IAHAIO

Position Paper

Minimum standards for research involving people and/or animals in the field of Animal Assisted Services (AAS), Human Animal Interaction (HAI) and/or the Human Animal Bond (HAB)

Version 1.0

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IAHAIO | International Association of Human-Animal Interaction Organizations

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Version 1.0 – Date: 3 December 2025

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Executive Summary

Purpose and scope

The International Association of Human-Animal Interaction Organizations (IAHAIO) has developed minimum standards for research in Animal-Assisted Services (AAS), Human-–Animal Interaction (HAI) and the Human-Animal Bond (HAB). These standards provide a baseline for ethical and methodological rigor while safeguarding the well-being of both humans and animals. They are designed to be internationally relevant, flexible, and evolving, reflecting ongoing advances in research, education, practice and policy.

Why standards are needed

Research in this field has grown rapidly, but challenges remain:

- **Variability in quality and terminology** reduces comparability across studies
- **Over-reliance on certain types of research (e.g., RCTs)** excludes innovative approaches and small-scale practice-based research
- **Animal well-being** has too often been overlooked despite its central role
- **Fragmentation across disciplines** slows the translation of knowledge into practice

By setting **minimum international standards**, IAHAIO seeks to:

- Ensure ethical safeguards for humans and animals
- Strengthen research quality, transparency, and reproducibility
- Foster cross-disciplinary collaboration
- Improve funding access and policy relevance

Target audiences

These standards are designed for, amongst others:

- Researchers designing and reporting studies
- Practitioners and educators embedding research into practice and curricula
- Students in or entering the field
- Journal editors and reviewers ensuring integrity and consistency
- Institutions, funders, and ethics boards evaluating and supporting research
- Policy and law makers shaping regulatory frameworks

How this document is organized

The standards are presented in three main sections (Introduction; Requirements and practicalities; Conclusion), supported by five appendices. The **main text** explains the rationale, ethical foundations, and practical considerations for each stage of research. The **appendices** provide focused guidance on the addressed key topics (Research design; Animal well-being; Risks; Qualifications; Resources and existing guidelines). This structure allows readers to grasp the principles quickly in the core document while accessing specialized, detailed guidance in the appendices as needed.

Core principles of the standards

1. Research design and methodology

- Methods must fit the research question (qualitative, quantitative, mixed)
- RCTs are valuable but not the only valid standard
- Protocols should be comprehensive, transparent, and, when relevant, pre-registered

2. Ethics and well-being

- **Human participants**: Informed consent, confidentiality, right to withdraw, protections for vulnerable groups
- **Animal participants**: Continuous welfare monitoring, choice and control, suitability for participation
- **One Welfare**: Human, animal, and environmental well-being are interdependent

3. Collaboration and expertise

- Research teams should be **multidisciplinary**, with expertise in human health and well-being, animal welfare and behavior, and research design
- **Training and qualifications** are essential for all involved

4. Transparency and dissemination

- Report methods, limitations, and negative results openly
- Provide detail for reproducibility
- Disseminate findings to scientific, practitioner and public audiences, ideally via open access

Future directions

The IAHAIO Research Standards are a living document, intended to evolve with new evidence and practice. Priorities include:

- Building **transdisciplinary practitioner-researcher** networks
- Securing **funding** pathways through demonstration of rigor
- Influencing **policy frameworks** with robust evidence
- Embedding **animal welfare** and benefit for people and animals at the heart of all research

Conclusion

Adopting these standards will:

- Enhance the rigor, credibility and reliability of research in AAS/HAI/HAB
- Place human and animal well-being at the forefront
- Enable collaborative practice, education and policy-making

IAHAIO invites feedback and collaboration to refine these standards and co-create best practices for the future. **Contact for feedback and contributions:** policy@iahaio.org.

Process

This document is a result of an international collaboration between IAHAIO and partners. It started with an international call in May 2023 to facilitate collaboration (research-practice-education) and to stimulate minimum standards for research in AAS/HAI/HAB. On 6 July 2023, a first meeting was held with 51 participants, which were then divided into two subgroups, i.e., (1) Research Practice, (2) Collaboration; 41 participants actively joined one of these two subgroups. Five online meetings were held with the total group of 51 participants. Additional subgroup meetings followed, with a resulting small working group (SWG) of seven participants, in alphabetical order: Barnfield A., Delanoeije J.*, De Santis, M., Hediger K.*, McBride A., Rusu A.*, & van Dierendonck, M. (*IAHAIO representatives leading the group) (See Appendix 6). The current document was developed and written based on 10 online meetings with this SWG, and inputs that were gathered during this process with the larger working group of 51 participants and with the IAHAIO board.

Definition of Terms

Below we provide an overview of how we define and use terms as used in *this document*. The terminology on animal-assisted services (including AATx, AAE, AASP) is adapted from Binder et al. (2024). The definitions of HAI and HAB are derived from HABRI (https://www.habri.org) and AVMA (https://www.avma.org/resources-tools/one-health/human-animal-bond).

We acknowledge that humans are mammalian animals. For clarity, we use the terms humans and animals instead of humans and non-human animals in this document.

- **Animal Assisted Services (AAS**): Mediated, guided, or facilitator-led practices, programs and human services that incorporate specially qualified animals into therapeutic, educational, supportive and/ or ameliorative processes aimed at enhancing the well-being of humans while ensuring the welfare of the animals involved in these practices. This term has recently been proposed to replace the term Animal Assisted Interventions (AAI). Three categories of AAS are identified: animal-assisted treatment (AATx), animal-assisted education (AAE), and animal-assisted support programs (AASP).
    - **Animal-Assisted Treatment (AATx):** Mental or physical treatment modalities used by health professionals for which the integration of animals, directly or indirectly, is a critical component of the treatment. Also known as Animal-assisted Therapy (AAT).
    - **Animal-Assisted Education (AAE):** Educational program in which animals are integrated, directly or indirectly, as a critical component of an ongoing educational process.
    - **Animal-Assisted Support Programs (AASP):** Programs in which animals are involved, directly or indirectly, in activities aimed at supporting and enhancing the well-being of humans. Also known as animal-assisted activities (AAA).
- **Animal Well-being and Welfare**: The **physical, mental, and emotional** state of an individual animal as experienced by that animal; should mean the animal has a life worth living as described by the five domains model (Mellor et al., 2020). **Well-being and Welfare are used as synonyms, and interchangeably in this document**.
    - Animals are a state of good well-being when they can actively adapt to their living conditions and thereby can reach a state that the animal perceives as positive.
    - This well-being requires consideration by caretakers throughout the individual animal's life course, from conception to death.
    - Welfare should be monitored throughout the 24-hour period and needs to include influences on both short-term and long-term well-being.
- **Applied Research:** Aims to test potential practical applications of current knowledge in real world settings and thereby inform decision making (e.g., does facilitating animal choice in AAS reduce signs of anxiety in the animal and increase time spent with AAS recipient?).
- **Fundamental Research:** Also known as Basic or Pure research. It is theoretical and exploratory and conducted to further knowledge and understanding of fundamental concepts (e.g., what is the hearing range of dogs and horses? What parts of the human brain react to pictures of different types of animals?).
- **Human–Animal Bond (HAB):** Ideally a mutually beneficial and dynamic relationship between people and animals that is influenced by behaviors considered essential to the health and well-being of both. This bond should be beneficial to the mental, physical, and social health of people and animals (Hosey & Melfi, 2014). However, it is important to note that bonds may be unidirectional. A person may bond with an animal, but the animal may not have bonded with the person and vice versa. The well-being and welfare of both parties should not be taken for granted and should be monitored.

- **Human-Animal Interaction (HAI):** Any manner of relationship or behavior between people and animal(s). These interactions can vary widely and be positive, negative, or neutral for either party; they can occur in individual, community, or societal contexts (AVMA, 2025).
  Human Well-being and Welfare: The **physical, mental, and emotional** state of an individual human as experienced by that human; should mean the person has a life worth living as described by quality-of-life indicators (Land, Michalos & Sirgy, 2011). **Well-being and Welfare are used as synonyms, and interchangeably in this document**.
  Well-being and welfare for humans and animals requires consideration:
    (1) **Of the life course**: A timeline approach (pre-birth to death), including **genetic** factors and lifelong effects of **experiences throughout the life course.**
    (2) At the level of the **individual.**
    (3) Of **both positive and negative states** such as affective, mental, health, etc.
    (4) Of **the environment,** including bio-security.
- **Involved humans:** In AAS/HAI/HAB we can consider the term "humans" to apply to: (1) "Participants" are the persons from whom research data is being gathered; (2) "Other humans" are those persons who may be present for all or part of the time e.g., practitioners, researchers, observers, bystanders, or animal handlers. We use the term "Involved humans" to cover all such persons.
- **Involved animals:** In AAS/HAI/HAB we can consider the term "animals" to apply to: (1) "Participants" are the animals from whom research data is being gathered; (2) "Other animals" are those animals who may be present for all or part of the time and who can directly or indirectly influence the research. We use the term "Involved animals" to cover all such animals.
- **One Health/One Welfare:** The concepts of "One Health" and "One Welfare" effectively illustrate the inextricable link between human, animal and environmental health and welfare. In particular, the concept of One Welfare emphasizes the interrelationship between the welfare/well-being of humans, animals, and the environment. One Welfare represents a valuable development and approach in the fields of both human and animal welfare science and in the study of AAS/HAI/HAB (Pinillos et al 2016; Pinillos, 2018, Hediger et al., 2019).
- **Randomized Controlled Trial (RCT)**: A trial in which participants are randomly assigned to one of at least two groups: one (experimental) receiving the intervention that is being tested, and the other (comparison) receiving an alternative treatment or no treatment.
- **Standards/Minimum Standards:** A set of shared rules, guidelines or characteristics for activities or for their results, aimed at the achievement of the optimum degree of efficacy, reliability and validity in any given context. In the case of this document, the context is research in the field of AAS/HAI/HAB, and The Standards are aimed at ensuring standards of integrity and transparency in conducting and reporting research. The term "minimum" is used to emphasize that this document defines basic requirements that can be further developed. ***Note: Unless otherwise stated, the term Standards refers to those developed for and presented in this document.***

Abbreviation List

1 **AAA** – Animal-Assisted Activities
2 **AAE** – Animal-Assisted Education
3 **AAS** – Animal Assisted Services
4 **AASP** – Animal-Assisted Support Programs
5 **AAT** – Animal-Assisted Therapy
6 **AATx** – Animal-Assisted Treatment
7 **HAI** – Human Animal Interaction
8 **HAB** – Human Animal Bond
9 **IAHAIO** – International Association of Human-
10 Animal Interaction Organizations
11 **RCT** – Randomized Controlled Trial

1. Introduction: Rationale and Applications

This document provides minimum standards for research in the field of Animal Assisted Services (AAS), Human Animal Interaction (HAI) and/or the Human Animal Bond (HAB). These are minimum standards, and different countries or organizations may require further evaluation, additional considerations etc. In the case of different levels of requirements, those involved in AAS must adhere to whatever is the higher ethical standard.

It is important to note that AAS are a specific form of HAI and HAB, and therefore this term also encompasses their respective meanings, unless otherwise stated. Issues that apply to AAS may also apply to HAI and HAB.

These standards were developed by an international group of researchers and practitioners collaborating with International Association of Human-Animal Interaction Organizations (IAHAIO) between 2023 and 2025. They are intended as a dynamic, evolving resource, based on collaborative and participatory processes. Thus, they may undergo modification to reflect scientific developments in the fields of AAS/HAI/HAB.

This introductory section will provide an overview of the document's rationale, addressing the following key issues:

- **What** are the aims of this document?
- **Who** is this document for?
- **Why** define these standards (what are their potential applications)?
- **How** were these standards developed and how is this document organized?

The question of "**Where** do these standards lead?" will be addressed in the concluding section, where a summary will be provided, along with considerations on possible future directions.

