

Comparative Effectiveness of Canine or Equine-Assisted Therapy for Residents with Dementia



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Background

By 2050, dementia is projected to affect over 115.4 million people globally (World Health Organization, 2018). Currently, over 50% of long-term residents have dementia (US Census Bureau, 2014). One of the most common neuropsychiatric symptoms in dementia is apathy (Selbæk, Engedal, & Bergh, 2013). Since no conclusive evidence exists for pharmacological approaches (Harrison, Aerts, & Brodaty, 2016) and some may have negative side effects, non-pharmacologic approaches are suggested (Brodaty & Arasaratnam, 2012). Limited research exists on animal-assisted interventions (AAI) effectiveness in decreasing apathy or increasing engagement. AAI has been shown to enhance well-being in older adults in LTC (Friedman, Thomas & Chung, 2015; Huff-Mercer, 2015). No known research measures older adult response to multi-species animal-assisted therapy. This study compared RT using canine, equine, and control to understand the effectiveness on apathy, heart rate variability (HRV), and engagement.

Research Question

Which type of animal-assisted intervention is the most effective in improving the social and engagement responsiveness of an older adult with dementia?

Methods

Following IRB/IACUC approval, in five two-hour sessions, 10 volunteer participants with dementia from two LTC facilities were randomly assigned to the order in which each resident received every intervention per session (AAI with dog, AAI with horse, and control (social group)). Informant-reported apathy, using the Apathy Evaluation Scale (Marin, Biedrzycki, Firingiogullari, 1991) was collected before and after the entire five-week period. During each session, Engagement in Preferred Activities Scale (EPASS) (Nelson et al., 2014), targeted observed AAI social responses, and heart rate variability (HRV) Emwave pro, which is impacted by dementia (Britton, 2008; HeartMath Institute, 2020).

Participants

Five participants were recruited through flyers, word-of-mouth, and LTC that serve older adults with dementia. Participation in the research was voluntary. Inclusion criteria were age 60 and above, with a diagnosis of dementia or related disorder. Exclusion criteria are anxiety or fearfulness of dogs or horses. An IRB/IACUC approved protocol assured protection of human and animal subjects.



Measures

Apathy (withdrawal from social engagement) was measured before and after the entire program using the Dementia Interview and Rating Scale (Strauss & Sperry, 2002). Four distinct outcomes were measured using previously reliability and validity-tested measures: Engagement in Preferred Activities Scale (EPASS) (Nelson et al., 2014), an observational measure, measured the 1) duration, 2) attentiveness, and 3) positive attitude, and 4) Heart rate variability, a measure of coherence, was measured using the Emwave pro (Heart Math Institute, 2018). Frequency of in-person observations of targeted social behaviors were recorded during each session.

Procedures

To promote fidelity, the same CTRS dog-handler and the same CTRS PATH instructor incorporated grooming, walking and interaction with the dog or horse during every session for the same amount of time. The control, a social group, was facilitated under the supervision of a CTRS.

Analysis

Observational data and heart rate variability was analyzed through charting, visual inspection, and interpretation of the data. Experimental control is demonstrated by a consistent level and/or trend difference between the conditions (Wolery, Dunlap, & Ledford, 2011). The Wilcoxon Rank Sum Test, was used to compare 1) apathy index before and after the entire protocol; and 2) the engagement (duration, attention, attitude) before and after each canine, equine, and control sessions.

Findings

On the overall apathy scale, as seen in Table 1, the participants became more apathetic ($p < .05$) over the six-weeks in "low effort" ($p = .039$) and "needs help" ($p = .015$). However, they significantly improved in the area of "friends" ($p = .013$) and "intensity" ($p = .053$). While not significant, means in interest, excitement, and motivation improved.

