



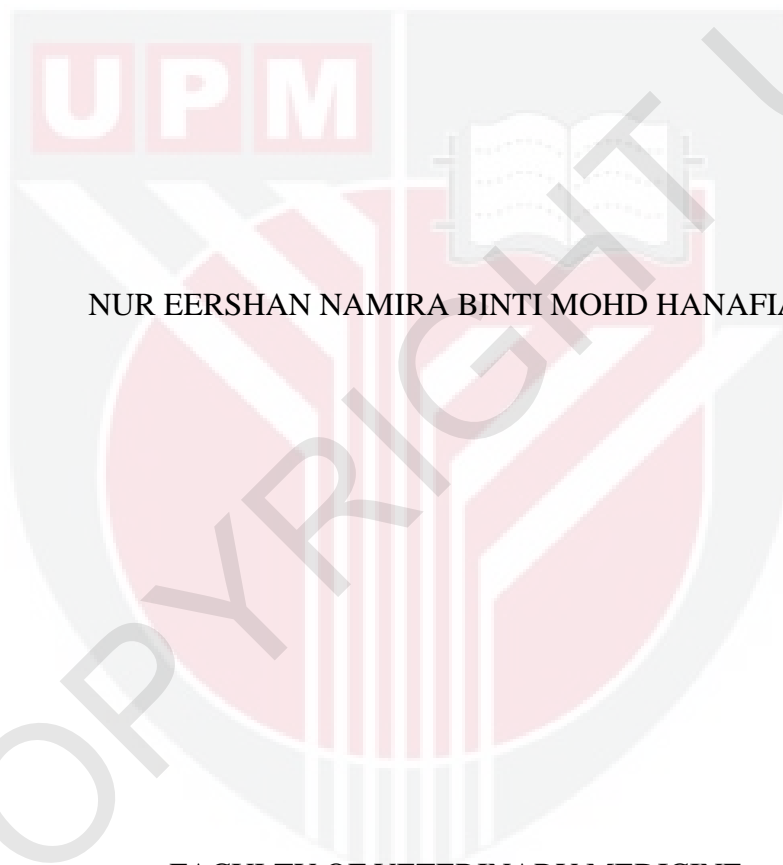
**UNIVERSITI PUTRA MALAYSIA**

***FRACTURE INJURIES IN RACEHORSES ON HORSE TRACK IN  
MALAYSIA***

**NUR EERSHAN NAMIRA BINTI MOHD HANAFIAH**

**FPV 2015 17**

**FRACTURE INJURIES IN RACEHORSES ON HORSE TRACK IN MALAYSIA**



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**FACULTY OF VETERINARY MEDICINE**

