The Impact of Therapy Dogs on Psychosocial and Cognitive Recovery in Stroke Patients

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Abstract

Background: Stroke rehabilitation commonly addresses physical impairment; however, psychosocial and cognitive difficulties remain significant barriers to recovery. Animal-assisted therapy (AAT) has emerged as a potential adjunct to conventional rehabilitation.

Objective: This review examined the available evidence regarding the impact of therapy-assisted interventions on psychosocial and cognitive recovery in adult stroke patients.

Methods: A literature search was conducted on 13 January 2024 using PubMed and CINAHL Complete. Inclusion and exclusion criteria were applied to identify studies examining AAT in adult stroke rehabilitation.

Results: Three studies met the inclusion criteria. AAT was associated with improvements in motivation, emotional engagement, and participation in rehabilitation. However, methodological limitations reduced evidence strength.

Conclusion: AAT appears to be a promising adjunct to stroke rehabilitation, particularly for psychosocial outcomes; however, further research is required.

Introduction

Stroke is a leading cause of long-term disability worldwide, affecting approximately 15 million people annually and leaving survivors with profound cognitive, physical, and emotional challenges.1 Common sequelae include motor dysfunction, aphasia, and post-stroke depression (PSD), each of which significantly affects quality of life and rehabilitation outcomes.2 As conventional physiotherapy and speech therapy remain the cornerstones of stroke recovery, interest in adjunctive approaches has grown. AAT has emerged as one such complementary intervention,3 drawing on the unique capacities of therapy dogs to support emotional, social, and physical engagement during rehabilitation.

In Ireland, stroke is a significant healthcare burden, with over 7,000 hospital admissions annually and projections indicating rising prevalence by 2046.15,16,17 This underscores the need for innovative, evidence-informed rehabilitation approaches within the Irish health system.18,19

This review is guided by the following PICO question: in adult stroke patients (Population), does therapy dog-assisted intervention as part of AAT (Intervention) compared with standard rehabilitation alone (Comparison) improve psychosocial, cognitive, or physical recovery outcomes (Outcomes)? The review focuses on study methodologies, key findings, and contextual factors relevant to clinical practice, with particular attention to the Irish healthcare setting.

Definitions and Context

Therapy Assisted Dogs vs. Rehabilitation Dogs

AAT is a structured, goal-directed intervention that incorporates trained animals to support therapeutic outcomes in clinical settings.4 Within this broader framework, therapy dogs are specially trained to provide comfort, emotional support, and therapeutic engagement in both structured and unstructured environments.4 Their primary goal is to enhance patients' psychosocial well-being through companionship and emotional connection. In contrast, rehabilitation dogs are a subset trained specifically for physical tasks such as assisting with mobility exercises or encouraging motor skill recovery.4 While therapy dogs primarily target emotional and cognitive recovery, rehabilitation dogs are more closely aligned with physical recovery goals within a clinical framework.4

Animal-Assisted Therapy (AAT) vs. Animal-Assisted Intervention (AAI)

AAT refers to goal-directed, structured interventions delivered by trained professionals to achieve specific therapeutic outcomes within clinical rehabilitation settings.4,5 AAI, by contrast, is broader in scope, encompassing activities that improve overall well-being6 without necessarily targeting measurable therapeutic objectives, such as casual animal interactions to reduce anxiety or improve mood.7

Methods

Search Strategy

A systematic literature search was conducted on 13 January 2024 across PubMed and CINAHL Complete via EBSCOhost. Search terms covered three key categories: dog-related terms ("therapy dog," "canine therapy," "animal-assisted therapy," "animal-assisted intervention," "pet therapy"); stroke-related terms ("stroke rehabilitation," "stroke recovery," "neurological recovery," "CVA"); and setting-related terms ("hospital," "gym," "home," "rehabilitation centre"). Terms were combined using the Boolean operator AND.

Filters applied included: adult population (18 years and over); English language; peer-reviewed articles; and publication date from 2010 to January 2024. The 2010 start date reflects contemporary practice given the rapid evolution of AAT research. No study design restrictions were applied at the search stage, as the limited evidence base required inclusion of pilot studies, single-case designs, and systematic reviews.

Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Studies involving therapy dogs in stroke rehabilitation	Studies on children
Focus on adult stroke patients	Studies involving robotic or non-canine therapy animals
Intervention settings in hospitals, gyms, or homes	Meta-analyses without original data
Psychosocial, cognitive, or physical recovery metrics	Bench science: laboratory studies without direct therapeutic interventions
Studies published in English from 2010 to 2024	Non-peer-reviewed articles
Pilot studies, case-control studies, randomised controlled trials (RCTs), systematic reviews	Studies without clear outcome measures or control groups

Table 1: Inclusion and Exclusion Criteria

Results

Search Results

The initial search yielded 1,171 hits in PubMed and 62 hits in CINAHL Complete via EBSCOhost. After application of inclusion and exclusion criteria, 177 PubMed studies and 9 CINAHL studies were retained for detailed review. Following full-text screening, three studies met all eligibility criteria and were included in the final synthesis.

