

# **ECHOCARDIOGRAPHY FOR THE DETECTION OF CARDIOMYOPATHY IN K9 DOG (BELGIAN MALINOIS) AT DIREKTORAT POLISI SATWA**

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**STUDY PROGRAM OF VETERINARY MEDICINE  
SCHOOL OF VETERINARY MEDICINE AND BIOMEDICAL SCIENCES  
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BOGOR  
2025**



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## ABSTRACT

AMABEL SEE LI YEN. Echocardiography for the Detection of Cardiomyopathy in K9 Dog (Belgian Malinois) at Direktorat Polisi Satwa. Supervised by DENI NOVIANA and LIGAYA I.T.A TUMBELAKA.

K9 dogs are critical to law enforcement but are susceptible to cardiomyopathies, including dilated cardiomyopathy (DCM), particularly in large breeds like Belgian Malinois. This study evaluated 30 actively working Belgian Malinois dogs from the Direktorat Polisi Satwa Korsabhara Baharkam Polri to determine the prevalence of cardiomyopathies. Routine health check-ups included physical examinations and echocardiographic assessments. Dogs were grouped into young adult, adult, and senior categories. Echocardiographic measurements, including left ventricular (LV) wall dimensions, interventricular septal (IVS) thickness, left atrial to aorta root (LA:Ao) ratio, left ventricular volumes (LVS), stroke volume (SV), cardiac output (CO), fractional shortening (FS%), and ejection fraction (EF%), were obtained using right parasternal short-axis views. No cases of DCM were clearly identified. Age-related changes, such as reduced left ventricular internal diameter in diastole (LVIDd), were noted in senior dogs, indicating early ventricular remodeling. Despite these variations, systolic function, cardiac output, and proportional left atrial adaptation were preserved across all age groups, demonstrating the cardiovascular efficiency of actively working Belgian Malinois dogs. Incorporating E-point septal separation (EPSS) in future studies may enhance the early detection and screening of DCM in working K9 dogs.

Keywords: age, cardiomyopathy, cardiac screening, echocardiography, K9 dogs

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## ABSTRAK

AMABEL SEE LI YEN. Ekokardiografi untuk Mendeteksi Kardiomiopati pada Anjing K9 (Belgian Malinois) di Direktorat Polisi Satwa. Dibimbing oleh DENI NOVIANA dan LIGAYA I.T.A TUMBELAKA.

Anjing K9 memiliki peran penting dalam penegakan hukum, tetapi mereka berisiko tinggi mengalami kardiomiopati, termasuk dilated cardiomyopathy (DCM), terutama pada ras besar seperti Belgian Malinois. Penelitian ini bertujuan mengevaluasi prevalensi kardiomiopati pada 30 anjing Belgian Malinois aktif dari Direktorat Polisi Satwa Korsabhara Baharkam Polri. Pemeriksaan kesehatan rutin mencakup pemeriksaan fisik serta pemeriksaan ekokardiografi. Anjing dikelompokkan berdasarkan usia: muda, dewasa, dan senior. Pengukuran ekokardiografi meliputi dimensi dinding ventrikel kiri, ketebalan septum interventrikular, rasio atrium kiri terhadap aorta (LA:Ao), volume ventrikel kiri, stroke volume (SV), cardiac output (CO), fraction shortening (FS%), dan ejection fraction (EF%). Tidak ada prevalensi DCM yang terdeteksi di Direktorat Polisi Satwa. Perubahan terkait usia, seperti penurunan diameter internal ventrikel kiri saat diastol (LVIDd), tercatat pada anjing senior, yang mengindikasikan remodeling ventrikel awal. Meskipun terdapat variasi tersebut, fungsi sistolik, output jantung, dan adaptasi atrium kiri yang proporsional tetap terjaga di semua kelompok usia, menunjukkan efisiensi kardiovaskular pada anjing Belgian Malinois yang aktif bekerja. Penerapan E-point septal separation (EPSS) dalam penelitian mendatang dapat meningkatkan deteksi dini dan skrining DCM pada anjing K9 yang bekerja.

Kata Kunci: anjing K9, ekokardiografi, kardiomiopati, skrining jantung, usia



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**AMABEL SEE LI YEN**

Undergraduate Thesis  
as a requirement for a degree of  
Bachelor of Veterinary Medicine  
School of Veterinary Medicine and Biomedical Sciences

**STUDY PROGRAM OF VETERINARY MEDICINE  
SCHOOL OF VETERINARY MEDICINE AND BIOMEDICAL SCIENCES  
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## FOREWORD

Gratitude is extended for all the blessings that enabled the completion of this scientific work. The title chosen for this research, conducted from December 2024 to June 2025, is “Echocardiography for the Detection of Cardiomyopathy in K9 Dog (Belgian Malinois) at Direktorat Polisi Satwa”.

I would like to express my deepest gratitude to my supervisors, Prof. Dr. drh. Deni Noviana, Ph.D., DAiCVIM, and Dr. drh. Ligaya I.T.A. Tumbelaka, M.Sc, Sp.MP, for their exceptional guidance, profound expertise, and steadfast support, which were integral to the successful completion of this study. Special thanks are extended to the Residency Cardiology Veterinary team from RSHP IPB for their time, expertise, and dedication in assisting with this research.

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Lastly, I am profoundly grateful to my family—my father and mother for their unwavering love, support, and prayers, which have been my greatest source of strength.

May this work contribute meaningfully to the field and benefit for those who seek to advance knowledge in this area.

Bogor, July 2025

*Amabel See Li Yen*



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