1.1. WHAT are the aims of this document?

This document aims to facilitate best practices regarding research on AAS/HAI/HAB. Its **overall aim** is to serve as a minimum standard for research in AAS/HAI/HAB and, in doing so, to ensure:

1. **Well-being and welfare**, safety and comfort of all involved, human and animals; regardless of the aims of the research.
2. **Quality** of pure and applied **research** in this field. Pure research identifies new ideas, theories, principles and ways of thinking. Applied research is based on the theories and principles discovered through pure research. Findings of pure research usually have a future use, not a current use. Findings of applied research generally have a current use.
3. Facilitate **knowledge and good practice in research and the work of practitioners** (i.e., this document will lead practitioners to apply these insights in their practice).

Considering the points above, these standards are designed to increase the feasibility of mutually beneficial **collaboration** between researchers and practitioners.

There appears to be a belief in the field that multiple location RCTs are the only way to do high-quality research. This ignores the **reality on the ground** in that many practitioners only do one type of therapy, so a comparison (e.g., control) group is not always possible, and they often work with small numbers of participants, making some types of statistical analyses impossible. We cannot expect practitioners to change their practices just so we, as researchers, can do an RCT. By insisting solely on RCTs as the 'gold standard' research method, we are potentially missing many significant **innovative practices** in this field (see also Murad et al., 2016).

Standards need to be developed which cover the full range of high-quality research methods, including qualitative and quantitative, that can be used to answer all the key research questions in the field in a feasible and practical manner. Furthermore, we argue that the research design (e.g., qualitative, quantitative, mixed methods) should align with the research question(s) and the goal(s) of the research.

Altogether, this document serves as an indicator of how to design quality research. Quality design will help with finding resources (e.g., through grant applications). This is important as a key barrier to rigorous evaluations of AAS efficacy is lack of funding. Many grants provide only small budgets which preclude conducting large scale or RCT studies. Encouraging the development of shared labor and advocacy through building practitioner and researcher collaborative networks across institutions will bring about meaningful opportunities for growth in the field in terms of innovative practice, research, and enhanced funding pathways.

1.2. WHO is this document for?

The **target audiences** for the document are those involved in practice, research, and/or knowledge dissemination in AAS/HAI/HAB, including, but not limited to:

- **Researchers** on topics related to AAS/HAI/HAB;
- **Educators** with an interest in research (e.g., to utilize research findings in education);
- **Students** both undergraduate and postgraduate may be interested in research in this field;
- **Practitioners** with an interest in research in the area and/or with an interest in participating in research (e.g., for program evaluation);
- **Participants** in research (e.g., for facilitating transparency to participants);
- **Journal editors and reviewers** of articles in scientific and/or practitioner-oriented journals; or other media (e.g., newspapers, blogs);
- **Coordinators** of outreach activities (e.g., co-creation with participants);
- **Institutions** including, but not limited to, funding bodies, universities and colleges, human and animal ethics boards, charities, associations, and organizations involved in AAS/HAI/HAB.
- **Policy and law makers.**

The standards outlined in this document primarily relate to research conducted within the context of AAS. While some of the principles may be applicable in other instances, it is not the case that all the content will be appropriate for all types of research conducted within the AAS/HAI/HAB domains.

Whilst most species involved in AAS/HAI/HAB are domesticated species of mammals or birds (see the IAHAIO White Paper, 2025), the principles considered in this document relate to any individual animal (vertebrate or non-vertebrate) directly or indirectly involved in AAS/HAI/HAB contexts.

1.3. WHY do we define these standards, and what are their potential applications?

The principal potential applications and impacts of this document are:

- The encouragement of both **basic and applied research to promote high-quality, evidence-based practice** through, for example, cross-domain knowledge sharing.
- The facilitation of both the gathering of **better data** and **the comparison of results** from different studies;
- The promotion of **consistent use of terminology,** in line with latest developments;

- The encouragement of **clearer reporting** of research methods to provide greater **transparency of treatment procedures and protocols used across** all involved, human and animal;
- The promotion of research approaches that can be **readily incorporated into educational** curricula and/or practices and **disseminated** to those involved in the field of AAS/HAI/HAB ;
- An enhanced **collaboration** between researchers, educators, and practitioners;
- Access to **transdisciplinary** funding and to improved research methodologies;
- The **facilitation of policy change** at both national and international level;
- An **enhancement of the well-being and welfare** of all humans and animals be they involved directly or indirectly;
- The widening and strengthening of **cross-disciplinary discussions** including, but not limited to, medicine, physiotherapy, social sciences, psychology, veterinary science, animal behavior, and animal welfare science.

1.4. HOW were these standards developed and how is this document organized?

These standards have been developed by researchers and practitioners through a collaborative process, drawing on the existing scientific literature and other standards currently in existence or in development. Section 2 provides a brief introduction outlining the Standards of practice in AAS/HAI/HAB, deontological and other ethical aspects, and general indications related to the different phases of research (before, during and after). This is followed by detailed consideration of the key points relating to methodology, human and animal participants.

We consider this document as a "**living document**" in which we aim for feedback from people who are involved in the field to allow for a **co-creation** of the standards. Those who wish to provide constructive comment/suggestions for improvement, please email IAHAIO: policy@iahaio.org.

1.5. Existing standards of relevance to this field

The current document focusses on the practice of research, including research design (**Appendix 1**) related to AAS/HAI/HAB and pertains to both human and animal involvement in research (**2.2.2. Humans** and **2.2.3. Animals**). Consequently, ethical aspects related to human-animal interactions (**Appendix 2** and **Appendix 3**) and the importance of qualifications (**Appendix 4**) are considered, to minimize both ethical and practical risks concerning animals and humans. It is acknowledged that existing standards and guidelines are already in place for both human and animal involvement in research. However, there are additional factors to be considered in multi-species research. Therefore, whilst this document addresses specific characteristics associated with the field of AAS/HAI/HAB, it is strongly recommended that additional relevant standards and guidelines be consulted (**Appendix 5**).

- A more in-depth look at **research designs** can be found in **Appendix 1**: RESEARCH DESIGN – Explanation of terms.
- A more in-depth look at **animal welfare** can be found in **Appendix 2**: ANIMAL WELFARE – Models and approaches to safeguard animal welfare.
- A more in-depth look at **risks** can be found in **Appendix 3**: RISKS – Minimizing risks: Animal and human considerations.
- A more in-depth look at **qualifications** can be found in **Appendix 4**: QUALIFICATIONS – People and animals involved in the research.
- A non-exhaustive **overview of existing resources and guidelines** can be found in **Appendix 5**: OVERVIEW RESOURCES – Existing resources/guidelines relevant to this field.

2. Requirements, Practicalities and Considerations for Research in AAS/HAI/HAB

The field of AAS/HAI/HAB has recently witnessed the emergence of numerous "standards of practice" at both national and international levels (**Appendix 5**). The focus of this document is on research, but it is important to note that good research can only be conducted if the AAS is conducted in a way appropriate for all actors involved (humans and animals). The reason is twofold:

1. Failure to consider all those involved leads to poorly designed research (inappropriate data; confounding variables, unreliable results);
2. Failure to consider all those involved is unethical and potentially damaging for the humans and animals involved.

One conceptual framework that informs the Standards is that of One Welfare (Pinillos et al., 2016), which emphasizes the close interconnection between humans, animals and the environment. In other words, it is not possible to assume that the welfare of humans is independent of that of animals and that both are not influenced by (and influence) the environment. AAS should be based on a mutual benefit model, whereby the welfare of human and animal participants is enhanced, as well as that of the setting/environment (see **Figure 1**).

Figure 1. One Welfare concept from Pinillos et al. (2016) – Figure from Jones et al. (2023)**.** Copyright: © 2023 by Jones et al. (2023). Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/).

Consequently, the initial recommendation is that research on AAS/HAI/HAB, whether conducted through experimental and/or observational and/or other studies should adhere to existing standards of practice that incorporate a One Welfare approach. Several fundamental points are common to these, including:

- The necessity of a correct definition and communication of the objectives of the AAS and their typology (AATx, AAE, AAPR);
- The multidisciplinary nature of AAS and the involvement of several adequately trained professionals to carry out all interventions;
- The centrality of the welfare of all individuals involved (including the individual animals).

Furthermore, AAS must be conducted in accordance with the guidelines, legislation and/or regulations of the respective countries in which they are carried out, particularly in those countries where *ad hoc* regulations have been enacted. It may be that local requirements are less than those

described in other standards regarding AAS practice and research, including this document. In such cases we urge practitioners and researchers to follow the higher level of requirements and thereby encourage the raising of quality of practice and research.

2.1. Timeline of the research planning and execution

Overarching all stages of the research process, it is paramount to take into account the **ethics** of the methodology of *any* procedure, as this pertains to both the animal AND human well-being and welfare. We aim for a **deontological code for involving animals** (currently lacking at many ethics boards). That is, meeting the animal's well-being needs is morally obligatory. Where there is no ethics board involved, then we encourage the research team to refer to appropriate others for comment prior to starting any research (e.g., universities, animal welfare organizations etc.).

We, IAHAIO, do not aim for developing an ethics review board ourselves; instead, we propose that researchers adhere to the standards for animal and human ethics in their studies.

Application of ethics include acquiring consent from people *and* animals, through appropriate humane, low-stress, cooperative training and research methods (Fernandez, 2024), and consideration of the short-term and long-term effects of the research on both people and animals, including the husbandry of the animals. Importantly, consent from people, who can explicitly give consent themselves, is qualitatively different from consent from animals, from whom we may only be able to infer consent (e.g., based on behavioral or other indicators, such as engagement or disengagement). In this document, we add clarification on important conceptualizations and issues concerning consent.

➔ See ethics statements in sections **2.2.2. Humans** and **2.2.3. Animals**.

Finally, the information in this document applies to different research stages: design and planning, conduct and post data collection. That is **before, during, and after the study**. For each part, we will refer to various sections in the document. Below is a concise overview of the considerations that should be made at each stage of the process.

Additionally, in **Table 1** we provide a checklist encompassing the various steps in research on AAS/HAI/HAB. This checklist is intended to provide a synopsis of the research process in the field of AAS (HAI/HAB), building on the information previously outlined in this document.

Table 1. Checklist providing a synopsis of the research process in the field of AAS/HAI/HAB.

CHECK	ITEM[1]	DESCRIPTION
Before data collection		
☐	**1**	Read and review current literature
☐	**2**	Draw up initial aims and hypotheses for study
☐	**3**	Draw together research team considering the necessary expertise for both the humans and animals involved
☐	**4**	As a team, review items 1 and 2
☐	**5**	Consider relevant ethical principles and potential issues

[1] Item numbers are not necessarily in a chronological order, as different steps can be taken in parallel or in a different order depending on the context.

