RESEARCH SUMMARY

"You can trace every sickness, every disease and every ailment to a mineral deficiency." Is a very powerful quote made by Dr. Linus Pauling. If we follow this quote to its end we believe then that we can help the health and well-being of animals through proper mineral nutrition.

It is well known but poorly followed that Amino Acid Chelated Trace minerals are the most bioavailable, highly absorbed, and best retained form of trace mineral available. This groundbreaking study will prove that by providing a superior trace mineral pack to middle age Labrador retrievers they will respond, in a very short treatment period, in a significantly positive way as measured by antioxidant enzymes in the blood and mechanical movement by using the GAIT system.

Purpose: To determine the effect of Life Balance Dog Tabs on the performance, recovery, and general health of canines

Trial Summary

- 20 Labrador Retrievers (10m/10f)
- 19-day trial on Dog Tabs
- Three Life Balance Dog Tabs each day
- Same food source – MFA Gold-N-Pro dog food
- Day 18 all dogs performed a 5-mile endurance run to induce exercise stress.
- Blood draws at baseline (prior to any treatment), 1-hour after run, and 24-hours after run.

Blood Analysis

Blood draws and gait analysis were performed at baseline (prior to any treatment), 1-hour after run, and 24-hours after run. No significant difference between groups was found in running activity, average moving speed, or resting activity. Treated dogs had significantly lower amounts of the biomarker superoxide dismutase (SOD) at baseline (P=0.0263), but had an increase of 0.433ng/ml in SOD from baseline to Post-1h, where untreated dogs had a -0.106ng/ml reduction in SOD (P=0.0927). Treated males highlighted this trend where SOD was significantly lower than control males at baseline (P=0.0060), but significantly higher than control dogs at Post-1h (P=0.0135). Treated males had a significant decrease in total antioxidant capacity (TAC) from baseline to Post-1h compared to an increase in untreated males (P=0.0583), while treated males had a higher increase from Post-1h to Post-24h than untreated males (P=0.0718). Treated dogs had significantly lower thiobarbituric acid reactive substances (TBARS) at baseline (P=0.0608) and at Post-24h (p=0.0712) than untreated dogs.

Gait Analysis

A commercial system called Gait4Dogs from CIR Systems, Inc. was used to evaluate and measure actual mechanical movement of dogs, gait, and the amount of pressure applied to each foot. This provides a determination of pain, sensitivity to movement, and lameness based on temporal and spatial gait parameters.

Dogs were walked over a pressure reading mat to establish a baseline, before beginning treatments, 1-hour after run, and 24-hours after the run. Historically, collected data shows that Labrador Retrievers carry approximately 60% of their weight on their front limbs, and 40% on their back limbs, for an ideal symmetry ratio of 1.5. Of note, the Labradors at the research center had lower than average symmetry ratios.

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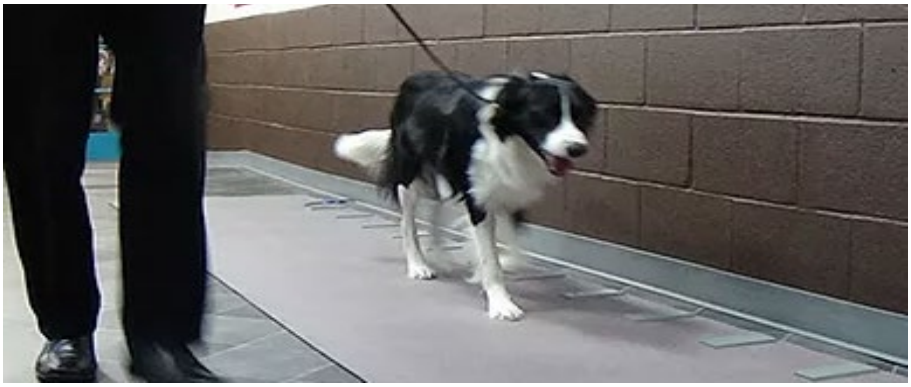
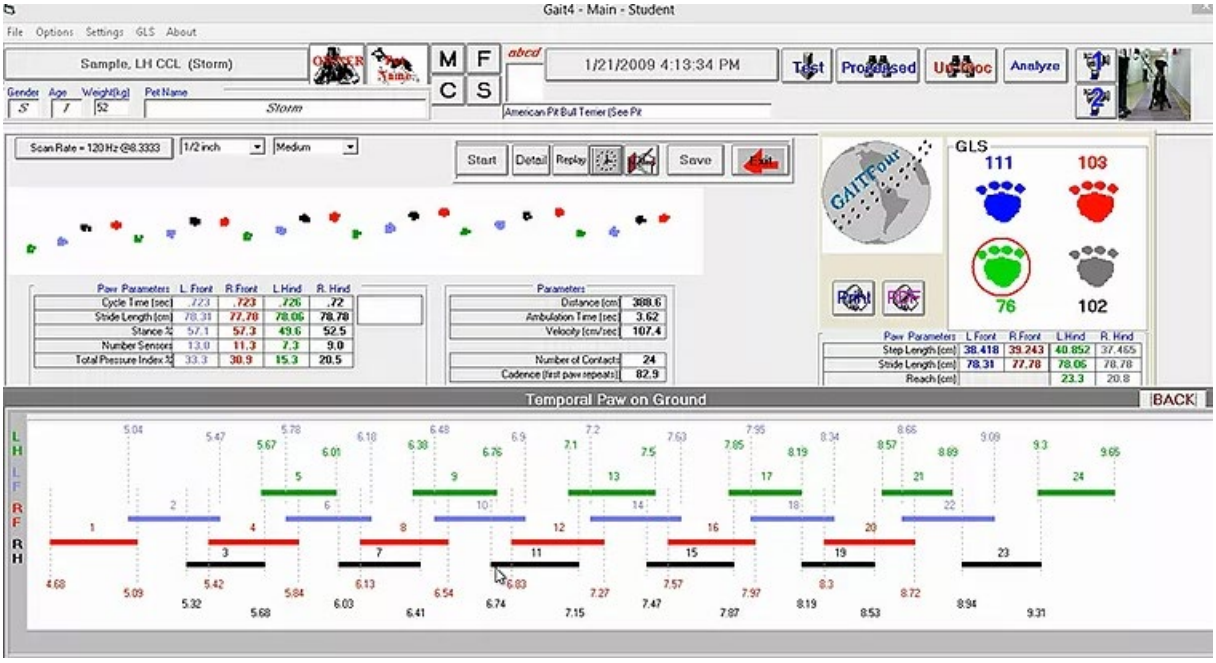


