherapy and appropriate patients seem to be less likely to regularly refer. Vet 1 stated that “I am a huge proponent of veterinary physiotherapy now, I wasn’t before because I didn’t know anything about it.” Their change in perception regarding veterinary physiotherapy was due to education from a veterinary physiotherapist and the professional experiences encountered from there. Vet PT 1 echoed this sentiment by reporting a change in practice due to veterinarians “being more educated on exactly what it is we can offer” and “vets being more keen to have us involved in a whole team approach.” They further suggested that due to veterinarians usually being the “first contact point” for the public, it is essential that veterinarians have a good understanding of which patients would benefit from veterinary physiotherapy.

#### *4.2.3.2 Lack of Evidence*

Two participants commented on the lack of evidence of the benefits of veterinary physiotherapy. Vet 2 inferred that even without the inclusion of veterinary physiotherapy, they had “managed fine and most of the cases had done well.” Their perception changed with direct positive experiences of cases referred to veterinary physiotherapy in the overall recovery of the patient, particularly post-operative. Their practice now includes the initial physiotherapy consult for all orthopaedic and spinal patients based on their “anecdotal experience is good and the cases that I see seem to benefit significantly from” (Vet 2).

This opinion suggests that the lack of solid evidence for veterinary physiotherapy may not have a significant effect on the likelihood to refer, provided veterinarians are observing positive results with their patients. However, Vet PT 2 believed that lack of evidence and outcome measures in veterinary physiotherapy had a negative impact on the profession and noted that “I think it always comes back to having evidence for what we do, which is still really rare and poor.” They thought that the evidence base needed to develop and grow to promote the veterinary physiotherapy profession.

In conclusion, the common themes identified in the first phase of data collection centred around the professional dynamics between the veterinarian and veterinary physiotherapist. Ensuring that each member of the team understands their scope of practice and communicates effectively regarding the care of the patient will improve the working relationship between the two professionals. Ease of accessibility to veterinary physiotherapists is believed to increase the referral rate as well as increase the uptake from the public.

The promulgation of the profession has generated a scope of practice for the veterinary physiotherapy profession and ensures sufficient training of all individuals as they are required to meet the minimum standards prescribed by the SAVC prior to registration, as well as maintain CPD compliance. This, combined with the education of role-players, should assist with the overall integration of the veterinary physiotherapy profession into the veterinary team.

### 4.3 Phase Three: Interviews with Veterinarians and Veterinary Physiotherapists

This section presents the results from the third phase of the study, the individual interviews with three veterinarians and three veterinary physiotherapists, which followed the completion of the questionnaire. This group consisted of 1 male and 5 female participants with a mean of 11 years of experience in their respective fields. The objectives regarding the barriers and facilitators to referrals from veterinarians to veterinary physiotherapists, the perception of veterinary physiotherapy by the veterinarian, and the challenges veterinary physiotherapists face with increasing their caseload will be explored in this section. To enable concise reporting in this section, the following identifiers will be used when referring to the interview participants:

- **Vet 3:** an equine veterinarian based in the Western Cape;
- **Vet 4:** a small animal veterinarian based in the Western Cape;
- **Vet 5:** a locum small animal veterinarian based in Gauteng;
- **Vet PT 3:** a veterinarian and private practice owner of two rehabilitation centres in Gauteng who practices solely in the rehabilitation sphere;
- **Vet PT 4:** a practice manager and physiotherapist in a busy small animal and equine practice in the Western Cape; and
- **Vet PT 5:** A mobile veterinary physiotherapy practice owner in the Western Cape.

Several themes were identified as factors that could contribute to the likelihood of veterinarians referring to veterinary physiotherapists (that have been detailed in Table 3 above and repeated here again).

*Table 3. Emerging Themes from Phase Three.*

THEMES	SUBTHEMES
<b>Theme 1:</b> Professional dynamics	<ul style="list-style-type: none"> <li>▪ Communication</li> <li>▪ Promotion of services</li> <li>▪ Understanding</li> <li>▪ Personal experiences</li> </ul>
<b>Theme 2:</b> Logistics	<ul style="list-style-type: none"> <li>▪ Practice type</li> <li>▪ Location</li> <li>▪ Facilities</li> </ul>
<b>Theme 3:</b> Clients	<ul style="list-style-type: none"> <li>▪ Cost</li> <li>▪ Awareness</li> </ul>
<b>Theme 4:</b> Registration of the profession	<ul style="list-style-type: none"> <li>▪ Positive views</li> <li>▪ Concerns</li> </ul>

#### *4.3.1 Professional Dynamics*

Four subthemes were identified relating to the professional working relationship between the two professions. These involved aspects related to communication between the two professions, the promotion of physiotherapy services, the understanding of the physiotherapy profession, and personal experiences of the veterinary physiotherapy profession.

##### *4.3.1.1 Communication*

Opinions regarding communication were prevalent in both the interviews with the veterinary physiotherapists and veterinarians. Vet PT 3 reported to “work largely on a referral basis. Sixty percent of the patients I see come from veterinary referrals” and noted “consistent communication” as the biggest contributor to the number of veterinary referrals received. They discussed all aspects of communication as being essential in developing a professional relationship between the veterinarian and veterinary physiotherapist.

This included the introduction phase of promoting the practice and the services offered as a physiotherapist to ensure the continuation of communication with the primary veterinarian regarding the patient's progress. Vet PT 4 echoed this sentiment and considered that the open communication channels in practice resulted in improved patient care and owner satisfaction. Their team of physiotherapists had been "in contact with them [the referring veterinarians] almost every single day. Whenever we have an update for them, we will actually physically go and find them" (Vet PT 4). They considered this to have helped with the optimal care of the patient as issues could be addressed swiftly. Vet PT 5 also agreed that consistent interaction with the veterinarians is important, even if they had specifically made the referral. "I try to work with vets wherever I can, I find that is the best way for me in challenging cases to be able to move forward" (Vet PT 5). Vet PT 5 also experienced that using WhatsApp worked well for communicating with veterinarians and noted that "a lot of vets prefer WhatsApp, and I must say they are really open to a discussion."

The veterinarians interviewed agreed that communication was essential in a multidisciplinary team, but all three reported that in their experience, feedback from the veterinary physiotherapists had been poor. Vet 4 reported that there is a "massive lack of feedback and reporting back" from physiotherapists which is a problem with regards to the management of the patient. They implied that there needs to be improved communication from the physiotherapists with the veterinarians regarding patients that are referred, which would be preferred in the form of an email to "copy and paste it into the clients' clinical notes" (Vet 4).

Vet 5 also commented on the poor communication from physiotherapists, noting that “you don’t get any feedback really” with “no real connections there [between the two professions].” They considered feedback regarding the physiotherapy intervention to be “information that should be shared” to ensure effective team management of the patient. They also suggested that reports from veterinary physiotherapy would provide a better understanding of the treatments provided and assist with the promotion of the veterinary physiotherapy profession. Vet 3 commented that they preferred communication via WhatsApp as it is “a nice free flow of information back and forth,” that is not time consuming but allows for active communication between the two professionals.

#### *4.3.1.2 Promotion of Physiotherapy Services and Abilities*

The initiation of a veterinarian–veterinary physiotherapist relationship should begin with an introduction by the physiotherapist and the services that they provide. All three veterinary physiotherapists discussed promoting their practices by visiting veterinary practices and introducing themselves to the veterinary practice staff. Vet PT 5 mentioned meeting some resistance to this by noting that “to start with the vets were actually not super welcoming,” but once they began working with a veterinarian and more clients in the area, other veterinarians became more receptive to them. Vet PT 4 suggested that veterinary physiotherapists needed to be “brave and actually go out there and try to get a meeting with vets” when promoting their services. “I think once they’ve met a veterinary physiotherapist, it’s easier to actually make a recommendation” (Vet PT 4). Persistent exposure in the form of in-person meetings, promotional materials such as information leaflets, and veterinary physiotherapy reports on patients are suggested to facilitate the development of a professional relationship with a veterinarian.

All three of the veterinarians interviewed discussed the veterinary physiotherapists promoting their profession by organising demonstrations or talks that educated veterinarians on the role that a physiotherapist can play in patient management. Vet 4 recommended “CPD type structured events, where you’ve got physios showing vets what they can actually do and what is applicable.” Vet 3 discussed similar options of setting up combined CPD events for veterinarians and physiotherapists, especially at the annual veterinary congresses. They also agreed that veterinary physiotherapists need to promote their services better and educate veterinarians on “what they are actually qualified to do.” This sentiment was echoed by others, noting that “the more that you can get people to see and hear what you do the better” (Vet 5). They suggested visiting the practices and promoting their services by handing over information material. Vet 3 suggested giving the promotional material to the practice manager to circulate to the veterinarians as they “would be more likely to read it.”

However, a veterinary physiotherapist participant experienced interacting with the front office staff a challenge and a barrier to accessing the veterinarians that “she wasn’t that welcoming to his practice for me to come and introduce myself... I don’t even know if he got my card” (Vet PT 5). The initial meet and greet with veterinarians was discussed as being difficult to carry out, but once the initial meeting and promotion of services had taken place, veterinarians seemed to be more open to working with physiotherapists.

All three veterinary physiotherapists believed that the relevant associations, the SAAPRA and the SAVC, had a responsibility to promote the veterinary physiotherapy profession to veterinarians and the public at a national level. This may help initiate contact between the professions.

One participant suggested increasing awareness at undergraduate level, while another recommended requesting private pet medical aids to promote the use of physiotherapy.

#### *4.3.1.3 Understanding of the Scope of Practice of Veterinary Physiotherapy*

The promotion of physiotherapy services increases the awareness of veterinary physiotherapy and the scope of practice. In addition, there needs to be a better understanding of the veterinary physiotherapy profession and its scope of practice by veterinarians. All three veterinarians reported to have a basic understanding of veterinary physiotherapy but acknowledged that if their knowledge improved, their referrals would most likely increase. “I think that’s also a big thing, why we don’t refer enough, because we don’t always know what you can send” (Vet 4). One veterinarian described having a good general understanding of what veterinary physiotherapists could do, but not their specific scope, suggesting that additional information needs to be shared with veterinarians.

As discussed above, they all suggested that talks and demonstrations by physiotherapists would improve their knowledge regarding which case types could benefit from physiotherapy. Vet PT 5 suggested that veterinarians would only understand what they were able to do once they experienced it, or when physiotherapists were able to relate their scope to specific cases. This links to the importance of providing feedback to veterinarians regarding patient progress.

In addition, one physiotherapist described that some veterinarians may feel that physiotherapists are in competition with them, “so in a sense, we're competing. I say in a sense, it's a perception, because actually, we're enhancing” (Vet PT 3).

They reported that if veterinarians were aware that veterinary physiotherapy complemented veterinary medicine and was not in direct competition to it, they would be more willing to embrace it. This understanding of the scope of practice should be introduced at undergraduate level. All three veterinarian participants did not remember being educated on veterinary physiotherapy during their training. Vet PT 3 believed that this hindered the veterinarians understanding of the profession, particularly in the older generation. They had approached Onderstepoort to enquire about exposing veterinary students to veterinary physiotherapy, however they were “shut down completely.” They did express that they believed there were younger veterinary graduates who had expressed an interest in rehabilitation and learning more about it. Vet PT 4 expressed a similar experience with more recently qualified veterinarians seeming to have a better awareness of the profession and its recent promulgation.

In addition, another veterinary physiotherapist reported that equine veterinarians held a poorer understanding of the scope of a veterinary physiotherapist. They considered that a contributing factor to this was the wide variety of unregulated practitioners still working in the field that created confusion amongst the veterinarians as “there is no basic understanding of the differences between them” (Vet PT 4). Vet 3 agreed that they only held a basic understanding of which cases physiotherapists could assist with but were not sure “what are they actually qualified to do.” As mentioned above, improving the understanding of veterinary physiotherapy skills and appropriate patient types would most likely increase referrals from veterinarians. This lack of understanding could therefore impact the number of appropriate equine cases that received veterinary physiotherapy.