☐	**6**	Apply for funding with the project idea or a more detailed research protocol *[if applicable]*
☐	**7**	Define the research project *[depending on the project, some of the following steps may not be necessary]*: ○ Research question and hypotheses: expected outcomes and appropriate measurements preferably with validated tools; ○ Choose a research methodology and define the research design; ○ Decide inclusion and exclusion criteria of human and animal participants and how they will be recruited; ○ Check for compliance with human and animal legislation, animal welfare standards, and AAS standards or legislation, also ensuring consistency with AAS terminology; ○ Design relevant intervention and control protocols; ○ Consider randomization and blinding if applicable; ○ Check for robustness – internal and external reliability; ○ Identify the setting and check feasibility in proposed location; ○ Plan for short and long-term welfare and wellbeing of involved humans and animals. Welfare monitoring protocol during the intervention; ○ Plan risk control strategies; ○ Prepare a contingency plan in case of participant withdrawal; ○ Check legal and other implications accounted for; ○ Prepare informed consent documentation; ○ Design Analysis Protocol; ○ Consider follow up if relevant; ○ Decide Dissemination Protocol.
☐	**8**	Apply for ethical approval for both human and animal involvement
☐	**9**	Pre-register the research protocol *[if applicable, e.g., in the case of RCTs]*
☐	**10**	Human and animal participants recruitment, checking that human-animal AAS teams are certified where applicable and, as a prerequisite, that the animal's health and welfare status is suitable for participation.
☐	**11**	Match handler-animal teams with human participants where applicable
☐	**12**	Ensure correct and clear communication of the project to participants and human involved (including the personnel of the facility). Collection of informed consent/assent and relevant data relative to human and animal participants (including individual characteristics, preferences and anamnestic data)
	13	Ensure training of the research team on the defined protocols, security and emergency procedures
☐	**14**	Plan data collection
☐	**15**	Perform pilot tests when necessary.
During data collection		
☐	**13**	Run the study: deliver AAS and collect measures as detailed in the protocol
☐	**14**	Check for implementation fidelity
☐	**15**	Document any change made to the research protocol
☐	**16**	Document environmental and confounding variables

☐	**17**	Monitor the health and welfare of human and animal participants during the study, and consider the welfare of the whole setting, including all human and animals involved – directly or indirectly
☐	**18**	Collect and store data in compliance with privacy policies, cybersecurity best practices and regular backups
☐	**19**	Document any unexpected or negative outcome
After data collection		
☐	**20**	Ensure post study health, welfare and wellbeing of animals
☐	**21**	Analyze collected data
☐	**22**	Provide correct statistical analysis
☐	**23**	Write up as per dissemination protocol: ○ Identify biases and limitations; ○ Provide full methodology for reproducibility including descriptions of animal characteristics, management, training, and care; ○ Critically interpret findings with relevance to clinical, applied and/or theoretical significance, as appropriate; ○ Report funding ○ Report any potential conflict of interest of both funders and researchers

2.1.1. Research concept considerations and funding

Ethical and robust research begins in the planning stages and carries on throughout the entire research process. This applies to studies on AAS/HAI/HAB in a variety of settings, including (health)care, education, work, household, and other settings (for an overview, see IAHAIO, 2025; Fine, 2025; and the additional resources at the end of this document). Important questions to answer **before** the onset of the research are:

- ➔ Why do you want to do this research? E.g., are there gaps in literature?
- ➔ What do you want to find out? E.g., what are your aims, hypotheses?
- ➔ What data do you need to answer your research questions?
- ➔ What legal approvals or considerations must be addressed?
- ➔ How are you going to obtain the data?
- ➔ How are you going to analyse the data?
- ➔ How are you going to write up the findings?
- ➔ How will you disseminate the findings?
- ➔ How will you fund your research? Before applying for funding, all the above questions should be addressed. Note that often you are unable to start the research before you get funding and/or ethical approval.

Research – both fundamental and/or applied – should fill knowledge gaps and thus increase our understanding of phenomena associated with AAS/HAI/HAB. To identify the gaps between theory and practice, it is recommended that:

- The development of the research question is aligned with current needs: identify the needs of practice that require an evidence-base and/or identify the needs of theory that are not replicated or studied in a naturalistic setting.

- The acquisition of up-to-date knowledge is facilitated by the consultation of scientific literature and direct contact with researchers, leaders, and practitioners involved in the area. To assist with development of knowledge, IAHAIO is developing a database. In addition to the conventional search platforms and databases typically consulted for studies and literature reviews (e.g., PubMed, Web of Science, Scopus, CAB–abstracts and The Human-Animal Bond Research Institute [HABRI]), other potential avenues for acquiring up-to-date knowledge include congress papers and the possibility of accessing work-in-progress reports from practitioners and researchers.

Rigorous science requires the posing of clear research questions and research goals. The research questions and goals dictate the design and methodology to be used. Appropriate methodologies may be qualitative, quantitative, or mixed methods. Therefore, the benefits and drawbacks of different methods should be considered prior to any final design decision and when interpreting results and drawing conclusions.

For instance, research designs may include an experimental (i.e., test group including an intervention or manipulation) and a control group (i.e., comparison group), but may also include case studies without a control group. Some designs address fundamental research questions, whereas other designs are applied and focus more directly on practice, i.e., applying a scientist-practitioner perspective. Depending on the research question, certain designs may be favoured over others. Importantly, interpretation of the results and the resulting conclusions should be applicable for, and tailored to, the chosen methodological choices.

2.1.2. Development of design and protocol

Irrespective of whether the research is an intervention, observational study, conducted in a laboratory or naturalistic setting, the design must consider the specific features, potential issues, and risks that may arise. A more in-depth look at **research designs** can be found in **Appendix 1**. In development of the design:

- The research protocol must be comprehensive and subject to evaluation by an ethics committee in accordance with the current guidelines, regulations and legislation. It is recommended that a deontological approach and the highest ethical considerations regarding animal and human well-being and welfare be adhered to. A more in-depth look at **animal welfare** can be found in **Appendix 2**.
- In addition, it is necessary to define strategies to minimize any risks to both humans and animals involved in the study. A more in-depth look at **risks** can be found in **Appendix 3**.
- This will require consideration of the expertise and qualifications of the research team and suitability of all involved animals (Trevathan-Minnis et al., 2021). A more in-depth look at **qualifications** can be found in **Appendix 4**.
- Compliance with relevant human and animal legislation **AND** national standards and legislation (such as the HETI Ethics Code, APA Ethical Standards, British Psychological Association (BPA) standards) is expected. A non-exhaustive **overview of existing resources and guidelines** can be found in **Appendix 5**.
- Furthermore, it is necessary to define strategies to maximize the benefit for humans and animals involved in the study. See also sections **2.2.2. Humans** and **2.2.3. Animals**, concerning the importance of welfare and well-being (i.e., positive welfare/well-being).

Methodological tools for data gathering should be robust. **Appendix 1** and **Appendix 5** provide lists of useful sources of information about available tools.

2.1.3. Data collection, processing, analysis and writing

When conducting a research study, particularly in field studies, such as when evaluating the effectiveness of an AAS, it is important to recognize that numerous variables may influence the course of the research and its results. As general indications, it is necessary to describe and:

- **Identify points of contact** such as peer-led group reflections, collaborative working, supervision or mentoring in the event of any issues arising.
- **Document** negative incidents and findings to avoid reporting bias of publishing only 'positive' findings.
- **Consider the possibility of re-designing** the initial approach should any change during the study be deemed beneficial. This is currently not a common practice in research, but it should be considered in cases where change is needed to increase human/animal well-being. Any changes must be documented extensively and openly.
- **Identify biases and limitations.**
- **Provide full methodology for reproducibility** including descriptions of animal management, training, and care.
- **Provide correct statistical analysis.**
- **Critically interpret findings** with relevance to clinical, applied and/or theoretical significance as appropriate**.**

2.1.4. Reflection and dissemination of findings

The dissemination of research results is intended to inform the professional and scientific community, as well as practitioners and the public. Thus, dissemination should aim to reach not only local, but also national and international audiences. Dissemination should be communicated clearly in appropriate formats, so it can be understood by a diverse range of audiences.

Providing lay persons with accessible, clearly communicated reports of research results is important to further understanding and support of AAS practice, thereby helping maximize the benefits and prevent risks to human and animal well-being and welfare.

Dissemination of findings may occur through various media but ideally includes publishing articles in peer-reviewed scientific journals, with preference given to Journals with Open Access possibilities.

2.2. Practical and ethical considerations

2.2.1. Methodology

When conducting research, effective planning is of the utmost importance. This entails using scientifically reliable sources when conceptualizing the research study and developing the hypotheses and design. Such sources include, but are not limited to, peer-reviewed scientific literature, and official institutional documents such as technical and government reports (see **Appendix 1** and **Appendix 5**).

2.2.1.1. Developing the research team

A research project often necessitates the collaboration of a diverse range of professionals from various disciplines, working collectively as a unified team. This is particularly evident in the context of AAS, where the research team encompasses researchers with distinct areas of expertise, practitioners, and animal handlers. Preferably there should be a 1:1 handler-animal ratio, i.e. a separate handler per individual animal that is directly involved, and at least one handler for any

animals indirectly involved. A coherent research team will help avoid observational pitfalls, biases, and minimize risks for all involved.

The composition of the research team has both ethical and research design implications. The experience and professionalism of the research team members will influence both the formulation of the research question and the definition of the study protocol.

In the process of assembling a research team for AAS, it is necessary to identify individuals with relevant expertise in:

1. Research design and methodologies (i.e. literature review, formulation of research questions, planning and implementation of quantitative and qualitative research regarding ethical standards, data collection, analysis and interpretation);
2. Human aspects;
3. Animal aspects;
4. Medical and behavior aspects.

For further information on qualification of those involved, see **Appendix 1** and **Appendix 4**.

2.2.1.2. Developing the research process

A big challenge in AAS research is to make the subject matter and research evidence less anecdotal (i.e., "belief-based") and more scientific (i.e., “evidence-based) (e.g., Kazdin, 2017).

List of considerations and recommendations to be made when designing your project:

- Frequent updating of any information considered/used and of training of those involved
- Establish a register of the community of professionals to work with. Such persons should include those with University-based training in relevant disciplines such as psychology, sociology, medicine, education, animal behavior and welfare.
- Use an existing code of ethics and professional conduct or write one based upon these.
- Consider whether it is possible to have single-blinded or double-blinded set-ups or analysis.
- Ensure implementation fidelity of the research protocol (see Rodriguez et al., 2023).
- All humans and animals are part of the research context, it is impossible to exclude them. So, describe and evaluate the effects all involved may have on the data collected. Also, the environment may influence research and thus all aspects should be noted e.g. weather, noises, smells, equipment, other factors, normal experience/routine for the animals/humans, etc.

All research designs should ensure:

- Respect for people, respect for animal well-being and welfare, respect for the environment in which AAS take place.
- That there is documented information about the type of animal, and documented experience with the individual animal(s) participating, for the practitioners and researchers involved.
- Ethical awareness about the individual animal; considering the animal to have a cognitive and emotional life.
- Full information about the setting and its wider context (e.g., ward and general hospital environs); others (human or animal) who may be affected/affect the research indirectly.
- Risk assessment, not just benefit assessment.
- Risk assessment must include due consideration of any ethical challenges relating to the use of Artificial Intelligence in the running of or writing up of any research, whether this use is of platforms or AI-based tools, including Generative AI (Ning et al., 2024; UKRIO, 2025).

Challenges to consider:

- Gaining Ethical approval: There may be difficulties in getting (human and animal) Ethics Committees to consider studies involving AAS, be they quantitative or qualitative studies. This can be due to the intrinsic nature of AAS being mixed-species (human and animal) and most ethics committees being either human or animal orientated. Thus, researchers may need to submit to two committees.
- Ensuring clinicians (and other practitioners, such as special educators, social workers etc.) and animal experts (veterinarians, trainers, behaviorists) have relevant current knowledge regarding the field of AAS, so they can collaborate in the process.
- Identifying any ambiguity in the distinction between interventions and their objectives (e.g., service/therapy animals, AATx, AAE, AASP).
- Ensuring adherence to the established experimental protocol and transparency regarding the services provided. Any discrepancies between the protocol and the actual services rendered should be meticulously documented (see implementation fidelity, Rodriguez et al., 2023)
- Ensuring that terminology is used uniformly across different disciplines, and thus collaborators.
- Consideration of and, as far as possible, controlling for possible influencing variables relating to the humans and animals involved (participants and others), the environment and experimental procedures.
- Ensuring full description and quantification of the interactions the animal has with all involved to highlight any potential confounding variables (e.g. unintentional / unnoticed guiding of the animal by handler or practitioner).
- Avoiding researcher and participant bias – in observation, attention and knowledge.
- In quantitative or mixed methods study designs, achieving a sufficient sample size of appropriate participants to ensure the internal and external validity of the results, thereby facilitating their generalizability.
- Providing valid control and/or comparison groups.
- Undertaking long-term studies or obtaining follow-up data at relevant time intervals.
- Paying sufficient attention to the animal to ensure their well-being is monitored and accommodated throughout.
- Ensuring when reporting research to provide sufficient detail of procedures **and** of involved humans and animals (participants and others).

