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*Abstract: A study was performed on 155 canines who suffered from moderate to severe osteoarthritis from 4 independent veterinarians across the country. The canines were assessed and assigned a quantified score in the areas of pain, lameness and range of motion, using a standard scale on days 1, 30 and 60. After 60 days, 98% of the subjects showed improvement in the pain category with an average decrease in felt pain by 77%. After 60 days, 95% of the subjects showed improvement in the lameness category with an average decrease of 65%. After 60 days, 96% of the subjects observed had exhibited an improvement in the range of motion category showing an increase of 51%. Overall, 99% of the canines in this study showed improvement in each of the three categories examined, thus showing that stem cell therapy is an effective treatment for canines who suffer from moderate to severe osteoarthritis.*

It is no secret that stem cell therapy is rapidly growing into one of the largest alternatives for regenerative medicine in veterinary science. Currently, it is being used to improve the lives of animals that suffer from osteoarthritis as well as tendon and ligament damage, joint injuries and fractured bones. Osteoarthritis is a disease affecting millions of animals nationwide that involves the deterioration of cartilage and smooth muscle tissue lining the joints—which generally leads to chronic pain, loss of range of motion, lameness and joint inflammation. While traditional treatment methods of non-steroidal anti-inflammatory drugs (NSAID’s) have proven to be therapeutic at best, this only temporarily masks or “numbs” a more severe problem.

Stem cells, found in bone marrow, adipose tissue, but also liver tissue, blood vessels and neurons, are the body’s personalized repair cells. They have the ability to both divide and differentiate into numerous cell types—depending on what is necessary for repair by the recipient. Adipose tissue yields a high concentration of adult mesenchymal stem cells (ASC’s). And while high yield is essential to therapies based around regenerative medicine, adipose-derived ASC’s present several more advantages in comparison to other sources. Adipose tissue is abundant, excision is minimally invasive, and ASC’s are easily and rapidly isolated by this method.

A team of 4 independent veterinarians from across the country conducted a case study on 155 canines that suffer from moderate to severe osteoarthritis. The dogs’ ages range from 1 to 17-years-old with an average age of 9-years-old.

The average weight of the dogs was 78.05 pounds with an average Body Condition Score (BCS) of 3.60—using the following scale:

**Table 1: Body Condition Scoring Criteria**

<b>1</b>	<i>Emaciated</i>
<b>2</b>	<i>Underweight</i>
<b>3</b>	<i>Ideal</i>
<b>4</b>	<i>Overweight</i>
<b>5</b>	<i>Obese</i>

Based on the average BCS score of 3.60, our case study purports that the majority of the canines included were between *ideal* and *overweight*. This suggests that the sample consisted of healthy canines with arthritic difficulties stemming from something other than weight factors.

Figure 1 displays the distribution of breeds represented in this case study. The breeds were characterized using the same categories as the Westminster Kennel Club.