#### *4.3.1.4 Personal Experiences*

All three of the veterinarian participants had experienced positive benefits when including veterinary physiotherapy into the management of their patients. “Almost every single time we get to see benefits, and it can improve recovery time, the wounds look better, less scar tissue and more mobile” (Vet 4). If a veterinarian were to observe a “direct benefit” from physiotherapy, they would be more likely to incorporate it into the management of their patients (Vet 5). Vet 5, who reported having more access to physiotherapists over the previous few years, expressed observing results for specific patient types, including overweight dogs or orthopaedic patients. They expressed that as a result, they had been “instituting [physiotherapy] much earlier” than they had previously. In addition, personal experiences with their own animals receiving physiotherapy encouraged the referral of animal clients. Another veterinarian expressed that having a veterinary physiotherapist treat their equine clients more regularly was “quite nice when at least you know that there’s somebody that’s skilled that is keeping an eye on the horse” (Vet 3).

A veterinary physiotherapist reported that the results they had observed with specific patients cemented the relationship they had made with the veterinarian, who now referred more patients to them, and “that was one of the patients that proved the benefits of having a physiotherapist in your practice to actually help you” (Vet PT 5). Vet PT 4 recommended providing feedback on the positive results as well, as often the veterinarian would only be contacted when there had been a problem. “I think that’s also helped our relationship with the vets within our small practice animal practice, because we have given them the positive news on our patients” (Vet PT 4).

This same veterinary physiotherapist commented on how their relationship with the referring veterinarians grew through them directly “seeing the importance of post-op physiotherapy and how much it benefits their patients” (Vet PT 4). This had developed into their primary referring hospital including physiotherapy as standard procedure on all their neurological and orthopaedic patient invoices.

#### *4.3.2 Logistics*

The themes regarding the logistics of the practices were identified as influencing the referrals from veterinarians to veterinary physiotherapists. These included practice type, location, and the facilities available at the physiotherapy practice.

##### *4.3.2.1 Practice Type*

A few of the participants described equine practices as being more difficult to establish a consistent referral system with. Both veterinary and veterinary physiotherapy equine practices are mobile, and it is therefore difficult to establish communication channels. Vet PT 4 stated that there may be a “definite improvement with veterinary communication with the equine side.” It is not as easy to organise a physical introduction, as both professionals are mobile and travel during the working day, and their paths rarely cross. A veterinarian participant who worked in a mobile practice admitted that they were difficult to contact. They also stated that they “won’t often specifically refer” (Vet 3) but encouraged the client to consult their physiotherapist if they so required. Due to the large geographical area that they covered, it was also difficult to establish a relationship with a specific physiotherapist, which is why they would prefer to suggest to the client to consult their regular or local physiotherapist.

A veterinary physiotherapist who owned a mobile practice, but also worked from a veterinary practice twice a week, explained that being based at a veterinary practice allowed for improved interactions with her and the veterinarian, which they believed to have increased their patient numbers. Regarding the mobile practice, they reported receiving few veterinary referrals and usually worked more on a word-of-mouth basis from existing clients.

#### *4.3.2.2 Location*

The location of the practice in terms of its vicinity to a veterinary practice was mentioned in a few of the interviews. The veterinary physiotherapists that had a base practice nearby or within a veterinary practice reported effective and functional communication channels between the two professions. A veterinary physiotherapist participant considered that this was due to the ease of being able to regularly update the veterinarians face to face on their patient's progress, as well as the veterinarians being more continuously exposed to what the physiotherapist are able to do, "since we've been next door to them our relationship has even improved more because they've seen the work that we can do" (Vet PT 4). Vet PT 4 also commented that "the owners of the patients are very impressed with how quickly things get solved with us being in such close proximity to the vets."

In addition, another veterinarian believed that it was more convenient for the client to be able to access the professions in the same place and that it would therefore increase the uptake from the clients. Vet 3 considered that in an ideal world she would "love to have it all under one roof, where you work together" and the concept of a multidisciplinary team approach would be adopted. Vet PT 4 worked in a practice with a similar set-up, where the physiotherapists and veterinarians managed their patients together in an informal set-up.

Another veterinary physiotherapist echoed this sentiment. Their practice was located within a veterinary practice that allowed for a much more holistic approach to patient management, noting “he’ll call me into his office to discuss the case with me and show me X-rays” (Vet PT 5). They enjoyed the open communication between themselves and the veterinarian and reported that it made the owners “more at ease with your intervention. If you are able to work with their vets, they like that” (Vet PT 5). Vet PT 3 also believed that being an in-house physiotherapist allowed veterinarians to discuss unusual hospital patients with them to enquire whether they could assist, for example, “I’ve got a patient with Syringomyelia, he’s not a candidate for surgery, please help us with managing the patient.” This increased the types of patients that veterinarians would consider to possibly benefit from physiotherapy intervention.

The location of the physiotherapist in terms of province and area was also suggested to make a difference to veterinary referrals. Veterinarians had greater access to veterinary physiotherapists in “the big hubs of South Africa” (Vet 4) and would be more likely to refer. One of the veterinary physiotherapists agreed with this by reporting that it would be more challenging in rural areas of the country that did not have as much exposure to the profession. Results from the questionnaires did not investigate the rural versus urban distribution of veterinary physiotherapists. This may be something to consider for further research to determine whether this impacts referrals from veterinarians to veterinary physiotherapy.

#### *4.3.2.3 Facilities*

In addition to the above, the facilities available at the practice had also been suggested to have an impact on the veterinarian’s likelihood to refer.

Vet 5 suggested that the “one man practice is not sustainable. You need everything and all the equipment.” They suggested that being able to offer all services within the physiotherapy practice would make her more “trustworthy” of the service that they received, as it would imply that the physiotherapist had all the necessary equipment at their disposal.

### *4.3.3 Clients*

The third consideration in the veterinarian and veterinary physiotherapist relationship is the client (the animal owner), as they are ultimately responsible for the services that their pet is able to receive. The veterinarians expressed that they sometimes referred to physiotherapy, but that the clients did not always follow through “especially with big surgeries, we tell them they must do it, but then we leave it in their hands and then they usually don’t do it” (Vet 4). Owner compliance is therefore a factor that was considered when referring their clients to physiotherapy, as “it depends on the consultation... you can just see straight away that they’re not going to do it” (Vet 5). The owner makes the decision whether they would consult with a physiotherapist for their animal. The factors that may affect this decision are discussed below.

#### *4.3.3.1 Financial Implications of Referrals*

One of the factors mentioned by a few of the participants as a potential barrier to veterinary physiotherapy referrals was the financial implications. “Cost-wise I mean more people would love to do it, but they just mostly can’t afford it” (Vet 5). Veterinarians did consider the financial impact it would have on their clients as physiotherapy treatment is rarely a once-off session. If they thought that the owner was unable to afford it, they were more likely not to recommend it. “So you narrow it down to what is going to make the client happy with that budget” (Vet 5).

Often, they would recommend that the owner consults with a veterinary physiotherapist, but the owner would choose not to take their animal, with Vet 3 noting “I guess it also depends on the cost and stuff.” Vet PT 3 did not consider that the cost was prohibitive, but agreed it was a factor that owners must consider.

Pet medical aid and insurance were suggested as a potential method to minimise the impact that the cost of veterinary physiotherapy may have on patient numbers. They also experienced more use of medical aid schemes that covered physiotherapy over the previous few years. They believed this was due to more medical aid schemes being available, and more people making use of them. Vet 5 stated that “if you get a trusted vet insurance relationship with the physio, that would be more of a push for us because we are always advertising or advocating insurance.” This suggests that further investigation into pet medical aids and their physiotherapy cover is warranted as a potential means to mitigate the cost factor when considering physiotherapy as an option.

#### *4.3.3.2 Public Awareness of Veterinary Physiotherapy*

In terms of the public’s awareness of veterinary physiotherapy, the views of the interviewees were mixed. Two of the veterinarians interviewed reported that their clients held a poor understanding of physiotherapy and where it was applicable. “I think the scope is there to do a broader base of patients, but I don’t think the clients understand” (Vet 5). Vet 4 expressed that “clients need to be made a bit more aware. I think that veterinary physio is lagging a bit behind human physio” in terms of educating the public. They considered that this played a significant factor in clients not following through with the suggestion to consult with a physiotherapist.

Vet 3 also suggested holding combined veterinarian and veterinary physiotherapy information days to educate clients as to what a physiotherapist is qualified to do.

This contrasts with the opinion of another participant. They considered that the public demand for veterinary physiotherapy had increased, which has in turn influenced the veterinarian's perception. "So I think that the veterinary profession is starting to wake up based on public demand" (Vet PT 3). They suggested that having an established online presence through social media and a website held value with regards to educating the public. Vet PT 3 also suggested "in person events" as being valuable to increase exposure of the public to veterinary physiotherapy. The equine veterinarian interviewed also implied that their clients had been facilitating the inclusion of physiotherapy into the treatment of their horses, as "there's usually a physio involved before us" (Vet 3). From the physiotherapist's perspective, specifically with equine patients, an increase in patient numbers was considered to be "very much word of mouth from previous clients" (Vet PT 4). This is once again related to personal experiences increasing the demand for veterinary physiotherapy.

They all agreed that a large percentage of their patient numbers resulted from direct contact by the owners, who wanted their animals to be assessed by a physiotherapist. Although the veterinary physiotherapists believed there had been an improvement in public awareness, there still needs to be more drive from physiotherapists to promote the profession to their surrounding communities.

#### *4.3.4 Registration of the Profession*

There were also mixed opinions regarding the impact that the registration of the veterinary physiotherapy profession has had.

##### *4.3.4.1 Positive Views on the Registration of Veterinary Physiotherapy*

Two of the veterinary physiotherapists interviewed reported that the registration had a positive impact on the profession due to the awareness that it had created within the veterinary community. “In terms of working with vets, they respect our profession based on that” (Vet PT 5) and “all the new vets that are graduating do know that it’s been a regulated profession” (Vet PT 4). Conversely, Vet PT 3 considered that it had not made any difference on the veterinary community as “most of them don’t even know it’s been promulgated.”

Vet 4 reported that the promulgation would make a difference to the integration of veterinary physiotherapy into veterinary care as it made the profession more “legit.” Although another veterinarian (Vet 5) believed it would have positively impacted the profession, it would only have made a difference individually if the veterinarian had already been interested in rehabilitation. The qualification of the veterinary physiotherapist made more of a difference than the registration of the profession according to another veterinarian, as it “didn’t change the way you guys are trained, so it just gave you the accreditation that you deserve” (Vet 3).

##### *4.3.4.2 Concerns Regarding the Promulgation*

Although all participants agreed that the promulgation of the profession had been a step in the right direction, there were still concerns regarding the profession.

The veterinary physiotherapists, particularly those who treated equine patients, encountered several unregulated and unqualified therapists working on horses. They both reported that there needed to be more regulation and awareness created around the public using a SAVC registered veterinary physiotherapist. Vet PT 3 considered that the “current outcome (of the promulgation) doesn’t serve the profession.”

The delay in the completion of the grandfather clause resulted in the senior professionals in the field being “denied full rights over a technicality” as they were only currently authorised pending completion of examinations. Vet PT 3 also reported being concerned that because there was only one automatic route to become registered as a veterinary physiotherapist, the SAVC had created a monopoly and, in turn, lost the diversity within the field. A veterinarian, however, believed that the establishment of a qualifying route for veterinary physiotherapists instilled greater confidence in working with them as they “know that they’re well trained, they’ve got a little bit of a veterinary background,” compared with others where “you don’t know their backgrounds” (Vet 3).

The themes identified above explore the experiences of veterinarians and veterinary physiotherapists currently working in the field. Factors that could influence veterinary referrals to veterinary physiotherapists largely relates to the professional dynamics between them, the accessibility in terms of location and communication, as well as the demand from the public. Practice type (i.e., small animal versus equine) was also discussed as having an effect on multiple factors such as ease of access and communication, as well as there being a difference in the understanding that the veterinarians held of the physiotherapy profession.

The promulgation of the profession is generally believed to have had a positive effect on the profession, through an increase in the awareness of the profession. There were, however, issues within the profession that could negatively impact its future growth.

## CHAPTER FIVE: DISCUSSION

The overall aim of the present study was to explore the relationships and referrals between the veterinarians and veterinary physiotherapists within the South African context, post-promulgation of the veterinary physiotherapy profession. South Africa is the only country in the world where veterinary physiotherapy has been recognised as an independent profession and is registered with the veterinary council. The hypothesis was that the promulgation of the veterinary physiotherapy profession would have had a positive impact on the integration of the profession into the veterinary health team.

