

A Study on The Physiological Status of Dressage Horses Before and After Training At Anantya Riding Club Bogor

Studi Status Fisiologis Kuda *Dressage* Sebelum dan Sesudah Latihan di Anantya Riding Club Bogor

Henny Endah Anggraeni*^{ORCID}, Igal Muhammad

Program Study of Veterinary Paramedic, Collage of Vocational Studies, IPB University, Bogor-Indonesia

ABSTRACT

Background: The physiological status of a horse is an indicator of its health. Parameters that can be used to determine the health status of a horse include respiratory rate, heart rate, and body temperature. As the activity of a horse increases, its respiratory rate increases. By measuring respiratory rate, heart rate, and body temperature before and after training, changes in the physiological status of a horse can be determined. **Purpose:** This study aims to provide an overview of the physiological status of horses before and after training at Anantya Riding Club. **Case:** Physiological status of horses before and after training. **Case Management:** This study used a qualitative approach. Data on the physiological conditions of horses were collected before and after training. A digital thermometer was used to measure body temperature. A stethoscope was used to measure heart rate. Respiratory rate was measured by placing the back of the hand or the palm of the hand close to the horse's nose to feel its breath. These measurements were taken before and after training. **Conclusion:** This study concluded that the physiological status of horses after training showed an improvement. The average body temperatures of the horses before and after training were $[37.6 \pm 0.09]^{\circ}\text{C}$ and $[38.61 \pm 0.03]^{\circ}\text{C}$, respectively. The average heart rates of the horses before and after training were 41.0 ± 2.4 beats/minute and 90.2 ± 3.5 beats/minute, respectively. Finally, the average respiratory rates of the horses before and after training exercise were 39.7 ± 3.0 breaths/minute and 101.2 ± 0.5 breaths/minute, respectively.

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***Correspondence:**

Henny Endah Anggraeni

E-mail: hennyendahanggraeni@apps.ipb.ac.id

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ABSTRAK

Latar Belakang: Status fisiologis seekor kuda merupakan salah satu indikator kesehatannya. Parameter yang dapat digunakan untuk mengetahui status kesehatan kuda antara lain frekuensi pernafasan, detak jantung, dan suhu tubuh. Ketika aktivitas kuda meningkat, laju pernapasannya meningkat. Dengan mengukur laju pernafasan, detak jantung, dan suhu tubuh sebelum dan sesudah latihan, perubahan status fisiologis kuda dapat diketahui. **Tujuan:** Penelitian ini bertujuan untuk memberikan gambaran status fisiologis kuda sebelum dan sesudah pelatihan di Anantya Riding Club. **Kasus:** Status fisiologis kuda sebelum dan sesudah pelatihan. **Manajemen Kasus:** Penelitian ini menggunakan pendekatan kualitatif. Data kondisi fisiologis kuda dikumpulkan sebelum dan sesudah pelatihan. Termometer digital digunakan untuk mengukur suhu tubuh. Stetoskop digunakan untuk mengukur detak jantung. Kecepatan pernafasan diukur dengan meletakkan punggung tangan atau telapak tangan dekat dengan hidung kuda untuk merasakan nafasnya. Pengukuran ini dilakukan sebelum dan sesudah pelatihan. **Kesimpulan:** Penelitian ini menyimpulkan bahwa status fisiologis kuda setelah pelatihan menunjukkan adanya peningkatan. Rata-rata suhu tubuh kuda sebelum dan sesudah pelatihan masing-masing adalah $[37,6 \pm 0,09]^{\circ}\text{C}$ dan $[38,61 \pm 0,03]^{\circ}\text{C}$. Rata-rata detak jantung kuda sebelum dan sesudah latihan masing-masing adalah $41,0 \pm 2,4$ denyut/menit dan $90,2 \pm 3,5$ denyut/menit. Terakhir, rata-rata laju pernafasan kuda sebelum dan sesudah latihan masing-masing adalah $39,7 \pm 3,0$ napas/menit dan $101,2 \pm 0,5$ napas/menit.