A further consideration is ensuring an appropriate methodology for the study and acknowledging any limitations. Presumed 'gold standard' methodologies, such as meta-studies or RCTs, are good at identifying if there is any potential benefit of a program, but give limited information about mechanisms of change, which population(s) benefit most, which animals are most appropriate, or the program design (Deaton & Cartwright, 2018). All these issues have been noted by highly respected academics in AAS as key outstanding questions. We do not suggest that we should accept sub-par, or second-rate research, but that we should acknowledge that any study design has limitations. Non-RCT studies can be of use only when basic guidelines are respected. So, if the research question dictates that a qualitative method should be used, one should ensure that the qualitative research that is done is rigorous and thus has a useful contribution. This maxim holds true for **all** research methods, including RCTs.

2.2.2. Humans

In AAS/HAI/HAB we can consider use the term "humans" to apply to:

1. Participants - the persons from whom research data is being gathered;

2. "Other humans" - those persons who may be present for all or part of the time e.g., practitioners, researchers, observers, bystanders, or animal handlers.

We use the term "involved humans" to cover all such persons.

We can distinguish three categories of human involvement: humans directly involved, humans indirectly involved, and other humans in the facility/neighborhood/environment.

1. **Humans directly involved** would be those engaged in the therapeutic setting, AAS, and/or in direct interactions with animals as part of research.
2. **Humans indirectly involved** would be those in the general vicinity (in the room, arena, field, etc.) but not directly involved in the AAS or research; other humans waiting to be included, or those in the immediate vicinity.
3. **Other humans in the facility/environment facility/neighborhood/environment** would be those not in the immediate vicinity of the AAS or research, but in the same area or facility.

Given that AAS participants can often be individuals facing a range of physical or psychological challenges, it is of the utmost importance to exercise a high degree of caution regarding planning and conducting the participant recruitment process. Such caution entails paying close attention to the establishment of and adherence to clear inclusion and exclusion criteria, as well as to the design and implementation of intervention and research procedures. This is to ensure they are designed to minimize any potential risk to the human and animal participants, as well as all others involved.

All participants should give informed consent to participate, or if unable to give consent themselves (e.g. children, those with diminished mental capacity), proxy consent must be obtained from another competent person (e.g. parent or legal guardian). Proxy consent also needs to be obtained from the person who is legally considered as the owner of the animal (also see **Appendix 1** and **Appendix 3**; and see FDA, 2023: https://avma.org/news/fda-creates-guidance-informed-consent-companion-animal-studies).

Ethical standards should be followed and can be found in human research guidelines, such as, The American Psychological Association, Canadian Psychological Association, Canadian Tri-Council, British Psychological Society (**Appendix 4**).

Whilst participants are encouraged to complete the study, they cannot be prevented from dropping out. They should be informed that they have the right to change their mind and withdraw from the study without giving a reason and without their participant rights being affected. In the case of anonymous studies this will be up until the data is submitted. For other studies, such as interviews, observations, then a time should be clearly stated. For example, within 10 working days of the interview, after which withdrawal will not be possible as the transcripts will have been pseudo-anonymized, and the recording deleted.

Legislation covering confidentiality such as the General Data Protection Regulation (GDPR) or, in the USA, Health Insurance Portability and Accountability Act (HIPAA), or a national equivalent, should be followed. Refer to those specific to each region where the study will be conducted.

2.2.3. Animals

In AAS/HAI/HAB we can consider the term "animals" to apply to:

1. Participants - the animals from whom research data is being gathered;
2. "Other animals"- those animals who may be present for all or part of the time and who can directly or indirectly influence the research.

We use the term “involved animals” to cover all such animals. Hence, the term "involved animal" encompasses all animals that are directly or indirectly exposed to the AAS/HAI. These animals may also be the main participants of the study.

We can distinguish three categories of animal involvement: animals directly involved, animals indirectly involved, and other animals in the facility/neighborhood/environment.

1. **Animals directly involved** would be those engaged in the therapeutic setting, AAS, and/or included in direct interactions with humans as part of research.
2. **Animals indirectly involved** would be those in the general vicinity (in the room, arena, field, etc.) but not directly involved in the AAS or research, therapy animals waiting to be included, or those in the immediate vicinity.
3. **Other animals in the facility/environment facility/neighborhood/environment** would be those not in the immediate vicinity of the AAS or research, but in the same area or facility.

Consent should be obtained for **any animal participating or directly involved**. This should be provided by the person who is legally considered as the owner of the animal, and preferably also from the guardian/handler that is responsible for the animal’s welfare/well-being.

Animal consent is qualitatively different from human consent, as we may only be able to infer animal consent implicitly, for instance, based on behavioral or other indicators, such as engagement or disengagement.

Ethical practice applies to animals and thus animals should be given **choice and control o**ver activities they are requested to perform, undergo, or be part of (Englund & Cronin, 2023; Fernandez, 2024; Rust et al., 2024). The animal should be monitored throughout so that their consent to participate can be ascertained.

It should be noted that involvement goes **further than just the target animal** (e.g., the therapy dog) or the target audience (e.g., patient/client) for whom the AAS is intended – all the humans/animals who are affected by the AAS one way or another, fall under the scope of the human/animal population to be considered in any research project.

It should also be considered that when animals are taken out of their normal physical and/or social environment, this can alter their behavior (McBride & Hinde-Megarity, 2022). For instance:

- Involving a solitary horse, without another horse in sight can lead to different responses and behavior due to social isolation;
- A familiar or unfamiliar handler can make a huge difference to an animal’s behavior;
- A dog or other animal in a new environment may react differently compared to when in a known or home (territorial) environment.
- Being hungry/thirsty/too warm/cold or any other form of discomfort, stress or pain will affect behavior.

The animal should not be taking part in the AAS research (or session) until its well-being needs are met. Measures taken to avoid or correct well-being issues should described in reports.

To engage or involve animals in research, the animal **must** be emotionally, physically and psychologically capable of doing the job. It is the responsibility of the research team to define the inclusion and exclusion criteria prior to the commencement of the study. Furthermore, it is imperative that the animals participating in the study are monitored by their handler and other members of the research team or external **experts in animal behavior** and veterinary medicine, in

accordance with the specific context in which the research is being conducted. Moreover, it is imperative that the species-specific signals of the individual animal are known and responded to appropriately (McBride & Hinde, 2022).

Animals should be **socially mature adults** whose temperament and behavior is best suited to the study. This is around 18-24 months for dogs. Neonates and young animals should not be involved in AAS as their behavioral development is still ongoing and may be damaged through the AAS research experience (King et al, 2011; McBride & Hinde-Megarity, 2022; Townsend & Gee, 2021).

Animal participants should be:

- Fit for purpose and healthy;
- Suited to the environment, research, and context;
- Able to have their physical, mental, and emotional welfare maintained to the highest standards;
- Where possible offered the choice to participate;
- Withdrawn or not selected if the above criteria cannot be met;
- Provided with veterinary care and treatment if unwell or if adverse effects occur.

These principles hold regardless of whether animals are owned by an individual or organization (e.g., resident cat; permanent sanctuary/petting farm), are in a rescue shelter awaiting rehoming (Peralta & Fine, 2021), or other. Only domestic species should be involved in AAS (Fine, 2025; IAHAIO, 2025).

It is important **not** to engage or involve animals with:

- **Physical characteristics** or conditions that are associated with stressful well-being and welfare effects, whether temporary or permanent, such as reduced mobility, post-operative conditions, being in estrus, lactating, nesting, and so on.
- **Inherited characteristics** including, but not limited to, joint dysplasia, sensory issues, and individuals (of any species) suffering from brachycephalic syndrome which compromises tolerance to heat, exercise, and increases general stress (Pratschke, 2015). For further information of inherited conditions by species and breed see Universities Federation for Animal Welfare (UFAW) Genetic Welfare Problems of Companion Animals https://www.ufaw.org.uk/genetic-welfare-problems/overview
- **Acquired characteristics** such as being over- or underweight, age-related issues such as sensory loss, arthritis, cognitive decline, seasonal allergies, etc.
- **Emotional well-being issues reflected in behavior,** such as acute or chronic anxiety, fear, or frustration, which would indicate insufficient resilience and adaptive capacity to meet challenges in the environment. Both chronic generalized anxiety and repeated exposure to acute stressors can lead to behavior changes including withdrawal, aggression, and cause medical issues. Other behavioral or physical manifestations indicative of low well-being and welfare include, but are not limited to, repetitive behavior, stereotypic behavior, apathy, aggressive/escape/submissive behaviors, changes in weight or eating/drinking habits, postural changes - possibly indicative of pain. Such indicators must be considered as rendering an animal as unfit for inclusion in AAS.

Animals with the above characteristics/behaviors should not be involved because such involvement:

- Demonstrates inappropriate modeling to “clients/care recipients”.
- Could have negative effects on the HAI, potentially increasing safety risks.
- Compromises the validity of data collected.

Should an animal have or develop any of the above mentioned conditions, it is suggested that a medical certificate from at least one veterinarian should be obtained to state if that the animal is able to participate in the research. Thus, in addition to unexpected veterinary need, regular veterinary checks to monitor overall physical and psychological well-being should be undertaken. These should be at least annually for dogs and other long-lived species, and 6 monthly for smaller species as they age more rapidly.

Safeguarding animal well-being and welfare

An animal should only be involved in AAS when the welfare of the individual is guaranteed not only during an interaction, but **at all other** times. The animals' management and experiences should be continuously monitored throughout the life course and be species-appropriate (Ng & Fine, 2021; Warwick et al., 2014) *and* in line with the Five Domains Model (Mellor et al., 2020) (**Appendix 2**). Animals should enjoy the activities that are part of the AAS, in line with a positive welfare approach. That is, the animal flourishing through the experience of predominantly positive mental states and the development of competence and resilience – see Rault and colleagues (2025).
An important part of research planning is to consider what happens to the animal after the research is finished. The outcomes for the animals (such as suitable rehoming) should be in place before any research begins. If euthanasia or abandonment/release into the wild **might** be the outcome, the purpose and ethics of the research **must** be reconsidered. Outcomes for the animals should be reported in any dissemination of the research.

3. Conclusion and Future Directions

The field Animal Assisted Services has grown seemingly exponentially since Aubrey Fine's 1999 seminal Handbook on Animal Assisted Therapy, now in its 6th edition (Fine, 2024). Growth has been in terms of both practice and research. However, there have been areas of valid criticism regarding the validity and reliability of the evidence on which practice is based. Further, research has been biased towards investigating the benefits for the people involved. It is only very recently that the role and welfare of the animals has come to be considered an important focus for research and essential aspect of practice (Peralta & Fine, 2021).

Thus, IAHAIO considered it timely to produce this document to facilitate best practice regarding research. Best practice in AAS/HAI/HAB research requires a collaborative approach between researchers and practitioners, and this document aims to be applicable to both areas of expertise. Further, good research and its dissemination will inform good practice, benefitting both the people and animals involved and wider society.

This document is a living document and IAHAIO does not claim that it provides information beyond that relating to minimum standards needed for good research. The document is intended for a wide readership and to reach out to researchers, practitioners, recipients of AAS, the public, institutions, and policy and law makers. IAHAIO welcomes feedback to allow for improvement and the co-creation of standards.

Those who wish to provide constructive comment and suggestions for improvement, please email IAHAIO using policy@iahaio.org.

We trust you find this document of interest and use, and we would like to thank all who have been involved, directly and indirectly, in its development to date.

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▶ For additional resources, we refer to **Appendix 5**.

Appendices

Appendix 1: RESEARCH DESIGN – Explanation of terms

General research standards, including those for animal-assisted services (AAS), should ensure the validity, reliability and ethical integrity of research findings.

In some circumstances, standardization may facilitate these aspects. Creating manuals of AAS services may be useful to inform standardization.