### 5.1 The Justification of the Establishment of an Independent Veterinary Physiotherapy Profession

Results from the first phase of the present study identified the need for a registered and regulated veterinary physiotherapy profession. The key role players interviewed all agreed that the promulgation was a necessary step in the right direction to ensure value and growth of the veterinary physiotherapy profession. The promulgation of the profession required a scope of practice to be determined and the veterinary physiotherapists skillset to be assessed prior to their registration with the SAVC, which ensured that everyone was sufficiently trained and capable. Previous studies, conducted both locally and abroad, identified the lack of standardised training and regulation of the veterinary physiotherapy profession as a reason for why veterinarians are reluctant to refer (Doyle & Horgan, 2006; Johnston, 2016; McGowan et al., 2007a; Naidoo et al., 2008). Results from the present study supported this, with 92% ( $n = 89$ ) of veterinarians agreeing that the promulgation would positively affect their likelihood to refer to a veterinary physiotherapist.

Reasons for this included an increased confidence in the qualifications of the veterinary physiotherapists, as well as accountability of veterinary physiotherapists to adhere to their scope of practice. The SAVC provides rules and regulations for each profession that they regulate, ensuring that the roles of the professions are clearly defined. This should assist with the integration of the veterinary physiotherapy profession into the veterinary healthcare team.

Most veterinary physiotherapists ( $n = 37, 63\%$ ) were happy with the promulgation. When this was explored further during the interviews, participants reported that the promulgation had improved the awareness of the veterinary physiotherapy profession, as well as the respect veterinarians held for the profession. For the veterinary physiotherapists dissatisfied with the promulgation, most cited the process as being an issue, while others merely considered that it had not improved their client base. There were also comments regarding the fact that they were still encountering people working in the animal rehabilitation field who were not sufficiently trained or registered with the SAVC and were therefore working illegally. This suggests that more needs to be done by the SAVC and SAVA to ensure there are disciplinary protocols in place and consequences for unregistered therapists practicing within the field.

## 5.2 Referrals from Veterinarians to Veterinary Physiotherapists

Veterinarians are considered to be the head of the veterinary healthcare team and are usually the first practitioner the public will consult when their animal has a problem. It is therefore essential that veterinarians understand the scope of practice of veterinary physiotherapy and refer appropriate patients to them.

Of the 97 veterinarian respondents, 65% ( $n = 63$ ) reported regularly referring to veterinary physiotherapists. This is in comparison to previous studies conducted within South Africa, that reported referral rates of only 48% (Johnston, 2016) and 7.4% (Naidoo et al., 2008). This suggests that there has been an increase in the number of veterinarians that regularly refer to veterinary physiotherapists. Additionally, results from the interviews with the veterinarian participants demonstrated a positive perception of the veterinary physiotherapy profession, with 86% ( $n = 83$ ) of veterinarians agreeing with the statement “veterinary physiotherapy should be considered an integral part of animal care.”

An interesting finding from the present study was that veterinarians who had obtained additional qualifications were significantly more likely to refer than veterinarians who did not. This correlated with the findings from previous studies (Alvarez et al., 2016). Possible reasons for this could be that veterinarians with additional qualifications are treating more patients who are appropriate for physiotherapy, and that their understanding of veterinary physiotherapy may be superior. In addition, if the feedback from the specialist veterinarian interviewed in phase one is compared with the general practitioner veterinarians interviewed in phase two, there was a difference in their experience with communication from the veterinary physiotherapists. The general practitioner veterinarians reported receiving little to no feedback from physiotherapists following referral to them, whereas the specialist veterinarian reported receiving thorough feedback. As communication was identified as an important factor in the relationship between the two professions, the lack of patient feedback to the veterinarians may also affect their likelihood to refer cases.

The most common small animal patient types referred were intervertebral disc disease ( $n = 45, 77\%$ ), post-surgical orthopaedic conditions ( $n = 43, 74\%$ ), cruciate disease ( $n = 38, 66\%$ ), elbow and hip dysplasia ( $n = 35, 61\%$ ), and osteoarthritis ( $n = 35, 61\%$ ). These results are expected, as previous studies identified veterinarians having a better understanding and awareness of physiotherapy intervention for these conditions (Doyle & Horgan, 2006; Eiermann et al., 2020; Johnston, 2016). The qualitative feedback from veterinarians and veterinary physiotherapists working in the small animal environment detailed the importance of including physiotherapy management of orthopaedic and neurological patients, as their return to function is accelerated.

In comparison to small animal referrals, veterinary referrals of equine patients were much less. This was corroborated by feedback from the interviews with veterinary physiotherapists reporting that they had received much less direct equine referrals from veterinarians and relied more on word of mouth from clients. The top equine conditions referred were tendon injuries ( $n = 11, 42\%$ ), back pain ( $n = 11, 42\%$ ), degenerative joint disease ( $n = 11, 42\%$ ), soft tissue injuries ( $n = 10, 40\%$ ), post-orthopaedic surgery ( $n = 9, 39\%$ ), and athletes for regular maintenance or conditioning ( $n = 8, 36\%$ ). In comparison to the small animal referral percentages, this is much less. These results may be explained by the fact that equine veterinarians and veterinary physiotherapists are both mobile. Results from the veterinarian questionnaires revealed that mobile veterinary physiotherapy practices were significantly less likely to receive veterinary referrals than those based at a physical practice. In addition, feedback from the interviews detailed the difficulty of contacting equine veterinarians due to the logistics of their practice.

Efficient communication was identified as a common theme effecting the referrals from veterinarians; therefore, potentially this difficulty with establishing effective communication channels with equine veterinarians explains these numbers. Another factor to consider is the lack of evidence in equine rehabilitation. A scoping review conducted on the literature available specifically highlighted a lack of evidence regarding the intervention and outcomes in the clinical practice of equine rehabilitation (Atalaia et al., 2021). This lack of evidence may contribute to the low equine referral numbers.

Small animal conditions less commonly referred included cardiorespiratory ( $n = 51$ , 98%), wounds ( $n = 48$ , 96%), obesity ( $n = 43$ , 81%), and soft tissue conditions ( $n = 38$ , 68%). Equine conditions that were less regularly referred were weight loss ( $n = 22$ , 95%), cardiorespiratory illness ( $n = 20$ , 92%), neurological cases ( $n = 18$ , 78%), and post-colic surgery ( $n = 18$ , 86%). Similar results were reported in previous studies (Doyle & Horgan, 2006; Johnston, 2016). However, these conditions still fall into the scope of practice of a veterinary physiotherapist and therefore need to be promoted further to veterinarians. Results from the interviews supported the concern that a lack of understanding from veterinarians of the entire scope of practice of veterinary physiotherapy hindered the number of referrals. Referral rates should therefore increase if veterinarians are to become more aware of all the types of patients that could benefit from the inclusion of veterinary physiotherapy.

In comparison to the results from the veterinarian questionnaire, results from the veterinary physiotherapy questionnaire indicated that 49% ( $n = 29$ ) of veterinary physiotherapists reported receiving regular veterinary referrals from veterinarians. This indicates that half of the veterinary physiotherapists are not receiving regular veterinary referrals.

This is important to note, as a significant correlation was found between veterinary physiotherapists that reported receiving regular veterinary referrals and those who had a caseload of greater than 20 patients per week. This demonstrates the link between receiving veterinary referrals and increasing the caseload of veterinary physiotherapists. For a veterinary physiotherapist to grow their practice, it is important that they increase the number of veterinary referrals received. This would, in turn, assist with the growth of the veterinary physiotherapy profession in South Africa. Factors influencing the referrals to veterinary physiotherapists are discussed below.

### *5.2.1 Factors Affecting Veterinary Referrals to Veterinary Physiotherapy*

In addition to the promulgation of the profession detailed above, several factors were identified as influencing referrals from veterinarians to veterinary physiotherapists.

#### *5.2.1.1 Professional Dynamics*

Having a good working relationship with a physiotherapist was listed as one of the top three reasons for referral in the veterinarian questionnaire. There are many aspects of the professional dynamics of a working veterinary care team to consider.

##### *a) Scope of Practice*

Every profession within a healthcare team should have their specific place and function (Rowland, 2014). The newly established scope of practice for veterinary physiotherapists guides their roles within the team and should allow for a better understanding from veterinarians.

It should also encourage the veterinarians to consider veterinary physiotherapy as complementary to veterinary care, and not in competition with it, as one participant in the interviews suggested. Veterinary physiotherapists need to work within their scope of practice and ensure that the diagnosis of a patient's condition is carried out by a veterinarian. They should also identify when the animal is not progressing and refer to the veterinarian. This assists with building trust between the two professions and ensures effective management of the patient.

#### b) Communication Channels

Establishing open and functional communication channels between the two professionals is essential for a strong and successful working relationship. This corroborates findings from previous research which identified a need for improved communication between the two professions (Doyle & Horgan, 2006; Johnston, 2016; Strange & Walley, 2016). Participants who reported having a good working relationship with the other professional identified being able to communicate with each other efficiently and effectively as being a key factor in their relationship.

Good communication between the two professions would include providing feedback from the veterinary physiotherapist regarding the patient's progress. Results from the interviews identified two problems with feedback from veterinary physiotherapists. One of the veterinarians reported that when they received written feedback, it was often too detailed and included irrelevant information. They preferred receiving succinct feedback that was pertinent to them as a veterinarian. Two of the veterinarians reported receiving no feedback on patients they had referred.

Both commented that receiving feedback on patients they referred would increase their likelihood to continue to refer to these specific veterinary physiotherapists. In contrast, all of the veterinary physiotherapists interviewed reported ensuring they provided regular feedback to the veterinarians. They did, however, comment that it was often difficult to establish this channel of communication with the veterinarians.

This is particularly the case with mobile practitioners. Participants in the study who worked in mobile practice, for example with equine patients, discussed the difficulties of establishing contact with other practitioners. As mentioned above, effective communication between the professions had been identified as an important factor in the veterinarian and veterinary physiotherapist relationship. If these communication channels had been difficult to establish, it may have influenced the number of patients that were specifically referred for veterinary physiotherapy. Veterinary physiotherapists, therefore, need to ensure that they identify communication channels that work best for all practitioners concerned, perhaps in the form of WhatsApp messages or email correspondence.

It was recommended by the veterinarians that veterinary physiotherapists should be persistent and suggested that veterinary physiotherapists leave information material for the veterinarians to access at a later time when they are available. One of the veterinary physiotherapists interviewed commented on their inclusion of positive patient feedback to the veterinarian, when the patient was doing well and had been discharged. Veterinarians often only received notifications when there was a problem with the patient; however, they believed that receiving feedback on the positive results would assist with further referrals.

The benefits of using WhatsApp as a communication tool was identified by many of the participants interviewed, as it is direct and can be responded to when the time allows. This demonstrates that veterinary physiotherapists need to ensure that their communication with veterinarians regarding patients is timely and relevant if they wish to build strong working relationships with the associated veterinarians. They also need to establish the preferred method of communication with the veterinarian to ensure ease of delivery of feedback.

### c) Personal Experiences

Personal positive experiences with referrals to veterinary physiotherapists was identified in the interviews as a major contributor to continued veterinary physiotherapy referrals. In addition, it was identified in the veterinarian questionnaire as one of the top three reasons for referral to a veterinary physiotherapist: "I have seen the benefits of using a physiotherapist for certain cases" ( $n = 47, 49\%$ ). It is therefore important that when a veterinary physiotherapist receives a veterinary referral, they ensure that the process is a positive experience. All of the veterinarians interviewed commented on having positive experiences and results from referrals to veterinary physiotherapists. The results obtained by physiotherapy management are suggested to be dependent on the skills of the physiotherapist to assess and treat each individual patient. The registration of the profession should ensure that all veterinary physiotherapists have been sufficiently trained and that they maintain their skillset through the completion of mandatory CPD activities. It is also up to the individual physiotherapist to ensure their competency by remaining informed on current research.

#### d) Understanding the Scope of Practice of Veterinary Physiotherapy

Veterinarians that held a better understanding of veterinary physiotherapy were significantly more likely to refer than those who held a poor understanding of the profession. This supports findings from previous studies that linked veterinarian's understanding of physiotherapy with their likelihood to refer patients (Doyle & Horgan, 2006; Johnston, 2016). It also corroborates feedback from the present study's interviews with veterinarians stating that they would be more likely to refer if they knew the full scope of veterinary physiotherapy. Educating veterinarians and increasing exposure to veterinary physiotherapy was recommended to increase their use of the service. Suggestions to achieve this included improving education at undergraduate level, the hosting of combined CPD events by associations such as the SAVC and SAAPRA, as well as by individual physiotherapists marketing their services within their local areas. All of the veterinarians interviewed in the third phase of the present study suggested that local physiotherapists should host CPD events and demonstrations to educate veterinarians on their full scope of practice.