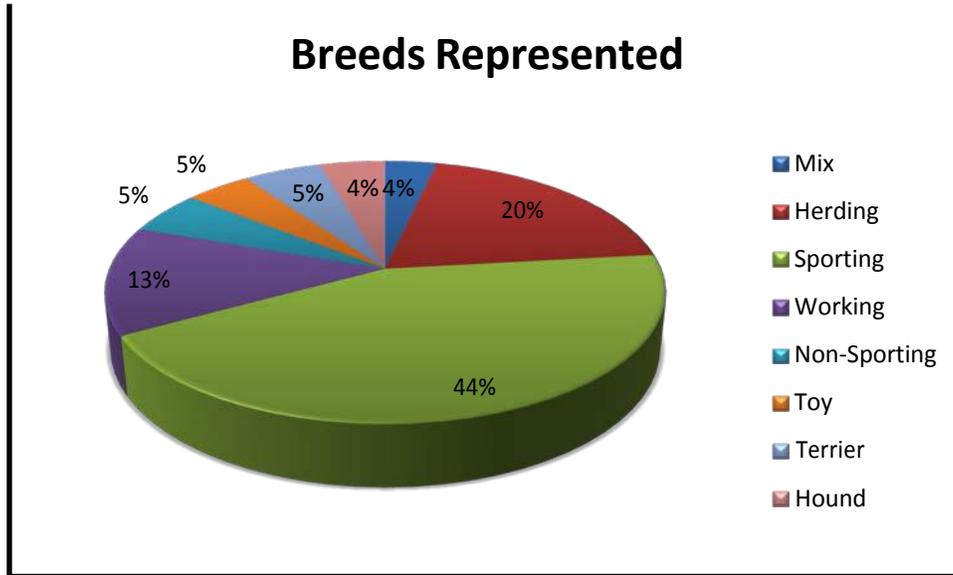


Figure 1: Distribution of canine breeds.

The Glasgow Composite Pain Scale was used to assess and quantify the dogs' pain level with a scale of 0-5 with 0 being no pain and 5 being the most intense pain.

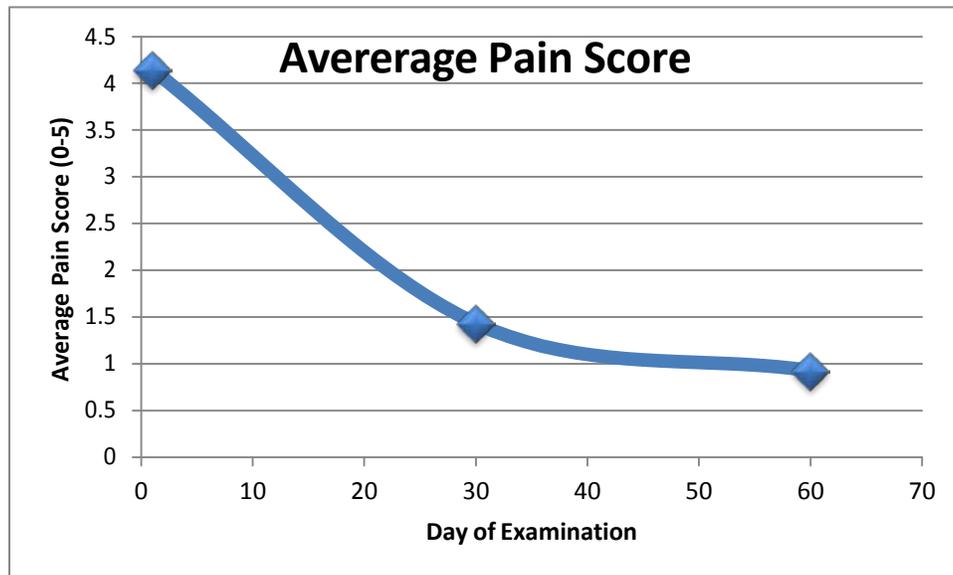


Figure 2: The average pain score of the 155 canines reported on Day(s) 1, 30 and 60.

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On Day 1 of the study, the average pain score reported was 4.1. By Day 30, the average pain score had dropped to 1.4—a decrease of 66%. On Day 60, the pain score dropped to 0.93. From Day 1 to Day 60, the pain that the canines felt decreased by 77%. Across the board, the canines in this study showed a significant decrease in their pain level after both 30 and 60 days from participating in stem cell therapy.

Lameness was assessed and quantified using a scale of 0-5, with 0 being no lameness in the affected area and 5 being complete lameness in the affected joint.