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Kata kunci: Dressage; Kuda; Status Fisiologi

INTRODUCTION

Dressage is an equestrian sport that emphasizes the ability of horses to balance their bodies in elegant and controlled movements. Anantya Riding Club is one of the training places for dressage horses. The training activity takes place five times a week for 45 minutes. This activity causes changes in the physiological status of the horses.

Changes in physiological status can be determined by measuring heart rate, respiratory rate, and body temperature before and after training. Knowledge of the integrated dynamics of whole-body function underlying these capabilities is extensive, and the contribution of major organ systems has been well-documented (Varley, 2020). One way to measure and maintain normal body condition is through the examination of physiological status. The physiological status of animals is an indicator of health and represents how the animals adapt to the environment (Mellor and Beausoleil, 2017). Respiratory rate serves as one of the parameters that can be used to determine the health status of a horse. As the horse becomes more active, the respiratory rate increases (Mellor and Beausoleil, 2017). Heart rate is an indicator of a horse's fitness. A healthy horse may have a high heart rate due to strenuous activities. The heart rate increases as the activity becomes more strenuous (Oklahoma State University, 2017). Body temperature can also determine the physiological status of a horse. As the activity becomes more frequent, the body temperature increases (Gaina and Foeh, 2019).

Horse management is essential to maximize the health, productivity, and performance of horses. With good care, proper nutrition, control of disease transmission, and training, the health of horses can be maintained. Equine physiology is an event of increasing and decreasing physiological conditions of horses, which include respiratory rate, heart rate, and rectal temperature. The physiological data that are commonly measured are body temperature, respiratory rate, and heart rate (Gaina and Foeh, 2019). This study aims to provide an overview of the physiological status of dressage horses before and after training at Anantya Riding Club.

CASE REPORTS

Signalment

The types of horses involved in this study were domestic mixed stallions with thoroughbred horses aged between seven to 10 years (Table 1). The physiological conditions of three horses were directly observed for 10 days and measured to determine their physiological state. Signalment are characteristics that distinguish horses from other animals of the same nationality and color despite their resemblance to each other. Signalment is very important to recognize and record at the beginning of the physical examination.

Parameters

Observations were made by measuring body temperature, heart rate, and respiratory rate of the horses. The data were analyzed by calculating the average of each observed param-

Table 1. Signalment of The Horses

No	Names	Sex	Age (years)	Weight (kg)
1	MyBoy	Male	10	447
2	Barito	Male	7	392
3	Opium	Male	9	528

ter (Widowati et al., 2020). The body temperature was measured by inserting the tip of the digital thermometer into the rectum. Rectal temperature measurement is a commonly used method for measuring core temperature in animals (Nutt et al., 2016). The heart rate was measured by placing a stethoscope on the left side of the horse's chest between the third and fourth os costae. The respiratory rate was measured by placing the back of the hand or the palm of the hand closer to the horse's nose to feel the breath (Indarjulianto, 2020). The measurement of the physiological status of the horses used a digital thermometer (Thermometer Digital LCD) and a stethoscope (OneMed Standard Stethoscope). These measurements were taken before and after training. The observations were carried out at Anantya Riding Club, Jl. Caringin RT 04/RW 04, Karanggan Village, Gunung Putri Subdistrict, Bogor Regency, from July 3 to August 3, 2023.

DISCUSSION

The results of the examination of the physiological conditions of MyBoy, Barito, and Opium horses before and after training are presented in Table 2.

Table 2. The Results of The Examination of The Physiological Conditions

No	Parameters	MyBoy		Barito		Opium	
		Before	After	Before	After	Before	After
1	Temperature (°C)	37.57 ± 0.20	38.63 ± 0.15	37.58 ± 0.13	38.56 ± 0.14	37.78 ± 0.16	38.64 ± 0.14
2	Heart Rate (beat/minute)	40 ± 4.0	87.2 ± 3.91	38.8 ± 3.13	88.4 ± 4.54	44.4 ± 3.77	95.2 ± 4.30
3	Respiratory Rate (breath/minute)	37.2 ± 4.4	100.8 ± 5.6	38 ± 4.09	100.8 ± 4.99	44 ± 4.0	102 ± 5.44