#### 5.2.1.2 Logistics

Factors regarding the logistics of the referral relationship between the two professions were also identified as having an impact. This included the vicinity of the location of the physiotherapy practice to the veterinary practice, as well as the physiotherapy and veterinary practice types.

#### a) Access to Veterinary Physiotherapy by Veterinarians

Veterinarians who had access and exposure to veterinary physiotherapy were more likely to refer.

Veterinary physiotherapists located within a veterinary practice or affiliated to one were statistically more likely to receive regular referrals than veterinary physiotherapists working in mobile practice. This is understandable as the veterinarians would have more exposure and access to veterinary physiotherapists. Feedback from the interviews supported this finding, as the veterinary physiotherapists who worked from a veterinary practice found that this allowed for open and functional communication channels. A few of the interview participants also commented on the ease of access for the client if the physiotherapy practice was located within, or close by to, the veterinary practice.

One of the top three reasons identified for not referring cases to veterinary physiotherapy included not having the service within a reasonable distance from their veterinarian practice. This would likely decrease the exposure that the veterinarian had to veterinary physiotherapy, as well as affect the ease of access to the veterinary physiotherapist by the client and veterinarian. Previous research also reported that a lack of awareness of available local facilities hindered the veterinarians likelihood to refer to physiotherapists (Doyle & Horgan, 2006; Johnston, 2016; Strange & Walley, 2016). Physiotherapists, therefore, need to ensure that the veterinarians in their area are aware of their services.

#### b) Practice Type

Practice type also appeared to influence the likelihood of veterinarians to refer. Veterinarians located in small animal practices and specialist centres were statistically more likely to refer than those in mixed practice and welfare clinics. This may be due to their patient case types and client base being more appropriate for referral to veterinary physiotherapy. In addition, they may have had greater exposure to veterinary physiotherapy based on their location.

From the veterinary physiotherapy questionnaire results, it was determined that mobile practitioners were significantly less likely to receive regular veterinary referrals than those located at a practice. This may be due to the factors identified above, such as ease of access and exposure. In addition, veterinary physiotherapists that are mobile may not be able to offer all the services that those based at a clinic would be able to, such as the underwater treadmill for example. As one veterinarian interview participant suggested, veterinary physiotherapy practices that offered all modalities would more likely receive increased referrals as their facilities would be able to cater to all needs. Additional studies are required to determine whether the location of practices in urban compared to rural settings, as well as practice type, effect the likelihood of referral.

#### c) Financial impact on the client

Another key reason cited for not referring, was the concern relating to the cost to the client. Financial implications are generally considered when a veterinarian makes a recommendation to their clients. Previous research listed perceived cost to client as a primary barrier to veterinary physiotherapy referrals (Johnston, 2016; Strange & Walley, 2016). Veterinarians understand that veterinary physiotherapy intervention is typically continuous and can be costly to the client, which would prohibit the use of physiotherapy for certain clients. If the veterinarians were under the impression that their client could afford the cost of physiotherapy, they did not recommend it. Suggestions made to mitigate this involved the inclusion of consulting with pet medical aids regarding their coverage of physiotherapy intervention. The exploration of this intervention was beyond the scope of the present study but may be beneficial for the veterinary physiotherapy community to explore in the future.

#### d) Lack of Evidence

Previous studies have identified a lack of research evidence as a factor affecting the referral rate to veterinary physiotherapists (Doyle & Horgan, 2006; Johnston, 2016). However, the results of the present study were mixed. When asked about reasons for referral in the questionnaire, 25% of veterinarians selected the statement: "I believe there is evidence to support the inclusion of physiotherapy for certain cases." In addition, feedback from the interviews suggested that the lack of class one research into veterinary physiotherapy did not make as much of an impact on the likelihood to refer, but rather that positive experiences and results from referrals would be a more significant factor. However, all of the participants agreed that additional high-quality evidence was required to expand and grow the field. This lack of evidence may impact the initial uptake of veterinary physiotherapy into the management of patients. The conditions that are not often referred may then be linked to the lack of evidence for the physiotherapy treatment of these conditions. However, as noted by one of the veterinarian interview participants, high quality research studies within the veterinary rehabilitation field are difficult to establish and are often not transferable to the clinical setting.

### 5.3 Challenges for Veterinary Physiotherapists in South Africa

The establishment of a professional working relationship between the veterinarian and the veterinary physiotherapist was identified as a challenge by the veterinary physiotherapist participants. They discussed finding it difficult to initially meet with veterinarians and promote their services, however suggested that perseverance was necessary to succeed. To mitigate this, they all suggested leaving promotional material for the veterinarians, as well as regularly following up as methods to establish that contact.

From the above findings, integration into a veterinary practice would ensure ease of access and communication. This would require veterinarians being open to including physiotherapists within their practice. From the present study, 50% of the veterinary practices included offered physiotherapy. This could be improved through the promotion of veterinary physiotherapy, through increasing the understanding of physiotherapy at undergraduate level, as well as by improving the evidence base supporting the inclusion of physiotherapy.

An additional challenge that some veterinary physiotherapists identified was regarding the promulgation of the profession and the subsequent delay in the completion of the required examinations for those currently authorised. Two of the veterinary physiotherapists interviewed felt very strongly that this was a disservice to the profession as those practitioners who had been in the field for the longest duration were currently denied the full rights of a registered veterinary physiotherapist, such as being a member of the council. They considered that only having one automatic route to registration as a veterinary physiotherapist in South Africa created a monopoly and limited the diversity of knowledge within the field. In contrast, other interview participants considered that by having an institution that provided an accredited, full-scope training gave more credibility to the veterinary physiotherapy profession. In future, other institutions wanting to create alternative routes to qualify as a veterinary physiotherapist would need to go through the same process that was followed by Equine-Librium College. Potentially, the APGSA and SASP have a responsibility to assist their members to register with the SAVC as a veterinary physiotherapist by providing them with education opportunities that meet the Day One skills list.

Despite the registration of the veterinary physiotherapy profession, there are still unqualified and unregulated individuals working in the animal rehabilitation field. Veterinary physiotherapists conceded this to be a major challenge, as it could create confusion with the public, as well as with the veterinarians. It is therefore essential that organisations such as the SAVC and SAAPRA continue to educate veterinarians and the public regarding the veterinary physiotherapy profession, as well as to promote the registry databases to encourage the use of qualified and registered practitioners.

#### 5.4 Recommendations

The results from the present study provide several recommendations and guidance for veterinary physiotherapists to grow their caseload through the increase of veterinary referrals. These include:

- ensuring effective and efficient communication channels between themselves and the veterinarians;
- promoting the physiotherapy profession, as well as promoting their individual practices and facilities at ground level and through CPD and other shared learning events;
- ensuring that veterinarians experiences with physiotherapists are positive, through the use of feedback and reporting; and
- getting involved in research to expand the evidence base of veterinary physiotherapy.

In addition, the regulatory bodies of the professions need to continue to provide opportunities for education, promote the ideal of a multidisciplinary approach to veterinary healthcare, as well as support and promote their members.

The public should be encouraged to use professionals in the field who are registered with the SAVC. One way to achieve this is to ensure that pet medical aids only provide cover for veterinary physiotherapists that are registered with the SAVC. Further investigation into what conditions medical aids cover should be carried out to ensure that the full scope of veterinary physiotherapy is being covered. Another method is for veterinarians to only recommend SAVC registered veterinary physiotherapists when referring patients. The list of registered professionals is available on their websites, but the onus is also on the physiotherapists to ensure that they promote their services to their surrounding veterinary practices.

#### 5.5 Limitations of the Study

For the second phase of the data collection, the questionnaire response rate was not as high as expected and the target sample size for the veterinarians was not obtained. This could have been due to not being able to distribute the questionnaires through the SAVC portal, although the SAVA database included SAVC registered veterinarians. The responses from the veterinarian population may therefore not be representative of the South African veterinarian population. Similarly, members of the SAAPRA do not include all veterinary physiotherapists listed on the SAVC website. Therefore, the responses may not be truly representative of the veterinary physiotherapy population. In addition, participation in the present study was voluntary and those who participated may have had an interest in the topic, thereby skewing the results towards a positive bias. In the third phase of data collection, the lack of willing participants for focus groups may have affected the depth of data collected; however, the interviews were able to explore the personal experiences of the participants in greater detail.

A conflict of interest is identified, as the researcher is an employee of the Equine-Librium College that offers the BSc in Veterinary Physiotherapy, which is currently the only automatic route for registration as a veterinary physiotherapist in South Africa. Therefore, there may be an inherent bias towards the promulgation of the profession, as this was made possible by the establishment of the college. The researchers experience as a veterinary physiotherapist and being employed at the college has contributed to the interest and passion for the development of the veterinary physiotherapy profession in South Africa and was unavoidable. This would have also added a level of understanding necessary for the engagement on the topic.

## CHAPTER SIX: CONCLUSION

The veterinary physiotherapy profession in South Africa is in a unique position compared to the rest of the world. The promulgation of the independent veterinary physiotherapy profession and its subsequent registration with the SAVC provides the veterinary community with assurance that veterinary physiotherapists are sufficiently skilled and trained. In addition, practitioners in the field are regulated. The results from the interviews with the experts in the field provided the justification for the promulgation of the profession. They also described the process as robust and thorough, ensuring that all stakeholders in the rehabilitation field were represented. Previous studies have identified lack of specific training and regulation of the veterinary rehabilitation field as a barrier to referrals from veterinarians (Doyle & Horgan, 2006; Johnston, 2016; Naidoo et al., 2008).

Overall, the results from the present research highlighted the positive perception of the veterinary physiotherapy profession following the promulgation, and the majority of the veterinarians agreed that veterinary physiotherapy should be considered an integral part of veterinary healthcare. The responses from the veterinarians suggests that the registration of the veterinary physiotherapy profession will have a positive effect on their likelihood to refer more patients. This is supported by the results from the present study that demonstrated an increase in the overall referral rates from veterinarians to veterinary physiotherapists, when compared to previous studies. However, 50% of the veterinary physiotherapists reported still not receiving regular referrals from veterinarians. There is no previous data to compare this to, but it does indicate a need for an improvement in referrals.

There was some negative feedback regarding the promulgation that needs to be considered by the representative organisations. These primarily pertained to the grandfather clause not being finalised, which is affecting authorised individuals in the field. The SAVC needs to consider the impact that the delay in the completion of these examinations is having on these practitioners. The examinations need to be finalised and made available to all authorised practitioners to complete their registration process. Once these examinations have been finalised, another avenue of application to the SAVC will be available for prospective veterinary physiotherapists, mitigating the concern of creating a monopoly of only registering veterinary physiotherapists that qualify from the Equine-Librium College. This is something that the SASP and APGSA should support as it provides an option for human physiotherapists wanting to work in the animal field.

Although the growth of the veterinary physiotherapy field appears to be headed in the right direction, there is still considerable room for improvement. The full scope of practice of veterinary physiotherapy is not being utilised by veterinarians due to a lack of awareness and understanding of all the conditions that can benefit from it. More needs to be done to educate veterinarians and promote the veterinary physiotherapy profession. The representative organisations, such as the SAVC and SAAPRA, need to play a big role in continuing to educate the veterinary community regarding the veterinary physiotherapy profession and its full scope of practice. It is still essential, however, that veterinary physiotherapists continue to promote their profession at ground level. Veterinary physiotherapists need to ensure that they market their services sufficiently within their areas, and to initiate contact with veterinarians. They also need to ensure effective and ongoing communication with the referring veterinarian.

The barrier of increased cost to the client also needs to be considered and potentially mitigated through the use of pet medical aids. The lack of good quality evidence to support the inclusion of veterinary physiotherapy for certain conditions and case types is also considered to be a barrier. Further research into physiotherapy interventions should be carried out to validate the use of physiotherapy in veterinary healthcare. Veterinary and veterinary physiotherapy training facilities, therefore, have a responsibility to provide research opportunities to practitioners.

A recurring theme when identifying the facilitators to veterinary referrals was feedback regarding veterinarians' personal experiences with veterinary physiotherapists. This perception of working with a physiotherapist is dependent on their personal exposure and experiences. Comments regarding establishing a good working relationship between the two professions centred around communication, understanding one's specific roles in the management of the patient, and obtaining favourable results. It is imperative that veterinarians are informed of positive results from the inclusion of physiotherapy into the management of their patients if they are to recommend it in the future.