**UNIVERSITI PUTRA MALAYSIA**

**SERDANG, SELANGOR**

2015

**FRACTURE INJURIES IN RACEHORSES ON HORSE TRACK IN  
MALAYSIA**

**NUR EERSHAN NAMIRA BINTI MOHD HANAFIAH**

A project paper submitted to the

Faculty of Veterinary Medicine, Universiti Putra Malaysia

In partial fulfilment for the requirement of the

**DEGREE OF DOCTOR OF VETERINARY MEDICINE**

Universiti Putra Malaysia

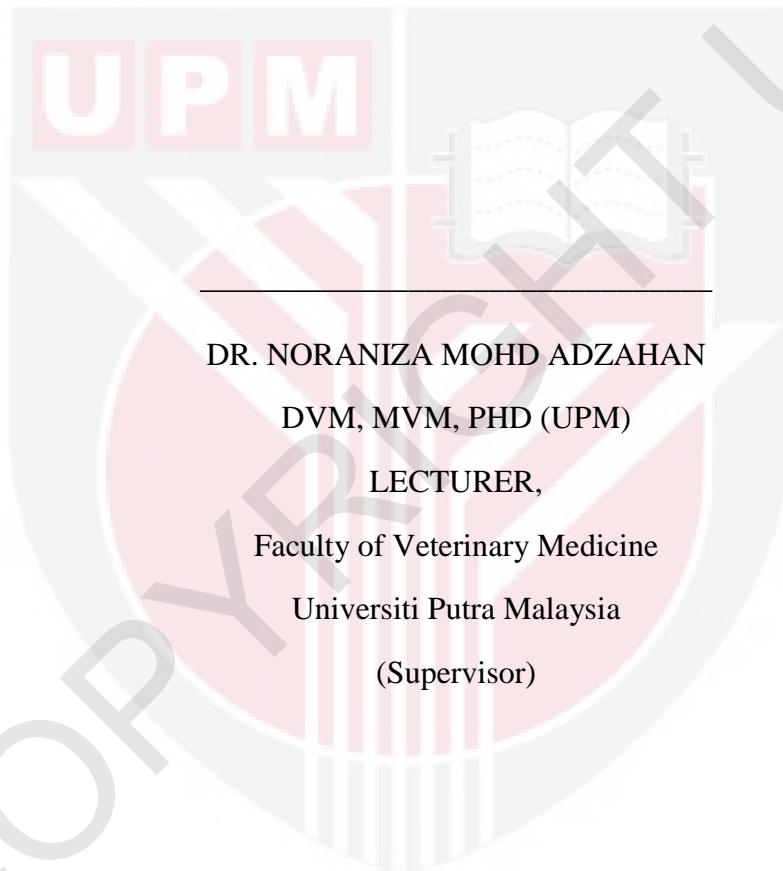
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Malaysia

**MARCH 2015**

## **CERTIFICATION**

It is hereby certified that we have read this project paper entitled “Fracture Injuries in Racehorses on Horse Track in Malaysia” by Nur Eershan Namira Bt Mohd Hanafiah and in our opinion it is satisfactory in terms of scope, quality, presentation as partial fulfilment of the requirement for the course VPD 4901 Project.



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“The hooves of horses!  
Oh! Witching and sweet  
Is the music earth steals from the iron-shod feet;  
No whisper of lover, no trilling of bird,  
Can stir me as much as hooves of horses  
Have stirred.”