Good research also includes (refers to) good practice – see **Appendix 5** for existing standards and guidelines, that include both research oriented and practice-oriented standards/guidelines.

Explanation of terms, ordered alphabetically:

• **Animal well-being and welfare**: The study design must consider the well-being and welfare, and safety, of the animals involved, taking into account factors such as stress and fatigue. The design must also include consideration of the welfare of the animals outside of the study (not directly involved in the study but e.g. on site) and after the study has been completed.

• **Artificial Intelligence**: Includes, but is not limited to, Natural Language Processing, Generative AI and Machine Learning. As AI is fast developing area and researchers are advised to ensure they consider the ethical implications of any tool they use. Such implications include, but are not limited to, privacy, informed consent, bias in use of data by platforms (Ning et al., 2024; UKRIO, 2025), and reliability and suitability of any tools used to monitor animal welfare.

• **Collaboration**: When designing the study, the involvement of experts in relevant fields is highly recommended to ensure comprehensive research design and interpretation. These may include, amongst others, experts in medicine, psychology, social work, veterinary science, and animal welfare science.

• **Data collection**: Data collection and recording procedures and protocols should be clearly described. If applicable, data collection will follow standardized procedures to ensure consistency across participants and sessions. Researchers and assistants will have to be trained to administer services and collect data in a consistent manner.

• **Data analysis**: Prior to collecting data, appropriate statistical or analytical methods should be thought of and selected based on the research questions and data types. Analytical methods should take into account the nature of the research question and the scientific evidence. If qualitative methods are applied, rigorous coding and thematic analysis techniques will be used.

• **Ethical approval**: Ethical approval from relevant ethics, privacy and other committees should be obtained before the research begins. The research and the AAS should have ethical approval from an institutional review board (IRB), Research Ethics Boad (REB), animal care and use committee (IACUC), or (local) equivalent. The approval and details of the organization or committee providing approval should be clearly stated. Written verification is required.

• **Ethical considerations**: The well-being and welfare of both animals and human participants must be paramount. Human participants should have given informed consent, or proxy consent and assent obtained. Proxy consent is usually required for those unable to give consent themselves, such as young children. The protection of personal data should be clarified to all participants prior to requesting consent.

• **Human participants**: Human comfort, safety, consent, and well-being must be considered.

• **Literature review**: A thorough literature review, to understand the existing research in AAS and related fields, will identify possible gaps and should provide the rationale for the AAS and the research project.

• **Ongoing evaluation and adaptation**: The progress of the research will be continuously monitored, and the research team must be prepared to make adjustments if unexpected issues arise.

• **Outcome measures**: Specific outcome measures related to the study's aims should be defined beforehand, including psychological, physiological or behavioral measures.

• **Publication and dissemination**: Results will be presented at scientific events, such as conferences and seminars, and/or published in peer-reviewed journals to contribute to the scientific knowledge base.

• **Randomization, "blinding", and control or comparison groups**: If relevant for the research question, randomization should be used, and (double) blinding may help to reduce bias and increase the validity of the study design. A control group (i.e., comparison group) next to a test group (i.e., experimental group) is often important in order to determine that any finding is related to the experimental manipulation.

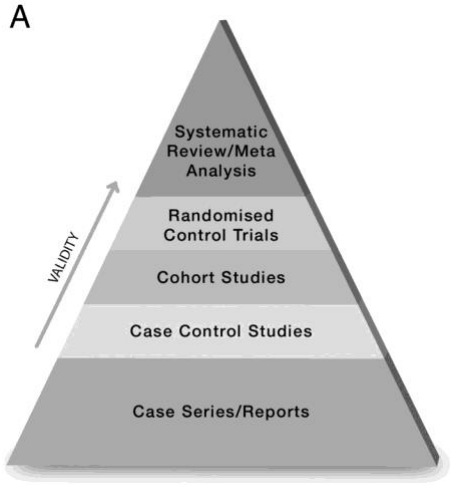
• **Replication and open science**: Replication and transparency of the study must be reliable and should be encouraged, for instance, through the use of open data science practices (e.g., OSF, https://osf.io).

• **Research design and objectives**: The research question or hypothesis must be clearly defined. The research objectives, outcomes and variables to be measured should be specified.

• **Research design; types**: It may be useful to consider the "levels of evidence" scheme adopted in medicine - this scheme helps providers and researchers evaluate study findings according to the degree of rigor in the designs, with RCTs being the most desired design (see **Figure 1**) and Murad et al., 2016). However, it should be noted that these levels of evidence may not apply to all study designs, due to various research philosophies and approaches.

Figure 1. Overview of levels of evidence for research (adapted from Murad et al., 2016)

A



The study design for animal-assisted services (AAS) research should be carefully designed to meet the research objectives, taking into account the ethical and practical aspects of working with animals and human participants.

- **Case study design**: An in-depth examination of a single case or small number of cases.
- **Comparative design**: Where different aspects of AAS are compared to determine their relative effectiveness (e.g., comparing different interventions, animal species, animal types/breeds, etc.).
- **Controlled clinical trial:** A rigorous design that includes experimental and control groups, randomization and blinding.
- **Cross-sectional design**: Collects data from participants at a single point in time.

- **Experimental design**: Typically involves manipulating variables to establish cause-and-effect relationships and should use random allocation to assign participants to different groups (e.g., intervention group with AAS and control group without). Measuring outcomes before and after the intervention to assess change is strongly recommended, but not mandatory.
- **Longitudinal design**: Collects data from the same participants at multiple points in time.
- **Mixed methods design**: Combines quantitative and qualitative methods to gain a full understanding of the research question. Quantitative data can provide statistical evidence, while qualitative data can provide in-depth insights.
- **Observational design**: Where AAS are observed in naturalistic settings.
- **Pre-test-post-test design**: Outcomes are measured before and after exposure to the AAS.
- **Quasi-experimental design**: Usually very similar to experimental design but lacks random allocation for practical or ethical reasons, and may involve comparing pre-existing groups (e.g., participants with and without previous experience of AAS).

• **Research context**: Study designs will take into account the context (e.g., hospitals, schools, nursing homes) in which AAS takes place.

• **Research methodology**: Appropriate research methods (quantitative, qualitative, mixed methods) will be chosen based on the research objectives. Data collection methods, tools and procedures will be described in detail.

• **Sample size**: The appropriate sample size to achieve sufficient statistical power should be determined before the start of the study.

• **Study population and sample**: The population or (both human and animal) participants, the setting or facilities, the recruitment strategy and how the sample size was determined should be clearly described.

• **Transparency and reporting**: Research methods, procedures and findings will be fully reported. Any limitations or challenges encountered during the research process should be clearly described.

• **Validity and reliability**: The validity of research tools and methods will be established by demonstrating that they measure what they are intended to measure. The use of validated and standardized tools is encouraged. Likewise, AAS researchers should aim to develop standardised measures of outcomes. Inter-rater reliability should be ensured when multiple researchers are involved in data collection or coding.

References cited in Appendix 1

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▶ For additional resources on this topic, we refer to **Appendix 5**.

Appendix 2: ANIMAL WELFARE – Models and approaches to safeguard animal welfare

We recommend using a **One Health / One Welfare approach** to ensure animal well-being and welfare (Hediger et al., 2019; Pinillos, 2018). One Welfare recognizes the inextricable linkage of humans, animals and their environment. Moreover, we recommend a **Positive Welfare approach**, that is, the aim to attain animal welfare states in AAS involving the animal flourishing through the experience of predominantly positive mental states and the development of competence and resilience – see Rault and colleagues (2025).

Animal welfare and biosecurity are essential and one should ensure that veterinary and/or appropriate professional animal behavior advice be sought for each individual case. For example:

- Is there zoonotic risk in using a particular species/animal in general or at a particular time, as in a disease outbreak risk?
- Is the diet appropriate for the animal and are there any potential risks for human interaction (see also the IAHAIO position statement on zoonoses and AAS; IAHAIO, 2019)?
- How to determine the optimal social companion of the involved animal, and what is the optimal location of this animal during a session (for obligate social species like horses or donkeys)?
- Does frequent bathing or other procedures pose an adverse risk to the animal's health or well-being?

In case of doubt as how to engage participants, the research team should consult experienced, established researchers or expert groups. These may include the following:

- Human Behavior Change for Animals; www.hbcforanimals.com
- Equitation Science (ISES); www.equitationscience.com
- The Animal Behavior and Training Council; www.abtc.org.uk
- Vereniging voor Diergedragsprofessionals (Flemish); www.diergedragsprofessional.be

To determine what the minimal, reasonable, or optimal standards per species are, three basic models have been developed since the 1960's: the Five Freedoms model (minimal), the Welfare Quality® Protocols (Reasonable with objective valid and reliable measures) and the Five Domains Model (optimal).

Since the publication of the UK government's report into animal welfare in 1965, known as The Brambell Report, the **Five Freedoms** were the general guideline to safeguard the welfare of domestic animals during their (productive) life:

1. Freedom from hunger, thirst, and malnutrition
2. Freedom from discomfort
3. Freedom from pain, injury, and disease
4. Freedom to express normal behavior
5. Freedom from fear and distress

Numerous guidelines for numerous animal species (and types of use) are based on these freedoms, despite the lack of clear criteria by which to measure most aspects of welfare in a valid and reliable way. This problem was tackled in the first decade of the 21st century when the **Welfare Quality®** (WQ®) and Animal Welfare Indicator (**AWIN**) protocols were developed (Blokhuis et al., 2013). The goal was to develop valid, reliable, applicable, affordable protocols for measuring the welfare of domestic animals (mainly production animals), based on both the environment-based measures (risk

assessment or protective measures), and animal-based measures (preferred). Minimal requirements were indicted to minimise the negative impact of husbandry and management. Four principles (Good Feeding, Good Housing, Good Health, and Appropriate behavior) were divided into 14 welfare criteria are used for all species in any role, but obviously the content is different per species and purpose of the animal (e.g., different criteria for meat cattle compared to the needs of milking cows). There are WQ® protocols for cattle, pigs, and poultry (www.welfarequalitynetwork.net).

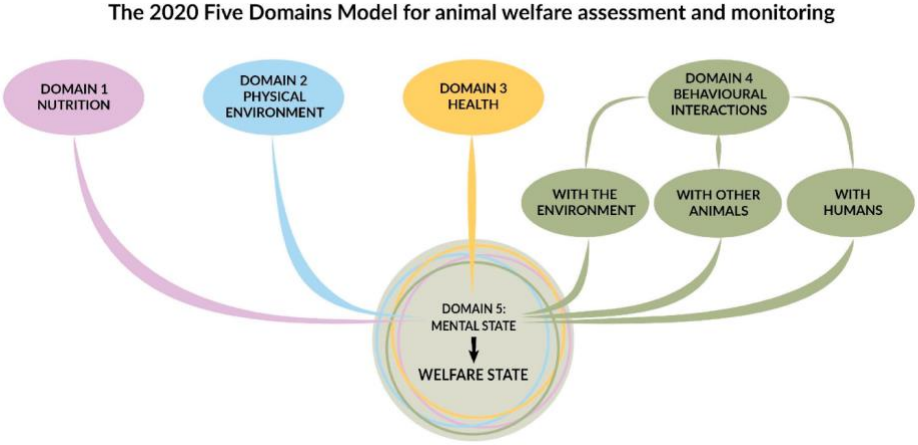
AWIN protocols are available for horses, donkeys, sheep, goats, rabbits, turkeys, quail, dog shelters, and so forth. These protocols give insight into minimal and acceptable husbandry standards per species. These protocols are currently the standard for welfare assessments.