Recommendations to ensure the integration of the veterinary physiotherapy profession into the veterinary field include improving communication between the practitioners, improving promotion of local veterinary physiotherapy practices, and education regarding the scope and function of the veterinary physiotherapy profession to veterinarians and the public. Further research into the perception of veterinary physiotherapy by the public is required as ultimately, they decide whether their animal will receive physiotherapy.

It would be important to understand what factors affect the demand for physiotherapy from the public, as this would assist with the growth of the veterinary physiotherapy profession. Another area that could affect the integration of veterinary physiotherapy into veterinary healthcare that should be explored is the exposure to the veterinary physiotherapy profession that veterinarians receive at undergraduate level. One would assume that the amount of exposure and education they receive in their training would impact their likelihood to include it in their management of appropriate patients.

The veterinary healthcare team within South Africa consists of a variety of practitioners, all with their specific roles and functions. The establishment of the veterinary physiotherapy profession and scope of practice has assisted with identifying their place within the team. There are undoubtedly benefits to ensuring that the veterinarian and veterinary physiotherapist collaborate in their management of patients in order to achieve the best possible outcome. Recommendations to achieve this have been detailed above, but ultimately depend on each individual within the team working together to achieve complementary goals.

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## APPENDICES

### Appendix A: Interview Questions for Phase One

This is a rough draft of the interview questions to be asked. The interview will however be guided by the responses from the participant, and feedback given will be elaborated on.

#### **VETERINARY PHYSIOTHERAPIST INTERVIEW:**

1. What are your qualifications?
2. Experience and current employment – including a description of it.
3. Were you directly involved in the promulgation of the Veterinary Physiotherapy profession? If so in what way? Elaborate to include their opinion on the promulgation.
4. Has the Veterinary Physiotherapy environment in South Africa changed at all due to the promulgation of the profession? Personal experiences and opinions.
5. Do you think Veterinary Physiotherapy should be considered an important component of veterinary health care and animal patient management? Why / Why not?
6. What conditions/ scenarios do you believe would benefit from routine physiotherapy intervention? Why?
7. What do you foresee as the greatest challenges to increasing vet physiotherapy caseload in South Africa? How can physiotherapists address these challenges?
8. What do you believe are the greatest barriers or facilitators to referrals from veterinarians to veterinary physiotherapy.
9. Who are the key role players in promoting the profession of Veterinary Physiotherapy and how do they go about doing it?
10. Where do you hope to see the Veterinary Physiotherapy profession in 5/10 years time?

#### **VETERINARIAN INTERVIEW**

1. Qualifications and specifications.
2. Experience and current employment.
3. Are you aware that the Veterinary Physiotherapy profession is now a SAVC regulated and registered profession? If yes, how?
4. Have you worked with a veterinary physiotherapist? Is it something you refer to regularly? Why or why not? What have your experiences been like with these referrals? What is your level of understanding about the physiotherapy profession and the techniques that are used?
5. Do you feel that the promulgation of the profession would increase your likelihood to refer? Why/ Why not?
6. Do you feel that a veterinary physiotherapist should be considered an integral part of the veterinary health care team? Elaborate.

7. How would a veterinary physiotherapist integrate themselves successfully into a veterinary health care team? What would you expect from a veterinary physiotherapist that you refer to/ work with on a case?
8. From a vet's perspective, should the profession of veterinary physiotherapy be promoted? If so, how and where should this be done.

#### **SAVC INTERVIEW**

1. How were you involved in the promulgation process?
2. Please elaborate on the process of promulgation and how it was executed? What was the reaction like from your current members? Was there any resistance to the registration of a Veterinary Physiotherapy profession.
3. Following the completion of the grandfather clause period, what are the different avenues one can take to be registered as a Veterinary Physiotherapist with the SAVC?
4. Have you had any feedback since the promulgation of the profession from the veterinarians or veterinary physiotherapists? Positive or negative?
5. Does it look like there will be any changes to the profession going forward?
6. Where do other practitioners, such as chiropractors, fall into the animal rehabilitation?
7. Do you believe the promulgation of the profession is a positive step for the veterinary industry? Why/ why not?

## Appendix B: Veterinary Interview Questions for Phase Three

1. Type of practice and how long they've been in practice
2. Caseload – typical/ regular patient types

### **REFERRAL AND RELATIONSHIP TO PHYSIOTHERAPISTS:**

1. Do you refer patients for physiotherapy? Why/ why not? Type of patient you routinely refer?
2. Is there a physiotherapist in your area that you regularly refer to? What started this professional relationship?
3. What has been your experience with these referrals? Good and bad?
4. What do you believe would increase your referral rate to physiotherapists?
5. What is your understanding of the physiotherapy profession in terms of appropriate patient types, treatment modalities used etc. What gave you this understanding?
6. If poor understanding– would you like to know more about the profession? Would this assist with referrals?
7. What do you believe are the biggest facilitators to referral of patients from veterinarians to veterinary physiotherapist?
8. What do you believe are the biggest barriers to referral of patients from veterinarians to veterinary physiotherapists?

### **EFFECT OF PROMULGATION:**

1. Were you aware of the promulgation of the profession (how)?
2. Do you believe that veterinary physiotherapy should be considered an integral part of veterinary care?
3. Do you believe promulgation will assist with the growth of the profession? Why?
4. What else do you believe will assist with the growth of the profession in South Africa?

## Appendix C: Veterinary Physiotherapy Interview Questions for Phase Three

1. Place of work and how long they've been in practice
2. Caseload – typical/ regular patient types

### **RELATIONSHIPS WITH VETS AND REFERRAL:**

1. Do you receive referrals from veterinarians in the area? If so what type of cases are typically being referred? On average how many referrals?
2. Is your caseload growing?
3. How do you market your practice or maintain contact with the vets in your area?
4. How well do you think veterinarians in your area understand the physiotherapy profession and appropriate patients?
5. What do you believe are the biggest facilitators to referral of patients from veterinarians to veterinary physiotherapist?
6. What do you believe are the biggest barriers to referral of patients from veterinarians to veterinary physiotherapists?

### **IMPACT OF PROMULGATION:**

1. Do you believe that veterinary physiotherapy should be considered an integral part of veterinary care?
2. Were you aware of the promulgation of the profession (how)?
3. Do you believe this will assist with the growth of the profession? Why?
4. What else do you believe will assist with the growth of the profession in South Africa?

## Appendix D: Veterinarian Questionnaire

### Question 1:

Informed Consent

### Question 2:

Gender:

- Male
- Female
- Prefer not to say

### Question 3:

Age:

- 20-29
- 30-39
- 40-49
- 50-59
- 60-69
- >70

### Question 4:

Location:

- Eastern Cape
- Free State
- Gauteng
- Kwazulu-Natal
- Limpopo
- Mpumalanga
- Northern Cape
- North West
- Western Cape

### Question 5:

Do you have additional qualifications?

- No
- Honours
- Postgraduate certificate/ diploma
- MSc
- PHD
- Other

**Question 6:**

Which of the below best describes the practice you work in?

- Small animal practice
- Equine practice
- Mixed practice
- Specialist veterinary clinic
- Welfare clinic
- Other

**Question 7:**

How many years cumulatively have you been in practice as a veterinarian?

- 0-10 years
- 11-20
- 21-30
- 31-40
- >40

**Question 8:**

How often do you treat the following general patient conditions?

- Orthopaedic conditions (surgical)
- Orthopaedic conditions (non-surgical)
- Neurological conditions (surgical)
- Neurological conditions (non-surgical)
- Medical conditions
- Reproductive conditions
- Routine cases (spay, dental, vaccinations etc)

**Question 9:**

Are you aware of the veterinary physiotherapy profession?

- Yes
- No

**Question 10:**

Is there anybody doing physical rehabilitation work within your practice/ affiliated to your practice?

- Yes
- No

**Question 11:**

What are the qualifications of the person who performs the rehabilitation work?

- Veterinarian
- Veterinary nurse
- Veterinary physiotherapist
- I don't know
- Other

**Question 12:**

Are you aware that the veterinary profession is now a registered profession with the SAVC?

- Yes
- No

**Question 13:**

Where did you first hear about the registration of the veterinary physiotherapy profession?

- SAVC
- SAAPRA
- Colleagues
- Veterinary physiotherapists
- Onderstepoort
- Social Media
- Talks/workshops/ CPD events
- I don't know
- Other

**Question 14:**

How would you describe your level of understanding of the veterinary physiotherapy profession?

- Excellent
- Good
- Satisfactory
- Average
- Poor

**Question 15:**

What has given you this understanding? (*only answered if above is answered excellent or good*)

- Veterinary physiotherapists
- Journal articles
- CPD training
- Colleagues
- Self interest
- Other

**Question 16:**

Do you refer patients for physiotherapy?

- All the time
- Often
- Seldom
- Never

**Question 17:**

Why not? (only if they choose seldom or never in Q16)

- The service is not available within a reasonable distance from me.
- I do not believe physiotherapy is beneficial
- I do not know the physiotherapists in my area
- I had a bad experience with a previous physiotherapy referral
- I am concerned about the qualifications and knowledge of the physiotherapist
- I am concerned about the cost to the client
- I do not know which cases would benefit from physio
- Other

**Question 18:**

Why? (Only if they choose 'all the time' or 'often in Q16)

- I have seen the benefits of using a physiotherapist for certain cases
- I have a good working relationship with the physiotherapist in my area
- My clients requested it
- I believe there is evidence to support the inclusion of physiotherapy for certain cases
- Other

**Question 19:**

Please specify how often you refer the following small animal conditions for physiotherapy?  
Skip if you do not treat small animal patients.

- Always
  - Often
  - Sometimes
  - Never
- 
1. Cruciate disease/ injury conservative management
  2. Elbow/ hip dysplasia conservative management
  3. Post-surgical orthopaedic conditions
  4. Intervertebral disc disease/ injury
  5. Other neurological disorders
  6. Osteoarthritis
  7. Soft tissue injuries
  8. Obesity
  9. Cardiorespiratory conditions
  10. Wounds

**Question 20:**

Please specify how often you refer the following equine conditions for physiotherapy?  
Skip if you do not treat equine patients.

- Always
  - Often
  - Sometimes
  - Never
- 
1. Tendon injury
  2. Back pain
  3. Degenerative joint disease
  4. Post-colic surgery
  5. Post-orthopaedic surgery
  6. Soft tissue injuries
  7. Neurological cases
  8. Weight loss
  9. Athletes for regular maintenance
  10. Cardiorespiratory illness

**Question 21**

Have you ever received physiotherapy yourself?

- Yes
- No

**Question 22:**

Did you experience a benefit from it? (only answered if chose yes above)

- Yes
- No
- Not sure

**Question 23:**

In your opinion will the registration of the veterinary physiotherapy profession have an impact on your likelihood to refer cases to a veterinary physiotherapist?

- Yes
- No

**Question 24:**

Please elaborate on your answer to the previous question.

**Question 25:**

In your opinion how could veterinary physiotherapists achieve more widespread use of their services within the multidisciplinary team.

Select three you think apply the most.

- Increased evidence of the benefits of veterinary physiotherapy
- Increased awareness of the profession to veterinary surgeons
- Increase in promotion of local service providers
- Increase information of the veterinary physiotherapy profession given at Onderstepoort
- Simplification of the referral process
- Improved communication between the two professions
- Increase in CPD talks about the use of the veterinary physiotherapy profession
- Other

**Question 26:**

To what extent do you agree with the following statement:

“The veterinary physiotherapy profession should be considered an integral part of animal health care”.

1 (strongly disagree) to 10 (strongly agree)

**Question 27:**

Do you have any further comments or opinions regarding the veterinary physiotherapy profession?

## Appendix E: Veterinary Physiotherapy Questionnaire

### Question 1:

Informed Consent

### Question 2:

Age:

- 20-29
- 30-39
- 40-49
- 50-59
- >60

### Question 3:

Gender:

- Male
- Female
- Prefer not to say

### Question 4:

Location:

- Eastern Cape
- Free State
- Gauteng
- Kwazulu-Natal
- Limpopo
- Mpumalanga
- Northern Cape
- North West
- Western Cape

### Question 5:

Qualification:

- Equine-Librium College
- Physiotherapist with further animal physical therapy training
- Veterinary nurse with further animal physical therapy training
- Certified Canine Rehabilitation Practitioner
- International Animal Physiotherapy Degree
- Other

**Question 6:** *Only answered if they chose Physiotherapist with further animal physical therapy training in above question*

Do you still treat human patients?