~ Will H. Ogilvi

*To my beloved husband,  
Mohd Nazri bin Mohd Nayan.*

*To my lovely parents,  
Hjh. Noor Hamidah Bt Ali*

*and*

*Hj. Mohd Hanafiah Bin Hassan,*

*Family,*

*for all the love and prayers.*

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**LIST OF ABBREVIATIONS**

CMI<sub>s</sub> Catastrophic Musculoskeletal Injuries

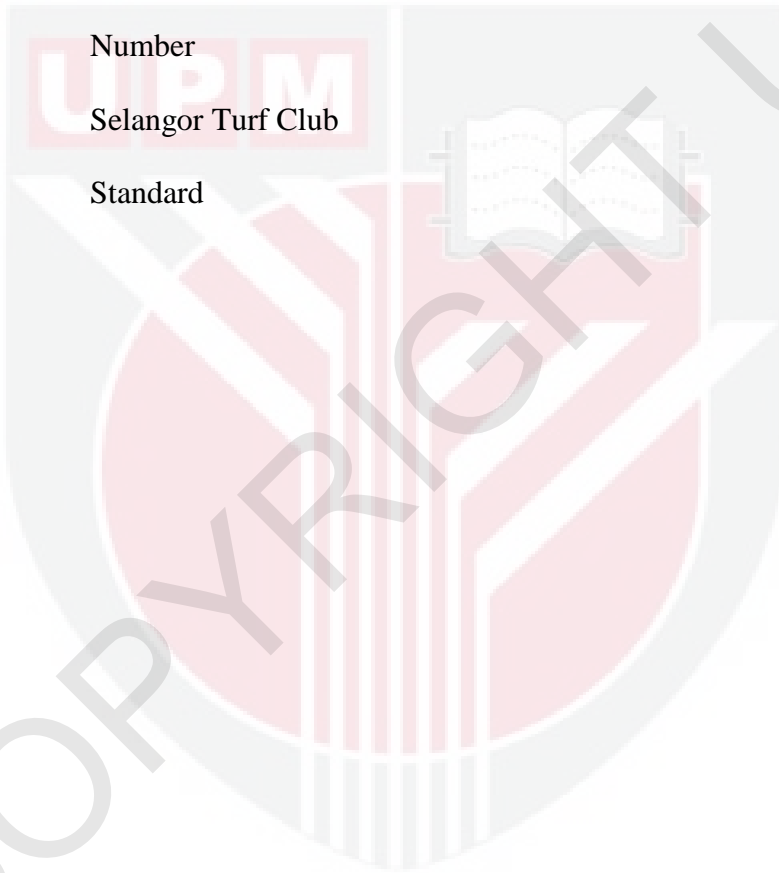
Fig Figure

ms Millisecond

N Number

STC Selangor Turf Club

Std Standard





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**ABSTRAK**

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

**KECEDERAAN KERETAKAN TULANG DALAM KUDA LUMBA DI ATAS  
TREK PERLUMBAAN KUDA DI MALAYSIA**

Oleh:

**NUR EERSHAN NAMIRA MOHD HANAFIAH**

**2015**

**Penyelia: Dr. Noraniza Mohd Adzahan**

**Penyelia bersama: Dr. Shri Kanth Kanaesalingam**

Kecederaan muskuloskeletal merupakan antara punca utama kerugian ketika latihan dan perlumbaan kuda Torugbred. Banyak kajian telah dilakukan berkaitan kecederaan maut namun kajian berkaitan kecederaan bukan maut masih belum dikaji secara meluas. Kajian ini dilaksanakan bagi menentukan kekerapan keretakan tulang

dalam kuda Torugbred semasa latihan dan perlumbaan di Malaysia berserta kaitan yang berkemungkinan. Rekod radiografi serta kecederaan maut bagi kuda yang dihantar ke Hospital Ekuin Kelab Lumba Kuda Selangor diakses untuk memperoleh kejadian keretakan tulang. Sejumlah 107 kes telah dinilai dalam kajian ini di mana keretakan pada tulang karpus (31.8 %) merupakan nilai tertinggi dengan kebanyakannya keretakan berlaku pada tulang radial karpal (15 %). Terdapat perbezaan yang signifikan antara kumpulan umur, jantina, lokasi keretakan serta kaki yang terlibat. Kumpulan umur 5 hingga 8 tahun, kuda jantan yang dikasi, karpus serta kaki kiri hadapan merupakan bahagian yang paling banyak menghadapi keretakan. Walaubagaimanapun, faktor-faktor ini tidak berkaitan secara langsung dengan kes kecederaan maut. Semua kes keretakan termasuklah kes kecederaan maut kebanyakannya berlaku pada kaki hadapan. Terdapat corak keretakan yang signifikan terhadap kejadian keretakan tulang dalam kuda lumba Torugbred semasa latihan dan perlumbaan.

Kata kunci: *Muskuloskeletal, tulang retak, kuda lumba, umur, jantina.*

**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.

**TITLE: FRACTURE INJURIES IN RACEHORSES ON HORSE TRACK IN  
MALAYSIA**

**By:**

**NUR EERSHAN NAMIRA MOHD HANAFIAH**

**2015**

**Supervisor: Dr. Noraniza Mohd Adzahan**

**Co-supervisor: Dr. Shri Kanth Kanaesalingam**

Musculoskeletal injuries are among the most common cause of loss during training and racing in Thoroughbred racehorses. There were many studies on catastrophic musculoskeletal injuries (CMIs) however non-catastrophic injuries were not well described. The present study was performed to determine the frequencies of fractures

injuries in Thoroughbred racehorses during training and flat race racing in Malaysia with the possible associations. Radiographic and CMIs records for horses presented at Selangor Turf Club (STC) Equine Hospital were assessed for the occurrence of fracture injuries. A total of 107 cases were included in this study; fractures of carpus (31.8 %) were the most common with highest fractured bone of radial carpal (15 %). There were significant differences among age group, gender, location of fracture and fractured limb. Age group 5 to 8 years old, gelding, carpus and the left forelimb were the most to obtain fractures. However these factors were not significantly associated with CMIs. Non-catastrophic and CMIs were both commonly occurred at the forelimb. There were significant pattern of fracture injuries in Thoroughbred racehorses during training and racing.