Our increasing understanding of animal sentience has led to a change in our ethical view of welfare, with the inclusion of wellbeing. The shift is away from "minimising the negative" to providing for an animal to have at least "a life worth living" moving towards a "good life" (e.g., Wilkins et al., 2024; Rault et al., 2025). In a good life animals can make their own choices to cater for their needs so they experience a positive mental state. "Providing a Good Life involves more than just minimising negative life experiences that lead to negative emotional states such as stress and fear but requires also that the animal experiences positive emotions similar to contentment, joy, pleasure and happiness as experienced by people" (Waran & Evans, 2024, p. 3). This shift is encapsulated in the **Five Domains Model** (Mellor et al., 2020).

The **Five Domains** relate to four physical and functional areas (domains): nutrition, environment, health and behavioral interactions (with environment, other animals and people). All these have positive and negative effects on an animal and thereby influence the animal's ability to not just survive, but to thrive (to have a life worth living, a good life). The resultant is the fifth Domain: the animal's mental state, also referred to as the animal's emotional state. It is this domain that is ***the*** indicator for good or less good welfare and wellbeing of an animal. Currently many scientists are working to objectively develop the parameters/measures to determine and integrate all these elements the four domains to the fifth domain for several species. World Horse Welfare recently made an interesting attempt to develop reliable valid objective measures for horses. AAS/HAB/HAI practitioners and researchers are encouraged to follow this rapidly developing field.

An illustration of the Five Domains Model is provided in **Figure 2**. Readers are urged to familiarize themselves with the needs of each species that they are involving. Some seminal current sources are provided below and in **Appendix 5**.

Figure 2. Illustration from Wilkins et al. (2024): The 2020 Five Domains Model for animal welfare assessment and monitoring; Figure by Cristina Wilkins, adapted from Mellor et al. (2020)



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Pinillos, R.G. (2018). *One Welfare – A framework to improve animal welfare and human well-being* CABI, Wallingford, UK

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Waran, N & Evans, L. (2024). *White paper: Good welfare for Equids.* Eurogroup for animals.

Wilkins, C.L., McGreevy, P.D., Cosh, S.M., Henshall, C., Jones, B., Lykins, A.D., Billingsley, W., (2024). Introducing the Mellorater—The Five Domains Model in a welfare monitoring app for animal guardians. Animals 14 (15). https://doi.org/10.3390/ani14152172

Additional resources

Golledge, H., & Richardson, C. (Eds.). (2024). *The UFAW Handbook on the care and management of laboratory and other research animals*, 9th Edition. John Wiley and Sons, Chichester

Koch, V. (Ed.) (2024). *Equine welfare in clinical practice*. Elsevier.

McBride E. A. (2017). Small prey species' behaviour and welfare: implications for veterinary professionals. *Journal of Small Animal Practice*, 58(8), 423–436. https://doi.org/10.1111/jsap.12681

Yeates, J. (ed) (2019). *Companion animal care and welfare: The UFAW companion animal handbook*. John Wiley and Sons, Chichester.

Rendle, M., & Hinde-Megarity, J. (Eds.) (2022). *BSAVA Manual of practical veterinary welfare*. BSAVA, Quedgeley.

Sandøe, P., Corr, S., & Palmer, C. (2015). *Companion animal ethics*. John Wiley and Sons, Chichester.

Waran, N & Evans, L. (2024). *White paper: Good welfare for Equids*. Eurogroup for animals.

Equine:

- https://thedonkeysanctuary.org.uk/for-owners/donkey-health-and-welfare
- https://worldhorsewelfare.org/advice/the-5-domains-of-animal-welfare
- https://www.equitationscience.com
- https://e-barq.com (horse)*

Canine and Feline:

- https://vetapps.vet.upenn.edu/cbarq/ (dog)*
- https://vetapps.vet.upenn.edu/febarq/ (cat)*

** Note: 'BARQ' stands for the Behavioral Assessment and Research Questionnaire; Versions available for dog, cat, and horse*

▶ For additional resources on this topic, we refer to **Appendix 5** and to the list of seminal books about animal behavior and welfare on the following page.

Behavior and Welfare – General / Across species			
AUTHOR/EDITOR	TITLE AND PUBLISHER WEBSITE	YEAR	ISBN
Appleby MC, Olsson IAS, Galindo F	Animal welfare (3rd Ed.), CABI www.cabi-publishing.org	2018	978-1-786390202
Broom DM, Fraser AF	Domestic animal behaviour and welfare (6th Ed.), Oxford University Press, www.oup.com	2022	978-178924878
Chance P, Furlong E	Learning and behavior: Active Learning Ed, (8th Ed.). Cengage Learning, Inc.	2022	978-0357658116
Grandin T	Improving animal welfare: A practical approach (3rd Ed.) www.cabi-publishing.org	2020	978-1789245219
Houpt KA	Domestic animal behavior for veterinarians and animal scientists (6th Ed.) www.iowastatepress.com	2018	978-1119232766
Mazur J, Odum AL	Learning and behavior (9th Ed.) Routledge	2023	978-1032637808
McMillan FD	Mental health and well-being in animals (3rd Ed.), CABI	2025	978-1800624290
Rendle, M, Hinde-Megarity J	BSAVA Manual of practical veterinary welfare. BSAVA www.bsava.com	2022	978-1910443781
Yeates J (ed)	Companion animals care and welfare: The UFAW companion animal handbook www.ufaw.org.uk	2019	978-1118688793

Behavior and Welfare – General / Across species			
AUTHOR/EDITOR	TITLE AND PUBLISHER WEBSITE	YEAR	ISBN
Dogs			
Hutchinson T, Robinson KR	BSAVA Manual of Canine Practice: A Foundation Manual. BSAVA www.bsava.com	2015	978-1905319480
Miklosi A	Dog behaviour, evolution and cognition (2nd Ed.), OUP, Oxford	2016	978-0199646661
Mills DS, Westgarth C	Dog bites: A multidisciplinary perspective. 5M Publishing	2017	978-1910455616
Serpell J	The domestic dog: Its evolution, interactions with people (2nd Ed.); www.cambridge.org/us	2017	978-1107024144
Horses			
Koch VW (ed)	Equine welfare in clinical practice www.elsevier.com/books-and-journals	2024	978-0323995085
McGreevy P, Winther Christensen J, Köning von Borstel U, McLean A	Equitation science (2nd Ed.), Wiley-Blackwell.	2018	978-1119241416
McGreevy P	Equine behavior: A guide for veterinarians and equine scientists (2nd Ed.), www.elsevier.com	2012	978-0702043376
Mills D, McDonnell S (eds)	The domestic horse – The evolution, development and Management of its behavior. CUP, Cambridge.	2005	978-0521891134
Riley CB, Cregier SE, Fraser AF	Fraser's the behaviour and welfare of the horse. CABI www.cabi.org	2022	978- 1789242119
Cats			
Tasker S, Harvey A	BSAVA Manual of feline practice: A foundation manual. BSAVA www.bsava.com	2013	978-1905319398
Turner DC, Bateson P (eds)	The domestic cat: The biology of its behaviuor (3rd Ed.); www.cambridge.org/us	2014	978-1107025028
Rochlitz I	The welfare of cats. Springer	2005	978-1402061431
Braastad B, McBride A, Newberry R	The cat: behaviour and welfare. CABI	2022	978-1789242317
Exotics, Rabbits, and Various Species			
Desmarchelier M (ed)	Veterinary clinics of North America: Exotic animal practice: Behavior	2021	978-0323733472
Yeates J (ed)	Companion animal care and welfare: The UFAW companion animal handbook. www.ufaw.org.uk	2019	978-1118688793
Buseth ME, Saunders R	Rabbit behaviour, health and care. CABI	2014	978-1780641904

Appendix 3: RISKS – Minimizing risks: Animal and human considerations

Minimizing risks in animal-assisted services (AAS) is of paramount importance to ensure the safety and well-being of all of those involved, including animals and humans, and to provide a positive and safe environment for all. To achieve this, practices should be evaluated and adjusted on a regular basis. Depending on the degree of potential risks for humans and animals, research can be considered minimal-risk, such as collecting survey-based data from AAS practitioners. There are various types of risk, involving e.g., emotional, psychological, physical discomfort or safety. we list some general strategies that should help to mitigate potential risks in AAS. This list in not exhaustive.

• **Animal selection and training**: Animals with appropriate temperament, behavior and training for the specific AAS context need to be selected, giving priority to animals that are comfortable with different types of people, including those with different backgrounds and abilities. Animals involved in AAS should be accustomed to both interacting with people and different environments. The appropriateness depends on the specific type of AAS.

• **Appropriate activities**: AAS will be designed to suit the abilities and comfort levels of both animals and humans. Activities that could be overly stressful or risky for either party will be avoided.

• **Artificial Intelligence**: Includes, but is not limited to, Natural Language Processing, Generative AI and Machine Learning. As AI is fast developing area and researchers are advised to ensure they consider the ethical implications of any tool they use. Such implications include, but are not limited to, privacy, informed consent, bias in use of data by platforms (Ning et al., 2024; UKRIO, 2025), and reliability and suitability of any tools used to monitor animal welfare.

• **Behavioral assessments**: Animal behavior and well-being and welfare will be assessed on a regular basis, at least before, during and after AAS sessions.

Detailed and accurate observations of human and animal behavior should be made during interactions. Videos are very helpful. Any signs of fear, anxiety, stress, or discomfort will initiate the stopping of the AAS until the animal/human have recovered. The human practitioner and person in charge of the animal's welfare will decide whether the AAS can be continued or should be stopped.

If issues arise or persist, animals should be referred to the veterinary surgeon to check for medical issues, and to an animal behaviorist (e.g., veterinary behaviorist, clinical animal behaviorist, certified applied animal behaviorist) as appropriate. The research team should re-evaluate the appropriateness of the protocol.

• **Clear communication**: Communication between all of those involved, including practitioners, participants, carers and support staff, will be as transparent as possible. Educational materials about AAS will be provided to participants and their families.

• **Consent**: Informed consent or proxy consent must be provided by participants – human and animal – before they engage in AAS. Expectations for interactions should be clearly defined to avoid situations that may cause stress or discomfort.

• **Continuing education**: The research team will keep abreast of best practice and evolving research in AAS and related areas and continually improve safety measures by attending workshops and training sessions related to human and animal health, behavior and welfare (according to their role and competencies).

• **Creating manuals of AAS:** May be useful to inform standardization, facilitate intervention fidelity, and diminish the likelihood of risk.

• **Emergency preparedness**: A clear plan for dealing with emergencies or unexpected incidents will be developed. Ensure that practitioners and handlers know how to respond to animal-related emergencies. In case of participants with special needs, for example, a specific emergency plan adapted to the medical risks associated with the specificity of participants must be planned.

• **Health and veterinary care**: Animals should be in good health, should have received appropriate training (and reliably respond at least to a basic set of commands) and be up to date with required vaccinations/preventative health care. Regular veterinary check-ups will be carried out to identify and address health issues promptly, as well as any veterinary intervention required during the AAS.

• **Hygiene and sanitation**: A clean and hygienic environment is maintained to prevent the spread of germs or zoonotic diseases. Frequent hand washing is encouraged, and hand sanitizer is provided for participants and handlers. The handler will have the necessary equipment to clean up in case the animal defecates or urinates.

• **Ongoing evaluation and adaptation**: Ongoing evaluation of animal well-being and welfare and research procedures is essential throughout the research project. If problems arise, adjustments should be made to address issues promptly.

• **Participant screening**: Human participants will be screened for allergies, fears and other potential sensitivities to animals. Consider that some participants are especially sensitive to contamination and zoonoses. Any special needs or preferences that participants may have when interacting with animals will be identified and accommodated. Screening should also facilitate ethical decision making that considers how the person's behavior may influence the animal (e.g., What are appropriate courses of action should participants repetitively show inappropriate behaviors towards the animal in pre-AAI screening sessions?).

• **Practitioner training**: AAS practitioners are properly trained in animal behavior, low-stress handling and safety. Training in recognizing signs of anxiety, fear, pain, stress or discomfort as well as relaxation and pleasure in both animals and participants must be provided.

• **Risk assessment and management:** Risk assessments are carried out before implementing AAS programs. A plan should be in place to address potential risks and challenges that may arise.