- Yes I treat both in an approximately 50% ratio
- Yes I treat more animal patients than human patients
- No, I no longer treat human patients

**Question 7:**

How long have you been working in the field of animal rehabilitation?

- <5 years
- 5-9 years
- 10 – 14 years
- 15 – 19 years
- 20 – 24 years
- >25 years

**Question 8:**

Current employment:

- Employed
- Self – employed
- Both employed and self-employed

**Question 9:**

Place of work:

- Independent veterinary physiotherapy rooms
- Veterinary physiotherapy rooms within a veterinary practice
- Veterinary physiotherapy rooms affiliated to a practice
- Mobile clinic
- Other

**Question 10:**

Please indicate the percentage of equine vs small animal patients you treat in a month.

- Equine
- Small animal

**Question 11:**

Caseload:

On average how many patients do you treat in a week?

- 1-10
- 11-20
- 21-30
- 31-40
- >50

**Question 12:**

How often do you treat the following small animal conditions – *skip if you don't treat small animals.*

*Each condition to have the option of*

- Very often (weekly)
- Often (bi weekly)
- Sometimes (monthly)
- Seldom
- Never

1. Orthopaedic conditions (post surgical)
2. Neurological conditions (post-surgical)
3. Osteoarthritis
4. Disc disease/ injury (conservative management)
5. Other neurological conditions
6. Elbow and hip dysplasia (conservative management)
7. Cruciate disease/ injury (conservative management)
8. Obesity
9. Cardiorespiratory conditions
10. Wounds
11. Medical conditions
12. Athletic conditioning / maintenance treatments

**Question 13:**

How often do you treat the following equine conditions? *Skip if you don't treat equines.*

*Each condition to have the option of*

- Very often (weekly)
- Often (bi weekly)
- Sometimes (monthly)
- Seldom
- Never

1. Back pain
2. Tendon injuries
3. Soft tissue injuries
4. Degenerative Joint Disease
5. Neurological Cases
6. Weight loss
7. Athletic conditioning/ maintenance treatments
8. Post-orthopaedic surgery
9. Post-colic surgery
10. Cardio respiratory illness or disease
11. Wounds

**Question 14:**

How do you feel about the growth of your practice / caseload?

- My caseload has grown sufficiently to accommodate my needs
- My caseload continues to increase
- My caseload is too high and I am struggling to meet the demand
- I am struggling to increase my caseload
- My caseload is insufficient to meet my needs

**Question 15:**

Where do you get the majority of your new patients from?

- Word of mouth (previous clients)
- Vet referrals
- Other

**Question 16:**

What is your experience with vet referrals from vets in your area?

- I get regular direct vet referrals from the local vets
- I get a few direct vet referrals from the local vets
- I get approval from the local vets once the client has contacted me
- I struggle to get the vets in my area to refer the patients to physiotherapy

**Question 17:**

What do you believe has assisted with getting regular vet referrals? Select all that apply  
(Only answered if chose option a in question above).

- I have a good working relationship with the veterinarians
- I communicate with them regularly regarding patients
- I educate the vets regarding conditions a physiotherapist can treat.
- Their clients have requested the referral
- My physiotherapy practice is located very close to them
- I am affiliated with their veterinary practice
- Other

**Question 18:**

How often do you get vet referrals for the following small animal conditions? Skip this question if you don't treat small animals.

For every option they can choose the following:

- Very often (weekly)
- Often (bi weekly)
- Sometimes (monthly)
- Seldom
- Never

1. Orthopaedic conditions (post-surgical)
2. Neurological conditions (post-surgical)
3. Osteoarthritis
4. Disc disease/ injury (conservative management)
5. Other neurological conditions
6. Elbow and hip dysplasia (conservative management)
7. Cruciate disease/ injury (conservative management)
8. Obesity
9. Cardiorespiratory conditions
10. Wounds
11. Medical conditions
12. Athletic conditioning / maintenance treatments

**Question 19:**

How often do you receive referrals for the following equine conditions?

Skip if you don't treat equine patients.

- Very often (weekly)
- Often (bi weekly)
- Sometimes (monthly)
- Seldom
- Never

1. Back pain
2. Tendon injuries
3. Soft tissue injuries
4. Degenerative Joint Disease
5. Neurological Cases
6. Weight loss
7. Athletic conditioning/ maintenance treatments
8. Post-orthopaedic surgery
9. Post-colic surgery
10. Cardiorespiratory illness or disease
11. Wounds

**Question 20:**

Which small animal conditions do you believe should be considered for routine physiotherapy referral within veterinary practices?

1. Orthopaedic conditions (post-surgical)
2. Neurological conditions (post-surgical)
3. Osteoarthritis
4. Soft tissue injuries
5. Disc disease/ injury (conservative management)
6. Elbow and hip dysplasia (conservative management)
7. Cruciate disease/ injury (conservative management)
8. Obesity
9. Wounds
10. Cardiorespiratory conditions
11. Medical conditions
12. Fractures (conservative and post-surgical management)
13. Athletic conditioning / maintenance treatments
14. Other

**Question 21:**

Which equine conditions do you believe should be considered for routine physiotherapy referral within veterinary practices?

Skip if you don't treat equine patients.

1. Back pain
2. Tendon injuries
3. Soft tissue injuries
4. Degenerative Joint Disease
5. Neurological Cases
6. Weight loss
7. Athletic conditioning/ maintenance treatments
8. Post-orthopaedic surgery
9. Wounds
10. Cardiorespiratory illness or disease
11. Post-colic surgery
12. Other

**Question 22:**

Indicate how often you use the following treatment modalities:

Each technique has the following options:

- Very often (weekly)
  - Often (bi-weekly)
  - Sometimes (monthly)
  - Never
  - I don't have access to it
- 
1. Joint mobilization and/or manipulation
  2. Massage and soft tissue treatment
  3. Myofascial release
  4. Stretching
  5. LASER
  6. TENS
  7. Faradic
  8. EMS
  9. Therapeutic ultrasound
  10. Ice/heat
  11. BEMER/ PEMF therapy
  12. Hydrotherapy
  13. Rehabilitation exercises
  14. Taping

15. Cardiorespiratory techniques

16. Shockwave therapy

**Question 23:**

Do you market your practice. (tick one)

- Yes, I advertise regularly through various avenues.
- No, I don't advertise regularly
- I rely on my social media pages for advertising
- I rely on word of mouth
- I rely on my established relationship with veterinarians

**Question 24:**

I am happy with the promulgation of the veterinary physiotherapy profession.

*Sliding scale from 1 (strongly agree) to 10 (strongly disagree)*

**Question 25:**

Please elaborate on your answer to the previous question regarding promulgation.

**Question 26:**

Do you believe that the promulgation of the profession has impacted your practice in any way?

- Yes
- No
- Not applicable

**Question 27:**

Please elaborate on your response to the previous question.

**Question 28:**

What do you think will benefit the veterinary physiotherapy profession in South Africa?

Select the three you consider to be the most important.

- Increased public awareness and understanding of the profession.
- Increased veterinarians' awareness and understanding of the profession
- More options for undergraduate training in the profession
- More opportunities for postgraduate training and education
- Increased opportunities for research
- Improved communication between the professions
- Promotion of the profession by the SAVC
- Promotion of the profession by SAAPRA

**Question 29:**

What role do you think veterinary physiotherapists have in promoting their profession?

**Question 30:**

Do you believe veterinarians have a role to play in promoting the profession of veterinary physiotherapy?

- Yes
- No

**Question 31:**

Please elaborate on your answer to the previous question.

**Question 32:**

Do you have any additional comments on the veterinary physiotherapy profession in South Africa?

## Appendix F: Information Sheet for Interview Participants



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
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### **MSc Physiotherapy Study: Examining the relationship between veterinarians and veterinary physiotherapists post-promulgation of the veterinary physiotherapy profession**

#### **INFORMATION SHEET**

Dear Interviewee

I am currently enrolled in an MSc Physiotherapy (by dissertation) at the University of Cape Town. I have chosen to do research into the perception of the veterinary physiotherapy profession by veterinarians post-promulgation to determine its current status within the animal health care field within South Africa.

The provisional title of my research is:

*Examining the relationship between veterinarians and veterinary physiotherapists post-promulgation of the veterinary physiotherapy profession.*

Data collected during this study will be used to complete a dissertation in fulfilling requirements of the MSc Physiotherapy Programme at the University of Cape Town.

Ethical clearance for this study has been granted by the University of Cape Town, Human Research Ethics Committee, Faculty of Health Sciences HREC REF number 053/2022.

#### **Purpose of the study:**

The aims of this study is to examine the relationships and referral procedures between veterinarians and veterinary physiotherapists; To determine whether the promulgation of the veterinary physiotherapy profession has increased the likelihood of veterinarians to refer to vet physios; and to determine ways in which veterinary physiotherapists can improve the vet referral system and their relationships with veterinarians.

**Why are you being asked to take part:**

As a key role player within the veterinary health care industry; your experience of the relationship and/or referral system between vets and vet physiotherapists will assist me to determine if there are barriers preventing referrals to vet physiotherapists and identify ways to mitigate these. It will also assist to evaluate whether there has been a change in the veterinary environment post-promulgation of the veterinary physiotherapy profession.

**What will be expected from you as a participant:**

You will be requested to partake in an approximately 30-45-minute interview (conducted over zoom) at a time convenient to you. During this interview you will be asked to discuss your experience within the veterinary/ veterinary physiotherapy field, particularly pertaining to the relationship between the two professions. Your opinions regarding growth of the veterinary physiotherapy profession will also be discussed.

**Risks of participation in the study:**

There is a risk of your personal information being divulged, but this will be mitigated through password protected data storage that will only be able to be accessed by myself and my supervisors.

**Benefits of the study:**

There are no individual benefits from partaking in this study, but with your input, my aim is to identify ways in which we can improve the relationship and referral systems between veterinarians and veterinary physiotherapists, and thereby provide holistic treatment and management of the animal patient.

Thank you for your time.

Kind regards,

Amy Louw  
BSc Physiotherapy UCT

**For any queries:**

If at any time you have any question about the study, please feel free to contact any of the individuals listed below:

Amy Louw (Student)  
Physical address: Equine-Librium College  
Plot F11  
Airport Road  
Jakkalskraal  
Plettenberg Bay

Phone: (+27) 790725735  
Email: amyleighdw@yahoo.com

Mrs Heather Talberg (Principal Investigator)

Physical address: Division of Physiotherapy  
Department of Health and Rehabilitation Sciences  
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Professor Niri Naidoo (Co-supervisor)

Physical address: Division of Physiotherapy  
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Tel number: +27 (0) 21 406 6171  
Fax number: +27 (0) 21 406 6323  
Email: [niri.naidoo@uct.ac.za](mailto:niri.naidoo@uct.ac.za)

The UCT Faculty of Health Sciences Human Research Ethics Committee can be contacted on +27 (0) 21 406 6338 in case you have any ethical concerns or questions about your rights or welfare as a participant in this research study.



**UNIVERSITY OF CAPE TOWN**  
**Faculty of Health Sciences**  
**Human Research Ethics Committee**



Room 45 E-52-E-Floor- Old Main Building  
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Observatory 7925  
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Website: [www.health.uct.ac.za/fhs/research/humanethics/forms](http://www.health.uct.ac.za/fhs/research/humanethics/forms)

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04 February 2022

**HREC REF: 053/2022**

**Mrs H Talberg**  
Division of Physiotherapy  
Health & Rehab Sciences  
Email: [heather.talberg@uct.ac.za](mailto:heather.talberg@uct.ac.za)  
Student: [DWLAMY001@myuct.ac.za](mailto:DWLAMY001@myuct.ac.za)

Dear Mrs Talberg

**PROJECT TITLE : EXAMINING THE RELATIONSHIP BETWEEN VETERINARIANS AND VETERINARY PHYSIOTHERAPISTS IN SOUTH AFRICA POST REGISTRATION OF THE VETERINARY PHYSIOTHERAPY PROFESSION-MSC CANDIDATE-MRS AMY LOUW**

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

**This approval is subject to strict adherence to the HREC recommendations regarding research involving human participants during COVID -19, our letter dated 02 February 2022 provides guidance found on our website:**  
**<http://www.health.uct.ac.za/fhs/research/humanethics/forms>**

**Approval is granted for one year until the 28 February 2023.**

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: [www.health.uct.ac.za/fhs/research/humanethics/forms](http://www.health.uct.ac.za/fhs/research/humanethics/forms))

***The HREC acknowledge that the student: Mrs Amy Louw will also be involved in this study.***

**Please quote the HREC REF 053/2022 in all your correspondence.**

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

---

Yours sincerely

**PROFESSOR M BLOCKMAN**

**CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE**

Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use: Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2020), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines. The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.