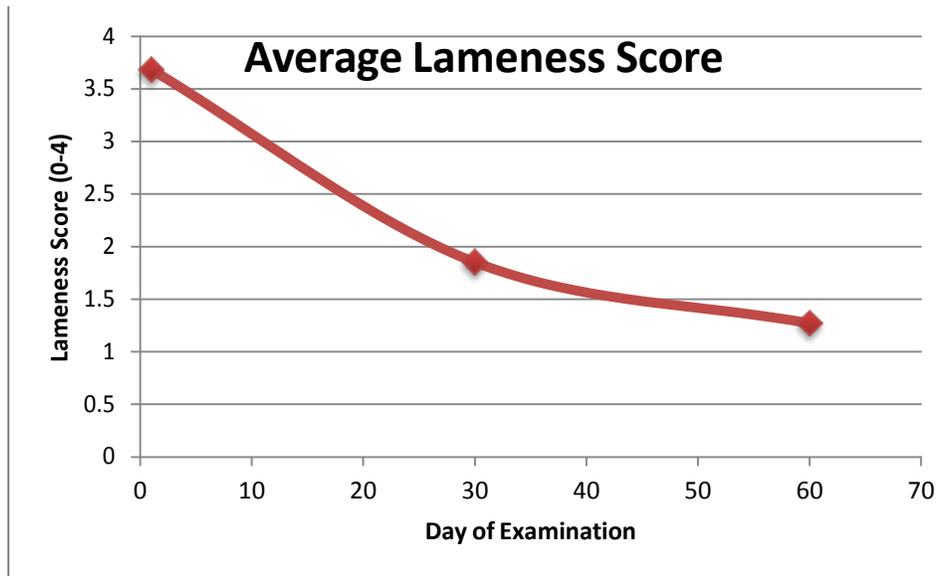


Figure 2: The average lameness score of the 155 canines reported at 1, 30 and 60 days.

Figure 2 shows the decrease of lameness experienced by the canines participating in this study over the 60 day period. After 30 days, the average lameness score dropped from 3.7 to 1.9, giving a 49% decrease. After 60 days, the canines exhibited a lameness rating of 1.3 for a total decrease of 65%.

The Range of Motion for the canines was recorded on a 0-5 scale with a 0 being no Range of Motion and a 5 being complete freedom of the affected joint.

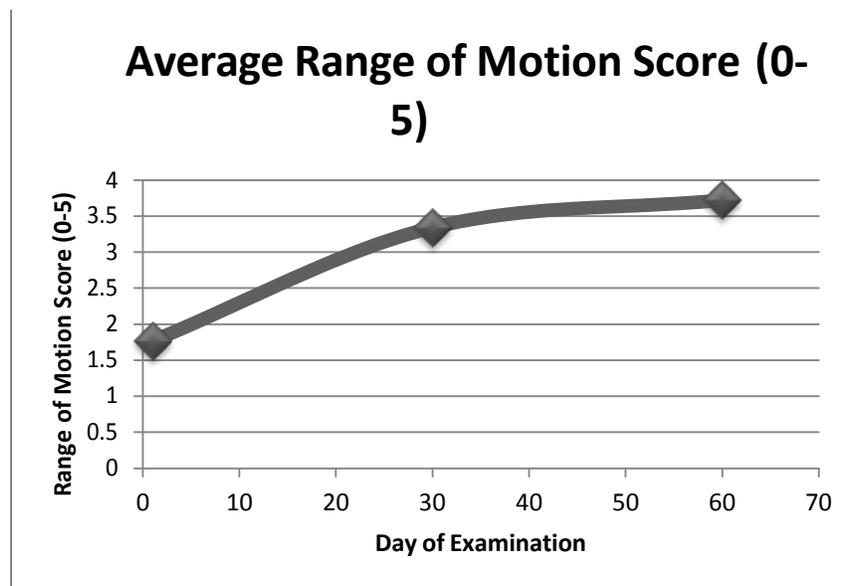


Figure 3: The average Range of Motion score of the 155 canines reported at 1, 30 and 60 days.

Figure 3 shows that the canines experienced an increase in the Range of Motion of the affected joint after both 30 and 60 days of participating in stem cell therapy. After 30 days, included participants saw an average increase of 45% after 30 days, and a 51% average increase after 60 days.

Based on these figures, participants experienced the majority of their improvement within the first 30 days of treatment, while continuing to show improvement between 30 and 60 days.

After 60 days, pain and lameness had decreased by averages of 77% and 65%, respectively, while range of motion increased by an average of 51%. Of the canines in this study, 99% benefitted or showed improvement in each of the three categories studied—which would suggest that stem cell therapy is extremely effective in not only alleviating pain, but serving as a template for repair in pets experiencing osteoarthritic and joint deterioration issues.