• **Safety protocols**: Safety protocols for both animals and participants must be developed and implemented. These protocols will require input from appropriate animal and human experts. Safety protocols will be clearly communicated to practitioners, participants and support staff. Zoonoses must be taken into account including adhering to the IAHAIO position statement that clearly discourages raw meat diets.

• **Supervision and monitoring:** trained supervisors or handlers, therapists and veterinarians, behaviorists or ethologists with experience and/or certifications according to their country's regulations will closely monitor interactions between animals and participants. A low participant-to-animal ratio will be maintained to ensure effective supervision.

• **Transparency and reporting**: Research results should be reported transparently, including both positive and negative results. Human participants should have the opportunity to choose to be informed of the results, although a confidentiality statement may be required.

• **Welfare monitoring**: Should be frequent enough to detect compromises to welfare, and planning should include accounting for environmental compromises to welfare (e.g., temperature, noise).

References cited in Appendix 3

Ning, Y., Teixayavong, S., Shang, Y., Savulescu, J., Nagaraj, V., Miao, D., ... & Liu, N. (2024). Generative artificial intelligence and ethical considerations in health care: A scoping review and ethics checklist. *The Lancet Digital Health, 6*(11), e848-e856. https://doi.org/10.1016/S2589-7500(24)00143-2

UKRIO (2025). *Embracing AI with Integrity- A practical guide for researchers*. UK Research Integrity Office. https://ukrio.org/wp-content/uploads/Embracing-AI-with-integrity.pdf

▶ For additional resources on this topic, we refer to **Appendix 5**.

Appendix 4: QUALIFICATIONS – People and animals involved in the research

4.1. Requirements for individuals conducting AAS

Requirements for **individuals conducting Animal-Assisted Services (AAS)** may vary depending on the specific type of AAS (e.g. therapy dogs, equine-assisted therapy), country, and organization involved, but the following should be the minimum standards required in a research project:

- **Education and training**: The knowledge of the team must include relevant education and training. This should include degrees or certificates in areas such as psychology, counselling, social work, veterinary medicine, animal behavior or education/training, covering both human and animal areas. Specific training in AAS techniques, ethics and safety should also be required.
- **Animal training and behavior**: At least one member of the team should have a sound understanding of animal behavior, humane training methods, and low-stress handling techniques to ensure the well-being and welfare of both the animals and the people involved; this person can act as the handler. The training should be done by a trainer with experience and/or certifications according to their country's regulations or under the supervision of the same or that of a veterinarian, behaviorist, or ethologist with experience and/or certifications according to their country's regulations.
- **Certifications and registrations**: At least one member of the team may need to hold certifications or registrations specific to the AAS, which should demonstrate competence in working with both animals and humans, and adherence to ethical and safety standards. All members of the team must meet the national regulatory requirements for conducting AAS.
- **Ethical standards**: The research team must adhere to the highest ethical standards relevant to the researcher/practitioner/educator involved. Practitioners should prioritize the well-being and welfare of both animals and humans, maintain professional boundaries, and ensure that services are conducted in a safe, respectful and effective manner. In addition, the ethical approach must be followed throughout the process, from the selection of animals for AAS programs, through the performance of the AAS, to the licensing of the animals.
    - If you do not have ethics review boards in your own organization, consider recruiting someone from an organization who does onto your research team.
    - Irrespective of whether you want to publish, it is always good to ask for ethical approval of an official body.
    - If you don't have access to an ethical review board, you can contact other scientists who have one in your country. If you don't know who to ask, contact IAHAIO.
- **Continuing education**: AAS is a field that is evolving with research and best practices. Practitioners should be aware of the latest important research developments and should receive continuing education to remain informed of the latest developments in animal behavior, psychology and intervention techniques.
- **Supervision and collaboration**: At least one member of the team should be a licensed professional, especially in therapeutic settings. Otherwise, the AAS team may need to work under the supervision of an accredited professional. The involvement of professionals such as psychologists or medical professionals should be encouraged, to ensure comprehensive care.

Researchers conducting studies involving animal-assisted services (AAS) should possess a combination of qualifications, skills, and knowledge of ethical considerations sufficient to ensure the quality, validity and ethical integrity of their work. Precise requirements may vary depending on the specific research project, context and objectives, but researchers should continually strive to maintain the highest standards of research ethics, animal well-being and welfare and participant

well-being and safety while advancing knowledge and understanding of AAS. Important aspects concerning qualifications for researchers involved in AAS include:

- **Adaptability, flexibility and resilience**: Researchers should demonstrate flexibility to adapt research plans and methods based on unexpected challenges or changes in the AAS context.
- **Animal Behavioral Experience**: part of the research team should have an in-depth understanding of animal behavior and be able to interpret animal cues, expressions and signals and know how animals might react in different situations during AAS.
- **Commitment to continuous learning**: Researchers should be willing to keep abreast of new developments in AAS research, animal behavior, and related fields.
- **Communication skills**: Researchers should communicate effectively to clearly explain research objectives, protocols, and results to both academic and non-academic audiences. Researchers are encouraged to disseminate information to AAI organizations and other professionals. Researchers should be able to present research findings at conferences, workshops and in peer-reviewed publications. Authors are encouraged to utilize "Open Access" formats to more widely disseminate research findings.
- **Critical thinking**: Researchers should have the ability to think critically in order to evaluate and interpret research findings within the broader context of AAS.
- **Cultural sensitivity**: Researchers should have an understanding of cultural differences and the ability to adapt AAS services and research methods accordingly.
- **Education and training:** strong academic backgrounds across the research team in relevant fields such as psychology, social work, veterinary medicine, animal behavior, or education is expected, while additional training in research methods, ethics and AAS-specific knowledge is strongly recommended.
- **Ethical awareness and standards**: the research team should be familiar with ethical standards for research involving animals and human participants and should be committed to prioritising animal and human participant well-being and welfare.
- **Ethical Considerations**: Researchers should demonstrate an unwavering commitment to ethical research practices, ensuring the well-being and welfare and dignity of animals and human participants.
- **Human Behavioral Experience:** part of the research team also should have an in-depth understanding of human behavior as regards the studied population and know how such people might react in different situations during AAS.
- **Practical AAS experience**: Researchers should have experience of working directly with animals and participants in AAS settings and be familiar with the practical challenges and nuances of conducting AAS services.
- **Record keeping and data management:** Researchers should be able to maintain accurate records, manage data effectively, and ensure data security and confidentiality.
- **Research methodological expertise:** The research team must demonstrate proficiency in quantitative and/or qualitative research methods, depending on the research design. They should be able to carry out appropriate data collection and analysis techniques.
- **Trained to recognize negative reactions:** Part of the team must be trained to recognise both human and animal signs of pain, distress or discomfort, and act appropriately when these occur.
- **Transdisciplinary collaboration:** Researchers should be willing and able to collaborate with professionals from a range of disciplines such as veterinary science, psychology and education.
- **Understanding of animal well-being and welfare:** Part of the research team should have knowledge of animal welfare principles and ethics and be able to assess and address animal well-being and welfare in research and services.

4.2. Requirements for animals involved in animal-assisted services (AAS)

It should be clearly stated that not all animals are suitable for AAS in general, and that not all animals are always suitable for a specific type of AAS, or indeed for any types of AAS. The well-being and welfare and comfort of the animals should always be paramount and animals showing signs of stress, discomfort or unsuitability for AAS should not be forced into these roles, either temporarily or permanently. Requirements for animals in AAS are essential to ensure the well-being and safety of the animals, the people with whom they interact, and others. They should cover at least:

- **Health and veterinary care**: Animals participating in AAS should be in good health, free of any pain, and receive regular veterinary care, including vaccinations, deworming and general health checks to ensure that the animals are physically fit and free from contagious diseases. Responsibility for care falls to the handler, under the supervision of a veterinarian if a veterinarian is not part of the research team. Any signs of overwork, illness, pain, distress or discomfort must immediately interrupt the AAS until the animal is fully recovered (see also assessment approaches as mentioned above for Five Freedoms, WQ®/AWIN and Five Domains).
- **Temperament and behavior**: Animals included in AAS should have a friendly temperament that fits the AAS. The animals should be comfortable in a variety of social situations and environments and should not display aggressive or fearful behavior. Animals recognized as suitable for a particular type of AAS, should at least have passed a behavioral assessment by a veterinarian, behaviorist or ethologist with experience and/or certifications according to their country's regulations. The animal's behavior during the AAS will be monitored by the handler, and, if necessary, supervised by a veterinarian, behaviorist or ethologist with experience and/or certifications according to their country's regulations, if such a professional is not available on the team. Any behavior that reflects fatigue, illness, pain, distress or discomfort must immediately interrupt the AAS until the animal is recovered. The behaviorist or veterinarian should ensure that the animal is ready to resume the AAS or to participate in a new session. Testing protocols can be found in the C-BARQ; E-BARQ and Fe-BARQ websites. It should be noted that no animal can be tested at one point in time based on general temperament alone to be considered as suitable for a range of AAS. Assessment should be tailored to the AAS and carried out or supervised by a veterinarian, behaviorist or ethologist with experience and/or certifications.
- **Training**: AAS animals should be well trained and cooperant. In some applications of AAS, they should respond reliably to basic commands from the handler and have appropriate manners, especially in environments where they interact with vulnerable (client) populations. Training and reinforcement should be humane, positive and reward-based, with no punishment allowed. Training and reinforcement of the animals will be carried out by the handler under the supervision of a behaviorist, ethologist or animal trainer with experience and/or certifications according to their country's regulations, if one is not a member of the research team.
- **Socialization**: Animals should be well socialized with different types of people, environments and other animals. This will help them to remain calm and composed in a variety of situations they may encounter during AAS. Any behavior that reflects anxiety, fear, distress or discomfort must immediately interrupt the AAS. The animal will undergo specific socialization (or desensitization and counterconditioning) under the supervision of a Clinical Animal Behaviorist, ethologist or animal trainer with experience and/or certifications according to their country's regulations who should ensure that the animal is ready to resume the AAS.
- **Desensitization and Counterconditioning**: AAS animals should be habituated to sights, sounds and experiences that they may encounter during services. This reduces the likelihood of animals becoming stressed or reactive in unfamiliar environments. Any behavior that reflects anxiety, fear, distress or discomfort must immediately interrupt the AAS. The animal will undergo specific socialization or desensitization and counterconditioning by a clinical animal behaviorist or

ethologist with experience and/or certifications according to their country's regulations who should ensure that the animal is ready to resume the AAS or attend a new session.