In addition to the literature synthesis, one observational session conducted at Cork University Hospital (CUH) is referenced in the discussion. This session represents unpublished, non-peer-reviewed contextual data and does not form part of the formal literature synthesis. It is included separately to provide locally grounded illustration of AAT in practice within the Irish healthcare context.

Table 2: Search Results and Study Selection

Database	Initial Hits	Filtered Results	Final Studies
PubMed	1,171	177	3
CINAHL Complete (via EBSCOhost)	62	9	3

Figure 1: Study Selection Flow Diagram (PRISMA-Adapted)
Adapted from PRISMA. Records identified via database search.

Excluded Studies

Table 4: Studies Excluded from This Analysis
Studies were excluded for several reasons. Paediatric-focused studies were removed as this review examined adult stroke populations. Studies involving robotic or non-canine animals were excluded because they lack the authentic emotional responsiveness central to AAT.11 Bench science studies without direct therapeutic applications were excluded, as were non-peer-reviewed articles.12 Meta-analyses without original data were excluded to ensure the review relied on primary research sufficient for methodological appraisal.13 Studies lacking clear outcome measures were also removed.

Included Studies

Table 3: Studies Included in This Analysis.
A growing body of evidence supports the therapeutic value of animal-assisted interventions in neurological rehabilitation. Experimental studies such as Machoiva et al. (2019) demonstrate enhanced motivation and emotional well-being in stroke patients.

In this study, 15 participants were divided into intervention and control groups, with the intervention group receiving standard physiotherapy alongside AAT sessions, while controls received physiotherapy alone. The findings showed improvements in motivation, emotional well-being, and engagement with rehabilitation protocols in the AAT group.8
Broader evidence from systematic analyses further supports these findings. Mittly et al. (2023) reviewed 25 studies examining animal-assisted interventions across neurological conditions, including stroke, and reported consistent psychosocial benefits. However, the review highlighted considerable heterogeneity in study designs and outcome measures, limiting comparability and strength of conclusions.9

Additional observational evidence is provided by Rondeau et al. (2010), who examined the role of AAT-supported interventions in gait retraining using a multiple single-case design involving four participants. Improvements were observed in walking speed, stride length, and patient engagement with physiotherapy exercises. While the absence of a control group limits causal inference, the study provides valuable qualitative insight into functional outcomes associated with AAT.10

Collectively, these studies demonstrate the potential of AAT to enhance patient engagement and functional recovery in neurological rehabilitation. However, the evidence base remains limited by small sample sizes, methodological variability, and a lack of controlled trials, highlighting the need for further standardised research.
Note: The CUH observational session is not included in the synthesis. It is discussed separately as contextual commentary.

Table 3: Studies Included in This Analysis

Author(s) and Year	Title	Study Design	Sample Size	Control Group
Machoiva et al. (2019)	The Effect of Animal-Assisted Therapy on the State of Patients' Health After a Stroke: A Pilot	Pilot study	15	Yes, standard physiotherapy
Mittly et al. (2023)	The Effect of Animal-Assisted Interventions on the Course of Neurological Diseases: A Systematic	Systematic review	25 studies	Variable across studies
Rondeau et al. (2010)	Effectiveness of a Rehabilitation Dog in Fostering Gait Retraining for Adults with a Recent	Multiple single-case study	4	None

Table 4: Studies Excluded from This Analysis

Title	Reason for Exclusion
Effects of Animal-Assisted Therapy on Gait Performance, Respiratory Function, and Psychological Variables in Patients Post-Stroke	Focus on children
Developing and Planning a Protocol for Implementing Health Promoting Animal-Assisted Interventions in a Tertiary Health Setting	Robotic animals used instead of therapy dogs
The Effect of Animal-Assisted Interventions on the Course of Neurological Diseases: A Systematic Review	Bench science unrelated to practical therapy
Influence of Animal-Assisted Therapy Using Dog for Patients with Stroke and Examination of Nursing Care	Non-peer-reviewed
Animal-Assisted Therapy in Adults: A Systematic Review	Meta-analysis without original data
Incorporating Pets into Acute Inpatient Rehabilitation: A Case Study	Absence of clear outcome measures
Animal-Assisted Therapy for Persons with Aphasia: A Pilot Study (Macauley et al., 2006)	Published 2006, outside the 2010–January 2024 inclusion date range

Figure 1: Study Selection Flow Diagram (PRISMA-Adapted)