Table 1
Comparison of Apathy Evaluation Scale Before and After Intervention Period

Variable	Pre Baseline	Post Baseline	Mean Difference	Wilcoxon Value * if < .05
Interested in things	3.360	3.450	0.090	.739
Gets things done during day	2.730	2.550	-0.180	.527
Gets important things started on his/her own	2.90	2.09	-0.810	.066
Interested in having new experiences	2.82	3.90	1.080	.102
Interested in new things	2.81	2.54	-0.270	.334
Puts little effort into anything	1.73	2.45	0.720	.039*
Approaches life with intensity	2.27	2.91	0.640	.053
Seeing a job through to end is important to him/her	2.81	2.36	-0.450	.197
Spends time on things that interest him/her	3.63	3.63	0.000	1.00
Someone has to tell him/her what to do each day	2.45	3.45	1.000	.015*
Less concerned about problems than she/he should be	3.09	3.27	0.180	.414
Has friends	3.00	3.36	0.270	.157
Getting together with friends is important to him/her	1.91	2.91	1.000	.013*
When something good happens, he/she gets excited	3.34	3.45	0.110	.527
Has an accurate understanding of her/his problems	1.81	2.45	0.640	.102
Getting things done during day is important to him/her	2.27	2.73	0.460	.265
Has initiative	2.81	3.0	0.190	.317
Has motivation	3.0	3.18	0.180	.480

Scale 1-4 1-not characteristic at all 4-a lot characteristic

Findings

As seen in Figure 1, participants started and ended the canine session with a high engagement. In Figure 2, significant improvement ($p < .05$) can be seen in equine sessions 3 and 4 with duration, attitude, and attentiveness and in the control for session 2 with duration and 5 with attitude. Mean difference scores vary in range: 1) for canine, range is -4 to 7.5 with average mean diff score of 3.46; 2) for equine, range is -8 to 12.7 with average mean difference score of 3.76; and 3) for control range is -4 to 12.2 with average mean diff score of 1.89. Participants displayed a higher frequency of all targeted social behaviors with canine than equine in every incidence but two. The participants' average HRV showed lower average coherence during equine-interaction than dog-interaction or control.

