



UNIVERSITI PUTRA MALAYSIA

***PREVALENCE OF RESPIRATORY DISEASES IN THOROUGHBREDS
RACING IN PERAK TURF CLUB, AND THEIR ASSOCIATION WITH
PERFORMANCE UPON SURGICAL CORRECTION***

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IN PERAK TURF CLUB, AND THEIR ASSOCIATION WITH PERFORMANCE
UPON SURGICAL CORRECTION**



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CERTIFICATION

It is hereby certified that we have read this project paper entitled “Prevalence of Respiratory Diseases in Thoroughbreds Racing in Perak Turf Club, and their Association with Performance upon Surgical Correction”, by Nur Aisyah binti Ridzuan. In our opinion, it is satisfactory in terms of scope, quality and presentation as partial fulfilment of the requirement for the course VPD 4999 – Final Year Project.

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DEDICATION

This project paper is dedicated to my dear parents,

Dr Ridzuan Hussin & Uztazah Asmahan Mokhtar

The ones I would give my life and soul to

Siblings,

Nur Rafiqah, Nur Ashiqin, Nur Anisah, Rashdan & Ar-Razi,

For being there come hell or high water

My two little balls of fur,

Ibnu & Agnes

&

To all equine enthusiasts all over the world.

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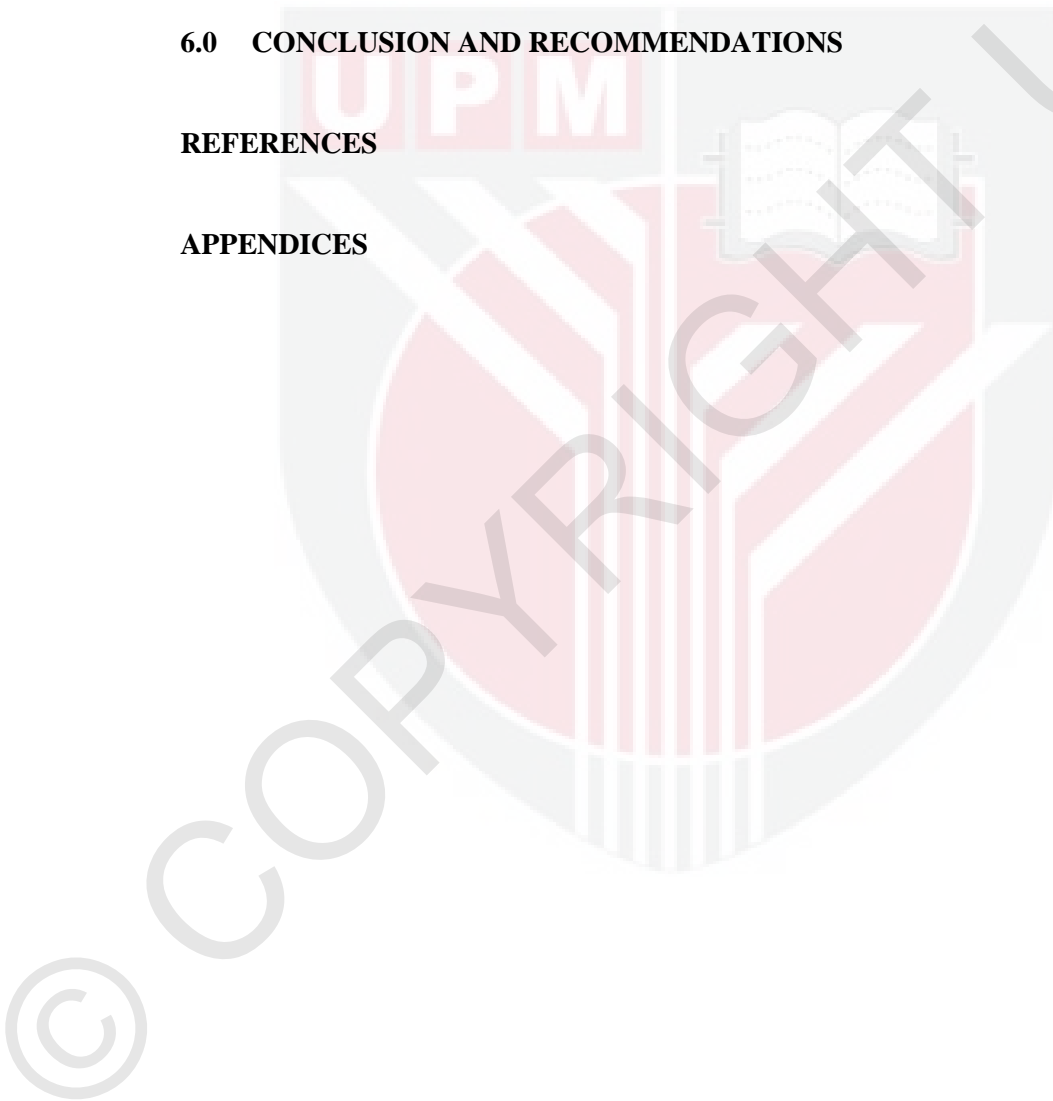
To my family, my dad especially, for his patience and time, and for teaching and guiding me through statistics that seemed impossible at first. To mom, thanks for being there at all times no matter the circumstance. To siblings, especially my big sister, for simply listening and being a great friend all through these five years of studying.