- **Grooming and hygiene**: Animals participating in AAS should be clean and well-groomed to ensure their appearance is appropriate to the setting and to maintain their comfort and health. The animals are not expected to urinate nor to defecate in the facilities, but the handler will take all cleaning equipment in case of such an occurrence. The duration of the AAS should allow the animals to relax and relieve themselves, including outdoors as appropriate.
- **Fitness and exercise**: Animals should be physically fit and have an appropriate level of exercise to ensure that their energy levels are manageable during AAS. No joint or muscle pain should be present during participation in an AAS. Any signs of pain or injury should stop the AAS and the animal should be examined by a veterinarian. The veterinarian will advise on the need for rest for the animal and the length of rest required for the animal to recover.
- **Legal and regulatory requirements**: Depending on the region and the type of AAS, there may be legal or regulatory requirements that the animals must meet. These regulations may include certifications, health or behavior certificates and compliance with local welfare legislation.
- **Ethical considerations**: Animals involved should be treated ethically and humanely; they should have the opportunity to rest, hydrate and take breaks as needed during procedures. The animal's well-being should be given the highest priority. Animal welfare is the responsibility of all members of the team, but particularly of the handler and the veterinarian, behaviorist or ethologist with experience and/or certifications according to their country's regulations.
- **Regular assessments**: Ongoing assessments of the animals' behavior, health and general well-being are essential to ensure that they remain suitable for AAS work. The handler and the veterinarian, behaviorist or ethologist with experience and/or certifications according to their country's regulations will make adjustments to the work as necessary. The AAS will stop if those professionals deem it necessary and a full assessment of the environment, participants, approach and handling will be carried out before a new session.
- **"Back-up" animals**: In certain environments it may be important to have "back-up" animals available. This ensures that if one animal becomes unwell or tired, another can take over without disrupting the session. Animals wait or rest in appropriate facilities that allow them to perform natural behaviors for the species, with a handler present at all times.
- **Retirement/Rehoming:** The research team or AAS organization should have a plan for retiring or rehoming animals when the project is completed or when the animal is no longer suitable for AAS. This will ensure that animals receive appropriate care and a suitable living environment.
- **Insurance**: Just as practitioners may need liability insurance, animals involved in AAS may also need insurance to protect against unexpected events.
- **Species engaged**: Although a wide variety of animal species have been engaged in animal-assisted services (AAS), depending on the aims and contexts of the services, the intended therapeutic outcomes, the preferences and needs of the participants, and the specific settings in which the services take place, there are several concerns about the species involved. Research should not support or encourage the engagement of animals that must be kept in captivity for the reason of AAS, such as dolphins and marine mammals, reptiles and amphibians, exotic animals, insects or any wild species. ***The choice of species should always prioritize the safety, well-being and comfort of the animals and the participants*** and be only a domesticated species. For allowable species see the IAHAIO standards (IAHAIO, 2025; https://iahaio.org/best-practice/white-paper-on-animal-assisted-interventions) and the ISAAT positive species list (https://isaat.org/wp-content/uploads/2021/03/Positive-List-Species_2018-03-08-redlist.pdf).

▶ For additional resources on this topic, we refer to **Appendix 5**.

Appendix 5: OVERVIEW RESOURCES – Existing resources/guidelines relevant to this field

Below we include resources to existing standards related to research, practice and/or education, and other relevant resources. This list is not exhaustive, and only English language references are inserted. People are encouraged to look for local (own language) existing resources. The scope of the references includes non-invasive research. The list is order alphabetically.

Resources are color coded, with regard to their application to the themes addressed in the other appendices. Symbol and color legend:

- ■ Appendix 1: Research Design (blue, square)
- ● Appendix 2: Animal Welfare (green,circle)
- ♦ Appendix 3: Risks (red, diamond)
- ▲ Appendix 4: Qualifications (purple, triangle)

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3 R principles – www.awionline.org/content/the-3rs or www.nc3rs.org.uk ■●

AD ASTRA: Adjunctive Dog-Assisted Interventions and Research (ADASTRA): Extending Methodological Guidelines for Robust Intervention Research and Preparing the Grounds for a Definitive Trial https://adastra-research.co.uk/ Aim: developing the foundations for gold standard research on Dog Assisted Interventions and contribute to shaping policy and practice. The AD ASTRA team has been working with a small group of international experts in the field to develop guidelines to improve how dog-assisted interventions (DAI) research is designed (SPIRIT guidelines) and how the results are written up (CONSORT guidelines). ●♦▲

American Psychological Association (APA) manual (7th ed.). https://apastyle.apa.org/ ■

Animal Welfare Indicator (AWIN). http://www.welfarequalitynetwork.net ●♦▲

ARRIVE Guidelines. On reporting: https://norecopa.no/prepare/mychecklist?id=851ba7 ■

AWIN – and Welfare Quality® (WQ®) http://www.welfarequalitynetwork.net ■

Blokhuis, H. J., Miele, M., Veissier, I., & Jones, B. (2013). *Improving farm animal welfare science and society working together: The Welfare Quality Approach*. Wageningen Academic Publishers, Wageningen. ●♦▲

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2), 77-101. ■

British Psychological Society (BPS): This organization represents Psychologists in the United Kingdom. The BPS has a number of ethical and research guidelines available on their website (https://www.bps.org.uk/). Guidelines for working with animals are found at https://www.bps.org.uk/guideline/guidelines-psychologists-working-animals ●♦▲

CABI. https://cabidigitallibrary.org/journal/abwcs ■●♦▲

CONSORT Guidelines. Reporting randomized trials. https://doi.org/10.1136/bmj-2024-081123 ■

COSMIN Risk of Bias tool to assess the quality of studies on reliability and measurement error of outcome measurement instrument - user manual 2021 https://www.cosmin.nl/wp-content/uploads/user-manual-COSMIN-Risk-of-Bias-tool_v4_JAN_final.pdf ■

EBSCO Health and Psychosocial Instruments (HaPI) database (https://ebsco.com) ■

Ethical Standards for Research of Animal-Assisted Interventions (July, 2023). Position paper of the *Federal Association of Animal Assisted Intervention Germany (BTI), Research Section*. ■ ● ♦▲

Ethical Standards from the American Psychological Association. ■●♦▲

Ethical Standards from the British Psychological Society. ■ ● ♦▲

Ethical Standards from the Canadian Psychological Association. ■ ● ♦▲

Ethical Standards from the Canadian Tri-Council. ■●♦▲

European Committee for Standardization Technical Committee 452 (CEN/TC 452): One of the European standardization organizations of the European Union. The purpose of this committee is to develop European standards for training and use of assistance dogs, and training staff. There is an ongoing document on assistance dogs which highlights various interesting themes. ●♦▲

European Society for Animal Assisted Therapy (ESAAT): goals of ESAAT = to conduct and support scientific research into animal-assisted services and to promote their status in society & to create recognized standards for education and training in the field of AAS within the EU and thus make them comparable. ■●♦▲

- Science meets practice section/resources: https://esaat.org/en/science-meets-practice/
- ESAAT Animal Welfare Requirements: https://esaat.org/en/responsibility/

Equator Network Enhancing the Quality and Transparency of Health Research. https://www.equator-network.org/reporting-guidelines/ ■

Equitation Science (ISES). www.equitationscience.com ■●♦▲

- ISES Training Principles: https://equitationscience.com/ises-training-principles ■●♦▲
- Position statements: https://equitationscience.com/equitation ■●♦▲

Farm Animal Welfare Council (1993). Report on priorities for animal welfare research and development. Surrey. ■●

Five Domains Model. Article: **Mellor, D. J., & Beausoleil, N. J.,** (2015). Extending the 'Five Domains' model for animal welfare assessment to incorporate positive welfare states. *Animal Welfare 24*(3), 241–253. https://doi.org/10.7120/09627286.24.3.241 ●

HABRI. www.habri.org ■●♦▲

Hooijmans, C. R., Rovers, M. M., de Vries, R. B. M., Leenaars, M., Ritskes-Hoitinga, M., Langendam, M. W. (2014). SYRCLE's risk of bias tool for animal studies. *BMC Medical Research Methodology, 14*, 43–43. https://doi.org/10.1186/1471-2288-14-43 ■●♦

HBC for Animals. www.hbcforanimals.com ■●♦▲

HLWIKI Canada. Website. https://open.ubc.ca/hlwiki-international

Human Research Standards Organization (HRSO): https://www.hrso-onrh.org/standards/published-standards/ ■●♦▲

IAHAIO Minimum standards for education and training in AAS. https://iahaio.org/iahaio-international-guidelines-for-minimum-standards-for-education-and-training-in-animal-assisted-interventions-aai/ ■●♦▲

IAHAIO (2025). The IAHAIO White Paper of the International Association of Human-Animal Interaction Organizations (IAHAIO) [online]. Available online: https://iahaio.org/best-practice/white-paper-on-animal-assisted-interventions (accessed on 1 July 2025). ■●♦▲

Italian National Guidelines for Animal Assisted Interventions. The Italian law on animal assisted interventions (2015) includes detailed guidelines on: AAI definitions; composition of the team; AAI structures; operational procedures; sanitary, behavioral and welfare requirements for animals involved; training requirements for professionals involved. Article describing the guidelines: **Simonato et al. (2018)** (see below)

International Society for Animal Assisted Therapy (ISAAT) positive species list ■●◆▲ (https://isaat.org/wp-content/uploads/2021/03/Positive-List-Species_2018-03-08-redlist.pdf

Koch, V. (Ed.) (2024). *Equine welfare in clinical practice*. Elsevier. ●

McBride, E. A. (2017). Small prey species' behaviour and welfare: Implications for veterinary professionals. *Journal of Small Animal Practice, 58*(8), 423–436. ●

Murad, M. H., Asi, N., Alsawas, M., & Alahdab, F. (2016). New evidence pyramid. *BMJ Evidence-Based Medicine, 21*(4), 125-127. https://doi.org/10.1136/ebmed-2016-110401 ■

Minkow, D. (2014). The Evidence-Based Medicine Pyramid. https://s4be.cochrane.org/blog/2014/04/29/the-evidence-based-medicine-pyramid/. ■

Ning, Y., Teixayavong, S., Shang, Y., Savulescu, J., Nagaraj, V., Miao, D., ... & Liu, N. (2024). Generative artificial intelligence and ethical considerations in health care: A scoping review and ethics checklist. *The Lancet Digital Health, 6*(11), e848-e856. https://doi.org/10.1016/S2589-7500(24)00143-2. ■◆

RAND (a non-profit and non-partisan research organization)**:** Standards for high-quality and objective research and analysis. https://www.rand.org/about/standards.html ■

Rendle, M., & Hinde-Megarity, J. (Eds) (2022). BSAVA Manual of practical veterinary welfare. BSAVA ●◆

RSPCA. https://kb.rspca.org.au/knowledge-base/what-are-the-five-domains-of-animal-welfare ●

Sandøe, P., Corr, S., & Palmer, C. (2015). *Companion animal ethic*s. John Wiley & Sons.■●◆▲

Simonato, M, De Santis, M, Contalbrigo, L, Benedetti, D, Finocchi Mahne, E, Santucci, VU, ... & Farina, L (2018). The Italian Agreement between the government and the regional authorities: National guidelines for AAI and institutional context. *People and Animals, 1*(1), 1. ■●◆▲

Simonato, M., De Santis, M., Contalbrigo, L., De Mori, B., Ravarotto, L., & Farina, L. (2020). The three R's as a framework for considering the ethics of animal assisted interventions. *Society & Animals*, 28(4), 395–419.■ ●

Society for Companion Animal Studies (SCAS): This organization gives an AAI SCAS Code of Practice for the UK (2019) – see SCAS guidelines: https://www.scas.org.uk/wp-content/uploads/2019/08/SCAS-AAI-Code-of-Practice-August-2019.pdf ●◆▲

SPIRIT (Standard Protocol Items: Recommendations for Interventional Trials) 2013 Statement. Provides evidence-based recommendations for clinical trial protocols' minimum content. SPIRIT is widely endorsed as an international standard for trial protocols. https://spirit-statement.org/ ■

UKRIO (2025). *Embracing AI with Integrity- A practical guide for researchers*. UK Research Integrity Office. https://ukrio.org/wp-content/uploads/Embracing-AI-with-integrity.pdf ■◆

Universities Federation for Animal Welfare (UFAW) Genetic Welfare Problems of Companion Animals. https://www.ufaw.org.uk/genetic-welfare-problems/overview ●

Waran, N & Evans, L. (2024). *White paper: Good welfare for Equids*. Eurogroup for animals. ●

Yeates, J. (Ed.) (2019) *Companion animal care and welfare: The UFAW companion animal handbook*. John Wiley & Sons, Chichester. ■●◆▲

World Horse Welfare. https://worldhorsewelfare.org/advice/the-5-domains-of-animal-welfare ●

Appendix 6: WORKING GROUP – Members of the Small Working Group (SWG) and their affiliations

The Small Working Group (SWG) consisted of:

- Delanoeije, Joni [1,2,3 *]
- Hediger, Karin [1,4,5 *]

- Barnfield, Anne [6]
- De Santis, Marta [7]
- McBride, Anne [8]
- Rusu, Alina [1,9]
- van Dierendonck, Machteld [10,11]

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