Department / Office Internal Mail Address	<u>heather.talberg@uct.ac.za</u> <u>DHRS, F45 OMB GSH</u> <u>Anzio Road, Observatory</u>	
1.1 Is this a major or a minor amendment? (see FHS006hb) Major (tick box) Minor (tick box)	<input type="checkbox"/> Major	<input checked="" type="checkbox"/> Minor
1.2 Does this protocol receive US Federal funding?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1.3 If the amendment is a major amendment and receives US Federal Funding, does the amendment require full committee approval?  <b>Note:</b> Any protocol amendments for <b>Full Committee Review</b> MUST be submitted on the monthly HREC submission dates. (Please email an electronic copy to <a href="mailto:hrec-enquiries@uct.ac.za">hrec-enquiries@uct.ac.za</a> )	<input type="checkbox"/> Yes	<input type="checkbox"/> No
1.4 Did the initial study require UCT No-Fault Insurance	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

## 2. List of Proposed Amendments with Revised Version Numbers and Dates

**Please itemise on the page below, all amendments with revised version numbers and dates, which need approval.**  
This page will be detached, signed and returned to the PI as notification of approval. Please add extra pages if necessary.

- 1.) Amendments to recruitment methods – The inclusion of an additional association to assist with the distribution of the surveys – pages 3, 4, 19, 20
- 2.) The incorporation of the informed consent form into the survey platform, and not as a separate form – pages 19, 20, 23, 42
- 3.) The addition of the letters to the new association to be contacted – Appendix H, page 47 and 48.

## 3. Protocol status (tick ✓)

<input type="checkbox"/>	Open to enrolment
<input checked="" type="checkbox"/>	No participants have been enrolled (for this phase of data collection)
Closed to enrolment (tick ✓)	
<input type="checkbox"/>	Research-related activities are ongoing
<input type="checkbox"/>	Research-related activities are complete, long-term follow-up only
<input type="checkbox"/>	Research-related activities are complete, data analysis only



**4. Proposed changes will affect:** (tick ✓ all the categories that apply)

Protocol		
<input type="checkbox"/>	Study objectives, design (including investigator's brochure, clinical activities, study length)	
<input type="checkbox"/>	Study instruments, questionnaires, interview schedules	
<input type="checkbox"/>	Sample size	
<input checked="" type="checkbox"/>	Recruitment methods	
<input type="checkbox"/>	Eligibility criteria (Inclusion and exclusion criteria)	
<input type="checkbox"/>	Drug/device (composition, amount, schedule, route of administration, combination with other drugs/devices, safety information)	
<input type="checkbox"/>	Data collection/ analysis	
<input type="checkbox"/>	Principal Investigator. (Please attach revised conflict of interest and PI declaration statements. Refer: sections 7 and 8.4 in the New Protocol Application Form FHS013)	
<input checked="" type="checkbox"/>	Consent form and information sheet	
<input checked="" type="checkbox"/>	Recruitment materials (e.g. advertisements)	
<input type="checkbox"/>	Administrative (e.g. change in sponsor's name, change in contact information)	
<input type="checkbox"/>	Other. Please specify:	
<p><i>*Note: Amendment changes involving study length, sample size, additional sites and eligibility criteria (i.e. inclusion of minors and /or pregnant woman) need to be declared to the Insurance office. Please liaise via <a href="mailto:fhs.sponsorship@uct.ac.za">fhs.sponsorship@uct.ac.za</a> regarding the required documentation and information to be submitted to obtain an updated UCT No-fault Insurance Certificate- it should be included herewith</i></p>		
4.1 In your opinion, will there be any <b>increase</b> in risk, discomfort or inconvenience to participants?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, please provide a detailed justification/explanation:		
4.2 What follow-up action do you propose for participants who are already enrolled in the study?		
<input type="checkbox"/>	Inform current participants as soon as possible	



<input type="checkbox"/>	Re-consent current participants with revised consent/assent forms (append)
<input checked="" type="checkbox"/>	No action required
<input type="checkbox"/>	Other. Please describe:

**5. Detailed description of the change(s)**

Please attach, for each amendment, a summary of all changes which clearly indicates:

- i. Old wording (e.g. ~~striketrough~~ text, CHANGED FROM and CHANGED TO)
- ii. New wording (e.g. *italicized*, **bold**, tracked)
- iii. Detailed rationale/ justification/ explanation for each change

**6. Ethics Review for Amendment Levy – cost including vat**

**Amendment Review Costs including VAT**

Please tick amount to be billed:

Submission Type	Description	New fee (Vat Incl.)	tick ✓
Research funded solely from UCT departmental/ divisional/group budget	Major/ Minor Amendments	R0,00	<input type="checkbox"/>
Non-sponsored student research for degree purposes at UCT/Other Universities & Colleges	Major/ Minor Amendments	R0,00	<input checked="" type="checkbox"/>
Protocol amendment - Major (FHS006 Form)	Clinical Trial & International Grant Funded Research - Any changes to the protocol that requires Full Committee review	R8 000,00	<input type="checkbox"/>
Protocol amendment - Major (FHS006 Form)	Clinical Trial & International Grant Funded Research - Any change to the protocol that requires Expedited review that does not require Full Committee Review	R5 000,00	<input type="checkbox"/>
Protocol amendment - Minor (FHS006 Form)	Clinical Trial & International Grant Funded Research - Minor amendments, administrative changes that do not affect study design e.g. changes to informed consent form, changes in study staff, etc.	R2 250,00	<input type="checkbox"/>
Protocol amendment - Major (FHS006 Form)	National grant funded research - Any change to the protocol that requires Full Committee review	R7 000,00	<input type="checkbox"/>
Protocol amendment - Major (FHS006 Form)	National grant funded research - Any change to the protocol that requires Expedited review that does not require Full Committee review	R2 500,00	<input type="checkbox"/>
Protocol amendment - Minor (FHS006 Form)	National grant funded research - Minor amendments, administrative changes that do not affect study design e.g. changes to informed consent form, changes in study staff, etc.	R1 000,00	<input type="checkbox"/>

**NB: Protocols funded by UCT (e.g. departmental funding / student research) and by certain grant funding organizations (e.g. MRC, NRF, CANSA,) are exempt from these charges.**

Please provide details for invoicing, either complete section 1 or 2 :

**1. Invoice billing – Directly to Sponsor**

Sponsor's name	
----------------	--



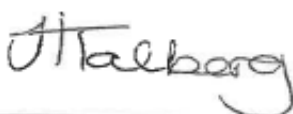
Billing Address of Sponsor:	
Vat Number:	
Contact person:	
Telephone number:	
Email Address:	
<b>2. Internal Journal Billing:</b>	
Fund Number:	
Cost Centre Number:	
Account Holder Name:	
Division of Account Holder:	

**7. Amendment Submission checklist (tick ✓)**

7.1 Please tick that all the documents are attached before submitting to the HREC. NB: Incomplete submissions will not be processed	
<input checked="" type="checkbox"/>	Latest FHS006 form completed with all sections completed as per our website
<input checked="" type="checkbox"/>	Cover Letter
<input checked="" type="checkbox"/>	PI Justification/ Summary for the reasons for the amendment
<input checked="" type="checkbox"/>	Protocol - Track changes & Clean Copy (where necessary)
<input type="checkbox"/>	Informed Consent Forms (ICF), if applicable (Any changes made to ICF tracked & clean copy)
<input type="checkbox"/>	Any other additional documentation in support of amendment
<input type="checkbox"/>	Updated no fault insurance certificate (if applicable)

Please email this form and supporting documents (if applicable) in a combined pdf-file to [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za) with subject line: FHS006 + (HREC Reference number). The latest forms are found on our website.

**8. Signature**

My signature certifies that I will maintain the anonymity and/ or confidentiality of information collected in this research. If at any time I want to share or re-use the information for purposes other than those disclosed in the original approval, I will seek further approval from the HREC.			
Signature of PI		Date	23 May 2022



**Form FHS006: Protocol Amendment**

<b>HREC office use only (FWA00001637; IRB00001938)</b>			
<input checked="" type="checkbox"/> Approved	<input checked="" type="checkbox"/> Type of review: Expedited	<input type="checkbox"/> Full committee	
This serves as notification that all changes and documentation described below are approved.			
Signature HREC Chairperson / Designee		Date	12/9/2022
<p><b>Note:</b> All <b>Major</b> amendments must include a <b>Cover Letter</b> and a local <b>PI Synopsis</b> justifying the changes for the amendment. Please note that incomplete amendment submissions will not be reviewed.</p> <p>Please email this form and supporting documents (if applicable) in a combined pdf-file to <a href="mailto:hrec-enquiries@uct.ac.za">hrec-enquiries@uct.ac.za</a> with subject line: FHS006 + (HREC Reference number).</p> <p>The latest forms are found on our website. <a href="http://www.health.uct.ac.za/fhs/research/humanethics/forms">http://www.health.uct.ac.za/fhs/research/humanethics/forms</a></p> <p>Please also clarify your plan for research-related activities during COVID-19 lockdown.</p>			
Comments from the HREC to the Principal Investigator:			
<p><b>Note:</b> The approval of this protocol amendment does not grant annual approval. Please complete the <a href="#">FHS016</a> / <a href="#">FHS017</a> form for annual approval at least one month before study expiration.</p>			

**Principal Investigator to complete the following:**

**1. Protocol information**

Date (when submitting this form)	9 September 2022
HREC REF Number	053/2022
Protocol Title	Examining the relationship between veterinarians and veterinary physiotherapists in South Africa post registration of the veterinary physiotherapy profession
Protocol Number (if applicable)	
Principal Investigator	Mrs Heather Talberg
Department / Office Internal Mail Address	



1.1 Is this a major or a minor amendment? (see FHS006hlp) Major (tick box) Minor (tick box)	<input type="checkbox"/> Major	<input checked="" type="checkbox"/> Minor
1.2 Does this protocol receive US Federal funding?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1.3 If the amendment is a major amendment <u>and</u> receives US Federal Funding, does the amendment require full committee approval?  <b>Note:</b> Any protocol amendments for <b>Full Committee Review</b> MUST be submitted on the monthly HREC submission dates. (Please email an electronic copy to <a href="mailto:hrec-enquiries@uct.ac.za">hrec-enquiries@uct.ac.za</a> )	<input type="checkbox"/> Yes	<input type="checkbox"/> No
1.4 Did the initial study require UCT No-Fault Insurance	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

## 2. List of Proposed Amendments with Revised Version Numbers and Dates

**Please itemise on the page below, all amendments with revised version numbers and dates, which need approval.**  
 This page will be detached, signed and returned to the PI as notification of approval. Please add extra pages if necessary.

