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EPIDEMIOLOGICAL STUDIES OF EARLY
EXERCISE AND MEASURES OF TRAINING
AND RACING PERFORMANCE IN
THOROUGHBRED RACEHORSES

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of the requirements for the degree of
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ABSTRACT

This thesis includes a series of epidemiological studies conducted to quantify the exercise regimens of Thoroughbred yearlings during their sales preparation and 2- and 3-year-old race training. Additionally, this thesis aims to establish if there are associations between the exercise regimens and training and racing performance at two years of age.

Cross-sectional and cohort studies quantified the components of the exercise regimens used during sales preparation on stud farms in New Zealand. Exercise was a common practice during sales preparation. The type and amount of exercise was often tailored to individual horses. Overall, exercise varied by gender, the month of preparation, and between farms indicating that the exposure to exercise during sales preparation was not the same for all horses.

Survival analysis identified different horse and exercise risk factors for voluntary, involuntary, and musculoskeletal interruptions during training. Specifically, there were strong associations between increased total hand walking time and reduced chance of voluntary interruptions, and more time walking on a mechanical walker increased the risk of involuntary interruptions. Other horse and training factors, such as trainer, gender, age at the start of training, and the distance accumulated at canter and high speed, were associated with the time to interruptions during training.

Interruptions before the first trial were associated with an increased time to the first trial or race and a decreased chance of starting in a trial. Accumulating shorter distances and fewer events at high speed were both associated with a decreased chance of a trial or race start. Longer distances accumulated at high speed were associated with a decreased time to the first trial. No associations were found between the exercise accumulated during sales preparation and the time to the first trial during training. Overall, the exercise accumulated during sales preparation was associated with a measure of training performance, whilst the timing of interruptions and the accumulation of exercise during training have implications for reaching important training and racing milestones. The results of this thesis indicate that current exercise regimens could be modified to enhance the training and racing performance of Thoroughbred racehorses.

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LIST OF ABBREVIATIONS

12s	12s/200m
13s	13s/200m
15s	15s/200m
BMC	Bone mineral content
CI	Confidence interval
CONDEX	Pasture plus exercise
DMD	Dorsometacarpal disease
GPS	Global positioning systems
HR	Hazard ratio
IQR	Interquartile range
LRS	Likelihood ratio statistic
MSI	Musculoskeletal injury
NH	National Hunt
NZB	New Zealand Bloodstock
NZTR	New Zealand Thoroughbred Racing
OR	Odds ratio
PASTEX	Pasture with no additional exercise
RR	Risk ratio
TAS	Training activity score

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