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LIST OF ABBREVIATIONS

CAD	<i>Crico-arytenoideus dorsalis</i>
CI	Confidence interval
DDSP	Dorsal displacement of soft palate
<i>df</i>	Degree of freedom
EIPH	Exercise-induced pulmonary haemorrhage
<i>et al.</i>	<i>et alia</i>
H_0	Null hypothesis
H_a	Alternative hypothesis
IAD	Inflammatory airway disease
<i>Mdn</i>	Median
MRA	Malaysian Racing Association
MYR	Malaysian Ringgit
Nd:YAG	Neodymium:yttrium aluminium garnet
<i>p</i>	P value
<i>r</i>	Effect size
RAO	Recurrent airway obstruction
RLN	Recurrent laryngeal neuropathy
RSQ	Risk-screening questionnaire
SPSS	Statistical Package for the Social Science
STI	Syndrome of tracheal inflammation
TSP	Thermocautery of soft palate
<i>U</i>	Difference between two total ranks
URT	Upper respiratory tract
χ^2	Chi-square value
Z	z-score or standard score

ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada keperluan kursus VPD 4999 – Projek Ilmiah Tahun Akhir.

**PREVALENS PENYAKIT RESPIRATORI DI KALANGAN BAKA
THOROUGHBRED YANG BERLUMBA DI PERAK TURF CLUB, DAN
KAITANNYA DENGAN PRESTASI PERLUMBAAN SELEPAS SURGERI**

oleh

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2016

Penyelia: Dr Noraniza binti Mohd Adzahan

Di kalangan atlet ekuin penyakit pernafasan yang melibatkan samada saluran pernafasan atas mahupun bawah ataupun kedua-duanya sekali adalah perkara biasa dan telahpun dikenalpasti sebagai salah satu penyebab penting berlakunya penurunan prestasi dikalangan atlet kuda. Prevalens bagi penyakit saluran pernafasan bahagian bawah adalah tinggi dalam kalangan atlet ekuin, namun prevalens penyakit saluran pernafasan bahagian atas adalah lebih sukar untuk dikenalpasti memandangkan penyakit ini tidak dapat dikesan ketika pemeriksaan semasa rehat. Kajian ini tertumpu kepada prevalens penyakit pernafasan dalam kalangan baka Thoroughbred yang berlumba di Perak Turf Club diantara tahun 2011 hingga 2015, dan bagaimana penyakit ini akan mengganggu prestasi perlumbaan. Prestasi kuda lumba akan dibandingkan menggunakan *cross-sectional study* di antara kuda yang melalui surgeri dan mereka yang tidak melalui surgeri. Penyakit pernafasan yang mendapat rekod kes tertinggi adalah *exercise induced pulmonary haemorrhage* (EIPH) Gred 1 ataupun kesukaran bernafas (38.2 %), diikuti EIPH Gred 2 (30.2 %), *recurrent airway obstruction* (RAO) dengan 17.6 %, *epiglottic entrapment* dan lain-lain pada 4.0 % dan 3.0 % masing

masing untuk *dorsal displacement of soft palate* (DDSP) dan pernafasan berbunyi. Tidak terdapat kesinambungan yang signifikan di antara prestasi lumba selepas surgery, dimana kesimpulannya boleh dikatakan bahawa pembedahan surgery tidak menjamin peningkatan di kalangan prestasi ekuin.

