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Kamiah's Kool Vests: Preventing Heat Stress in Service Dogs: Phase 2

Rebecka Seward
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Rebecka Seward, Department of Biology, College of Arts and Sciences
Faculty Mentor: Dr. Uwe Reischl, Department of Community and Environmental Health, College of Health Sciences

Introduction
- Service dogs are trained to perform tasks for persons with disabilities.
- The health and safety of service dogs can impact the safety of the owner.
- Service dogs may be overexposed to heat in hot outdoor environments.
- To protect service dogs from excessive heat from the sun, a special IR blocking vest was developed and the initial prototype tested in 2015.

Phase 2
- The purpose of Phase 2 is to determine the IR attenuation properties of dog fur.
- Understanding the IR attenuation properties of dog fur is foundational to development of further prototypes of Kamiah’s Kool Vest.
- Due to time constraints only one breed of dog fur was tested.

Current Prototype
- Test results of the current prototype show a 64% reduction in IR penetration through the shield.

Future Goals
- Vest Development:
  - Partner with engineers to develop ergonomic prototypes.
  - Test IR properties of kevlar and other materials.
  - Survey service dog raisers, trainers and handlers to determine necessary features.

Future Involvement and Acknowledgments
- I love ideas!
  - If you have ideas or would like to be involved please e-mail: rebeckaseward@u.boisestate.edu
- Acknowledgments:
  - Dr. Uwe Reischl for use of his lab and for his expertise and insights.
  - Do it Yourself Doggie Detailing for collecting fur samples.

Future Research:
- Test different fur types and configurations of fur.
- Partner with physiologists to test physiological changes in dogs in response to the vest.

Test Method
- The layers of fur were placed into Infrared (IR) testing equipment as illustrated in Fig.1.
- The four layers were tested in series.
- Control measurements were taken at the beginning and end of each series.
- The layers were exposed to 400 Watts IR power levels for a duration of 2 minutes per layer for a total of 10 minutes per series.
- Measurements were obtained four times and values averaged.

Equipment
- Figure 1. Equipment used for IR measurements.
- Samples ready for testing.
- Thermocouple thermometer was used to record IR heat effects.
- 4 100 Watt incandescent bulbs were used to generate IR heat.

Results
- Initial testing of one breed of dog fur shows a steady reduction in IR penetration with each added layer.
- Further tests with variety of breeds will need to be conducted to determine if different fur types demonstrate different IR properties.