GAIT Four Dogs sensitive mat reader

Part of the gait analysis of the Labradors was to look at the amount of pressure they would put down with each step, measured as Total Scaled Pressure (TSP). Higher scores indicated more willingness to push off harder, and apply more pressure and weight, showing that they feel better and move more confidently in the step. The baseline reading for dogs on the tabs were not different than the control dogs at baseline (P>0.05), however the treated dogs were able to exert more pressure after running stress when examining each limb (P=0.0485). At baseline, treated dogs tended to have higher Gait Lameness Scores (GLS) indicating an over compensation in the hind end of the animal especially on the right side (P=0.0600). On their 1 hr and 24 hour post run GAIT readings, the treated Labradors compensated less than the controls and had more ideal GLS values (P=0.0416). This indicated improvement over the baseline and that the animals had an overall improvement in lameness and were even footed as treatment progressed. Dogs on the tabs performed better after stressed running events than the control dogs did on their baseline readings.



GAIT Four Dogs control panel readings

Treated dogs at baseline had aless than ideal left and right balance symmetry. These values became ideal in the front (P=0.05) and improved in the hind legs (P=0.0091) 24 hours after the run. Male Labradors experienced an improvement from baseline to post 1-hour run and post 24 hour run (p=0.024). Females tended to have better balanced left and right ratios than the controls 1 hour after the run (p=0.0603).

Evaluating the pressure exerted in the front and hind ends of the animals, it was found that 24 hours was enough time for the dogs on Life Balance Dog Tabs to return to normal stance (P=0.1531) showing no stance difference between baseline and 24 hour post run, however, differences up to a 5% weight shift were still seen in the control dogs 24 hours after the run (P=0.0149). Control dogs also had a more drastic shift in weight after the run indicating that the control dogs are unable to move in a fluid manner between walking and running.

Treated dogs had a 7% pressure unevenness in the left to right hind limbs at baseline (P=0.0129) but were able to overcome this while on treatment to become statistically similar to the controls at 1 and 24 hours post run (P=0.1635) resulting in 99% evenness which became the case for all balances (left, right, front, back)

At the beginning, all dogs had the same walking stride length (P=0.6326). After treatment, the treated dogs had a more balanced, natural, and efficient stride (P=0.0198). This stride did not change for the treatment dogs, regardless of time since stressor, however, the control dogs experienced unevenness 24 hours after the run (P=0.0435).

Discussion

Directly after eccentric exercise, Labrador Retrievers on the Life Balance Dog Tabs had significantly higher superoxide dismutase, preventing damage from the by-products of oxygen metabolism. Thiobarbituric acid reactive substances (TBARS), an indicator of stress of lipid peroxidation, was significantly lower 24-hours after exercise for dogs receiving Life Balance Dog Tabs.

In this study with Labrador Retrievers, looking at biochemical and physiological response to a blended Amino Acid Chelated Trace Mineral pack we discovered several significant beneficial responses to the therapy in a very short amount of time under the “treatment”.

First, we saw a great response to the production of SOD in the treated vs. non treated dogs when placed under stressful conditions as implemented by a 5 mile run. When cells burn energy free radical oxygen is produced. In order for the animal to rid itself of the free radical oxygen it produces Superoxide Dismutase (SOD) to convert the free radical oxygen to hydrogen peroxide. SOD is Zinc, Copper, Manganese, and Iron dependent meaning these minerals are required for the production of SOD. The body will then produce GpX and Catalase to convert the H2O2 to water and oxygen. If the animal is mineral deficient, it will not produce sufficient SOD to clear the animal of free radical oxygen and it will experience oxidative stress which is measured in the blood by TBARS. Oxidative stress causes inflammation, particularly in the joints and can be measured by looking at physiological movement with a system such as GAIT.

This study proved the physiology. Dogs receiving the life balance dog tabs had higher levels of Superoxide Dismutase 1 hour post exercise meaning the dog was able to respond to elevated levels of free radical oxygen. 24 hours post exercise showed dogs with lower levels of TBARS or “contamination” in the blood from free radical oxygen as expected.

When looking at the GAIT results, the dogs receiving the treatment that moved less freely on baseline evaluation at the end were able to overcome their agility depression. These dogs went on to actually have better and more relaxed movement 24 hours post exercise challenge than the untreated dogs did on their baseline GAIT analysis. The treated dogs had improved total pressure index numbers and stance time and were significantly more balanced indicating less inflammation and increased soundness.

Conclusion

Life Balance dog tabs improved overall joint functionality and cellular health when given on a daily basis in addition to a conventional diet. It is recommended for all dogs whether active or sedentary to receive the dog tabs on a daily basis for improved quality of life.