**Table 1.** Linear mixed effects analysis reveals differences in alpha-diversity for glucosamine supplementation and older age. Linear mixed effects were calculated for metadata features including glucosamine, age, sex, breed, diet, injuries, and exercise subgroups and were assessed with Shannon’s Diversity Index and Faith’s Phylogenetic Index alpha-diversity metrics. ( **\***p<0.05, †p<0.10)

|  |  |  |
| --- | --- | --- |
| Variable | Shannon’s Diversity Index | Faith’s Phylogenetic Diversity |
| Glucosamine | <0.001\* | 0.005\* |
| Age | 0.012\* | 0.071† |
| Sex | 0.127 | 0.584 |
| Breed | 0.830 | 0.226 |
| Diet | 0.978 | 0.750 |
| Injuries | 0.763 | 0.879 |
| Exercise | 0.473 | 0.441 |

**Table 2.** Alpha diversity subgroup comparisons reveal significant differences in alpha-diversity for glucosamine supplementation, age, sex, and diet in different exercise and glucosamine subgroups. Linear mixed effects were calculated for metadata features in exercise in glucosamine subgroups and were assessed with Shannon’s Diversity Index and Faith’s Phylogenetic Index alpha-diversity metrics. ( **\***p<0.05, †p<0.10)

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Pre-exercise | Shannon’s Diversity Index | Faith’s Phylogenetic Diversity |
| Age | 0.188 | 0.318 |
| Breed | 0.977 | 0.235 |
| Diet | 0.744 | 0.860 |
| Glucosamine | 0.032\* | 0.116 |
| Injuries | 0.976 | 0.287 |
| Sex | 0.497 | 0.434 |
|  |  |  |
| Post-exercise |  |  |
| Age | 0.037\* | 0.120 |
| Breed | 0.607 | 0.589 |
| Diet | 0.758 | 0.772 |
| Glucosamine | 0.011\* | 0.026\* |
| Injuries | 0.565 | 0.498 |
| Sex | 0.153 | 0.180 |
|  |  |  |
| Yes-glucosamine |  |  |
| Age | 0.742 | 0.065† |
| Diet | 0.051† | 0.023\* |
| Exercise | 0.368 | 0.013\* |
| Sex | 0.002\* | 0.405 |
|  |  |  |
| No-glucosamine |  |  |
| Age | 0.006\* | 0.059† |
| Breed | 0.624 | 0.262 |
| Exercise | 0.763 | 0.922 |
| Injuries | 0.330 | 0.803 |
| Sex | 0.047\* | 0.490 |