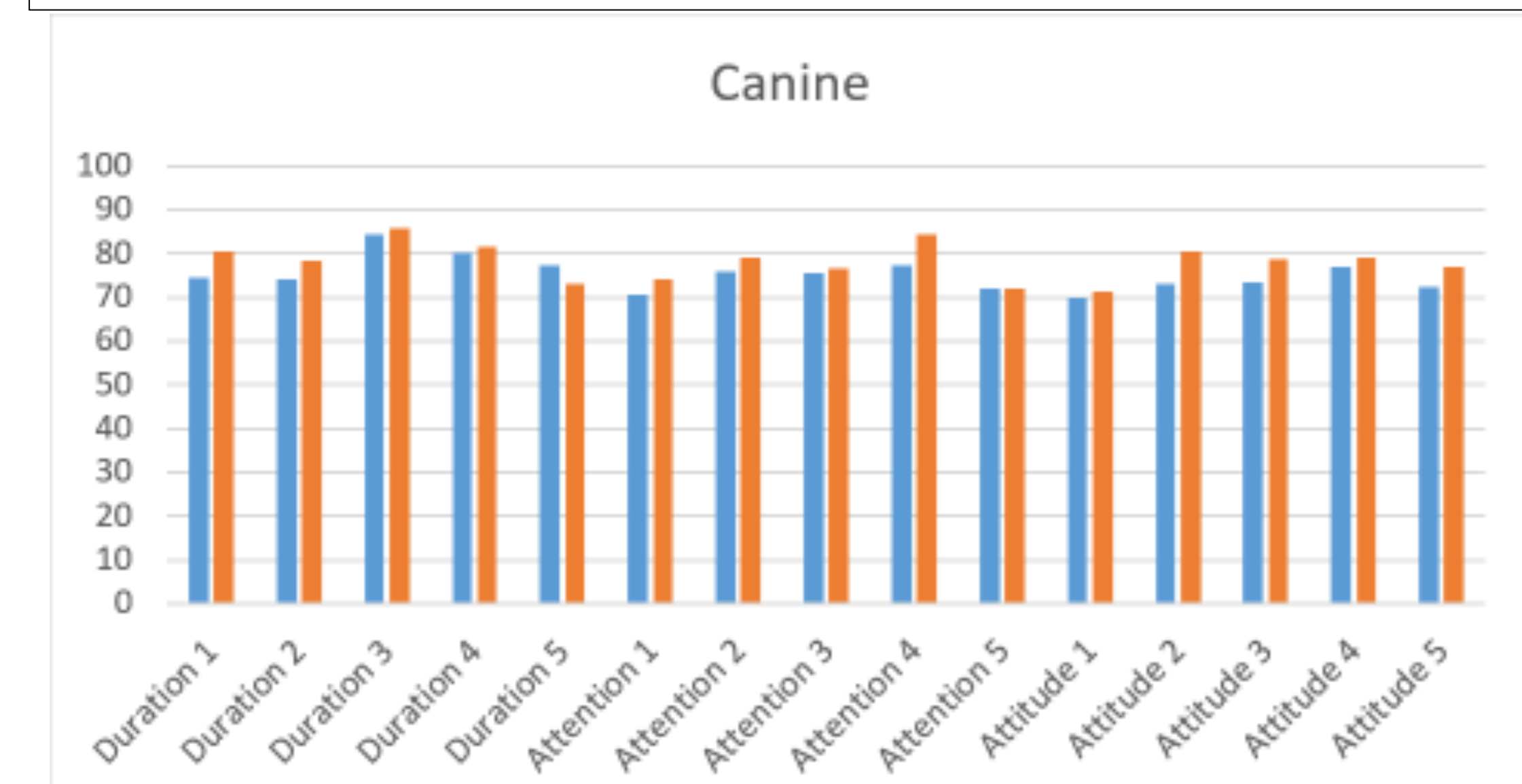


Figure 1 Comparison of Pre and Post EPASS Scores for each Canine Session

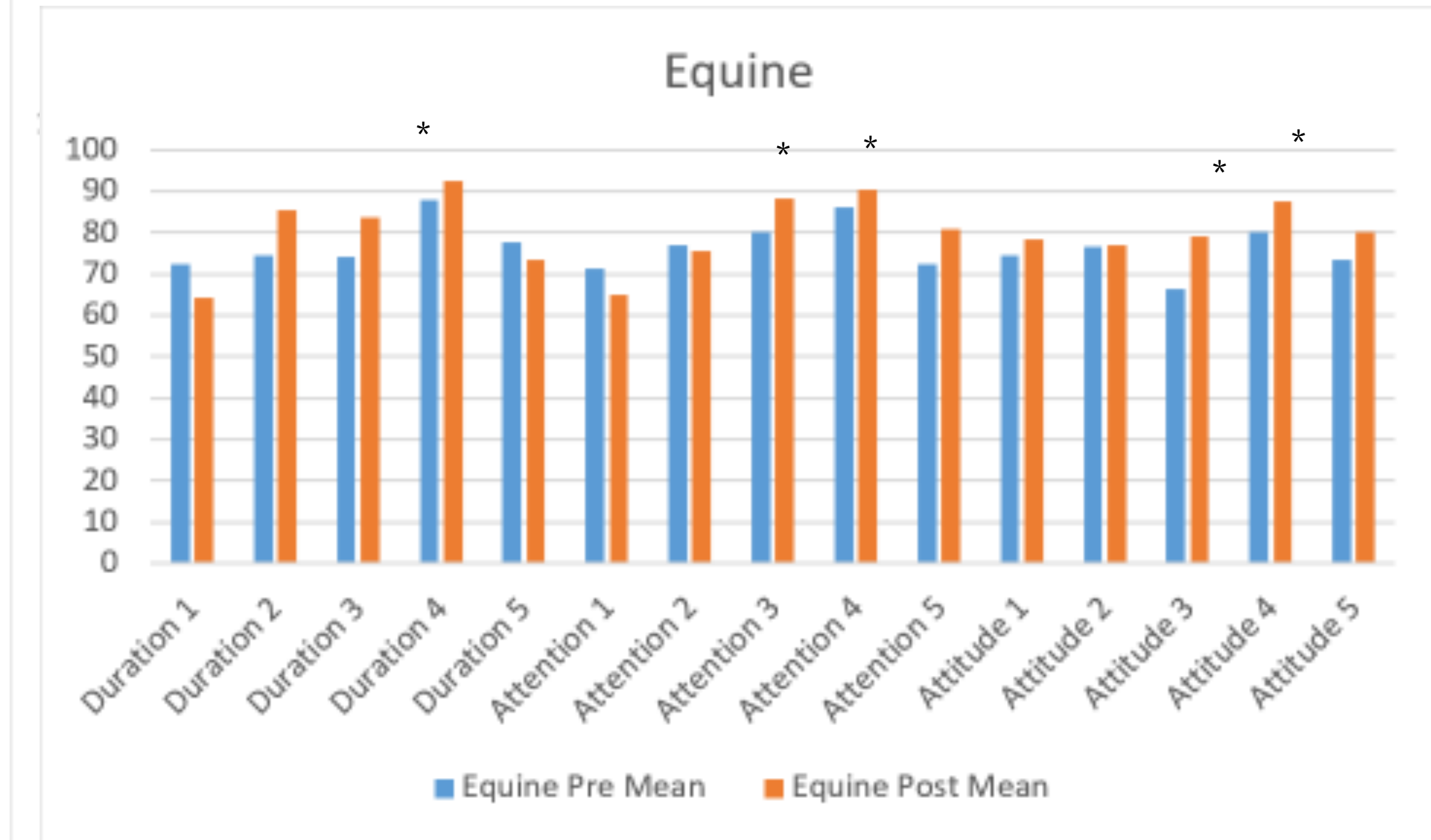


Figure 2 Comparison of Pre and Post EPASS Scores for each Equine Session

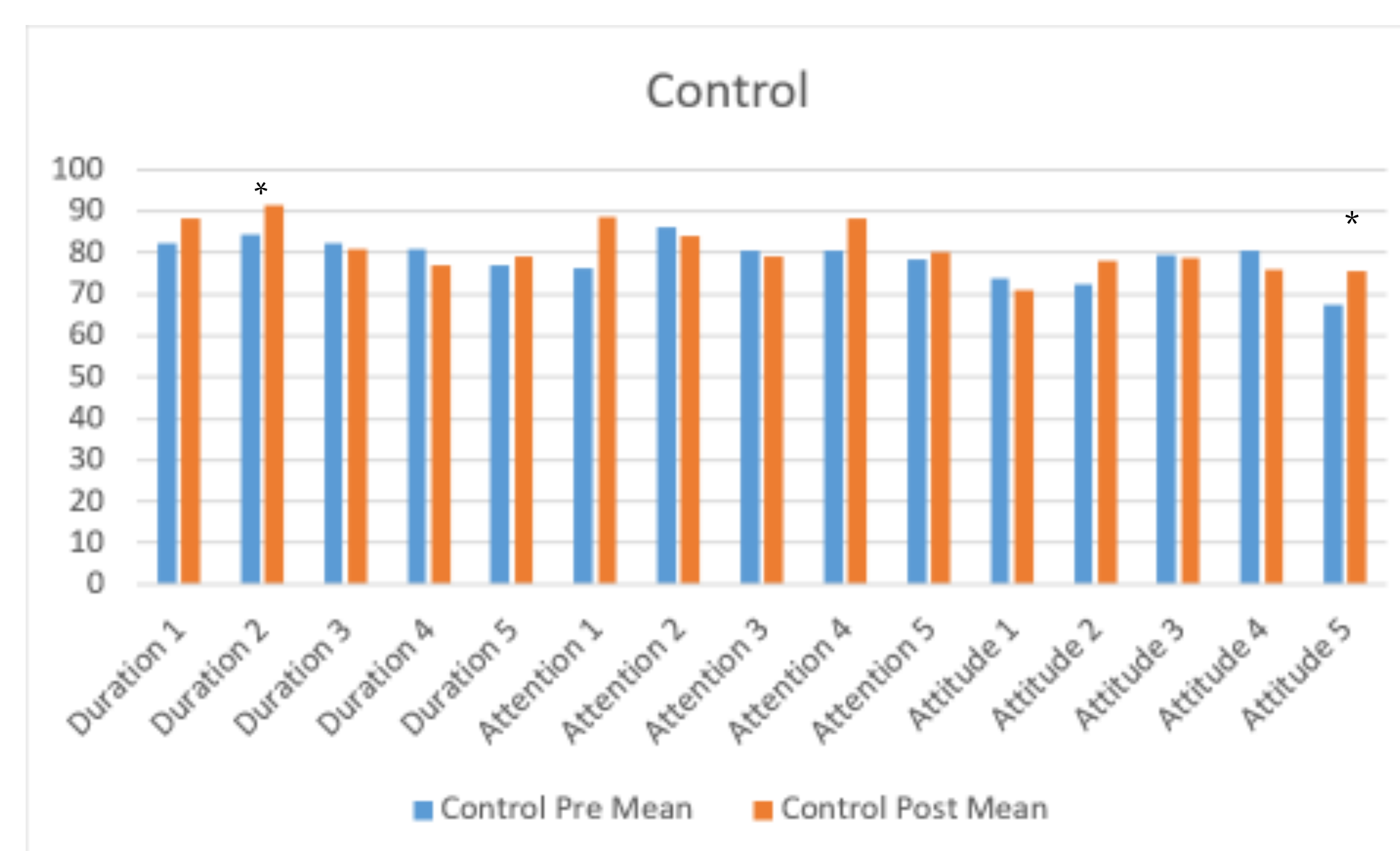


Figure 3 Comparison of Pre and Post EPASS Scores for each Control (Social) Session

Discussion

Overall, the program with canine, equine, and control decreased apathy scores in social items but increased apathy in ADLs items. Canine-assisted showed more stable participant duration, attentiveness, and coherence than equine. Participants started the equine sessions with lower engagement improved over the sessions. Because the same protocol (grooming, leading, feeding) was used, the differences probably relate to the type of animal. When compared to the control, the equine and canine sessions pre-and post EPASS scores were lower. However, difference scores from pre-and-post comparison were lowest in social control and highest in equine. While the equine sessions showed the most improvement, canine and social control showed steady engagement. The differences in familiarity and size of the animals may make a difference in the participants initial reaction to animal-assisted interventions. Limitations: Residents opportunity to go on a regular community outing, variability in health, and disease progression may have impacted results. Further research is needed to better understand how preference and early experience shapes engagement with animals in late life for a person with dementia.

Implications /Significance to Recreational Therapy

Structured AAI sessions facilitated by CTRS may decrease some symptoms of apathy related to socialization and improve engagement. Some response varies by dose and familiarity with the particular animal. While equine sessions showed more significant increases during later sessions, after the participants gained more familiarity with the horses, canine sessions and social control more consistently yielded engagement, coherence, and frequency social response. AAI is being used frequently with older adults (Porter et al, 2020). CTRS with specific training in AAI modalities can promote engagement, coherence, and improved socialization of LTC residents with dementia. Assessment of the residents' needs for engagement and lifelong preferences with particular animals is particularly important in choice of the animal and individualization of the session to meet particular resident needs.

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