The body temperatures of MyBoy, Barito, and Opium horses were within the normal range, namely [37.57 ± 0.20]°C, [37.58 ± 0.13]°C, and [37.78 ± 0.16]°C, respectively. The normal body temperature of horses is between 37.5°C and 38.6°C (Gaina and Foeh, 2019). After training, the body temperatures of the horses showed an increase but were within the normal range, namely [38.63 ± 0.15]°C, [38.56 ± 0.14]°C, and [38.64 ± 0.14]°C. The body temperatures before and after training were relatively similar. Horses are homeothermic, which means that they can maintain their normal body temperature when they are active (De Andrade Fernandes et al., 2014). The increase in body temperature was associated with training activities. In accordance with the results of a study (Saefullah, 2016), high muscle activity and environmental conditions will increase the body temperature of horses. Animals obtain heat in two ways, namely by metabolic activities or energy production in the body and by absorbing heat from the environment. The ambient temperature at Anantya Riding Club was 32°C. If the surrounding environment is cooler than the horse's body, it can still absorb energy from solar radiation (Abarca, 2021).

The heart rates MyBoy, Barito, and Opium horses were within the normal range, namely 40 ± 4.0 beats/minute, 38.8 ± 3.13 beats/minute, and 44.4 ± 3.77 beats/minute, respectively. The normal heart rate of horses is between 40 to 60 beats/minute. Factors that can increase heart rate include exercise, fear, and hot weather (Pohlin *et al.*, 2017). After training, the heart rates of the horses showed an increase, namely 87.2 ± 3.91 beats/minute, 88.4 ± 4.54 beats/minute, and 95.2 ± 4.30 beats/minute. The increase in heart rate was associated with the levels of activity. Saefullah (2016) suggested that high levels of activity will increase the heart rate of horses, causing vasodilation and faster blood flow (Gaina and Foeh, 2019).

The respiratory rates of MyBoy, Barito, and Opium horses were within the normal range, namely 37.2 ± 4.4 breaths/minute, 38 ± 4.09 breaths/minute, and 44 ± 4.0 breaths/minute, respectively. The normal resting respiratory rate of adult horses is between 40 and 50 breaths/minute (Gaina and Foeh, 2019). After training, the respiratory rates of the horses were 100.8 ± 5.6 breaths/minute, 100.8 ± 4.99 breaths/minute, and 102 ± 5.44 breaths/minute, respectively. The increase in respiratory rate was attributed to the increased activity, causing the body to produce heat as energy. Horses try to dissipate heat in their body to maintain a relatively constant body temperature, called homeostasis, one of which is through respiration (Saefullah, 2016). Breathing or respiration in animals is a process regulated by the nervous system to meet the need for oxygen intake and carbon dioxide removal, which vary greatly depending on the activity being performed (Abarca, 2021). Therefore, the respiratory rates are different before and after training. During training, horses perform a high level of physical activity. Training or exercise causes the respiratory rate to increase to retain heat stored in the body by increasing the frequency of breathing (Adnyana, 2007).

Training affects all bodily processes, especially respiratory, thermoregulatory, and cardiovascular functions (Oklahoma State University, 2017). The results of this study showed that the heart rate, respiratory rate, and body temperature increased after training.

CONCLUSION

The physiological status of the horses after training showed an improvement. The average body temperatures of the horses before and after training were $[37.6 \pm 0.09]^\circ\text{C}$ and $[38.61 \pm 0.03]^\circ\text{C}$, respectively. The average heart rates before and after training were 41.0 ± 2.4 beats/minute and 90.2 ± 3.5 beats/minute, respectively. The average respiratory rates before and after training were 39.7 ± 3.0 breaths/minute and 101.2 ± 0.5 breaths/minute, respectively.

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CONFLICT of INTEREST

The author declares that there is no conflict of interest in the authorship of this case report.

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ETHICAL APPROVAL

This study did not require ethical approval.

AUTHORS' CONTRIBUTIONS

MA handled cases and recorded data. HEA was responsible for supervising the handling of cases, processing of data, and writing of article. HEA provided input on data processing and article writing.

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