Key words: *Musculoskeletal, fracture, racehorse, age, gender*

## 1.0 INTRODUCTION

The history of horse racing in Malaysia started in the 1800s which was brought by the British traders (Malayan-racing.com, 2015). Even though the sport was introduced as a foreign sport, it was well supported by horse racing enthusiasts and made it into a very popular events. Here in Malaysia, the type of racing is flat racing. It is a form of horse racing that run on a level track at a predetermined distance. As the sport is developing very well, the welfare of the racing horses become as well as important as the generated profit.

Earlier, the equine veterinary community begins to describe racehorse injuries and fatality at a population level. It started in the late of 1960s and 1970s and the researches still continues. The case definitions evolved from a general and population level such as lameness and breakdown, into a specific type injuries such as proximal sesamoid bone fracture. There was also many studies regarding the risk and the racehorse injuries and majority of them focused on Thoroughbred horses (Parkin, 2008).

Generally, racehorse injuries does not only involved on musculoskeletal and soft tissues injuries but they are also at risk of cardiovascular and respiratory failure (Cruz *et al.*, 2007). As injuries continues to happen, it create alertness and interest regarding cause and subsequent preventive measures. It became critical if the injuries requires euthanasia decision. Therefore many researchers performed studies on factors that may contribute to the occurrences of these injuries so that the welfare of the horses are not compromised during the racing.



Fracture is one from the three case definitions discussed in reporting racetrack injury. Other cases are tendon injury and sudden death. It was agreed that chips less than 5 mm in size is excluded from fracture cases. Stress fractures are included as one type of fracture, regardless of the details and outcome; complete/incomplete, displaced/non-displaced, surgery/euthanasia. The term catastrophic is preferred rather than fatal in differentiating catastrophic and noncatastrophic. They provide useful information when investigating fractures at multiple sites (Parkin, 2007).

In the early 1980s, they have identified that musculoskeletal disorders were a major reason for horses not training or racing (Jeffcott *et al.*, 1982). Even though there were variety of injuries location described in literatures, this study focussed at distal limb that encounter fracture cases. They include structures distal to radius and tibia. It has been reported that limb fractures were the most common cause for euthanasia on the racecourse (McKee, 1995). Among the various racing injuries structures, 86% of the representative descriptive studies were structures at or distal to the carpus (Peloso *et al.*, 1994).

Most of racehorse injuries affects the forelimb. At rest, 60 to 65 % of horse weight is supported by the forelimb (Sellnow, 2008; Higgins, 2012). Therefore, it is expected that more weight is stressed on the forelimb especially when saddle and rider is on the horseback. Pressure and stress to bones, joints and soft tissues will be increased as the horse is at force and speed during training and racing. In Kentucky, 90.2 % of racing injuries involved the forelimb (Peloso *et al.*, 1994). In Poland, 70.2 % of the Thoroughbred racehorses injured their forelimb (Pieszka *et al.*, 2011).

Since majority of the racehorse injuries involved the forelimb, studies was performed to find the possible factor that may contribute to the occurrences of the injuries. Most of the time, the fact is that racehorses were trained and raced in a counter-clock wise. Including in the Selangor Turf Club where this study was conducted. During working in a counter-clock wise, the horses are on the left lead of their gait when in turns (Nunamaker, 2001).

Records pertaining racetrack injuries are valuable in monitoring racing and training injuries. Many literatures are available especially regarding CMIs because fatalities are recorded in all racing jurisdictions, however the recording systems vary in recording other types of injuries. Most major racing jurisdictions record information from horses injured while racing and returning lame from racing, but few have systems in place to document training injuries.

There is still limited study on horse racing industry in Malaysia and no literature available on racehorse injuries in Malaysia. This study will be the first report on horse track injuries and provide preliminary information on occurrence of racehorse fractures during training and racing presented at Selangor Turf Club (STC) Equine Hospital. The objectives of this study are to:

1. Determine the most common location of fractures and affected limb in racehorses during training and racing.
2. Determine the frequencies and proportions on fractures location in racehorses during training and racing.
3. Retrospectively evaluate the associations between age group and gender on fracture cases and CMIs.

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