1.) The change of the 3<sup>rd</sup> phase of research from focus groups to individual interviews due to insufficient number of participants willing to be involved; as well as the difficulty of finding a suitable time and date that the participants can agree on. Pages 2, 3, 15, 16, 17, 20, 21, 22, 23, 36, 49

## 3. Protocol status (tick ✓)

<input type="checkbox"/>	Open to enrolment
<input type="checkbox"/>	No participants have been enrolled
<input checked="" type="checkbox"/>	Closed to enrolment (tick ✓)
<input checked="" type="checkbox"/>	Research-related activities are ongoing
<input type="checkbox"/>	Research-related activities are complete, long-term follow-up only
<input type="checkbox"/>	Research-related activities are complete, data analysis only

## 4. Proposed changes will affect: (tick ✓ all the categories that apply)

Protocol	
<input type="checkbox"/>	Study objectives, design (including investigator's brochure, clinical activities, study length)
<input checked="" type="checkbox"/>	Study instruments, questionnaires, interview schedules
<input type="checkbox"/>	Sample size



<input type="checkbox"/>	Recruitment methods
<input type="checkbox"/>	Eligibility criteria (inclusion and exclusion criteria)
<input type="checkbox"/>	Drug/device (composition, amount, schedule, route of administration, combination with other drugs/devices, safety information)
<input checked="" type="checkbox"/>	Data collection/ analysis
<input type="checkbox"/>	Principal Investigator. (Please attach revised conflict of interest and PI declaration statements. Refer: sections 7 and 8.4 in the New Protocol Application Form FHS013)
<input type="checkbox"/>	Consent form and information sheet
<input type="checkbox"/>	Recruitment materials (e.g. advertisements)
<input type="checkbox"/>	Administrative (e.g. change in sponsor's name, change in contact information)
<input type="checkbox"/>	Other. Please specify:
<p><i>*Note: Amendment changes involving study length, sample size, additional sites and eligibility criteria (i.e. inclusion of minors and /or pregnant woman) need to be declared to the Insurance office. Please liaise via <a href="mailto:fhs.sponsorship@uct.ac.za">fhs.sponsorship@uct.ac.za</a> regarding the required documentation and information to be submitted to obtain an updated UCT No-fault Insurance Certificate- it should be included herewith</i></p>	
4.1 In your opinion, will there be any <b>increase</b> in risk, discomfort or inconvenience to participants?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, please provide a detailed justification/explanation:	

4.2 What follow-up action do you propose for participants who are already enrolled in the study?	
<input type="checkbox"/>	Inform current participants as soon as possible
<input type="checkbox"/>	Re-consent current participants with revised consent/assent forms (append)
<input checked="" type="checkbox"/>	No action required
<input type="checkbox"/>	Other. Please describe:

### 5. Detailed description of the change(s)

Please attach, for each amendment, a summary of all changes which clearly indicates:

- i. Old wording (e.g. ~~strikethrough~~ text, CHANGED FROM and CHANGED TO)
- ii. New wording (e.g. *italicized*, **bold**, tracked)
- iii. Detailed rationale/ justification/ explanation for each change


**6. Ethics Review for Amendment Levy – cost including vat**

<b>Amendment Review Costs including VAT</b>			
Please tick amount to be billed:			
<i>Submission Type</i>	<i>Description</i>	<i>New fee (Vat Incl.)</i>	<i>tick</i> ✓
<i>Research funded solely from UCT departmental/ divisional/group budget</i>	Major/ Minor Amendments	R0,00	<input type="checkbox"/>
<i>Non-sponsored student research for degree purposes at UCT/Other Universities &amp; Colleges</i>	Major/ Minor Amendments	R0,00	<input checked="" type="checkbox"/>
<i>Protocol amendment - Major (FHS006 Form)</i>	Clinical Trial & International Grant Funded Research - Any changes to the protocol that requires Full Committee review	R8 000,00	<input type="checkbox"/>
<i>Protocol amendment - Major (FHS006 Form)</i>	Clinical Trial & International Grant Funded Research - Any change to the protocol that requires Expedited review that does not require Full Committee Review	R5 000,00	<input type="checkbox"/>
<i>Protocol amendment - Minor (FHS006 Form)</i>	Clinical Trial & International Grant Funded Research - Minor amendments, administrative changes that do not affect study design e.g. changes to informed consent form, changes in study staff, etc.	R2 250,00	<input type="checkbox"/>
<i>Protocol amendment - Major (FHS006 Form)</i>	National grant funded research - Any change to the protocol that requires Full Committee review	R7 000,00	<input type="checkbox"/>
<i>Protocol amendment - Major (FHS006 Form)</i>	National grant funded research - Any change to the protocol that requires Expedited review that does not require Full Committee review	R2 500,00	<input type="checkbox"/>
<i>Protocol amendment - Minor (FHS006 Form)</i>	National grant funded research - Minor amendments, administrative changes that do not affect study design e.g. changes to informed consent form, changes in study staff, etc.	R1 000,00	<input type="checkbox"/>
<b>NB: Protocols funded by UCT (e.g. departmental funding / student research) and by certain grant funding organizations (e.g. MRC, NRF, CANSAs) are exempt from these charges.</b>			
Please provide details for Invoicing, either complete section 1 or 2 :			
<b>1. Invoice billing – Directly to Sponsor</b>			
Sponsor's name			
Billing Address of Sponsor:			
Vat Number:			
Contact person:			
Telephone number:			




Email Address:	
<b>2. Internal Journal Billing:</b>	
Fund Number:	
Cost Centre Number:	
Account Holder Name:	
Division of Account Holder:	

**7. Amendment Submission checklist (tick ✓)**

7.1 Please tick that all the documents are attached before submitting to the HREC. <b>NB: Incomplete submissions will not be processed</b>	
<input checked="" type="checkbox"/>	Latest FHS006 form completed with all sections completed as per our website
<input checked="" type="checkbox"/>	Cover Letter
<input checked="" type="checkbox"/>	PI Justification/ Summary for the reasons for the amendment
<input checked="" type="checkbox"/>	Protocol - Track changes & Clean Copy (where necessary)
<input type="checkbox"/>	Informed Consent Forms (ICF), if applicable (Any changes made to ICF tracked & clean copy)
<input type="checkbox"/>	Any other additional documentation in support of amendment
<input type="checkbox"/>	Updated no fault insurance certificate (if applicable)

Please email this form and supporting documents (if applicable) in a combined pdf-file to [hrec-enquiries@uct.ac.za](mailto:hrec-enquiries@uct.ac.za) with subject line: FHS006 + (HREC Reference number). The latest forms are found on our website.

**8. Signature**

My signature certifies that I will maintain the anonymity and/ or confidentiality of information collected in this research. If at any time I want to share or re-use the information for purposes other than those disclosed in the original approval, I will seek further approval from the HREC.			
Signature of PI		Date	8 September 2022

## Appendix H: Informed Consent Form for Interviews



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

F45 Old Main Building, Groote Schuur Hospital  
Observatory, Cape Town, South Africa, 7925  
Telephone: +27 (0) 21 406 6401  
Website: www.dhrs.uct.ac.za

### Informed consent:

- I have read the covering letter and I understand the purpose of this research.
  
- I confirm that I am registered with / authorised by SAVC and that I am currently practicing as a veterinarian / veterinary physiotherapist.
  
- I consent to partake in this study, and I understand that my participation is voluntary and I can withdraw at any time.

Name: \_\_\_\_\_

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

## Appendix I: Permission Letter to the SAVC, SAAPRA, and SAVA



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

F45 Old Main Building, Groote Schuur Hospital  
Observatory, Cape Town, South Africa, 7925  
Telephone: +27 (0) 21 406 6401  
Website: www.dhrs.uct.ac.za

### **Mpho Mojanaga**

Director Registrations  
South African Veterinary Council  
26 Victoria Link Street, Route 21 Corporate Park  
Nellmapius Drive, Irene, South Africa  
PO Box 60114, Pierre van Ryneveld  
Centurion, Gauteng 0045

### **Permission for assistance with distribution of the questionnaire**

Dear Mpho

I am currently enrolled in an MSc Physiotherapy (by dissertation) at the University of Cape Town. I have chosen to do research into the perception of the veterinary physiotherapy profession by veterinarians post-promulgation to determine its current status within the animal health care field within South Africa.

The provisional title of my research is:

*Examining the relationship between veterinarians and veterinary physiotherapists post-promulgation of the veterinary physiotherapy profession.*

I am now in the data collection phase of my study following ethical clearance for this study by the University of Cape Town, Human Research Ethics Committee (HREC), Faculty of Health Sciences (HREC reference number 053/2022).

I am writing to request permission to send out a link to my survey to your veterinarian data base. Data collected during this study will be used solely to complete a dissertation in fulfilling requirements of the MSc Physiotherapy Programme at the University of Cape Town. Only myself and my supervisors will have access to this information. An online questionnaire will need to be sent out via email to participants to complete. The questionnaire is anonymous and will not contain any identifying information. Data received from the questionnaires will be pooled and presented as combined results. Upon completion of the study, I undertake to provide SAVC with a copy of the full research.

Your approval to conduct this study will be greatly appreciated. Thank You for your time and consideration in this matter.

If you agree, kindly send a signed approval letter of permission on your institution's letterhead acknowledging your consent and permission for me to conduct this study at your institution

Kind regards,

Amy Louw  
BSc Physiotherapy UCT

**For any queries:**

If at any time you have any question about the study, please feel free to contact any of the individuals listed below:

Amy Louw (MSc Student)

Physical address: Equine-Librium College  
Plot F11  
Airport Road  
Jakkalskraal  
Plettenberg Bay  
Phone: (+27) 790725735  
Email: amyleighdw@yahoo.com

Mrs Heather Talberg (Principal Investigator)

Physical address: Division of Physiotherapy  
Department of Health and Rehabilitation Sciences  
University of Cape Town  
Groote Schuur  
Anzio Road  
Observatory  
7725

Tel number: +27 (0) 21 406 6431  
Fax number: +27 (0) 83 462 8187  
Email: [heather.talberg@uct.ac.za](mailto:heather.talberg@uct.ac.za)

Professor Niri Naidoo (Co-supervisor)

Physical address: Division of Physiotherapy  
Department of Health and Rehabilitation Sciences  
University of Cape Town  
Groote Schuur  
Anzio Road  
Observatory  
7725

Tel number: +27 (0) 21 406 6171  
Fax number: +27 (0) 21 406 6323  
Email: [niri.naidoo@uct.ac.za](mailto:niri.naidoo@uct.ac.za)

The UCT Faculty of Health Sciences Human Research Ethics Committee can be contacted on +27 (0) 21 406 6338 in case you have any ethical concerns or questions about your rights or welfare as a participant in this research study.

Signed:

Date:



**UNIVERSITY OF CAPE TOWN**  
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD  
**HEALTH SCIENCES**



Divisions of Communication Sciences & Disorders • Disability Studies •  
Nursing & Midwifery • Occupational Therapy • Physiotherapy

F45 Old Main Building, Groote Schuur Hospital  
Observatory, Cape Town, South Africa, 7925  
Telephone: +27 (0) 21 406 6401  
Website: www.dhrs.uct.ac.za

**Dr Megan Esterhuysen**

SAAPRA Chairperson

**Request for assistance with the distribution of my survey**

Dear Megan

I am currently enrolled in an MSc Physiotherapy (by dissertation) at the University of Cape Town. I have chosen to do research into the perception of the veterinary physiotherapy profession by veterinarians post-promulgation to determine its current status within the animal health care field within South Africa.

The provisional title of my research is:

*Examining the relationship between veterinarians and veterinary physiotherapists post-promulgation of the veterinary physiotherapy profession.*

I am now in the data collection phase of my study following ethical clearance for this study by the University of Cape Town, Human Research Ethics Committee, Faculty of Health Sciences HREC REF number 053/2022.

I am writing to request permission for assistance with distribution of my questionnaire all veterinary physiotherapists on the SAAPRA database. Data collected during this study will be used solely to complete a dissertation in fulfilling requirements of the MSc Physiotherapy Programme at the University of Cape Town. Only myself and my supervisors will have access to this information. An online questionnaire will need to be sent out via email to participants to complete. The questionnaire is anonymous and will not contain any identifying information. Data received from the questionnaires will be pooled and presented as combined results. Upon completion of the study, I undertake to provide SAAPRA with a copy of the full research.

Your approval to conduct this study will be greatly appreciated. Thank you for your time and consideration in this matter.

Kind regards,

Amy Louw  
BSc Physiotherapy UCT



**Gert Steyn**

Managing Director of SAVA

**Request for assistance with distribution of Survey to SAVA members:**

Dear Gert

I am currently enrolled in an MSc Physiotherapy (by dissertation) at the University of Cape Town. I have chosen to do research into the perception of the veterinary physiotherapy profession by veterinarians post-promulgation to determine its current status within the animal health care field within South Africa.

The provisional title of my research is:

*Examining the relationship between veterinarians and veterinary physiotherapists post-promulgation of the veterinary physiotherapy profession.*

I am now in the data collection phase of my study following ethical clearance for this study by the University of Cape Town, Human Research Ethics Committee, Faculty of Health Sciences HREC REF number 053/2022.

I am writing to request assistance with the distribution of my survey to your members. My target study group are veterinarians currently in private practice. Data collected during this study will be used solely to complete a dissertation in fulfilling requirements of the MSc Physiotherapy Programme at the University of Cape Town. Only myself and my supervisors will have access to this information. An online questionnaire will need to be sent out via email to participants to complete. The questionnaire is anonymous and will not contain any identifying information. Data received from the questionnaires will be pooled and presented as combined results. Upon completion of the study, I undertake to provide SAVA with a copy of the full research.

Your approval to conduct this study will be greatly appreciated. Thank You for your time and consideration in this matter.

Kind regards,

Amy Louw

BSc Physiotherapy UCT