IDENTIFICATION

Records identified through database searching:

- PubMed: n = 1,171
- CINAHL Complete: n = 62
- Total: n = 1,233

SCREENING

Records after applying inclusion/exclusion filters:

- PubMed: n = 177
- CINAHL Complete: n = 9
- Total retained for screening: n = 186

ELIGIBILITY

Full-text articles assessed for eligibility: n = 186

Full-text articles excluded, with reasons:

- Studies on children: n = 1
- Robotic/non-canine animals: n = 1
- Bench science (no direct intervention): n = 1
- Non-peer-reviewed: n = 1
- Meta-analysis without original data: n = 1
- No clear outcome measures: n = 1
- Outside date range (published before 2010): n = 1
- All other non-eligible records: n = 178

INCLUDED

Studies included in synthesis: n = 3

- Machoiva et al. (2019); Mittly et al. (2023); Rondeau et al. (2010)

Note: CUH observational session discussed separately as contextual commentary.

Results

Critical Analysis of the Evidence Base

Across the three included studies, the overall evidence for animal-assisted therapy (AAT) in stroke rehabilitation is promising but remains methodologically limited. The pilot study by Machoiva et al. (2019) provides the strongest individual design through the inclusion of a control group; however, its small sample size (n=15) and non-randomised allocation reduce internal validity and limit generalisability.

In contrast, Rondeau et al. (2010) utilise a multiple single-case design involving only four participants and no comparator arm. While improvements in gait retraining and engagement were observed, the absence of a control condition restricts causal inference, making it difficult to distinguish intervention effects from natural recovery or therapist influence.

Mittly et al. (2023) synthesise evidence from 25 studies across neurological populations and report consistent psychosocial benefits. However, heterogeneity in study design, outcome measures, and intervention protocols limits stroke-specific conclusions and reduces confidence in the overall strength of the evidence.

Notwithstanding these limitations, findings across studies demonstrate consistent directional benefits, particularly in motivation, emotional engagement, and participation in rehabilitation. Machoiva et al. report improved emotional well-being and engagement, while Rondeau et al. describe enhanced gait participation and patient effort. Mittly et al. similarly identify psychosocial improvements across neurological populations, although with considerable methodological variation.

Overall, the evidence base is characterised by small sample sizes, a lack of randomised controlled trials, and substantial heterogeneity, all of which limit the strength and certainty of conclusions. While early findings are encouraging, particularly in relation to psychosocial and motivational outcomes, higher-quality, standardised research is required before AAT can be recommended as a routine component of stroke rehabilitation.

Breed Selection and Training

Within animal-assisted therapy (AAT), the selection and training of therapy animals are critical to ensuring safe and effective therapeutic engagement. Labrador Retrievers were frequently utilised across studies, largely due to their calm temperament, trainability, and adaptability to clinical environments, as demonstrated in Rondeau et al.10
Therapy animals involved in AAT undergo extensive behavioural and environmental training to ensure they remain calm in the presence of medical equipment and are responsive to patient cues. In addition to animal training, handlers, many of whom are healthcare professionals, receive specialised instruction to facilitate structured therapeutic interactions. Organisations such as the Delta Society provide certification to ensure adherence to recognised standards of practice.14

Intervention Settings

Table 5: Intervention Settings and Outcomes

Recovery Stage Effectiveness

The timing of animal-assisted therapy (AAT) appears to be a significant factor influencing rehabilitation outcomes. Early implementation during active rehabilitation has been associated with increased motivation (Machoiva et al.)8 and enhanced physical activity levels (Rondeau et al.),10 suggesting that AAT can support engagement with conventional physiotherapy protocols.

Evidence also indicates sustained benefits beyond the acute rehabilitation phase, including reductions in depressive symptoms and improvements in social engagement. These longer-term effects have been reported across both systematic review evidence and individual case studies within the included literature.9

Table 5: Intervention Settings and Outcomes

Setting	Findings
Hospital	Enhanced structure and accessibility for motor-focused recovery, as seen in Rondeau et al. and Machoiva et al.
Gym	Semi-structured spaces support informal interaction and movement-based exercises; noted across studies within Mittly et al.
Home	Informal settings foster emotional comfort and long-term engagement, noted in several studies within Mittly et al.

Discussion

Local Context Commentary: CUH Case Illustration

The following observational vignette from Cork University Hospital (CUH) is included as contextual commentary to illustrate how animal-assisted therapy (AAT) may operate in an Irish rehabilitation setting. This material does not form part of the formal literature synthesis and was not included in the systematic search, appraisal, or evidence extraction process.

During the observed session, two patients engaged with a trained therapy animal under semi-structured conditions, supported by a speech and language therapist and a physiotherapy assistant.