Kata kunci: prevalens; penyakit pernafasan; prestasi selepas surgeri



ABSTRACT

An abstract of the project paper presented to the Faculty of Veterinary Medicine in partial fulfilment of the course VPD 4999 – Final Year Project.

**PREVALENCE OF RESPIRATORY DISEASES IN THOROUGHBREDS RACING
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by

Nur Aisyah binti Ridzuan

2016

Supervisor: Dr. Noraniza binti Mohd Adzahan

In equine athletes, respiratory diseases affecting either the upper or lower airways or both are common and they have been identified as an important cause of poor performance in horses. The prevalence of lower airway diseases is high in equine athletes, but the prevalence of upper airways disorders is difficult to be determined since these conditions are not necessarily evident during examination at rest. This study focuses mainly on the prevalence of respiratory diseases in Thoroughbreds racing in Perak Turf Club between year 2011 to 2015, and how they impair race performance. The horses' racing performance is compared using cross-sectional study between those that underwent surgery and those without surgical correction. Respiratory diseases with the highest case recorded was exercise induced pulmonary haemorrhage (EIPH) Grade 1 or respiratory distress (38.2%), followed by EIPH Grade 2 (30.2 %), recurrent airway obstruction (RAO) with 17.6 %, epiglottic entrapment and other conditions with 4.0 % respectively and 3.0 % for both dorsal displacement of soft palate (DDSP) and respiratory noises. There is no significant

association between racing performance following surgery, in which it can be concluded that surgical corrections does not assure improvement in equine performance.

Keywords: prevalence; respiratory diseases; performance after surgical correction



1.0 INTRODUCTION

Athletic animals, particularly the horse have the unique ability to increase its oxygen uptake by a factor of 60 during heavy exercise achievable by the physiological adaptation of all oxygen chain links. Ventilation will then be increased by a factor of 30. However, since horses are obligate nasal breathers, this hyperpnoea necessitates high transmural pressure changes thus causing the dynamic collapse of the airways (Art & Lekeux, 2005). This is common in equine athletes as such it affects not only the upper or lower airways, but sometimes both. As a consequence, even mild occurrence of any respiratory disease, has the potential to impair gas exchange further through the limitation of diffusion or ventilation, which causes decrease in performance. The impact of the disease not only will be dependent on the nature and severity of the disease but also on the equestrian discipline performed (Erck-Westergren *et al.*, 2013).

Based on a simulated model of the normal equine upper airways, it shows that during inhalation, the most negative pressures and highest airflow turbulence occur at the floor of the rostral aspect of the nasopharynx and within the pharynx. That is why these are the areas where dynamic airway collapse commonly occurs (Rakesh *et al.*, 2008). The increase in airway resistance will lead to an increase in respiratory workload, and where airflow is reduced the resulting hypoventilation may lead to decreased oxygen consumption, increased blood lactate concentration and exacerbation of arterial hypoxemia and hypercapnia (Erck-Westergren *et al.*, 2013).

Moreover, in a study performed by Van Erck (2011), it has been found that poll flexion and factors relating to the bit and bridle, may be implicated in the development of upper respiratory tract (URT) collapse. Fatigue of the respiratory musculature may also play a role, thus the type of exercise performed will have an impact on the ability to make a definitive diagnosis of dynamic URT collapse (Allen & Franklin, 2010).

The objectives of this study are:

- i. To determine the prevalence of respiratory diseases in Thoroughbreds racing in Perak Turf Club between year 2011 to 2015.
- ii. To describe the prevalence of selected respiratory diseases and their association with performance in Thoroughbreds racing in Perak Turf Club between years 2011 to 2015.
- iii. To compare racing performance of Thoroughbreds racing in Perak Turf Club with or without surgical correction between year 2011 to 2015.

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