Patient 012M showed immediate emotional engagement and, when encouraged to pet the animal with his affected left hand, demonstrated purposeful limb use, suggesting preserved motor planning. Emotional bonding was evident as he adjusted his position to accommodate the animal.

Patient 009F, presenting with apraxia, initially showed hesitancy but gradually engaged with therapist support. She was able to approximate the animal's name through a musical cue, highlighting the potential of AAT as a motivating stimulus for speech. Over subsequent sessions she demonstrated improvements in verbal initiation and social engagement, with spontaneous speech and laughter indicating reduced anxiety and increased participation.
As this account is not peer-reviewed, it does not contribute to the evidence base but offers contextual insight into how AAT may enhance engagement, motivation, and participation in Irish clinical practice.

Contextual Relevance to Irish Healthcare

The CUH session illustrates how AAT may operate within the Irish healthcare system. Ireland's patient- and family-centred care model is well suited to integration of AAT within existing rehabilitation services. Ongoing qualitative data analysis from focus group and individual interviews with multidisciplinary team members, patients, and families will inform future research on implementation, hospital policy, and resource considerations in the Irish context.

Methodological Considerations

The application of rigorous exclusion criteria was essential to ensure the quality and relevance of this review. Studies involving robotic or non-canine animals were excluded, as their interactions differ fundamentally from live animal-based therapy and lack the emotional and behavioural responsiveness central to AAT, including elements such as spontaneity, warmth, and reciprocal engagement.11

Laboratory-based studies were also excluded, as they do not translate into clinically applicable therapeutic interventions.12 Similarly, meta-analyses without original data were excluded to ensure that the review was grounded in primary research that could be critically evaluated for methodological quality.13

Machoiva et al. included a control group receiving standard care, strengthening internal validity and allowing clearer attribution of improvements to AAT.8 Rondeau et al. lacked a control group, limiting comparative strength and preventing definitive conclusions about the specific contribution of AAT.10

In addition, the absence of standardised metrics, such as consistent intervention duration, session structure, and outcome measurement tools, further limits inter-study comparability and highlights the need for more unified methodological approaches in future AAT research.13

Limitations

This review has several limitations. Small sample sizes across the included studies limit statistical power and generalisability, while heterogeneity in study design, outcome measures, and intervention protocols restricts direct comparison. The evidence base specific to AAT in stroke rehabilitation remains limited, requiring incorporation of broader AAT literature in places, which reduces the specificity of conclusions to stroke populations. The search strategy, while adequate to identify relevant studies, was limited in scope; a wider range of MeSH terms may have retrieved additional evidence. The CUH observational session, though contextually informative, is non-peer-reviewed and should not be treated as equivalent to the empirical studies included. Finally, the absence of a formal systematic review methodology such as PRISMA may introduce selection bias.

Practical Implications

The current evidence suggests AAT is most appropriately implemented in supervised inpatient settings. Before routine adoption, practical considerations including infection control, handler certification, patient screening for allergies, and documentation of therapeutic goals must be addressed. The findings do not yet support routine integration, but are sufficiently encouraging to support pilot programmes in appropriate clinical settings, alongside standardised outcome measures to facilitate future evidence synthesis

Future Directions

Standardised AAT protocols with clearly defined session structures, duration, handler training, and validated outcome measures are a priority for advancing this field and enabling robust evidence synthesis.

Larger cohort studies are also needed to improve statistical power and generalisability beyond the small samples typical of current research.

Context-specific implementation research is critical. International findings cannot be applied directly to the Irish healthcare setting without consideration of cultural norms, system structures, and resource availability. Future work should focus on localised programme development, integration pathways within existing rehabilitation services, and sustainable funding models within the Irish public healthcare system.

Conclusion

The current empirical evidence suggests that animal-assisted therapy (AAT) may offer meaningful benefits in stroke rehabilitation, particularly in enhancing psychosocial well-being, motivation, and patient engagement. These findings highlight the potential of therapy-assisted interventions to complement conventional rehabilitation approaches by addressing dimensions of recovery that are often less responsive to standard therapies alone.

However, the strength of the existing evidence remains limited. Small sample sizes, methodological variability, and a lack of robust controlled trial designs restrict the reliability and generalisability of findings. Consequently, while early results are promising, they are not yet sufficient to support the routine integration of AAT into stroke rehabilitation on empirical grounds alone.

Despite these limitations, the consistency of positive directional outcomes across studies underscores the clinical relevance of this field. AAT represents a novel and potentially valuable adjunct within multidisciplinary rehabilitation, warranting further investigation. Future research should prioritise large-scale, methodologically rigorous, and standardised studies to establish efficacy, clarify mechanisms of action, and inform evidence-based implementation.

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